

# URBAN OPEN SPACES AND THEIR POTENTIAL AS GREEN INFRASTRUCTURE

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Towards an  
Integrated  
Approach for a  
Sustainable Built  
Environment in  
Malta



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## DECLARATION

I hereby declare that the work in the dissertation entitled 'Urban Open Spaces and their Potential as Green Infrastructure: Towards an Integrated Approach for a Sustainable Built Environment in Malta', presented to the Faculty for the Built Environment at the University of Malta for the degree of Ph.D. in Spatial Planning, during 2021, is my own original work.

Sarah Scheiber



*To my parents and husband, for their constant support throughout this journey*



## Abstract

The need to strive for sustainable development and mitigate or adapt to climate change are increasingly at the forefront when planning for and managing urban concentrations. Urban design is a key player and the planning and design of urban open spaces is one area within the dimensions of urban form which is increasingly recognised for its importance in improving the sustainability and resilience of built environments. In fact, if urban open spaces function as green infrastructure they have the potential to address a broad range of urban challenges.

A review of Maltese policy and publications reveals the poor quality of urban open spaces in Malta. Additionally, various trends such as: Malta's particular scale; development pressures; policy orientation; governance; climatic conditions; and mobility challenges, support the need to develop research in relation to Malta's urban open spaces. The suggestion is made that a 'gap' exists in relation to their planning and design. The aim of the research is therefore to investigate planning policy and the design of urban open spaces in Malta and use the outcomes to develop proposals for improving their contribution to sustainable development.

The research adopts a mixed methods approach using both quantitative and qualitative data collection techniques and Malta's urban conurbation as a single city case study. The methodology is developed in two phases. The first utilises: physical survey; online survey; interviews; case study project reviews; and policy review to gather the initial data. The second develops proposals in response to the results and attempts to identify potential barriers to implementation using focus groups.

The results of phase one identify that the design of existing urban open spaces in Malta are lacking in their potential to act as green infrastructure. Gaps in spatial planning systems and policy as well as governance issues, which are also contributing to current trends, emerge. Following a comparison with international literature, a set of proposals are developed. These are elaborated on and refined using the input from the focus groups. A refined framework is developed for the spatial planning of urban open spaces. This is recommended as a means to facilitating the potential for Malta's urban open spaces to act as green infrastructure. The potential barriers to implementing such a framework are also discussed together with emerging considerations and parallel mechanisms which should be considered. In conclusion, the thesis advocates the importance of adopting a multi-faceted and 'middle-up' approach.





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## Glossary

<b>Abbreviation</b>	<b>Meaning</b>
AGIR	Amenity Green and Grey Infrastructure Related Spaces
AEI	Area of Ecological Importance
BAF	Biotope Area Factor
BICC	Building Industry Consultative Council
BID	Business Improvement Districts
BRO	Buildings Regulation Office
CBA	Cost Benefit Analysis
CMLP	Central Malta Local Plan
COE	Council of Europe
CPD	Civil Protection Department
CRPD	Commission for the Rights of Persons with Disability
EEA	European Environment Agency
EEC	European Economic Community
EIA	Environmental Impact Assessment
ELC	Environment Landscape Consortium
EPD	Environment Protection Department
ERA	Environment and Resources Authority
EWA	Energy and Water Agency
DPA	Development Planning Act
FAR	Floor Area Ratio
FGD	Focus Group Discussions
CABE	Commission for Architecture and the Built Environment
GBI	Green Blue Infrastructure
GHLP	Grand Harbour Local Plan
GHRC	Grand Harbour Regeneration Cooperation
GI	Green Infrastructure
GoM	Government of Malta
HPU	Heritage Protection Unit
IM	Infrastructure Malta
MCAST	The Malta College of Arts, Science & Technology
MECP	Ministry for the Environment, Climate Change and Planning
MEPA	Malta Environment and Planning Authority
MESDC	Ministry for the Environment, Sustainable Development and Climate Change
MFCS	Ministry for the Family, Children's Rights and Social Solidarity
MFSS	Ministry for Family and Social Solidarity
MQF	Malta Qualifications Framework
MRA	Malta Resources Authority
MSDEC	Ministry for Sustainable Development, Environment and Climate Change
MTIP	Ministry for Transport Infrastructure and Capital Projects
NBSAP	National Biodiversity Strategy and Action Plan
NCSD	National Commission for Sustainable Development
NCPD/KNPD	National Commission Persons with Disability
NEP	National Environment Policy
NHLP	North Harbour Local Plan
NSO	National Statistics Office
PA	Planning Authority

<b>Abbreviation</b>	<b>Meaning</b>
PPCD	Planning and Priorities Coordination Division
PPGIS	Participatory Planning Geographic Information Systems
PPS	Projects for Public Space
PPP	Public Private Partnership
PUA	Principal Urban Area
PV	Photovoltaic
SAC	Special Areas of Conservation
SCH	Superintendence of Cultural Heritage
SEA	Strategic Environmental Assessment
SMLP	South Malta Local Plan
SPA	Special Protection Area
SPED	Strategic Plan for the Environment and Development
SSI	Site of Scientific Importance
SUDS	Sustainable Urban Drainage Systems
TM	Transport Malta
ToM	Times of Malta
UCA	Urban Conservation Area
UOM	University of Malta
UOS	Urban Open Space
WCMP	Water Catchment Management Plan
WSC	Water Services Corporation

The measure of any great civilisation is its cities and a measure of a city's greatness is to be found in the quality of its public spaces, its parks and squares

John Ruskin



# 1 Introduction

## 1.1 Background

Around 72% of Europe's population now lives in urban areas (EEA, 2017). Urban concentrations of population, if not appropriately managed, result in a number of problems (Richardson, 1995). Challenges engendered by the need to address problems such as: increasing mobility while decreasing dependence on private vehicles, reducing sprawl and land take up; improving micro-climates and the increasing need for effective water management in urban areas, are all topics relating to the development and management of the urban environment. Such issues have a direct impact on the quality and sustainability of urban environments. Amongst the challenges faced in ensuring sustainability and a high-quality urban environment is also the need to adapt to climate change (Costa, Figueira de Sousa, & Silva, 2014; Wilby, 2007).

Although numerous nations and cities have embraced the concept of sustainable urbanization, we have yet "to successfully design and plan cities that will accommodate our economic and demographic needs while uplifting and elevating us, and...the planet and its natural systems". (Beatley, 2012, p. 1) Policy at all levels, from the European Union to municipal governments has set guidelines for the development of urban neighbourhoods to provide a greater quality of life in a sustainable way. This aims to pursue the global aim of environmental protection, social equity and economic vitality for present and future generations. Urban design is considered a key player in this enterprise as it has substantial potential to affect the various dimensions of urban form.

The planning and design of urban open spaces is an important area within the dimensions of urban form. This recognition is evident through the wide range of policies which incorporate the role of urban open spaces (Stiles, 2009) or mandate or subsidise the inclusion of green features in new urban developments (Beatley, 2012). Their impact on ecological functioning, health/human well-being, and other social and economic benefits has been clearly documented (Haase, et al., 2014; Pauleit & Breuste, 2011) while other authors (Banister, Watson, & Wood, 1997; Bell, 2012; Fausold & Lilieholm, 1996; Lehmann, 2010) clearly establish the importance of open spaces in improving the sustainability and quality of the built environment.

Open spaces "have a direct influence on how local people and visitors perceive urban areas, how they identify with them and how well social life functions." (UrbSpace, p. 5) They also influence economic prosperity through increase in real estate value, increasing attractiveness and hence competitiveness of cities. Their potential to address the challenges being created by climate change, particularly in urban areas reveals their environmental importance (Stiles, 2009; UrbSpace). The presence of more high-quality green space in neighbourhoods is therefore becoming crucial (Haase, Pauleit, & Randrup, 2020).

The term open space can refer to a range of typologies. This thesis is concerned with open spaces within the urban or built environment, hence also referred to as 'urban open spaces' (UOS). This is defined further in Section 1.3.1 on page 47.

## 1.2 The Maltese Context: Problem Definition and Research Justification

In Malta<sup>1</sup>, both the National Environmental Policy (NEP) (GoM, 2012) and the Strategic Plan for the Environment and Development (SPED) (GoM, 2015) identify the need to move towards sustainable development. The SPED comments on the importance of open spaces when increasing densities: “without parallel mechanisms to manage the associated adverse impacts arising from higher densities, in certain instances this may lead to negative impacts at a local level.” (GoM, 2015, p. 14) The increase in densities has “had a number of negative effects manifested to different degrees in certain localities with impacts on the quality of streetscapes and public open spaces, social and community facilities, increased traffic flows and on residential amenity and the general upkeep of the environment”. (GoM, 2015, p. 14) Additionally, the low provision of urban green spaces does not encourage healthy lifestyles. Factors such as congestion, pedestrian safety, air and noise pollution, have reduced the amenity and quality of life. This has led to the gradual erosion of the degree of social integration within communities (GoM, 2015).

An initial review of Maltese policy (spatial planning and others) and other publications, identified the poor quality of open spaces in Malta (GoM, 2012; TPPI, 2008; TPPI, 2015; GoM, 2015)<sup>2</sup> in relation to the sustainability agenda. This led to the problem identification of this thesis which suggests that: a ‘gap’ exists in relation to the planning and design of urban open spaces in Malta. This section expands on this by introducing Malta’s context with respect to heavy urbanisation, resultant pressure on open spaces for development and the need to respond to climate change. It also gives a brief introduction (see Chapter 4 for more in-depth discussion) of the spatial planning system and policy trends in the Maltese context. This illustrates the lack of attention to urban open space and the need to move towards a more integrated and interdisciplinary approach. In fact, the Environment and Resources Authorities (ERA)’s recent document on green infrastructure (GI) in Malta concludes that there are potential research opportunities in relation to adopting a “multifaceted planning approach to GI and building expertise and experience in this regard.” (ERA, 2019, p. 52)

### 1.2.1 The Particularities of Scale

Malta is an island state and has the highest population density of all EU Member States. At the end of 2018, the population stood at 493,559 which implies a density of 1,562 persons per km<sup>2</sup> (NSO, 2019). Additionally, in 2019, 94.7% of its population lived in urban areas (World Bank, n.d.). Malta can be defined as an entirely urban area (Zammit, 2010; Antikainen, 2005). While planning documents (GoM, 1990; GoM, 2015) do define areas which are outside the permitted development boundaries as rural areas, these areas are still influenced by urban areas. In fact, Zammit (2010) submits that they cannot be defined as rural areas but rather as peri-urban areas (Pullicino, 2005 in Zammit, 2010).

Zammit (2010) advocates that while for Malta it is not usual to talk about a city, district or region, it is possible to identify an urban fringe which acts as a transition zone. However, this zone does not transition

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<sup>1</sup> The Maltese Islands refer to the archipelago of islands in the middle of the Mediterranean. Malta is the main island; however, the term Malta is also used interchangeably to refer to the group of islands. Throughout this text, Malta is used interchangeably with ‘The Maltese Islands’ to refer to the state of Malta as a country. It is also used to refer to the main island, the main urban conurbation of which, is the focus of the study.

<sup>2</sup> TPPI is The Today Public Policy Institute. This was a think tank which claimed to act independently and impartially in developing alternative public policies. Its website was no longer accessible towards the end of this research. Its printed publications however remain a valuable source of information.

with rural areas but rather with peri-urban areas, suggesting that urban-rural interfaces do not exist, but rather, urban-peri-urban interfaces, which have a small proportion of open space. In some cases, such areas become extensions of existing urban areas and the identification of the interface is difficult.

The SPED<sup>3</sup> (GoM, 2015) is the document at the highest planning scale (national level) and seeks to address spatial issues throughout its lifetime. It replaced the 1990 Structure Plan for the Maltese Islands (PA, n.d.; GoM, 1990).

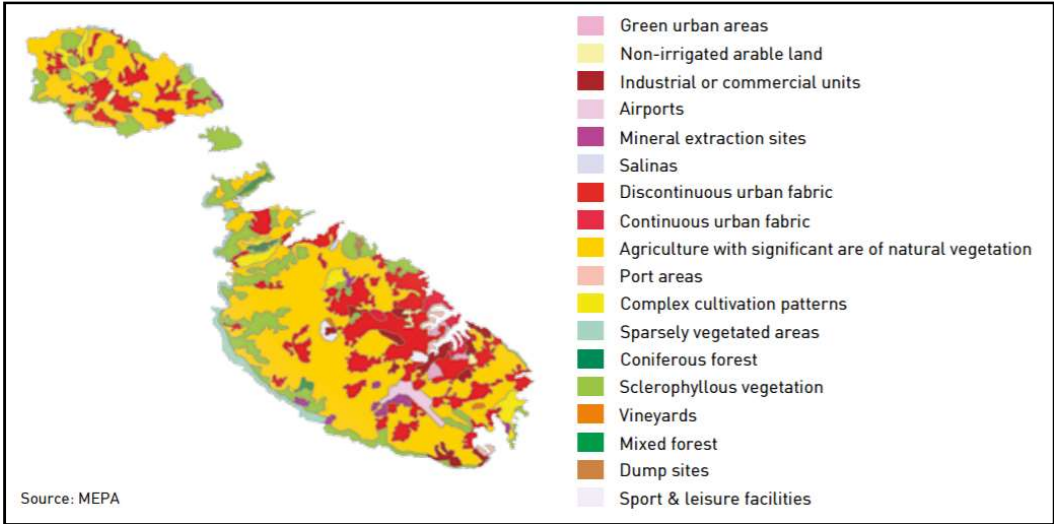


Figure 1: Land cover for The Maltese Islands (MEPA & NSO, 2010)

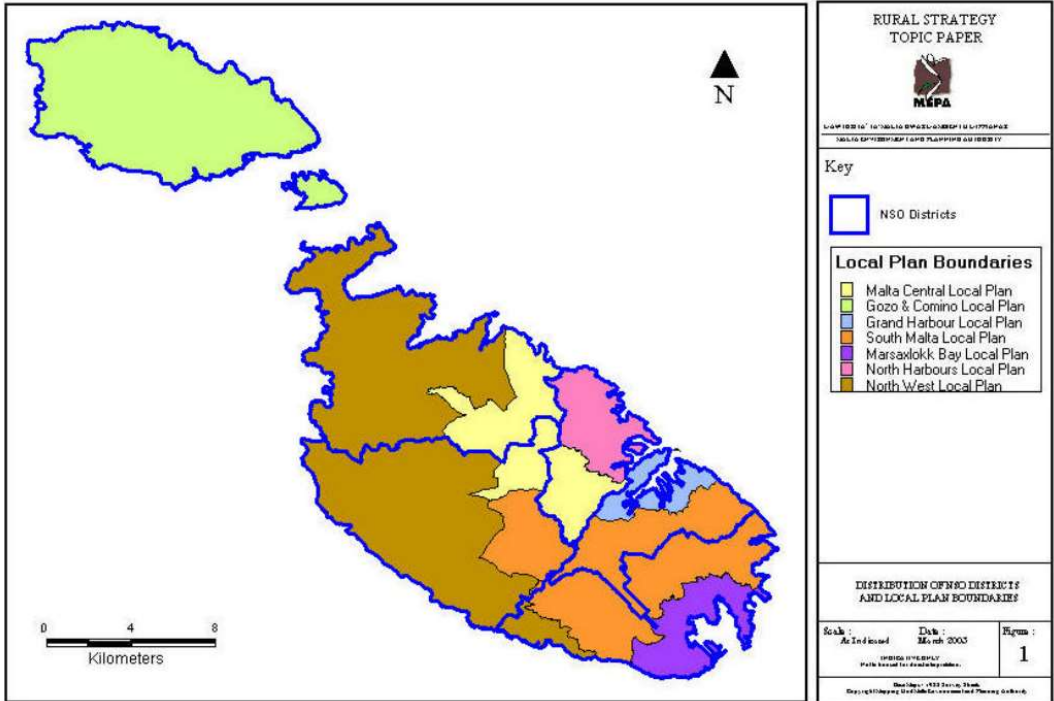


Figure 2: Local Plan Boundaries and National Statistic Office Districts (GoM, 2003)

According to the planning framework in the Structure Plan (GoM, 1990), 24 local plans were to be developed. This was eventually reduced to seven local plans. The Marsaxlokk Bay Local Plan was approved

<sup>3</sup> A detailed policy review is provided in Chapter 4.



in 1995, the Grand Harbour Local Plan in 2002 and the rest in 2006. The local plans define regions (Figure 2 above) in the Maltese Islands for which spatial development policies are determined. These cover land use, building heights, conservation, open space, and transportation aspects amongst others. It is interesting to note that boundaries defined by the National Statistics Office (NSO) (outlined in blue in Figure 2 above) for statistical analysis do not correlate with the local plan boundaries.

These local plans are to date still the reference points in terms of land use planning policies. Although, under the current Development Planning Act (Cap 552) (Article 52) (GoM, 2016), local plans can be overruled by the SPED (GoM, 2015). A review of the current local plans had been announced due to the introduction of the SPED (GoM, 2015). At the time of writing however, there is still no indication as to the framework or scale which will be adopted for the next planning level under the SPED (GoM, 2015). Additionally, more recently a review of the SPED was also announced (The Malta Independent, 2020). The SPED (GoM, 2015) introduces a hierarchy of urban areas, namely the 'Principal Urban Area' (PUA), Regional Urban Settlements and Small Urban Settlements (Figure 3 below).

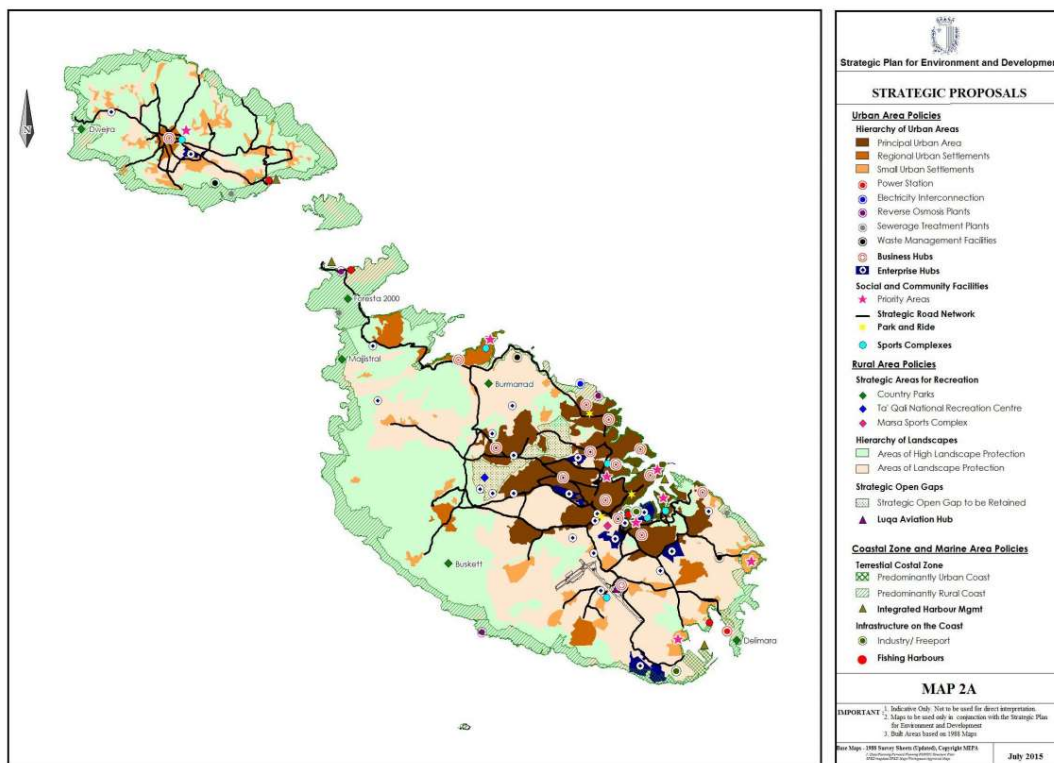


Figure 3: Strategic proposals from the SPED illustrating a hierarchy of urban areas (GoM, 2015)

A number of supplementary planning documents also exist which set out guidance and policies on various issues which can be broad ranging, such as Development Control, and also specific, such as the 'Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands' (GoM, 2002). Such supplementary guidance is generally applicable at a national scale.

Besides spatial planning documents, other national strategies and policies exist, such as the National Environment Policy (NEP) (GoM, 2012) and Malta's National Biodiversity Strategy and Action Plan 2012-2020 (NBSAP) (GoM, 2012). Furthermore, the development of a National Strategy for the Environment is currently in the pipeline (ERA, n.d.). Chapter 4 provides a detailed policy review; however, what emerges at this stage is the particularity of Malta's scale for strategy and policy development. Due to the islands'

size, policy is often developed at a national scale which can also be considered to be the city scale. This is because the size of the PUA could easily be compared to that of a medium sized European city. The national and local scales therefore interact in a manner which is specific to the Maltese context. This may therefore require specific responses when considering the planning and design of urban open spaces.



Figure 4: The Principal Urban Area (PUA) (right) compared to Den Haag in The Netherlands (a medium sized European City) (left)  
Source: Author (base map adapted from Google)

### 1.2.2 Development Pressure

Malta's dense urban setting is actually made up of a number of towns and villages. However, the built form tends to be unbroken between one settlement and another (MEPA & NSO, 2010), thereby forming a single conurbation. The Buildings Permits (Temporary Provisions) Act, 1988 (GoM, 1988), The Temporary Provision Schemes (Pullicino, 2006) and the 1990 Structure Plan were the first instruments outlining areas and policy to regulate the developable areas in Malta. These boundaries were then rationalised through an exercise carried out in 2006 (PA, 2006; Pullicino, 2006). As a result of these boundaries, undeveloped land which is classified as outside the limits to development<sup>4</sup> for planning purposes, does exist within the urban conurbation.

This land forms strategic gaps of open spaces within a very dense urban environment. They are however constantly under intense pressure for development (GoM, 2003; Zammit, 2010; ToM, 2016; The Malta Independent, 2016). Proactive spatial visions or plans to guide the use and management of such areas, do not, unfortunately, exist. As a result, response to development in such areas is limited to a conservationist approach. This leads to lack of use and management of such spaces, resulting in their under valuation and lack of appreciation. In fact, Zammit (2010) suggests that such areas demand a more "proactive, forward-looking and flexible planning system". (p. 16)

Development pressures also exist with respect to the urban fringe. Ever since the post-war building boom and the development response to housing demand and speculative development, between the 1960s and 1980s, Malta's urban core has continued to expand outwards in ad hoc or newly planned areas. To date continuous development pressure and the existing planning system has led to continued urban sprawl. Understanding the weaknesses of planning systems, and advocating flexibility or rigidity is a discussion/research topic in its own right (Gauci, 2002) and as such, is beyond the scope of this research. Having said that, it is important to acknowledge the constant pressure on the planning system, leading to

<sup>4</sup> As drawn up in 1988 and revised in 2006

various revisions and rationalisation schemes to include more land in the development boundaries (Kamrat-Periti, 2007; Zammit, 2010; Gauci, 2002).

### 1.2.3 Policy Orientation: Open Spaces in Decline

Our cities, towns and villages are where we spend most of our lives, yet the quality of the outdoor environment has been undermined by factors such as car dependence and poor urban design... The outdoor environment also provides important opportunities to be physically active, especially when walking and cycling are presented as reasonable and safe mobility options. This is determined by factors such as the availability of open spaces, pedestrianised areas and outdoor sports facilities in urban areas... Environmental nuisance related to noise and dust also undermines the liveability of urban areas...The improvement in the appearance, pleasantness, cleanliness, amenity and attractiveness of Malta's places is central to our quality of life. (GoM, 2012, p. 59)

The quality of Malta's open spaces therefore needs attention. It is also said that the Maltese living environment has been "systematically degraded". (TPPI, 2015, p. 10) In particular, the lack of trees and vegetation in Maltese streetscapes results in lack of shade creating unbearable environments during the summer months. This also misses out on the opportunity to create sinks for carbon dioxide. Additionally, the high vehicular traffic in our streets and open spaces results in uninviting environments, such that people need to search elsewhere for places supporting leisure activities (TPPI, 2008). In another study on underutilised public spaces in the Maltese conurbation Journee (2017) concludes that the design of public spaces which does not respond appropriately to the needs of that specific area is resulting in underused or even unused public space. Further study into the design of open spaces, specific to the Maltese context, can help shape policy, improve designs and better manage our resources (GoM, 2012). Journee (2017) also advocates that a framework adapted to the Maltese context could be developed to serve as a guiding tool which would facilitate the development of successful public open spaces.

The NEP (GoM, 2012) identifies the importance of the quality of urban open spaces (UOS) in relation to sustainability. Six priorities are listed.

- Addressing the overbearing presence of motor vehicles in urban spaces.
- Improving provision of public open space.
- Promoting quality in design.
- Protecting and enhancing urban biodiversity.
- Addressing shabbiness and dilapidation.
- Mitigating the impacts of construction activity. (p. 62)

It is clearly stated that by "improving the urban environment, cities, towns and villages can become much better places to live, work and visit. Their amenity - which means how easy and pleasant they are to live and work in and to visit - also needs to improve. Amenity involves access for all to factors such as: pedestrian safety; air quality; cleanliness; age and child friendliness; well-designed street furniture; urban green space, including playgrounds, parks and other recreational and exercise-oriented areas; upkeep of buildings; and, local shops such as grocers, newsagents and chemists." (GoM, 2012, p. 62) These considerations all relate directly to the planning and design of UOS illustrating clearly the need for research in this area.

A review of the framework guiding the planning and design of open spaces is thus essential. According to Zammit (2014), “Maltese planning has to date focused on architectural and building control, rather than urban design matters, and has not formally recognised planning as a distinct profession.” (p. 456) Occasionally, specific guidance documents such as development briefs do provide some element of urban design guidance. However, Local Plans, which can be seen as the primary planning tool, do not. The Development Control Design Policy, Guidance and Standards 2015 (DC 2015) (GoM, 2015) is a document which Zammit (2014) advocates set a new approach for Malta in urban design by starting with improved streets. Despite this, the document provides limited policy and guidance for urban open spaces (See Section 4.4.4 on page 133).

Maltese planning has also not focused on the strategic planning of open spaces. The SPED (GoM, 2015) limits its open space hierarchy to ‘Areas of High Landscape Protection’, ‘Areas of Landscape Protection’ and ‘Strategic Open Gap to be Retained’. Similarly, the Coastal Zones are simply described as ‘Predominantly Urban Coast or Rural Coast’ giving no further indication as to what the breakdown of the qualities of these places might be. As an example, Rural Objective 4, “To protect and enhance the positive qualities of the landscape and the traditional components of the rural landscape” defines that this would be done by:

- promoting integrated countryside management;
- carrying out a reappraisal of designated areas;
- identifying and classifying a hierarchy of landscapes;
- carrying out a reappraisal of strategic open gaps identified in subsidiary plans to prevent coalescence of urban development and identifying further areas for designation;
- encouraging the reuse of existing structures worthy of conservation, in a manner which is compatible with the rural character and prevents formalisation of the countryside; and
- reviewing the hierarchy of rural settlements to guide the nature, scale and type of development within them. (GoM, 2015, p. 26)

The Development Planning Act (DPA) (GoM, 2016) sets out the potential role to be played by subsidiary plans and policies. However, to date, it has not yet been specified whether such plans relating to specific themes such as those outlined above, or green infrastructure will be produced. Additionally, it should be kept in mind that the SPED still predominates over Local Plans and Local Plans over subsidiary plans and policies.

Regarding the urban context, Urban Objective 3 talks about:

- protecting and greening open spaces which contribute towards the character and amenity of urban areas, reduction of soil sealing and support biodiversity with a view of developing ecological corridors;
- retaining and seeking to upgrade existing sports facilities, public gardens, playgrounds, promenades and other public open spaces in urban areas; and
- seeking to achieve a minimum level of urban public open space per person, part of which should be green open space. (GoM, 2015, p. 24)

Once again since the current local plans are under revision, it is unclear how, when and whether they will support the necessary strategic planning of UOSs. What is clear however, is that compared to

international planning frameworks<sup>5</sup> for urban open spaces (Beatley, 2012; Ritchie & Thomas, 2003; Nelson, n.d.), strategic planning, standards and design guidance for urban open spaces are lacking. Due to the lack of research concerning UOSs specific to the Maltese context, the potential for the in-depth inquiry which this thesis provides, was seen as substantial. Particularly, with the intention of developing a framework for the planning of urban open spaces (UOSs) for improving their contribution to sustainable development.

The lack of case studies and design guidelines specific to the Maltese context does not aid the implementation of best practice principles as advocated by international literature (see Chapter 2) since this often requires a departure from accepted approaches and design principles. This research therefore also contributes to the evidence base required for improving the planning and design of urban open spaces.

#### **1.2.4 The Production of Plans and Governance of Urban Open Space**

Whilst the PA<sup>6</sup> is responsible for spatial planning, open spaces, even though state owned tend to be managed by local councils. Local Councils were introduced in 1993 through the Local Government Act (Cap 363) (GoM, 1993) resulting in the decentralisation of some central state services. They are responsible for operational matters in their respective towns or villages. Amongst these is the upkeep and maintenances of local roads and the establishment and management of public urban opens spaces, parking areas and local traffic management schemes (Attard, Miceli Farrugia, & Borg Barthet, 2017).

While a local plan might outline proposals for open spaces, the PA advocates (Frendo, 2016) that Local Councils need to take ownership of the local plans. However, whether they have the resources to do this is questionable. The United Kingdom, for example<sup>7</sup>, have systems in place where independent teams facilitate and enable major projects when local planning authorities struggle due to projects beyond their resources and expertise. The research therefore explores whether such ideas, could be identified, for supporting the planning of urban open spaces in Malta. This is seen as essential since such proposals need to consider the broader planning and governance context within which they function.

Another complication is ownership and management systems. Open spaces within the urban conurbation can be privately owned, state owned or owned by the church. They may also be under multiple or fragmented ownership. Additionally, there are a number of authorities who may be responsible for managing state owned open spaces. These include the Local Councils, the Environmental Landscape Consortium (ELC) (ELC, n.d.) and state authorities such as Transport Malta (TM) (TM, n.d.), Infrastructure Malta (IM) (IM, n.d.) or the Public Works Department (MTIP, n.d.) (see Figure 29 on page 116). In an exercise carried out by Frendo (2016) it was established that while identifying land ownership is possible, such information is currently not easily accessible. However, considering the amount of land identified as State-owned or Church-owned, the potential for establishing an urban green space system does exist. The complication lies in the strategic planning, co-ordination and management of such spaces.

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<sup>5</sup> Insights based on personal working experience in the United Kingdom and The Netherlands between 2005 and 2011

<sup>6</sup> PA Website (PA, n.d.)

<sup>7</sup> Insight through personal communication with ATLAS representative at University College Birmingham (Atlas Planning Group, n.d.)

In fact, Attard, Miceli Farrugia and Borg Barthet (2017) identify a considerable number of challenges that inhibit Local Councils' ability to be pro-active about their localities' future. In their study carried out for the case of Lija, in relation to sustainable mobility, liveability and public space, they established that local councils are not allocated funds to support studies or the development of strategic plans regarding the future development of their localities. Additionally, while such plans fall within the remit of the Planning Authority (PA), this function has never been fully developed. In fact, the authority is today primarily concerned with the processing of development applications.

The study (Attard, Miceli Farrugia, & Borg Barthet, 2017), dealt with the development of a strategy for the sustainable development of Lija focusing on urban mobility and renewal of urban open spaces. The conclusion was drawn that there are no institutional structures in place to facilitate such an approach, and suggests that further research is required to look at institutional structures and relations, which could support such initiatives at the local, regional and national level. The focus in this case was on mobility, and dealt with the local scale. However, the challenges identified are relevant to the planning and design of urban open spaces both at the local level as well as the scale of the urban conurbation. Zammit (2010), in relation to his discussion on urban fringes, also proposes that the formation of Regional Authorities would be more effective than individual Local Councils.

As outlined in Section 1.3.3 p53, working towards sustainable development, is dependent on adopting an integrated approach and in Malta, the necessary framework to facilitate this approach for the planning and design of urban open spaces is lacking. The question therefore remains, as to which scale would be suitable for such a framework to be established. Furthermore, in light of the existence of two entities which need to play an important role, the PA and the Environment and Resources Authority (ERA) (ERA, n.d.), a clear framework needs to establish how an integrated approach can be operationalised.

### **1.2.5 Climatic Conditions**

Taylor (2013) advocates "...that there certainly is a connected green space movement, particularly in northern Europe. However, this movement is unfortunately somewhat disconnected from southern European green space research...There are a growing number of international articles and journals which specifically use and study the term green space... however... there does seem to be a northern European bias." (p. 19) When considering the planning and design of urban open spaces, the climatic context is extremely relevant. While most Western European countries are considered Temperate Oceanic climates, far Southern European countries including Malta are classified as a Warm Mediterranean Climates. Design response to climatic conditions should adapt accordingly.

While Northern European countries may open up the southern facades of buildings through the use of glass to maximise solar gain, countries such as Malta, recommend minimal use of glass/apertures on southern facades and the use of solar shading. While northern countries make maximum use of their open spaces during the summertime to enjoy the relatively warm summer months, in climates such as Malta's, open spaces exposed to the sun are used less frequently during the summer months, while climatic conditions allow for very pleasant micro-climates and thus the use of open spaces during sunny winter days. Such variations require an appropriate design response in relation to creating comfortable climatic conditions which encourage and allow for the use of open spaces.

Climate change trends also vary depending on the climate classifications requiring different adaptation techniques. Differences in precipitation patterns and expected changes, for example, may call for different design responses when considering the use of urban open spaces as a form of sustainable water management. Malta’s vulnerability to the impact of climate change is an important consideration. The Second National Communication to the United Nations Framework Convention on Climate Change (GoM, 2010) outlines how the climate in Malta is changing such that annual precipitation levels are reducing, whereas the frequency of intensive storms is increasing. This can result in periods of drought and flash flooding. Change in sea level can also have an impact on coastal areas and groundwater resources. These predicted changes “are expected to affect ecological processes and systems upon which most socioeconomic activities and infrastructure depend.” (GoM, 2015, p. 12) Consequently, this research also develops further understanding on how urban open spaces in warm Mediterranean climates are contributing to sustainable development.



Figure 5: Flash flooding during winter storms in Malta (Agius, 2020)

### **1.2.6 Mobility and Traffic Congestion**

Malta has one of the highest motorisation rates in Europe (Transport Malta, 2016). Economic growth, the lack of integration of land use development and transport planning as well as insufficient investment in public transport infrastructure has continued to fuel a culture of car dependency. A traditional predict and provide policy has resulted in further infrastructure investment where the aim is to increase supply to meet the ever-increasing growth in demand. This has resulted in road space and urban open space being prioritised for car usage (Attard, Miceli Farrugia, & Borg Barthet, 2017; Transport Malta, 2016).

Unfortunately, as recent as September 2020 (ToM, 2020) the government infrastructural implementation agency, Infrastructure Malta, issued a call for tenders for developing flyovers and through traffic routes within the urban core. Such proposals (Figure 7 below), prioritise traffic and do little to improve the quality

of the built environment, let alone the provision of quality open spaces. This despite the fact that policy requires a solution for this specific area which improves “provisions for pedestrians, cycling and public transport” (Transport Malta, 2016, p. 144) and changes the functionality of the section of the road network so as to redirect through traffic onto the TEN-T network.



Figure 6: Existing situation Msida Creek (Google Earth)



Figure 7: Proposal for Msida creek (ToM, 2020)

Besides the impact on the quality of urban open spaces, such approaches are leading to ever increasing levels of traffic congestion resulting in unsustainable development patterns. This trend in relation to the spatial allocation and use of urban open spaces is seen as a critical issue for the planning and design of



urban open spaces. It is therefore a fundamental consideration in adopting an integrated approach to the planning and design of urban open spaces.

### **1.3 Theoretical Underpinning**

This section introduces the theoretical foundation for this research. Section 1.3.2 p51, establishes the link between the planning and design of urban open spaces and sustainable development. Section 1.3.3 p53, concludes with the research focus, that of adopting an integrated approach in relation to the potential for urban open space to act as green infrastructure (GI). However, before delving into this section 1.3.1 defines what this research considers as urban open space.

#### **1.3.1 Defining Urban Open Space**

Urban open space refers to open spaces relating to the urban or built environment. However, this does not imply that only open spaces which are urban in nature are considered. Natural spaces such as valleys which run through an urban area are also included. Commonly, urban open spaces are seen as defined outdoor places, for example the village piazza, square or garden. Common greens, streets and marketplaces are also easily identified, but elements such as riverbeds, roads, footpaths and coastal areas for example also need to be considered (Festas, 2012; Noguera & Riera, 2016).

According to Stiles (2009) urban open space is a fundamental part of the infrastructure of towns and cities. It can refer to all non-built up spaces comprising much more than a limited set of different types of spaces forming discrete sites. Instead, urban open space can be seen as “the continuous matrix of all unbuilt land in urban areas...it...links together individual spaces and flows around and between every building and structure, forming the context and surroundings of each one and connecting the inner city to the surrounding landscape.” (p. 9) It can also include parts of the built fabric such as roofs, terraces, balconies or even green walls.

This understanding leads to something which is wider and more all-encompassing. It includes not only public squares but also private gardens, urban streets and infrastructure. It also includes sizeable open areas such as local recreation spaces outside the city boundaries (Stiles, 2009). Stiles (2009) goes on to say that even though “... this broader perception of urban open space as an undivided resource is a vital basis for its strategic planning, design and management, for practical purposes it is also necessary to differentiate it into its component parts.” (p. 7) This can be done in different ways and this section does this by discussing: Ownership Vs. Access; Functionality and Typology; The ‘Green’ Element; and The Notion of Scale. It concludes by applying this to the Maltese context.

#### **Ownership vs Access**

An important consideration is the distinction of private or public space. “Within the political economy, the spectrum between public and private can be categorized as types of goods, from pure public goods (air) and common pool resources (parks and squares), to club goods (yards) and private goods (gardens)”. (Stahle A. , 2010, p. 5) A public space can be seen as any place which is freely accessible to the public regardless of individual conditions (Noguera & Riera, 2016). It can be said that it is much easier to influence the planning and design of public open space through public policy. However, it is also possible to influence private spaces for example through grants, guidance or planning conditions (Stiles, 2009).

Besides the relative influence, it is also important to consider the relative impact or importance of affecting the design. It can be said that public spaces should be the focus, as they are enjoyed by the common good or can affect the quality of life of society in general. Additionally, they are the product of public funds which further reinforces the need to ensure a quality product. When considering a public space as any place which is freely accessible, the onus is placed on the use rather than ownership considerations. The focus is, then, on accessibility and functionality rather than ownership.

**Functionality and Typology**

Public space can cover several functions: leisure, urban structuring, aesthetics, contemplation, visual planning, social and cultural uses, educational use, and ecological. It can also be said to be multi-dimensional (physical, social, political, cultural, etc.) (Noguera & Riera, 2016). Planning frameworks and policies often establish a set of open space types or categories. In UK planning policy guidance for example, PPG 17<sup>8</sup> Planning for Open space, Sport and Recreation (DCLG, 2002) the types ranged from parks, gardens and civic spaces to accessible countryside in urban fringe areas. Appendix A4 provides additional information on different classifications and typology definitions.

		TYPE							
		Park	Allotment	Cemetery	Road verge	Golf course	Civic Square	Pedestrian area	Wildlife site
<b>FUNCTIONS</b>	<i>Recreation, play &amp; enjoyment</i>	x	x			x	x	x	x
	<i>Wildlife habitat</i>	x	x	x	x	x			x
	<i>Environment &amp; landscape</i>	x	x	x	x	x	x	x	x
	<i>Water management &amp; pollution control</i>	x	x	x	x	x			x
	<i>Education &amp; awareness</i>	x	x	x		x	x		x
	<i>Movement</i>	x			x		x	x	x
	<i>Community development</i>	x	x	x		x	x		x
	<i>Production of resources for man &amp; wildlife e.g. food, timber</i>	x	x						x
	<i>Burial</i>			x					

Figure 8: Multifunctional urban open spaces (Waters & Smith, 2002)

Waters & Smith (2002) outline the multi-functionality of urban open spaces by identifying how different types of spaces contribute to a number of functions (Figure 8 above). Understanding the varied functions

<sup>8</sup> In 2012 this was replaced by the National Planning Policy Framework (DCLG, 2012). Detailed guidance on typologies of open spaces is now developed at the local planning level (Insights based on personal discussions with Birmingham City Council).

of urban open spaces is crucial to improving their design, management and effectiveness. Stiles (2009) summarises the functions into three main groups: Environmental and ecological functions; Social and societal functions; and Structural and aesthetic functions.

Bellet (2009) in Noguera & Riera (2016) considers the multi-dimensionality of public space which varies depending on how it is analysed resulting in the following dimensions of public space: Collective and civic dimension (the social experience); Symbolic and representational dimension (political places, spaces for expression and representation); Functional dimension; and the Physical and urbanistic dimension (easily reachable, visible, without barriers).

### The 'Green' Element

Another approach is a focus on the environmental dimension. The notion of 'green' urban open spaces has gained a lot of interest. Ecologists, economists, social scientists and planners tend to agree that urban green spaces are "public and private open spaces in urban areas, primarily covered by vegetation, which are directly (e.g. active or passive recreation) or indirectly (e.g. positive influence on the urban environment) available for the users". (Tuzin, Leeuwen, Rodenburg, & Nijkamp, 2002, p. 3)

Schobel (2006) uses the term 'urban green open space'. He defines this as a planned element of urban growth including plazas, boulevards or street trees. However, some typologies e.g. parks and green corridors, can also be interpreted as opposing urban growth. It serves as public infrastructure or even as a buffer or transition spaces between urban activities/development. It can be used as a means for conserving natural or cultural heritage or to provide environmental benefits e.g. by creating green corridors, which facilitate air flow, provide protection to water bodies or facilitate habitat creation.

According to Stahle (2010) "'green' spaces, areas and structures have been widely used in the last centuries mainly because of the strong dominance of the ecological, environmental, biodiversity and sustainability paradigms in planning. The concept of 'green' has been very influential in urban planning as objects for conservation...green space is simply open space (partly) covered by vegetation or natural features." (p. 5) Taylor (2013) provides a review of various definitions of urban green space. On occasions grey space is also included, while others distinguish between 'greenspace' and 'greyspace' (Al-Hagla, 2008)<sup>9</sup> or focus on the presence of vegetation and size (Kabisch & Haase, 2013). Taylor (2013) concludes that common characteristics identified are that such "spaces are primarily open, vegetated and permeable." (p. 2)

Waters & Smith (2002), having reviewed various definitions from policies and authors dating back to 1972, recommend a classification for open space and green space (Figure 9 below). Here 'Open Space' is defined as "any open land (i.e. non-built) which provides, or has the potential to provide, environmental, social and/or economic benefits to communities, whether direct or indirect, within urban areas." (p. 7) Since the focus is on open spaces within urban areas, this definition is also seen to be suitable for the term 'urban open space'. This then also includes 'Greenspace' which "is any vegetated land or structure, water or geological feature within urban areas." (p. 7)

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<sup>9</sup> See Appendix A4

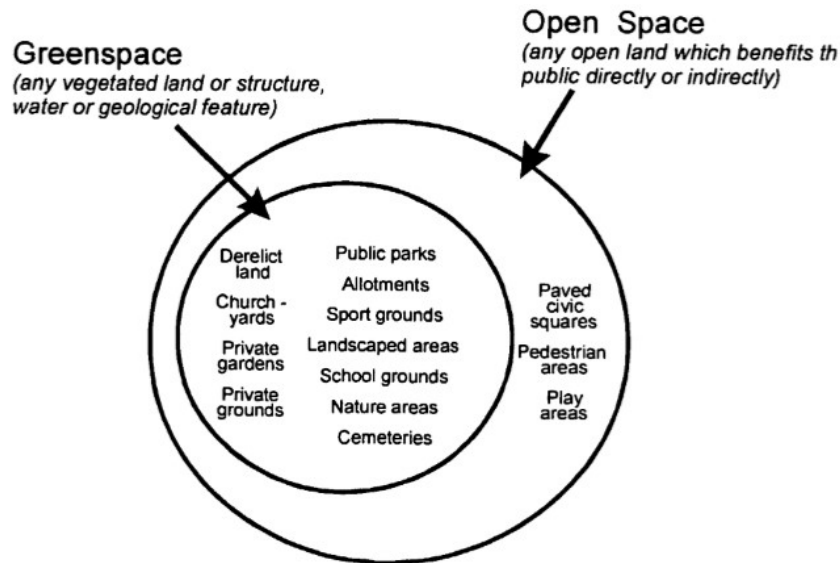


Figure 9: Classification of Green Space and Open Space according to Waters & Smith (2002)

Finally, the importance of a green network also emerges. This idea linked to the protection of natural resources while simultaneously providing and connecting recreational areas to cities has “been popular, from Portland, USA to Vienna and Glasgow, UK”. (Thompson, 2002, p. 59) It is important to think of open spaces “as nodes within a wider open space system in the form of a network of inter-connected spaces” forming “a critical part of the infrastructure of towns and cities.” (Stiles, 2009, p. 10) The term ‘Green Infrastructure’ (GI) is being used to describe such networks particularly where vegetation plays a dominant role.

GI also represents the major shifts in the last decades with respect to the planning and development of ecosystem and landscape management in Europe. This has happened with respect to three areas: the application of the concept of ecosystem services; the concept of ecological networks; the increasing recognition of the beneficial relationship between access to green space and improved public health and well-being. Additionally, particularly in urban areas, “GI is being placed at the same level as other essential urban infrastructure”. (Laforteza, Davies, Sanesi, & Konijnendijk, 2013, p. e1)

### The Notion of Scale

In relation to this the concept of scale is particularly relevant. Open space in towns and cities includes a wide variety of sites from roadsides verges of only one metre width, to Country Parks of numerous hectares. Open spaces provide multiple benefits. This may be through the social function they serve or the ecological value they provide. However, the extent of such benefits depends on the scale of the open spaces (ASLA, n.d.; Austin, 2014). To fully comprehend the benefits and plan and design open spaces appropriately, the understanding of scale is essential (Gobster, 2001).

Thompson (2002) advocates that, “we cannot assume that relationships that exist at one scale of time and space will be the same at another. The challenge is to determine at what level of detail we should be looking for the ‘grain’ or smallest unit, of public open space, and the ‘extent’, or upper limit of our system. Is the grain determined by the size of an individual tree, a private garden or back street, or the habitat of an urban fox or vole? Is extent determined by neighbourhood, city, water-shed or biogeographically region?” (p. 68) These are the questions which should be addressed by contemporary interpretations of green networks.

## ‘Urban Open Space’ - The Case of Malta

In relation to the Maltese context, ‘urban open spaces’ are therefore being considered as all types of open spaces within the administrative boundary of an urban area. All varying types and functionality are being considered as well as both vegetated spaces according to Water et al.’s (2002) definition of green space and non-vegetated space. In order to somewhat limit the research boundaries, the attention is turned to publicly accessible open spaces which may be private or public in ownership.

In Malta’s case, the definition of an administrative boundary for a specific urban area becomes problematic in relation to the varying regional boundaries adopted by different authorities<sup>10</sup> and the notion of scale. Additionally, the definition of the ‘Urban Conurbation’ is also tricky, particularly due to the merging of urban and rural areas. Zammit (2010) submits that “rural areas have become peri-urban areas and it has become almost impossible to distinguish the different scales and interfaces that compose the urban-rural spectrum”. (p. 1) However, defining a specific boundary, is not seen as crucial to the study. The research rather addresses the open spaces within Malta’s urban areas and for this purpose adopts the PUA (Figure 3 p39) as defined by the SPED (GoM, 2015) as the overall study area since this provides the necessary variation in scale and typology of open spaces.

### 1.3.2 Sustainable Development and the Importance of Urban Open Spaces

Sustainable development is defined as “development that meets the needs of the present without compromising the ability of the future generations to meet their own needs” stemming from the World Commission on Environment and Development (WCED) summit. The concept implies limits, defined by “the ability of the biosphere to absorb the effects of human activities.” It refers to development which allows the basic needs of all to be met while creating the opportunity for all to improve their quality of life. In this sense it is not seen as a “fixed state of harmony but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs.” (Brundtland, 1987, p. 15)

Professions concerned with the environment, whether in the natural or man-made state, are usually concerned with nature’s ability to replenish. Reducing the gap between the poor and the rich is however also an important aspect (Eaton, Woka Ihuah, & Ibimina Kakulu, 2014) together with the principles of climate change. The increased awareness of climate change, global warming and the exhaustion of fossil fuels phenomena, has come about in the past few decades. It has raised the importance of the sustainability agenda in the fields of architecture and urban design. In relation to urban design, sustainability refers to the development of ways in which a city, community or development can meet economic, environmental, social and cultural needs. Therefore, “...sustainability is not just about energy and resource efficiency, but also about how urban spaces could respond to demands of a community – i.e. ‘Design for people’” (Cheshmehzangi & Bo Li, 2010, p. 241). This also advocated by Elkin et al. (1991) who say that “sustainable urban development must aim to produce a city that is ‘user-friendly’ and resourceful, in terms not only of its form and its energy efficiency, but also its function, as a place for living”. (p. 12)

This all relates to the quality of life which can be enjoyed by current and future generations. Discussing ‘quality of life’ complicates the matter of sustainable development. This is because all aspects of life are

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<sup>10</sup> For example, the National Statistics Office (NSO) and Planning Authority (PA)

interrelated and a decision in one area has impacts elsewhere (Brandon & Lombardi, 2011). In looking out for future generations, it is, however generally accepted that sustainable development needs to consider three main aspects: environmental, social and economic impacts. Sustainable development therefore implies two main principles. The first is that it is concerned with both present and future generations and the second is that it assumes a holistic approach to economic, social and environmental factors. While both principles can be seen as 'Motherhood and Apple Pie' objectives, in that nobody could ever disagree with any of them, the real concern is how we put this into practice and also the balance which is created between each pillar. This thesis therefore deals with the operationalization of 'Sustainability' in the context of planning and designing 'urban open spaces' as defined in section 1.3.1.

The important role which urban open spaces play as part of the built environment is evident through the wide range of policies which incorporate the role of urban open spaces. The most notable is possibly the European Landscape Convention (COE, n.d.). This came into force in 2004 and has been signed by 40 European countries and ratified so far by 38 of them. While Malta has signed, it has not yet ratified the convention (Council of Europe, 2016). According to Stiles (2009) one of the more innovative developments is that the convention recognises all landscapes including urban and peri-urban areas. Advocating that, urban open space "is likely to become more, rather than less, important over the coming years and decades" and that "the impact of climate change and the effects of demographic trends" (p. 11) are two phenomena which reinforce this.

As Dejeant Pons (2012) puts it "With the adoption of the European Landscape Convention, the member States of the Council of Europe, have taken an important step acknowledging that the landscape is an essential part of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas. All open public spaces are therefore concerned." (p. 5)

In 2007 European cities came together to publish the Leipzig Charter on Sustainable European Cities. This puts forward a number of recommendations, amongst which making greater use of integrated development policy approaches, with creating and ensuring high-quality public spaces, identified as a specific strategy for action (European Commission, 2007). Similarly, the Freiburg Charter for Sustainable Urbanism talks about the need to develop "some kind of architectural guiding principles to help those in charge" (The Academy of Urbanism, 2012, p. 6) and develops twelve principles to do this. 'Nature and the environment' is one of these principles.

Evidently, various views have been developed regarding the sustainability of cities (Noguera & Riera, 2016). Stiles (2009) advocates that "Attractive urban spaces of all kinds – from extensive parks dominated by semi-natural vegetation to tight inner urban paved spaces – contribute significantly to the quality of life in urban areas." (p. 11) Additionally, a review of Lehmann's 15 principles of Green Urbanism (Lehmann, 2010) reveals that 10 out of 15 principles have a direct relationship with open spaces, illustrating that open spaces play an important role in achieving such principles.

Besides urban open space per se, the provision and importance of 'green' space is also frequently studied (Atiquil Haq, 2011; Austin, 2014; Beatley, 2012; Noguera & Riera, 2016; Stiles, 2009). Ensuring sustainable development is a challenge being experienced throughout the world and "urban green spaces can provide social, economic, cultural and psychological services...". As a result, "the role played by green spaces in our urban environments can no longer be ignored by today's policy makers" (Atiquil Haq, 2011, p. 601)

“the quality of cities depends on how urban green spaces are designed, managed and protected” (Atiqul Haq, 2011, p. 601)

Ambrosje-Oji, et al. (2017) also advocate that “The role of urban nature and urban green infrastructure (UGI) has never been more important to hundreds of thousands of urban dwellers. Individuals derive physical and mental health benefits from UGI ... and at a community level UGI supplies a range of other ‘ecosystem services’ that can support urban adaptation and sustainability in the face of climate change and biodiversity loss.” (p. 5)

In conclusion, this section advocates that urban open spaces play an important role in achieving sustainable development. Chapter 2 provides a full literature review of the specific value and benefits which urban open spaces provide in relation to sustainable development. It also identifies the design principles which can specifically contribute to this.

### **1.3.3 An Integrated Approach and the Potential for Green Infrastructure**

Thompson (2002) discusses the role of urban open spaces in the 21<sup>st</sup> century. She questions what the new patterns of urban open space should be and whether we should be planning for completely new structures of open space provision and usage considering modern and future needs. The need to consider the sustainability of urban open spaces also raises the question of what sort of structure or planning framework might improve their sustainability.

Cheshmehzangi and Bo Li, (2010) advocate that sustainable urban design requires an integrated approach which would “reflect on many factors such as, society, health, identity, cultural and even pollution and energy use.” (p. 242) Julien, Hamilton and Croxford (2014), also stress on the importance of an integrated approach in master planning. The practical application is the development of multi-objective and integrated environmental strategies to achieve sustainable master plans. The definition of objectives plays an extremely important role and projects need to be assessed at least in part, based on the objectives they are attempting to address. What is apparent from the review of sustainable development at the urban scale is that there are numerous drivers behind the actions that attempt to create a ‘sustainable place’. However, the framework within which goals are defined and shaped is failing. This puts emphasis on the approach to achieving sustainability.

A successful approach is likely to be one that acknowledges that a variety of viewpoints exist over the nature and challenges of sustainable development, meaning that context and pragmatism is key. Plans are rarely developed in isolation, and many goals for neighbourhood design will represent a synthesis of context and ideals. Therefore, to address the major barriers to sustainable development, first requires a capacity for insight and integrated working. This is necessary to properly consider the wide range of viewpoints and the complex context impacting sustainability objectives (Julien, Hamilton, & Croxford, 2014). Atiqul Haq (2011) also claims that “an integrated approach regarding the planning, monitoring, designing and maintaining of urban green spaces is required for improving the environmental sustainability in cities in different countries.” (p. 601)

An integrated approach is, consequently, seen as essential, when considering all of the design principles which need to be considered to achieve the potential value which urban open spaces can provide (see Chapter 2). At the outset of this research, consideration was made on whether to focus on a certain type of open space. However, as the literature review developed the importance of a network of open spaces,

to capitalise on the numerous benefits of urban open space in relation to sustainability, also emerged. A planning framework supporting a network of open spaces and facilitating an integrated design approach is therefore seen as crucial. Rogers (1999) for example, developed such a framework by looking at the detail of open space networks (Figure 10 p54) for the United Kingdom, touching upon different models (Thompson, 2002). Hansen et al. (2017) suggest the adoption of an ‘urban green infrastructure planning approach’ where the concepts of connectivity, multifunctionality and integration, amongst others, are seen as key principles.

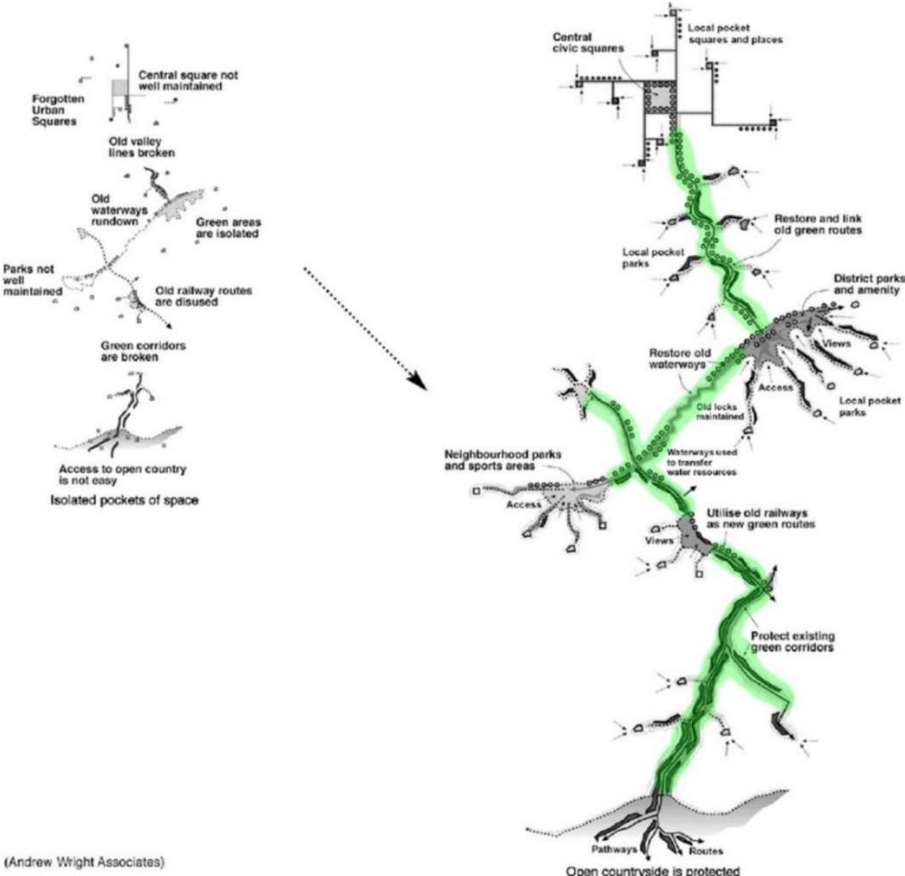


Figure 10: Open space networks adapted from Rogers (1999) to emphasise connections

This raises questions: How can a planning framework for urban open spaces facilitate their potential to add value to the built environment and contribute to sustainable development? What would be the nature and critical aspects? Does it require a focus on multi-disciplinary working amongst professionals? Is it more about governance i.e. who is managing such spaces, who plays the active role? Is it more about policy making and design guidance? Such aspects are explored through the research.

In order to understand how a planning framework can facilitate such an integrated approach it was important to define the value which urban open spaces have the potential to provide and the design principles which are necessary to achieve this. This made it possible to then explore the relationship between the planning framework (in Malta’s case) and adopting an integrated approach i.r.t.<sup>11</sup> such principles. Through the literature reviewed (see Chapter 2) it emerged that urban open spaces have the potential to tackle urban challenges and contribute to sustainable development if they function as green

<sup>11</sup> This abbreviation is used throughout the text to replace ‘in relation to’



infrastructure. As a result, the potential of urban open space to act as green infrastructure became a focus as the research progressed, ultimately honing in on the planning and governance of urban open spaces with particular attention for adopting a 'green infrastructure approach'.

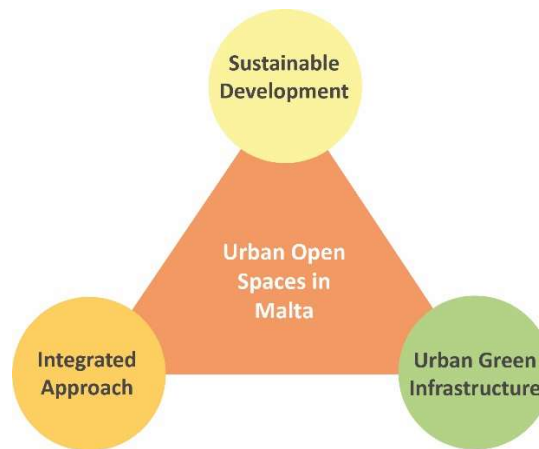


Figure 11: Summary of key themes central to the research

## 1.4 Thesis Overview

Section 1.3 has thus established that the design of urban open spaces plays an important role in the creation of sustainable urban environments. Section 1.1 p36, identified the research problem which suggests that: a 'gap' exists in relation to the planning and design of urban open spaces in Malta. As a result, the following research aim was developed:

Investigate the spatial planning and design of urban open spaces in Malta and use the outcomes to develop proposals for improving their contribution to sustainable development

There is extensive literature available concerning the planning and design of urban open spaces and their potential contribution to sustainable development (Chapter 2 and 6). However, there is still the need to understand if and how the spatial planning process can provide the necessary framework for facilitating an integrated approach to the planning and design of urban open spaces as a means of improving sustainability of the Maltese urban environment. As a development of the research aim, this thesis addresses the following question:

How can the spatial planning system facilitate the potential for urban open spaces to add value (social, economic and social) to the built environment and hence improve their contribution to sustainable development?

This is done through the following research objectives.

- Identify design principles/themes relevant and specific to the design of urban open spaces in Malta and their potential to contribute to sustainable development
- Understand existing urban open space policies and planning processes and identify gaps
- Develop a framework for the planning of urban open spaces in Malta including understanding the process for its development and implementation
- Identify barriers/implications for its implementation

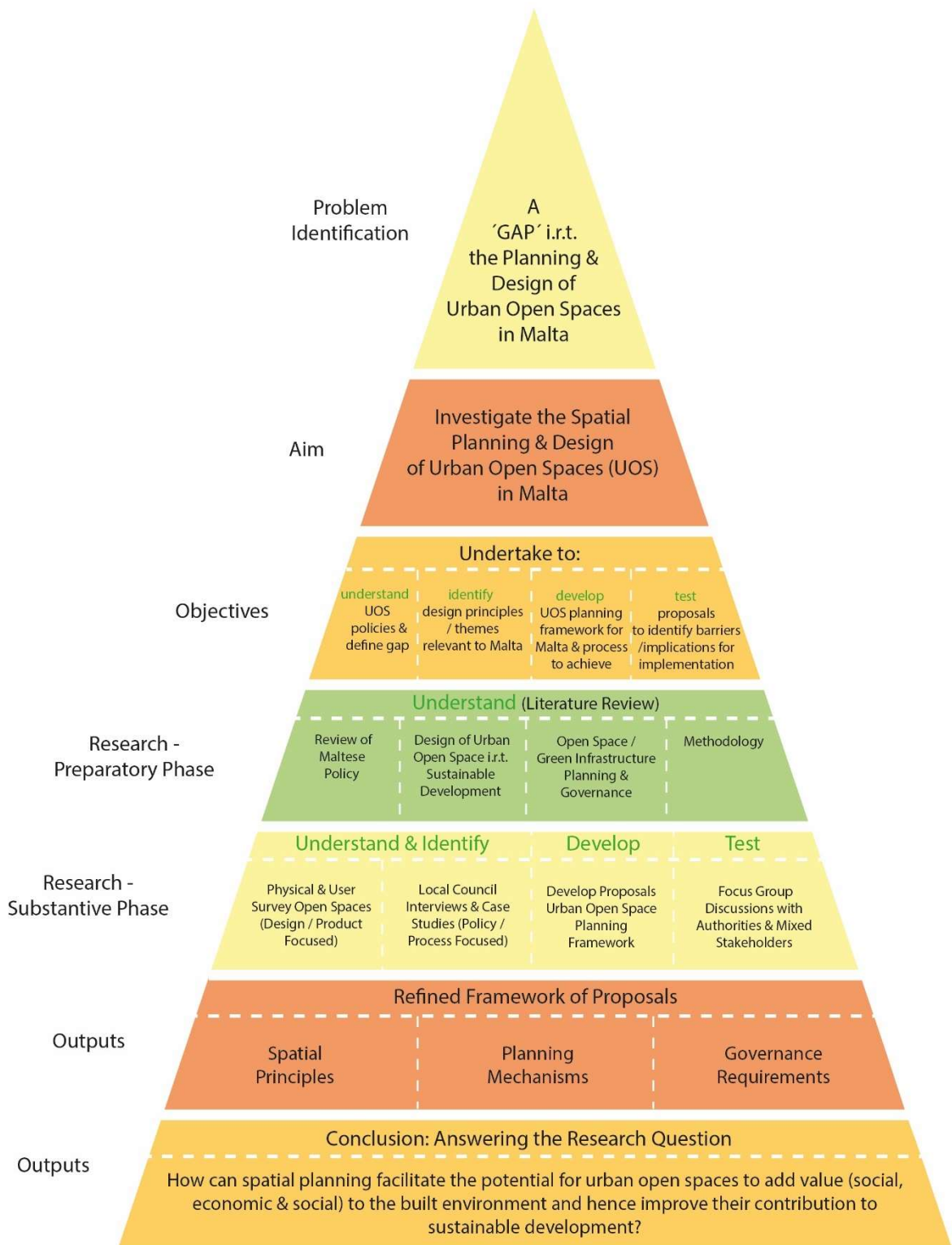


Figure 12: Research scope summarising: problem, aim, objectives, data collection and outputs

Figure 12 above summarises the research scope for this study which is presented over eight chapters. Chapter 1 has introduced the research topic, with a brief overview of the theoretical underpinning and research scope. Chapter 2 provides a literature review on the design of urban open spaces in relation to their potential to contribute to sustainable development. Chapter 3 gives a detailed account of the methodology adopted. Chapter 4 presents a review of Maltese national and planning policy concerning urban open spaces. Chapter 5 gives an account of the results of the phase one empirical research. Chapter 6 provides a comparative literature review in relation to the planning and governance of urban open spaces with a focus of green infrastructure. Chapter 7 describes the proposals developed for an urban open space planning framework and the results obtained from the second phase of the research, where these were discussed during stakeholder focus groups. Finally, Chapter 8 concludes by discussing the key findings of the research in relation to the research question and objectives. Figure 13 below gives an overview of these chapters illustrating whether they serve as: input to the research via the literature; output in the form of results; or somewhere in between.

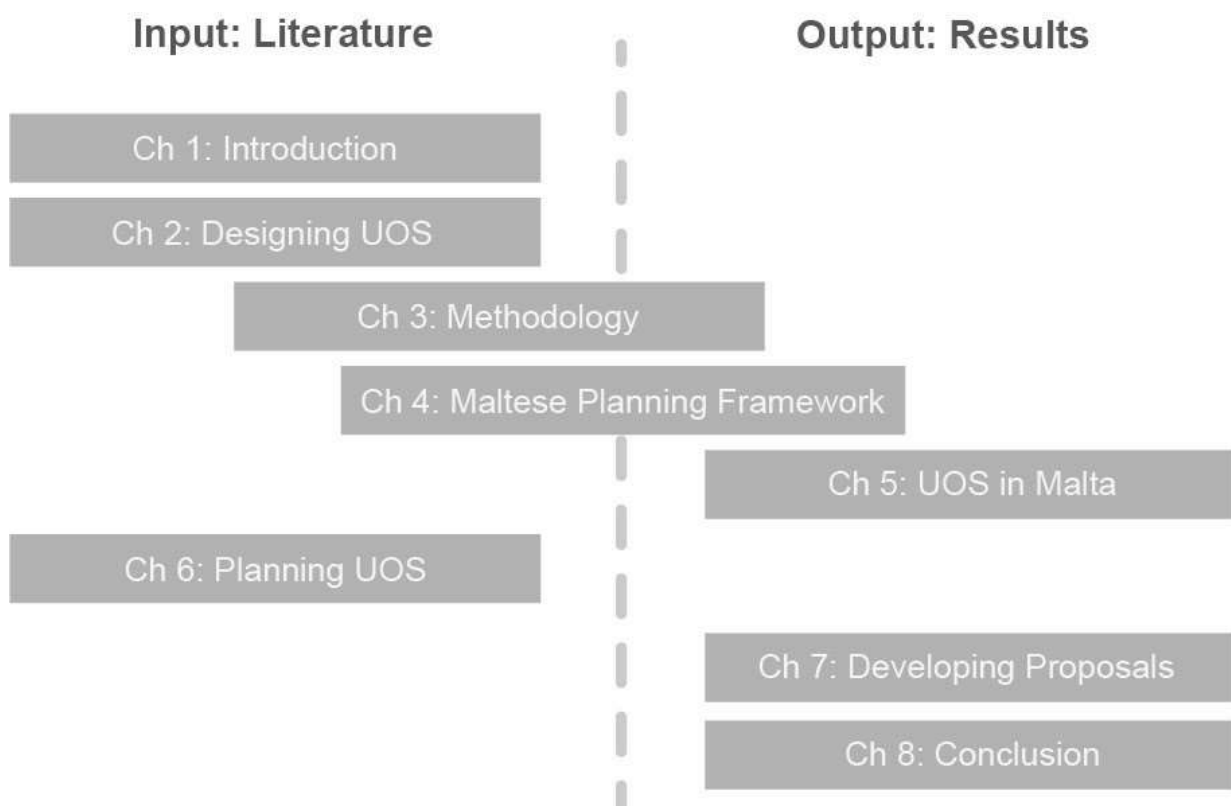


Figure 13: Thesis chapter overview

## 2 Designing Urban Open Spaces for Sustainable Development

### 2.1 Urban Open Spaces: Discourse through Time

The purpose and function which urban open spaces serve has changed over time with an emerging focus on their potential to contribute to sustainable development. Public open spaces in urban areas have been “traditionally linked to social, cultural or economic exchanges” and are “increasingly gaining importance, even in political terms, as a component of everyday quality of life”. (Festas, 2012, p. 3)

The social function is perhaps one of the more prominent values which can be historically traced from the establishment of public spaces. “The hundreds of squares which make up the cities in Europe are the place of events and dramas which have marked the history of the population of Europe”. (Fera, 2012, p. 6) In addition, the economic value was also of importance. In fact, the provision of public space in European cities usually served the purpose for trade, religious ceremonies and exercising democracy (Fera, 2012).

The 19<sup>th</sup> Century saw an emerging focus on the recreational value through the urban park movement. This was the idea of dedicated urban parks as specialised recreational space (Stanley, Stark, Johnston, & Smith, 2012), also termed the ‘Pleasure Ground’ (Cranz & Boland, 2004). The movement saw the creation of public urban parks in the form of massive green spaces, as central park of New York City and the Amsterdam’s Bos Park (Atiqul Haq, 2011). Many instances also existed where public parks came about when governments took over large estates which were previously occupied by elites or royals, as for example is the case with Berlin’s Tiergarten. Large urban cemeteries have also served the function of green space, park provision at the city scale (Stanley, Stark, Johnston, & Smith, 2012).

Open spaces defined specifically for recreation tend to have modern origins. They have emerged as socio-political responses during the industrial period to address urban issues at the time. Green belts and semi-wild park planning for example emerged in the 19<sup>th</sup> and 20<sup>th</sup> Centuries to provided recreational areas for cities and to act as buffers between different land uses. During the same period the Garden City reform aimed to provide recreational space at the neighbourhood level. Playground spaces emerged in America and the concept of ‘adventure playgrounds’ was established in Sweden and adopted in other cities (Stanley, Stark, Johnston, & Smith, 2012).

Rogers (1999) observes that the urban landscape, which incorporates urban open space, changes over time due to three main factors:

- the technical revolution: centred on information technology and the establishment of new networks connecting people from the local to the global level;
- the ecological threat: ...consumption of natural resources and the importance of sustainable development; and
- the social transformation: changing life patterns reflecting increasing life expectancy and the development of new lifestyle choices (p. 27)

In fact, besides the social, economic and political variances over time, the end of the 20<sup>th</sup> Century saw the development of a different focus for open space particularly in relation to park design. Cranz and Boland (2004) refer to the ‘Ecological Park’ as an emerging type. The features they describe are based upon a study of numerous park designs which emerged during this time. The qualities of such parks are

that they connect fragments of open space into a comprehensive network where the aim is to realise the concept of the city as a garden rather than them being two separate entities. Ecological parks aim at self-sufficiency. Concepts such as integrated water management are included. They represent a return to natural processes. According to Thompson (2002) as the need for natural spaces becomes increasingly important, the way in which these can be provided and interact with the social use of open space, becomes an interesting challenge in relation to open space planning.

Here, the most recent discourse on the potential role of urban open spaces in contributing to sustainable development and mitigating the impacts of climate change comes into play. This relates to the concepts of green infrastructure (GI) and ecosystem services<sup>12</sup>. At a European scale GI has been defined as a “concept addressing the connectivity of ecosystems, their protection and the provision of ecosystem services, while also addressing mitigation and adaptation to climate change”. (EEA, 2011, p. 6) While ecosystems services are the “direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life.” (BISE, n.d.) According to the EEA report (EEA 2011) key principles of GI could include “(a) strategically planned and delivered network of high-quality green spaces and other environmental features; (b) delivering multifunctional benefits; (c) helping to deliver placemaking; and (d) delivering ‘smart’ conservation.” (EEA, 2011, p. 9)

## 2.2 Designing ‘Successful’ Urban Open Spaces

The design of urban open spaces or public spaces has long been the focus of contemporary research (Gehl, 1987; PPS, n.d.; Carmona, 2014; Stiles, 2009). Theory revolves around various factors ultimately with the aim of trying to understand what makes a ‘good’ or ‘successful’ open space. The terms ‘quality’ and ‘sustainable’ open spaces are also referred to. Often the term public space is used as many public spaces are in fact open spaces and vice versa.

This research focuses on the underlying theory that open spaces are an essential component for sustainable development. However, how can they be planned and designed to contribute to sustainable development? It is important to clearly define the objectives for such an approach and that is the aim of this Chapter. If not, discussions on the best approach can quickly degenerate into disagreements on what is trying to be achieved. Such discussions tend to revolve around objective and also subjective principles.

Stiles (2009), established criteria by which good open spaces can be defined and recognised when developed. A functional approach is developed which looks at the quality of open spaces in relation to the range of functions which can be performed and then the extent to which such functions are fulfilled. The authors acknowledge, that while such an approach may be criticised, there are well-accepted precedents on which to base this, such as the definition by the Roman author Vitruvius regarding the three qualities of a building: *utilitas*, *firmitas* and *venustas*. Where *utilitas* corresponds to the social and societal functions; *firmitas* to the concept of their ecological rather than structural stability; and *venustas* to their aesthetic and structural functions. Three main functional categories are therefore established: Environmental and ecological; Social and societal; and Structural and aesthetic functions.

Environmental and ecological functions relate to ‘ecosystem services’ such as climatic considerations and storm water management. Social and societal functions refer primarily to the ways in which spaces are

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<sup>12</sup> See p. 68.

used. Structural and aesthetic functions refer to the role which open spaces play at the scale of the city as well as the local scale. The three categories are further developed to create a toolbox by which existing open spaces and new ones can be evaluated. The authors advocate that the quality of an urban space depends on the extent to which it can provide such functions. However, they also acknowledge that, depending on context, it may not be equally important to provide all the functions (Stiles, 2009).

Similarly, Stahle (2006) advocates another means of evaluating the quality of open spaces which relates to the value they provide. This is also related to function, however primarily social function. The term value can refer to two main types: use value and non-use value. Use value can be divided into direct and indirect use value while non-use value is commonly seen to be option value or existence value. Based on this, Stahle (2006) developed a method of analysis called Sociotope mapping. The Sociotope map is a map of the direct open use values of specific open space as commonly perceived by citizens (see section 6.2.3).

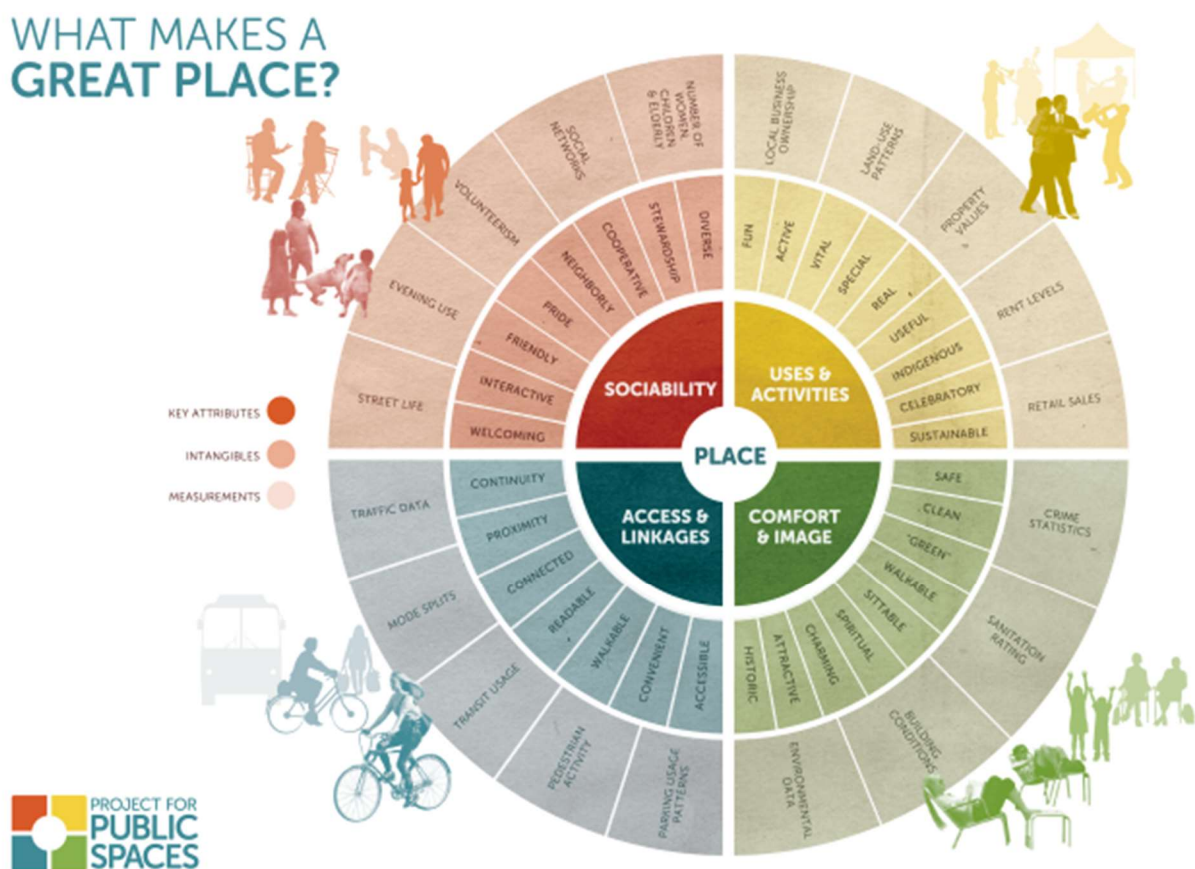


Figure 14: The four categories attributed to a 'Great Place' (PPS, n.d.)

Literature also describes 'quality' open spaces as 'successful' spaces. Project for Public Spaces (PPS), a non-profit organisation has evaluated thousands of public spaces and based on this has defined four categories of qualities which successful public spaces share (Figure 14 above) (PPS, n.d.). A 'successful' open space may also be defined in relation to user levels and user satisfaction. This is something which could be evaluated or tested using post occupancy evaluation. According to Austin, there are 12 factors that influence the use of urban open space. These are: "park access and quality; recreation facility location and variety; the mix of land uses and desirable destinations; residential density; street connectivity; ease of pedestrian transport; walking and biking facilities; traffic speed and volume; pedestrian safety elements; the degree of neighbourhood civility or order; threat of crime; and the presence of vegetation." (Austin, 2014, pp. 131,132)

Definitions of ‘quality’ or ‘successful’ open spaces may therefore vary. It can also be said that a ‘quality’ open space is one which subscribes to achieving sustainable development. The ‘Auditing the Sustainability of Public Spaces’ (ASPIs) project (Noguera & Riera, 2016) developed a framework for auditing the sustainability of public spaces. The aim was to build a ‘framework’ which would allow for the ‘auditing’ of public spaces in terms of sustainability by defining a list of criteria. Noguera et al. (2016) conclude this by proposing a set of ‘sustainability criteria’ to achieve a more sustainable urban planning process specific to public spaces. These relate to nine main categories: variety of uses (or users); security/safety; maintenance; accessibility; organic relationship of the open space to the city; design and functionality; environmental sustainability; governance of public open spaces; and carrying capacity.

Al-Hagla (2008) also discusses the role which open spaces can play in achieving sustainable neighbourhoods. The research advocates that this can be done using three key issues: space management, space function, and the role of objects within space. A sustainability checklist which can be applied to open spaces is then developed.

Sustainability Goals	Sustainability Objectives	Green Space							Grey Space			
		Parks and gardens	Amenity greenspace	Children's play areas	Sports facilities	Green corridors	Natural/semi-natural greenspaces	Other functional greenspaces	Civic squares	Market places	Pedestrian streets	Prosceniums and sea fronts
Cutting greenhouse gas emissions Energy	<ul style="list-style-type: none"> <li>Reduce the need to travel</li> <li>Reduce car reliance</li> <li>Increase energy efficiency in buildings</li> </ul>			☐	☐				☐	☐	☐	☐
Closing local resource loops	<ul style="list-style-type: none"> <li>Reduce demand for non-renewable resources</li> <li>Reuse and recycling of resources locally</li> <li>Local water sourcing, treatment and aquifer recharge</li> <li>Local low-input food production</li> </ul>	☐		☐			☐				☐	
Enhancing local environmental quality	<ul style="list-style-type: none"> <li>Promote local distinctiveness and heritage</li> <li>Create an attractive public realm</li> <li>Enhance local habitat diversity</li> </ul>	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐
Creating a healthy environment	<ul style="list-style-type: none"> <li>Improve local air quality</li> <li>Promote an active life-style (especially walking)</li> <li>Encourage consumption of fresh fruit and vegetables</li> </ul>	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐
Increasing street safety	<ul style="list-style-type: none"> <li>Reduce the chance of vehicle/pedestrian accidents</li> <li>Reduce the fear of violence</li> </ul>			☐	☐				☐	☐	☐	☐
Increasing accessibility and freedom of choice	<ul style="list-style-type: none"> <li>Choice of transport mode for trips</li> <li>More facilities accessible locally</li> </ul>				☐	☐			☐	☐		☐
Equity and social inclusion	<ul style="list-style-type: none"> <li>Choice of facilities within easy walking distance</li> <li>Viability of public transport</li> </ul>				☐					☐	☐	
Local work opportunities	<ul style="list-style-type: none"> <li>Accessible jobs for those tied to the locality</li> <li>Reduce transport emissions</li> </ul>	☐	☐	☐			☐	☐	☐	☐		☐
Value of local community	<ul style="list-style-type: none"> <li>Facilitate accessible social networks</li> <li>Promote mental health</li> </ul>	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Increasing local self-determination	<ul style="list-style-type: none"> <li>Increase user/citizen control</li> <li>Management of decentralized systems</li> </ul>			☐	☐				☐		☐	☐

Figure 15: Sustainability Matrix (Al-Hagla, 2008)

Benedict and McMahon (2002) advocate that in order to achieve environmental, social and economic sustainability, Green Infrastructure (GI) is needed as an ecological framework. They advocate that this “differs from conventional approaches to open space planning because it looks at conservation values and actions in concert with land development, growth management and built infrastructure planning.” (p. 5) Austin (2014) also identifies GI systems as an approach to tackle urban challenges by ensuring that high-quality and higher density living is possible. The need to address many problems simultaneously is what makes GI an important concept for open space. According to Austin (2014) GI can be defined as a systematic, holistic approach involving trans-disciplinary cooperation.

The Environmental and Resources Authority (ERA, 2019) in Malta defines GI as a “strategically planned network of green (land) and blue (water) spaces in natural/semi-natural, rural and urban settings...designed to deliver a wide range of ecosystem services such as environmental and social

benefits, as well as climate change adaptation and mitigation.” (p. 5) This is very similar to Hansen et al. (2017) who advocate a “strategic planning approach that aims to develop networks of green and blue spaces in urban areas, designed and managed to deliver a wide range of ecosystem services and other benefits at all spatial scales.” (p. 3) They specifically speak about urban green infrastructure planning which due to its “integrative, multifunctional approach, is capable of addressing a broad range of urban challenges, such as conserving biodiversity, adapting to climate change, supporting the green economy and improving social cohesion.” (p. 3) These are all aspects falling under the umbrella of sustainable urban development. The idea of GI as a planning approach is discussed further in Chapter 6.

It is therefore evident that there is extensive literature concerning the design of urban open spaces. This sometimes has a more social or a more environmental focus, while others try to adopt a more holistic approach. Since this research is concerned with the contribution of urban open spaces to sustainable development, the creation of ‘quality’ or ‘successful’ open spaces is being defined as spaces which adopt design principles, which increase their potential, to contribute to sustainable development. Consequently, section 2.5, of this chapter explores and synthesises existing literature on the design of urban open spaces, green spaces and green infrastructure so as to identify such principles. This is used as a theoretical basis throughout the research. Prior to this however, section 2.3 summarises the value of open spaces in relation to sustainable development.

### **2.3 Urban Open Spaces and their Contribution to Sustainable Development**

Numerous theorists have valued open spaces in relation to social, political and health benefits which they can provide (Jacobs, 1961; Whyte, 1980; Tibbalds, 1992; Carr, Francis, Rivlin, & Stone, 1992). Historically, open spaces have in fact taken on a wide variety of forms and functions, resulting in numerous benefits (Stanley, Stark, Johnston, & Smith, 2012). As cities continue to grow and development pressures increase the availability of urban open space is decreasing. Society however, is willing to pay high prices for open space and in particular green open space (Atiqul Haq, 2011). If planned and designed appropriately, urban open spaces, can deliver a wide range of social and environmental benefits (Noguera & Riera, 2016). The importance of multi-functional spaces which provide multiple benefits then emerges.

Together with this is the importance of green open spaces and the environmental, economic and social benefits linked to the presence of vegetation in urban areas. Atiqul Haq (2011) advocates the importance of a functional network of green spaces i.r.t. to ecological value and connections with the natural world, while Noguera and Riera (2016) identify their importance i.r.t. increasing the overall quality of life, adding social and environmental value. Additionally, “nature and open urban spaces as elements of the urban landscape are key to improving the quality of life of urban dwellers regardless of their cultural or social status.” (Priego, Breuste, & Rojas, 2008, p. 18)

Section 2.2 established that different frameworks can be used to illustrate how urban open spaces can contribute to sustainable development. While section 1.3.2, concluded that in looking out for future generations, it is generally accepted that sustainable development needs to consider three main aspects: environmental, social and economic impacts. This refers to the ways in which a city, community or development can meet economic, environmental, social and cultural needs. In relation to this, this research adopts a framework based on, the Brundtland report’s (1987) three dimensions of sustainable development that should be considered in an integrated way: society, environment and economy. Table



1 therefore summarises the potential role which urban open spaces play in relation to these three values. A more detailed discussions is provided in Appendix A6.

Table 1: Overview of potential value in relation to sustainable development

Value Category	Key Principle	Authors
<b>Environmental Value</b>		
<b>Micro-climate</b>	<ul style="list-style-type: none"> <li>Urban open spaces with appropriate vegetation can mitigate the urban heat island and improve micro-climate conditions.</li> </ul>	(Bell, 2012; Atiqul Haq, 2011; Loibl, et al., 2014; Forest Research, 2010; Chang, Li, & Chang, 2007)
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>Urban greening can reduce the level of air pollutants as particles can be absorbed by vegetation.</li> <li>Attractive urban spaces influence residents' decisions to live or spend free time in the city thus reducing travel.</li> <li>Attractive and appropriately design urban spaces, in particular streets, facilitates the use of sustainable travel modes.</li> </ul>	(Bilgili & Gokyer, 2012; Atiqul Haq, 2011; Forest Research, 2010; Holden & Liversedge, 2014; Brodhead, 2009; Banister, Watson, & Wood, 1997)
<b>Noise Pollution</b>	<ul style="list-style-type: none"> <li>The presence of green space with appropriate vegetation, in urban areas can significantly reduce noise pollution.</li> </ul>	(Senate Department for Urban Development and Housing, n.d.; Atiqul Haq, 2011; Peng, Bullen, & Kean, 2014; Brodhead, 2009)
<b>Ecology, Ecosystems &amp; Biodiversity</b>	<ul style="list-style-type: none"> <li>Urban green spaces have an important relation with ecology and can provide various ecosystem services such as: cleaning the air, water purification, cycling nutrients, generating soils, regulating climate, sequestering carbon, habitat provision, etc.</li> <li>Urban open spaces particularly in the form of GI can influence ecosystem services and hence biodiversity by: increasing habitat area; increasing populations of some protected species; and by increasing species movement.</li> </ul>	(Austin, 2014; Forest Research, 2010; Atiqul Haq, 2011; Laforteza, Davies, Sanesi, & Konijnendijk, 2013; Stiles, 2009)
<b>Water Management</b>	<ul style="list-style-type: none"> <li>Urban open spaces if appropriately designed (use of SUDS), can contribute to: reducing flood risk; improving water quality; reducing water usage; replenishing ground water and reducing costs for water drainage infrastructure.</li> <li>SUDS reduce rainwater runoff by increasing permeability, infiltration and storage capabilities of urban areas.</li> </ul>	(Beatley, 2012; Hoyer, Dickhaut, Kronawitter, & Weber, 2011; Forest Research, 2010; Austin, 2014; Duffy, et al., 2008)
<b>Food Production</b>	<ul style="list-style-type: none"> <li>The presence of open spaces or GI in urban areas has the potential to create space for food production.</li> <li>This has environmental benefits due to the decreased carbon footprint when food is</li> </ul>	(Hansen, Rall, Chapman, Rolf, & Pauleit, 2017)

Value Category	Key Principle	Authors
	produced locally but it can also have social (community engagement) and economic (job creation) benefits.	
<b>Social Value</b>		
<b>Social Interaction &amp; Cohesion</b>	<ul style="list-style-type: none"> <li>Green areas and natural features increase the use of outdoor areas, which in turn facilitates social interaction and thus cohesion.</li> <li>UGI can counteract social exclusion e.g. through participatory community greening activities.</li> </ul>	(Jain, 2013; Priego, Breuste, & Rojas, 2008; Gehl, 1987; Forest Research, 2010; Sullivan, Kuo, & DePooter, 2004; Brodhead, 2009; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Ambrose-Oji, et al., 2017)
<b>Recreation &amp; Well-being</b>	<ul style="list-style-type: none"> <li>Urban green spaces provide a source for relaxation and recreation.</li> <li>Urban nature is a provider of a social service essential to the quality of human life.</li> <li>Open space can also affect the legibility of an urban area which is important for ensuring a sense of well-being.</li> </ul>	(Atiqul Haq, 2011; Chiesura, 2004; Beatley, 2012; Krcmarova, 2009; Stiles, 2009)
<b>Human Health</b>	<ul style="list-style-type: none"> <li>Access to some form of 'nature' is a fundamental human need.</li> <li>The provision of urban open spaces contributes to positive health by increasing opportunities for physical activity.</li> <li>Green urban spaces have the added benefit of contributing to stress reduction.</li> <li>The presence of green spaces alone is important as a mental space, and in this sense, they are valuable even simply due to their availability, even if not used.</li> </ul>	(Thompson, 2002; Austin, 2014; Forest Research, 2010; Brodhead, 2009)
<b>Economic Value</b>		
<b>Energy Savings</b>	<ul style="list-style-type: none"> <li>Increasing green space and tree planting in temperate climate cities is a cost-effective reason for reducing the energy cost of cooling buildings.</li> <li>Shading from trees can act as a barrier to solar radiation thus decreasing air and surface warming.</li> </ul>	(Sadeghian & Vardanyan, 2013; U.S. Department of Energy, 1995; Bilgili & Gokyer, 2012)
<b>Infrastructure Savings</b>	<ul style="list-style-type: none"> <li>The design of urban open spaces, such as streets, affects the ways in which people choose to travel.</li> <li>Infrastructure provision for sustainable transport modes such as walking, cycling and public transport vs private vehicles is more cost effective.</li> <li>While using open space to provide for SUDS may be considered a cost in itself, such systems reduce the demand for traditional</li> </ul>	(Hoyer, Dickhaut, Kronawitter, & Weber, 2011; Beatley, 2012; Stiles, 2009)

Value Category	Key Principle	Authors
	<p>infrastructure to provide increasing capacities for infrequent yet high intensity storms.</p> <ul style="list-style-type: none"> <li>• The collection and re-use of rainwater for activities such as irrigation, is also a cost saving technique in terms of reducing expenditure for water consumption.</li> </ul>	
<b>Real Estate Value</b>	<ul style="list-style-type: none"> <li>• Well-designed/maintained open spaces can have an impact on the property market by creating an enhancement value due to their amenity and aesthetic properties.</li> </ul>	(Bilgili & Gokyer, 2012; Fausold & Lilieholm, 1996; Forest Research, 2010)
<b>Tourism, Commercial and Local Regeneration Value</b>	<ul style="list-style-type: none"> <li>• Urban open spaces are essential for events such as concerts or markets take place in urban open spaces.</li> <li>• Other activities such as eating out, lingering and drinking coffee are also capitalised on depending on the success and attractiveness of a space and thus the willingness of people wanting to spend time and money as a result.</li> <li>• Attractive green spaces also improve a city's competitiveness as a destination for new residents, businesses and tourists.</li> <li>• Investment in GI can be used to stimulate local economic regeneration. The investment in green open spaces can create high quality environmentally friendly living and working environments thereby attracting high value industries and skilled workers to a region.</li> </ul>	(New York City: Department of Transportation, n.d.; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Natural Economy Northwest, 2008; Baycan-Levent & Nijkamp, 2009; Brodhead, 2009; Tuset, 2016; Forest Research, 2010)
<b>Productivity Value</b>	<ul style="list-style-type: none"> <li>• The presence of urban open spaces has also been linked to increased worker productivity by improving people's ability to concentrate.</li> </ul>	(Beatley, 2012; Stiles, 2009)

## 2.4 The Climate Change Agenda

In relation to sustainable development, the climate change agenda also merits some discussion. Climate change is resulting in a number of challenges which need to be addressed particularly in urban areas. Such challenges include: increased flood risk due to changing precipitation patterns; increased temperatures due to increased greenhouse gas emissions and depletion of the ozone layer; and risks to biodiversity in urban areas due to changing climatic patterns.

As discussed, urban open spaces and in particular urban green open spaces play an important role in mitigating and adapting to these challenges. For example, if ecological connectors are accommodated through or at the edge of cities, these corridors can mitigate the fragmentation and loss of habitats as they will allow ecosystems to adjust to climate change by providing the necessary routes to new habitats as may be needed. "In Europe, where roads, settlements and agriculture have fragmented habitat more

than anywhere else in the world, an ecological network of habitat patches and linking corridors is critical.” (Austin, 2014, pp. 106,107)

Additionally, studies have found that urban vegetation does make a difference in relation to ozone concentrations. A regional simulation study found that “upgrading a city’s vegetation from approximately 20 to 40% resulted in a 4% decrease in ozone concentrations, mainly owing to the vegetation’s cooling effect. Likewise, a reduction from 20 to 5% of urban green space yielded an increase of 4%.” (Brodhead, 2009, p. 9) This effect was noted particularly in cities highlighting the need to acknowledge the importance of vegetation in cities at an EU policy level.

As discussed in section 2.2 p59, the concept of GI, and where such open spaces include water bodies, also blue infrastructure, comes into play. GI has become an important policy response in relation to climate change and moving towards a low carbon economy. It is seen as a strategy for the ‘climate proofing’ of UK towns and cities. It can also be used to create more awareness and appreciation concerning the impacts of climate change (Forest Research, 2010).

What is important to note is, that in addressing climate change, both mitigation and adaptation strategies are needed. However, Hansen et al. (2017) advocate that GI in urban areas “can play a key role in strategies for climate change adaptation and – to a lesser degree – mitigation...Importantly, planned adaptation is more cost effective than emergency measures and retrofitting.” (p. 8) Additionally, climate change which is a priority on political agendas “may provide a window of opportunity for making the case for investing in UGI.” (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 10) The link however needs to be made between the “existing plans and policies and highlighting the benefits which UGI is capable of delivering in relation to this urban challenge.” (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 10)

## **2.5 Identifying Design Principles which Contribute to Sustainable Development**

As outlined in section 2.2 p59, different literature exists concerning the design of urban open spaces. Some of these address in particular the design of urban open space in relation to achieving sustainable development (Noguera & Riera, 2016). While others focus on the functionality in relation to: environmental and ecological; social; and structural and symbolic aspects (Stiles, 2009). Al-Hagla (2008) also identifies such design considerations and groups these into three categories (Appendix A5).

Together with these and other literature reviewed, this section identifies and synthesises those design principles which relate to the potential for urban open spaces to provide the value and benefits outlined in section 2.3. Twelve main categories have been identified.

- Spatial and Structuring Qualities.
- Contextual Relationships.
- Character and Form.
- Activities and Functionality.
- Accessibility.
- Climatic Response.
- Water Management and Use.
- Use of Vegetation.
- Lighting.
- Resource Management.

- Maintenance and Management.
- Community Involvement.

## 2.5.1 Spatial and Structuring Qualities

### Open Space as a Structuring Element

While an individual open space serves a function in its own right, open spaces also have the potential to form part of a network of open spaces or green space system which often serve as structuring elements for urban areas. Such systems provide spaces of different forms and functions relating also to the different urban scales such as district, local or neighbourhood. Elements such as greenbelts, green wedges or green corridors as well as smaller green links form part of such systems. They may be as simple as boulevards or tree-lined streets with low traffic levels. Stiles (2009) advocates that the “role of urban open space in providing structure and organisation for an urban area is well established...The concept of articulating space is, however, scalable and can of course also be applied to the structuring and organising of individual open spaces and how they relate to the surrounding urban fabric.” (p. 18)

Many European cities such as Vienna, Berlin and Graz (among others) have an extensive greenbelt and regional open space structure. Others such as Helsinki and Copenhagen have a spatial structure where urban development is formed around large green wedges, such that the open spaces are easily accessible thus influencing the cities spatial quality. Additionally, within the urban form, cities may also have an integrated network of green spaces. This network should also relate to the identification and provision of spatial corridors to support airflows and breezes. Green corridors can be used to allow fresh cool air into the city for pedestrian and cyclists (Haase, Pauleit, & Randrup, 2020; Beatley, 2012). Freiburg for example, has identified such corridors and “placed height and building limitations in these areas. Similarly, cities such as Stuttgart are notable for the designation of ‘ventilation corridors’ or cool air movement zones intended similarly to ensure that cool breezes through the city are preserved.” (Beatley, 2012, p. 14) It is therefore important to consider how through its design, an open space can contribute to such a system.

The development of such systems is important to protect habitats and in turn biodiversity. One approach would be to cluster urban development into higher density hamlets. By containing development, it would then be possible to create open space corridors between the developments to provide for protected habitats. The treatment of such ecological corridors and habitat fragments with regard to the human focus needs consideration. While the edges may provide a dominant human focus to reinforce connections and relationships, other times there may be reason to separate ecosystem and human values into dedicated spaces. The dominant focus once decided, would then inform the design and materials (Austin, 2014).

As Hansen et al. (2017) put it “UGI networks are not just important for enabling the movement of people and wildlife, they can also support abiotic flows, such as of energy, water and air. Ventilation corridors improve the supply of fresh air and reduce pollution, while the cooling effect of urban parks is enhanced when these form part of a network. In this way, interconnected green spaces can minimise environmental risks and the impacts of climate change”. (p. 27) Identifying the role which such open spaces play as part of a larger system is therefore important.

## Connectivity

Open spaces can be considered a node or a link when forming part of a network. Even if not part of a network, some spaces are places where people tend to stay, whereas others are places which people go through. That is, they are 'pathways' more than 'stay places'. Corraliza (Thompson, 2002) suggests that people in Spain prefer 'pathways' to 'stay places' as there are many more opportunities to engage with other people and the environment e.g. shops, cafes, shady boulevards in streets rather than in parks or plazas. The street is hence, an important element.

Here, the importance of connectivity is increasingly recognised. For example, the Urban Task Force specifically highlights the need to consider "the vital 'glue' between buildings", arguing that "the continuous presence of passers-by as well as informal surveillance combine to create the blend of urban vitality and safety that is characteristic of many successful urban areas." (Rogers, 1999, p. 57) In the provision of public spaces, it is therefore important to also focus on the design of connections/links/pathways as places for passing through and staying. Additionally, good connections with good pedestrian access between the spaces and surrounding areas and the provision of direct routes and connections are essential (PPS, n.d.; Noguera & Riera, 2016; Austin, 2014; Stiles, 2009; Marcus & Francis, 1998).

The connections in a network of open spaces can also be seen as those spaces where the potential exists for the ecological cycle to take its course. Woody scrubland or mature woodland might provide the perfect recreational setting for adventure parks, mountain biking or nature walks. While urban parks may be too small for such ecology, linear parks or corridors could provide such a setting. Such places might be an addition to formal parks (Thompson, 2002). Here it is important to consider how the various elements of GI are positioned in relation to each other. While some "goods and services depend on a strong connectivity between location and user...Others, such as wildlife habitat, may depend on the interconnectedness of the component parts of the green space 'jigsaw'." (Forest Research, 2010, p. 4)

One of the challenges to ecosystem functionality and the provision of ecosystem services is the increasing fragmentation of landscapes and ecosystems (Laforteza, Davies, Sanesi, & Konijnendijk, 2013). For habitat creation, the presence of interlined networks of vegetated open spaces for habitat connectivity is in fact crucial (Stiles, 2009; Austin, 2014). Increasing urban development and transport infrastructure has resulted in physical barriers which fragment and isolate habitats. "Consequently, ecosystems have become scattered across the landscape and displaced by new land-use developments." (Laforteza, Davies, Sanesi, & Konijnendijk, 2013, p. e2)

With careful consideration and planning in advance, a system of habitat patches and corridors could easily be established while still allowing for urban development. While the total area of an ecosystem could be one indicator of viability, the configuration of an area is also important. Connections between habitat fragments can mitigate the impact of urban development. This can be provided in the form of a physical corridor made up of the original habitat. The planning and design of linkages and connectivity of sites needs to be given due attention. A system of open spaces is composed of diverse elements which should be planned simultaneously. Well-connected patches and road parkways can mitigate urban development impacts through the preservation of core habitats at the edge of the neighbourhoods and by providing routes through it. Various design solutions are possible. For example, where parks have been fragmented by roads, these can be knitted together with raised wildlife crossings. The Mile End Park in East London is a good example of this (Austin, 2014).

Austin (2014) suggests that corridors of 10-30m corridors are sufficient/necessary for species which are moderately or highly adapted to human activity. However, he also goes on to say that such dimensions may vary depending on contextual characteristics such as the variability of the animal species, climate, vegetation and topography. Helden and Leather (2004) advocate that even small open spaces can facilitate biodiversity. Roundabouts or green spaces alongside grey infrastructure if appropriately managed can support a wide variety of plants and insects. What is important is that they are not too intensively mown and the right vegetation species are planted. Vicinity of vegetation is also important; for example, street trees may contain more birds (number and diversity) when connected to an urban park (Fernandez-Juricic, 2000). Therefore, although the provision of green infrastructure in urban areas can support habitat creation and hence biodiversity, the size and characteristics of the connecting elements should be specifically planned, designed and managed accordingly.



Figure 16: Mile End Park, London (Pinterest, 2001)

## 2.5.2 Contextual Relationships: Physical, Functional and Socio-Cultural

Besides forming part of a wider open space system, the design of an open space should also relate to the neighbourhood and immediate context in relation to physical, functional and socio-cultural aspects.

It is important to consider the permeability of the edges, whether or not they connect to the urban form and whether soft or hard boundaries are required. Other important considerations are: creating a direct physical relationship between the open space and surrounding buildings; creating the right balance between views in and out; the right sense of enclosure while retaining permeability and accessibility; and creating opportunities for overlooking and natural surveillance. Flowing, gentle transitions between different types of spaces are required and while they should be indicated physically, visual contact should be retained. Additionally, active frontages should be encouraged and edges should provide opportunities for lingering and staying (Stiles, 2009; Noguera & Riera, 2016; Jacobs, 1961; Gehl, 1987).

Another important aspect is the sense of ownership. Noguera and Riera (2016) suggest that an organic relationship should be created between the open space and its neighbourhood and city as a whole such that it becomes a reference point in everyday life. This can be influenced through the planning and design. This can be broken down into:

- physical cohesion to surrounding infrastructure network (e.g. pathways);
- social cohesion to the surrounding cultural and social practices;
- functional cohesion and interaction with local amenities;
- function as an identity point for the neighbourhood/city (defined by users and uses); and

- connectivity of public open space to networks of other public spaces/services. (Noguera & Riera, 2016, p. 101)

The relationship to its context will have an impact on the meaning of the open space. Besides the functional and social-cultural context, Stiles (2009) also identifies the geographical and topological context; the ecological, hydrological and climatic context; and the economic context as being necessary to consider. The more relationships are created, the greater the potential meaning.

According to Rogers (1999) outdoor spaces should be conceived as an outdoor room within a neighbourhood, that is, the living room for the society to enjoy the urban experience. To maximise the success of such public spaces they need to establish a direct relationship between the space and the people who live and work around it. In relation to this, the density of surrounding developments and the typology of built form is also important. The provision of open space, for example, is much more important in dense areas with a predominance of apartment typologies where private space for outdoor recreation is lacking. Therefore, the types of open space provided in terms of size and function needs to relate to the density and typology of the surrounding built form.

Hansen et al. (2017) advocate that to really be successful GI “must provide adequate amenities in connection to existing economic and social networks, instead of being limited to design. Local attachments to existing spaces should also be considered, instead of trying to solve perceived ‘anti-social’ behaviour by displacing it elsewhere”. (p. 19)

### 2.5.3 Character

The character of an open space is an important design factor. This may refer to the public or private nature of the space or whether it feels more natural or more urban for example. It also refers to the sense of identity which a space may provide. Such aspects are important considerations particularly in relation to the socio-cultural values which a space can provide.

#### Typology

The higher the population density, the more public open space is valued. According to Austin (2014) when the population density increases by 10 per cent, the value of open space increases by 5 per cent. Thus, neighbourhood parks located in areas with single family dwellings which have lots of private open space tend to be poorly used. In such areas the amount of public open space is less in demand except for specific events. In such cases public open spaces tend to be unsuccessful. On the other hand, when private open space is absent from the dwelling typology in an area, the provision of public open space should be prioritised.

Additionally, when considering social interaction, a hierarchy of open spaces should be provided. These should vary in terms of privacy, ranging from private to public, including semi-private spaces. The design of the interfaces of open spaces of varying accessibility is also important in relation to the eyes on the street concept linked to social control. Such interfaces need to provide smooth transitions while concurrently ensuring clear definition between the different ownership and accessibility levels. Ensuring visual connectivity through the edges/boundaries is one way of doing this (Stiles, 2009). The character of an open space in terms of privacy or public nature is therefore important and strategic planning should



ensure that different degrees of privacy or public nature are available so as to ensure opportunities for different levels of social interaction required to strengthen social cohesion.

Whether an open space provides an urban or natural setting is another important aspect. Research studying the importance of the natural environment in human well-being, established that there is a pervasive need for recreation addressed by nature-based settings across varying demographics and nationalities. Human wellbeing is mostly affected by how close one's home is to areas providing a natural setting within urban areas. The suggestion is made that ease of access to such areas is more important than size. In fact, the desire for contact with nature and recreational areas is a worldwide trend (Matsuoka & Kaplan, 2008).

The provision of naturalistic open spaces within urban centres is therefore important resulting in the need to consider whether a space is designed to create an urban character with vegetation or whether an attempt is made to design an environment which gives the sensation of a natural setting. This is also important for open spaces used for passive recreation where users look for landscape attributes which offer a sense of refuge or seem completely natural (Austin, 2014). The provision of natural areas within the city should also be included in planning policies in relation to contextual (social and economic) requirements. All types of green areas are important from private gardens to city parks and recreational landscapes outside of the city. Providing a variety of spaces with varying characters will allow users to find something suitable for their needs, such that nature can form a part of their daily lives (Priego, Breuste, & Rojas, 2008).

The presence of semi-natural areas in urban areas is also important to increase public knowledge i.r.t. environmental aspects. In fact in some countries standards have been developed for providing near-natural open spaces (Stiles, 2009) as discussed in Chapter 6. Varying characters may not only relate to the urban and natural extremes. The organisation of space may also be developed by providing a range of characters opposing each other. Other examples may be wet or dry; loud or quiet; dynamic or serene (Stiles, 2009).

### **Visual Interest, Responding to Site and Identity**

Design is an important aspect in almost all sectors of life. Concerning open spaces, it plays an important role in determining the functionality and hence successfulness of a space. Besides functionality it also considers aesthetics including principles such as visual interest and identity. Identity can be provided by attractive amenities and features depending on the furniture used, presence of art works or choice of materials. It also relates to whether the heritage of a place is respected, or local knowledge incorporated. It may simply be based on a well-defined space for different uses (Noguera & Riera, 2016). Identity might also be referred to as creating a sense of place or *genius loci*, that is, a particular feeling which a place generates. A sense of place can be established by considering the history and geography or the meaning given by those who use it. It is also important to acknowledge that "different groups may value the same space in different ways. Such layers of meaning make it extremely challenging to react to this open space function in design terms." (Stiles, 2009, p. 19)

### **Spatial Proportions and Enclosure**

The spatial proportions and a space and spatial enclosure provided in relation to the size is also important. With larger spaces, subspaces could be provided depending on the typology and spatial enclosure

required. The spatial enclosure should also relate to the social activity one is designing for. In relation to this there is also need to consider the creation of spatial contrasts. This not only with respect to spatial enclosure but also in relation to creating interesting spatial experiences which contribute to the objectives for the character of the space (Marcus & Francis, 1998; Gehl, 1987).

#### **2.5.4 Activities and Functionality**

The activities provided for in an open space are crucial to the success of the space. According to Stiles (2009) the provision of open space functions can be a reference for determining the quality of an open space. The main point to consider here is the activities which an open space allows for. Austin (2014) advocates that the programming of a park increases its value. In fact, the value of an open space will increase in relation to its size but beyond a certain size the value will stabilise. If, however recreational opportunities are provided, then the open space value increases by 322% meaning that urban parkland programmed for specific activities has higher open-space value. Lastly, green space should be aimed at the surrounding users in terms of the facilities and services. In this respect, it will only be fully exploited if the local community support the activities and functionality provided (Forest Research, 2010).

#### **Recreational Facilities and Functionality**

The choice of facilities is important to ensure that open spaces can provide for active recreation to contribute to active lifestyles but also for passive recreation to contribute to other forms of human health. Provision for activities including: play areas for kids of all ages; formal sport activities; and informal recreation, should be considered. The aim should be to ensure that all social groups and demographics are addressed (Stiles, 2009).

Activity programming and education can encourage people to be more active, however, the landscape/open space required for such activity must be available. The planning and design of the spaces needs to focus on removing obstacles to ensure appropriate use and also on creating supportive and satisfying environments for the intended activities and also to sustain use and create interest (Austin, 2014). Designs should therefore also provide for rest activities which would include enjoying the weather and fresh air, viewing wild plants, resting in a green open space and being in a place to experience quiet and reduced activity.

The activities which an open space allows for will determine whether or not the space is used. For social interaction to take place, and social cohesion to develop, society needs to spend time in the same place (Gehl, 1987). Importantly, green space should be planned and designed to fit in with daily activities and routines such as commuting to work, walking to local shops or taking a lunch break (Hitchings, 2013). Public spaces, if designed well, can serve such functions. It may be said that as technology takes over, it is no longer necessary to go out into streets and towns to find news or to meet people. However, it might also mean that the streets, squares and parks can now be used with more confidence as it is easier to know what can be found there and who we will meet (Thompson, 2002).

The provision of spaces such as allotments or school gardens is also important. That is, spaces where children can experience growing plants and seeing the food they eat, grow. In an urbanised society the importance of this as part of a child's development has often been stressed. The urban structure should provide some flexibility for such spaces to be created, where other activities can also take place as the

social fabric changes. Such places can be seen as 'loose-fit' places which can function in parallel to those which are planned (Thompson, 2002).

The facilities which are provided are therefore important in order to create open spaces where people want to spend time, since only then is social interaction possible. In conclusion, the design needs to consider: the facilities provided; how the space will be used; the type of interaction expected; whether the design is welcoming and encourages spending time there; the provision of seating and whether it encourages interaction amongst strangers; whether there is something to do or watch; and whether walking paths create footfall in the right places (PPS, n.d.; Marcus & Francis, 1998; Stiles, 2009; Noguera & Riera, 2016; Jacobs, 1961; Gehl, 1987).

### User Preferences and Diversity

Research has also found (Austin, 2014) that different landscape characteristics are preferred for different activities. This means that the design of an open space needs to respond to different activities and various population groups. The pairing of activities together with the characteristics of the spaces leads to better user satisfaction. It also suggests the need to create landscapes and open spaces which are diverse and respond to the expectations and desires of a diverse population. In this sense there is need for co-ordination, to identify which open spaces within an urban area should provide for which activities and characteristics as part of a wider context. Another aspect to consider in responding to user preferences and diversity of user needs, is the carrying capacity of a space. A design needs to ensure adequate space in relation to the varying activities which are provided for so as to avoid overcrowding or conflicts between incompatible uses (Noguera & Riera, 2016).

Consequently, it is extremely important to identify and understand the needs of the users who can be identified according to various characteristics. When it comes to the use of open space it is important to consider three different characteristics: mobility, physical activity, and the amount of time the user would have available to spend in an open space. These three factors vary throughout one's lifetime affecting user preferences. For example, younger kids such as toddlers may be less mobile, therefore requiring less space but together with their carers may have lots of time to spend in open spaces. Care should be taken not to stereotype the provision of activities usually associated with specific user groups (Stiles, 2009). Ensuring public participation forms an integral part of planning and designing is therefore crucial (Atiquil Haq, 2011).

Cultural preferences are also important considerations. While in Spain and many other Mediterranean countries, streets are traditionally used for promenading, hence the development of Barcelona's Ramblas; in Britain and other northern countries the public park has traditionally taken centre stage for leisurely walks (Corraliza, 2000 in Thompson, 2002). As countries experience an increasing cultural mix, it is important to consider how the design of urban open spaces can respond to this. Such diversity is clearly reflected by Stahle (2002) who advocates that there is a need for "peace and relaxation for stressed urban inhabitants; diversity of public meeting places for cultural integration; a 'second' living room for people in confined quarters; places for informal meetings and reflection for businessmen and researchers; places for the non-organised sports for spontaneous activities that complement the organised elite; activity space for a sedentary and over-weight city population; environments for children to discover the world; active and social places for youths". (p. 2)

## Multi-functionality and Flexibility

In ever expanding compact European cities, pressures on space availability are constantly increasing. In the provision of urban open spaces, the notion of efficient and sustainable use of land is therefore of the essence. Multi-functionality and flexibility in the way open spaces can be used has therefore emerged as an important design principle. It is also essential in ensuring that a space is well used. Open space should be planned together with other land uses and to serve multiple objectives. One approach could be to assign a specific use in parallel to other generic functions (Bilgili & Gokyer, 2012).

The concept of GI for example, is based on integrating services and benefits, including also their interaction. The idea is that the same space can serve several functions if suitably managed. In relation to this, if developed in tandem with spatial planning, the creation of GI can address landscape fragmentation and potentially provide open spaces which can be used for physical exercise. For example, tree-lined corridors which connect residential areas to employment or retail nodes can also act as cycle-ways (Lafortezza, Davies, Sanesi, & Konijnendijk, 2013).

Open spaces should therefore strive to achieve flexibility and multi-functionality in the uses they provide. According to Stiles (2009) “strictly divided, structured and user defined space reduces the range of opportunities for other groups.” (p. 20) However, in providing for diverse uses the design needs to serve different and often conflicting needs of different users. This in turn might require the definition of specific spaces so as to mitigate conflicting needs. Additionally, “the designed public space must be conceived for everyday life, useable in various types of weather and different seasons”. (p. 20) An open space must therefore serve the needs of different users and have the capacity to adapt to changing demands and conditions.

## Supplementary Equipment

In considering the functionality of a space, the provision of supplementary services depending on the function of the space is important. Facilities such as seating and meeting areas might be required and need to be placed in appropriate positions. Other services such as sanitary facilities also need to be made available in an easily accessible and detectable manner (Stiles, 2009). The provision of waste collection, water drinking fountains or food facilities where necessary would also need to be considered. These aspects may not provide for the main functionality of the space; however, they are ancillary services which need to be provided to ensure the proper functioning and resulting success of a space.

### 2.5.5 Accessibility

Accessibility of open spaces can refer to: availability and vicinity; legibility; and movement. Availability and vicinity refer to the presence and geographic proximity to different typologies of space. Legibility considers ease of movement and orientation within an open space. Lastly, movement considers the ease of access by different transport means as well as the ease of mobility within a space and its potential to provide for active lifestyles.

## Availability and Vicinity

Austin (2014) advocates that vicinity of a network of ecological spaces and corridors to the urban area is also important as this could provide for “interaction and educational opportunities...this...may translate

into an appreciation for the value of nature and a willingness to support its preservation also outside the city.” (p. 107) In fact, various standards and guidance exist which aim to regulate or guide the provision of open space in urban areas. These suggest for example, that there should be a public green space at the centre of a neighbourhood and at a distance of not more than five minutes’ walk (Rogers, 1999). According to Thompson (2002) any survey of urban park use suggests that most users will only frequent a park on a regular basis if it is within a 3-5-minute walk. Britain for example has the ‘Accessible Natural Green Space Standards’ (Natural England, 2010) which determine size and proximity as outlined in Table 2. The availability and proximity are therefore two important aspects which should be considered. Stiles (2009) describes this as providing for “interlinked networks with proper distribution in the territory and with determination of proper attractions territories for inhabitants.” (p. 20)

Table 2: ANGSt Standards – United Kingdom (Natural England, 2010)

Park Type	Service Radius	Size (acres)
Neighbourhood	300 m	2 ha
Community	2 km	20 ha
Large Urban Park	5 km	100 ha
Regional	10 km	500 ha
Nature Reserve	a minimum of one hectare of statutory Local Nature Reserves per thousand population	

Cities such as Oslo and Victoria-Gasteiz which are seen as best practices for sustainable development also work towards achieving proximity to open spaces and nature for their citizens. It is estimated that in Oslo 94% live within 300m of a park or green area while in Victoria-Gasteiz the percentage is 100% (Beatley, 2012). Hammarby Sjostad in Stockholm, Vauban in Freiburg and the Greenwich Millennium Village in London are all exemplary developments which create conditions with access to green areas. The principles which emerge from these projects, is the provision and presence of open space and natural areas, as well as the possibility for children to easily access the spaces and to easily move from one space to another. The provision of safe pedestrian access away from vehicles is key (Beatley, 2012).

Thus, green spaces should be easily accessible, and adequately distributed throughout the city. They should also be large enough to accommodate the populations needs (Atiqul Haq, 2011). Having said this, what emerges is, that the vicinity and ease of access to open spaces for recreation is more crucial rather than the quantity. Therefore, when open space is limited it is justified to focus on the quality and accessibility of available open space rather than the quantity in terms of attempting to provide a certain amount of m<sup>2</sup>/person as some standards aim to achieve. Such standards vary with different cities aiming to provide between approx. 5-50 m<sup>2</sup>/person.

Research frequently cites the World Health Organisation (WHO) as recommending a minimum of 9 m<sup>2</sup>/person with a generous ideal amount of urban green space per person being 50 m<sup>2</sup> (Maryanti, Khadijah, Muhammad Uzair, & Megat Mohd Ghazali, 2016; Morar, Radoslav, Spiridon, & Pacurar, 2014). However, further investigation revealed that the original source could not be verified, further reinforcing the idea that quality is perhaps more important than quantity and standards should be developed in relation to context. Ultimately, it is also important to note that the provision of different types of urban green space is important as “each will play a different role in providing space for biodiversity, different homes needed for different creatures, and each in their own way will contribute environmental benefits.” (Brodhead, 2009, p. 7)

## Legibility

Legibility is another important design principle. This means that the design of a space should allow for it to be easily understood. This would ensure that one can easily grasp how the space is to be used and what the space provides for. Aspects would include: clear entrances; convenient movement, well-defined routes including a smaller number of principle routes; limiting the use of subways, footbridges or areas under viaducts. Additionally, following the 'Image of the City' discourse (Lynch, 1960) a good balance of 'districts', 'edges', 'paths', 'nodes' and 'landmarks' should be created. Visibility, appropriate visual permeability, together with the provision of orientation signs and information are also important (Noguera & Riera, 2016).

The material used is another consideration relating to legibility, even though it concerns the very local and detailed scale. Materials used for paving and also street furniture play an important role in ensuring that a user can intuitively make sense of a space. Visual clarity and ease of navigation should strongly relate to the choice of materials (Stiles, 2009).

## Movement

The provision of and proximity to open spaces alone is not sufficient. The ability to access and ease of access by different transportation modes is also important. Consideration needs to be made for the provision of appropriate transport infrastructure, capacity and planning. Particular care should be given to the provision of public transport and alternative transport. Pedestrian access to and within the space without barriers should also be prioritised. Care also needs to be taken to provide access for persons with reduced mobility as well as anticipating for demographic change and an increase in the elderly population (Noguera & Riera, 2016; Stiles, 2009; Thompson, 2002; PPS, n.d.; Marcus & Francis, 1998).

Additionally, demographic sectors of society which are most likely to use public spaces such as parks, since they have the most opportunity to do so, are those who are least mobile such as the elderly, children, unemployed or disabled. Ensuring good access to local open spaces is therefore crucial (Thompson, 2002). The movement framework also needs to consider the evening economy. In order for an open space to be used, users need to be able to leave for home at whatever time they are ready. Direct routes therefore need to be provided which lead people where they would like to go, using their preferred transport mode in the most convenient manner (Stiles, 2009).

Besides providing access to or within a space, a movement framework also needs to consider the principle of walkability. This is the ability for an open space to facilitate walking. One of the values which urban open spaces can provide is that they support human health by allowing for active lifestyles. This however is dependent on whether the space provided will allow for physical exercise to take place. The solution to this may not be limited to the provision of parks or dedicated spaces for recreation. If one considers a 40-minute exercise session a typical neighbourhood park is too small to provide for this as one would need to make 17 circuits and would therefore find little satisfaction doing this day after day. On the other hand, providing larger open spaces is not always possible. Therefore, the design of streets as a walking/jogging route for physical activity is crucial (Austin, 2014).

The design of streets as green infrastructure which supports neighbourhood walkability is therefore the first requirement. A better solution would be to have paths that are segregated from the road which are designed for walking or biking. To encourage physical activity, a dedicated path is more suitable especially

if it is well vegetated (Austin, 2014). Stiles (2009) however advocates against total segregation, but rather using design to indicate separation e.g. through a change in surface material. Other important principles are to avoid creating hiding places and create intersections between different routes (Stiles, 2009). The identification of pedestrian and cycling routes which connect facilities and open spaces is therefore a crucial design principle.

In the case of infrastructure running alongside each other, the provision is not the only aspect, its character is also important if walking is to be promoted. This is important particularly in car dominated environments which tends to be the case in urban settings. The control of traffic speed and volume, as well as the connectivity throughout the urban area is therefore essential. There are many factors which contribute to this; however, the aim is one, to create open spaces which promote walking (Austin, 2014).

### **2.5.6 Climatic Response**

Responding to climatic conditions is an extremely important aspect for design. This concerns responding to seasonality and climatic elements; in turn ensuring a comfortable micro-climate. An important principle is the need to create spaces which can be used during different types of weather or seasons. In basic terms, this means ensuring spaces which are; sheltered from the wind during winter; sheltered from the sun during summer; or even ensuring that areas are created where the sun can be enjoyed during fair winter weather. A detail for example, is the attention to the micro-climate when locating seating elements (Noguera & Riera, 2016; Stiles, 2009; Marcus & Francis, 1998; Jacobs, 1961; Gehl, 1987).

Another important principle is the use of materials which reduce glare and consider thermal comfort. The properties of materials can have an impact on environmental aspects. Here the radiation properties are important since the use of materials with a higher reflectance can assist in reducing urban temperature. According to Austin (2014) “permeable asphalt embedded with absorbent fibres for example can significantly reduce temperatures” (Austin, 2014, p. 65). Having said this, it is also believed that “this change has only a small effect on their thermal balance with the environment.” (Erell, Boneh, Pearlmutter, & Bar-kutiel, 2013) While higher reflectance may contribute to this, high reflectivity can also result in glare particularly in climates where strong sunny spells are predominant. A balance between achieving thermal comfort and reducing glare therefore needs to be achieved.

### **2.5.7 Water Management and Use**

#### **Surface Water Drainage**

This refers to the way in which an open space manages surface water runoff. Urban development tends to retain very little vegetation or permeable surfaces, instead providing buildings, roads and various forms of hard surfaces which tend to be impermeable. This increases rain water run-off and as a result increases flood risk during heavy rainfalls. Sufficient vegetation in urban areas can mitigate flooding by: delaying the downstream water flow; reducing runoff volumes through interception; and by allowing water infiltration into the soil (Forest Research, 2010; Austin, 2014). As a result, two main factors need to be considered during design. These are the permeability of the surfaces and the provision of storage areas.

Various materials can be chosen for ground coverage. These range from impermeable ones such as concrete, to areas with vegetation which are fully permeable as water can drain into the ground. Other

options include permeable paving or even porous concrete. Unsealed surfaces allow rainwater to infiltrate into the ground returning to the natural water cycle. This would reduce the need for conventional piped drainage systems (Forest Research, 2010; Stiles, 2009). Impermeable surfaces require water collection systems which would lead to water cisterns, allowing for water to be re-used, or which would transport the water to be disposed of in water bodies further afield. A sustainable approach to the management of water is to retain as much water on site as possible through infiltration or water storage and re-use. This would also have benefits on the micro-climate (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).



Figure 17: Exposed water channels and permeable surface areas in Freiburg

Besides surface materials, the provision of storage areas is therefore also important. Rainwater harvesting cisterns above or below ground can be used as larger storage devices. While water butts can serve as smaller devices useful for irrigation. Ponds can also be used to store and filter water. There are also other options which combine detention and infiltration. Roof gardens, trenches, rain gardens and swales are all examples of these. In relation to this, bio-retention basins can also be used to treat runoff from streets and parking areas (Hoyer, Dickhaut, Kronawitter, & Weber, 2011; Austin, 2014; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). Ecological corridors can be used to hold and clean storm water runoff from roofs and impervious surfaces and create water basins. Permanent pools of water are also desirable for ecological purposes (Austin, 2014, p. 125). The design of an open space can also be flexible so as to provide areas which can be used to temporarily store water during intense storms. This can then be slowly released to the storm water system or allowed to slowly infiltrate into the ground (Stiles, 2009).

### Use of Water

The presence of water in an open space can have an important effect on the micro-climate. Passive cooling systems have traditionally been used in various Arab cities and work well in dry air regions. Mist sprayer cooling systems may be used outdoors and are used for hotel and restaurant patio areas in hot climates (Loibl, et al., 2014). Such systems may also be seen in tropical climates. Areas of open water can also contribute to the reduction of air temperature in general, including the changes between day and night temperatures (Stiles, 2009). In the Alhambra Palace<sup>13</sup> for example, a courtyard fountain is used to cool air before it enters the building (Attia, 2006).

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<sup>13</sup> The Alhambra is a palace and fortress complex located in Granada, Andalusia, Spain



Additionally, if the water system is incorporated in the design to provide an aesthetical and visible component, this provides the opportunity to make environmental processes apparent. In this way environmental and nature awareness may be created through design. It also provides the important access to and experience of nature which provides for the health and well-being value. Lastly, water may also be used in a design as an interactive recreational element or to mitigate undesirable noise levels such as that from vehicular traffic.

### **2.5.8 Use of Vegetation**

The use of vegetation in urban open spaces is perhaps the design principle which features most throughout the literature. This is not only in relation to typical open spaces typologies but also grey infrastructure such as transportation networks. “Increasingly, local governments are seeking to...create more attractive and environmentally sustainable mobility routes...interest is growing in green, walkable streets that integrate transit, safe pedestrian access and stormwater management...There is evidence that even simple measures such as landscaping along roadsides can help to calm traffic, block wind, increase driver alertness and lower stress.” (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 25) There are a number of aspects to consider when maximising the benefits of vegetation. These can be grouped into three main themes: the presence; the location; and the form and type of the vegetation.

#### **Presence of Vegetation**

The presence of vegetation in itself increases the benefits of an open space with respect to sustainable development. One benefit is that vegetation cools down the air as solar radiation is absorbed by the vegetation through evapotranspiration. In this sense the percentage of vegetation present is important. According to Austin (2014), “...the higher evaporation and transpiration of water through vegetation and soils from green roofs and street trees reduces urban temperatures.” (Austin, 2014, p. 65)

Air pollution can also be mitigated by vegetation. Pollutants tend to concentrate in high density areas where tall buildings create urban canyons. Research (Austin, 2014) indicates that increasing the planting of these canyon spaces with green roofs, green walls and trees would increase the rapid and sustained deposition of nitrogen oxides and particulates. More specifically, “the ecosystem benefit is a reduction of these pollutants by as much as 40 per cent for nitrogen oxides and 60 per cent for particulates.” (Austin, 2014, p. 81)

The presence of vegetation in any form is also important to slow surface run off rate and velocity. While large infiltration basins have the largest impact, small but numerous areas of vegetation can also help to slow storm water runoff and reduce flooding (Austin, 2014).

#### **Location of Vegetation**

Apart from the presence of vegetation, the location of vegetation can be designed such that additional benefits are provided. Placing vegetation according to prevailing winds, can assist in facilitating air circulation. Alternatively, vegetation can also be used to act as a windbreak or shelter from the prevailing winds if it is set up to form a barrier. Also, if placed as a barrier in the path of the wind, vegetation can be more effective in removing particulate pollutions from the air (Stiles, 2009). Additionally, the exposure to pollutants can be highest due to vehicular traffic and this is usually the worst at the edge of the road. Roadside planting is therefore very important (Austin, 2014).

Vegetation can also be used to mitigate noise through vegetation barriers. According to Peng et al. (2014) “the effectiveness of vegetation in attenuating road traffic noise is greatest close to the road (over the first 10 to 20m), and the rate of attenuation decreases as the distance from the road increases...significant positive effects can also be expected even when only multiple rows of tree trunks are present.” (p. 10) Finally, vegetation can also be used to create psychological barriers in relation to creating a sense of refuge, or even achieve functional requirements such as creating soft physical barriers for incompatible uses. In such cases, the siting of vegetation is crucial.

### Form and Type of Vegetation

In terms of mitigating negative impacts or introducing functionality, the form and type of vegetation is also important. For an open space to act as a noise barrier, additional interventions are required to ensure effectiveness. Variations in topography using mounds and providing dense vegetation (coniferous trees and shrubs) could be one solution. Alternatively, physical elements planted with vegetation could be used and these take up less space. Having said that green open space can still be useful for separating noisy land uses, however this is primarily due to the psychological reduction of perceived noise rather than measurable reduce noise levels (Stiles, 2009).

When considering the use of vegetation in intercepting and slowing storm water runoff, the denser the vegetation cover the better (Stiles, 2009; Austin, 2014). In a New Hampshire study, when a forest area was cleared, the average stream flow increased by 40 per cent and the peak run off was five times more (Daily, et al., 1997). In terms of microclimatic factors, Loibl et al. (2014) found that trees have the greatest effect. “Planting trees helps - in addition to the increase in transpiration - by enlarging the shaded area and thus reducing the extent of areas exposed to high mean radiant temperature.” (Hagen, et al., 2014, pp. 580,581)

The type of vegetation chosen is also important. Trees have different canopies and one needs to consider this if the potential physical effect for shading is to be maximised (Stiles, 2009). The choice of seasonal vegetation can contribute to providing shade during the summer months while allowing for sunny spots during the cold winter months (Noguera & Riera, 2016). The type of vegetation is also important for the cooling effect. Woody plant coverage for example is 60% more effective than lawns (Stiles, 2009).

Selection of planting type and species is also important when designing for ecology and the various species groups which are being targeted. There is the need to ensure that “fruit, nectar, seed and shelter resources are available in each season” and breaks “in the forested corridor should include shrub and grass associations to encourage a full range of species.” (Austin, 2014, p. 125)

The water requirement of vegetation also needs to be considered so as to avoid high water demand for vegetation growth. This is especially important in warmer climates with limited water supply. This consideration should therefore influence the vegetation used. A principle developed specifically with this in mind is Xeriscaping. This aim here is to reduce water consumption through creative and appropriate landscape design. The idea was first intended for climates where drought is common, however with water being a limited resource the principle is widely applicable. The idea consists of seven principles these being: planting species for water conservation, soil improvement, limiting use of turf, using mulch, avoiding overwatering and low maintenance (Eartheasy, n.d.; Wade, et al., 2010).

### 2.5.9 Lighting

The provision of lighting is crucial for the proper functioning of the space in the evenings for the purpose of extending the use of public spaces. There is the need to ensure adequate lighting to create the required character, allow for objects to be seen and ensure use of the space (Marcus & Francis, 1998; Gehl, 1987). At the same time aspects such as the use of energy efficient lighting, the need to reduce light pollution and consider ecological impact need to be addressed (Austin, 2014). For example, “Lighting in ecological corridors should be limited to ground level path lights. Also, mercury vapour lighting should be avoided and all lighting should be only bright enough to provide safety, with motion activation preferable to continuous lighting.” (Austin, 2014, p. 125) Naturally, the approach might be different for open spaces in urban areas, however there is still the need to be sensitive to the three key principles: use of energy efficient lighting; reducing light pollution; and sensitivity to ecological habitats.

### 2.5.10 Resource Management

#### Local Sourcing, Recyclability and Durability

The origin of materials used is also important. Using locally sourced materials leads to reduced carbon footprints. Also, the potential for using recycled materials should be considered (Stiles, 2009; Al-Hagla, 2008; Noguera & Riera, 2016). In Venlo, The Netherlands, a wooden bridge was made out of recycled scaffolding planks; while, in Dresden, Germany, a sustainable urban drainage solution was constructed re-using site construction materials (Holden & Liversedge, 2014). There is also the need to reduce the energy input or maximise renewable outputs, for example through the introduction of renewable energy sources such as solar panels (Al-Hagla, 2008; Noguera & Riera, 2016). Lastly, there is also the need to consider the use of hardwearing construction materials which are durable (Noguera & Riera, 2016), particularly in relation to site-specific conditions. Sites exposed to salty conditions for example require the use of specific materials due to corrosion. Continuous concrete as a paving material can also cause maintenance difficulties if cracks emerge. Paving blocks of varying materials are much easier to replace if damaged. This also relates to the need to minimise maintenance as discussed in the next section.



Figure 18: Images illustrating the use of recycled materials (Holden & Liversedge, 2014)

### 2.5.11 Maintenance and Management

Maintenance plays an extremely important role in determining whether an open space is sustainable. This overlaps with many of the design principles discussed in the preceding sections. When choosing vegetation for example, the ease of maintenance needs to be kept in mind in view of reducing

unnecessary maintenance costs. Species for example should be chosen ensuring that sufficient space is available for them to mature without the need for constant pruning. The unnecessary use of seasonal flowering plants is another way in which to ensure constant maintenance or replacement of a planting scheme is not required.

Having a list of existing open spaces and developing a management plan for their maintenance is an important requirement for local authorities if they are to ensure the sustainable management of urban open spaces. Such plans should be developed at project inception stage, so as to consider the cost of both developing and maintaining a space (Atiqul Haq, 2011). The maintenance and management of open space therefore also relates to planning and governance and is discussed further in Chapter 6.

### **2.5.12 Community Involvement**

As discussed throughout this chapter, open spaces have the potential to catalyse social interactions and promote or facilitate social cohesion. For this to happen they need to respond to different users with different interests or cultural backgrounds. To really understand the users' needs and ensure that different interests are represented, community engagement is crucial. The community should be involved in the planning and design process from the very beginning as this then helps to develop a sense of ownership and ensures the inclusion of local knowledge. Another way is to involve residents and users in the management and maintenance of the spaces (Marcus & Francis, 1998; Stiles, 2009; Al-Hagla, 2008; Noguera & Riera, 2016; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). Community involvement and engagement is therefore extremely important and since this relates to the governance of open spaces, it is discussed in more depth in Chapter 6.

## **2.6 Conclusion: Defining the Theoretical Foundation**

The preceding section has given a detailed overview of the various design principles which should be considered so that urban open spaces may contribute to sustainable development. This forms the theoretical foundation for the first phase of the empirical research as discussed in Chapter 3. Some of the principles can be considered independently at the local site-specific scale, while others at a strategic scale<sup>14</sup> and others still, at both. The scale relevance determines to what extent they need to be planned and designed at a strategic level as part of a system of open spaces. This can then inform the design at the local scale such that the open spaces will fit within a larger context thus further capitalising on their value with respect to sustainable development.

According to Stiles (2009) in acknowledging that individual open spaces are also actually nodes which form part of a wider open space system, which is in fact a network of inter-connected spaces, the concepts of hierarchies and connectivity come into play. With respect to hierarchies, this considers the different typologies of open spaces which may exist ranging from parks and urban squares to streets, incidental urban places and even car parks. When planning and designing an open space it is important to consider how these should be integrated within such a system and how each relates to each other. In this sense each space would then perform different functions and contribute in varying ways accordingly. For such

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<sup>14</sup> Spatial planning in Malta tends to address the local or national scale while omitting the regional scale. At this point in the research the 'strategic scale' is therefore used to address both national and regional scales interchangeably.

a holistic and integrated approach to be adopted, the importance of planning for a system of open spaces emerges.

An example of the concept of hierarchies is that discussed in section 2.5.3 p70, 2.5.4 p72 and 2.5.5 p74, when different open spaces, depending on their size and location, may provide varying functions and attract groups/categories of people accordingly, also dependent on the distance which needs to be travelled to get to it. In this sense, open spaces would play a role at a local, district or metropolitan scale and should therefore be distributed accordingly.

In parallel, the connectivity of urban open spaces is equally important in order to maximise value. This could be with respect to the urban climate, providing support to habitats and biodiversity or the sustainable management of water in urban areas. Sustainable movement within urban areas is also dependent on this characteristic. Connected spaces are also important in terms of structuring the urban environment to ensure legibility and a sense of orientation. Additionally, if the connectivity extends to the wider landscape, the possibility exists to strengthen the meanings and values present in urban spaces (Stiles, 2009).

Lafortezza et al. (2013) advocate similarly the importance of hierarchy and connectivity with respect to GI. These principles are identified through two main elements: hubs and links. "Hubs act as an 'anchor' for a variety of ecosystem services, providing source and sink habitats for species dispersing through the landscape...Links are the connections binding the ecosystems together, facilitating the flow of ecological processes." (p. e2) Fragmentation, the opposite of connectivity, can also reinforce social and economic separation as well as alienate man from nature. "This calls for approaches and strategies that overcome fragmentation and enhance functionality, including the development of structural and functional linkages among ecosystems through networks of ecological and human-based components." (p. e2)

### **The Importance of Integrated Strategic Planning**

In conclusion, the strategic planning of open spaces is essential. Additionally, as discussed, there are a number of principles to consider. Although, it is not possible to talk about a fixed recipe. Rather it is the balance between the principles according to the context and design objectives which is important. This poses the question as to how such objectives are defined. So once again, both the design, and planning processes, play an important role.

Much will depend on the extent to which the objectives of sustainability move from purely environmental ones to a multidimensional concept that incorporate economic and social aspects. In this sense the debate often focuses on the shape or form of the design, however the aspect of 'time' is also important. In this sense long-term planning is an essential requirement. Additionally, public participation should be an integral part of the process. A process which adopts an integrated approach and which addresses multiple scale levels. Therefore, the creation of urban open spaces which contribute to sustainable development, depends on strategic integrated planning and design. Having said this, additional research is required on the mechanisms needed to achieve this (Noguera & Riera, 2016). In relation to this, the integrated nature of the planning framework within which one designs and develops urban open spaces becomes crucial. These aspects are therefore explored further in Chapter 6.

### 3 Methodology

This chapter discusses the methodology adopted for this research. First, a brief overview of the research aim and objectives is given. This is followed by a methodological discussion which outlines the context for the research and philosophical approach adopted in relation to the aim and as a basis for the research design. The methodology is then presented in depth discussing reasons for its choice and how it was developed in relation to the research objectives and question.

#### 3.1 Introduction

A review of Maltese literature (spatial planning and others) identified the poor quality of open spaces in Malta (GoM, 2015; TPPI, 2008; TPPI, 2015; GoM, 2012) in relation to the sustainability agenda. This led to the research problem which suggests that: a 'gap' exists concerning the planning and design of urban open spaces in Malta. This was translated into the following research aim and question:

*Aim:* Investigate the spatial planning and design of urban open spaces in Malta and use the outcomes to develop proposals for improving their contribution to sustainable development

*Research Question:* How can the spatial planning system facilitate the potential for urban open spaces to add value (environmental, economic and social) to the built environment and hence improve their contribution to sustainable development?

To answer the research question, more specific objectives were defined, these being to:

- identify design principles/themes relevant and specific to the design of urban open spaces in Malta and their potential to contribute to sustainable development;
- understand existing urban open space policies and planning process and identify gaps;
- develop a framework for planning urban open spaces in Malta including understanding the process for its development and implementation; and
- identify barriers/implications for its implementation.

#### 3.2 Setting the Scene

This section presents a methodological discussion of the various strands which have informed the development of the research approach. This is understood as the procedure which has been adopted to achieve the aims and objectives. This includes all the steps, ranging from the broader framework, to the detailed methods chosen for data collection, analysis and interpretation.

Creswell (2014) defines a number of factors which inform the choice of research approach. These are the philosophical assumptions, research design, and research methods (Figure 19 below). Together with these, the nature of the research problem, the researcher's experience and the intended audience are also included.

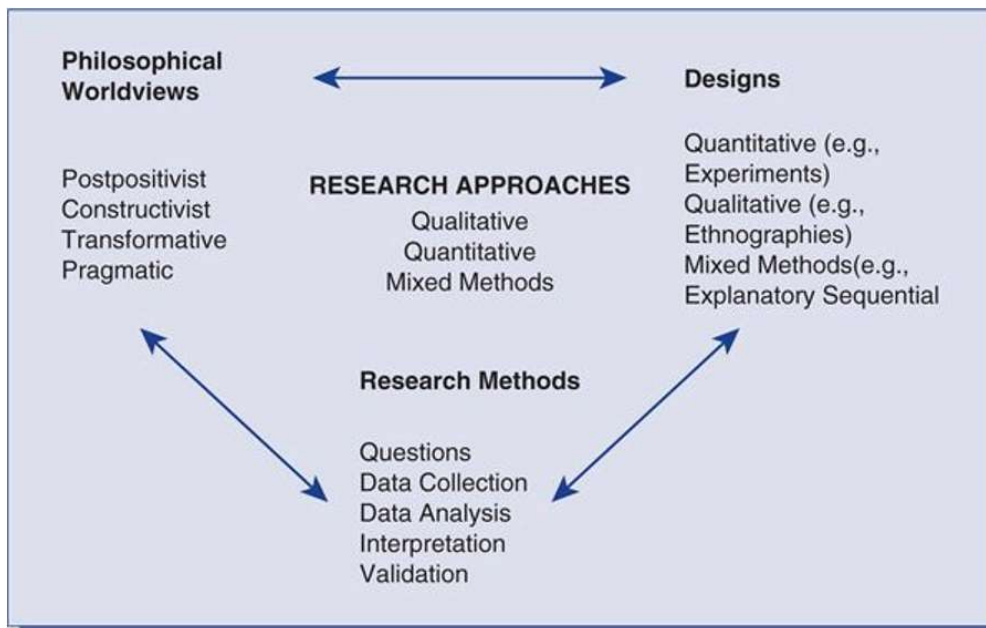


Figure 19: A framework for research outlining the main elements informing a chosen research approach (Creswell J. W., 2014)

Similarly, Groat and Wang (2013) define the aspects informing the research approach in terms of: Systems of Inquiry (Philosophical Worldviews); Research Strategies (Research Designs); and Tactics (Research Methods). Additionally, the research purpose in terms of the contextual backdrop (audience and research motivation) and research goals are discussed as an additional layer. Based on these two frameworks as well as Neuman (2014), the following aspects have informed the research approach adopted.

- Research Context.
- Research Purpose.
- Philosophical Assumptions.
- Research Design/Strategy.
- Research Methods/Tactics.

### 3.2.1 Research Context: Moving Beyond the Basic-Applied Research Dichotomy

Research is said to have two possible orientations referred to as basic research or applied research. Basic research tends to advance fundamental knowledge about how the world works by supporting or refuting theories. It tends to focus on the 'why' question. The scientific community is generally its primary audience. It can however lack practical application in the short term. Applied research on the other hand tends to address a specific concern with the aim of offering practical solutions. It is generally commissioned research where active practitioners are the main audience. In applied research, researchers tend to prioritise obtaining quick applicable results potentially resulting in more trade-offs or compromising scientific rigour (Neuman, 2014).

Defining the research orientation is important as the different orientations, evaluate research methodology differently (Groat & Wang, 2013). Having said this, the basic vs. applied research dichotomy is overly simplistic and additional research orientations may be developed which move beyond this dichotomy (Neuman, 2014).

In this case, the primary purpose of the research is to address a practical problem. That is, to devise how spatial planning in Malta, can facilitate the contribution of urban open spaces to sustainable development.

Additionally, the main audience is active practitioners and the relevance of the proposed solutions is thus of importance. The research therefore leans towards the applied orientation (Neuman, 2014). Nonetheless, the research is autonomous and it was not the intention to sacrifice scientific rigour to obtain fast and usable results. The scientific audience is hence also considered an important target. The research orientation therefore lies beyond the traditional basic – applied definitions.

### **3.2.2 Research Purpose: Exploratory and Descriptive**

Research may be considered exploratory, descriptive or explanatory. Explanatory research, is when the main aim is to explain why things happen, and elaborate or test theory. Exploratory research, intends to examine and understand a phenomenon with the aim of developing ideas about it. Descriptive research, aims to present a picture of the specific details of a situation. It can also be used as a strategy for areas of investigation about which little is known. In practice, descriptive and exploratory research tends to blur together (Neuman, 2014; Deming & Swaffield, 2011).

The main purpose of this research is not to test or develop a theory; rather it looks to develop proposals about a subject, which for the Maltese context, little research exists. This being the planning and design of urban open spaces. The objectives are to explore and understand the current situation in order to develop and test proposals. The questions are therefore 'How' and 'What' questions. The main purpose of the research is therefore 'exploratory' (Neuman, 2014), because its main aim is to investigate a situation and develop proposals for improving the contribution of urban open spaces to sustainable development. To achieve this, the research also has a 'descriptive' component (Deming & Swaffield, 2011). This is due to the first step which is to investigate spatial planning policies and the poor design of urban open spaces. This will present a descriptive picture of the situation at hand. The purpose of the research is therefore both exploratory and descriptive.

### **3.2.3 Philosophical Assumptions**

The wider philosophical assumption which underpins or informs a research proposal is the third aspect to consider. Creswell (2014) uses the term philosophical worldview which he explains as being a basic set of beliefs which guide action. Terms such as paradigms; epistemologies and ontologies; and systems of inquiry have also been used to describe this meaning (Creswell J. W., 2014; Groat & Wang, 2013; Neuman, 2014). In simple terms, this is primarily about the general philosophical understanding which a researcher has of the world and the nature of the research. Such beliefs generally influence the research approach adopted.

The various beliefs which may be brought to research are constantly being discussed. Groat and Wang (2013), adopt what they call a three-part continuum. This ranges from the Positivist/Post Positivist, where the emphasis is on objectivity, to the Constructivist, where the emphasis is on subjectivity. In the middle they use the term Intersubjective to reflect a tradition which recognises both the multiplicity of distinct perspectives and the importance of socially shared action and knowledge. This is summarised below.



	Objective Approach			Subjective Approach	
	Positivism / Post Positivism		Intersubjective	Constructivism	
Epistemology	Knower distinct from object of inquiry	Knowing through distance from object	Knowledge framed by understanding sociocultural engagement	Knowledge co-constructed with participants	Knowledge perpetually provisional
Ontology	Assumes objective reality	External reality revealed probabilistically	Diverse realities situated in sociocultural context	Multiple constructed realities	Infinite realities

Figure 20: Continuum of research paradigms ranging from an objective to a subjective approach. Sourced from Groat and Wang (2013, p. 76) reproduced with modifications.

Creswell (2014) focuses on four beliefs which include transformative and pragmatism as well as post positivism and constructivism as discussed by Groat and Wang (2013). These are summarised in Figure 21.

Post Positivism	Constructivism
Determination Reductionism Empirical observation and measurement Theory verification	Understanding Multiple participant meanings Social and historical construction Theory generation
Transformative	Pragmatism
Political Power and justice oriented Collaborative Change-oriented	Consequence of actions Problem-centered Pluralistic Real-world practice oriented

Figure 21: Four worldviews of philosophical beliefs. Sourced from Creswell (2014), reproduced with modifications.

A brief definition of these five main philosophical views, which guide different types of research, is provided in Appendix A1. This helped in understanding the beliefs underlying the research proposal at hand. Firstly, when considering the research's main topic, the contribution of urban open space to sustainable development, it can be said that this is not a fixed recipe but rather a response to a particular context/situation/problem (Julien, Hamilton, & Croxford, 2014). Consequently, it is not easily measured in an objective sense and does not assume the existence of one reality. This line of thought does therefore not subscribe to positivist/post positivist beliefs (Creswell J. W., 2014; Groat & Wang, 2013).

The transformative beliefs (Creswell J. W., 2014) also do not lend themselves to the research. While the research does tend to be action oriented, the focus is not that of marginalised or vulnerable societal groups. In environmental and design research, the constructivist approach would use the views and experiences of persons within that particular setting to provide in-depth insights and interpretations of a particular environment (Groat & Wang, 2013). While the research does aim to understand a situation based on the meanings and experiences of individuals working in a specific context, the idea is not to focus only on the complexity and individuality of the meanings. It also aims to develop a common or shared understanding of the situation. The belief is therefore more intersubjective (Groat & Wang, 2013) rather than constructivist.

Nevertheless, in attempting to understand the research problem, the focus was not only on the views of those working in or experiencing the context. Other approaches such as physical surveys and document reviews were used. The focus was on identifying which approaches are more suitable for understanding the identified problem and developing potential solutions. Overall, therefore, the research adopts a pragmatic world view.

### 3.2.4 Research Design/Strategy

Creswell (2014) categorises ‘Research Design’ (Designs in Figure 19) into qualitative, quantitative and mixed methods approaches. This categorisation then provides specific direction for procedures in a research design.

Quantitative	Qualitative	Mixed Methods
Experimental designs Non-experimental designs, such as surveys	Narrative research Phenomenology Grounded theory Ethnographies Case study	Convergent Explanatory sequential Exploratory sequential Transformative, embedded, or multiphase

Figure 22: Categorisation of ‘Research Designs’. Sourced from Creswell (2014), reproduced with modifications.

In a similar manner, Groat & Wang (2013) use the term ‘Research Strategy’. While they present similar types of research, the categorisation differs. They instead classify different strategic approaches to research into seven strands. These being: Historical; Qualitative; Correlational; Experimental; Simulation; Logical/Argumentation; and Case Study/Combined Strategies. While the Qualitative category includes a number of research types similar to Creswell’s (2014) categorisation, other research types such as case studies are explained in their own right. Similarly, experimental research or non-experimental research such as correlational research is not grouped together as quantitative research types (Creswell J. W., 2014; Groat & Wang, 2013). While the approach to classifying quantitative research seems to differ, similarities exist again with respect to mixed methods or what Groat & Wang (2013) call combined strategies.

In relation to the exploratory nature of the research as well as the intent to research a specific context in depth, the qualitative and case study research strategies were considered suitable types. The lack of a specific theory or hypothesis, as a departure point, suggested that the research should be inductive further leaning towards a qualitative orientation. Having said this, the pragmatic belief which underpins this research suggests that a mixed method/combined strategy could also be appropriate. While quantitative research types such as experimental strategies are unlikely to be suitable (lack of theory to test), these were not automatically discounted. This because, when considering pragmatic orientations, the idea is to use whichever research type might be suitable to understanding the problem at hand (Creswell J. W., 2014), hence the mixed method strategy.

Additionally, “as a descriptive strategy becomes more sophisticated, it becomes more dependent upon the combination, classification, and interpretation of different sources of data. Words are good at describing qualities, but less good for quantities. Research strategies that are confined to purely qualitative descriptors are limited in their ability to manage large and complex amounts of data and face all manner of challenges in dealing with consistency... Thus, even qualitative researchers find it useful to incorporate simple numerical techniques.” (Deming & Swaffield, 2011, p. 70)

In relation to this a number of potential research strategies, which it was felt were more suitable, were researched in more depth. These are: Qualitative, Correlation, Simulation, Case Study and Mixed Method/Combined Strategies. An overview of these is given in Appendix A1. This informed the research design/strategy adopted which is outlined in Section 3.3 p89, together with the reasons for its choice.

### 3.2.5 Research Methods/Tactics

Research methods (Creswell J. W., 2014) or tactics (Groat & Wang, 2013) are understood as the data collection techniques which are employed to gather data during the research as well as the means of analysis and interpretation which are adopted. The methods chosen would very much depend on whether the type of information to be collected is already determined at the start of the study, or whether the information will be that which emerges through the data collection. Methods also vary depending on whether the data to be collected is more numerical or alternatively in the form of text. With regards to interpretation this can range from statistical analysis to the interpretation of themes or patterns which emerge from the data.

Quantitative Methods	Mixed Methods	Qualitative Methods
Pre-determined	Both predetermined and emerging methods	Emerging methods
Instrument based questions	Both open and closed ended questions	Open-ended questions
Performance data, attitude data, observational data, and census data	Multiple forms of data drawing on all possibilities	Interview data, observation data, document data, and audio-visual data
Statistical analysis	Statistical and text analysis	Text and image analysis
Statistical interpretation	Across databases interpretation	Themes, patterns interpretation

Figure 23: Categorisation of data collection techniques into Quantitative, Mixed, and Qualitative methods. Sourced from Creswell (2014), reproduced with modifications

Creswell (2014) organises the various data collection techniques depending on the nature of the questions (closed vs open-ended), the focus on numeric data, and the predetermined nature. He categorises them into quantitative, qualitative or mixed methods, where mixed methods are when the researchers make use of methods from both ends of the qualitative/quantitative spectrum. This categorisation is illustrated in Figure 23. In relation to the exploratory nature of the study, the research makes use of data collection techniques from both ends, i.e. a mixture of methods/tactics was adopted. These together with the reasons for their choice are discussed in Section 3.3.

## 3.3 Selecting and Developing the Methodology

### 3.3.1 Adopting a Qualitative and Inductive Approach

Based on the research purpose, orientation, and philosophical underpinning, as well as, the various potential research strategies, the most suitable research approach was identified. As stated, the aim of the research is to investigate a situation/problem and develop proposals. Ultimately, these would also be tested and refined as a result. Additionally, the departure point is the observation and understanding of

a situation rather than a hypothesis which is to be tested. The research therefore follows an inductive course.

An inductive approach is one which begins with collecting empirical data and then analysing and interpreting it to develop an understanding about what is happening with the aim of developing theoretical concepts and propositions. When operating inductively, the research usually begins with a broad topic and some general ideas which through refinement and elaboration are then developed into more specific concepts (Neuman, 2014). This approach is appropriate as the intention was to start by understanding the situation in the Maltese Context and identify design principles/themes relevant to the contribution of urban open spaces to sustainable development in Malta. This inductive emphasis, as well as the exploratory nature of research, suggested the use of open ended-questions. This together with the intent to research a specific context in depth led to the conclusion that qualitative research strategies would be appropriate (Creswell J. W., 2014; Groat & Wang, 2013). This is also in line with Jacobs (1961) who advocated working “inductively, reasoning from particulars to the general, rather than the reverse”. (p. 440)

### **3.3.2 The Potential for a Combined/Mixed Method Strategy**

Having settled on a qualitative approach, grounded theory, which adopts a bottom-up approach to develop new ideas instead of testing existing theoretical ideas (Neuman, 2014) was seen as a potential strategy. This involves a systematic methodology involving the construction of theory through data analysis. It would most probably start with a question, or even just collecting qualitative data (Groat & Wang, 2013).

In developing the research, several attempts were made to develop an approach where a hypothesis is developed and then tested. However, such attempts proved futile as the aim, which was to investigate and develop proposals regarding the planning of urban open spaces in Malta, lent itself to a research question. That is, ‘How can spatial planning facilitate the potential of urban open spaces to contribute to sustainable development?’. Additionally, if a hypothesis was developed, the initial scope of the research would have been narrowed arbitrarily, as little research existed on the subject to inform the development of a hypothesis specific to Malta.

While a grounded theory approach was seen as interesting as it aims to follow an inductive process, and then test and verify the developed theory, its aim, is also to identify an explanatory theory (Groat & Wang, 2013). In this sense, the objective of the research is to develop proposals or recommendations rather than develop a theory. Additionally, the focus of grounded theory is not on exploratory studies. Therefore, it was felt that grounded theory was not the best approach to use. What is interesting is the belief that once a theory is conceived based on an inductive approach, it is then elaborated on and verified through deductive and verification techniques. So, while grounded theory may not be suitable due to the research’s exploratory nature, the approach of elaborating on the developed theory is still interesting.

Following on from this, Creswell’s (2014) definition of an ‘Exploratory Sequential Mixed Method Strategy’ seemed to be a better fit. This is particularly applicable as this approach begins with a qualitative phase and the information which emerges is then used to develop a second phase which is used to build and elaborate on the findings (Creswell J. W., 2014; Creswell & Plano Clark, 2011). The pragmatic nature of the research also suggested that a mixed method strategy would be appropriate. This is because when

considering pragmatic orientations, the idea is to use whichever research type might be suitable to understanding the problem at hand (Creswell J. W., 2014). Using Creswell and Plano Clark's (2011) definition of 'Exploratory Sequential Mixed Method Strategy', a mixed methods approach was adopted starting with an inductive qualitative phase. This was then followed by a second phase which was chosen in relation to the nature of the outcomes and proposals of the inductive phase.

As the research progressed, an adapted version of the 'Exploratory Sequential' model was actually used. The model used adopts a qualitative second phase rather than quantitative. The reasons are that the aim of the second phase is not to have a representative sample which identifies the opinion of the majority. Rather, it is to gather a richness of ideas from different stakeholders. It is to explore what different people think about the proposals and what the issues might be to implementing them. Exploring new ideas is what planning and policy making is about and not necessarily identifying what the majority think.

As an overall approach, the sequential exploratory design is still seen as relevant since the ultimate aim is to test and elaborate on exploratory findings. Additionally, overall the research has a qualitative emphasis. Having said this, referring back to the literature on mixed methods (Creswell & Plano Clark, 2011), the research design can also be seen as a two phased approach which adopts a convergent design for the first phase and a purely qualitative design for the second. Adopting a convergent design is in fact suitable for pragmatism as an umbrella philosophy and is useful when the design purpose is to provide a more complete understanding of a topic. This is in fact what the first phase of the research set out to do. In conclusion, it can be said that the research design is a variation of the 'typical' mixed methods designs, adapted in relation to the research orientation, philosophy and purpose.

### **3.3.3 Mixed Method Approach Using a Single City Case Study**

The research also adopts a case study approach. This is generally used when the research is intended to understand a specific issue or process within a specific context. While research which traditionally uses experiments, seeks to use the results to generalise; when using a case study approach generalisation is not necessarily the purpose. In studying a case study, discovering the uniqueness of the case is the main purpose (Hays, 2004). Additionally, case study research is suited to "questions that relate to a particular landscape setting; questions of an exploratory nature; questions that seek an in-depth understanding about particular types of situations". (Brink, Bruns, Tobi, & Bell, 2017, p. 114)

Concurrently, it can be said that case studies also play a role in developing and contributing to knowledge, through the power of multiple case studies to act as "a means of advancing theories by comparing similarities and differences among cases". (Riddler, 2017, p. 282) From a social sciences perspective, case study research can be seen as an answer to acknowledging the impossibility to study society in its entirety, and therefore as a means to draw broader conclusions (May, 2011). In fact, Gerring (2004) defines case studies "as an intensive study of a single unit with an aim to generalise across a larger set of units". (Gerring, 2004, p. 341)

Since the aim of this research is also to specifically study the case of Malta, a single city case study approach has been chosen. As outlined in Chapter 2, the main urban conurbation in Malta has been identified so as to specifically focus on 'urban open spaces'. Additionally, the study is also seen as a stepping stone to knowledge contribution by providing insight into a particular context which may then be compared to other similar or dissimilar contexts.

## A Single City Case Study - The Case of Malta

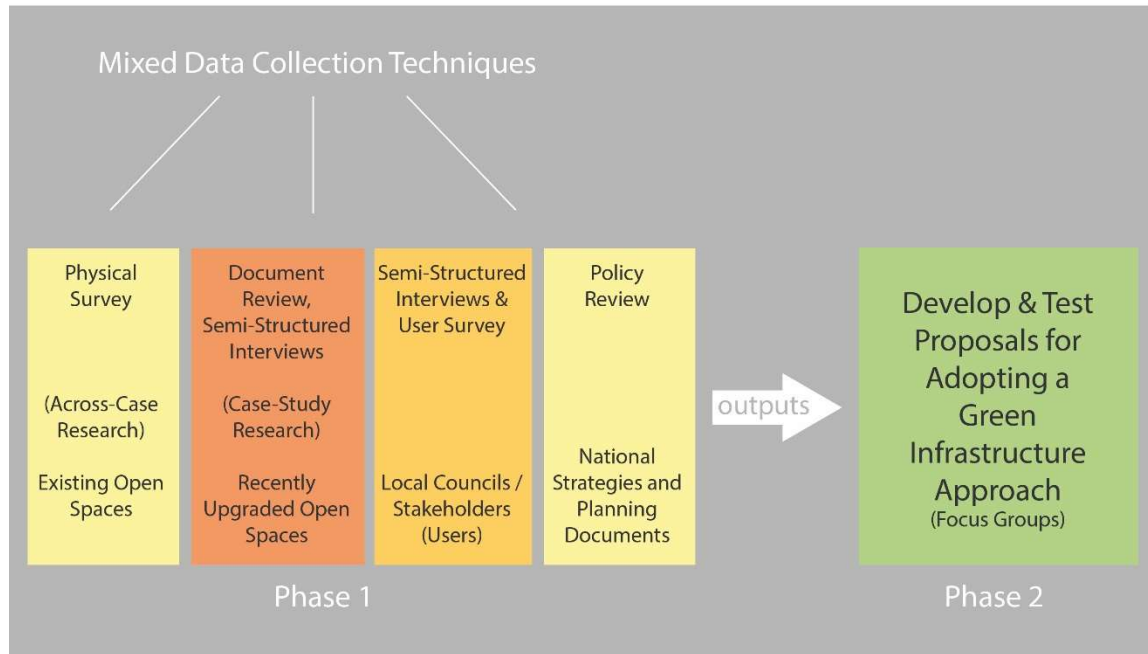


Figure 24: Outline of research methodology adopting a mixed method approach

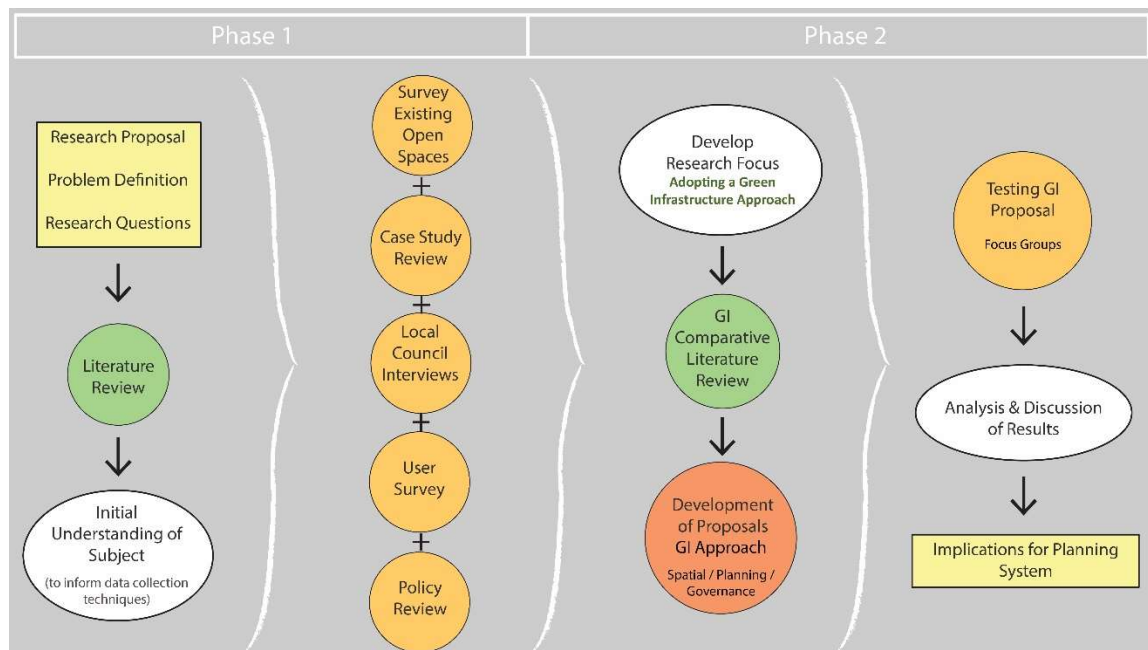


Figure 25: Research overview illustrating main stages of the research

Figure 24 above outlines the methodology while Figure 25 above illustrates the various stages of the research in more detail. The five methods identified for phase one are: physical surveys of existing open spaces; in depth qualitative review of three case study open space projects; interviews with local councils; an online user survey; and a review of existing strategies and policies. The second stage then uses focus groups to test the proposals and develop final recommendations. The different data collection techniques were developed in relation to the objectives as outlined in section 3.3.4.

### 3.3.4 Selecting the Methods according to the Objectives

The mixed methods principle is also adopted at data collection level. The idea is that choosing methods which work is more important than the 'purity' of the approach. Meaning, researchers should "pick and mix methods depending on the phenomenon to be studied. This is particularly useful when the questions being answered do not easily classify as either qualitative or quantitative". (Carmona, 2014, p. 78)

#### The First Phase

The first objective, to identify design principles or themes relevant and specific to the design of urban open spaces in Malta and their potential to contribute to sustainable development was achieved by carrying out physical surveys of a sample of existing urban open spaces. This made it possible to really grasp what the situation in Malta is. This may be seen as across-case research gathering quantitative data (Neuman, 2014). Additionally, semi-structured interviews with local councils provide further insight into some of the themes which could not be investigated on site. Finally, an online survey was carried out to gather data on the user perspective.

The second objective, to understand urban open space design policies and identify gaps, was achieved by carrying out a policy review of national strategies, policies and spatial planning documents and guidelines. Additionally, three case studies of recently designed and implemented urban open spaces, were chosen and studied in detail. Here, the focus is on qualitative data. This is seen as suitable, as it allowed the linking of the micro-level (the design of urban open spaces) to the macro level (the planning of urban open spaces) (Neuman, 2014). It also made it possible to understand how spatial planning policy is failing to support the design of urban open spaces with the potential to contribute to sustainable development.

Once the initial data set was collected, the results were analysed and a comparative literature review was carried out focusing on the themes which emerged particularly relating to planning and governance issues. Comparing the data in hand with the literature reviewed, proposals were developed for the planning and governance of urban open spaces in Malta. The first step of the third objective was thus achieved that is, to develop an urban open space planning framework for Malta.

#### The Second Phase

Focus groups were selected as a means of completing the third objective by elaborating on and refining the proposals and understanding the process for development. They also served to achieve the fourth objective. That is to identify barriers/implications for implementation. Originally, interviews with authorities/expert stakeholders were going to be included in phase one. However as this progressed they were shifted to phase two as the testing technique and eventually it was decided to use focus groups instead. The reasons for this are as follows.

- Potential solutions were emerging during the case study interviews and it was felt that the same would happen when interviewing the authorities/expert stakeholder. There was therefore a risk of the interviews becoming repetitive if they were held in the first phase and then again to test the proposals in the second phase.
- Bringing various experts together as a focus group and creating a platform for discussion would be potentially more effective and interesting in trying to explore solutions and developing ideas especially considering the integrated and multidisciplinary nature of the research topic.

- The interview questions/focus areas which were being developed were based on what was emerging from the surveys and case studies. So even though they were not concrete proposals they were queries, leading to suggestions, which would be explored during the interviews. Thus, speaking to the authorities seemed more suited as a form of testing.

Eventually, as the research developed two different formats were used for the focus group. This is discussed further in section 3.4.7, p. 109.

### 3.3.5 Theoretical Underpinning

As discussed in Chapter 2, this research deals with the operationalization of ‘sustainability’ in the context of designing and planning urban open spaces. The framework adopted is based on, the Brundtland report’s (Brundtland, 1987) three dimensions of sustainable development that should be considered in an integrated way: society, environment and economy. Chapter 2 also identified a number of principles through which urban open spaces can add social, environmental and economic value and hence contribute towards sustainable development. They have been grouped into twelve main categories and sub-categories as listed in Table 3 below.

Table 3: Overview of Design Categories

Design Categories	Sub-categories
Spatial & Structuring Qualities	open space as structuring element, connectivity
Contextual Relationships	physical, functional, socio-cultural
Character & Form	typology, visual interest, spatial proportion & enclosure, responding to site & identity
Activities & Functionality	recreational facilities & functionality, user preferences, diversity, multi-functionality & flexibility, supplementary equipment
Accessibility	vicinity & availability, legibility, movement
Climatic Response	responding to seasonality, micro-climatic comfort
Water Management & Use	surface water drainage, ground coverage & storage areas, use of water
Use of Vegetation	presence, location, form & type
Lighting	energy efficiency
Resources Management	locally sourced & recyclability, durability
Maintenance & Management	operations, roles & responsibilities
Community Involvement	voluntary schemes, participation during the design & planning process

## 3.4 Describing the Data Collection Techniques

### 3.4.1 The Physical Survey

The physical survey was carried out so as to have a better understanding of the situation on the ground. It was intended and eventually successfully served in strengthening the argument that more attention is required in relation to the planning and design of urban open spaces. Thus, the research justification was no longer based solely on the initial publications reviewed. Additionally, the results served to identify more specifically which categories and design principles are more relevant and should be more of a



priority in the Maltese context. The purpose of this data collection was therefore not to accurately measure the level of good design or contribution to sustainable development but rather it was more strategic and served to provide further knowledge regarding the specific Maltese context.

### Selecting Study Areas and Typologies to be Studied

Initially the aim was to randomly select urban open spaces from the Maltese conurbation. This however was not possible as no official classification or mapping of spaces was available. It was not feasible to do this for the study, thus the spaces surveyed were selected from two areas (Figure 26) within the urban conurbation. It was also felt that the spaces need not be randomly selected. It was more important that the areas chosen be representative of the conurbation since for, “case study research the selection of cases is usually purposive i.e. non-random. In landscape planning and design studies the claim of ‘representative sampling’ seems to lead a life of its own. However, it is important that information is given on what is representative and how this results for the sample.” (Brink, Bruns, Tobi, & Bell, 2017, p. 30)

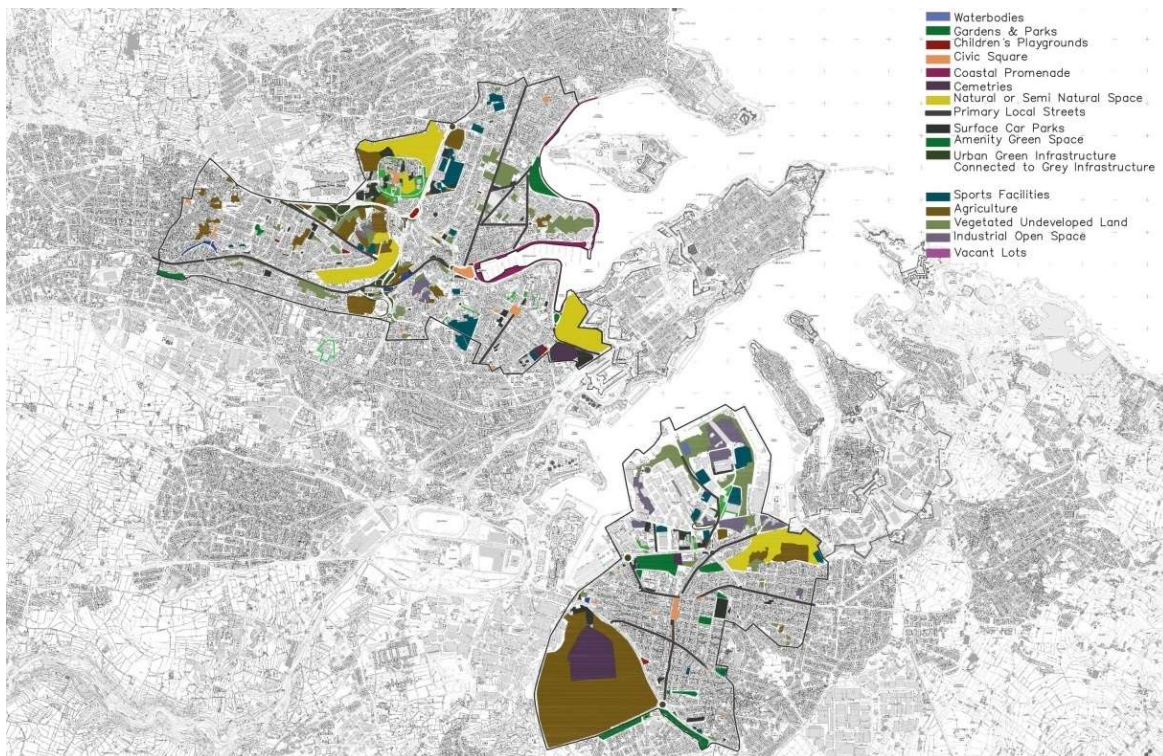


Figure 26: The two areas selected for analysis with the classification of open spaces

To do this, based on Frenco (2016) the potential localities were shortlisted according to two criteria (see Appendix B1). Firstly, that they had the full range of typologies and secondly the amount of open space present was close to the average amount found within localities. Next, those localities which had particular qualities were removed (see highlighted rows in Table 4). These included: Floriana, Cospicua, (bastions, gardens fortifications), Pembroke (extensive semi-natural areas) and Marsa (golf course). The localities were further shortlisted to include those where the amount of open space per person was representative of most localities. Finally, the localities were chosen to create two areas which represented the: north, south and central part of the conurbation; coastal and inland towns; industrial areas and

valleys. The final boundaries were then selected according to the transport model zones<sup>15</sup> (Transport Malta, 2016) because they provided a finer grain when compared to administrative boundaries. Additionally, the population data for the chosen zones could be sourced.

Table 4: Shortlisting of potential localities

Locality	Urban Green Space sqm / Capita	Accessible Urban Green Space / Capita	Description/ Qualities to Note
Birkirkara, Swatar & Mriehel	25	< 6	Typical inner urban towns;
Cospicua	44	6-25	Bastions gardens / fortifications
Fgura	31	< 6	
Floriana	118	> 50	Bastions gardens / fortifications
Gzira, Ta'Xbiex & Manoel Island	33	6-25	Provides coastal typology
Marsa	139	26-50	Golf course present
Msida, Pieta & G'Mangia	16	< 6	Provides coastal typology; Provides valley / semi-natural area
Paola, Kordin	124	6-25	Provides industrial areas; Typical inner urban towns; Typical inner urban towns
Pembroke	119	6-25	Extensive semi-natural coastal area
San Gwann & Kappara	56	6-25	Provides valley / semi-natural area; Provides industrial areas; Typical inner urban towns

The existing open spaces were mapped out and classified as follows: Gardens/Parks; Children's Playgrounds; Civic Squares/Piazas; Coastal Promenades; Natural/Semi-natural Areas; Main Streets; Surface Car Parks; Amenity Green Space/Urban Green Space connected to Grey Infrastructure (AGIR<sup>16</sup>); and Water bodies.

The categories were first identified in relation to literature (Al-Hagla, 2008; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). It was then decided to focus on publicly accessible urban open spaces as defined in Chapter 1. In relation to this, the following typologies were not included:

- private sports facilities - since these are not publicly accessible;
- urban agriculture – as this tends to be private and not publicly accessible;
- vacant lots – as these are not publicly accessible;
- cemeteries – as access here is controlled;
- vegetated undeveloped land – this was also not publicly accessible; and
- industrial open spaces – space related to industrial areas which are not publicly accessible.

Urban agriculture which was publicly accessible such as community gardens was retained as a typology to be surveyed, however none were identified in the two areas selected. This is also not a typology which is easily found in the Maltese urban conurbation. Beaches were not included as a separate typology but formed part of the promenade typology. Following the classification, 45% of each typology was selected

<sup>15</sup> These zones were created as part of the transport modelling used for the National Transport Strategy and Masterplan. They are based on the national census enumeration areas and are smaller in size than localities.

<sup>16</sup> This acronym represents the typology Amenity Green Space/Urban Green Space connected to Grey Infrastructure

using random sampling (Neuman, 2014) resulting in 42 spaces (Appendix B2). This amount was selected due to the time available to dedicate to this data collection (3 months) and also seeing that it would provide a suitable number for statistical analysis. In some cases, it was found that some of the spaces originally selected were closed due to on-going projects and thus these were replaced. The percentages of each type of open space in the two study areas is listed in Table 5. Unfortunately, data on the percentage covered by buildings and all open space with the two study areas was not available.

Table 5: Percentages of open space typology in study area

Open Space Typology	% of Total Area 1 (Total Area 1 = 400 Ha)	% of Total Area 2 (Total Area 2 = 335Ha)
Gardens/Parks	0.81	1.83
Children’s Playgrounds	0.14	0.05
Civic Squares	0.43	0.21
Coastal Promenade	0.94	0
Waterbody	0.24	0
Natural/Semi-Natural Areas	5.73	2.61
Amenity Green Space/ Urban Green Space connected to Grey Infrastructure	0.53	0.01
Main Streets (only considering those surveyed)	0.80	0.65

### Developing the Survey

While in traditional sciences, detailed measurement procedures and instruments usually exist and are accepted, in social sciences and neighbouring disciplines, this is not so straight forward. Operationalization of the concept being surveyed was therefore required. “Operationalization is the iterative decomposition of the key concept until identifiable characteristics...are reached in an explicit and auditable way that is structured by theory. Only then can appropriate scales and questionnaires be recognised or constructed.” (Brink, Bruns, Tobi, & Bell, 2017, p. 29) The development of the survey therefore sought to operationalize the potential contribution of urban open spaces to sustainable development.

This was done by developing questions organised into the twelve design categories. For each sub-category listed in section 3.3.5 p94, the most critical design principles were identified based on frequent citations in the literature. The aim was to choose the design principles which best represent the categories. This systematic development is outlined in Appendix B3. Questions were then developed to represent each principle. For most, a Likert scale was developed. In some cases, the question required a descriptive answer. For all questions a reason for the scoring was also included to provide an added level of transparency in understanding how the characteristic was judged.

### Testing, Piloting and Validating the Survey

The final survey was developed following various rounds of piloting. The very first sets of questions were tested simply to identify if they would work. At this stage some questions were made more specific as they were vague. For others a list of categories or brackets to choose from was developed. Additionally, the Yes/No answers were mostly developed into Yes/Yes (to some extent)/No or even Yes (minimal)

creating revision one (Appendix B4iii). This was done as it was felt that Yes/No were not sufficient to describe the situation. This version was then discussed with a statistician.

Following this, additional research on Likert scales (McLeod, 2019; Joshi, Kale, Chandel, & Pal, 2015) was carried out, which was used to provide a standardised approach to the responses. This resulted in revision two (Appendix B4iv). After testing this again, a further refinement was carried out, so as to be more consistent with the type of Likert scale used, where possible. This resulted in the final version (Appendix B4v).

While some of the survey questions can be answered quite objectively, other questions lean towards subjectivity. While this may be considered inappropriate, subjectivity, or the existence of different opinions is actually a natural part of planning theory. Hoch (2011) reports that authors such as Hiller and Healy (2010), who would actually prefer the existence of a “coherent set of shared planning ideas” actually “end up celebrating the current diversity” (2011, p. x). Landry (2000) also believes that such diversity and differences in opinion, and going back to first principles as opposed to working with established beliefs, is what leads to innovation and creativity.

Having said this, efforts were still made to retain an element of consistency and transparency in answering such questions, albeit potentially subjectively. Therefore, for such questions (particularly those dealing with aesthetics) photos are provided (Table 8 p. 153), to identify what was meant by the various Likert scale levels when rating the spaces. With regard to other questions, a selection of photographs is used as part of the reporting of results in Chapter 5.

Validating the survey was carried out by having four respondents answer the survey for the same space. These respondents were students studying for a Masters in Architecture and Urban Design at the University of Malta. Through their lectures, they were considered knowledgeable on the subject. Using professionals or other academics was not really an option as persons specialised in this area are quite limited in Malta. The Kendall Rank correlation coefficient (Magiya, 2019) test was used to test the subjectivity of each category. That is whether the respondent’s answers varied and to what extent. If subjectivity was identified in a category, then the standard deviation test was to be used as needed to identify the individual questions contributing to that subjectivity. This however was not required.

Some of the categories could not be tested individually as the sample size, that is the number of questions, was too small to provide significant results. For the categories that could be tested individually, the testing revealed that where correlations were statistically established, these were always positive. That means the respondents tended to agree with each other. In many of the cases this was also with 99% certainty as opposed to the standard 95%. The test was also carried out for the whole survey, which entailed taking all the questions together as a sample. Here, a positive correlation was found with 99% certainty for all individuals. The detailed results of the testing can be found in Appendix C1.

### **Analysing the Data**

The data was analysed statistically and thematically. The spaces were analysed according to the design categories and principles identified. Appendix C2 gives an overview of the method of analysis for each question. With regard to the statistical analysis, the data was converted into numeric answers in an excel

sheet (Appendix C3) and then imported into SPSS<sup>17</sup>. The main statistics were gathered for each design theme and the relationship between these findings and the typology of open space was tested. Since most of the variables in the survey are categorical, the Chi Square test was used to test whether associations exist between categorical variables (Moore, Notz, & Flinger, 2013). Two hypotheses are defined.

- $H_0$  hypotheses = There is no association between the 2 variables.
- $H_1$  hypotheses = There is an association between the 2 variables.

When the association between two variables is tested, a P value is given. If this is  $< 0.05$  then  $H_1$  is accepted. If the P value is  $> 0.05$  then  $H_0$  is accepted. This meant that with no association the situation/characteristic is happening or not happening irrespective of the typology of space. If there is an association ( $p < 0.05$ ), the trend is related to a particular typology. A cluster analysis was then used to further identify the relationship. A statistical description of the results together with the graphs produced is given in Appendix C5. A summary of the key observations is presented in Chapter 5. Where possible the descriptive data was categorised to allow for statistical analysis. The same process was then followed.

For the thematic analysis, for every question, the text answers were imported into a word document, and coded manually (See Appendix C4). Questions, concerning policy, were analysed by reviewing relevant policy documents. Finally, questions on the accessibility of inhabitants to different types/sizes of open spaces required a desktop calculation. This was done at the level of each study area. For these analyses, the themes which emerged are presented directly as part of the results in Chapter 5.

## Limitations

One of the limitations was that some of the questions are subjective. While this is still considered acceptable, attempts were made to be as transparent as possible through the use of photographs explaining how various judgements were made. Additionally, in an attempt to be as consistent as possible, all surveys were carried out by the researcher. Moreover, the validation of the survey helped to test the extent of this subjectivity which in fact, according to the results, did not seem to transpire. As the surveys started to be carried out it was also recognised that some of the questions were repetitive; however, they provided similar data from a different angle. Additionally, some questions were not answered as eventually, the researcher realised that to answer them a more in-depth analysis would be required and this was not possible. These questions are identified in Appendix C2 together with the reason for elimination. Another limitation was that it was not possible to answer some of the questions just by visiting the site. An attempt was made to answer these questions through a telephone interview with the local councils concerned so as to retrieve the information. However, the first such interview provided so much interesting information about the locality's open spaces in general, that it was decided to set up formal interviews with a number of local councils to explore some of the topics in further depth.

### 3.4.2 Interviews with Local Councils

As discussed above, it was not possible to gather all the required data through a visual inspection of the space. Interviews with Local Councils were therefore carried out to fill in some of these gaps. The following categories are addressed through this method:

- contextual relationships (social and cultural);

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<sup>17</sup> A software platform which allows for statistical analysis.

- water management and use;
- maintenance and management; and
- community involvement.

The opportunity was then also taken to gain insight regarding some additional aspects, these being: the Local Council’s experience with the planning process and use of policy; and issues encountered when embarking on projects for public open spaces.

### Selecting the Localities and Participants: Purposive Sampling

The localities and participants were selected through purposive sampling. This is when samples are chosen in a deliberate manner for a specific reason. This is usually the case in qualitative research. Through this technique, the specific instances are chosen such that they have the potential to reveal the most relevant data (Yin R. K., 2016).

Since maintenance was one of the aspects to be further investigated, it was decided to analyse the data from the physical surveys to see whether this could inform which localities would be selected. The relationship between maintenance level and localities from the data collected in the surveys was tested using the Chi Square test, however  $p=0.065$  ( $> 0.05$ ). Therefore, no relationship was established (See Appendix B5). Nonetheless, the cluster diagram did reveal some patterns/extremities. These are summarised in Table 6 below where: A = Leans towards badly maintained; B = Leans towards well maintained; and C = No pattern. It was decided to choose a selection of localities which represented both badly and well-maintained spaces.

The localities chosen were Tarxien and Msida as representatives of the ‘Badly Maintained’ camp and Paola, B’kara and Gżira as representatives of the ‘Well Maintained’ camp. Pietà was also classified as having no pattern as the positive trend of scoring was not as reliable due to the small sample of spaces surveyed. It was then decided to interview the local council’s executive secretary as they would have hands on experience in dealing with the day-to-day management of the locality. The Mayor on the other hand would tend to be more politically oriented and provide direction rather than participate in routine operations. In one locality however, when an interview was requested, the researcher was directed to the Mayor, who indicated his/her preference to be the interviewee. In another case, the local council had an employee specifically responsible for Information Systems, Environment and Microclimate Policy. The interview was therefore held with this person.

Table 6: Summarised results for maintenance levels according to locality

Locality	Number of Spaces Surveyed	Maintenance Scoring	Classification
<b>Tarxien</b>	7	Mostly ‘Not at all’	A
<b>Fgura</b>	2	No pattern	C
<b>Paola</b>	8	Mostly ‘Very Much’	B
<b>B’Kara</b>	8	Mostly ‘Very Much’ & ‘Somewhat’	B
<b>Msida</b>	6	Mostly ‘Not at all’ & ‘Somewhat’	A
<b>Pietà</b>	3	Mostly ‘Very Much’ & ‘Somewhat’	B/C
<b>Ta’ Xbiex</b>	2	No pattern	C
<b>Gżira</b>	4	Mostly ‘Somewhat’	B

## Developing the Interviews

The questions used for the interviews were mostly open ended. Only in two of the questions were participants asked to select from predetermined responses. Additionally, as the conversation developed, the researcher sometimes switched from one question to the next as was appropriate without necessarily sticking to the predetermined order. The questions therefore simply served to guide the researcher and ensure that all topics were covered. These qualities are typical of semi-structured interviews. This approach was specifically chosen as it is suitable when the researcher only has one opportunity to interview someone. It allows the researcher to respond to the situation (Savin-Baden & Howell Major, 2013).

The researcher also began the interview with an 'entering' discourse or 'header' which explained the purpose of the research in informal terms to set a conversational tone as is done for qualitative interviews (Yin R. K., 2016; Savin-Baden & Howell Major, 2013). The questions were developed in relation to the categories which were to be investigated. The interview protocol (Savin-Baden & Howell Major, 2013) is provided in Appendix B6. The interview was not piloted in a formal manner because an informal interview had already been carried out per telephone with one locality, and this gave a good indication of how this would work and the type of questions which were required.

## Gathering and Analysing the Data

The interviews were recorded and then transcribed. These were analysed thematically using NVIVO. A set of coding categories were established which were not predetermined but emerged from the data itself. Coding is helpful in analysing qualitative data as it makes it "easier to search data, make comparisons and identify patterns worthy of further investigation". (Savin-Baden & Howell Major, 2013, p. 422) The initial transcript text was organised according to the following categories: Funding; Maintenance and Management; Water Management and Use; Community Use; Lack of Open Space; Community Involvement: Design Process; Community Involvement: Voluntary Schemes; Funding; Governance and Resources; Developing Projects and Public Consultation; Planning and Other Processes; Use of Materials; and Use of Vegetation. For this level the data was 'cut' holistically to retain the context (Savin-Baden & Howell Major, 2013). The compiled texts, according to each category were then reanalysed manually, using highlighting of smaller phrases. Through this process themes emerged, that is to say a "unifying or dominant idea in the data". (Savin-Baden & Howell Major, 2013, p. 427) These were then summarised and reported on in Chapter 5. The analysis process therefore moved from description to categorisation and preliminary analysis towards interpretation (Savin-Baden & Howell Major, 2013) or even as per Yin's (2016) approach: compiling; disassembling; reassembling; interpreting and concluding.

## Strengths and Limitations

The strength of this method is that it allowed the researcher to adapt to the situation and decide how best to use the time available. Additionally, the questions were open ended enough to allow the respondent to express their opinion while still allowing the data to be compared across respondents (Savin-Baden & Howell Major, 2013). The main limitation is that respondents might sometimes provide information they think the researcher wants to hear or may not be willing to give the full picture of the situation and therefore not provide a fully accurate account (Yin R. , 2009). This could have been the case particularly when interviewing the Mayor who naturally would be cautious due to being in an elected position.

### 3.4.3 User Survey

The user survey was carried out to understand the user perspective with regard to how urban open spaces are responding to user preferences and needs. From the theory, the categories concerned are: accessibility and use; character and identity; and functionality.

#### Developing the Survey and Data Collection

The questions were developed in relation to the design categories concerned. A few questions concerned demographics. Initially the intention was to carry out the survey in person by visiting open spaces. Therefore, some initial questions in the 2<sup>nd</sup> version were intended to ask about the space itself, to start a conversation with the respondent. The researcher wished to use this method as this would allow for more interaction with the users. However, due to eventual time limitations and personal physical restrictions, the survey was distributed online. The 3<sup>rd</sup> version therefore eliminated such questions. The survey was conducted using Survey Monkey and was distributed via social media platforms and email networks.

The second version was circulated to some random colleagues and acquaintances via personal email contacts, asking them to fill out the survey as a pilot. The aim was to test the clarity of the questions and obtain any other feedback. The feedback was primarily positive. The only additional change represented in the 3<sup>rd</sup> version is that the category 'retired' was added to the demographic questions. The survey versions can be found in Appendix B7. The questions were designed to be primarily closed questions and sometimes partially open questions to allow for statistical analysis. However, where necessary it allowed for descriptive answers so as not to constrain the respondent unnecessarily (Neuman, 2014). These though could still be categorised and analysed statistically.

#### Data Analysis

In total 127 responses were collected and analysed statistically. The raw data and compiled/analysed data as extracted from Survey Monkey itself can be found in Appendix C13i and C13ii respectively. The closed questions were automatically represented in graphs by the software. The open-ended questions which include descriptions were categorised by the researcher and graphs were produced and added to Appendix C13i. Statistical analysis using the Chi Square test and Cramer's V test were also carried out to understand whether relationships exist between responses and demographic characteristics. With regard to the statistical analysis, the data was imported into SPSS<sup>18</sup>. The main statistics were gathered for the key responses and the relationship between these findings and the age and occupation of the participants was tested. Since most of the variables in the survey are categorical, the Chi Square test was used to test whether associations exist between categorical variables (Moore, Notz, & Flinger, 2013). In relation to this, two hypotheses are defined.

- $H_0$  hypotheses = There is no association between the 2 variables.
- $H_1$  hypotheses = There is an association between the 2 variables.

When the association between two variables is tested, a P value is given. If the P value is  $< 0.05$  then  $H_1$  is accepted. If the P value is  $> 0.05$  then  $H_0$  is accepted. The Cramer's V test was also calculated to test the strength of the association. The main findings are reported on in Chapter 5.

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<sup>18</sup> A software platform which allows for statistical analysis.



## Limitations

The ideal situation would be for the sample size to be a representative one. The target sample size was calculated using an online tool (Creative Research Systems, n.d.). Based on a population size of 493,559 (NSO, 2019) and assuming a confidence level of 95% and confidence interval of five, a sample size of 384 would be required assuming that this would be normally distributed. The survey was therefore left open for as long as was feasible, approximately two months, with constant sharing of the link every few days. With a sample size of 127 and confidence level of 95% the confidence interval which was eventually achieved was 8.69. This suggests a limitation, in terms of representativeness of the sample due to size.

A second limitation is that since the survey was circulated online, issues of sampling and unequal access to and use of the internet arise (Neuman, 2014). The demographics are therefore potentially related to the researcher's network. However, efforts were made to spread the link using a variety of social media groups in the community and not just the researcher's email network. In this sense, the sampling can probably be considered convenience sampling, which could be considered legitimate for exploratory studies (Neuman, 2014). While the localities where the respondents live are quite varied, there is a predominance of respondents from the 35-44 age bracket and employed persons.

Keeping these limitations in mind, it is felt that the data still provides useful insights into people's thoughts and concerns when it comes to urban open spaces in Malta, which was the main purpose.

### 3.4.4 Case Study Projects

To understand the planning process and policies used when designing and reviewing projects for open spaces in urban areas, three case study projects were studied in depth. The cases consisted of: a civic square in Paola, a waterfront regeneration of an industrial dock in Cospicua; and a public garden in Pembroke.

#### Developing the Method: Using a Case Study Protocol

A case study protocol (Appendix B8) was used to guide the development of this method. This served as a standardised format for the line of inquiry when reviewing the case study projects. It is a way of increasing the reliability of case study research and is considered essential when carrying out multiple case-studies (Yin R. , 2009). The protocol set out in detail: how the cases were selected; the data which needed to be collected; which data collection techniques were used and why; how the techniques were developed; and finally, the data analysis as informed by the literature (Yin R. , 2009; May, 2011).

The development of the data collection techniques went through a systematic process of identifying which data was to be collected and which sources could be best targeted. For the development of the interview questions, the categories of which data was to be collected was identified, and a level two set of questions developed, identifying the likely sources. The level one questions for each type of interviewee (Appendix B9) were then developed together with the framework (Appendix C8) guiding the review of the case files (Yin R. , 2009). Additionally, as each case was studied, the interview questions were reviewed depending on the case so as to respond to the findings of the case file.

When developing the interview questions a number of aspects were kept in mind as identified through the theory. They are expanded upon in Appendix B9. In brief, these included:

- the use of initial descriptive questions so as to build a relationship;
- the use of semi-structured interviews in the form of guided conversations rather than structured queries;
- wording which would appear genuinely naïve about the subject so as to give the interviewee the freedom to comment freely;
- questions based on the case study protocol, however the interviewer was allowed to delve further into the answers in a way which might seem detrimental to standardisation and comparability; and
- the option for people to have more flexibility when answering versus a standardised interview, but still provide a more structured approach allowing for more comparability when compared to focused or unstructured interviews (Yin R. , 2009; May, 2011).

It was also felt that piloting the interview was important. The opportunity did not exist to do this with a client or Planning Officer. However, a colleague architect who had worked on an urban open space outside of the urban conurbation did agree to participate. This was actually the most important interview to pilot as it was the lengthiest. It was therefore especially useful, to test the time taken and to see whether and how the detailed questions should be used. It also served to get feedback on whether the questions were clear. In general, positive feedback was received, and no major adjustments were needed. Following the pilot, it was decided to leave the detailed design questions towards the end of the interview and use them as a checklist to raise questions about any aspects which had not been raised by the interviewee themselves.

### Selecting the Case Studies and Participants

As outlined in Appendix B8 an initial list of projects was developed and shortlisted using purposive sampling. The cases are considered paradigmatic, that is, they were selected because they have prototypical value (Brink, Bruns, Tobi, & Bell, 2017). The criteria considered projects implemented in the last 10-15 years (to have a good number to choose from) and which are representative of typical spaces.

The first selection was then reduced to the final three using convenience sampling. This was necessary to make sure that planning permits were available for the projects to be analysed, and that the persons concerned were willing to participate in the research. Attempts were made to reach contacts for the following projects: Pembroke Gardens (playground); Swieqi Public Garden and Civic Centre (garden/playground); Antoine de Paule Square (Paola); George Bonello du Puis Garden (Qui Si Sana Playground); and Dock 1 Regeneration. The Local Council mayors, client or architect were emailed. People from Swieqi garden and Qui Si Sana did not respond, so the other three were chosen. They were also sufficient to represent the typologies being studied as follows:

- Pembroke (Garden and Play Area);
- Dock 1 Regeneration (Street, Civic Square, Promenade, Water Body); and
- Paola (Civic Square).

### Data Collection

The intention was to use multiple sources of evidence. The final data collection consisted of a review of the planning case files and semi-structured interviews with the architect, client and planning officers.

The case file review was carried out by first reviewing the online files and submissions and understanding the process chronologically and overall content. Notes were taken as to any missing minutes/referenced documents. Visits to the Planning Authority were then carried out to review the hard copies. This was essential as in some cases the online files were not exhaustive. Still, not all the documentation is publicly available. All the information gathered was compiled in a case file overview following a framework as per Appendix C8.

Notes were taken regarding important references which were made to documentation which was not available. These were then followed up on during the interviews. The permit drawings, DPAR and development permission are publicly available documents, however permission was also requested from the Planning Authority to use and include the information as part of the published research. The interviews were carried out during face-to-face meetings. They were audio recorded and transcribed verbatim.

A database for each case was compiled containing the following:

- A case file review (compilation of notes from the original case file)
- The Case Officer Report/Development Planning Application Report (DPAR)
- Development Permission
- A set of project photos
- The transcripts from the semi-structured interviews

### **Data Analysis, Reliability and Validity**

Finally, it is important to maintain a clear chain of evidence between the research objectives set to be achieved through such a method, the data intended to be collected and the final data collected and analysed. This was therefore also set out in the protocol (Appendix B8).

Having reviewed some of the main strategies used in analysing case study data, two relevant approaches were selected. They were chosen due to the exploratory and descriptive nature of the research. The two strategies adopted are: relying on theoretical propositions; and developing a case description (Yin R. , 2009). The first strategy relies on following the theoretical propositions that led to the study. These would have shaped the data collection plan. In this case, the theory was not as such in the form of propositions; however, it did lead to a theoretical underpinning (section 3.3.5 p94) which guided data collection. Hence, this was referred to when analysing the data.

Additionally, a second analytical strategy is to develop a descriptive framework for organising the case study data. Since the nature of the research is also descriptive, this was considered appropriate. The data was therefore compiled in a descriptive manner according to the data collection plan set out in the protocol and guided by the design categories. Within these general strategies, the analytical technique which is used is that of explanation building (Yin R. , 2009). The approach was iterative in nature. Initial propositions were made based on the emerging data, for example about a policy or trend which seemed to emerge. These suggestions were then compared to the findings of the various cases and the statement/explanation was revised as required. Consequently, the approach comprised the gradual building of the findings through the process of refining and revisiting a set of ideas as the data collected was analysed and compared.

One way of reporting case studies particularly when using the descriptive approach is to compile the data of each case using a question and answer format. In this way “the content of the database is shortened and edited for readability, with the final product still assuming the format analogously, of a comprehensive examination.” (Yin R. , 2009, p. 171) This can also be very advantageous when reporting multiple case studies as it provided an easy way to create cross comparisons between the different cases.

So, in a more practical sense, a number of questions were developed as outlined in Appendix B8 and the data gathered from the interviews and documentation per case study was summarised in relation to these. This was done using coding with NVivo<sup>19</sup>. The questions were the basis for each coding theme. As the process developed, the coding was organised as follows:

- project objectives;
- design principles at concept stage;
- policies consulted during the design process;
- policies consulted during the planning review;
- stakeholders’ input during the design process;
- stakeholders’ input during the planning review;
- reference to design principles during design process;
- reference to design principles during planning process;
- governance issues; and
- planning process issues.

The final questions developed were then compared for each case study and the findings summarised (Appendix C12). The final data set as reported in Chapter 5 covers:

- the design themes during the design process;
- stakeholder participation during the design process;
- observations regarding the planning process;
- stakeholder involvement during the planning process;
- the design themes during the planning process;
- governance and funding; and
- maintenance and management.

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<sup>19</sup> NVivo is a qualitative data analysis computer software package which helps to organize, analyse and find insights in unstructured or qualitative data.

Table 7 below gives a concise overview of how reliability and validity of the data is ensured.

Table 7: Reliability and validity of the method based on Yin (2016), Neuman (2014) and Savin-Baden and Howell Major (2013)

Traditional Approaches	Qualitative Approaches	Ways in which Criteria is Achieved
Internal Validity	Credibility	<ul style="list-style-type: none"> <li>• Triangulation of data was used – as three interviews were carried out getting perspectives from different persons involved with the process, as well as a thorough review of the planning case files.</li> <li>• Participants were sent a copy of the interview transcript for confirmation.</li> <li>• The data analysis went through 3 levels of analysis. First, compiling/transcribing the data from each source to create a database for each case. Second, analyzing and organizing the data according to a set of questions for each case. Third, comparing the questions for each case to identify patterns and develop the final data set.</li> </ul>
External Validity	Transferability	<ul style="list-style-type: none"> <li>• Purposive sampling was used to ensure representativeness of the cases.</li> <li>• A detailed description of the results relating to the context and specific case is also provided in Appendix C12.</li> </ul>
Reliability	Dependability /Consistency /Repeatable	<ul style="list-style-type: none"> <li>• A case study protocol was developed to guide the process and adopt a systematic and consistent approach.</li> <li>• Semi-structured interviews were used to guide the discussion.</li> <li>• A framework to guide the review of the case files was used.</li> </ul>
Objectivity	Confirmability	<ul style="list-style-type: none"> <li>• Data was managed and collected meticulously. Notes were taken from the case files keeping in mind a predetermined framework as a guide. These were immediately translated into a case review report.</li> <li>• The interviews were transcribed verbatim.</li> <li>• Data was organized according to questions for each case adopting a systematic approach of analysis. Each question was then compared.</li> </ul>

### Strengths and Limitations

The strengths and limitations of using semi-structured interviews are explained in section 3.4.2 p99. Regarding the document review, unfortunately some of the communications which took place during the planning review process, are not available to the public and permission was not granted to view the full record. This is one of the main issues with document research. As May (2011) writes “...what people decide to record, to leave in or take out, is itself informed by decisions which relate to the social, political and economic environment of which they are part”. (p. 215) It therefore, must be acknowledged that the

document review could only provide a partial understanding. However, it did provide an initial basis which was then built upon through the interviews.

Overall, the method provides an important contribution as it adds depth to the investigation, as it was possible to document the process from multiple perspectives and present diverse viewpoints. It allowed a thorough investigation of three cases and provided rich and thick description. Considering that it is also not possible to study society as a whole, case studies provide a perspective from which broader conclusions can then be developed. The limitation however, is that the data relates to specific cases (Savin-Baden & Howell Major, 2013; May, 2011). To overcome this, three cases were selected to have as much data as possible within the resource constraints. Unfortunately, none of the projects were led primarily by a Local Council itself. The case which could have potential represented this model, could not be selected as the architect did not respond to initial requests to participate in the research. Additionally, the projects which substantially transform a space and are led by Local Councils are limited.

### **3.4.5 Policy Review**

In order to really understand whether there is a gap in relation to policy for urban open spaces a review of existing and current national strategies and policies was carried out. The review took a qualitative approach (May, 2011) similar to a literature review. The main categories of documents analysed are: national legislation; national strategies, plans and policies; and spatial planning plans and policy. Each document was reviewed keeping in mind the theoretical underpinning, to understand whether the various design principles were represented in national strategies and policies. The presence or lack of strategies or objectives which aimed to achieve social, environmental and economic benefits which could potentially be achieved through the planning and design of urban open spaces, as discussed in Chapter 2, was also noted.

As a process, two main steps were carried out. The relevant content of each document was summarised as presented in Chapter 4. The main points from each document were then systematically organised according to the design categories and potential benefits of urban open spaces as per Appendix A3. The overall findings were then summarised in the conclusion of Chapter 4, according to each design category and the social, environmental and economic value which urban open spaces have the potential to provide. Additionally, the policy review was carried out prior to the case studies and interviews with local councils. Therefore, as the documents triggered questions, these were noted and used to inform the interviews carried out and eventually the development of the focus groups at a later stage. Appendix C14 provides more detail on some of the content extracted from the policy review and how this informed the line of questioning developed.

### **3.4.6 Comparative Literature Review**

This method was used to guide the development of proposals. Once the first phase of results had been analysed, the main findings were summarised in Chapter 5. The design principles which should be targeted in the Maltese context in order to improve the potential environmental, social and economic benefits which urban open spaces in Malta can provide were identified. It was also concluded that urban open spaces in Malta are lacking in their potential contribution to sustainable development.

Literature (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017) has shown that urban open spaces have the potential to tackle urban challenges and contribute to sustainable development if they function as urban green infrastructure (UGI). To achieve this, the Green Surge project has proposed the UGI planning approach which focuses on four main principles. Many of the aspects which were identified as requiring attention in the Maltese context relate to these four main principles. Organising the results according to this framework clearly illustrated that urban open spaces in Malta are not acting as green infrastructure (GI) elements. The need to explore and develop proposals for urban open spaces to act as GI was therefore identified.

The principles of GI, however, need to be understood as part of a holistic approach adapted to suit the local context, meaning the planning system, social, economic and environmental conditions, as well as the available actors. The success of the UGI planning approach is dependent on the planning process together with the engagement of stakeholders and implementation (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). A more detailed literature review was therefore carried out in relation to international best practice on the planning and governance of urban open spaces with a particular focus on urban green infrastructure and the specific themes which through the data, emerged as needing attention in Malta. This comparative literature review is presented in Chapter 6.

This literature provided a framework for consolidating the results and developing proposals (Appendix D1 and D2). The key findings were summarised systematically and proposals developed. Each proposal/action was then categorised. The proposals were then grouped to provide a consolidated list of proposals relating to: Spatial Implications; Planning and Governance (section 7.3, p287). They were further developed using best practice case studies from Chapter 6 as reference examples. The proposals were then subjected to focus group discussions, which also included an interactive online survey.

### **3.4.7 Focus Groups**

#### **Developing the Method and Participant Selection**

Focus groups were used in the second phase of the research. The primary aim was to obtain feedback from authorities in relation to the proposals and understand the barriers and implications to their implementation. As a result, this also made it possible to refine and elaborate on the proposals. Focus groups allow for a semi-structured interview with groups. They are usually suitable for collecting data on a particular subject. The term focus group discussion is also used, and this is also seen as an ideal method for getting stakeholders of similar characteristics (e.g. backgrounds or experiences) together so as to discuss something specific (ODI, n.d.; Yin R. K., 2016; Cohen D, 2006; May, 2011).

In this case, the participants were carefully selected to represent two main groups of stakeholders. The first is the authorities who play an important role (planning, design, implementation, management and regulation) in relation to the topic. The following entities/authorities were represented: Planning Authority, Environment and Resources Authority, Transport Malta, Works and Infrastructure Division, Ministry for Transport, Infrastructure and Capital Projects, Ministry for the Environment, Sustainable Development and Climate Change, Energy and Water Agency, and Ambient Malta.

The second group was a mix of stakeholders made up of NGO's, professionals and academics from different backgrounds. Various non-governmental organisations, professional and academic interests

were represented as follows: Faculty for the Built Environment; Institute of Earth Systems; MCAST; Faculty for Social Wellbeing; Din L-Art Helwa; Malta Foundation for the Wellbeing of Society; Architecture; Economics; Bicycle Advocacy Group; Geography; Friends of the Earth Malta; Flimkien ghal Ambjent Ahjar; and Transport Planning/Road Engineering.

Three sessions were held with the authorities covering: spatial implications; planning proposals; and governance proposals. Two sessions were held with the 'mixed' stakeholder group since it was clear that participants were not willing to participate in three sessions due to time constraints. Therefore, the spatial implications and planning proposals were combined in one session, with the second tackling governance. The list of authorities and interests which were represented during the different sessions are listed as part of the reporting of results in Appendices E1-E17.

A focus group is seen as a suitable method here as this can be used to: "explore a topic which is difficult to observe (not easy to gain access);...does not lend itself to observational techniques (e.g. attitudes and decision-making);...collect a concentrated set of observations in a short time span;...ascertain perspectives and experiences from people on a topic;...clarify research findings from another method." (Cohen D, 2006) All these aspects are of relevance here. Additionally, this method was preferred over interviews, as focus group participants would likely react to and make comparisons between their own experiences potentially leading to more in-depth and interesting insights.

The aim was therefore also to provide a platform for discussion between participants. The strength here is that the method leaves room for agreement or disagreement between the participants. This provides a snapshot about how that particular set of stakeholders views the subject being discussed, the range of perspectives or opinions, and to what extent, based on their experiences these are consistent or vary. This can potentially provide much value in understanding whether there is consensus or diversity of experiences (Cohen D, 2006; ODI, n.d.). Finally, in "...bridging research and policy, FGD<sup>20</sup> can be useful in providing an insight into different opinions among different parties involved in the change process, thus enabling the process to be managed more smoothly." (ODI, n.d.)

## Data Collection

The first session with the authorities, on spatial implications, was a physical meeting where the researcher moderated the discussion and a colleague was also present to take notes of the discussions. The session was purposely not recorded so as to provide more comfort for the participants to speak openly. To improve the accuracy of the notes, these were reviewed and analysed within 24 hours of the session while the discussion was still fresh in the researcher's mind. The structure and presentation used for this session is found in Appendix D3i. Following the presentation of results and proposals, a number of questions were developed to guide the discussion. However, participants were left free to discuss openly. The researcher simply moderated the discussion and posed questions when the discussion fell flat. The questions also served as a guide to ensure that the required aspects were discussed.

Initially, all the sessions were intended to be held as traditional physical focus groups. Eventually however the second and third sessions with the authorities and both of the sessions with the 'mixed' stakeholder group were carried out virtually adding the use of an online interactive survey to maximise participant

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<sup>20</sup> Focus Group Discussions



input. In the case of the discussion on spatial implications held virtually with the ‘mixed’ stakeholder groups, a short survey was developed to compliment the virtual discussion (Appendix D4).

The structure and presentations used for the sessions relating to the planning and governance proposals, is outlined in Appendix D5-D8. In brief, the researcher held a virtual meeting where a number of results and proposals were presented using international case studies to explain the ideas. Following each set of proposals, a series of questions were posed to the participants. The participants were asked to answer these anonymously using an online survey created using Google Forms. This change and development of the method took place for the following reasons.

- These focus groups were carried out during a period when ‘social distancing’ was in force due to a global pandemic, meaning that the session had to be redeveloped in the form of a virtual meeting.
- Due to restrictive working schedules, experienced by some of the participants, resulting from ‘social distancing’ regulations in force, it was not possible to coordinate a session where all the participants would be present at once.
- In parallel, the researcher felt that while the first focus group allowed for a relatively unstructured discussion, which purposely triggered interesting and explorative data, the follow up sessions should try to gather and target more specific response to the proposals to get a better understanding of the potential barriers to implementation as well as the reactions of the participants in general.
- The idea of an interactive survey was developed where the participants would answer a set of questions as the presentation of proposals progressed. It was felt that this would better serve the purpose of gathering the specific data required.
- Moreover, it would ensure that all participants would respond and contribute. With an unstructured discussion, even though the researcher acted as a moderator, the more dominant participants tended to contribute more than others.
- Additionally, through the interactive survey, participants could respond anonymously potentially allowing for more genuine responses.
- This format also allowed a number of sessions to be held ensuring a higher number of participants as it was not dependent on all participants being present together and discussing between them.
- Having the survey would also provide the possibility to include questions exploring the prioritisation of proposals.

In developing the survey used during the ‘focus group’ sessions, the idea of descriptive social surveys was kept in mind. These are used when “information is required that can only be found by asking what other people have seen or experienced.” (Deming & Swaffield, 2011, p. 72) This would involve the development of a survey, with a standard set of questions, usually based on categories. Here, the selection of participants is crucial and it is important for the questions to “be clear, direct, and unambiguous”. (Deming & Swaffield, 2011, p. 74) Since the aim is therefore to tap into the participants’ experiences, it was important to have representatives from the different authorities which play a role in the planning and design of urban open spaces. It was also important to have representatives from civil society, which is why a wide range of NGOs and academics from various backgrounds were invited to participate.

## Data Analysis

The focus group data was analysed qualitatively. Firstly, a database was compiled for each thematic session which included: notes of the discussions of each session held where relevant; and the compiled survey data for each participant group (authorities and 'mixed' stakeholders) in chart and text format. The textual data was then coded using NVivo. The emerging themes were then reported on in a compiled document for each theme: Spatial Implications; Planning Proposals; and Governance Proposals (Appendices E5, E10 and E17 respectively). The key emerging themes are presented in Chapter 7. The results of the spatial implications are reported on first as this also informed the development of the initial and planning and governance proposals. The reactions to the planning and governance proposals were then consolidated and the results report on four main aspects: the level of agreement/disagreement of each proposal; the potential barriers and threats to implementation; addressing multifunctionality and identifying remit; and finally, understanding implications for implementation (section 7.4, p300).

### 3.5 Integrating and Consolidating the Data

#### 3.5.1 Creating a Strong Evidence Base and Developing Proposals

The data from the different methods used in phase one was compared and consolidated to provide an integrated data set responding to the initial objectives set (Creswell & Plano Clark, 2011). The findings relate to four main categories. The first two concern the design principles identified in Chapter 2 and how these feature in: the design of urban open spaces in Malta; and how/if they are addressed when reviewing projects during the planning process. The principles or themes specific to the Maltese context and which policy makers should be focusing on, were therefore identified.

Moreover, the case study and local council interviews also maintained an open approach, such that any additional issues not directly related to the design principles, but also the process, may be identified. As a result, two other categories emerged relating to: gaps in the planning process and governance issues. In this way, the results of phase one provide a strong evidence base informing the development of initial proposals.

As part of the analysis process, Appendix C15 was also developed which contains the key points/notes which were extracted from the data and how they were integrated and consolidated into the four categories. The points are sorted according to the themes but still not summarised, thus showing the original conclusion notes from the data and its source. These were then interpreted and summarised to form the concluding sections of Chapter 5.

The research process for the first phase thus went through two stages of analysis overall. The first being that of: exploring the data; analysing the data; representing the data and interpreting the data for each data set. The second being a combination of: data comparison; data consolidation; and data integration (Creswell & Plano Clark, 2011). Overall, it can also be said that the process used also reflects Yin's (2016) approach to analysing qualitative data. In this sense, step one involved compiling the database for each method. Disassembling represents the data analysis process for each method. Reassembling is the interpreting of the data from each method to draw out the key patterns for each individual data set. Interpreting is the comparison of the individual data sets. And finally, concluding is the consolidation and

integration of the data sets to extract the findings presented for each of the four themes presented in the concluding section of Chapter 5.

This is important as the larger study concerns Malta's conurbation as a case study. However, it is important to report clearly and separately the findings about the data from each individual method when using mixed method research. The overall findings are then based on the pattern of evidence from the data of all the methods used in a complementarity manner to answer the research objectives and main question (Yin R. , 2009). Using the data set from phase one and the comparative literature review of international best practice, an initial set of proposals were developed i.r.t. three main categories: the spatial implications; the planning proposals; and the governance proposals (Section 7.3, p. 287). Using the feedback from the focus groups, the proposals were reviewed and a refined framework was developed as presented in section 7.5 p320.

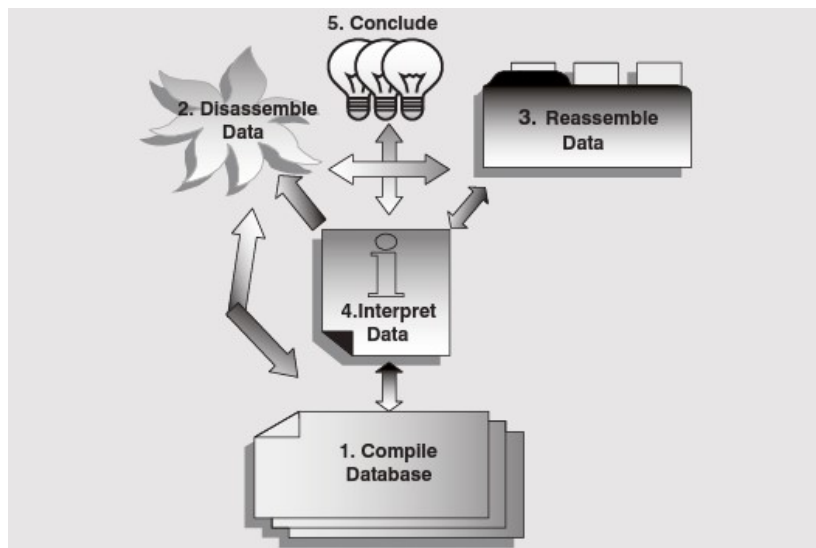


Figure 27: Five phases of analysis and their interactions when analysing qualitative data (Yin R. K., 2016)

### 3.5.2 Answering the Research Question and Final Reflections

Figure 28 below illustrates how the various data sets were integrated and consolidated to produce the final outputs relating to the research objectives. Ultimately however, the final outputs served to answer the research question set and develop the final reflections and conclusions as presented in Chapter 8. Therefore, the key themes emerging in relation to each of the four objectives, served to answer the research question. This is answered in section 8.2 p334, through conclusions relating to the following aspects.

- Urban Open Spaces in Malta and their contribution to Sustainable Development.
- Gaps in the Planning of Urban Open Spaces.
- Challenges relating to the Governance of Urban Open Spaces.
- The Role of Spatial Planning: Towards Green Infrastructure Planning.
- Acknowledging Potential Barriers and their Implications.
- Emerging Considerations and Parallel Mechanisms.

Finally, section 8.3 p343, presents some final reflections and recommendations, while section 8.5 p347, acknowledges that the research also raises additional questions and uncertainties which should be addressed through further research.

	Objectives	Method	Guiding Framework	Final Data Set i.r.t Method	Final Data i.r.t. Objective
Phase 1	Identify design principles/themes relevant and specific to the design of urban open spaces in Malta and their potential to contribute to sustainable development	Physical Survey	Design Categories & Principles (Chapter 2 -Literature)	Spatial & Structuring Qualities; Contextual relationships; Character & Form; Activities & Functionality; Accessibility; Climatic Response; Water Management & Use; Use of Vegetation; Lighting; Resource Management; Maintenance & Management; Community Involvement (Section 5.2)	The Design of Urban Open Spaces (Section 5.6.1)
		Local Council Interviews		Social Context & Use; Water Management & Use; Maintenance & Management; Community Involvement; (Section 5.3)	
		User Survey		Availability & Use; Character and Identity; Functionality (Section 5.5)	
Phase 1	Understand existing urban open space policies and planning process and identify gaps	Policy Review	Design Categories & Principles (Chapter 2 -Literature)	Spatial & Structuring Qualities; Contextual relationships; Character & Form; Activities & Functionality; Accessibility; Climatic Response; Water Management & Use; Use of Vegetation; Lighting; Resource Management; Maintenance & Management; Community Involvement (Section 4.6)	Gaps in Planning Policy & Project review; Gaps in Planning Process; Governance Issues (Section 5.6.2, 5.6.3, 5.6.4)
		Local Council Interviews		Experience with the Planning Process; Difficulties when embarking on Projects for Public Open Spaces (Section 5.3)	
		Case Study Review	Design Categories & Principles extracted from Literature (Chapter 2 -Literature); and Emphasis on open ended question exploring planning process and governance	Design Themes during Design Process; Stakeholder Participation during the Design Process; Observations regarding the Planning Process; Stakeholder Participation during Planning Process; Design Themes during the Planning Process; Governance & Funding; Maintenance & Management (Section 5.4)	
Phase 2	Develop a framework for the planning of urban open spaces in Malta including understanding the process for its development and implementation	Comparative Literature Review	Literature on Green Infrastructure (Chapter 6, Phase 1 Data Set and Conclusion: Towards a GI Approach (Section 5.6)	Adopting a Green Infrastructure Approach: Spatial Implications; Planning Proposals; Governance Proposals (Section 7.3)	Refined Framework: Spatial Principles; Planning Mechanisms; Governance Requirements (Section 7.5) and Advocating a Multi-Faceted and Middle Up Approach (Section 8.3)
	Identify barriers / implications for its implementation	Focus Groups inc. Interactive Online Survey	Adopting a Green Infrastructure Approach: Spatial Implications; Planning Proposals; Governance Proposals (Section 7.3)	Socio-cultural tendencies; lack of resources; planning & governance systems (Section 8.2.5) A New Public Infrastructure: Image, Branding and Creating Social Demand; A Strategic Integrated Planning approach; A Regional Approach; An Implementation Driven approach; Emphasis the Health Benefits; Capacity Building Strategy; Ensuring Transparency and Building Trust; Creating a Sense of Ownership; Monitoring and Enforcement; The Role of Political Commitment; A Clear Mandate (Section 8.2.6)	

Figure 28: Integration and consolidation of data sets i.r.t. research objectives

## 3.6 Reflecting on the Methodology

### 3.6.1 Ethical Considerations

Research ethics procedures as established by the University of Malta have been followed. Approval of the methods was obtained from the research ethics committee prior to proceeding. Where the data collection involved participants, their written consent was obtained. This was the case for the interviews and focus groups. Information sheets and consent forms were distributed via email prior to the meetings. The information sheet and consent form were then once again given to the participant at the beginning of the meeting and the content explained. The participant signed the consent form before the start of the meeting. All interviews and focus group discussions have been anonymised, however there is still the potential for individuals to be identified due to publicly available information related to the projects. A shorter information paragraph was used for the online user survey which preceded the survey. In this case participation was anonymous. All the relevant forms can be found in Volume F of the Appendices.

### 3.6.2 Strengths, Limitations, Reliability and Validity

As a reflection on the methodology, it can be noted that the mixed method approach was successful in strengthening the richness of the data gathered. One of the advantages of mixed methods is that specific methods are used to take advantage of what data may be available and to use the right methods in relation to the specific objective and research question (Creswell J. W., 2014). The various methods chosen were successful in doing this, and where some methods failed to provide data on specific aspects, other methods (e.g. interviews with Local Councils or a survey with users to supplement the physical survey) could be used to address this.

The total data set allowed for both: statistical data which provides a strategic evidence base; and a contextualised and in-depth understanding of the situation through the qualitative data. In this sense it is felt that the mixture of methods complimented each other (Carmona, 2014). Additionally, various appendices were produced to record the various stages in reporting and analysing the results. This was done not only for the individual methods, but also when comparing, consolidating and integrating the different data sets to produce the key findings overall (Appendix C15). This provides transparency in the reporting (Creswell & Plano Clark, 2011). The focus groups strengthened the whole approach even further as the proposals which were developed based on the first set of findings, were refined and elaborated upon. This strengthens and improves the validity of the research.

With respect to the limitations, while every effort was made to be as rigorous as possible with each particular method, the pragmatic nature of the study did sometimes have to be prioritised. Some limitations, particularly in relation to the quantitative methods used did arise. However, this is one of the potential pitfalls of mixed methods (Carmona, 2014) and has to be recognised. In conclusion, it is the following which is the most crucial aspect to keep in mind in relation to mixed methods research:

“...mixing methods implicitly accepts that there is no single reality, and that in gathering evidence we need to remain cognizant of how the evidence was derived, its strengths and shortcomings, and thereby its explanatory value when compared to other sources of evidence.” (Carmona, 2014, p. 79)

# 4 Urban Open Spaces in the Maltese Planning Framework

## 4.1 Introduction

There are a number of ministries, agencies and public bodies responsible for various aspects concerning the planning of urban open spaces and related policy development. Figure 29 below gives an overview of the situation according to the latest administrative set up brought into effect in February 2020. While the ministerial set up and related bodies tend to shift according to changes in government administrations, the entities themselves for the most part are inclined to be somewhat consistent. Having said this, some recent initiatives such as the idea of Ambjent Malta<sup>21</sup> has been on and off the table in recent years and still seems fluid. As Figure 29 below illustrates, the various themes identified in Chapter 2, fall under a number of entities and ministries potentially resulting in fragmentation if an integrated approach is not adopted. This Chapter gives an overview of the more relevant national regulations, strategies and policies concerning urban open spaces as developed over the years by the various ministries, authorities and public bodies.

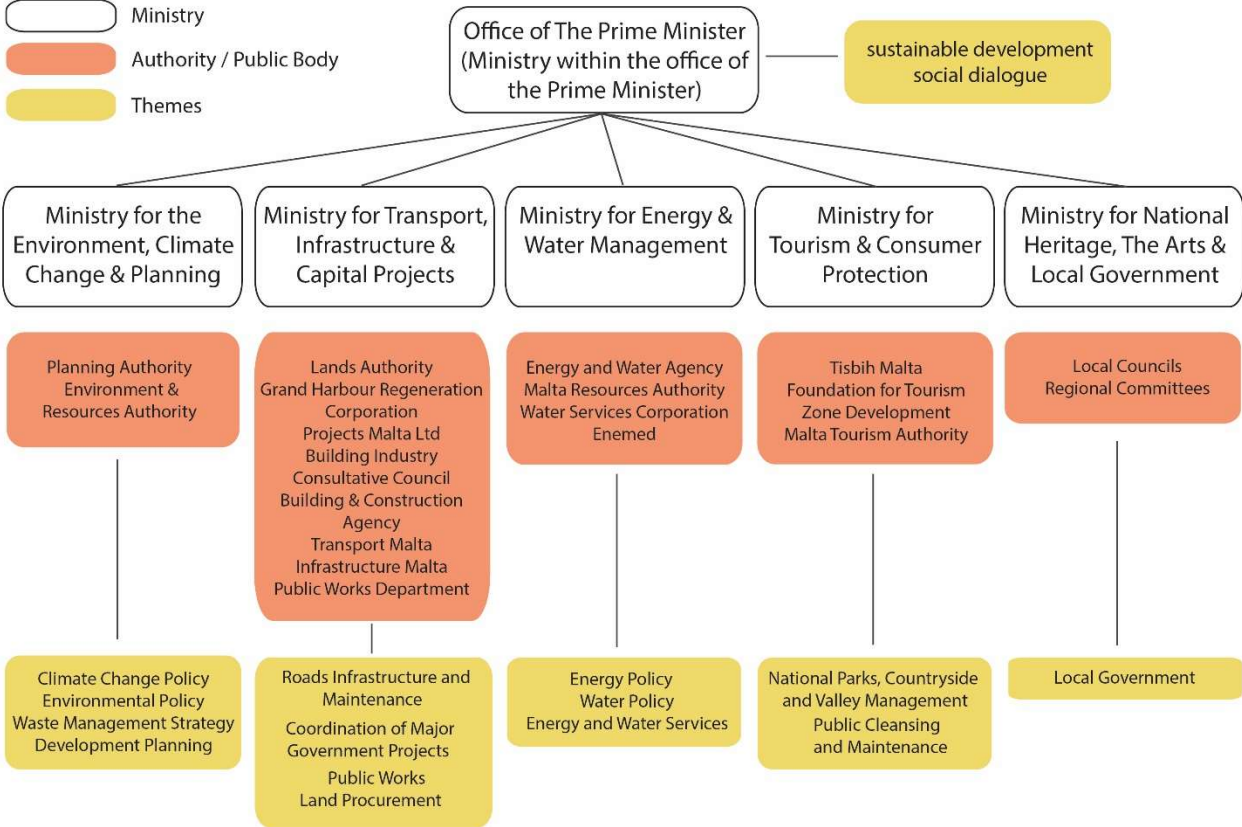


Figure 29: Overview of relevant ministries and public bodies

<sup>21</sup> The concept of Ambjent Malta was launched in 2018 as a new agency which would focus on the implementation of environmental projects and innovative green initiatives. (Malta Today, 2018)

## 4.2 National Regulations

This section gives a brief overview of the more relevant regulations as listed below.

- Flora, Fauna and Natural Habitats Protections Regulations (SL 549.44, LN 164/2019)
- Trees and Woodlands Protection Regulation (SL 549.123, LN 258/2018)
- Water Policy Framework Regulations (SL 549.100, LN 345/2015)
- Local Government Act (CAP 363) and Regional Committees Regulations (SL 363.160, LN 312/2015)
- Development Planning Act (CAP 552)
- Environment Protection Act (CAP 549)

### 4.2.1 Flora, Fauna and Natural Habitats Protection Regulations (SL 549.44, LN 164/2019)

This subsidiary legislation regulates the Natura 2000 sites as well as Special Protection Areas (SPA) and Special Areas of Conservation (SAC). The competent authority is the Environment and Resources Authority (ERA). Amongst other things, the authority shall create a coherent ecological network of protected areas titled the 'National Ecological Network'. It should also contribute to the setting up of a coherent European Ecological Network of special areas of conservation, entitled Natura 2000 by way of Article 3 of the European Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora. Additionally, the authority also had the right/responsibility to strengthen the ecological coherence of Natura 2000. This can be done through the maintenance and development of suitable landscape features which support wild fauna and flora, as referenced in regulation 14(9). This legislation also regulates the selection, maintenance and management of such sites as well as the protection of species (GoM, 2019).

### 4.2.2 Trees and Woodlands Protection Regulation (SL 549.123, LN 258/2018)

This subsidiary legislation regulates the protection of trees and tree protection areas. A list of tree species which are detrimental to biodiversity or the natural environment is also determined. The legislation also regulates: the activities which are permitted or not permitted in relation to protected and invasive/alien species; the permits required for interventions on said trees; compliance and enforcement procedures; and the application of penalties (GoM, 2018).

### 4.2.3 Water Policy Framework Regulations (SL 549.100, LN 345/2015)

The regulations' purpose is to create a framework for protecting inland surface waters, transitional waters, coastal waters and groundwater, considering and transferring Directive 2000/60/EC of the European Parliament and of the Council. The Water Framework Directive governs water management in the Maltese Islands. The regulation establishes one water catchment district in Malta and Gozo together with the setting up of an authority which will be responsible for the implementation of the regulations (GoM, 2015).

These regulations establish the Ministry for Energy and Water as the competent authority for groundwater and inland waters; except for inland surface waters which are protected through the Environment Protection Act (section 4.2.6 p119). The responsibility of these, together with coastal waters

falls under the Environment and Resources Authority (ERA, 2020). The Energy and Water Agency is then established as the agency working under the Ministry for Energy and Water (GoM, 2016).

The regulations are relevant to this research since urban open spaces if planned and designed accordingly can contribute to sustainable water management. In this respect, aspects in the regulation which relate to this are the need to prevent the deterioration of surface waters as well as restore and protect ground water. The regulations thus require the said authority to establish a program of measures to achieve the regulations as well as a Water Catchment Management Plan (WCMP). The contents and purpose of the WCMP is also determined by the regulations. To date a 2<sup>nd</sup> WCMP (ERA, 2015) has been produced which includes a review of the 1<sup>st</sup> WCMP (MEPA, 2011) (section 4.3.6 p124).

#### **4.2.4 Local Government Act (CAP 363) and Regional Committees Regulations (SL 363.160, LN 312/2015)**

Local Councils were established in 1993 through the Local Government Act (CAP 363) (GoM, 1993). They are a statutory authority and are responsible for the management and governance of various aspects in the locality. Specifically, some of the functions/responsibilities of a Local Council are:

- the upkeep and maintenance, or improvements in, any street or footpath not including reconstruction;
- the establishment, upkeep and maintenance of urban open spaces such as children’s playgrounds and public gardens;
- provide and maintain proper road signs and road markings;
- provide the installation and maintenance of bus shelters;
- provide for the protection of school children in the vicinity of schools;
- propose and, where applicable, be consulted on any changes in traffic; and
- protect the natural and urban environment of the locality and take all necessary measures to ensure the more efficient use of energy, good waste management and climate change initiatives (GoM, 1993).

2011 saw the establishment of five Regional Committees representing all of the regions in The Maltese Islands. They are a juridical body and one of their functions is to “protect the natural and urban environment of the locality and take all necessary measures to ensure the more efficient use of energy, good waste management and climate change initiatives.” (GoM, 2015, p. 5) They may also be assigned new functions as may be approved by central government. In relation to this both Local Councils and Regional Committees are not responsible for arterial and distributor roads as determined by the Structure Plan or national parks or gardens (GoM, 1993).

#### **4.2.5 Development Planning Act (CAP 552)**

The Development Planning Act (CAP 552) regulates development planning in Malta with regards to the establishment of the responsible authority, the functions it should perform and the various tools, plans and policies it should be responsible for, amongst other things. It determines the responsibility to prepare a Spatial Strategy for Environment and Development (currently the SPED<sup>22</sup>) which is a strategic document

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<sup>22</sup> The SPED was called the ‘Strategic Plan for Environment and Development’ under the Environment and Development Planning Act (CAP 504). This was then repealed in 2016 and called the ‘Spatial Strategy for the Environment and Development’ in the 2016 Development Planning Act (CAP 552).



regulating the sustainable management of land and sea resources. It should be based on an integrated planning system incorporating the protection of the environment. It should set out objectives, and ensure that plans, policies, activities and inputs are spatial and holistic and are integrated and coordinated with each other (GoM, 2016).

Subsidiary plans and policies should also be prepared as required. These may be in the form of subject plans, local plans, action plans, management plans, policies or development briefs. Subject plans would deal with specific development planning matters and would include detailed specifications intended for its implementation. This could be relevant when considering what type of planning instruments or tools could be used for the planning and design of urban open spaces. Detailed policies and guidelines can also be developed. They would conform to the subsidiary plan and the spatial strategy however they could provide more specific detailed regulation/guidance. Finally, the act regulates the setting up of a development planning fund which can be used to finance both public and privately-owned projects, programmes and schemes, and costs (GoM, 2016).

#### **4.2.6 Environment Protection Act (CAP 549)**

This Act regulates the activities of the Environment and Resources Authority (ERA). It sets out the functions of the authority which is entrusted to carry out government's duties in relation to the sustainable management of the environment. This includes advising the Minister on the development of environmental standards, guidelines, regulations, plans and policies. Protection and conservation orders for specific areas, habitats and species are also regulated through this Act. The authority is also required to publish a state of the environment report at least every four years (GoM, 2019).

The Act specifically determines that the authority should prepare a National Strategy for the Environment and the first shall be produced within 24 months of the Act coming into force. This should be a strategic governance document setting out a policy framework for the development of plans, policies and programs. On-going work on this strategy was made publicly available in July 2020 in the form of a 'Vision for Malta's Environment' (ERA, 2020).

Besides the strategy, the authority may also draw up subsidiary plans and policies dealing with any matter or subject which falls under the authorities remit. Specifically, for cases "where the Authority considers that it has to pay particular attention in order to better manage it". (GoM, 2019, p. 28) Such plans could potentially be required for the provision of urban open spaces in Malta or green infrastructure. The potential for this should therefore be explored further.

### **4.3 National Strategies, Policies and Plans**

This section gives a brief overview of the more relevant national strategies, policies and plans as listed below.

- Wellbeing First, A Vision for Malta's Environment: National Strategy for the Environment for 2050
- State of the Environment Report 2008 and 2018
- A Sustainable Development Strategy for the Maltese Islands 2007-2016
- Malta's National Biodiversity Strategy and Action Plan (NBSAP) 2012-2020
- National Environment Policy (NEP) 2012

- Malta’s Water Catchment Management Plans (WCMP)
- An Outline Strategy for the implementation of a National Restoration and Afforestation Project in the Maltese Islands
- National Climate Change Adaptation Strategy 2012
- Sustainable Communities: Housing for Tomorrow

#### **4.3.1 Wellbeing First, A Vision for Malta’s Environment: National Strategy for the Environment for 2050**

This document outlines the scenario and vision which will underpin the development of the National Strategy for the Environment for 2050. The scenario chosen is for a Wellbeing First approach as it “recognises the environmental, social and economic wellbeing dimensions at par”. (ERA, 2020, p. 1) Through consultation with citizens and experts a strong preference was revealed for measuring progress beyond GDP. The Wellbeing First Scenario has been adopted as the Vision and will support the development of strategic environmental goals and measures.

The Vision for Wellbeing First is summarised as follows: “It is envisioned that by 2050 strategic alignment across government entities creates a robust policy framework that endorses environmental limits, leading to an improved quality of life. This is reinforced by greater collaboration among government, citizens and stakeholder groups in decision making. Strong political commitment for overall wellbeing, measured beyond GDP, supports a market that remains a priority and is directed towards environmental and social products and ethic. The removal of silos fosters a culture where the environmental, social and economic dimensions are considered at par.” (ERA, 2020, p. 31) The intention is for this to “serve as a shared vision and a common foundation for adoption across Government’s strategic policies.” (ERA, 2020, p. 3)

One of the key environmental challenges identified is to ensure “liveability of urban areas in terms of noise levels, air quality, cleanliness, greening, aesthetics, and access to open spaces; and access to natural open landscapes to determine our quality of life.” (ERA, 2020, p. 12) Additionally, part of the vision includes the adoption of an ecosystem’s services approach to increase resilience to climate change. It advocates that nature should not only be found in rural settings but also integrated into the urban fabric. The aim is for the strategy itself to define strategic environmental goals together with recommendations on how these can be achieved by 2050. It also intends to develop action plans with detailed objectives and measures for 10-year periods.

According to a survey, citizens are also willing to contribute to a better environment. It is clear that the quality of the environment is high on the list of factors which Maltese citizens are most concerned about. Additionally, 61% of those surveyed were happy to do without parking spaces in exchange of additional public spaces and 80% were willing to avoid driving through particular roads for cleaner air (ERA, 2020).

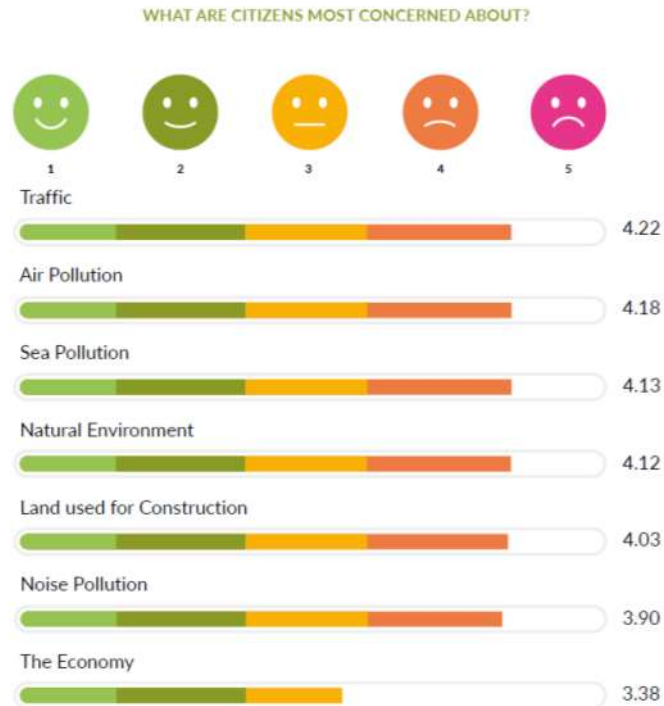


Figure 30: Level of worry (ERA, 2020)

### 4.3.2 State of the Environment Report 2008 and 2018

The Environment Protection Act (GoM, 2019) obliges ERA, to publish a state of the environment report every four years. The latest report was published in 2018 and previously in 2008, followed by the publication of environment report indicators for 2009 and 2010-2011. Both reports clearly identify the need for environmental stewardship across government and with all citizens. In part, this means ensuring more effective integration and co-ordination amongst the responsible entities. The need for development planning to act as a tool for mitigating and adapting to climate change is one of the aspects identified. This means that mitigation and adaption measures should be included in development plans and subsidiary policies and regulations (MEPA & NSO, 2010; ERA, 2018).

The Urban Improvement Fund was set up for Local Councils to implement urban embellishments i.r.t. landscaping, traffic management and the upgrading of urban open spaces (MEPA & NSO, 2010). Between 2008 and 2015 212 projects were funded and the total allocation was 9.6 million Euros (ERA, 2018). This fund has now been transformed into the Development Planning Fund.

The 2008 report identifies the need for improved and more creative approaches to the management of water run-off in urban and rural areas. Due to the forecasted sea-level rise and increased summer temperatures, a rise in evapotranspiration and reduced rainfall are expected together with changes in precipitation patterns. This will result in shorter rainy seasons and more intense storms also requiring the need to better manage rain water run-off and mitigate the risk of flooding. Additionally, there is the potential to increase the collection and storage of rainwater (MEPA & NSO, 2010). In the 2018 report, the pressure on groundwater recharge and contamination of urban storm water run-off remains an issue (ERA, 2018).

Malta also suffers from environmental health challenges, in particular, respiratory diseases due to air pollution. This needs to be tackled together with the need to facilitate exercise and healthy lifestyles particularly by providing urban green space/recreational areas. The potential role which land use planning can play in ensuring access to, protecting and enhancing public open space is recognised, together with its importance in encouraging alternative modes of transport and discouraging separation of land uses so as to facilitate the use of sustainable transport modes (MEPA & NSO, 2010). In the 2018 report, the section on environmental health identifies one of the regional goals emerging from the 2010 Parma Declaration as being: Addressing obesity and injuries through safe environments, physical activity, healthy diets. Again, the high rate of overweight people and obesity in Malta is recognised (69.75%). Together with this is the low rate of physical activity performed by children. The private car use trend is identified as an issue, and the need to move towards more sustainable transport modes is recognised. However, the importance of urban open spaces in allowing for environmental health to improve is not stressed. The lack of access to green/recreational areas is only limitedly mentioned as one of the aspects which could be further researched as a cause of environmental health inequalities.

The environment was also recognised as playing an important role in the Maltese economy. Its contribution in terms of employment amounts to one-fifth, while the value-added amounts to one-sixth. Besides this it also provides for recreation, residence and location of economic activity (MEPA & NSO, 2010).

With regards to policy responses, the need for the increase in use of participatory approaches as well as the overall strengthening of civil society is noted. This would play an important role in the on-going democratization of Maltese society when it comes to decisions concerning the environment (MEPA & NSO, 2010).

One of the more relevant sections is that on Land and Coast. This however, fails to address the current state of urban open spaces as an essential component of land cover in urban areas. The review primarily deals with the building stock. One of the categories is environmental leisure however open spaces are not separated and it is assumed that those which provide for leisure fall within this category, together with rural areas. A review of the countryside is provided, including initiatives to improve protected areas or tree planting in rural areas. It can be said that the focus is on the rural countryside without any attention given to the state of urban open spaces. Even in terms of biodiversity the review is limited to rural areas; the status of biodiversity in urban areas is not discussed (ERA, 2018).

### **4.3.3 A Sustainable Development Strategy for the Maltese Islands 2007-2016**

The strategy was drafted by the National Commission for Sustainable Development in 2006. The main objective of the strategy was to harmonise and build upon various sectorial policies and plans and to "...ensure socially responsible economic development while protecting the resource base and the environment for the benefit of future generations". (NCSD, 2006, p. 10) This was in response to Malta's commitment when the Millennium Declaration was signed in September 2000. It confirmed support for the principles of sustainable development and Agenda 21 and agreement with the Millennium Development Goals.

The strategy outlines priority areas under five main themes: The Environment; The Economy; Society; Cross Cutting Issues and Implementation. The need to address issues such as climate change, air quality,

loss of biodiversity and water quality is clearly highlighted. Land use aspects such as the need to protect and improve the urban and rural environment and transportation issues including increasing car ownership emerge. Under crosscutting issues, the need for an integrated spatial development plan was identified. A number of important aspects such as: ecological corridors, promoting higher densities and mixed use, integrating transport and land use planning are identified; however, the importance of green open spaces particularly within urban areas does not seem to emerge. The need for integrated planning is however given importance (NCSD, 2006).

The report can be seen as an important contribution in setting a clear path to move towards Sustainable Development. Its timeline expired in 2016, and the National Commission for Sustainable Development, which should have acted as the steward for the strategy's implementation, no longer exists. At the end of 2018, a public consultation was launched for Malta's Sustainable Development Vision for 2050 which sets out aspirations and priorities for mainstreaming sustainable development. The intention is then to develop a new Sustainable Development Strategy and Action Plan (MESDC, 2018). The Ministry which produced this vision however no longer exists. Sustainable development now falls under the Ministry within the Office of the Prime Minister (GoM, n.d.). There is no publicly available update regarding the strategies' development.

#### **4.3.4 Malta's National Biodiversity Strategy and Action Plan (NBSAP) 2012-2020**

The main purpose of the NBSAP (ERA, n.d.), is to have a national policy which drives the integration of biodiversity issues into plans, programmes and policies. The document identifies 18 themes with a number of measures under each theme. Below are some of the more important measures (see Appendix A2 for more detail) relating to the planning and design of urban open spaces.

- The safeguarding of urban biodiversity through the uptake of community initiatives, such as green rooftops and green open spaces.
- The updating of the 2002 Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands.
- Maintain the capacity of linear features in the landscape to serve as ecological corridors.
- Strengthen the components for building a system of green infrastructure.
- Adopt appropriate and cost-effective rain water harvesting technologies.
- Forestation for climate change mitigation.
- The role and importance of spatial planning as an instrument for wider biodiversity conservation to be reflected in new policy on spatial planning... to contribute towards EU priorities for Green Infrastructure (GoM, 2012).

A number of measures are therefore identified which reflect the planning and design principles which emerged through the literature (Chapter 2). The extent to which such measures are actually represented in spatial planning policy and the design of urban open spaces remains to be seen.

#### **4.3.5 National Environment Policy (NEP) 2012**

The NEP is a strategic integrative policy outlining principles for managing and upgrading Malta's environment. It advocates that other non-environmental sectors should respect and follow it. It identifies a number of environmental issues. Some of those relating to urban open space are the need to: enhance the provision of recreational space; improve the use of run-off water; mitigate the impacts of climate

change; improve the amenity in urban and peri-urban areas; and address the 'uglification' of Malta (GoM, 2012).

One of its six objectives is for 'A pleasant place: Improving the local environment' under which the greening of our cities features. Additionally, objective 2 is about 'Safeguarding environmental health' and urban open space is identified as having an important role to play. Some of the measures (see Appendix A2 for more detail) identified to achieve the objectives are listed hereunder.

- Reviewing and consolidating public funding/funds for the environment and setting up an Environmental Improvement Fund.
- Promote the protection, upgrading and creation of additional public open space.
- Implement Malta's Water Catchment Management Plan.
- Local Councils to draw up local sustainable development strategies (pedestrianisation to be included) and encourage the use of town centre management.
- Carry out an assessment to actively involve Local Councils in the planning system.
- Promote an integrated approach to urban rehabilitation through the spatial planning system.
- Redesign road network to take traffic out of town centres.
- Assess the exposure of recreational areas to traffic and propose policy response.
- Take an integrated approach to valley management.
- Provide areas for family and informal recreation in all five regions of the Islands.

A number of important measures are therefore identified. However, it is worth mentioning that some areas do not consider the role which open spaces can play. For example, while the objective 'A pleasant place: Improving the local environment' acknowledges the importance of urban green space, pilot projects focus on buildings through the introduction of green roofs and not on greening urban open spaces. Another important policy is to 'Ensure better coordination of work between the various governments and agencies working on environmental issues'. This supports the need to move towards a more integrated approach (GoM, 2012).

#### **4.3.6 Malta's Water Catchment Management Plans (WCMP)**

The WCMP gives administrative bodies, the local authorities and the general public, directions and objectives for water management. It takes into consideration objectives of existing sectorial plans, policies and programmes which in some manner overlap with the water sector. Some of the more salient aspects of the plan concerning urban open spaces are discussed below.

The plans give an overview of water bodies in the Maltese Islands including transitional waters, water courses and pools. The water bodies are also mapped out illustrating that none are located in Malta's main urban conurbation. While some river valley systems do exist, these are limited and are dry river valley systems. The potential for these to once again become active watercourses, also as ecological habitats in urban areas could therefore be explored. One of the issues however, is that they transport contaminants from road networks towards coastal waters. So, while one may consider the potential for valleys in urban areas to become active water courses the issue of pollution needs to be addressed (ERA, 2015; MEPA, 2011).

The 1<sup>st</sup> WCMP introduced a pilot project to showcase integrated valley management. A number of interventions such as soil stabilisation, planting of trees, restoration of footpaths and ideas for changing impermeable asphalted roads to ecological, permeable paving materials were developed. The 2<sup>nd</sup> WCMP

then includes a measure to develop a strategic policy framework to encourage integrated valley management. However, one aspect which is perhaps not stressed enough is the facilitation and management of valleys as areas for informal recreation within the urban conurbation (ERA, 2015; MEPA, 2011).

The plan also addresses the capacity of rainwater run-off storage facilities. It intends to increase the levels of rainwater harvesting due to the need to recharge groundwater resources. The potential for rural roads and tracks to be used is mentioned however that of urban open spaces is not. The plan also includes a measure for a comprehensive assessment for the inclusion of Sustainable Urban Drainage Systems and Natural Water Retention measures to mitigate flood hazard and risk. This includes the development of a planning guidance document which would guide the take up of such measures (ERA, 2015).

The closest the plan comes to mentioning the design of urban open spaces is when it identifies the need to establish water-use standards and guidelines for public landscaping. This is however limited to the use of water rather than considering how public open spaces can actively contribute to replenishing groundwater. Interestingly, the PA is not listed as one of the stakeholders responsible for implementing this measure. The PA could potentially play an important role through the permitting process by ensuring that new projects include groundwater recharge measures, harvest rainwater run-off and reuse for irrigation and develop planting schemes which minimise unnecessary and excessive use of water (ERA, 2015).

Finally, the plan also discusses the need to: reduce the demand on groundwater resources through the use of new water resources; develop guidance documents to aid operators i.r.t. water management best practices; and consider governance aspects such as the roles and responsibilities of public sector agencies and the administrative capacity necessary for the effective implementation of related legislation (ERA, 2015).

#### **4.3.7 An Outline Strategy for Implementation of a National Restoration and Afforestation Project in the Maltese Islands**

This outline strategy is a response to the recognition of the need to safeguard existing habitats in the Maltese Islands and extend the network of green areas through tree planting. It provides the basis for a national afforestation and ecological restoration project which should aim to maximise both social and ecological benefits. It seeks to increase recreational space and the presence of nature in urban areas, extend and buffer existing natural habitats and increase the provision of associated ecosystem services. It provides an outline plan for the implementation of the strategy over six phases (Cassar & Conrad, 2014).

The strategy identifies four key aspects which need to be considered. These are: fragmentation and connectivity; ecosystem services; ecological restoration; and urban green space. While the last is naturally the most relevant to the research at hand, the other three aspects are also of importance. With regards to urban green space, the report notes how the Maltese population in general has a low level of engagement with nature due to the lack of urban parks as well as the fact that most recreational areas within urban areas are mainly characterised by hard landscaping. In particular, many children are increasingly living highly urbanised sedentary lifestyles with the related health and well-being implications. There is therefore the need to increase the availability of green areas within the urban area due to the benefits and eco systems services which they can provide. According to the report these can

be in the form of parks and gardens, semi-natural green spaces, amenity green spaces, and allotments and cultivation areas.

With respect to fragmentation and connectivity, many sites including natural ones of ecological value tend to be small and isolated. Various barriers exist such as urban development, road infrastructure as well as semi-permanent barriers such as strong floodlighting which creates light pollution. Landscape connectivity is therefore important so as to counter the limitations due to size. Planning for connectivity needs to consider both land-use and landscape features as well as specific habitat and resource requirements for the species being targeted. In the case of the Maltese Islands a connectivity strategy which facilitates movements of species and allows various habitat areas to act as stepping stones is thus essential.

Lastly, ecological restoration as opposed to simply afforestation is particularly relevant for Malta due to the impact of urban development on natural habitats and species. Local government organisations and the strengthening of the non-governmental sectors could suggest new opportunities for implementing small scale initiatives to restore degraded sites. Through restoration projects, one should not only think of tree planting/increase of vegetation but also additional functions such as for example the creation of recreational areas within urban areas (Cassar & Conrad, 2014).

#### **4.3.8 National Climate Change Adaptation Strategy 2012**

This document sets out a number of actions and recommendations required for the adaptation and mitigation of climate change. One action is that threats to natural areas and the countryside will be addressed through measures such as “improving the quality of design, and life, in urban areas, both by providing quality green (and not just) open areas as well as providing quality amenities and facilities”. (GoM, 2012, p. v) Other actions of note relate to the restoration of habitats (Action 17) and the maintenance and preservations of valleys (Action 38 and 39). Actions 28 and 29 target the capturing and re-use of water in commercial and domestic buildings however not in open spaces. Actions 31 and 32 address the maintenance and upkeep of roadside reservoirs, soak ways and dams and the need to restrict the use of groundwater for irrigation. Lastly, Actions 41 and 43 address the need to improve water catchment and rain harvesting by road infrastructure (GoM, 2012). There is also scope for such policy to not only address grey infrastructure but all urban open spaces.

#### **4.3.9 Sustainable Communities: Housing for Tomorrow**

This policy aims towards sustainable homes and neighbourhoods. Amongst other things, the policy suggests that “the programme will actively integrate within the existing social and infrastructural fabric of the village or town by becoming an extension of the neighbourhood.” (Housing Authority, 2019, p. 23) Additionally, it speaks about the addition of vegetation in the area which may serve to contribute to cooler air or the harvesting of rainwater for maintaining green spaces in projects.

### **4.4 Spatial Planning Policy**

This section gives a brief overview of the relevant spatial planning policy as follows.

- The Structure Plan Review
- The SPED



- The Local Plans
- Development Control Design Policy, Guidance and Standards 2015
- Floor Area Ratio (FAR) Policy
- Outdoor Catering Areas
- Guidelines on Trees, Plants and Shrubs for planting and Landscaping in the Maltese Islands
- Rural Policy and Design Guidance 2014
- Guidelines on Works involving Trees
- Investing in the Multi-functionality of Green Infrastructure

#### **4.4.1 The Structure Plan Review**

The 1990 Structure Plan (GoM, 1990) was Malta's first strategic planning document providing direction and policies to guide Malta's development. Its intended timeline was 20 years and was eventually replaced by the Strategic Plan for Environment and Development (SPED) (GoM, 2015) in 2015. While the SPED came into force in 2015, a number of studies to review the 1990 Structure Plan started to be conducted in the 2000s. These documents are unfortunately no longer available on the authority's website; however, this section provides an overview of the key aspects emerging from the more relevant studies.

#### **Landscape Assessment Study of the Maltese Islands**

This study analysed the Maltese landscape taking a wide view of its definition from rural to urban settings. It identifies high pressures for informal recreational spaces due to the Islands' high density coupled with its small size in terms of land territory. Open space which would help define the spatial hierarchy of urban areas is mostly absent and when they do exist they are dominated by parking and vehicular presence. Landscaping attempts usually address the more visible main roads and larger open spaces. While, the PA policies at the time and the setting up of Local Councils were leading to improvements, more attention to the detail was identified as requiring attention. For example, footpath surfaces and kerbs "bear witness to hasty and unskilled execution". (PA, n.d., p. 102)

The introduction of Local Councils was seen as instrumental in leading to the improvement of public urban open spaces especially within UCAs, with landscaping and pedestrianisation interventions in selected areas. However, the study advocates that while the embellishment of such spaces including coastal promenades, for example, did contribute positively to local visual amenity, the "lack of maintenance and lack of attention to design and detail remain outstanding problems." (PA, n.d., p. 54) In fact, the document states that at the time, "...compared to even some of the smallest European settlements, the standards of Maltese road building and open space surfacing technique are primitive. Apart from design considerations, the main problems are related to lack of attention to detail and still poor standards of workmanship". (PA, n.d., p. 126)

#### **Leisure and Recreation Topic Paper**

This topic paper subdivides leisure and recreation facilities into five categories of which outdoor rural recreational areas and outdoor urban recreational areas are the most relevant to this research. During the years following the adoption of the Structure Plan and following the establishment of Local Councils in 1993, a number of existing recreational facilities were upgraded and new public gardens and playgrounds provided. However, the various activities related to recreation fall under a number of

bodies/agencies and the sector is considered to be fragmented with hardly any integrated planning management (PA, 2002).

With regards to urban recreational areas, an exercise was carried out to quantify the availability of urban recreational areas within each Local Council. At the time, it emerged, that the availability of formal open spaces in urban areas was about 2.4 sqm per capita with 69% of local councils being below this national average. The lack of urban recreational facilities is therefore identified as a key issue and the strategy of the paper is to aim to increase provision in those areas not reaching the national average (PA, 2002), thus adopting a quantitative approach.

With regards to rural recreational areas the paper notes that a demand exists for parks and rural recreational areas located outside development boundaries but in close vicinity to urban settlements. Traffic movement patterns illustrate that most take advantage of established recreational areas in the North during the weekends (particularly Sundays) and public holidays. A key issue identified is the need for the protection and upgrading of the overall rural recreational provision. The proposed strategy focuses on the provision of formal national and regional parks and one could question why the provision of informal recreational areas is not seen to be of similar importance.

### **Rural Topic Paper**

The paper includes all areas which are outside the development boundaries. Pockets of such areas can still be found within the urban conurbation. This is the case of valleys for example. The paper identifies the need for: protection and enhancement of the rural landscape; provision of countryside recreation; the classification of rural settlements; and protecting the amenity and setting of the countryside, amongst others (PA, 2003).

While the concept of rural conservation areas does exist, and the paper advocates that the scheduling process has reduced development pressure in protected rural areas, there is no proactive approach/measures for the restoration and management of the natural environment and landscape. This is essential if such areas are to be valued to their full potential. As the paper clearly states “rural areas cannot be protected solely through land designation and development control”. (PA, 2003, p. 4) There is the need for enhancement and creative landscape management.

Countryside recreation and increasing accessibility of rural areas are recognised as important aspects to promote and facilitate. Also, of importance is the need to protect corridors or pockets of undeveloped land between urban areas classified as outside the development boundary. Such areas are considered to be strategic open gaps and are under constant threat by development pressures. Another issue identified is the decrease in water infiltration due to soil sealing in rural areas, with impacts on ground water recharge and flooding (PA, 2003).

The paper concludes by suggesting that the sustainable development of rural areas and countryside stewardship may provide the basis for the planning and management of the countryside. The proposed strategy is provided in Appendix A2.

### **Coastal Topic Paper**

The paper was issued in 2001. At the time, one of the major uses associated with coastal areas was informal recreation such as water sports and coastal walks. Most of the activities enjoying coastal areas

require facilities and the need to better regulate these was identified due to the conflicts between such activities, the landscape and natural environment. The coastal areas play an important role in providing much needed open space for recreation in urban areas. However, public access and their use are constantly under threat from development pressures. The paper had in fact identified the need to strengthen planning policy in order to protect such coastal areas and their availability for informal recreation (PA, 2001).

In general, the coast is classified according to two categories: predominantly urban; and predominantly rural. With regards to the main urban conurbation, the coast is classified as predominantly urban. For such areas the strategy proposed is to safeguard existing legitimate coastal uses and minimise existing and potential conflicts. It also stressed the need to prevent loss of open space for public use. Multi-functionality was therefore proposed to accommodate various activities and retain public uses. In areas with industrial uses public access should, where possible, be safeguarded even if this is limited to views of the areas. Additionally, increasing public access for informal recreation should also be encouraged (PA, 2001).

#### **4.4.2 The SPED**

The SPED is a spatial planning instrument which in 2015 replaced the 1990 Structure Plan. It sets out proposals for future development as well as environmental protection (land and sea) according to national policies and Government's objectives. It sets out the spatial boundaries for the Urban Area (Development Zone), the Rural Area (Outside the nautical miles), the Marine Area (between 12 and 25 nautical miles) and Gozo. In terms of the urban area, the document envisages it to become an attractive place which amongst other things is "clean, pollution free, safe, green, distinct, evoke a sense of openness, energy efficient" with a "network of economically dynamic urban hubs and walk-able neighbourhoods with clusters of local facilities." (GoM, 2015, p. 6)

The document (GoM, 2015) identifies a number of key issues. Those particularly relevant are listed below.

- The continued threat to biodiversity being experienced by the Maltese Islands.
- Lack of sustainable water management resulting in increased localised flooding and water shortage.
- Traffic, industry and energy generation as significant sources of air pollution, leading to air quality issues particularly in areas experiencing heavy traffic and congestion.
- Heavy traffic also identified as the primary contributor to ambient noise.
- Anticipated changes in precipitation patterns, resulting in drought and intensive storms, together with changes in global sea levels, are expected to impact coastal areas and groundwater.
- Development trends of dispersal and intensification, together with high car dependency resulting in continued land take up for roads and parking. This is resulting in negative impacts on streetscapes, cultural and natural heritage as well as human health and quality of life.
- The increase in density has had a detrimental impact on "the quality of streetscapes and public open spaces, social and community facilities, increased traffic flows and on residential amenity and the general upkeep of the environment."
- Urban areas do not facilitate healthy lifestyles due to the lack of urban green space and other recreational facilities. Reduced "amenity and quality of life...greater congestion, lack of

pedestrian safety and air and noise pollution” together with increasing demand for parking has resulted in poor quality streetscapes leading to poor social integration. (GoM, 2015, p. 14)

The general approach for controlling spatial development is that of firstly re-using existing developed land, secondly re-developing existing developed land and lastly the use of vacant land. The document does this by setting out a number of thematic and spatial objectives. These include the promotion of a number of design principles promoting the provision and good design of urban open spaces. Appendix A2 provides a detailed account. In summary however, the plan (GoM, 2015) promotes:

- increasing green open space;
- the provision of new recreational facilities;
- improving the intrinsic quality of informal recreation;
- alternative transport modes such as walking, cycling and waterborne travel;
- improving public and collective transport;
- facilitating modal shift;
- revising standards for provision of off-street and on-street parking;
- rain water harvesting and the adoption of SUDS;
- safeguarding and enhancing biodiversity;
- protecting and greening open spaces;
- reduction of soil sealing;
- developing ecological corridors;
- retaining and upgrading existing public open spaces in urban areas;
- aiming for minimum levels of urban public open space per person;
- reducing traffic in urban areas by promoting pedestrianisation, shared space streets, traffic calming and green modes of travel; and
- energy and water efficient developments.

However, while the above might seem to provide the ideal wish list in terms of what the focus should be for urban open spaces and their contribution to sustainable development, it is simply that, a wish list. The plan fails to develop more specific spatial strategies particularly in relation to the planning of urban open spaces at a strategic level as a means to tackling some of the issues and challenges identified.

#### **4.4.3 The Local Plans**

The Maltese Islands are divided into seven different local plans (see Figure 2) for spatial planning purposes. The four local plans which concern the PUA are reviewed in this section.

##### **North Harbour Local Plan**

According to the plan, apart from the four main valleys and coastline which form important areas of open space within the plan area, open space is very limited. The main reason given, is the high population density characterising the region. A number of issues are identified including: no definition of space for vehicles and pedestrians in many urban squares and excessively wide roads; lack of recreational space; and constant development pressure even concerning valleys. Valleys are identified as important for: protection of water, natural assets; controlling pollution; ecological and landscape reasons; informal recreation and controlling urban sprawl (GoM, 2006).

The plan also identifies limited investment in the public realm and transport infrastructure. As a result, streets and outside areas look neglected also due to the impact of traffic. Tree presence is very limited and a threatened resource. The need for afforestation projects together with recreational routes is identified. In general, though, policy direction i.r.t. informal recreation is lacking.

The plan recognises the quality of the public realm as crucial in ensuring that residential areas remain viable and liveable. Valleys are seen as important areas and should be upgraded to improve orientation with them together with their identity and amenity. Streets are also viewed as requiring attention in terms of investment. Interventions such as traffic calming, pedestrianisation, customer parking provision and improving accessibility are seen as the type of solution which should be prioritised. The plan sees collaboration between MEPA, Local Councils, the private sector and government as the answer to achieving such objectives. Overall, it “promotes the development of recreation in the widest sense and in particular seeks to improve links to informal open spaces, such as valleys, upgrade facilities and protect existing recreational open spaces”. (GoM, 2006, p. 69)

### South Malta Local Plan

The South Malta local plan aims to secure an improvement to the quality of the environment of urban areas as an overall strategy. The growing urban sprawl in the area risks obliterating some of the green gaps that still exists between settlements (GoM, 2006).

The plan encourages the development and upgrading of sites zoned as public urban open spaces. It also aims to encourage the provision of additional spaces by identifying urban areas which should provide open spaces as part of their development and encourages the provision of underground reservoirs within such sites. However, the focus is on upgrading individual areas rather than creating a network of open spaces. It also tends to be quite vague and not very specific or proactive other than encouraging a programme for enhancement and landscaping within urban settlements (GoM, 2006).

With regard to transportation and accessibility, the plan is identified as the vehicle for increasing pedestrian priority or access only areas. Policies are provided on controlling car parking (SMTR02) and traffic calming and road safety (SMTR03). Traffic management, pedestrian friendly schemes and provision of landscaped areas and public open spaces is also included under housing policies (SMHO01) where residential amenity improvement action areas have been designated. A public attitude survey conducted in 1999 found that there was significant support for such measures. However, such policy primarily encourages initiatives by Local Councils and seems limited in its effect to improve the situation on the ground (GoM, 2006).

Another focus is the conservation aspect. A number of policies (SMCO03, SMCO05, SMCO06, SMCO10) aim to protect existing open spaces from development. SMCO07 protects valley protection zones and watercourses which are identified as environmental planning constraints with a presumption against development. However, there is no indication as to how to increase the value of such areas for example to provide informal recreation.

The policies relating to the provision of open spaces under the recreation theme are quite limited. They primarily include the provision and retention of recreational and sports facilities and the provision of walking and cycling routes and heritage trails in urban and rural areas. Again, the tone of the policy is to encourage, while it is Local Councils or other entities which should take the initiative (GoM, 2006).

The plan also promotes sustainable drainage systems (SMPU01) and identifies flood prone areas. However, it is not clear to what extent such mechanisms are actually requested or simply encouraged or promoted. MEPA is required to consult with relevant entities when assessing developments to avoid negative impacts and increased flooding.

One of the more specific policies, at least spatially, is SMIA04, which designates specific roads to be turned into attractive tree lined boulevards and SMIA12 identifies the creation of a District Park along the Cottonera lines. The area specific policies also provide more specific guidance on particular open spaces such as the environmental upgrading and development at Paola Square (SMPA01). Such projects would need to be initiated by the Local Councils (GoM, 2006).

In general, the local plan provides a number of important policies, however it is not a proactive tool and the mechanism as to how such measures may be implemented is not clear.

### Grand Harbour Local Plan

While the area of the plan is densely populated, it also includes significant greenery and open spaces in comparison to some of the other urban local plan areas. In relation to urban open spaces, the plan (GoM, 2002) identifies the following problems:

- inadequate provision for the pedestrian/cyclist;
- lack of adequate community facilities, especially open space and play provision;
- pressure for development of open space and greenery in some peripheral areas; and
- a general tendency towards poorly prepared development proposals which give insufficient or no consideration at the outset to matters such as contextual design, access for people with special needs, parking, landscaping and planting and energy efficiency. (p. 9)

With regard to urban open spaces, the plan (GoM, 2002) includes policies concerning the provision and promotion of:

- surface water runoff and collection;
- access for all;
- traffic calming measures;
- prioritisation of pedestrians and cyclists;
- protection from development of formal and informal open space;
- afforestation in the form of structural planting;
- improvement and embellishment of the urban waterfront; and
- a recreational footpath system.

Interestingly, the plan attempts to reverse population decline. However, the strategy to preserve the character and sense of place within the plan area seems to focus more on the building stock rather than the quality of open spaces. Having said this, it is the only local plan which has a specific objective to create a network of open spaces. It is also important to note that many policies establish the role of the PA as to encourage, promote or support the proposals (GoM, 2002). It is therefore unclear which entity would be the driving force for such environmental improvements in urban open spaces.

## Central Malta Local Plan

The plan has limited policy in relation to urban open spaces. It promotes soft landscaping schemes (CG11) with the aim of greening the urban environment, however the principles of creating a network of open spaces or green infrastructure does not feature. It takes a conservationist approach through policies (CG22) and identification of Special Areas of Conservation (SAC), Sites of Scientific Importance (SSI), Areas of Ecological Importance (AEI), and Areas of High Landscape Sensitivity (AHLS). It also identifies Strategic Open Gaps (CG25). However, in general the focus is on protecting these areas from development, retaining their open nature. There is no proactive approach as to how such space may be better managed or provide more value. The closest policies to creating a network are those which promote improved access to the countryside through the provision of country paths, the promotion of heritage trails and walkways (CG26) and the strategic indication of cycle ways and cycle routes (CG40) (GoM, 2006).

In relation to water management, policies exist to support the development of Catchment Management Plans (CG30) for improvement to storm water run-off systems. Policies also do not permit the development or redevelopment within the identified valley water course areas and all existing open spaces found within them are to be retained open and unobstructed. However once again policies are limited to restricting development as opposed to adopting a more proactive approach on how to improve the situation and maximise the value and benefits which such spaces could provide (GoM, 2006).

### 4.4.4 Development Control Design Policy, Guidance and Standards 2015

This document (GoM, 2015) provides a revision to the 2007 version (GoM, 2007). It suggests the adoption of a “new urban design approach” which advocates that “better urban environments must start from better streets”. It also seeks to provide “a more enabling role through qualitative performance criteria” rather than one which adopts “inflexible and restrictive quantitative policies”. (Zammit, 2014, p. 454) However, while the street is one of the aspects/scales one needs to consider in the design of urban open spaces, planning policy needs to go far beyond the private – public interface and address the space in-between buildings in its own right.

The third objective presented is “Integrally designed, energy-conscious, quality architecture”. It can be said that the same type of objective is needed for the design of open spaces in Malta. That is to say integrally designed, environmentally conscious quality landscape architecture is needed for urban open spaces. The document distinguishes between: mandatory regulation/policy; good-practice guidance; and technical standards (GoM, 2015).

### Policies concerning Urban Open Space

The document gives guidance with respect to the boundaries between public streets and private or semi-private spaces adjoining buildings, specifically front, side and rear garden boundary walls. Design guidance relates to the need for boundary walls to relate to the context and streetscape. Specific allowable heights are then given which vary according to the type of the boundary wall and its visual permeability. The guidance also encourages the ‘landscaping’ of front gardens particularly in detached and semi-detached dwellings. For such dwellings a minimum of 20% soft landscaping is required for front or side curtilages. For all dwelling types, excavation/basements below front gardens are not allowed so as to allow for vegetation, ideally trees to be planted. Having said that, the 20% requirement for soft landscaping is only for detached and semi-detached dwellings.

The guidelines/policies also refer to the 'Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands' (GoM, 2002) i.r.t. the use of appropriate species. What constitutes 'landscaping' is not really defined, other than to say that trees are preferred to shrubs. Overall, this preference and the general aim of the policies in terms of landscaping is linked to the streets' character rather than environmental benefits (GoM, 2015).

Another aspect which the guidance provides for is the need for developments to be integrated and accessible. "The design should encourage direct, safe and attractive connections between public transport, footpath and cycle routes and existing and proposed uses." The guidance stresses the need for routes to be provided so as to "maintain a well-connected, highly permeable network of secure routes" (GoM, 2015, p. 67), prioritising firstly pedestrians then cyclists then public transport and lastly motorists.

Landscaping in parking areas is another aspect where limited guidance is provided, primarily to "relieve the monotony of tarmac/paved areas". (GoM, 2015, p. 87) Environmental, social or economic benefits of introducing vegetation are not really considered and again specific guidance is limited to the reference to the 'Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands' (GoM, 2002). The opportunity to use such areas to introduce solar panels, for example as shading devices, is also suggested (GoM, 2015).

The document also concerns itself with the building line, which is the interface with the public street. However, the policies are primarily concerned with maintaining contextual building alignments and streetscape rhythms. Aspects such as policies for the provision of semi-private spaces or various types of soft transition areas between public and private space so as to create opportunities for neighbourly contact and facilitate social interaction and cohesion are not included. Having said this, the document does provide some policies with respect to ground floor treatment. This includes the prohibition of semi-basements and the promotion of active frontages. However, guidance on how to establish and design the semi-private zone is limited to the boundary wall as described above (GoM, 2015).

Another three areas which the document provides guidance on, but not policies, are: the creation of, and access to, open spaces; trees and other landscaping; street furniture; and materials for external paved surfaces. With regard to the first point, the provision of open space is encouraged so as to "increase the quality, amenity and attractiveness" (GoM, 2015, p. 133) of the urban environment/development but also as a contribution to a potential open space network. The guidance also states that the authority may request a certain amount of open space as part of a development or alternatively request planning gains to support the maintenance or improvement of open spaces in the area. These suggestions however remain at guidance level rather than being a required policy or standard. The guidance also mentions the need for such spaces to function well from a microclimatic perspective although once again there is no detailed guidance or specific requirements on how to achieve/provide this (GoM, 2015).

Similarly, with the second aspect, the document limits its suggestions to guidance rather than policies or standards. The most detailed aspect is provided through the 'Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands' (GoM, 2002) with respect to trees species selection. 'Landscaping proposals' and 'schemes' are required however guidance as to what this should be is limited. Additionally, the limited provision mainly concerns the use of landscaping for aesthetic purposes and the use of appropriate paving and provision of seating. The climatic and environmental benefits are not discussed (GoM, 2015).



Under the third aspect, street furniture, some specific functional aspects in the positioning of street furniture are provided such as for example the need for some seating areas to be located in a shaded position. However, once again the provisions are guidance. Finally, the fourth aspect gives guidance on the use of materials for external paved surfaces. Without giving any specific details, it outlines the need for materials to be durable and safe and to fit into the character or townscape qualities of the area. It also mentions the need to consider and provide access for all through the use of tactile surfaces as appropriate (GoM, 2015). While 'Access for All' standards (NCPD, 2011) (albeit limited) do exist, one is left to interpret what other qualities such as 'durable' and 'safe' might mean.

#### **4.4.5 Floor Area Ratio (FAR) Policy**

This policy (GoM, 2014) promotes the provision of open space in urban areas. Projects which qualify and adopt this policy must retain a minimum of 50 % of the site as 'open space'. Through the policy it is up to the developer to justify whether a tall building is suitable for the area. This should be done by preparing/commissioning an: urban design study/character appraisal; Environmental Impact Assessment; Transport Assessment; and Social Impact Assessment if these are considered necessary. Such studies should review "the relationship to the context, including topography and the urban structure, relationship to infrastructure, especially transport, and historic areas and the effect on the skyline, the architectural quality, the microclimate and the contribution to the public realm." (GoM, 2014, S. 12) Proposals also need to comply with certain criteria and guidelines. Some of the most relevant are: Land Use; The Public Realm; and Permeability and Legibility of the Site.

Land use: This requires of a mix of uses and the ground and topmost levels must provide uses for public access "such as restaurants and cafes with associated viewing galleries. Uses being proposed at ground level should also contribute to the diversity, vitality and vibrancy of the surrounding streets and spaces. A mix of uses rather than a single use has the greatest potential for interacting successfully with the surrounding smaller buildings and of creating a place, not just a location." (GoM, 2014, pp. 24,25)

The Public Realm: Schemes "should create high quality, public open space within the site...The development should promote consolidated outdoor public spaces that are safe, especially from crime, and attractive for all, and which meet the needs of both the users of the building and the wider neighbourhood. Public open space should encourage people to linger and incorporate well-designed landscaping and street furniture...The management and maintenance of these spaces needs to be specified in a planning gain obligation and agreed to by MEPA." (GoM, 2014, p. 27)

Permeability and Legibility of the Site: Schemes "...should promote pedestrian accessibility and local permeability by making places that connect with each other, putting people before traffic. The development should be integrated in the existing network of pedestrian routes and streets and should provide recognisable intersections and landmarks to help people find their way around". (GoM, 2014, p. 27)

#### **4.4.6 Outdoor Catering Areas**

These guidelines serve to ensure that pedestrian public footpaths are not negatively impacted by the introduction of outdoor catering. This includes the potential impact on: the expression of local character and identity and feeling of open space in urban area; the diversity and attractiveness of urban open

spaces; the character of the existing urban context; the safety and function of the footpath or any nearby street; and the level comfort for pedestrians to pursue their walks at a leisurely pace (TM, MTA, MEPA, & GPD, 2015).

Policies take into consideration the protection of SAC's SPA's, AEI's, SSI's and any other protected areas. Interventions should not have negative impacts the characteristics of the public open space when this has important historical, architectural, natural or social contributions. Various detailed policies are provided to ensure that access is not obstructed. These are in the form of minimum widths to be retained for pedestrian access but also for other forms of access such as cycle lanes and public transport. Policies also regulate how such areas may be provided in different types of urban spaces such as squares or gardens, promenades or pedestrian streets. Policies and guidelines are also provided in relation to existing street furniture and the relationship to existing traffic flows and speeds.

Apart from access related policies, quality standards are also provided covering: outdoor furniture criteria; marking of the area; maintenance conditions; and materiality. The design and maintenance considerations of the enclosure and shading and equipment structures are also included. These policies primarily relate to contextual aspects, aesthetics, durability of materials, retention of visibility and impact on third parties (TM, MTA, MEPA, & GPD, 2015).

#### **4.4.7 Guidelines on Trees, Plants and Shrubs for Planting and Landscaping in the Maltese Islands**

This document is the main guidance document regarding the use of vegetation in the Maltese Islands. Unfortunately, the primary value which it assigned to trees and vegetation is that they are important "aesthetic features which provide valuable opportunities for landscaping and screening" (GoM, 2002, p. 4) or as essential components of natural or semi-natural ecosystems. This is not surprising considering that it dates back to 1999. Other benefits related to the use of vegetation are not included.

The document (GoM, 2002) aims to provide detailed guidance when assessing development proposals. The main aims are to:

- promote environmentally-sound planting and soft-landscaping by guiding genuine efforts made by interested agencies (e.g. Government Departments, Local Councils, voluntary organisations) and by the general public;
- encourage incentives for environmentally-compatible improvements in planting and landscaping projects, and to deter unsustainable, or environmentally-damaging practice;
- further promote the demand for the propagation of suitable indigenous vegetation, and encourage Governmental and private nurseries to satisfy such demand; and
- enable clients/developers, as well as their architects and consultants, to produce appropriate landscaping layouts and drawings for specific development projects. (pp. 5,6)

The guidelines make provisions i.r.t. the type of species to be used, planting density, allowing sufficient growth space, watering and maintenance. However, the requirements are quite limited and tend to be quite vague. For example: "It is important to ensure that the methods used for planting, transportation, maintenance and irrigation are environmentally-friendly", (GoM, 2002, p. 15) leaving 'environmentally-friendly' open to interpretation. Considerations related to site design include: aesthetic compatibility;

screening; growing habits; creation of micro-climates; and scenic value. There is however scope for more detailed guidance on such aspects (GoM, 2002).

A section on planting in urban areas is included. Clear guidance is provided on the suitable/non-suitable use of specific species in relation to invasive qualities and indigenous considerations. Limited guidance is provided on: aggressive root systems; health considerations such as allergic reactions from particular species; road safety implications; planting layout; historical consideration of urban contexts; pests and diseases (GoM, 2002). Overall, these guidelines require updating.

#### **4.4.8 Rural Policy and Design Guidance 2014**

This policy and guidance document regulates development which may have an impact on rural areas and areas which fall outside the development zone. It contains policies related to the protection of special areas of conservation, special protected areas, and the protection of landscape features, protected species and their habitats from development. The policies contained in this document do not really relate to the planning and design of urban open spaces other than say valley areas. The policies are actually intended to regulate proposed developments in such open spaces and not proposals for the transformation of the open spaces themselves (MEPA, 2014)<sup>23</sup>.

#### **4.4.9 Guidelines on Works involving Trees**

This is a guidance document which provides advice on: protected trees, permits required; exemptions; obtaining permits; becoming a licensed tree specialist; and emergencies. It refers to the regulations and guidelines outlined in section 4.2.2 p117 and 4.4.7 p136 and builds on these in terms of promoting good practice for works on trees. The guidance covers: pruning of trees; transplanting of trees; compensatory planting requirements; and avoiding impacts on trees during construction (ERA, 2019).

#### **4.4.10 Investing in the Multi-functionality of Green Infrastructure**

This document (ERA, 2019) is the first policy document to be published in Malta specifically focusing on green infrastructure. Its aim was to provide an information document to support GI thinking in Malta. It does this by: setting the context for GI in terms of the EU mandate; defining GI and the documented benefits; reviewing the presence of GI in national policies; providing a preliminary stocking taking of existing GI in the Maltese Islands; discussing the financing of GI; and finally giving a brief overview of GI initiatives.

From the policy review it can be seen that besides the primary national strategies and spatial planning documents as reviewed in this chapter, there are strategic documents from other sectors where the concept of GI has been introduced. In 2015, for example, the Ministry for the Environment, Sustainable Development and Climate Change launched the document entitled “Greening Our Economy – Achieving a Sustainable Future”. The document (MSDEC, n.d.) identifies initiatives categorised in nine sectorial pillars including that of ‘Agriculture, Biodiversity and Green Infrastructure’. It mentions the main principle of multi-functionality and refers to Government commitment for the greening urban areas. Two relevant actions identified are: to identify areas of public land to serve as component of GI by the end of 2017; and

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<sup>23</sup> This document was in the process of being reviewed towards the end of the research period (PA, 2020)

by 2016, the identification of public gardens which need restoring and to draw up a plan for a five-year period.

The National Strategic Policy for Poverty Reduction and Social Inclusion 2014-2024 (MFSS, 2015), is also relevant as it aims to “improve coordination towards providing environmental health for all, such as clean air and seas; safe neighbourhoods with more open spaces; natural habitats; pollution and noise reduction; and sustainable community regeneration”. (MFSS, 2015, p. 73) Similarly, the National Children’s Policy 2017 calls for promoting “...a public environment, both natural and urban, that is conducive to the healthy development of children”. (MFCS, 2017, p. 67)

In conclusion, the document notes that GI in Malta is addressed by a number of authorities (also see section 4.1 p116). Interestingly, it states that the lead entity “to consolidate national efforts and ensure national, EU and international targets of GI development and implantation are met in a timely manner still needs to be identified, whilst remits and responsibilities of the various stakeholders are yet to be established”. (ERA, 2019, p. 63)

#### **4.5 Latest Government Initiatives**

ERA’s recent publication on GI (ERA, 2019) is not the only initiative which illustrates government’s recent interest in GI. Various initiatives have been initiated which relate in some way or other to the GI concept. In 2018 the PA launched a scheme called ‘Sebbah il-Lokali’. Its idea was to create a funding incentive for Local Councils to propose and implement ‘greening’ projects which embellish open spaces in their localities. The intention was to supplement the development planning fund and through the scheme Councils would be eligible for a further €50,000 for ecological initiatives or embellishment projects (MTICP, 2018). The scheme is still active but the definition of ‘greening’ remains dubious as many of such projects have resulted in the introduction of potted trees or plants.

This initiative was however followed by the reform of the Development Planning Fund which since 2017 has been in operation and utilised for the embellishment of urban areas. Its revision in 2020 introduced incentives for Local Councils, NGOs and other bodies to invest in green and blue infrastructure (GBI). The funds criteria promote cross-organisational partnerships. Through the structure of funding eligibility percentages, the fund’s criteria are promoting the inclusion of GBI interventions such as green roofs and walls in projects. Additionally, funds may be sought not only for the capital expenditure but also studies and five years of maintenance (PA, 2020).

At the same time, the Slow Streets initiative was launched organised by the Local Council Association<sup>24</sup> (LCA, n.d.) in collaboration with Transport Malta. This is an action plan which aims to temporarily close a number of streets to vehicles creating public open space which will be prioritised for pedestrians and bicycles. These projects will then be studied to understand the degree of pedestrianisation which should be permanently implemented (MTICP, 2020).

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<sup>24</sup> The LCA was established in 1994 through the Local Council (Association) Regulations (GoM) with the aim of representing all the Local Councils and promoting their common interests as well as offering consultancy services and training.

In parallel, in 2018, a vision for a green network for Malta, was presented by Saliba (BICC, 2019) to the BICC<sup>25</sup> Advisory Board. A working group to explore this vision and work towards creating a nationwide masterplan was set up. The idea was that this would be integrated within the planning systems as part of the policies related to the development permitting process so as to ensure implementation. To date however such a master plan has not materialised.

The latest of initiatives is the announcement of three green infrastructure design competitions, being piloted by the Ministry of Environment and Planning to the tune of 3 Million Euros. A design and build competition will be launched in collaboration with the Chamber of Architects. The Ministry's vision is to "move from grey to green in terms of infrastructure, and which truly benefit the health of residents and improve wellbeing." While other funding initiatives have targeted Local Councils, in this case, "the central government will be leading the project, due to the large-scale nature of the works". (Micallef, 2020)

#### **4.6 Conclusion: Addressing Urban Open Spaces in Regulation and Policy**

This chapter is aimed at understanding how national regulation and spatial planning policy addresses the planning and design of urban open spaces. In conclusion, this section summarises this understanding according to:

- the extent to which the potential of urban open spaces to contribute to social, economic and environmental value and address urban challenges is recognised and advocated; and
- the extent to which the various design categories as identified through the literature (Chapter 2) are addressed.

The review notes that various social and environmental issues have been identified in the various documents which have the potential to be addressed by urban open spaces. For example: obesity trends and the lack of physical activity; issues relating to air quality, loss of biodiversity and water quality; the need to enhance the urban environment and improve the quality of life; the need to adapt to and mitigate the impacts of climate change; incidence of localised and flash flooding; ambient noise due to traffic; car dependency and traffic congestion; and the lack of recreational facilities. However, overall, it can be said that the link between the potential for urban open spaces to contribute to such issues is seldom made. There is scope for the value of such spaces and the potential role which they play to emerge more strongly. While various strategies identify economic goals relating to sustainable development, the potential economic value which urban open spaces can contribute to is only limitedly acknowledged (ERA, 2020; MEPA, 2008; MSDEC, n.d.).

With respect to the various design categories, it can be said that overall there is a lack of policies and guidelines guiding the planning and design of urban open spaces. Where policies do exist, these tend to be strategic, primarily in the form of objectives which without additional standards or guidelines are open to interpretation. Additionally, implementation mechanisms are lacking. It can also be said that policy inadequacies exist, particularly, because they primarily adopt a conservationist approach with no

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<sup>25</sup> This is the Building Industry Consultative Council which is a council made up of stakeholders from the construction sector. BICC's "main aim is to advise the government on construction issues and also to assist the government in implementing the EU legislation and directives to ensure that Malta satisfies the commitments towards the 2020 energy targets." (BICC, n.d.)

proactive frameworks for increasing the value of urban open spaces. In conclusion, a brief overview for each design category is given below.

### **Spatial and Structuring**

Objectives to improve biodiversity or create ecological corridors and networks of open space are present. Additionally, their importance is also stressed. Connectivity of habitats is also recognised as an important goal. However, there is the lack of proactive planning and the implementation mechanisms necessary to achieve this. Overall the SPED (GoM, 2015) is limited to stating objectives and adopts a conservationist approach to protecting existing open spaces. There is no strategic framework or mechanism for increasing their value in relation to providing a system or network of open spaces.

### **Contextual Relationships**

There is very limited provision for this category. The policy which exists is limited to building alignments and streetscape considerations when designing boundary walls of front or side curtilages (GoM, 2015). There is no policy or design guidance concerning contextual considerations when planning and designing urban open spaces. Overall it can be said that there is a general lack of policy.

### **Character and Form**

The lack of greenery and attractiveness of the urban environment emerges as an issue throughout the documentation. Urban open spaces are predominantly hard landscaping. Even though this issue is identified the mechanisms and guidance which could address this are lacking. Objectives and policies are primarily limited to the need for proposals to be contextual.

### **Activities and Functionality**

Objectives are present for improving the quality and design of green open spaces and the provision of amenities and facilities. Guidance and actual policy are however limited. The local plans do contain some policies for greening. The NHLP for example is quite specific about certain spaces. However, more guidance is needed on how to interpret these. Additionally, policy should form part of an overall hierarchy and implementation plan, which is currently lacking. On a positive note the development planning fund has recently been reformed (PA, 2020) so as to encourage public spaces projects or improvements which target and incorporate green infrastructure. However, this targets bottom-up and localised proposals, which, while important, would still not form part of a strategic holistic implementation programme.

### **Accessibility**

Some strategies do identify the need for more open spaces and specifically green ones, however others which are unfortunately also more recent do not (ERA, 2018; NCSD, 2006). There are numerous objectives and targets set out (GoM, 2012), but the identification of specific projects is lacking and the question remains regarding which entity or authority is actually tasked with implementing and driving the creation of new open spaces. Local Councils are identified (GoM, 1993) as being responsible for their provision at a local level however considering their resources and set up, this role should be questioned. Spatial planning documentation (section 4.4 p126) identifies the need, demand, importance and sets objectives but again implementation and the driving entity is not identified. In terms of movement, various objectives and policies exist on the prioritisation of pedestrians, introducing traffic calming, connectivity,

walking/cycling trails and reducing vehicular impact. The field work should therefore seek to understand the extent to which these are actually taken on board during planning and design.

### **Climate Response**

Policy and guidance on this are lacking. There is a brief mention in DC 2015 (GoM, 2015) for open spaces to function well climatically. This therefore requires much more attention.

### **Water Management and Use**

This aspect is mentioned quite substantially in strategies and policies. The WCMPs (ERA, 2015; MEPA, 2011) have identified specific measures such as the need for assessment and the need for planning guidance documents. Policies in the local plans are also quite specific, for example in some cases requiring the use of SUDS. The field work should seek to understand the extent to which these are actually taken on board during planning and design.

### **Use of Vegetation**

Policies are limited to the introduction of soft landscaping schemes, primarily for aesthetic benefits. Existing guidelines focus on species selection and date back to 2002 (GoM, 2002). In fact, the Biodiversity Strategy and Action Plan (GoM, 2012) identifies the need for this to be updated.

### **Resource Management**

There is almost no policy or guidance representing this category. The DC 2015 (GoM, 2015) makes some reference to the use of solar panels and the use of durable materials without giving additional guidance or details. The SPED (GoM, 2015) requires new developments (including infrastructure) to be energy and water efficient and reduce waste. However, such concepts remain at a strategic level in the form of objectives.

### **Community Involvement**

There is no policy or guidance in this regard relating to the planning and design of urban open spaces. The concept is briefly mentioned in the NEP (GoM, 2012).

### **Maintenance and Management**

The responsibility regarding the upkeep of urban open spaces lies with the Local Councils. The development planning fund is a potential funding source. The NEP (GoM, 2012) does have a measure which suggests the need for guidelines concerning landscape management. The WCMPs (ERA, 2015; MEPA, 2011) also identify the need for more focus on governance aspects. The need for better management also emerged in the topic papers (section 4.4.1 p127). Clearly this category requires attention, but, there is no concrete policy or guidance. Recently, ERA developed limited guidance (ERA, 2019) specifically for works involving trees.

## 5 Urban Open Spaces in the Maltese Conurbation

### 5.1 Introduction

High densities and rates of development in Malta often result in discussions and concerns about the lack of open spaces, in particular recreational open spaces or areas of refuge within urban areas. While this may be legitimate, especially when compared to international standards, this research has focused on understanding the quality of the urban open spaces which do exist and what can be done to improve their potential to add value to the built environment.<sup>26</sup> Chapter 2 developed a theoretical basis informing the direction of the empirical research.

This Chapter reports on the first phase of the empirical research, which consisted of four different data collection techniques. These data sources are complemented by the review of existing strategies, plans and policies presented in Chapter 4. These results address the first two research objectives.

- Understand existing urban open space policies and planning process and identify gaps.
- Identify design principles/themes relevant and specific to the design of urban open spaces in Malta and their potential to contribute to sustainable development.

The first data source is a physical survey of existing urban open spaces in Malta, the second is a set of semi-structured interviews with Local Councils in Malta, the third is an in-depth review of three case study projects, and finally the fourth is a user survey which aims to provide insights regarding the user perspective. The results are presented in sections 5.2 p142, 5.3 p187, 5.4 p193, and 5.5 p219, while section 5.5.5 p227, provides a summary of the emerging aspects and conclusions which may be drawn from this part of the research.

### 5.2 Physical Survey of Existing Urban Open Spaces

#### 5.2.1 Introduction

This section presents the key results of the physical surveys of existing urban open spaces in Malta.<sup>27</sup> The statistical analysis was carried out using SPSS and the Chi Square test. The P value's obtained are provided as footnotes (See Chapter 3). The sub-sections which follow relate to the twelve categories identified through the literature (See Chapter 2). With respect to the last four categories<sup>28</sup>, the information which could be gathered through surveying the spaces was limited. Interviews with Local Councils were therefore carried out to fill in these gaps (See section 5.3 p187).

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<sup>26</sup> The research defines 'Quality' and 'Value', by looking at the potential contribution of urban open spaces to Sustainable Development. This means, looking at the potential environmental, social and economic benefits. (See Chapter 2)

<sup>27</sup> The data was analysed using thematic and statistical analysis (See Chapter 3). Only the key statistics and images are presented here. Statistical graphs are used where the data has quite a varied spread and is easier illustrated using a graph. A full account of the statistical analysis can be found in Appendix C5.

<sup>28</sup> Lighting; Resource Management; Maintenance & Management; and Community Involvement.



As outlined in Chapter 3 two areas within the urban conurbation were chosen (see Figure 26) and a total of 42 spaces covering different typologies were analysed. The number of spaces per typology<sup>29</sup> and the localities in which they are found are outlined in Figure 31 and Figure 32 below.

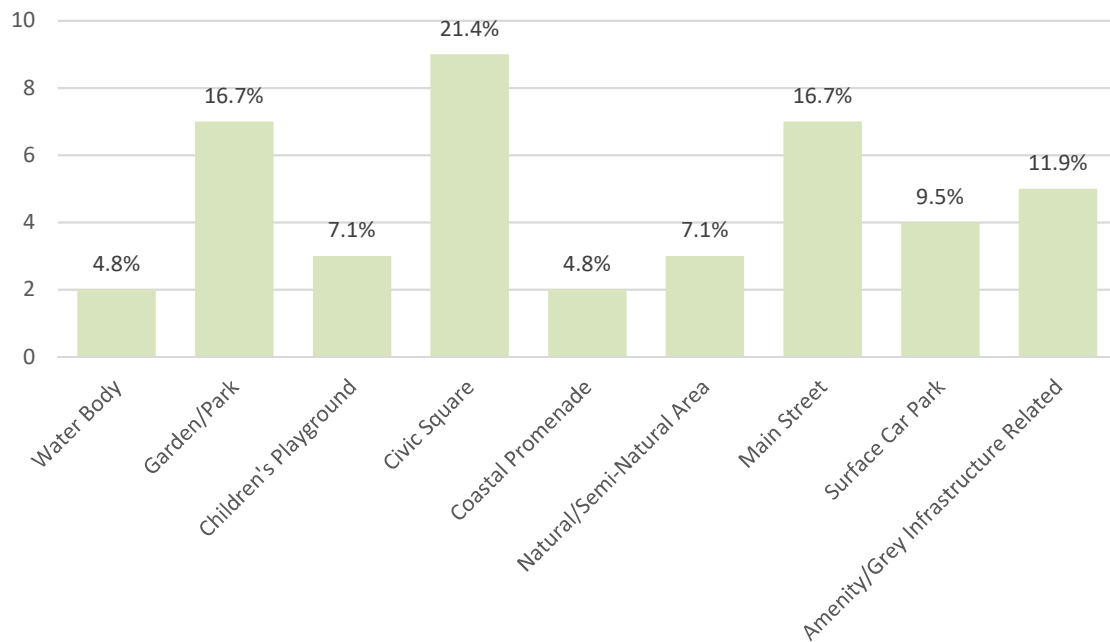


Figure 31: Number of open spaces surveyed per typology of open space

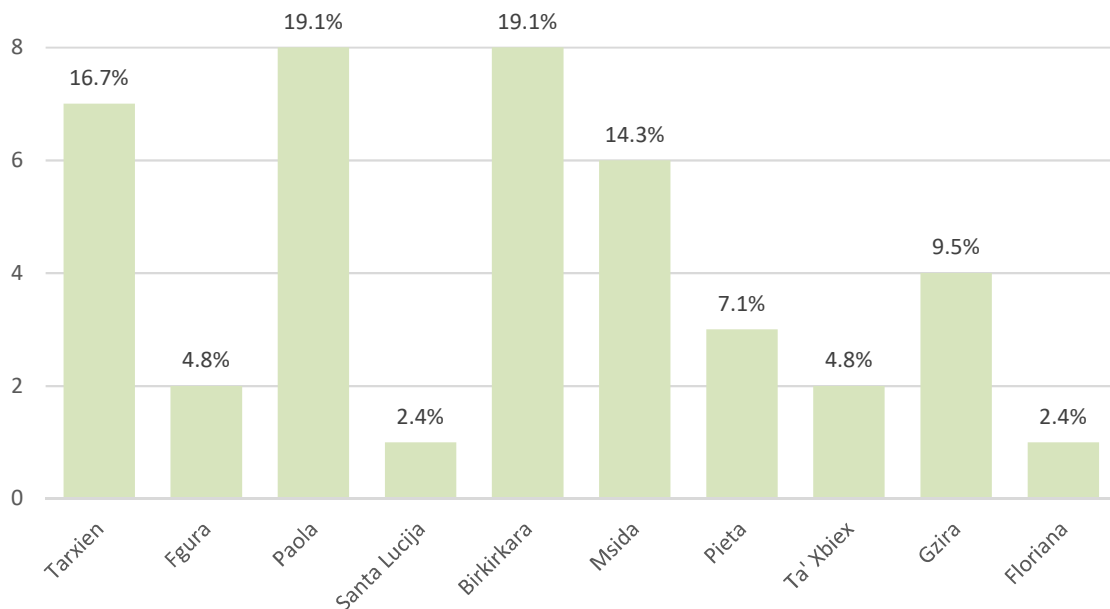


Figure 32: Number of open spaces surveyed in each locality

In terms of size, 50% (21 spaces) of the spaces measured less than 3000 sqm (Figure 33), while 26.2% were between 5000-20,000 sqm (11 spaces). However, five of these are the main streets which are not

<sup>29</sup> 'Amenity/Grey Infrastructure Related' (AGIR) refers to green space alongside grey infrastructure such as roads, traffic islands etc. and amenity planting with no particular recreational function.

useable as recreational spaces but rather are designed as spaces for vehicular movement. Additionally, none of the spaces are greater than 20 ha. Moreover, only four are greater than 2ha of which three are the natural/semi-natural spaces and one is a garden/park found in Gzira. Thus, for these urban areas to provide local parks<sup>30</sup>, the potential of valleys and areas such as the Pinetum in Floriana, needs to be explored.

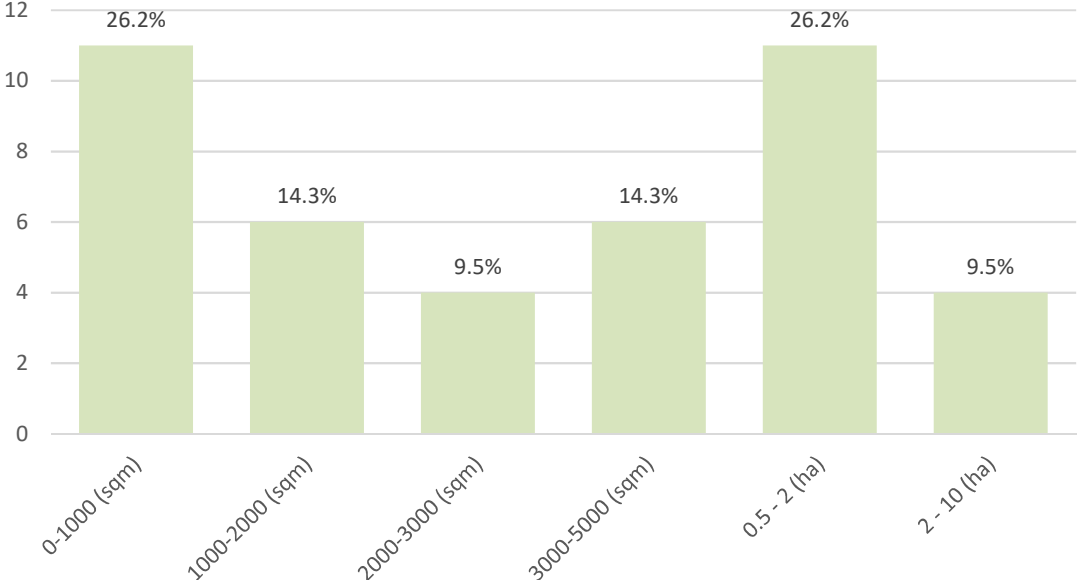


Figure 33: Number of spaces surveyed according to size

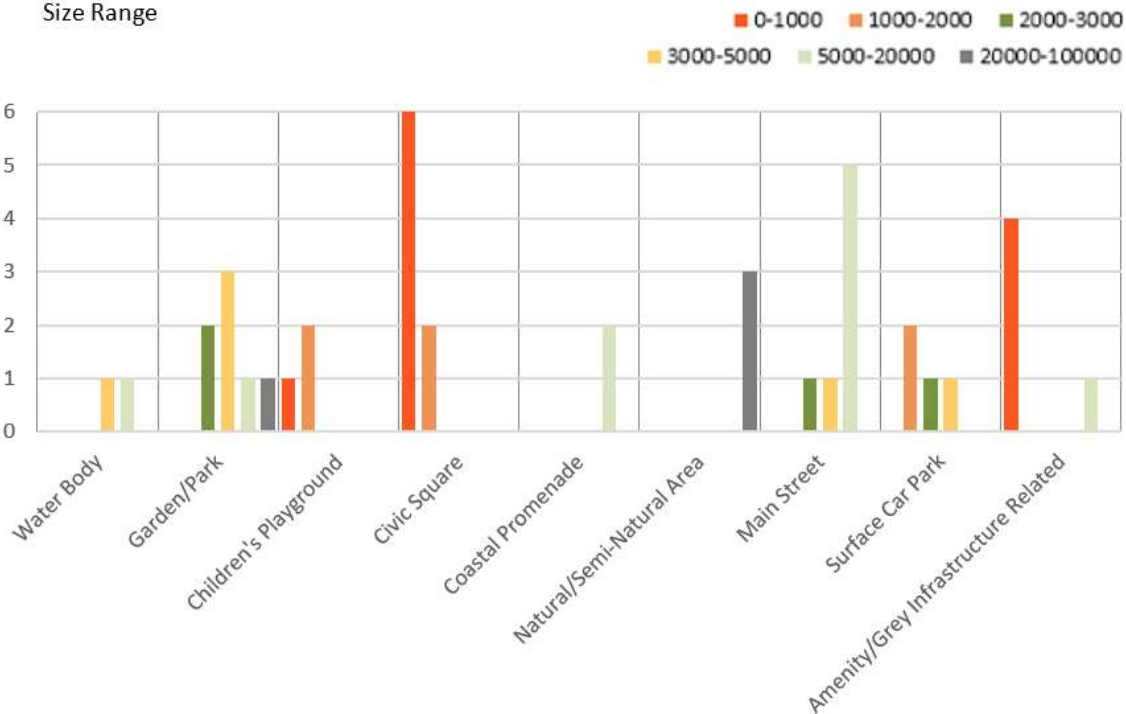


Figure 34: Number of spaces surveyed according to size distribution and typology of space

<sup>30</sup> By international guidelines (Llewelyn-Davies, 2007) these should be greater than 2ha.

## 5.2.2 Spatial and Structuring Qualities

### Open Spaces as a Structuring Element for the Urban Fabric

Most of the questions under this theme relate to whether or not policy exists for these aspects. A policy review was carried out at local plan level which is the lowest policy scale for specific urban areas and sometimes specific open spaces. The two study areas are covered by four different local plans. These being the: North Harbour Local Plan (NHLP) (GoM, 2006), Grand Harbour Local Plan (GHLP) (GoM, 2002), Central Malta Local Plan (CMLP) (GoM, 2006) and South Malta Local Plan (SMLP) (GoM, 2006).

The first aspect is that open spaces could potentially form part of an open space system which provides a spatial structure and sense of orientation for an urban area at a strategic scale (Stiles, 2009). Overall, none of the local plans provide policies aiming to do this. The NHLP does however in its general introduction mention the need to retain the remaining undeveloped areas to provide 'green lungs', recreational open space, and buffers between settlements so as to retain their identity and improve orientation. Additionally, the SPED (GoM, 2015) also identifies 'Strategic Open Gaps' which should be retained. However, there are no proactive policies which aim to improve the structure of the existing open spaces.

Another aspect is the identification and provision of spatial corridors with corresponding height limitations which could support airflows and breezes (Beatley, 2012). However, none of the local plans address this. Thirdly, policy should aim to provide green belts or protection belts alongside water bodies (Austin, 2014). In this regard, three of the local plans have policies which set out protection areas around valley protection zones and valley watercourses. In brief the policies indicate a presumption against any development as well as the development of rehabilitation and management plans to guide the reinstatement of the valleys. The GHLP does not have such policies.

Another important aspect is the provision of continuous green infrastructure as part of an open space system within urban areas so as to support and protect habitats and biodiversity (Austin, 2014; Beatley, 2012; Stiles, 2009). However, none of the local plans provide policies to create a continuous network of green infrastructure. Rather the focus is on greening the urban environment in general or individual open spaces together with conservation and protection of ecological areas and existing open spaces from development. This is primarily through policy which designates protection areas or strategic open gaps. The focus is also on environmental improvements in the form of tree and shrub planting and afforestation efforts in the form of structural planting.

Lastly, the aim should also be to provide connections and create an interlinked open space system in the form of a network (Stiles, 2009). In the CMLP and SMLP there are no policies in this regard. The hint at this is the promotion of the creation of pathways/cycle routes to countryside areas or supporting the introduction of cycle ways and cycle routes as broadly indicated as part of the transport improvements. Similarly, in the SMLP there is the promotion and safeguarding of public access to the coast including its rehabilitation; and supporting the introduction of walking and cycle routes for which some specific ones are identified.

The GHLP is a little more specific since it does have an objective to 'establish a network of open space within the urban area'. The actual policies however are quite limited. These include the protection of existing areas and the improvement of access to coastal areas. The policy which comes closest to articulating this objective is that of promoting the development of a 'recreational footpath system'. This

should be away from traffic, link areas of greenery, extensive fortifications and open vistas and viewpoints. It should be a managed footpath system for simple recreational use. The NHLP also specifically states that it seeks to improve links to informal open spaces. With specific strategies to improve cycle ways and walkway networks so as to link major open spaces; and to link the plan area’s major green spaces. Once again however the actual policies are limited to promoting the development of recreational walkways and cycle routes.

In conclusion it can be said that policy for the planning of open spaces at the strategic scale with the aim of creating a network of open spaces and particular a continuous system of green infrastructure is lacking.

**Connectivity of Open Spaces**

The open spaces surveyed tend to be physically connected to each other. In fact, 64.3% of the spaces were scored as being ‘extremely’ or ‘very’ connected to other open spaces within a 400m walking radius. However, this relates<sup>31</sup> to the open space typology and it is actually the main streets, car parks and AGIR which contribute most to this statistic (14 out of 27 spaces). They were classified as such since they are open and directly connected to or form part of the street network. Civic squares also fare well as do gardens/parks. However, children’s playgrounds do not.

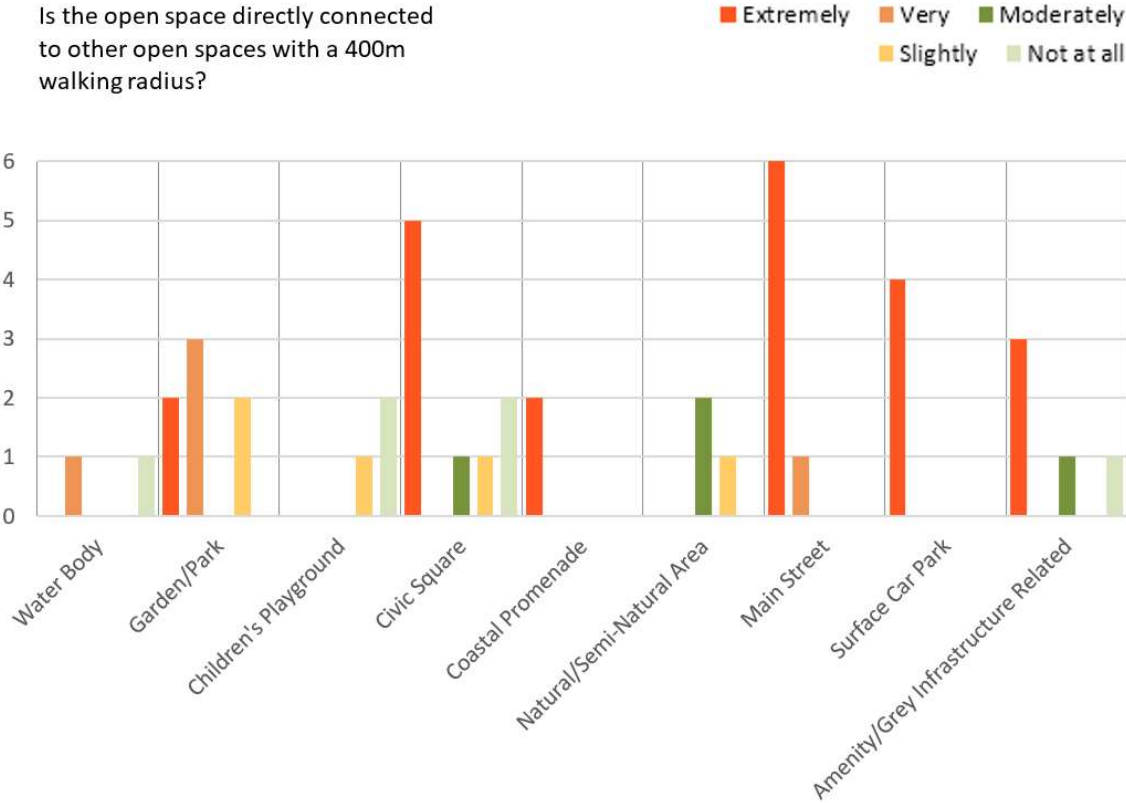


Figure 35: Number of spaces according to level of connectivity and open space typology

<sup>31</sup> P value = 0.017



Figure 36: Typical closed off boundaries used for children's playgrounds (Pietà and Birkirkara)

In fact, none of the three playgrounds act as places to walk through which is an important aspect of connectivity (Austin, 2014; Marcus & Francis, 1998; Noguera & Riera, 2016). While, many spaces surveyed (57.1%) do contribute to being a space to walk through, a substantial proportion (42.9%) do not. Gardens, civic squares and promenades are the typologies which do tend to provide a place to walk through. Natural spaces are unfortunately a missed opportunity. While it is understood that there is the need for children's playgrounds to be contained, solutions do exist which can ensure this and provide connectivity as part of a network of open spaces.



Figure 37: Images of a civic square (Birkirkara) and garden (Paola) which act as spaces to walk through

Another important aspect when considering connectivity is the quality of the pedestrian connections. Unfortunately, in 52.8% of the cases (19 spaces) the infrastructure for pedestrians was rated as 'poor' or 'very poor'. Only three spaces were rated as good, while fourteen were rated as acceptable. None were rated 'very good'. These results were irrespective of the typology<sup>32</sup>. Therefore, while physical connections might exist, their quality deserves attention.

This is also true when considering interlinked networks of vegetated open spaces integrating local biodiversity systems to facilitate habitat creation. There is the potential for such networks to be created, since in 92.9% of the cases, the spaces surveyed were directly surrounded by streets or spaces which have vegetation (trees (85.7%), shrubs (88.1%) and plants (88.1%)). However, physical green connections<sup>33</sup> between this vegetation do not exist in 74.4% of the cases and this is true across the typologies<sup>34</sup>.

<sup>32</sup> P Value = 0.201

<sup>33</sup> This refers to spatial elements which would contain soil and vegetation connecting the vegetation in the various open spaces

<sup>34</sup> P Value = 0.001

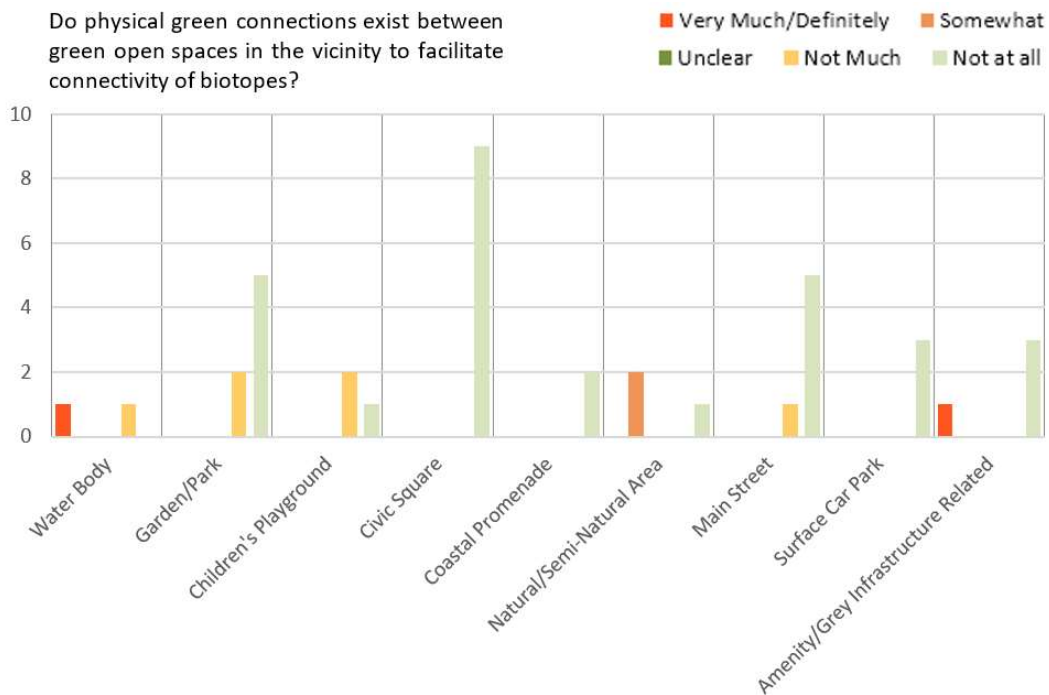


Figure 38: Number of spaces according to the existence of physical green connections and open space typology

Similarly, while local biodiversity systems<sup>35</sup> do exist within 400m for most of the cases (81%), there is typically 'not much' or 'no' relationship between the systems. The cases which do provide a relationship are usually those where trees are present and close enough to work together and provide a habitat for birds. In such cases this was clearly evident as birds could be clearly heard even if only a few trees were present in that particular space.

It can therefore be concluded that while the potential to create a network of green open spaces exists, this is currently not being exploited at the individual design scale, particularly with respect to designing for connectivity.

### 5.2.3 Contextual Relationships

#### Physical Relationships

The physical relationship which is created between an open space and its surroundings is a very important design aspect (Marcus & Francis, 1998; Jacobs, 1961; Gehl, 1987; Alexander, 1977). There is the need for appropriate boundaries which provide soft transitions, while creating clear spatial definitions and ensuring enclosure while still retaining a relationship with the street or buildings. In this respect, 'very' clear boundary conditions are provided in most cases (76.2%). However, on analysing the boundary conditions further, their design fails to create good relationships particularly with the surrounding buildings. In 48.4% of the cases, the open spaces are completely surrounded by road carriageways, the design of which is primarily oriented towards vehicles. In another 41.9% of the spaces, most of the edges of the spaces were surrounded by streets<sup>36</sup>. Moreover, it was often the case that a row of parallel on-

<sup>35</sup> Identified through desktop analysis as substantial patches of vegetation including fields, agriculture or vegetated undeveloped land

<sup>36</sup> This analysis was done excluding the category of streets and car parks since they are streets themselves.

street parking separated the space from the street, resulting in a complete detachment of the space from its context.

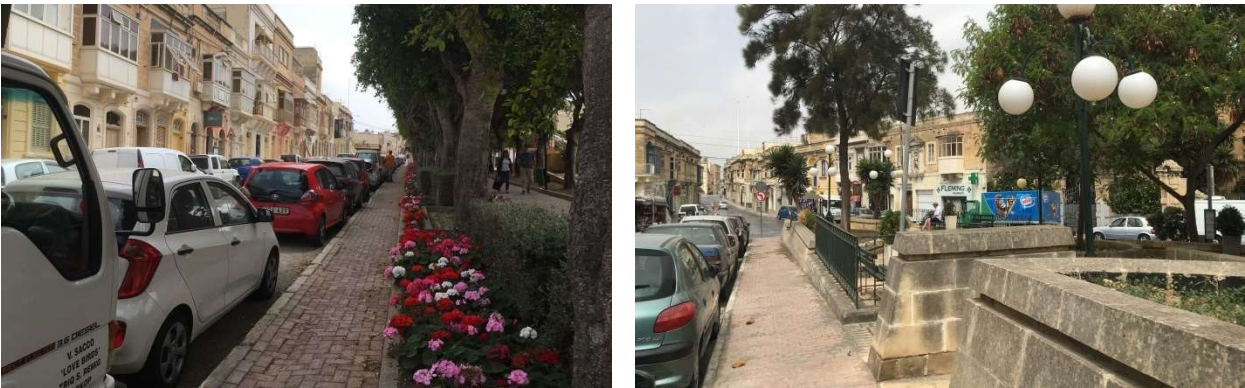


Figure 39: Images showing typical boundary conditions of carriageways and parking surrounding open spaces (Paola and Tarxien)

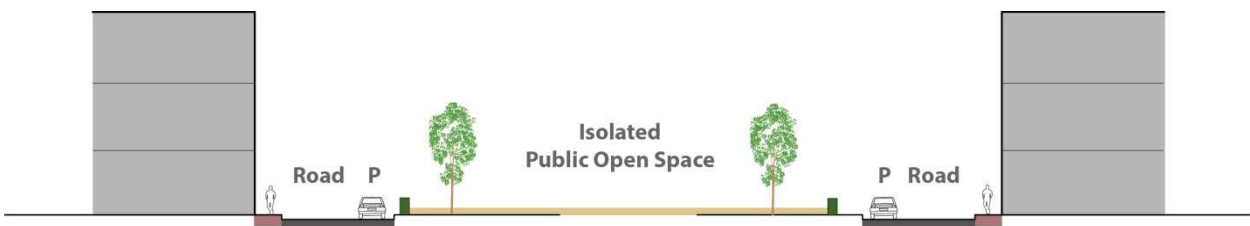


Figure 40: Typical section illustrating detachment of the open space from its context



Figure 41: Images showing a bad transition between a public and private space creating blank walls (Tarxien and Pietà)

The relationship between the buildings and the space or street was also analysed. Overall, it was quite positive since in 31.4% of the cases there was a direct relationship with the buildings, where no semi-private zones existed. In 25.7% of the cases a softer transition was provided in the form of front gardens or front porches. Another 31.4% provided a mix of transitions some with semi-private zones, some without. Where direct relations between public and semi-private or private spaces existed, the design of this transition was analysed. This rated negatively in 39.4% of the cases while another 30.3% was rated as 'moderately' providing a good transition. These were rated as such when high boundary walls and blank facades were present as illustrated in Figure 41 above.

Another important aspect is the visibility of the open space from the surrounding context and facilitating opportunities for overlooking (PPS, n.d.; Marcus & Francis, 1998; Stiles, 2009; Gehl, 1987; Jacobs, 1961; Noguera & Riera, 2016). This scored quite well, since many of the spaces (51.4%) are surrounded by buildings which have 'mostly active' or 'active' frontages while another 24.3% provide a combination of

dead and active frontages. Additionally, in 61.9 % of the cases there was potential for overlooking from the surrounding buildings.



Figure 42: Images showing typical active frontages onto a civic square (left) and street (right) (Paola)



Figure 43: Images showing a combination of dead and active frontages onto a civic square (left, Msida) and dead frontage onto a playground (right, Paola)



Figure 44: Images illustrating visual connectivity when inside a garden (Tarxien) and outside a civic square (Birkirkara)

Visually connectivity is also on the right track with many spaces (59.3%) providing the opportunity to see inside the space when outside or 22.2% where more or less half of the edges allow for this. Similar results were obtained for the possibility to connect with passers-by from inside the space; 46.2 % scored positively ('very much' or 'mostly yes') with another 19.2% providing a combination.

More attention is needed with respect to the design of the boundary conditions. In 42.9% of the cases the edge conditions were classified as 'mostly hard' or 'hard'. Additionally, no relationship<sup>37</sup> was found between providing clear boundaries and the use of hard edges. This means that soft edges can also be

<sup>37</sup> P value = 0.41



used to provide clear boundaries between the spaces and their surroundings. Moreover, in many of the cases (68.6%) there were 'not much' (42.9%) or 'no' (25.7%) opportunities for resting or sitting in front of surrounding dwellings. There is also no relation<sup>38</sup> between the provision of active frontages and the provision of spaces for sitting or resting. So, while active frontages are being provided, there is still no opportunity to sit/rest in front of the buildings surrounding open spaces.



Figure 45: Images showing soft edges in a garden (Paola) and hard edges bordering a civic square (Tarxien)

In conclusion, the edges and boundaries of open spaces need to be improved to provide softer transitions. Additionally, the relationship between the open spaces and the surrounding buildings needs to be addressed as often open spaces are isolated due to road carriageways.

### Functional Relationships

With respect to creating relationships between open spaces and surrounding local amenities (Austin, 2014; Marcus & Francis, 1998; Noguera & Riera, 2016), open spaces tend to be well located, since 97.6% of spaces are within 200m of local shops, and 76.2% are within 200m of public buildings, recreation/sport or cultural facilities/amenities of local importance. Additionally, all of the spaces were rated as being within 400m of potential users, suggesting that the mix of uses in the relevant catchment area, which relates to the size of the spaces being surveyed, is appropriate for attracting users to the space.

## 5.2.4 Character and Form

### Character of the Open Spaces

The spaces surveyed were public spaces with two being semi-public. These are the University campus grounds and the reservoirs in Msida valley since they are fenced off (although visibly part of the streetscape) due to safety and security reasons.

A usual objective for open spaces in urban areas is the provision of natural spaces which provide access to nature or the creation of spaces which provide a sense of refuge (Stiles, 2009). Unfortunately, the majority of spaces (53.7 %) do not provide a sense of being in touch with nature, with a further 22% scoring 'slightly'. Only five spaces were rated 'extremely' or 'very' and this is related<sup>39</sup> to the open space typology, primarily the natural/semi-natural areas and one garden. Similarly, only 23.8% provided a sense

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<sup>38</sup> P value = 0.37

<sup>39</sup> P Value = 0.00

of refuge. Furthermore, the majority (64.3%) were classified as providing an urban character with a significant 42.9% being characterised by 'traffic'. Literature suggests (Stiles, 2009; Jacobs, 1961) that spaces should provide varying characters; this is therefore lacking. Other characteristics were noted such as: playful, adventurous, religious or monumental. However, these were quite limited.



Figure 46: Images illustrating a garden (Gżira) with a predominantly urban character and a garden which gives a sense of being in touch with nature (Tarxien)

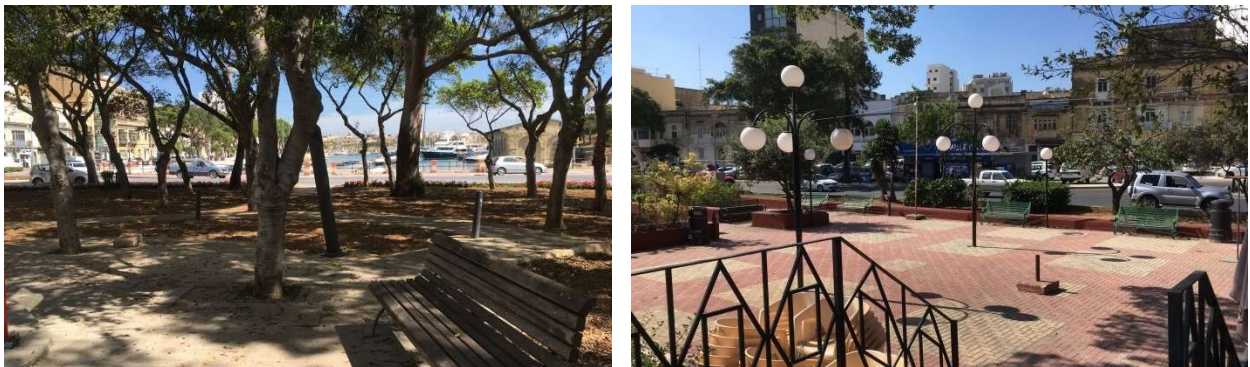


Figure 47: Images illustrating a garden (Pietà) and a civic square (Msida) surrounded by busy roads and parking areas and characterised by traffic

In general, it can be said that the spaces (71.4%) did not seem to be organised to provide specific characters or character areas. This was true irrespective of the typology<sup>40</sup> and the size<sup>41</sup> of the spaces. On a positive note though, where different characteristics were present or spaces were organised into different areas, the variety does tend to be compatible<sup>42</sup>.

In conclusion, the open space character does not vary much and is predominately urban. There is scope to increase the sense of refuge and being in touch with nature and reduce the impact of vehicular traffic.

### Visual Interest

Open spaces should provide a rich and varied aesthetic environment with the creation of attractive amenities and features (Marcus & Francis, 1998; Stiles, 2009; Noguera & Riera, 2016). While this can be subjective, an attempt was made to evaluate this and images are provided (Table 8 below) to illustrate how this was judged. In most spaces (57.9 %) there was 'no' evidence of complementary design features, such as street furniture, public art works or material choice, with a further 31.6% scoring 'slightly'. No spaces scored 'extremely' and just 1 scored 'very'. The majority (64.3%) were rated as 'slightly'

<sup>40</sup> P Value= 0.17

<sup>41</sup> P Value = 0.22

<sup>42</sup> 90% of the cases

aesthetically pleasing or 'not at all'. Only 3 spaces scored 'very'. Additionally, in 56.1% of the spaces there seemed to be no attempt to use attractive amenities and features.

Table 8: Images illustrating scoring reasoning for aesthetically pleasing





Classification (Likert scale)	Reasoning	Image of a Typical Example
Extremely	High level of design in terms of vegetation and detailing of hard landscaping or presence of interesting features.	No spaces qualified as such.
Very	Good presence of vegetation with interesting variation. Detailing of additional features such as lighting and paving. Good levels of maintenance and cleanliness. Overall no negative impacts.	
Moderately	Presence of reasonable vegetation and detailing of some features (example stone boundary wall).	
Slightly	Presence of reasonable vegetation but not much else. Also presence of features which detract/have negative impact (e.g. run down kiosk and heavy vehicular presence).	
Not at All	Nothing is aesthetically pleasing. No particular features or details, or interesting vegetation. Presence of aspects which give a negative impact (e.g. lack of maintenance and signs of dilapidation).	



Figure 48: Images illustrating typical features when scored as ‘no attempt’

### Spatial Proportions and Enclosure

It is suggested (Marcus & Francis, 1998) that depending on the open space typology and spatial enclosure which is required, open spaces should create subspaces. The idea of creating spatial contrasts is also important (Gehl, 1987). From the spaces surveyed 19 were rated as ‘not applicable’ in the sense that they responded to the human scale in themselves. Of those that didn’t, 14 of them (60.9%) did not create subspaces. This was irrespective of typology<sup>43</sup> or size<sup>44</sup>. Additionally, 67.6% of the spaces did not provide spatial contrasts.

### Responding to Site Identity

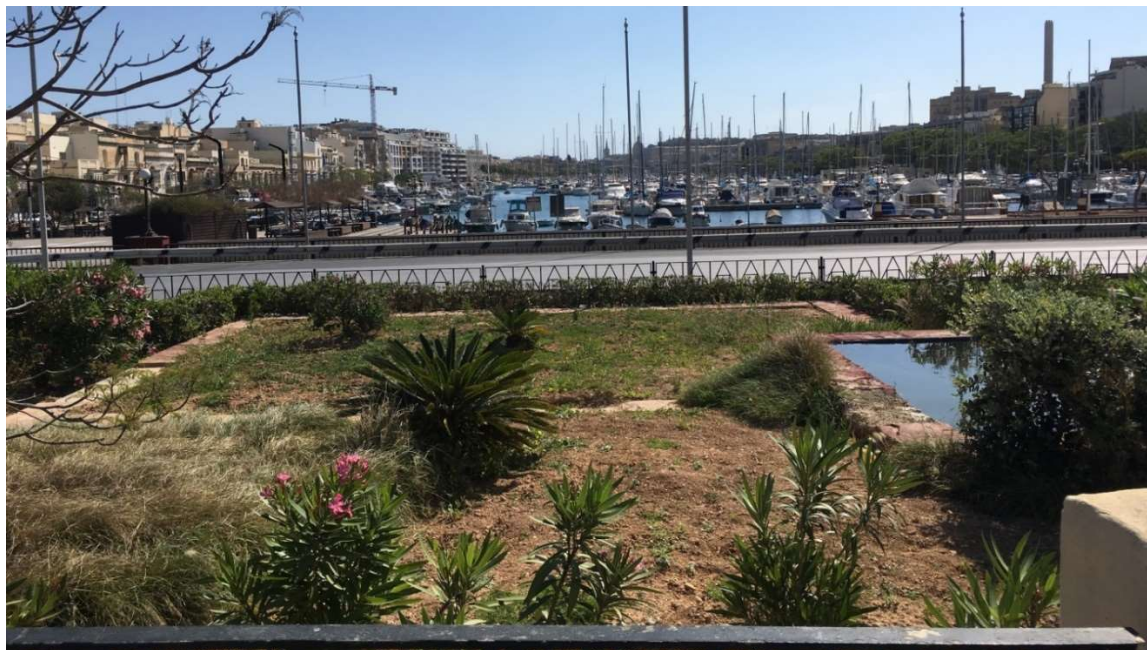


Figure 49: A civic square (Msida) scored as ‘moderately’ providing a sense of place due to the connection and views to the sea experienced from some parts

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<sup>43</sup> P Value = 0.15

<sup>44</sup> P Value = 0.69

With respect to providing signs relating to history or heritage of the locality the majority (61.9%) scored 'not much' or 'none at all'. However, 38.1% scored 'very much' or 'somewhat'. In many cases this was due to the presence of monuments or busts commemorating public figures. Additionally, 40.5% did not provide a sense of place with a further 19.1% scoring 'not much'. Making environmental process apparent and celebrating this could be a way of creating a sense of place (Al-Hagla, 2008), however this did not feature in 92.5% of the spaces while the remaining 7.5% scored 'somewhat'.

## 5.2.5 Activities and Functionality

### Recreational Facilities and Functionality

Urban open spaces should provide or facilitate a variety of activities (PPS, n.d.; Stiles, 2009). Many of the spaces tended to provide for primarily passive recreation such as: meeting points (54.8%); sitting out (52.4%); lunch breaks (42.9%) or relaxation (40.5%). Spaces which provided for formal or informal active recreation or physical exercise are limited (23.8%, 26.2% and 23.8% respectively). Other uses noted in smaller amounts (1-9 spaces) were: movement or access to buildings (primarily streets); parking; environmental/nature; aesthetic; water storage/flood mitigation; tombola; bocci; servicing of tourist attractions; swimming and fishing.



Figure 50: Images showing primary (benches) and secondary (planter wall) seating types (Tarxien and Birkirkara)

The provision of a choice of different seating types which respond to the activities in the space is an important functionality (PPS, n.d.; Marcus & Francis, 1998; Stiles, 2009; Noguera & Riera, 2016). The spaces perform well with 73.8% providing some sort of seating, 61.9% having primary seating and 35.7% having some sort of secondary seating. In most cases however this does not maximise potential views (46.2% – 'not at all'; 7.7% – 'not much'). However, for the majority of spaces, the location and orientation, maximises the potential for watching activity (40% – 'very much' or 26.7% – 'somewhat').



Figure 51: Images showing seating which does not maximise the potential watching of activity (Msida and Paola)



Figure 52: Images showing segregated spaces in a valley (Msida) and an entrapment area in a playground<sup>45</sup> (Birkirkara)

The provision of a safe and secure environment is another important aspect. It is important to ensure that all areas are easily visible from the main pathways and the design does not create entrapment zones; hiding places or segregated spaces (Marcus & Francis, 1998; Stiles, 2009). The surveyed spaces seem to function well since for the majority (65.8% 'very much'; 15.8% 'mostly yes'), all areas are easily visible from the main pathways. Additionally, the majority of spaces (67.7%) do not create entrapment zones or segregated spaces (61.5%) or potential hiding places (56.4%). When analysing some of the spaces which did not score at all well on all four aspects it was clear that this related to a specific typology, primarily the natural/semi-natural areas. In these spaces some areas were not visible from the main pathways. They also created entrapment zones, segregated spaces and hiding places. Having said this, this is the nature of such spaces.

Functionality also includes the provision of a circulation system which facilitates meeting people or watching the world go by (Marcus & Francis, 1998; Jacobs, 1961; Gehl, 1987). This was translated into whether paths were wide enough to stop and chat or sit along a route, requiring them being at least 2.5m (Department for Transport, 2007). In the case of streets, the footpath width was measured. While a good proportion of the spaces do have paths wide enough to stop and chat (36.7% 'very much') and 16.7% 'mostly yes'), there is still a good percentage which do not (40%) with an additional 6.7% scoring 'mostly no'. In this case a relationship<sup>46</sup> does exist with the typology of space.

It can be seen that while gardens/parks and civic squares perform quite well, natural spaces, main streets and surface car parks do not. The sample size of water bodies, coastal promenades and AGIR was not large enough to comment. In the case of water bodies and AGIR this question was mostly not applicable as the spaces were not accessible to walk through. Regarding the footpath widths for streets and car parks, 45.5% (5) have footpaths less than 1.2m, one space between 1.2-1.5m, three spaces 1.5-2m, and two spaces >2m. Additionally, when considering all footpaths, i.e. the footpaths on streets and those provided to access the other types of spaces, 47.6% do not provide seating or vegetation while another

<sup>45</sup> Most of the areas in this playground are dead ends due to how the changes in levels and movement through the space is designed

<sup>46</sup> P Value = 0.002

28.6% 'mostly do not'. It could be quite straight forward to ensure that this particular design aspect is provided for and this therefore merits attention.

Lastly, an important functional aspect is the material suitability, particularly in the case of surface materials. From the descriptions noted, it can be concluded that, in general, various forms of concrete are used for the ground surface and walking paths. This is in the form of cast-in-situ brushed concrete, printed concrete and concrete pavers. This usually provides a suitable material and issues occur primarily when it is not maintained. In children's play areas rubber flooring was always provided around the equipment but once again this was sometimes in need of maintenance. With regard to street carriageways, dark grey/black asphalt was always used. There is the opportunity to explore the use of different materials for street carriageways which could improve the aesthetic impact or traffic calming requirements. Overall, 50% of the spaces did not exhibit evidence of materials not being used suitability. However, 15% did and 27.5% somewhat did.

In conclusion, there is need for more varied types of activities. Additionally, the circulation system within and approaching open spaces should be improved by increasing widths and improving the provision of seating and vegetation.



Figure 53: Trees enclosed in concrete scored as 'not suitable materials'



Figure 54: Ramps without blister paving (left) and slippery paving (right). Both scored as 'not suitable materials'

### User Preferences and Diversity

Open spaces need to provide activities for different age groups and user groups (PPS, n.d.; Marcus & Francis, 1998; Stiles, 2009; Noguera & Riera, 2016). The open spaces surveyed do seem to target specific user or age groups quite uniformly (Figure 55 and Figure 57). However, the percentages in Figure 55 are

quite low. In fact, a good percentage of spaces (59.5%) did not seem to target specific user groups. This relates<sup>47</sup> to specific types of spaces, such as: water bodies, civic squares, natural/semi-natural areas, main streets and amenity green spaces/AGIR (Figure 56).

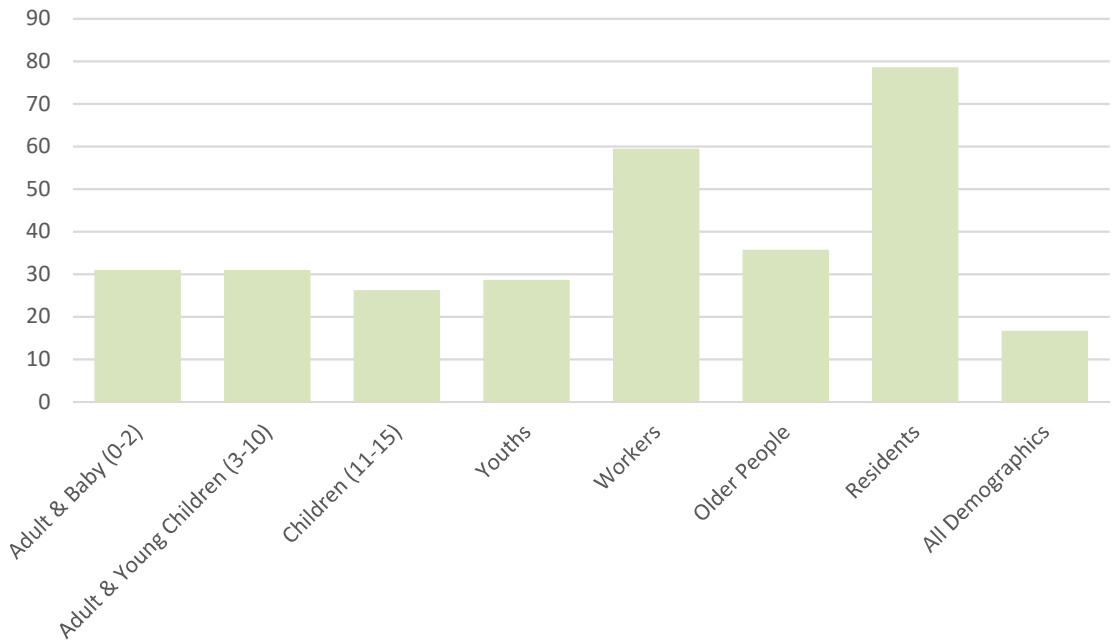


Figure 55: Percentage of spaces according to the type of user they potentially provide for

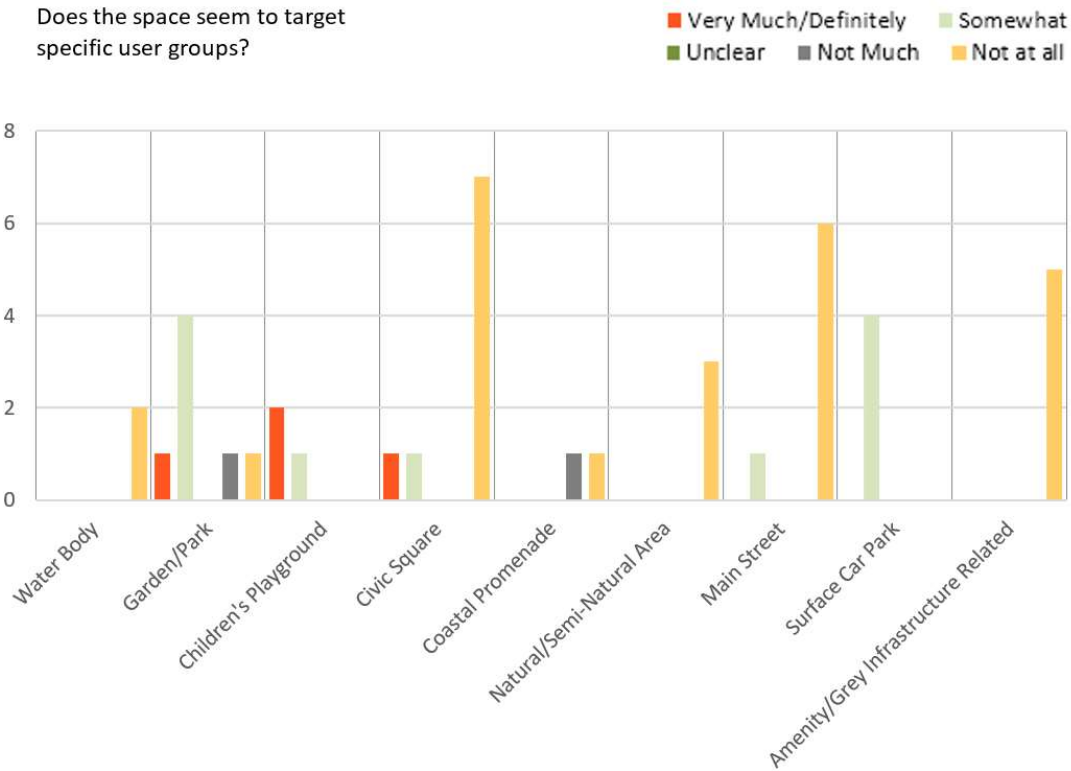


Figure 56: Level of how much a space targets specific user groups according to typology of space

<sup>47</sup> P Value = 0.00



Figure 57 also shows that a good percentage do not target any group in particular. Again, this relates <sup>48</sup> to the open space typology. Spaces such as main streets, car parks, natural/semi-natural areas and even coastal promenades do not tend to target a particular age group. Other typologies such as civic squares and gardens tend to be split both ways with some targeting specific age groups and others not. To be expected, children’s playgrounds all target a specific age group and this is the only type of space which does this.

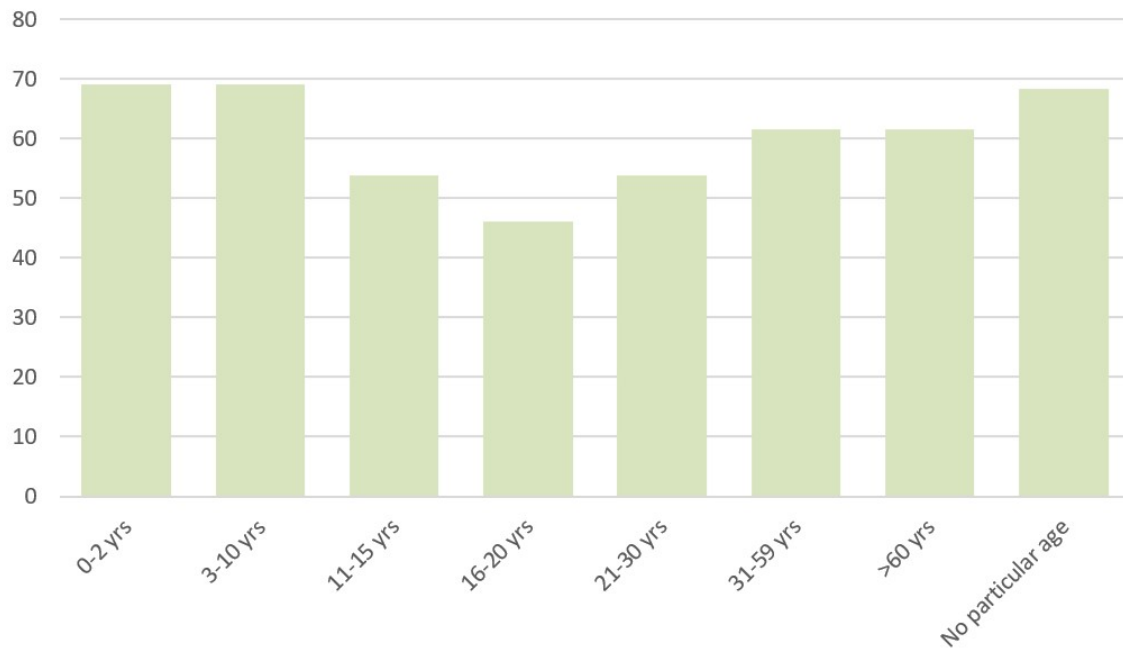


Figure 57: Percentages of open spaces according to the age group they target

Children’s play grounds usually provide typical catalogue equipment targeted at various ages. There is scope to increase the variety on offer with more informal, adventurous or interactive playscapes. Additionally, 16-20-year olds are only provided for within spaces which target all age groups and the only functionality of such spaces is either to walk through or just to sit/hang out in. This is similar for adults of all ages. Throughout the typologies, spaces mostly provide places to walk through or sit in. Few spaces actually providing a setting for other activities such as: community gatherings for bocci, tombola or kiosks. Some spaces attempt to provide something different by installing outdoor gym equipment. However, this risks becoming repetitive if other forms of attractions are not developed.

In conclusion, there is the potential for civic squares and natural/semi-natural areas to target more specific user groups and age groups while still providing for a range of demographics and users. Overall, the provision of activities and functionality should be more varied. There is also scope for spaces which facilitate the mixing of compatible user groups, rather than for example separating/isolating children play areas. All these aspects could potentially increase the use and social value of open spaces.

### Flexibility and Multi-functionality

Flexibility and adaptability are also important. A useful quality is for open spaces to be able to accommodate a varying program of activities or uses and ensure multi-functionality (Marcus & Francis, 1998; Stiles, 2009; Al-Hagla, 2008). In doing this, the compatibility of activities or the need to take

<sup>48</sup> P Value = 0.04

measures to mitigate incompatibility should be considered (Noguera & Riera, 2016). The spaces surveyed did not really perform well in this sense as 69.1% of the spaces do not provide for more than one activity with a further 9.5% scoring 'not much'. This was irrespective of the typologies<sup>49</sup>. Additionally, in 52.4% of the cases, the design was not flexible and the space couldn't be adapted to be used for activities other than its intended use, while still retaining its current use function, with a further 21.4% scoring 'not much'. This relates<sup>50</sup> to the type of space. As illustrated in Figure 58 it was primarily the water bodies, children's playgrounds, natural/semi-natural areas, main streets, surface car parks and amenity green spaces/AGIR which contributed. Gardens/parks and civic squares tend to be more adaptable/flexible.

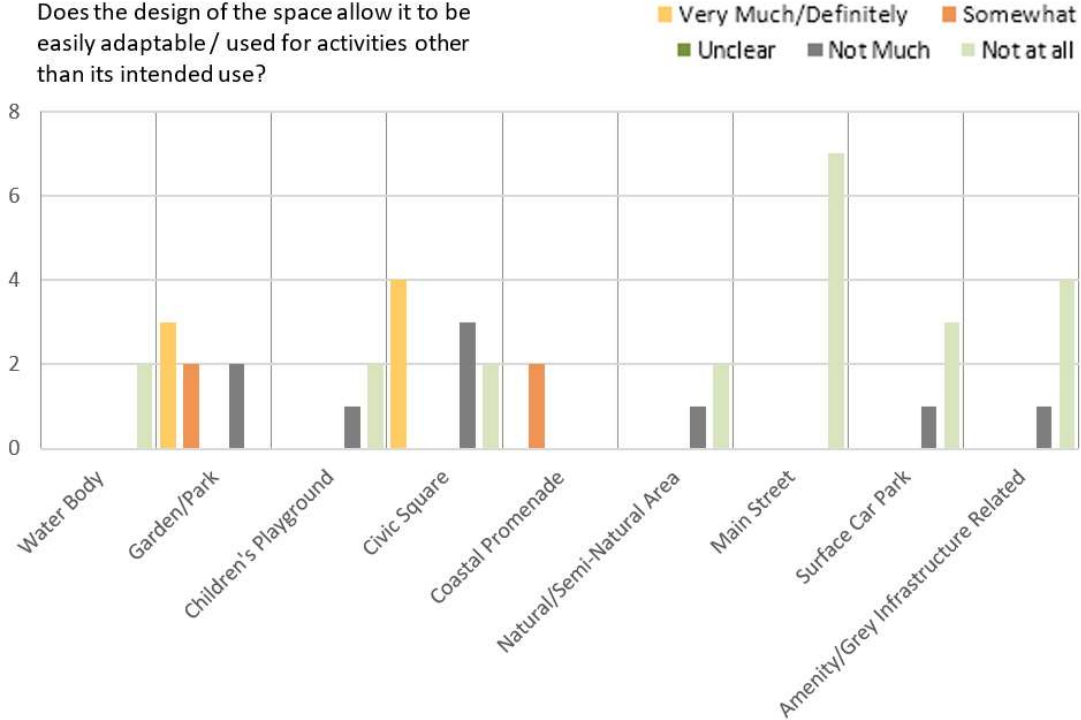


Figure 58: Level of adaptability according to the typology of space



Figure 59: Images illustrating a garden (Tarxien) which can be easily adaptable and used for other activities while retaining its current function and a piazza (Tarxien) which is not so flexible due to level changes, movement paths and design of sub spaces

In relation to adaptability, 13 spaces (31.7%) did have an element of obstacle free space which could be transformed to host temporary activities with a further 19.5% (8) scoring 'somewhat'. However, 20 spaces

<sup>49</sup> P Value = 0.07  
<sup>50</sup> P Value = 0.00

still scored 'not much' (24.4%, 10) and 'not at all' (24.4%, 10). On a positive note when different activities are present, in 60% of the cases, these were compatible.

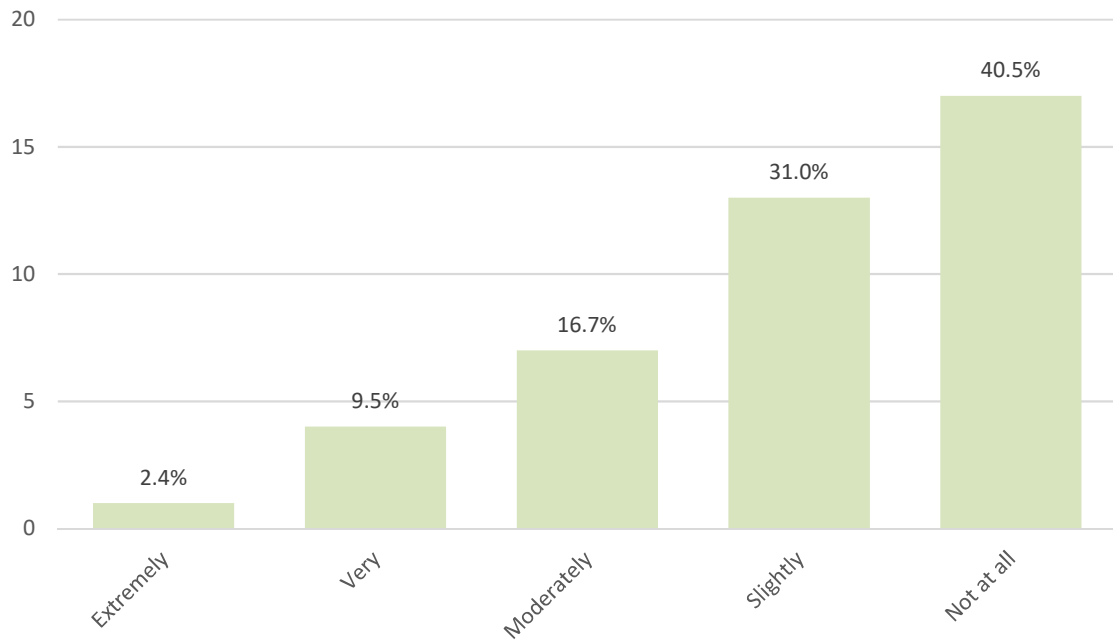


Figure 60: Number of spaces according to the extent of multi-functionality



Figure 61: Image of a civic square (Msida) considered to be multi-functional because of the varied activities it allows for (playground, bocci, tombola, evening events, garden, vegetation)

Overall, the spaces were not considered to be multi-functional (Figure 60). This relates<sup>51</sup> to the typology. Gardens/parks and coastal promenades seem to be the most multifunctional as do natural/semi-natural spaces. This is mostly due to the heavy presence of vegetation and the benefits associated with this. Children’s playgrounds, civic squares, main streets, surface car-parks, water bodies and amenity green space/AGIR however are not. This is a missed opportunity particularly in the case of civic squares.



Figure 62: Image of a children’s playground (Paola) considered not multi-functional since it only caters for a limited age group and there are no accompanying complimentary activities in the space



Figure 63: A civic square (Birkirkara) classified as not multifunctional as it simply provides some benches for seating and not much else. Vegetation is also limited.

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<sup>51</sup> P Value = 0.01

In conclusion, there is the potential to improve: the variety of activities which individual spaces offer; the flexibility and adaptability of children’s playgrounds, natural/semi-natural areas and main streets; and the multi-functionality of civic squares.

### Supplementary Equipment

In general, the spaces only provided basic supplementary equipment such as waste disposal facilities. In 82.9% of the spaces no sanitary facilities were present; in 97.6% of them no drinking fountains; and in 85.4% no signs identifying plants, facilities or features were present.

## 5.2.6 Accessibility

### Vicinity and Availability

The accessibility of open spaces can be measured by assessing the availability of open spaces per capita, and the availability within an appropriate geographical distance. There is also the need to consider the availability of varying types of open spaces (Marcus & Francis, 1998; Stiles, 2009; Austin, 2014; Gehl, 1987).

The amount of open space per capita available in the study area was calculated considering spaces accessible for recreation (passive and active). This included the following typologies: Gardens/Parks, Children’s Playgrounds, Civic Squares and Coastal Promenades. It emerged that in Area 1, 3.0 sqm/capita was available and in Area 2, 4.6 sqm/capita. Water bodies, Natural/Semi-Natural Areas, Main Streets, Surface Car Parks, Amenity/AGIR typologies were not included as in general they were inaccessible or did not provide space for recreation. This does not compare well to international standards<sup>52</sup>.

Table 9: Calculation breakdown for Area 1

Typologies available for recreation			
Typology	Amount in Sqm		Amount/Capita
Gardens/Parks	32,254		1.0
Children’s Playgrounds	5,680		0.2
Civic Squares	17,047		0.6
Coastal Promenades	37,432		1.2
<b>Total</b>	<b>92,413</b>		<b>3.0</b>
Typology with the potential to be made accessible			
Typology	Amount in Sqm	50% of Amount in Sqm	Amount/Capita
Waterbody	9,750	4,875	0.16
Natural/Semi Natural Areas	229,343	114,672	3.7
Surface Car Parks	10,117	5,059	0.16
Amenity Green Space	19,042	9,521	0.3
<b>Total</b>	<b>268,252</b>	<b>134,127</b>	<b>4.3</b>

<sup>52</sup> For example, Berlin suggests 6sqm of urban green per person (Kabisch, Strohbach, & Haase, n.d.).

Table 10: Calculation breakdown for Area 2

Typology available for recreation			
Typology	Amount in Sqm	Amount/Capita	
Gardens/Parks	61,164	4.0	
Children’s’ Playgrounds	1,510	0.1	
Civic Squares	7,080	0.5	
Coastal Promenades	0	0.0	
<b>Total</b>	<b>69,754</b>	<b>4.6</b>	
Typology with the potential to be made accessible			
Typology	Amount in Sqm	50% of Amount in Sqm	Amount/Capita
Waterbody	0	0	0.0
Natural/Semi Natural Areas	87,395	43,698	2.9
Surface Car Parks	5,584	2,792	0.2
Amenity Green Space	0	0	0.0
<b>Total</b>	<b>92,979</b>	<b>46,490</b>	<b>3.1</b>

However, if one considers that 50% of the area of water bodies, natural and semi-natural area, surface car parks and amenity green space, could have the potential to be made accessible and transformed to partially provide recreational space, there would be the potential to double this amount (Area 1: 4.3 sqm/capita; Area 2: 3.1 sqm/capita). The calculations are outlined in Table 9 and Table 10.

To understand the availability of open spaces within an appropriate geographical distance various desktop analysis were carried out. Firstly, the geographical area which falls outside the walking catchment (400m) of an open space of any size (including spaces even less than 3000 sqm) was calculated. In Area 1, 6.1% of the area fell outside the catchment of an open space. In Area 2, 34.2% of the area fell outside the catchment of an open space (Figure 64).

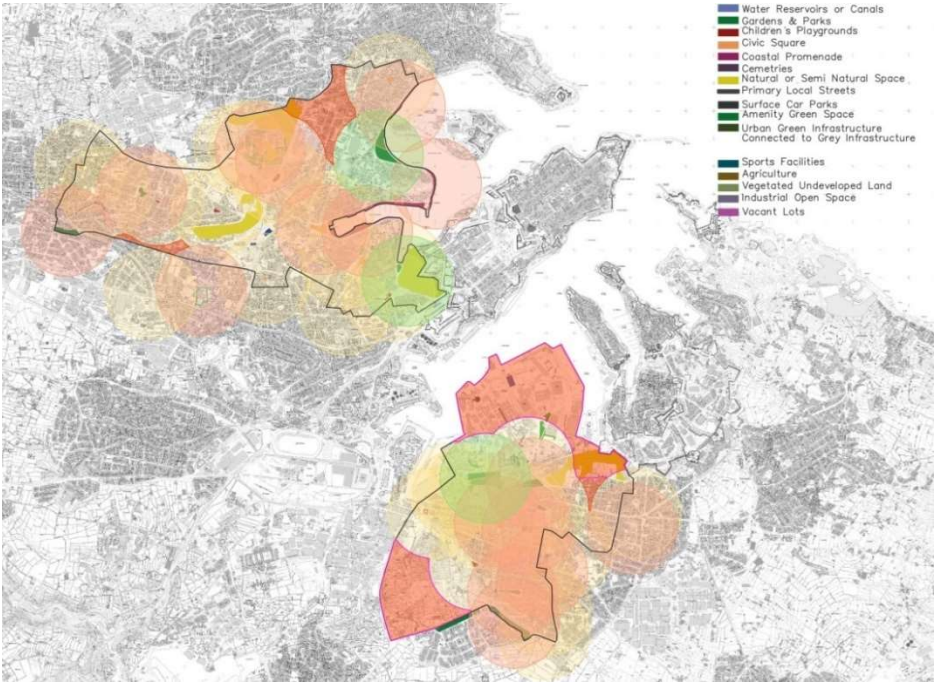


Figure 64: Image showing the areas in dark orange falling outside the 400m catchment radii

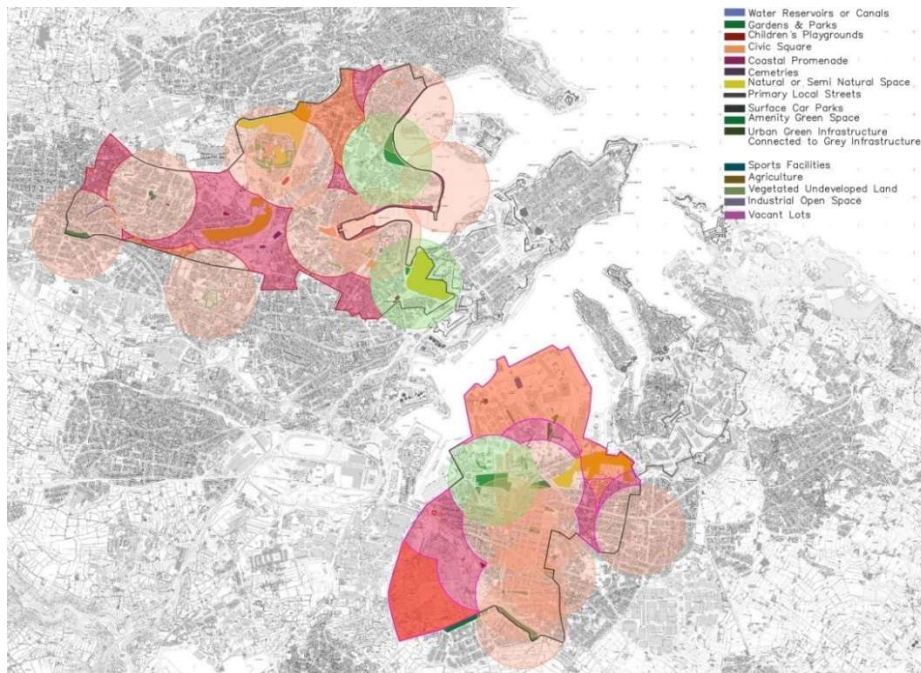


Figure 65: Image showing in dark orange and dark pink the areas falling outside the 400m catchment radii of spaces greater than or equal to 3,000 sqm

When considering the accessibility to open spaces greater than or equal to 3,000 sqm, 30.7 % of the area fell outside the catchment (400m) in Area 1 and 62.9% in Area 2 (Figure 65). Lastly, the same exercise was carried out for spaces greater than or equal to 2 Ha. In this case 82.7% of the area fell outside the catchment (400m) in Area 1 and 85.7% in Area 2 (Figure 66). The valleys, which were found to be quite inaccessible and run down through the surveys, were not included in the calculations.

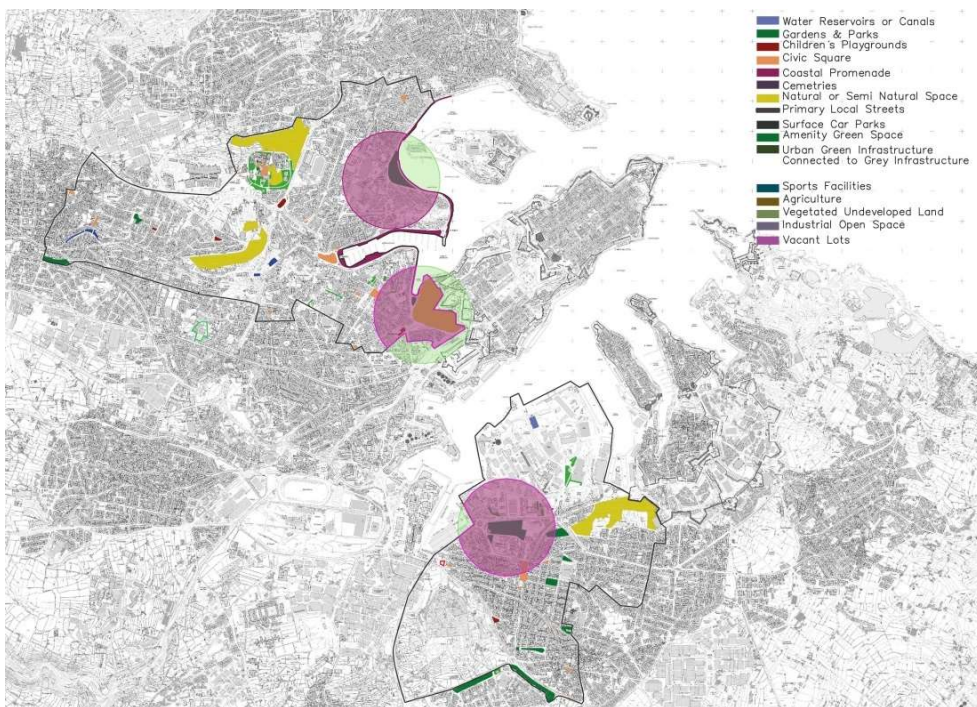


Figure 66: Image showing dark purple shaded areas which indicate the areas within the 400m catchment radii. The excluded areas were calculated as a negative of this.

With regards to the variety of typologies which exist, one can analyse the variety of open spaces present within a 400m radius of each space. The results are shown in Table 11.

Table 11: Variety of spaces within a 400m catchment

Variety of Spaces within 400m	Percentage of Spaces having this Variety
1 type	7.1 (3 spaces)
2 types	40.5
3 types	35.7
4 types	14.3
5 types	2.4 (1 space)

When considering the variety of spaces within a 1.2km radius, all of the spaces had: gardens and playgrounds within 1.2km. Almost all, 41 spaces also had civic squares and 36 spaces (85.7%) had a natural/semi-natural area. Promenades were less common (17 (40.5%) spaces) as were water bodies (19 spaces).

In conclusion while smaller spaces (< or equal to 3,000 sqm) tend to be readily available and in the required vicinity, the availability of larger spaces (> 3,000 sqm and > 2 Ha) needs attention. District parks greater than 20 Ha are lacking altogether. While it may not be possible to reach the sqm/capita recommended by international guidelines, it is evident that there is the potential to increase the provision simply through the transformation and better design of existing spaces.

**Legibility**

Ensuring the visibility of the space on approach is important for encouraging use (Marcus & Francis, 1998; Noguera & Riera, 2016). Together with this is also the creation of clear and effective sightlines through the space (Marcus & Francis, 1998; Gehl, 1987). Of the spaces surveyed 82.4% of the spaces scored ‘extremely’ (70.6%, 24) or ‘very’ (11.8%, 4) to being clearly visible on approach. Also, 56.5% scored ‘very much’ or ‘somewhat’ to having clear and effective sightlines of the space from the entrances.

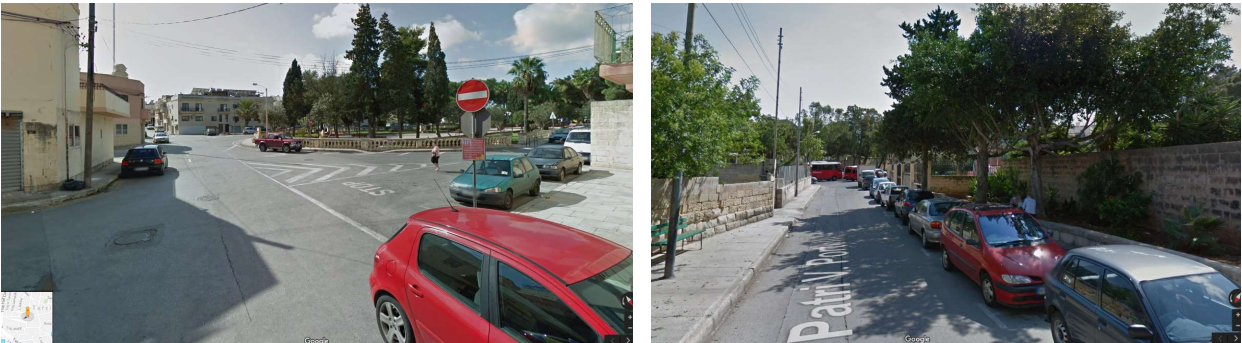


Figure 67: Images illustrating a garden (Tarxien) which is clearly visible on approach and a playground (Pietà) which is not so visible due to the high boundary walls surrounding it (Source: Google)

Entrances need to be easily identifiable and located appropriately according to the line of approach (Stiles, 2009). The spaces surveyed do not perform well in this regard, with 54.6 % scoring ‘slightly’ or ‘not at all’ to the entrances being easily identified. In relation to whether entrances are located conveniently, the results were split with 45.5% scoring ‘extremely’ or ‘very’, while 50% scored ‘slightly’ or ‘not at all’. Additionally, in 71.4% of the spaces the design of the entrances did not announce the space.



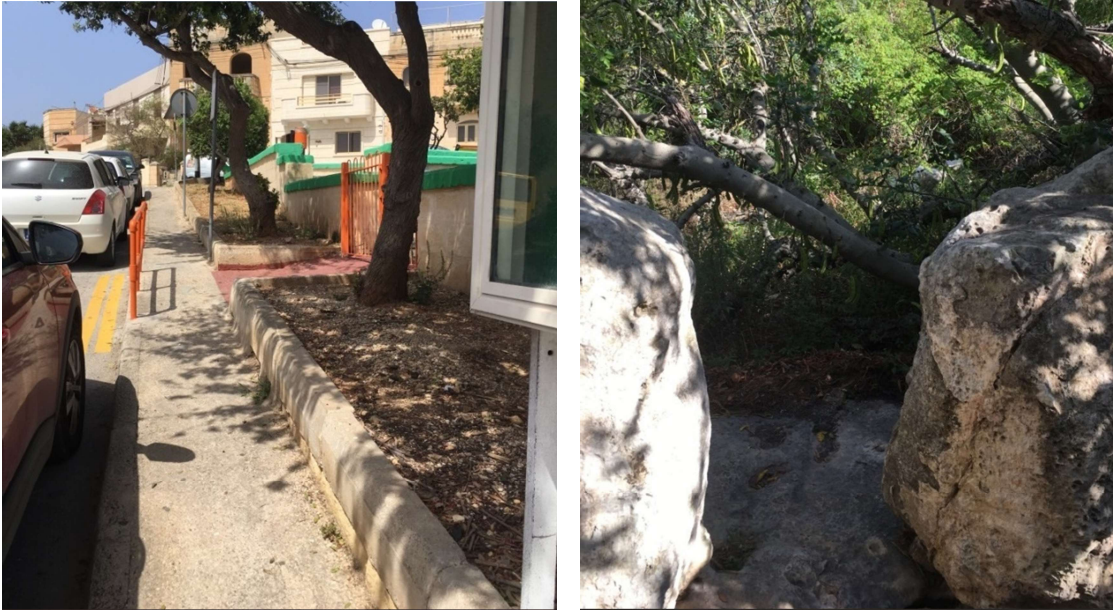


Figure 68: Entrances which are not located according to the line of approach and do not announce the space in a playground (Birkirkara) and valley (Msida)



Figure 69: Entrance to a garden (Paola) which clearly announces the space and is provided on all four corners as the space is approached from the side streets. Additionally, more access points are provided along the edges.



Figure 70: Entrance to a garden (Tarxien) clearly visible on line of approach, announces the space and provides clear views of the space.

For legibility, a clear hierarchy of circulation paths through the space is another important factor (Marcus & Francis, 1998; Stiles, 2009). However, 62.5% (20) of the spaces did not provide this. This was irrespective of the type of space<sup>53</sup>.

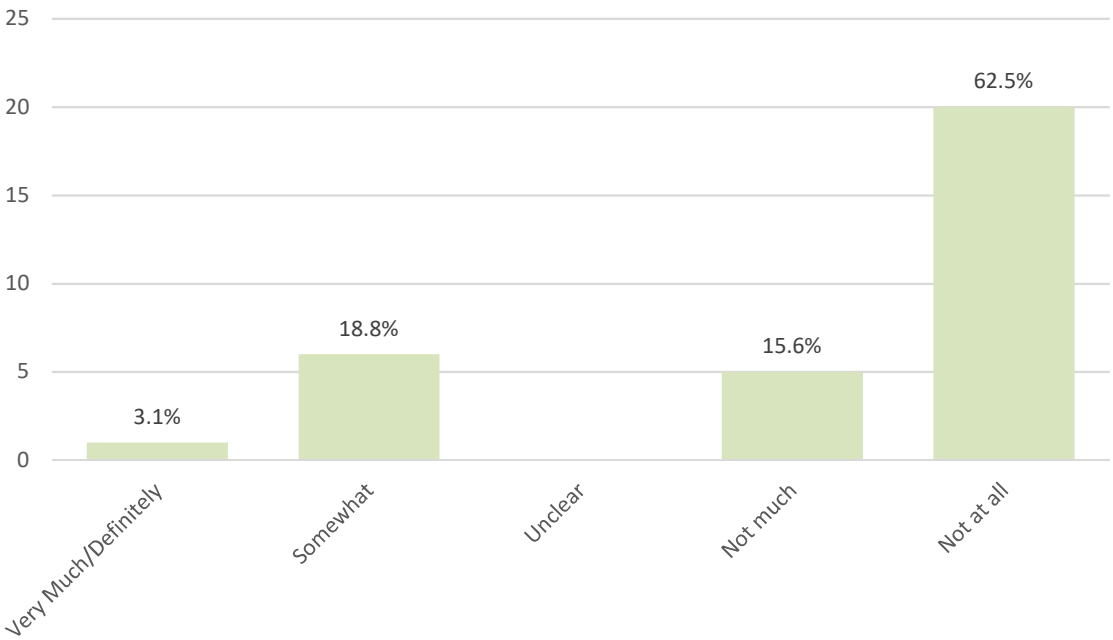


Figure 71: Number of spaces according to the extent to which the design provides a clear hierarchy of circulation paths through the site

Lastly, 72.7% of the spaces did not have signs about the expected use and function of the space. However, it was still ‘extremely’ clear in most of the spaces (75%) what the expected use of the space was. In fact, there is no relation<sup>54</sup> between the provision of signs and whether or not the expected use is coherent and clear. Neither is there any relation<sup>55</sup> between the provision of signs and the space typology.

Finally, to ensure the legibility of open spaces, more attention needs to be given to the location and design of entrances and the circulation paths through the space.

**Movement**

One of the most important aspects in open space design especially i.r.t. sustainability is the provision for movement through and within the space. There is the need to provide suitable routes and connections between destinations within the space (PPS, n.d.; Stiles, 2009). The results were quite split when it came to providing direct routes or connections between the spaces (Figure 72). Similarly, 50% provided options for shortcuts between different areas within the spaces while 50% did not.

The survey also looked into whether the potential existed for the space to form part of a walkable route to promote leisure walking. Interestingly, 83.3% of the spaces scored very much/definitely and this was

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<sup>53</sup> P Value = 0.21  
<sup>54</sup> P Value = 0.74  
<sup>55</sup> P Value = 0.47

valid irrespective of the typology<sup>56</sup>. However, in 51.3% of the cases this potential was not exploited, with a further 12.8% of the spaces only slightly exploiting this and just 15.4% exploited this potential.

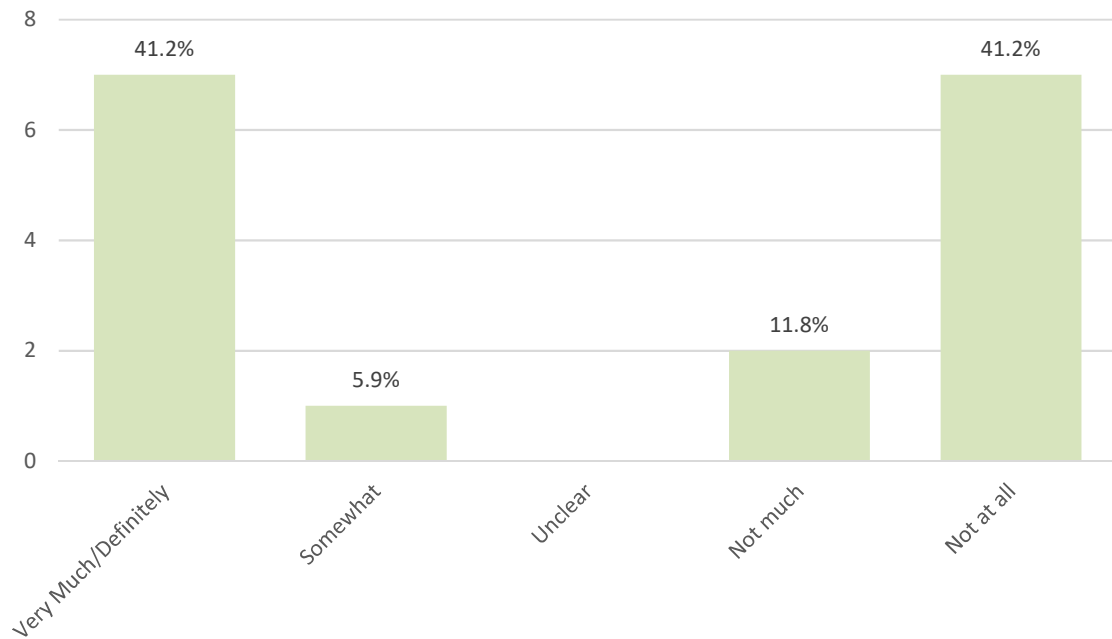


Figure 72: Number of spaces according to the provision of direct routes/connections between destinations within the space

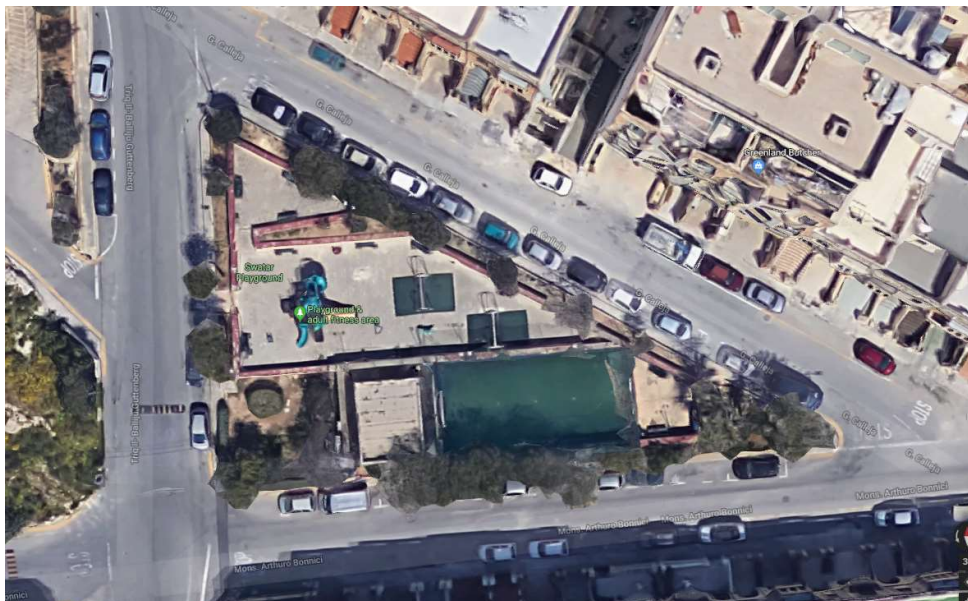


Figure 73: Aerial imagery of a children's playground (Birkirkara) where all the different areas are accessed from the space's perimeter and there are no connections between them. This also does not take advantage of the potential for the space to form part of a walkable route.

<sup>56</sup> P Value = 0.52

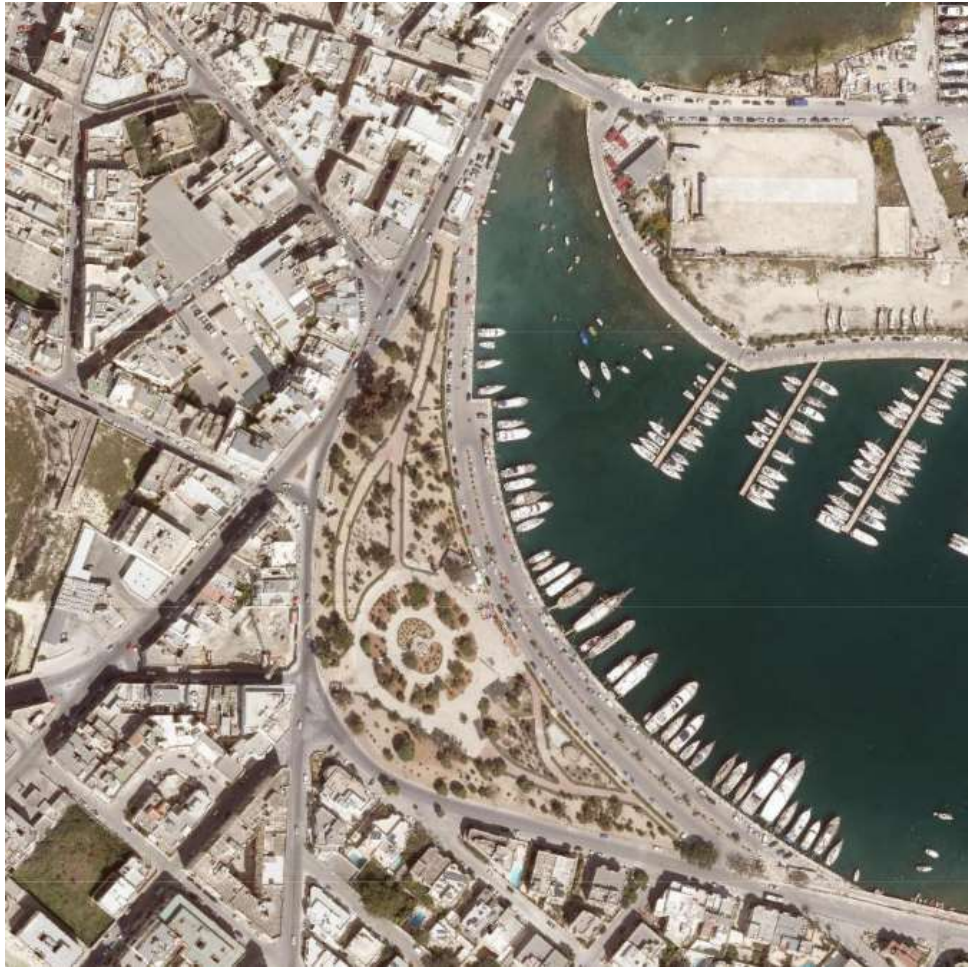


Figure 74: Aerial imagery of a garden (Gżira) showing a hierarchy of paths creating direct routes and connections between various areas within the space. The paths also create a walkable route through the space connecting to the coastal promenades on either side.

Provision of access to the space using a variety of transport modes, particularly those which promote sustainable mobility, is another important aspect (Stiles, 2009; PPS, n.d.; Marcus & Francis, 1998; Al-Hagla, 2008; Noguera & Riera, 2016; Austin, 2014). Unfortunately, the spaces performed quite poorly since even though all of the spaces could technically be accessed on foot, by car, by bike and by public transport the quality of the access does not fare so well.

It was not possible to properly assess the level of access by bike, since physical access was possible however, no infrastructure was ever present and more in-depth analysis (traffic count, network analysis etc.) would have been necessary to assess whether access was possible. However, in 94.4% of the spaces there were no facilities for locking bicycles. Additionally, in 19 (52.8%) spaces the infrastructure for pedestrians was rated as 'poor' or 'very poor'. Only three spaces were rated as good. While fourteen were rated as acceptable. None were rated 'very good'. This was valid irrespective of typology<sup>57</sup>. With regard to surface materials which are used for walking paths, concrete pavers/bricks, in-situ concrete or a combination of the two are the predominant material used (85.7%). Not considering aesthetics, this can be seen as a suitable material. The issue tends to be lack of maintenance and is discussed in section 5.2.12 p186.

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<sup>57</sup> P Value = 0.2

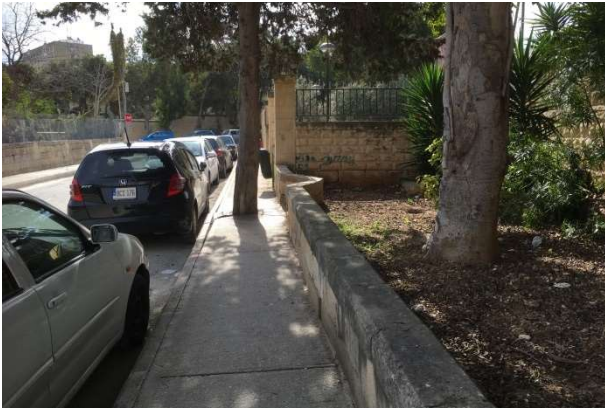


Figure 75: Images showing very poor provision for pedestrians. Infrastructure is either absent or discontinuous



Figure 76: Images showing poor provision for pedestrians. Infrastructure is either uneven or minimal.



Figure 77: Images showing acceptable provision for pedestrians. Infrastructure is level and of basic minimum dimensions.



Figure 78: Images showing good provision for pedestrians. Infrastructure is level and wider than the required minimum.



Figure 79: Images showing some materials used for walking paths

It is also evident that vehicular transport dominates public spaces. In 57.1% of the cases traffic dominates the surroundings of the space to some extent. Only 23.8% scored 'not at all' with 19.1% scoring 'slightly'. This was valid irrespective of typology<sup>58</sup>. Additionally, in 79.5% of the cases there were no measures at all to reduce traffic speeds. While, in 20.5% of the cases there were slight measures which basically consisted of speed bumps. In none of the cases was there any evidence of attempts to integrate the open space with neighbourhood traffic management schemes.



Figure 80: Images illustrating vehicular dominance around urban spaces

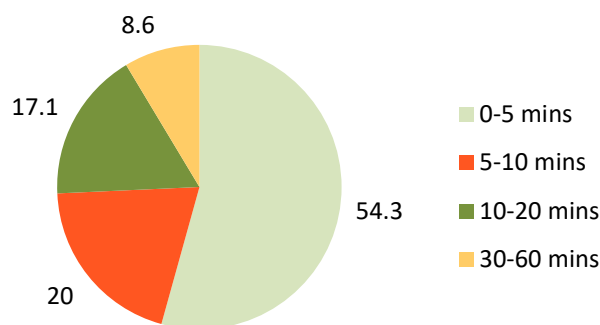


Figure 81: Percentage of spaces according to frequency of service it has access to

Regarding public transport, all of the spaces were within 400m of a bus stop. Access to a public transport service in terms of frequency is quite good (Figure 81). In terms of availability of the service however, most (82.9%) services stop by 23:00 with a few spaces being within reach of services which run until 24:00. This is fine for daytime spaces like children playgrounds; however, it is limited for spaces such as

<sup>58</sup> P Value = 0.25

promenades or civic squares which are often used late into the evening particularly during the hot summer months.

In terms of 'Access for All' the spaces scored very poorly. In 80% of the spaces, the design did not show evidence of applying 'access for all' principles, while the remainder scored 'slightly'. In seven cases this was not applicable primarily because it was not accessible or because it would not be expected example in natural/semi-natural areas. More specifically 52.7% did not facilitate access for persons with reduced mobility with a further 26.3% scoring 'slightly'. In terms of providing surfaces which are firm, non-slip and level, 54.3% scored negatively with 'not at all' or 'mostly no'. This was valid irrespective of typology<sup>59</sup>.



Figure 82: Images showing no provision for 'access for all' or inadequate attempts



Figure 83: Images showing no provision for 'access for all' or inadequate attempts

In general, access in case of emergencies scored quite well. This relates<sup>60</sup> to the type of space, since access tended to be affected for natural/semi-natural areas, which is expected. While typologies such as main streets or car parks scored positively in all cases (Figure 84).

In conclusion, there is the need to improve the: design of circulation routes through spaces and connecting to the surroundings; access and design for pedestrians, cyclists and 'Access for All'; access by public transport in the evenings; and traffic management so as to reduce the dominance of vehicular traffic.

<sup>59</sup> P Value= 0.247

<sup>60</sup> P Value = 0.00

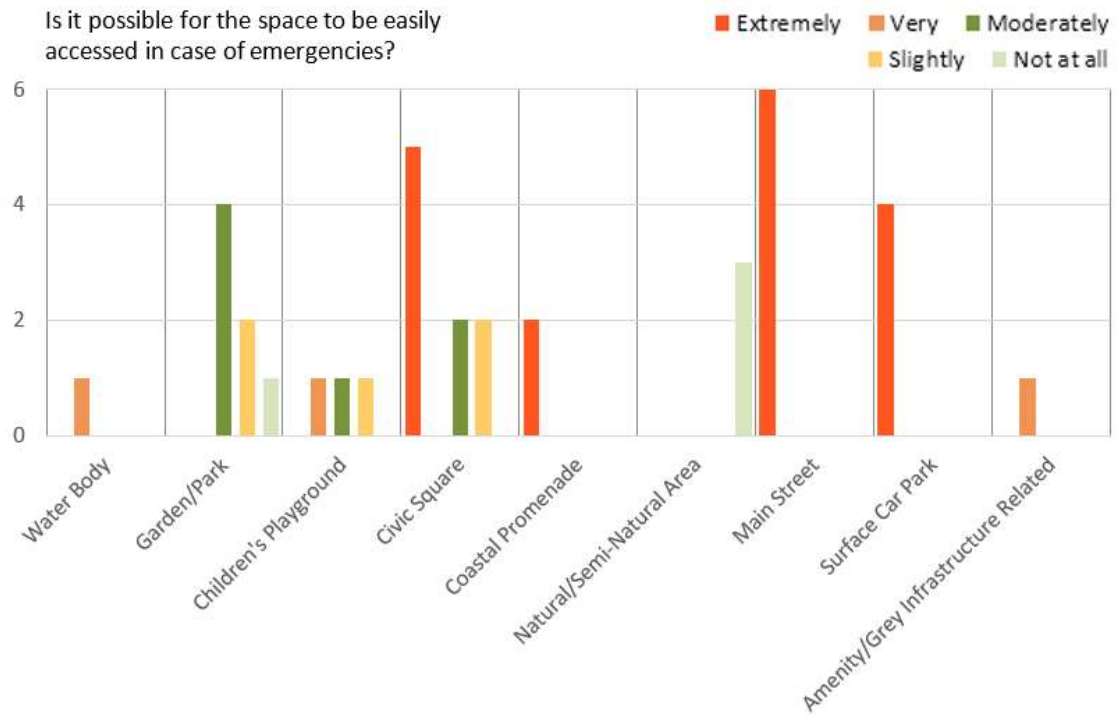


Figure 84: Level of access in case of emergencies according to the typology of open space

### 5.2.7 Climatic Response

It is also important to create spaces which can be used during different seasons (Marcus & Francis, 1998). Specifically, for the Maltese climate this means: spaces which are shaded during the warmer months as well as spaces where the sun can be enjoyed when the weather is favourable during the colder months. It is also important to consider protection from the wind to ensure comfortable micro-climates.

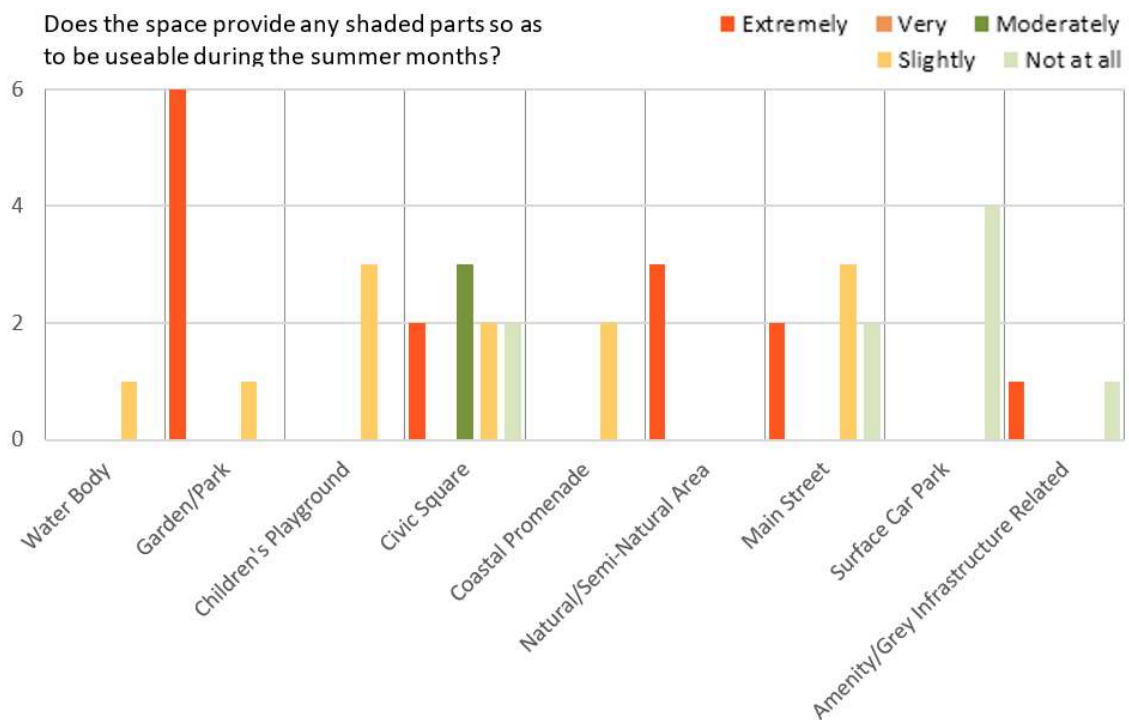


Figure 85: Number of spaces according to the provision of shade and open space typology



Unfortunately, most of the spaces surveyed scored negatively to providing shade with 23.7% scoring 'not at all' and 31.6% scoring 'slightly'. This relates<sup>61</sup> to the open space typology. As seen in Figure 85 only the gardens/park and natural areas perform well. There is room for improvement particularly for children's playgrounds, civic squares, main streets and car parks.



Figure 86: Images showing good examples of shading in civic squares (Msida) and gardens (Pietà, Tarxien)

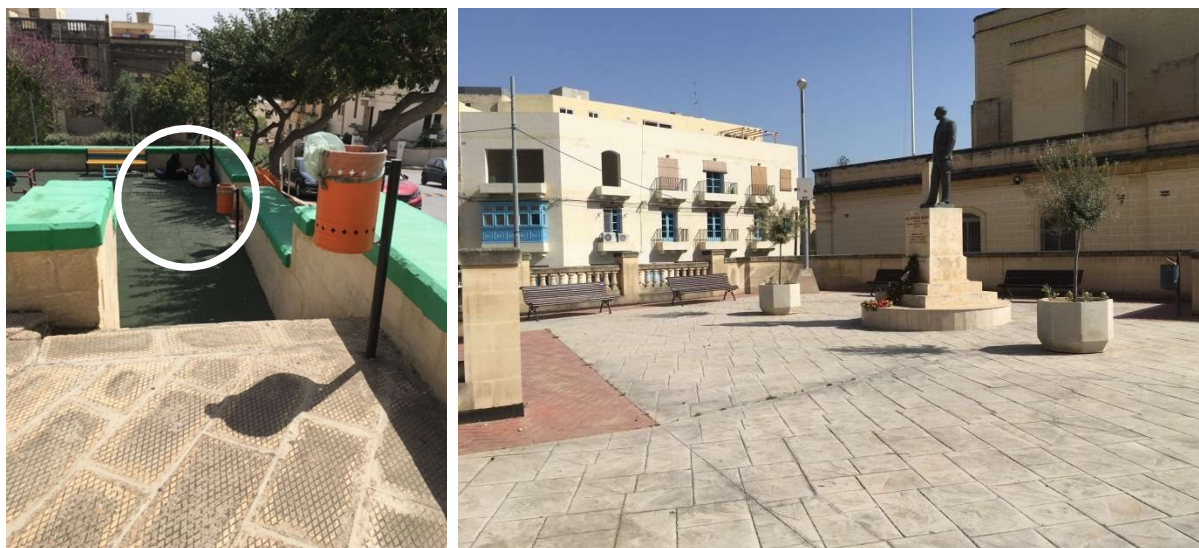


Figure 87: Images showing lack of shading in a playground (Birkirkara) and civic square (Birkirkara). Youths sit on the floor in order to find some shade during the month of April.

<sup>61</sup> P Value = 0.00



Figure 88: Image showing lack of shading in a civic square (Paola)

Similarly, there is room for improvement in mitigating windy conditions. 44.1 % of the spaces ‘definitely’ result in exposed windy conditions or ‘somewhat’ due to the spatial enclosure of the space. The issues are mostly in relation to children’s playgrounds, civic squares and coastal promenades. Unfortunately, the majority of the spaces do not have measures to mitigate the situation with 18.8% scoring ‘slightly’ and 40.6% scoring ‘not at all’. In fact, overall only 35.3% of the spaces provide a ‘very’ or ‘extremely’ comfortable microclimate, with another 35.3% scoring ‘slightly’ or ‘not at all’. Another 29.4% were rated ‘moderate’.

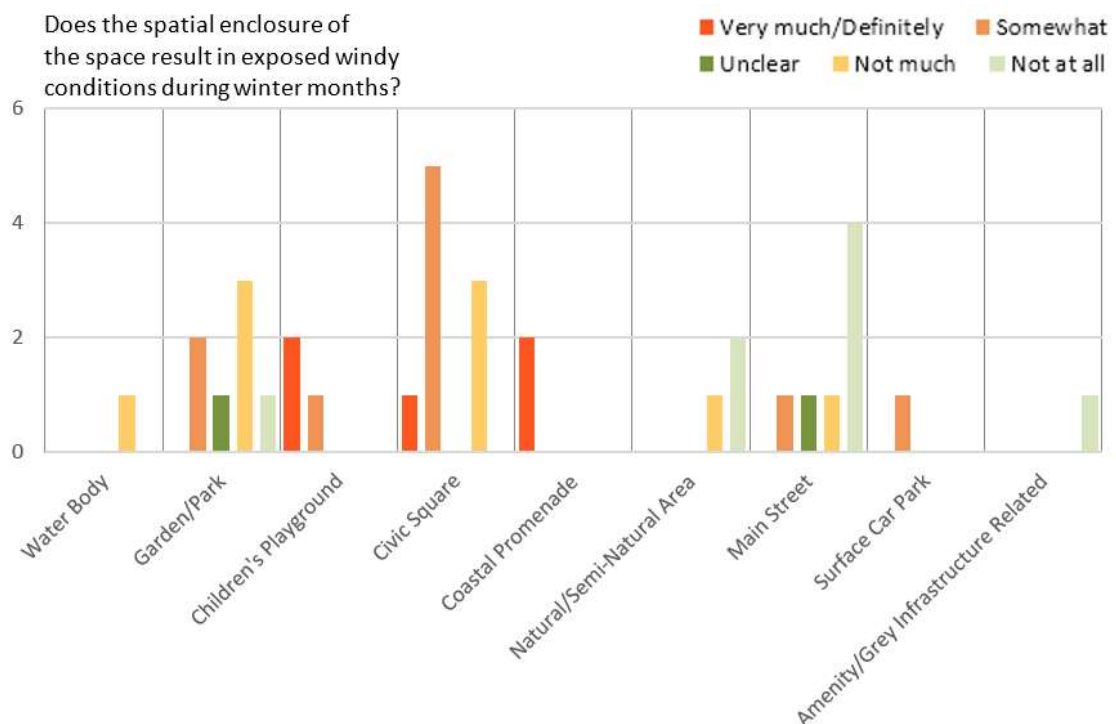


Figure 89: The level of exposure to windy conditions according to the typology of the space

Another important aspect is the use of materials in relation to thermal comfort and glare (Austin, 2014). Darker materials may increase micro-climate temperatures while the excessive use of very light colours would result in glare particularly in climates such as Malta’s. The predominant paving materials used in the open spaces surveyed are primarily light grey or beige concrete (pavers/in-situ) as this was used in

62% of the spaces. This was followed by red bricks or tiles in 28.6% of the spaces. The use of such materials, purely from a micro-climate point of view could be seen as favourable as they are neither too dark nor too light and don't result in glare. The use of black asphalt also featured in 13 spaces (31%). However, 11 of the spaces are either streets or car parks so the use of this material is to be expected. Having said this, considering the hot Maltese climate, there is the potential to look into different types of asphalt which may be used to mitigate the impact on micro-climate.



Figure 90: Images showing typical grey, beige and red concrete pavers

To conclude, there is the need to create climatically comfortable spaces which respond to the Maltese climate, particularly concerning the provision of shaded areas and mitigation of wind exposure.

## 5.2.8 Water Management and Use

### Surface Water Drainage and Storage Areas

Some of the main design principles when it comes to surface water management are: the provision of sustainable urban drainage systems (SUDS); the use of permeable surfaces for infiltration; and the collection of water, storage and its re-use (Stiles, 2009; Noguera & Riera, 2016; Austin, 2014). Unfortunately, 72.5% of the spaces do not have a storm water management system in place, with a further 15% scoring 'not much' (one or two storm water gratings present or some rudimentary gutters). This was irrespective of the typology<sup>62</sup>. Additionally, 92.5% of the spaces showed no evidence of SUDS being used.

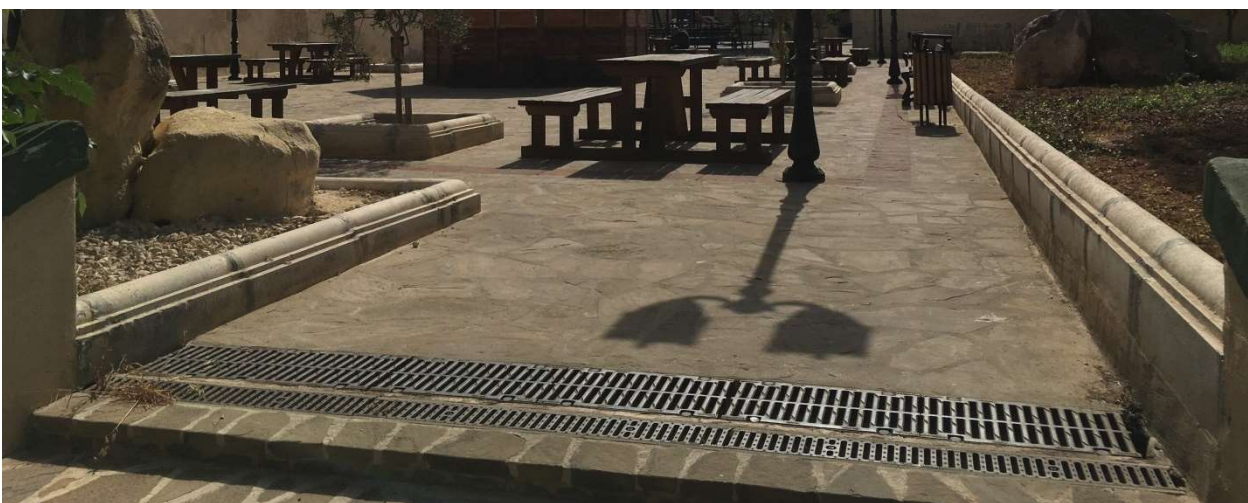


Figure 91: A civic square (Tarxien) where just one grating was present to collect water ahead of a staircase

<sup>62</sup> P Value= 0.37



Figure 92: Basic or sporadic gutters/gratings observed in a civic square (left) and street (right). In the case of the gutter the water is discharged into to street carriageway which then has no gratings.

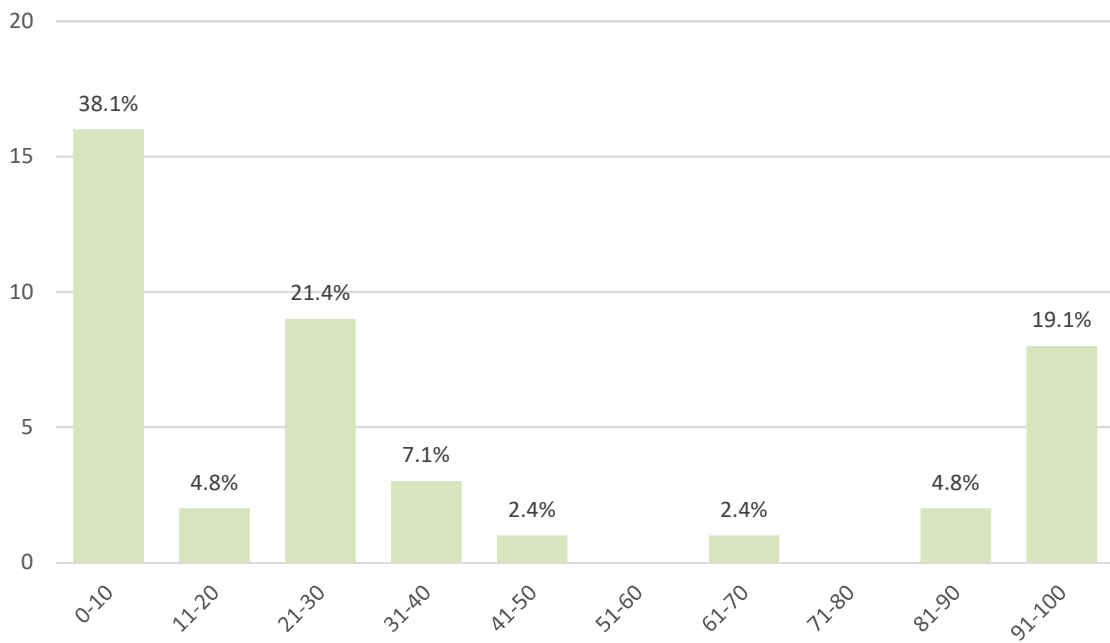


Figure 93: Number and percentage of spaces according to the percentage of permeable surface area

With surface permeability, the majority of spaces (64.3%) have < 30% surface permeability. While a good amount (38.1%) have < 10%. The areas considered as permeable were primarily vegetation/soil areas. Permeable paving was not used. Public spaces are therefore not really contributing to sustainable water management through infiltration of rain water. Additionally, in 76.2% of the cases there was no evidence of water storage areas, meaning that rain water is not collected and re-used.

In fact, most of the spaces (91.9%) do not have an irrigation system. A further five spaces were classified as 'not applicable' due to no vegetation being present. Of the three spaces which did have some sort of irrigation system, the source of the supply was not clear for two of the spaces, while in one case there was evidence of access to a pump room and therefore probably the presence of a reservoir. In this

particular case there was however no evidence of storm water gratings, hence the reservoir would probably be supplied by a bowser or have a direct water supply rather than being supplied by rain water.

It is evident that storm water management needs great attention particularly with regard to sustainable approaches such as thinking about water infiltration, storage and re-use.

### Use of Water

Water could also be integrated in the design with the aim of noise mitigation, stress relief, ambience or play (Marcus & Francis, 1998). Unfortunately, in 82.9% of the cases, water was not used as part of the design. Additionally, in the six cases where it was used, the purpose was mostly aesthetic or for ambience and it did not seem to serve any additional functions. Also, in many cases water features were not maintained or not functioning. There is therefore scope to improve the use and integration of water in the design of open spaces however the issue of upkeep and maintenance needs to be considered further.

## 5.2.9 Use of Vegetation

### Presence and Location of Vegetation

When considering the use of vegetation, the simple presence of vegetation is important to: provide a green experience/access to nature; mitigate the urban heat island effect; act as 'patches' in the creation of biological habitats; as well as mitigate air pollution (Stiles, 2009; Noguera & Riera, 2016; Austin, 2014; Marcus & Francis, 1998; Al-Hagla, 2008). Of the spaces surveyed, 92.9% provided some sort of vegetation. In 97.4% (38) of these, trees are present, 89.7% (35) shrubs, and 84.62% (33) plants. However, the extent of the vegetation is only such that 33.3% spaces were scored as 'definitely' being considered green infrastructure and 23.8% (10) as 'somewhat' being considered green infrastructure.



Figure 94: Images of spaces scoring 'definitely' in relation to provision of green infrastructure

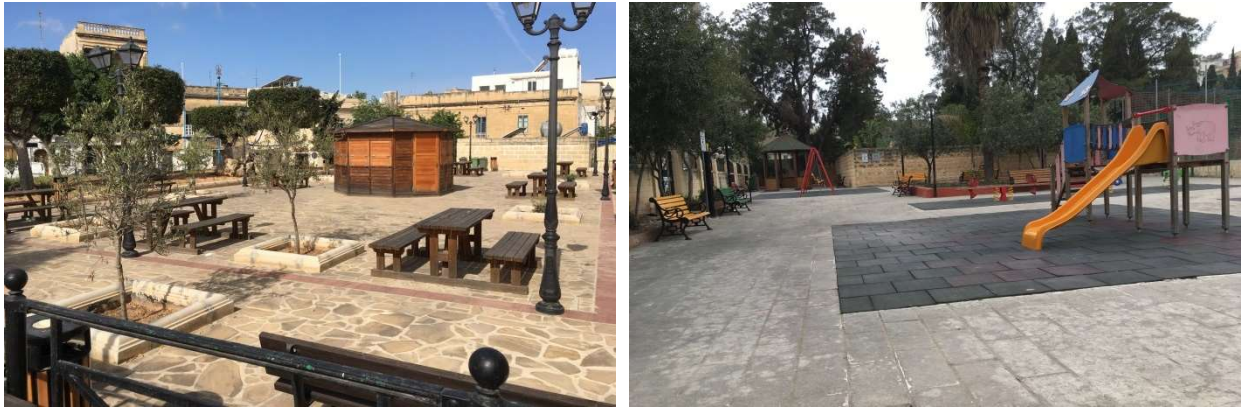


Figure 95: Images of spaces scoring 'somewhat' in relation to provision of green infrastructure

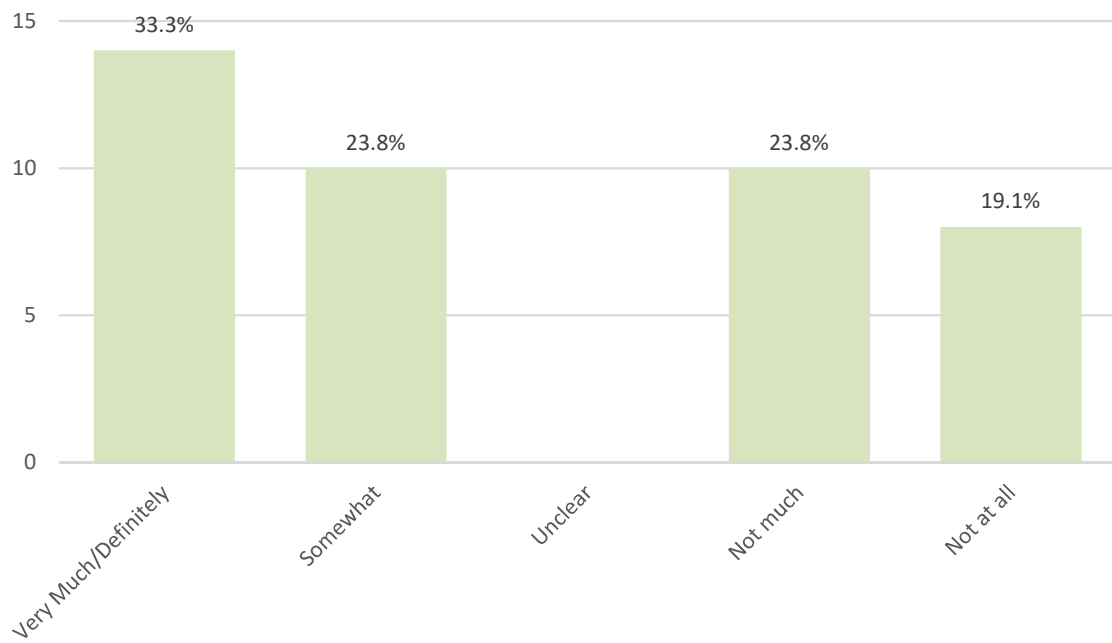


Figure 96: Percentage and number of spaces and the extent to which they were considered green infrastructure



Figure 97: Images of spaces scoring 'not much' in relation to provision of green infrastructure

Moreover, in terms of the percentage of soil/vegetation cover 60% of the spaces have < 30% and 30% have < 10%. This relates<sup>63</sup> to the open space typology (Figure 99). The extent of trees and ground cover present was also analysed. As can be seen in Figure 100 and Figure 101 overall the provision of ground cover was poorer than that of trees. This often resulted in the vegetation not contributing to mitigating noise and air pollution or wind exposure.

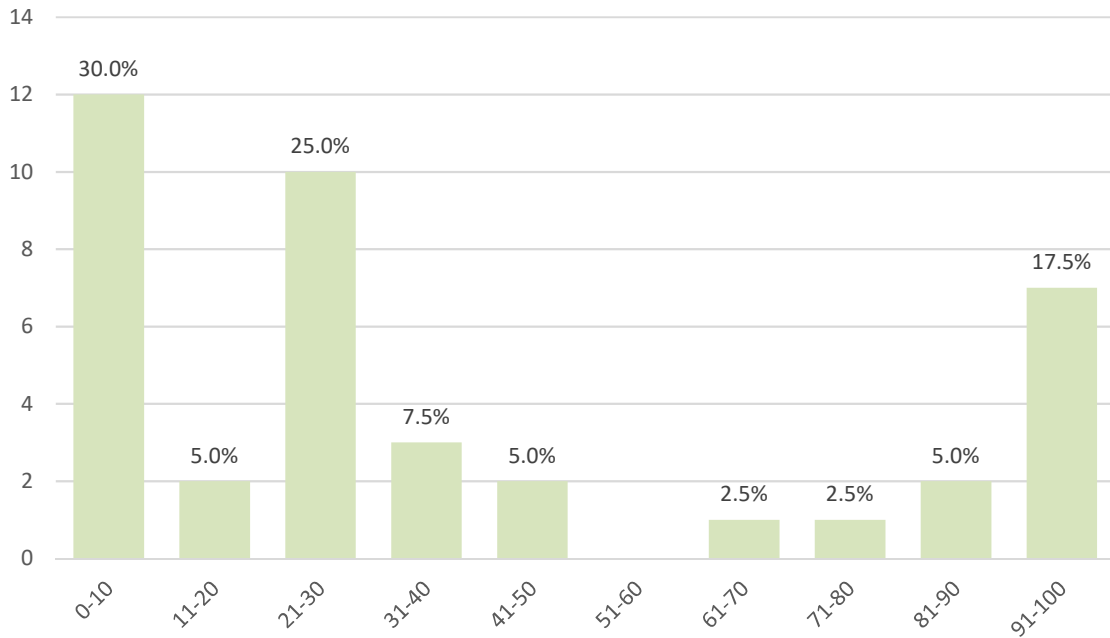


Figure 98: The number and percentage of open spaces according to the percentage of soil/vegetation cover present

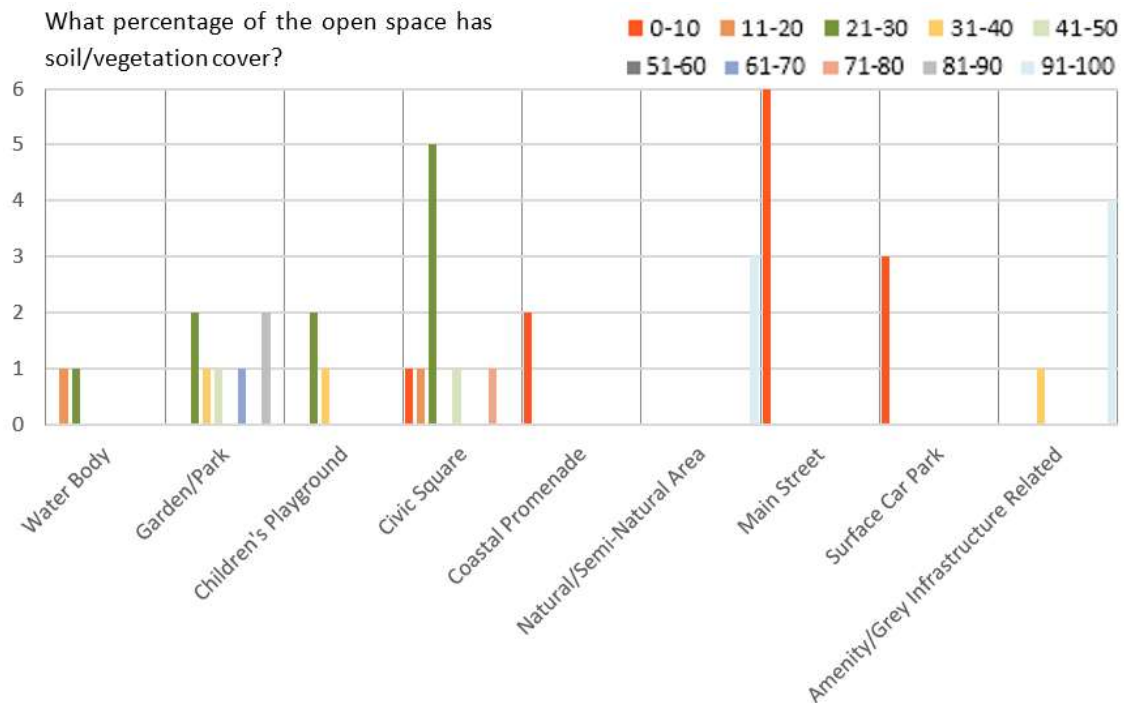


Figure 99: Number of spaces according to the percentage of soil/vegetation cover and typology of space

<sup>63</sup> P Value = 0.00

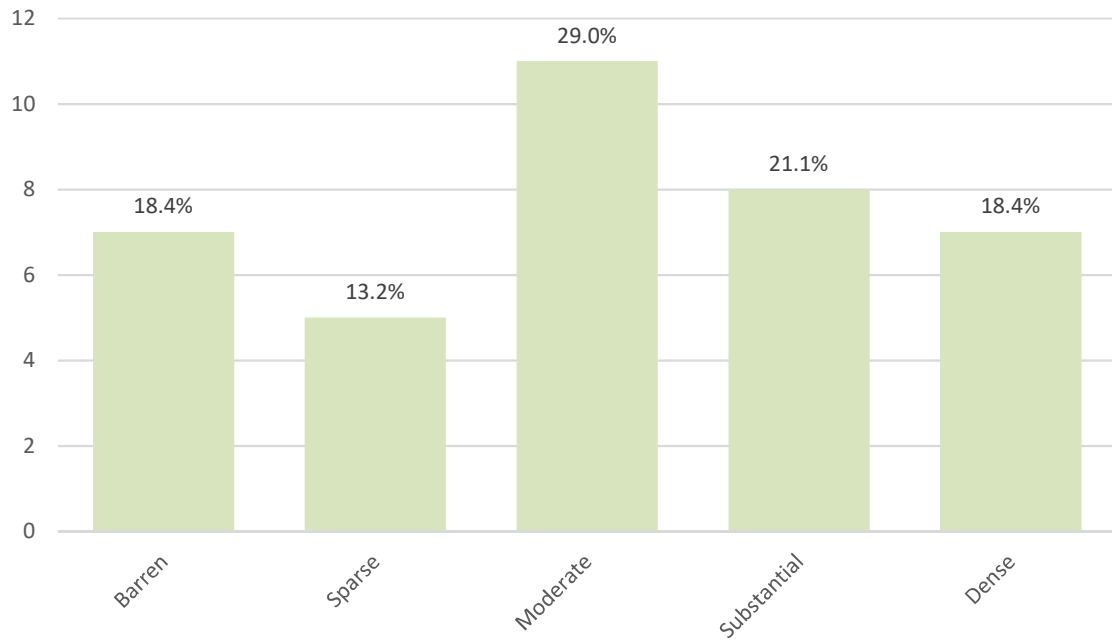


Figure 100: Number and percentage of spaces according to level of tree provision

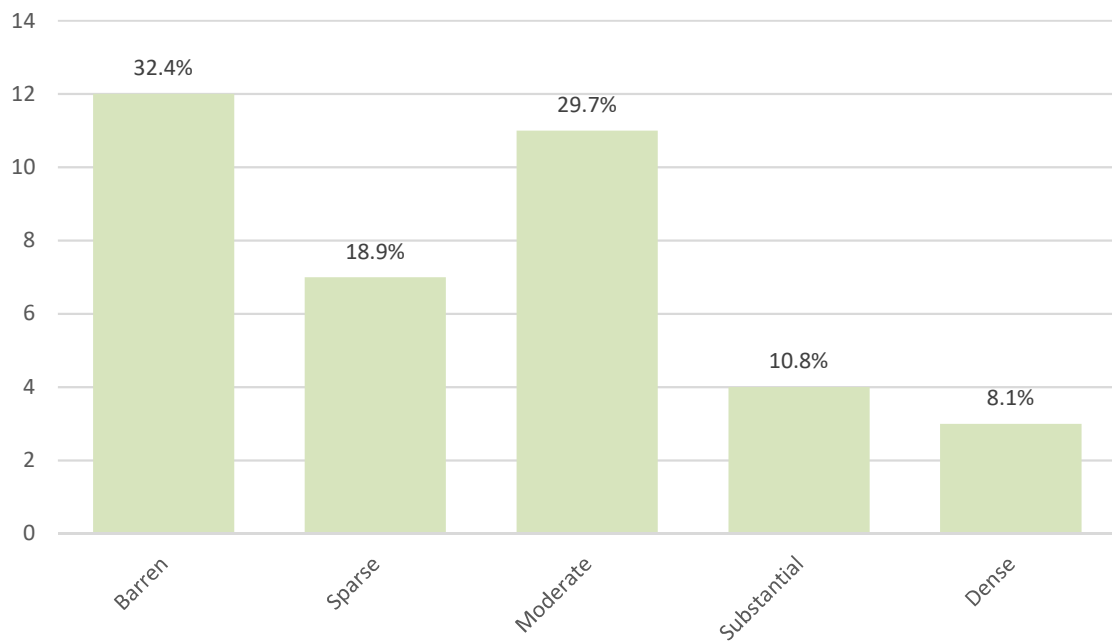


Figure 101: Number and percentage of spaces according to level of ground cover provision



Figure 102: Images showing different tree levels - dense, moderate and barren (left to right)





Figure 103: Images showing different ground cover levels – dense, moderate, barren (left to right)

Also, in relation to the siting of vegetation, in general it is not used to mitigate hazards (65.6% - 'not at all') e.g. such as traffic. On the positive side it also doesn't seem to create any hazards (84.6% - 'not at all') or nuisance (80.6% - 'not at all'). Again, there is scope for improvement in using trees to provide shade for seating or play areas. In 58.1% of the spaces the location of the trees to provide shading, were rated as 'not much' or 'not at all'. This is irrespective of typology<sup>64</sup>.



Figure 104: Images illustrating how trees created nuisance, firstly due to dirty and slippery paving, secondly due to benches littered with bird droppings



Figure 105: Images of a children's playground and civic square where trees are not placed to provide shade to play or seating areas

To conclude, the provision of vegetation in urban open spaces should be increased. With respect to trees, attention should be paid to their potential to provide shade. With respect to ground cover, there is scope

<sup>64</sup> P Value = 0.11

to increase this in relation to benefits such as noise mitigation, wind protection as well as providing a greener environment.

**Form and Type of Vegetation**

The type and form of vegetation used can influence a number of factors such as: the provision of visual interest; the amount of maintenance required and water usage; heat reduction; and habitat creation (Stiles, 2009; Noguera & Riera, 2016; Austin, 2014; Marcus & Francis, 1998; Al-Hagla, 2008). With regard to the provision of visual interest, in general the spaces scored negatively with 53.9% scoring ‘not at all’ or ‘slightly’. This relates<sup>65</sup> to open space typology and it was primarily the gardens/parks and natural/semi-natural areas which scored positively (Figure 107).



Figure 106: Images showing different levels of visual interest – Extremely, Moderate, Not at all (left to right)

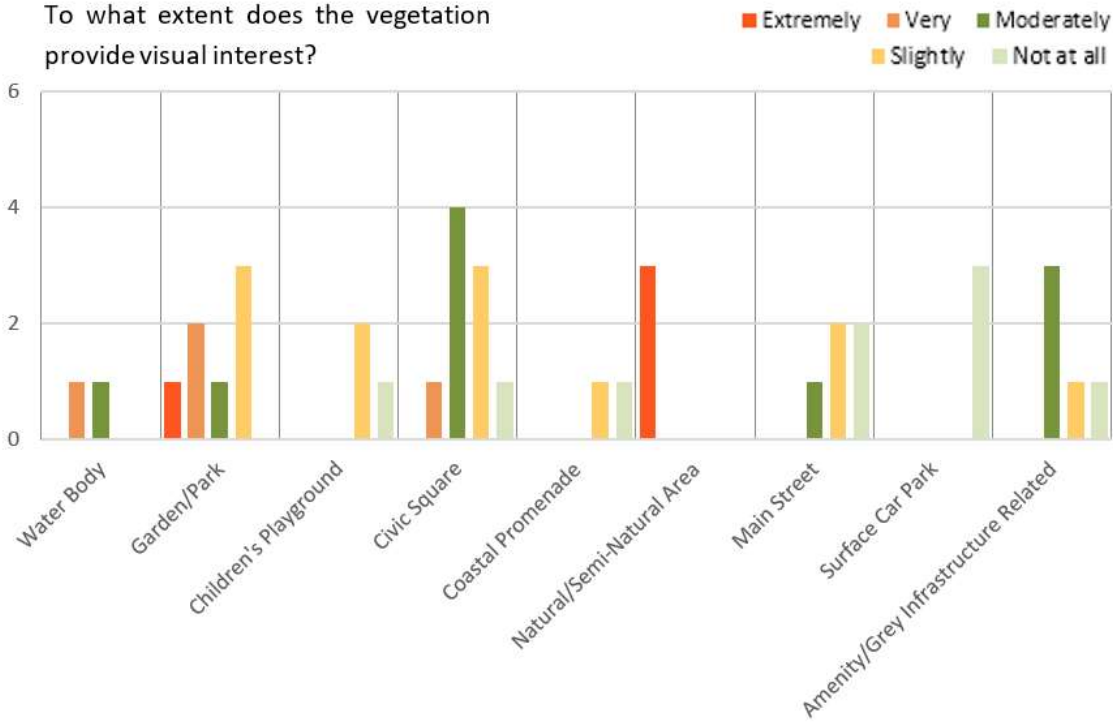


Figure 107: The level of visual interest which vegetation provides according to the typology of open space

<sup>65</sup> P Value = 0.00

The survey also attempted to: understand the level of animal life present in the spaces; and the species of vegetation in relation to habitat creation. However, the analysis of this data required external input which eventually could not be obtained.

The type and form of vegetation chosen also affects the maintenance required. Since maintenance requires resources, it is more sustainable to consider low maintenance planting. In general, the extent to which 'natural' vegetation is managed was split down the middle with 16 spaces scoring 'not much' or 'not at all' and 17 spaces scoring 'somewhat' or 'very much'. The 'planted' vegetation on the other hand leans more towards being managed with 40.5% scoring 'somewhat' (15) and 24.3% scoring 'very much' (9). This indicates that a high level of maintenance is required for the vegetation.

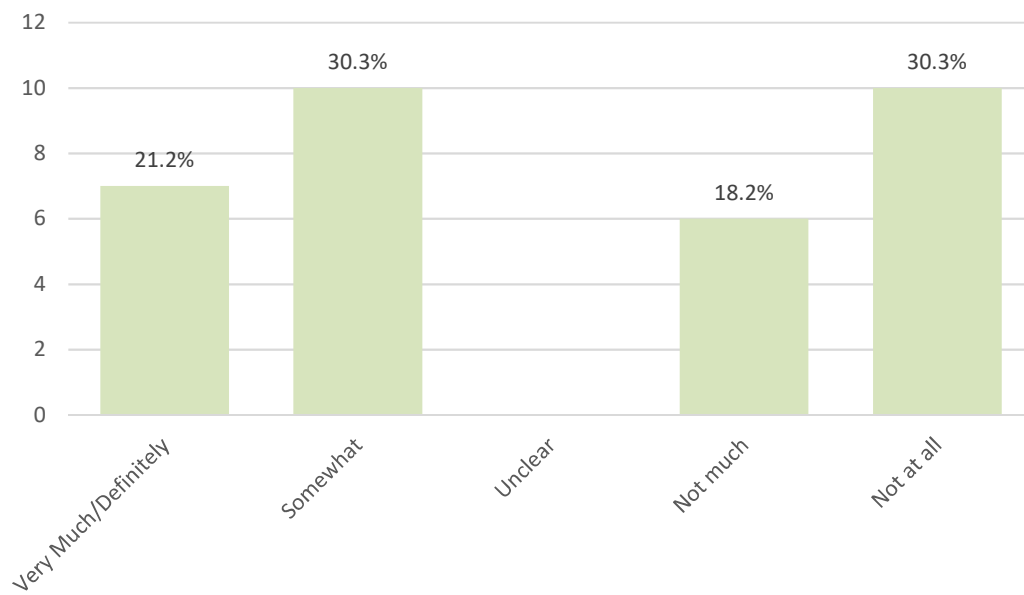


Figure 108: The percentage and number of spaces according to the level of maintenance required by the 'natural' vegetation

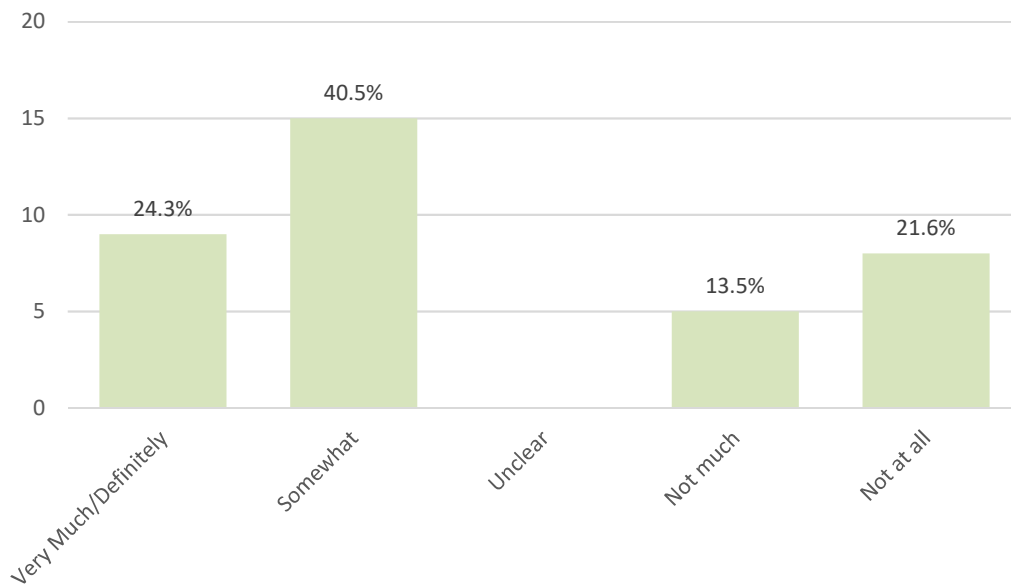


Figure 109: The percentage and number of spaces according to the level of maintenance required by the 'planted' vegetation

### 5.2.10 Lighting

The only aspect which could be analysed in terms of lighting was the type of lighting provision. Of the 42 spaces, 23 had lampposts, 21 had street lighting, 11 had flood lights, three had path or low-level lighting, two had floor lighting and one had fairy lights. Four spaces had no lighting at all. These were the natural/semi-natural areas and the amenity green space in the university grounds. Of the 23 spaces which had lampposts, ten had some other form of lighting. Generally, this was flood lighting or street lighting. Two of the ten had low level lighting, while another two had floor lighting. Nine of the spaces were only provided with street lights. These however were streets, car parks, urban green space connected to grey infrastructure or water bodies (also part of a street environment). Three of the spaces were only provided with flood lights or street lighting (one playground, one piazza, one car park). One space, a car park was only provided with one flood light.

The frequent use of flood lighting and street lighting and limited use of other forms of functional or ambient lighting illustrates the rudimentary approach to lighting which also seems to be ad hoc and an afterthought in terms of intervention.

### 5.2.11 Resource Management

When considering resources, the aim is to consider whether local materials or recyclable/renewable materials are being used (Al-Hagla, 2008; Noguera & Riera, 2016; Stiles, 2009). The predominant use of materials was noted as follows:

- Concrete – 34 spaces
- Stone – 18 spaces
- Wood – 16 spaces
- Steel – 14 spaces
- Soil/Vegetation – 11 spaces
- Asphalt – 9 spaces
- Rock – 3 spaces
- Rubber flooring – 3 spaces
- Artificial turf – 1 space

The use of renewable or recycled materials did not seem to feature. Another factor is the use of renewable energy sources. However, there was no evidence of renewable resources in 83.3% of the cases. A few spaces did score positively and this was due to the presence of a PV panel to operate a flood light or CCTV camera. Additionally, in 77.8% of the cases, waste was not separated or recycled.

### 5.2.12 Maintenance and Management

With regard to maintenance, most spaces (57.1%) looked either 'very' well maintained or 'somewhat' maintained. With regard to management, in most cases the space was open 24 hrs (90.5%) and no CCTV (74.8%) was present. Lastly, in none of the spaces was there security or management staff present. The topic of maintenance and management is expanded upon further in section 5.3.4 p189, through the information gathered from the local council interviews.

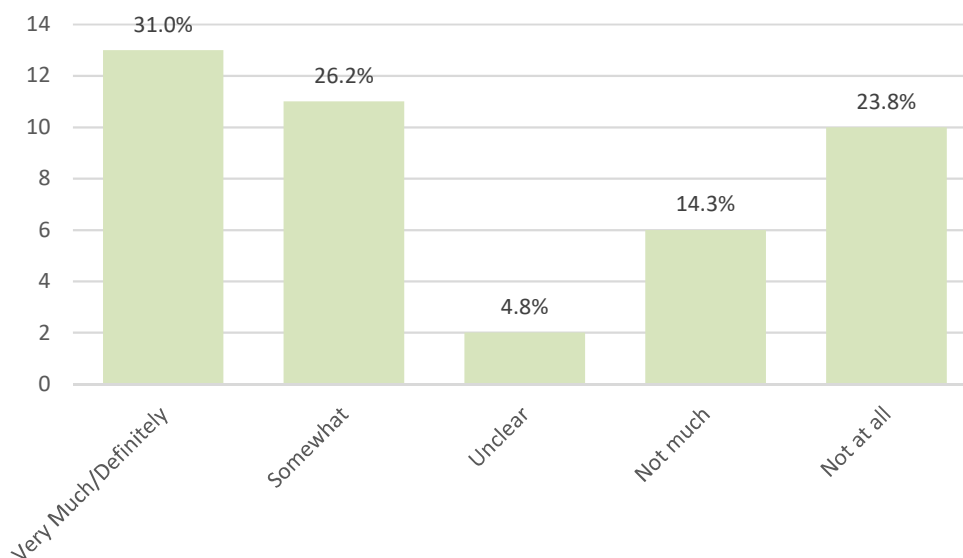


Figure 110: Level of maintenance observed in the spaces in numbers and percentages

### 5.2.13 Community Involvement

This topic is covered in section 5.3.5 p190, through the information gathered from the interviews with local councils.

## 5.3 Interviews with Local Councils

### 5.3.1 Introduction

To expand on a number of themes which could not be easily analysed through on-site visits, five interviews were carried out with local councils in the study areas. The localities chosen were: Msida, Birkirkara, Tarxien, Gżira and Paola (see Chapter 3). The themes which required more input were: Social Context and Use; Water Management and Use of Water; Maintenance and Management; and Community Involvement. The opportunity was also taken to gain insight on: the local council's experience with the planning process and use of policy; and issues encountered when embarking on projects for public open spaces.

### 5.3.2 Social Context and Use

The 5 interviewees all felt that public open spaces are a valuable asset in the community and are used widely. There tend to be seasonal variations with much more use during the warmer months, however all 5 councils stated that they serve as a community meeting point throughout the year. Some felt that children playgrounds and gardens were the most popular types of spaces. Where a promenade was present this was also seen as a very popular space used by locals and visitors alike. Depending on the type of space, activities such as relaxing, enjoying views, meeting people, taking in the summer air and children playing were mentioned. Different demographics were mentioned: the elderly, children with parents, mothers gathering to socialise, students from neighbouring colleges, workers taking breaks, men on their own and tourists. In one council it was observed that the use of the space was very much linked to the

surrounding activities such as businesses, a school, or a church. The use patterns by different demographics also varied accordingly.

Two of the councils specifically mentioned the changing demographics in their communities. This was not only in terms of the age group but also cultural backgrounds, with a high influx of different nationalities. In one case it was felt that the cultures integrated quite seamlessly and that such spaces were important for the mixing of said cultures. In another, the council had observed various groups gathering based on nationalities and that they used the spaces in different ways during different times. This was not seen to create any issues so far. However, it is something which is being monitored as it is a new phenomenon which the community is experiencing.

The spaces are also used by community groups for organised activities. In some cases, such groups seek formal permission and in other cases they are used more informally for activities such as yoga. More structured activities included: team building activities by the business community; clean up campaigns; artisan markets; intercultural activities by Appogg<sup>66</sup>; band club performances; scouts' activities and fund raising; village feasts and fireworks. In one locality one of the gardens was also being used temporarily by a school during refurbishment on their recreational grounds.

The Councils themselves also use the spaces to organise activities. Two of the Councils specifically mentioned organising weekly activities during the summer with various entertainment or talent shows for the younger community. Apart from these, other activities included: fundraising events; music shows; village days; carnival celebrations; Christmas festivities; intercultural festivals; open air cinemas; mini basketball tournaments; and speciality themed feasts.

Overall, all 5 Councils felt there was a lack of open spaces to serve their communities. Some felt that gardens and green areas were specifically lacking. However, other typologies and specific uses were also mentioned. These included: civic squares; play areas; pet friendly areas such as dog parks; gardens which are targeted to different users such as dementia or autism friendly; and skate parks. One Council was specifically keen to provide areas which allowed for different uses rather than the usual swings or open-air gyms. Another Council was working on a project where different activities would come together for the whole family rather than the usual separation of activities. Yet another Council mentioned streets as a potential space.

“We have identified two areas...where we'd like to create in the peripherals of our locality, major underground parking areas with filtration and afterwards create a shuttle service.” (Appendix C7ii, p.4)

As their town was becoming denser and denser they felt it was important to widen streets and create more space for alternative forms of transport. They wished to shift on street parking to the peripheries. They also felt that it would be possible to create more green areas if the FAR<sup>67</sup> concept was actually respected.

### **5.3.3 Water Management and Use**

The 5 councils interviewed reported that either wells (to collect water and re-use it) do not exist or where they do exist, they have not been maintained and so they don't retain water. It was felt that it was easier

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<sup>66</sup> Social Help Government Organisation

<sup>67</sup> Floor Area Ratio Policy (GoM, 2014)

to use bowsers (water tanker) for water supply. In one particular case the issue in using the wells was that the water quality was not good due to sea water ingress and infiltration of downstream water from a valley system which was contaminated with foul water. In this case the Council did have ambitions to try and develop systems which would overcome this. However, testing so far had not proven successful.

When considering new projects, interviewees mentioned that they do introduce wells and connect them to irrigation systems. These wells are designed to collect rain water. However, they are also supplemented with bowsers during the summer months. In some cases, the Councils are still waiting to see whether these systems will work out. One specific one was keen to see the existing wells being upgraded as there is a lot of potential for water catchment in the locality however they did not have the means to do this.

With regard to irrigation systems there was a mixture of responses. In many cases these did not exist and the preference was to use bowsers and manual systems. In other cases, irrigation systems were present but sometimes damaged and not repaired as it was felt it was easier to use a bowser. In the same case, where the system did work, it was supplied by mains water and it was felt that it was more worthwhile to use bowser water, so the irrigation system was not used.

“...the problem with the irrigation system is one that some damage is caused during certain works so it wasn't viable to arrange it. Then you have other irrigation systems that depend upon the Government mains, and it isn't worth it so it pays you to use a bowser.” (Appendix C7iii, p.2)

In other cases, drip irrigations did exist and were used but they were supplied by bowsers and not mains as the water quality was not good due to salinity and chlorine.

Concerning water features, often these were not functional due to the need for constant maintenance and repairing. In one case they were removed due to mosquitoes. In this case the Council was planning to introduce natural water features using sea water inlets. One Council felt that there wasn't sufficient expertise to deal with such features and that the personnel employed for maintenance through local council contracts were not sufficient. The interviewee felt it would be useful if there was a team or experts at a regional or ministerial level who could aid with such technical issues concerning vegetation and water.

#### **5.3.4 Maintenance and Management**

Local councils are allocated a budget according to the Local Government Act (GoM, 1993). The budgets are calculated according to formulae defined in the act for: Landscaping and Maintenance of Parks and Gardens; Roads Maintenance and Roads Fixtures; Waste Management; and Administration. The budget for 'Landscaping and Maintenance of Parks and Garden's' is calculated according to the total area of such spaces as proportion to all of such spaces of all localities multiplied by the total yearly apportionment allocated by government (GoM, 1993). This therefore varies yearly.

The maintenance of soft landscaped areas and vegetation is carried out by specific contractors awarded the work through tenders. These contracts sometimes include the general cleaning of the gardens and public spaces as well. In two of the cases, the Councils were not happy with such contractors because they don't do the job well. They don't have the right expertise or else if they do, they dictate the planting according to what they have available. One of the bigger Councils said that maintenance worked quite efficiently on a daily basis. In another case this was carried out on a weekly basis.

Three of the Councils gave specific figures on how much was spent annually. In general, this allocation was for the upkeep and maintenance of parks and gardens. The figures given were in the region of 25,000, 80,000 and 100,000 Euros.

For general cleaning and sweeping, one Council had an additional contractor who was also engaged on a daily basis. Workers were also engaged to carry out daily inspections and report back. Three Councils said they used council workers for general cleaning and maintenance. Such workers were usually not used for skilled jobs but general forms of labour. Two Councils specified that these workers came via a scheme of persons registering for work whilst one Council complained that this pool of people was dwindling and they would be going for a tender. However, they felt it was difficult to find a contractor for such small quantities of work. Another, however said that new agreements had just been signed to continue engaging workers through the registration scheme. The fifth Council included general cleaning as part of the soft landscaping contract.

For the 5 localities interviewed, general repairs were carried out as the need arose. Inspections tend to be ad hoc and through reports which are received. Contractors are usually engaged depending on the works which need doing. Some Councils admitted that this caused delays. They found it hard to find skilled persons available as and when needed. One felt that it would be good to have a small team of people who were skilled and could be available to the Council. However, it was said that it was not possible for the Local Councils to engage such people. It was felt that this facility could be made available at a regional level and shared. Another Council however said that they did have a number of outside labourers engaged with them to do such work while others also mentioned that regular health and safety assessments are carried on playing fields as required and repair works were carried out when needed.

### **5.3.5 Community Involvement**

The use of voluntary schemes, where the community can get involved in maintenance of public spaces was discussed. Two Councils had such schemes related to team building activities organised by businesses in the locality. Examples given were clean up campaigns and tree planting. In another case an agreement had been struck with a business to upgrade and manage a garden which they would then also use for team building. Another Council was working on the refurbishment of alleys and the residents were being involved in the planting and maintenance and upkeep of these streets. Yet another had tried to organise such schemes however the land which was easily accessible for such schemes was limited. They had tried to organise something in a valley with school children, however, maintenance was an issue due to lack of water supply. A further Council commented that such schemes didn't work out as there would then be an issue with abuse, or some members of the community felt like others were taking over. Additionally, they may also be ruined by vandalism and as a result, they abandoned such ideas.

Neighbourhood watch schemes were less popular. The issues relayed were those of data protection and lack of interest from the community. One Council was still trying to implement a system using CCTV monitoring, while another observed that this was done informally as they would always get updates/complaints from the community itself as to what was going on in this way. Such schemes were said to be present in one of the Councils, where a councillor was specifically appointed to organise this and liaise with the police.



With regard to community participation during a project design process, four of the Local Councils saw the value in this and tried to practice it. One did not see the need and felt that the planning process was sufficient... “otherwise there would be too many ideas or wishes pulling in different directions, and one ends up doing nothing”. Methods used include: informing through letters or organising opportunities to meet up. Some Council’s experience was that official meetings didn’t really work and getting feedback through social media platforms was more effective. One Council commented that when they were simply carrying out embellishment projects they didn’t bother to consult. However, such projects also seemed to introduce new play area or gym equipment so this did not really add up.

### 5.3.6 Experience with the Planning Process

The Local Councils were asked whether they were familiar with local plans and their policies. In particular that often some of the policies require initiatives from Local Councils for realisation. Most of them (4/5) were aware that these policies existed however they felt there were issues with implementation. One specifically said that they didn’t really look at the plans but rather took their own initiatives. Another felt that while they try to work on the policies, the Planning Authority (PA) itself doesn’t and so they are often in conflict with the authority and opposing permits. They felt the PA should be providing expertise to them to help them develop local plans for their own locality and not vice versa. Another Council felt that there was a communication barrier.

“...I also think there is a barrier between Local Councils and the Planning Authority. I don’t think they reach out to us a lot. Yes, they send a weekly email to say what is happening...but there isn’t contact...I would like to phone and speak to someone...where the Planning Authority are concerned it is very difficult...I think there should be a unit which should focus on...The Councils in the South, North, Central Harbour, they should be specific and one could discuss with this person.” (Appendix C7iv, p.10,11)

An issue which emerged is that there needed to be schemes which would assist Local Councils in realising certain policies. One Council said that they are always discussing with different parties to see how they can collaborate but funding still has to be sourced and it is not easy. It was also mentioned that the local plans need updating and that they don’t necessarily address the community’s needs. One interview suggested, it would be more useful if Local Councils could come up with their ideas and there would be somewhere they could take these ideas to get assistance to develop them. The Local Council’s architects are not readily available to focus on small projects. It was suggested that this could be centralised and there could be a consultant for a group of towns with similar issues.

Two Councils mentioned attending seminars on topics such as urban design which were held by the PA. They found these interesting and very positive. However, it was also frustrating as they could see things which are wrong in their localities but when they have ideas for a project they get stuck with the ideas and how to realise them. It would be useful to have people to turn to for assistance in developing the ideas.

The Environment and Resources Authority (ERA) was also mentioned. The councils observed that a new process for pruning of all trees had been introduced which required applying for a permit. This was lengthy<sup>68</sup> and was not helpful in ensuring that trees were properly maintained. There was also no system

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<sup>68</sup> It was said to take 2 months

in place which could account for regular pruning. One Council suggested it would be more helpful if ERA provided advice and expertise rather than introducing restrictive processes.

Issues with the CRPD were also raised. In one case problems arose because public conveniences were not accessible however there were no funds to carry out such projects/amendments.

The recently set up agency called Ambjent Malta<sup>69</sup> was also mentioned by one of the Councils. This is supposed to be an umbrella agency which oversees policies for the environment. At the time, a consultative body for the Ministry of the Environment, Sustainable Development and Climate change<sup>70</sup>. However, its role and power were not really functioning at the time and its relationship with the PA and ERA was not clear.

### 5.3.7 Difficulties when Embarking on Projects

#### Governance

The availability of contractors or suppliers emerged as an issue as did the availability of expertise. The interviewees reported that, contractors were not easily available because they were busy working on projects for national government so smaller projects were not given priority. Also, that technical expertise is lacking within the Councils and they are limited to what the supplier says they have. One even felt they were always restricted to choosing from the same few things<sup>71</sup>. When they try to do something different it's difficult. "There is a contractor who has all of Malta, all the main roads and can't cope. And if he says this is what I have, this is what I'm going to plant, we know that we will have an area of trees etc., but we aren't experts." (Appendix C7iv, p.4)

It was felt that engaging consultants is too cost intensive. It was suggested that there needs to be centralised resources, maybe at a regional level, tackling localities with similar issues, where Local Councils can turn to for advice or expertise on technical issues and to get help with developing ideas for the locality. It was also suggested that there could be documents with guidelines on certain matters such as the use of soft landscaping. It was also felt that Local Council architects are not readily available to discuss ideas or focus on smaller projects. "Everyone has the same problem. None of the Councils have architects who they can phone and who turn up immediately." (Appendix C7iv, p.9)

Lack of resources in terms of staff is another issue. Projects are very time intensive so when new projects are proposed this is very difficult for the Council to manage alongside it's daily tasks. They also feel that they need to be experts in all matters relating to the various projects, when they are not.

#### Funding

Project funding is generally sourced from funds other than the yearly Local Council budgets. One Council did say that savings were specifically made from their yearly budget to invest in new projects. The issue they encountered was then in actually finding the architects and contractors to work on the projects. The funds which Local Councils use for projects include: Planning Authority funding (Development Planning

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<sup>69</sup> Towards the end of the research it was unclear whether the agency was still in existence. Eventually, it transpired that Ambjent Malta is a department within the Ministry for the Environment, Climate Change and Planning.

<sup>70</sup> This was the Ministry in existence at the time the interviews were held

<sup>71</sup> This concerned discussions on vegetation and planting

Fund through Planning Gain, previously known as the Urban Improvement Fund); EU funds such as ERDF; Capital or National Funds which can be allocated through specific schemes or depending on political agendas; and National funds through specific ministries such as the Ministry for Tourism in touristic areas. In general, however it was felt that securing funding for new projects is difficult. Access to the Development Planning Fund<sup>72</sup> was also set to become more restrictive as it will only provide 70% of the funds. This means that a Local Council will then need to source 30% of the funds which could be a substantial amount in the case of decent sized projects.

One of the Councils also mentioned that they recently had two projects which were funded through National Funds because the government was showing an interest in the region and had an agenda to upgrade specific areas. Without such funds, they realised they wouldn't be able to carry out projects of such a level.

### Resistance to Change

Another issue which emerged is resistance to change. Some Councils experienced this mostly from the residents especially when considering projects for traffic management or pedestrianisation. Others experienced this from local authorities such as PA or Transport Malta<sup>73</sup> (TM). Introducing new vegetation such as trees in streets for example was often met with difficulties from TM. Both PA and TM tend to take an authoritative approach and it was felt that they don't really understand the locality's issues. Another authority which was mentioned as often creating complications or not being helpful was the Water Services Corporation (WSC)<sup>74</sup>. One Council did report very positively on the support received from authorities; however, it was the one where national government had stepped in to implement particular projects they were interested in. Thus, it could be that support from authorities varies depending on their own interest in a project.

With regards to the locals, one Council was attempting to constantly meet the locals or organise activities to try and explain the various projects or ideas for change which the Council has. Another group which was mentioned was developers. They often object to new ideas such as introducing and facilitating the introduction of roof gardens.

## 5.4 Comparison of Case Study Projects

### 5.4.1 Introduction

To understand further the planning process and policies used when designing and reviewing projects for open spaces in urban areas, three case study projects (see Table 12) were studied in depth. Chapter 3 provides more detail on the method adopted. The data of each case was analysed using a question and answer format (Yin R. , 2009). A number of questions were developed and the data gathered from the

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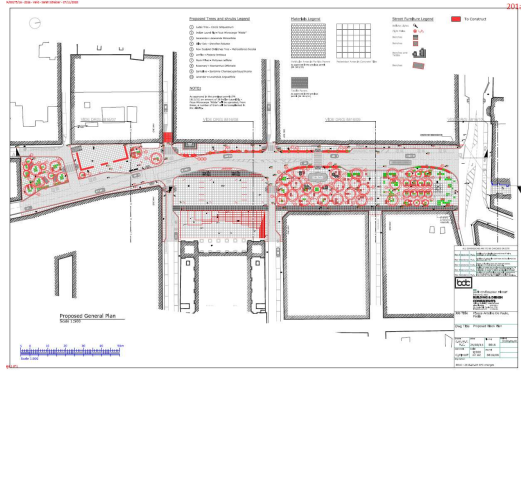

<sup>72</sup> Following the interviews this was reformed in 2020 (see Chapter 4)

<sup>73</sup> This is the Authority for Transport in Malta (GoM, n.d.) which is responsible for developing, regulating and promoting the transport sector in Malta including all aspects: land, sea and air.

<sup>74</sup> The WSC was set up in 1992 to produce and distribute water in the Maltese Islands. In 2004 the drainage department was incorporated making it responsible for the complete water cycle from production and distribution of water, to the collection and treatment of wastewater (WSC, n.d.).

various interviews and documentation per case study was summarised in relation to these questions (Appendix C12). The questions were compared for each case and the findings are presented below.

Table 12: The three case studies

<p><b>Case Study 1: Pembroke Public Garden</b></p>	<p><b>Case Study 2: Paola Civic Square</b></p>	<p><b>Case Study 3: Cospicua Waterfront Regeneration of Industrial Dock</b></p>
		
<p>The project was part of a number of projects aimed at upgrading the Tourism product in Tourism Zones. The open space studied is a public garden which provides informal recreational areas and formal play areas for children of different ages. The spaces is surrounded by different uses including: 5 star hotels; residential areas, sports fields and a natural stretch of coastline. The size of the space studied is about 7,300 sqm.</p>	<p>The second open space studied is a civic square. The square already existed in a different form and the project consisted of a transformation of the same space. In general it retains the function of a civic square and aims at reducing the quality of the place through improved traffic management. The size of the space is about 10,500 sqm.</p>	<p>The third space studied is a waterfront space which includes different typologies including: a promenade; informal recreational / garden areas; civic squares and a local street. The waterfront was previously closed off as an industrial dock. The size of the space is about 33,200 sqm.</p>

**5.4.2 Design Themes during the Design Process**

A common theme for the projects was the objective of regenerating or upgrading an area. The focus varied from more social regeneration initiatives to upgrading of the tourism product. In all cases however, investment in the public space was recognised as a tool and catalyst for regeneration. This was in terms of attracting private entities, improving and strengthening the commercial offer and hence the economic context and also aimed at social regeneration in one case in particular. In one of the cases the investment in public infrastructure was also seen as a means to upgrade the derelict historic fabric by attracting

private investors to the abandoned buildings. Nonetheless, it was felt that more could have been achieved had more attention been given to the wider transport system. The following sub-sections outline to what extent the design categories identified in Chapter 2 featured during the design process.

### Spatial and Structuring Qualities

**Open Space as a Structuring Element:** All three cases did consider the project to form part of a wider spatial context and aimed to reorganise the urban areas recognising the strategic scale. Two cases focused on the connection to the water's edge or the coast and the provision of a continuous waterfront, promenade or coastal route. While the third case focused on the restructuring of open space in relation to other spaces in the vicinity and through creating a stronger spatial structure for the urban area.

**Connectivity:** This element emerged as an important focus throughout the projects from the initial objectives and design concepts to the actual layouts. All projects were primarily about improving pedestrian connections and connecting with the surroundings/open spaces.

### Contextual Relationships

**Physical:** The projects generally responded to the physical context. The variation in topography was one aspect which required attention; secondly, the physical relationship between the space being created and its surroundings. In most cases this required looking at vehicular infrastructure and adapting or transforming this to improve the relationships between the open spaces created and the surrounding buildings or features such as the sea/water. Recreating the waterfront or establishing views to the sea were emerging themes. In one case however, while the aim was to connect to the sea or neighbouring sports facilities on one side, the newly created space was then also seen as a 'buffer zone' between an area with 5-star hotels and a neighbouring social housing estate. In this case the public garden was also fenced so that it could be secured at night.

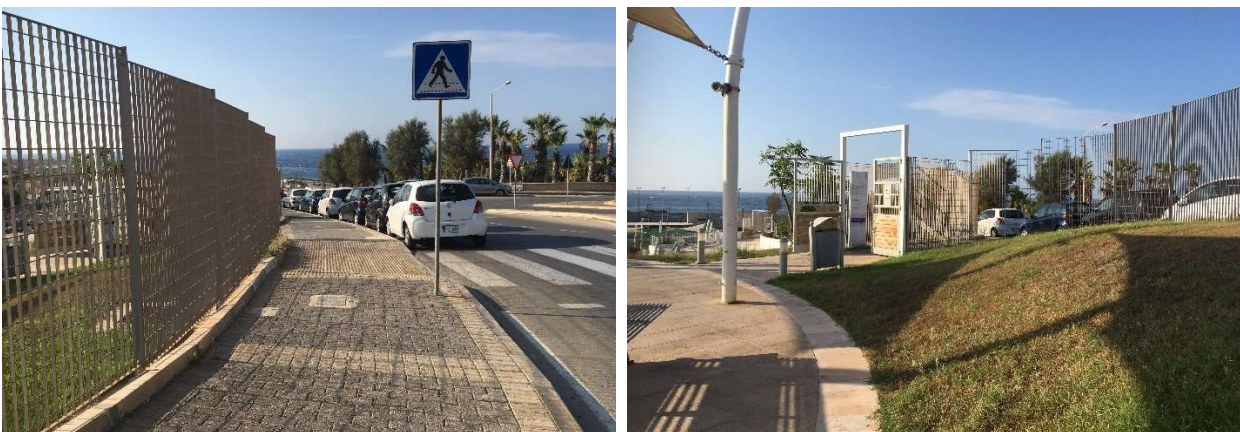


Figure 111: The fence enclosing the garden in Pembroke for night time security

**Functional:** This emerged as an important design focus. The activities and functionality of the spaces provided were very much informed by the surrounding functions, particularly where there were buildings with existing activities and operations. The designs mainly aimed at building on and responding to the existing functional contexts.

**Socio-Cultural:** Connecting to the social context and responding to the communities' needs featured very strongly in two of the cases. In one of them, introducing certain physical connections and visual axis

between the existing built fabric and the new open space was seen as important in ensuring that the existing community became part of and related to the open space. In this case the project wanted to provide something for the community so as to uplift and empower the social context. Links to the area’s industrial heritage were also created to specifically create memories for the community since they were proud of their industrial past. In the other case even though a lot of consultation with the community was held, it is not clear how the functionality of the space responds to particular demographic needs. Rather it seems to respond to the activities of the adjoining buildings. In the third case it was also evident that improving the public space and area in relation to the economic context was more important than responding to the social context. In fact, there was no involvement of the local community to try and understand what type of space would best serve the locality or what functionality they might require.

**Character and Form**

Typology: The creation and provision of green spaces featured prominently and terms such as: urban gardens, areas which are natural or feel like a garden, ‘green lung’ where used. Water was introduced in one case specifically to create a more natural space.

“...so the garden my objective was to create a playground and a natural interactive space, the noise of the water... I wanted to give a natural space where the green, I couldn’t put too much green cause I had to have this footpath, but as much green as possible which is also useable...not a lot of green which you’re not allowed to stroll on.” (Appendix C9ii, p.3)

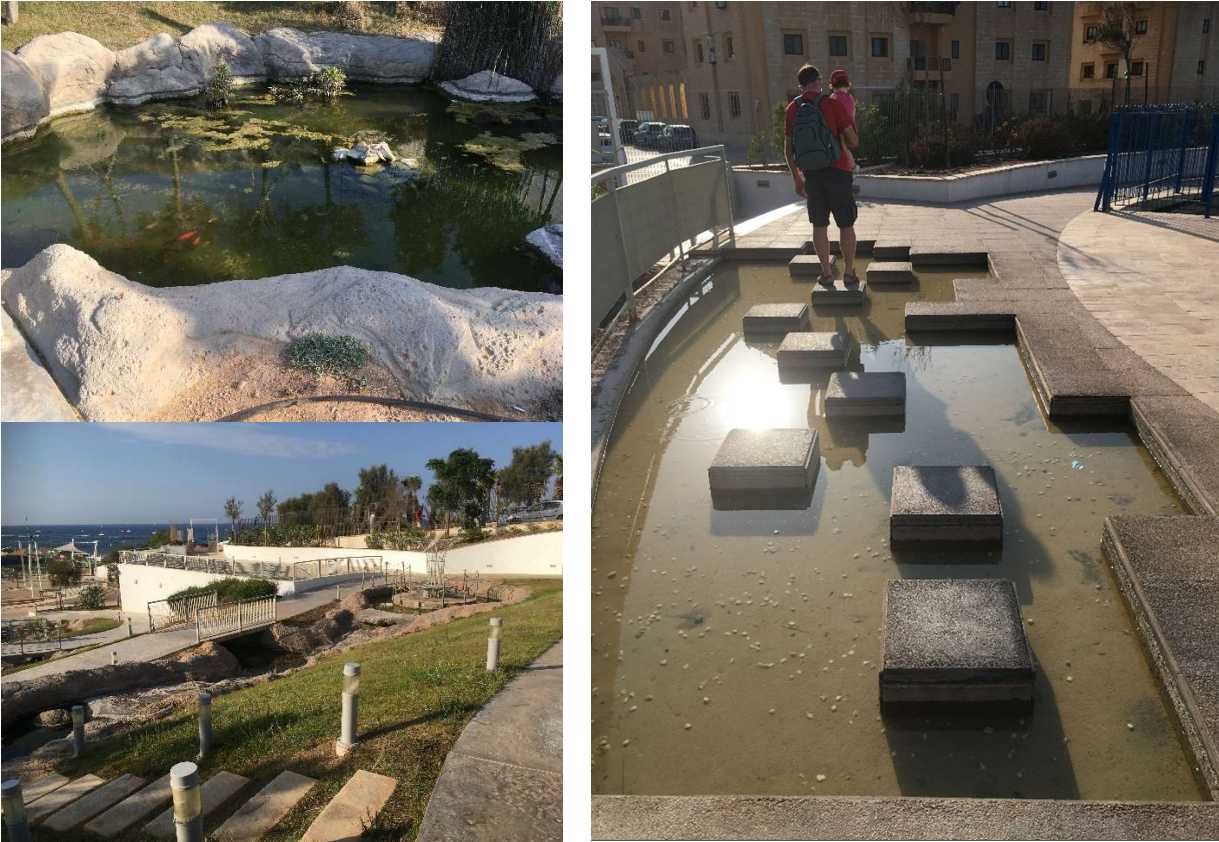


Figure 112: The ‘stream’ introduced in the Pembroke gardens

Visual Interest: Overall, specific street furniture and materials were used to ensure compatibility and create visual interest. In one case there was specific design intent to create an ‘architectural language’ for the locality, through the use of the colour yellow for particular features.

Spatial Proportions and Enclosure: The designs did attempt to create sub spaces. These however served to provide different activities, or create areas with different functionality rather than introducing spatial contrasts or different levels of enclosure or character. In one case the idea of creating different spaces where one would feel enclosed but then still experience the space as a whole was mentioned. However, this experience doesn’t really emerge on site.



Figure 113: Yellow elements introduced as an ‘architectural language’

Responding to the Site and Creating Identity: Design decisions were taken to produce a design which is context specific. In some cases, this was about responding to the site’s characteristics or qualities such as the water’s edge or views to the sea and celebrating this. History and heritage also emerged as an important aspect. This was done through the use of geometric forms and grid paving to reflect the localities street network or the use of materials to reflect historic context in one case. In another, historic artefacts found on site, were integrated in the design. Additionally, care was also taken to retain existing references to the historic context. In the third case no references to the history of the site were made as before the project this was a dumping site. Having said that, the project was also intended to link up with a Natura 2000 site and historic fort although this connection is not experienced in the garden itself.



Figure 114: Historic artefacts (rails, stone slabs and ship bollards) retained and incorporated in the design

## Activities and Functionality

Recreational Facilities and Functionality: Overall, the projects considered the provision and need for different types of play areas, some more formal and others informal. Otherwise, the other main activity provided for was seating areas (in one case linked to retail establishments). The provision of a circulation system, nodes and paths and mapping out how people would move through the space informed the layout in two of the cases. In the third case the road layout informed the spaces which were created. Having said that, the pedestrian spaces were still formed with the intent of creating stronger relationships with the buildings and reducing vehicular impact. In general, the choice of materials was determined for aesthetic reasons. In parallel, aspects such as: non-slip surfaces, ensuring 'Access for All' and performance came into play.



Figure 115: Public space design to allow seating areas for retail establishments

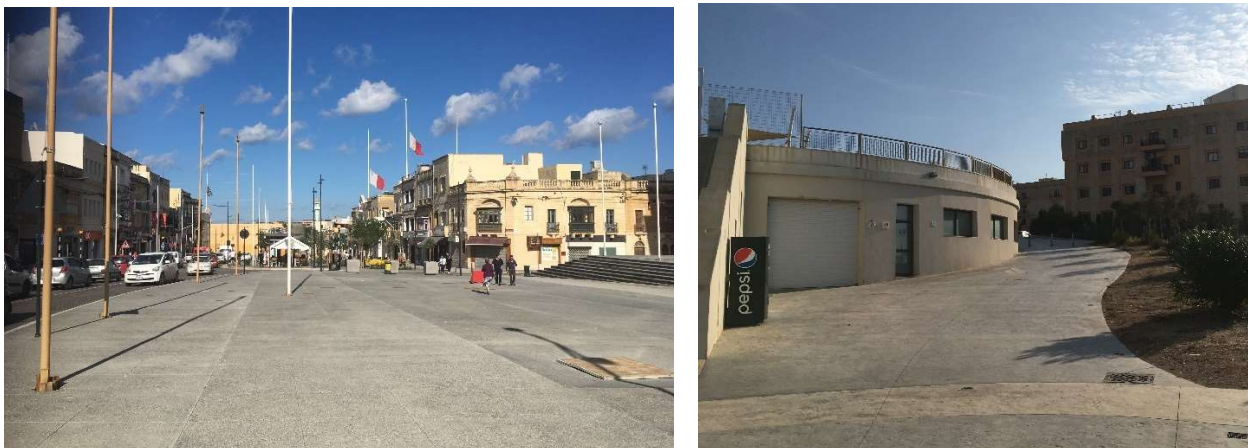


Figure 116: Open and 'flexible' space in front of church (Paola) and inactive frontage (Pembroke)

User Preferences and Multi-functionality: The provision of different types of spaces which can serve different activities featured prominently. This was often done through the subdivision into small spaces such as piazzas or smaller pockets depending on the size of the space. The functionality of the spaces tended to be developed in response to requirements related to the surrounding buildings. For example,



the requirements of the village feast featured prominently in two of the cases, particularly in maintaining the traditional procession routes.<sup>75</sup>

**Flexibility:** The need to retain open and flexible spaces in front of churches to serve different activities was another requirement. In one case such flexibility was provided in absence of a church and is now used for various activities such as yoga or other forms of physical activity. There was also an attempt in one case to provide indoor multi-use spaces. However, the users were never really identified and in reality, the client was not keen to introduce 3<sup>rd</sup> parties. Thus, the spaces remain unused resulting in inactive frontages and dead spaces. It also had a negative impact of the potential for tree planting as much of the garden area lacks sufficient soil depth due to underground spaces which are not used.

**Supplementary Equipment:** Sanitary facilities were provided in all cases. However, the provision of waste facilities was limited to general use bins rather than recycling options. In one of the cases the use of green portable bins was observed.



Figure 117: Waste collection as an add on

## Accessibility

**Vicinity and Availability:** Community participation in one case revealed that the people wanted more open space. The creation of open space for recreation and relaxation, for the community and pedestrianised spaces featured prominently.

**Legibility:** The creation of a hierarchy of circulation paths featured in two cases. Not so much in the piazza case study. The permeability of the spaces and the locations of entrances were important aspects in the cases where this was relevant.

**Movement:** Transforming and reorganising the transportation system was seen as essential in all cases. In all of the cases, vehicular access was one of the first aspects to be considered. In general, the solutions informed the rest of the project. In all three cases it was also the architects' intent to improve access for pedestrians and in two of the cases even prioritise the pedestrian over the vehicle. The creation of walkable routes and access to and through the sites for pedestrians was a clear objective. However, ultimately, in two of the cases vehicular access was still prioritised over pedestrian access where the two

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<sup>75</sup> During traditional village feasts, statues are usually carried through the village/town in the form of a procession. This practice results in particular spatial requirements to allow for the passage of such processions.

had to co-exist in the design. In one of the projects this was due to requests from the relevant authorities and was against the architects wishes.

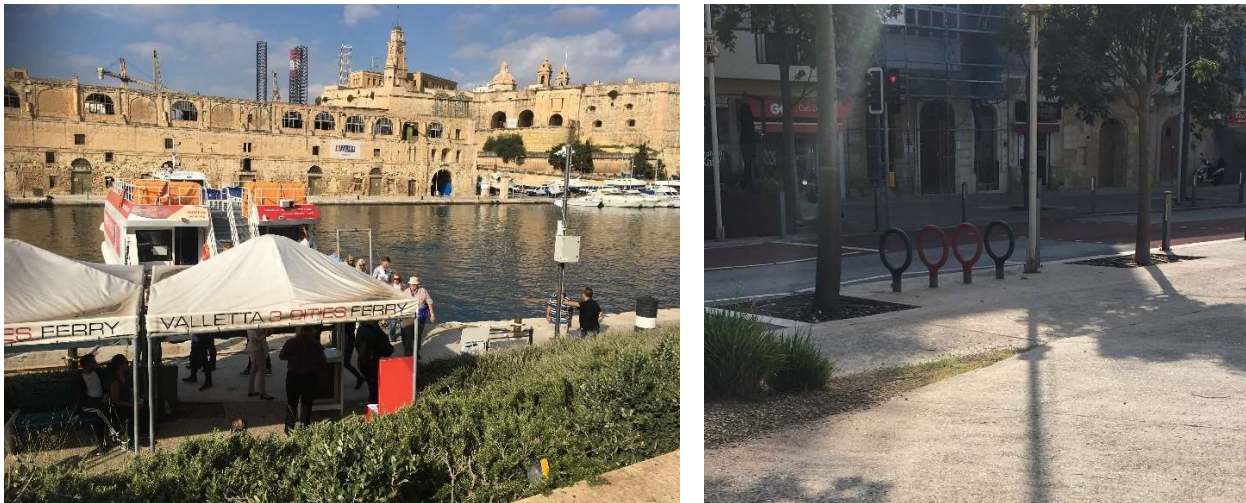


Figure 118: Ferry 'terminal' and cycling racks in the Dock regeneration project (Cospicua)



Figure 119: The ramped footpath which informed the garden's layout due to the site's topography (Pembroke)

In another project, which was in fact the latest to be designed and implemented, there was more success in reducing the impact of vehicular traffic. In one of the cases improving access to a natural coastal area for pedestrians was also intended however this was restricted/abandoned due to environmental concerns from the authorities. The importance and provision for public transport emerged in two of the cases, where the architects specifically retained and wanted to prioritise public transport provision (buses and the ferry in one case) over vehicular access. Discussions on provisions for cyclists did not feature apart from providing bicycle racks.

The provision of parking also emerged as an important aspect in two cases from the initial stages. In the latest project to be implemented, a shift can be noted where the project intent was successful in relocating parking to peripheral locations. In two of the projects there was the idea to try and create centralised underground parking, however this did not materialise. In one of the cases it was primarily due to archaeological remains. In another it was simply not given enough attention.

Providing for 'Access for All' according to national guidelines featured in all the cases and in some aspects was even the departing point for the design concept.

### Climatic Response

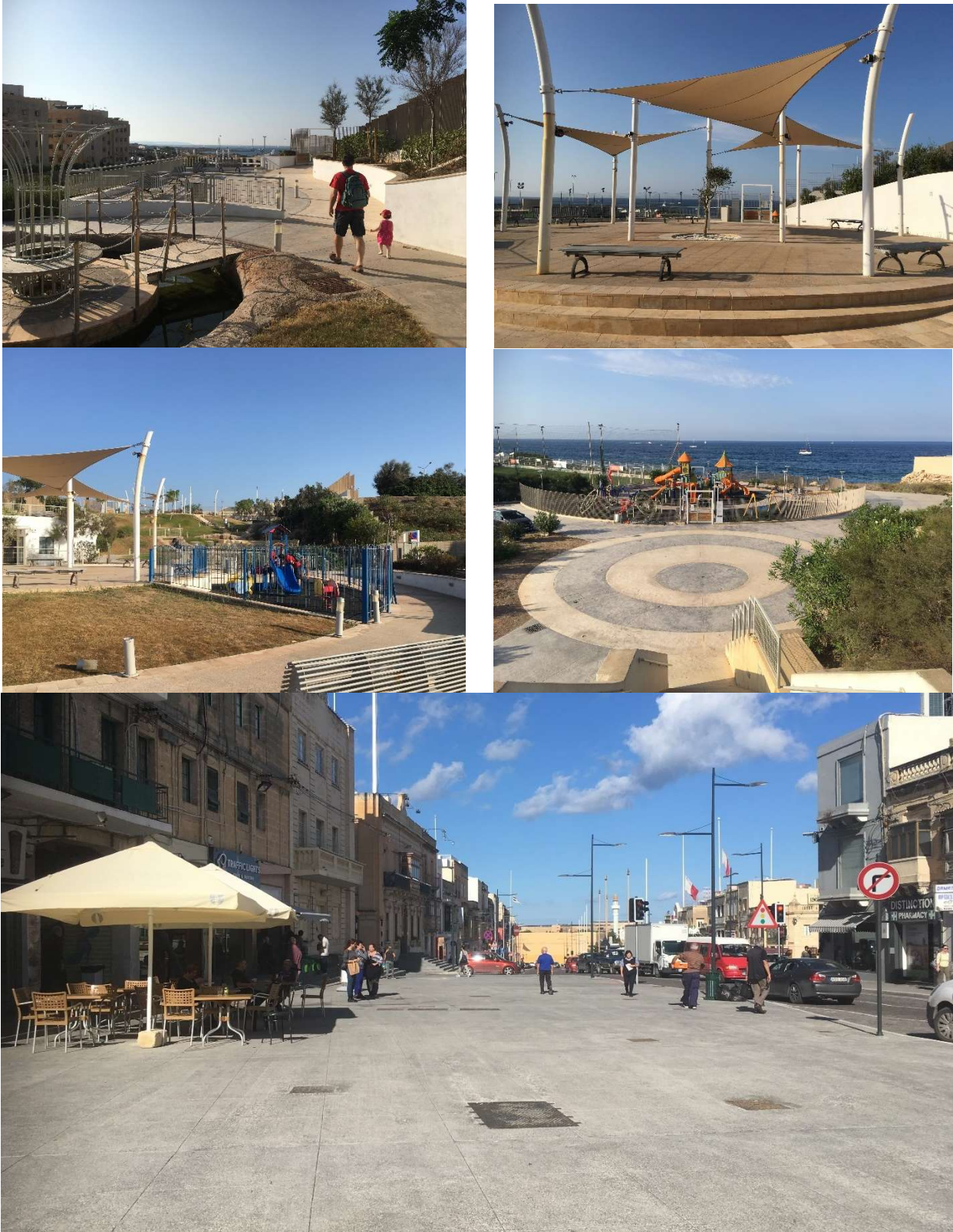


Figure 120: Images showing the lack of shading throughout the projects (Pembroke and Paola)

In all three cases the attempt to address climatic comfort was quite limited. When this issue was raised during interviews, particularly the architects did recognise its importance. Some mentioned the need to mitigate the sun when walking. Another mentioned the introduction of canopies, although admitting that these were also primarily an architectural feature. However, in all cases the spaces are pretty much exposed to the sun and the use of trees to provide shade is quite limited. In one case, the architect said that the benches were designed to remain cool in summer. One particular site is quite windswept and even though the architect raised this point himself, the design did not seek to address this to create comfortable conditions. It was accounted for simply when choosing vegetation which could resist this. In this case creating views to the sea was more important than creating more enclosure for the climatic comfort of the space.

### Water Management and Use

**Water Management:** Water management was provided for in all three cases. This was in the form of storm water gratings which collected water in underground reservoirs. The reservoirs are then connected to an irrigation system for watering vegetation. In two cases a backup supply for the reservoirs was provided to supplement the rain water when needed as is traditionally done, particularly for the summer months. In one case, where ‘green mounds’ with lawn was an important element and the vegetation is substantial, the architects where aware from the start that the supply of water would not be enough. They therefore developed a sewage treatment plant on site to create second class water which supplies the reservoirs when this is required.

Overall, the use of SUDS did not feature. Two of the sites were close to the sea which may have hindered certain approaches; however, this was not even raised in the discussion. In one case, one of the paved areas which contain trees was designed for water to drain into the planters which are designed to allow water infiltration.



Figure 121: Tree pits designed to serve as rainwater catchment points

Use of Water: In all three cases water was used as a feature, a recreational element and to create a more natural character in one project. This was in the form of fountains and in one case an artificial stream and ponds which were central to the design concept.

### Use of Vegetation

Presence and location: In all three cases vegetation was seen as an important element. All three projects wanted to create 'green' spaces. However, the extent of the vegetation provided actually came secondary to other aspects. In one case, even though the project sought to create a 'garden setting' or an 'urban garden' this was actually restricted to a small part of the site. In another case, the idea was to create a 'natural' space, but again vegetation was limited to certain areas so as to prioritise views to the sea, or to create underground storage areas which in fact have never been used. In the last case the vegetation is a bit more extensive; however, the positioning of trees was again limited due to archaeological remains. So, whereas one of the project objectives was to create a 'green lung', the success of this could be questioned. In this particular case, the vegetation was located and designed in such a manner so as to mitigate the impact of vehicles using the road adjacent to the site. In all cases the final outcomes still feel quite urban with the vegetation simply serving to soften the urban character.

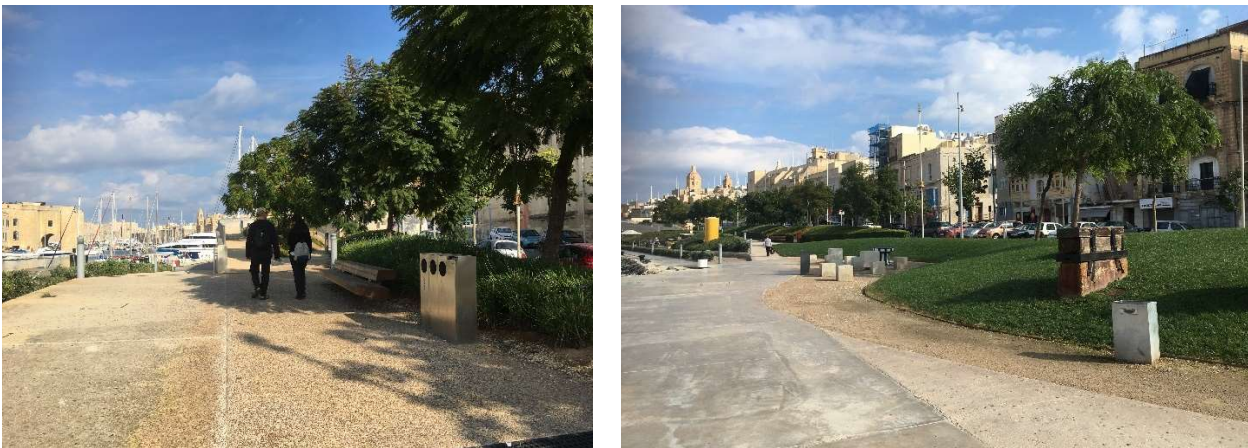


Figure 122: Green mounds introduced to buffer the road (Cospicua)

Form and Type: In all three cases a consultant was appointed to give advice on the selection of vegetation species, with the architect giving input/creating a brief on what was required. Generally, the required aesthetics informed the choice of vegetation. In one of the cases, maintenance and the provision of shading were also considerations; however, the success in providing shading is still to be judged as the trees mature. Additionally, these are limited to one part of the site.

It is worth observing that the specialisation of the landscape architect as a professional is not common place in Malta. There would be scope for such professionals to play a stronger role in the design process.

### Lighting

Again, a lighting consultant was appointed in all three projects. The considerations made were primarily with regard to the aesthetics and the functionality in terms of providing minimum lighting requirements for safety. The importance of ensuring energy efficiency was only raised in one of the cases.

## Resource Management

The provision or use of solar energy did not feature much in the discussions. In one case it was mentioned, however there were limitations in introducing this as it was considered a new concept at the time and the authorities were not ready for it.

Materials were generally chosen for aesthetic reasons and also functionality such as non-slip factors and performance to deal with different use levels. Durability was a consideration when considering fixtures and lighting. For example, wood was eliminated as a material in one of the projects due to maintenance concerns. The use of concrete blocks with integrated lighting featured in another project to ensure seating which was resistant to vandalism.

### 5.4.3 Stakeholder Participation during the Design Process

There were two main stakeholders consistently consulted at an early stage in the design process, the transport authority and utilities companies. All of the projects required some level of intervention on vehicular infrastructure and the transport authority was contacted to obtain their feedback or informal agreement at an early stage. In two cases, consultation with the transport authority was found to be quite difficult. There would often be disagreements on the changes which the architects wished to implement. The reasons were either related to restricting or giving less priority to vehicular access, or simply that the authority did not readily accept change.

In one case the participants did report a positive relationship with the authority and it was clear that in this case the vehicular infrastructure was quite separate from the design of the open space itself. Therefore, the two did not really affect each other and were designed independently. Another interesting observation was that in one of the cases where the authority was seen as being difficult, this seemed to change once the permit was awarded and it was clear that the project would be proceeding. Once this happened, the architect felt that the Transport Authority was then more helpful.

With regard to the utility companies, the experience varied. In one case they were not helpful at first as they were not keen to fork out funds to upgrade their infrastructure. In another case, some were helpful and easy to work with, while others were more difficult, not necessarily knowing what they wanted. It can be concluded that the cooperation from utility companies, does vary depending on the site and the actual personnel one might have to deal with.

Another authority which was given importance was the CRPD<sup>76</sup>. However, even though 'Access for All' was given importance at an early stage in the design, actual consultation mostly took place through the planning process itself.

Another important stakeholder was the Local Council. The level of consultation varied depending on the architect and the client/authority leading the project. In two cases the client was not keen to consult directly with the Local Councils. Reasons cited were that they are too politically involved, and do not usually see the broader picture. They tend to focus only what would earn them votes. The general feeling was that they would always find objection, or that if the authority leading the project was directly linked

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<sup>76</sup> This is the Commission for the Rights of Persons with Disability. It is committed to rendering Maltese society an inclusive one, in a way that persons with disability reach their full potential in all aspects of life, enjoying a high quality of life thanks to equal opportunities (CRPD, n.d.).

to the central government, whose political party would differ from that of the Local Council, then there would be clashes. In reality, in both of the cases the Local Councils were very much on board with the projects.

In one case the architect pushed to start consultation with the Council and once this was received positively, further public consultation then took place which benefited the project. In the second case, consultation with the Local Council was still limited and took place primarily through the planning system. With the third project, it was actually the Local Council who was pushing for the project, which was eventually implemented through Central Government assistance. In this case public consultation was central to the project. It is also worth mentioning that throughout the period of the project, the Central Government, Local Council and locality's political associations were all aligned.

Finally, consultation with the general public and local stakeholders such as businesses or operators affected by the project or in the vicinity to it, varied depending on the clients' and architects' approach. In one case, this was not given much importance. The client was not keen and the architect did not really see the relevance. In another case, there was extensive consultation with the public and operators, however only after the architect insisted with the client that this was essential. In the third, there was extensive consultation which was recognised as being important by all the leading parties: architect and client (Central Government and Local Council).

Overall, interaction and feedback from the public was positive in the two projects where this was given importance. In some instances, operators were hesitant at first since they feared or were sceptical about what the project would mean for their businesses or operations. However, this was usually overcome once the projects were explained and lines of communication were kept open. In the project where extensive consultation was held, the overall feeling from the architect and client was that even though this was important, it was very complex and could sometimes get out of hand. The more one consults, the more demanding stakeholders are, sometimes to the detriment of the project. The architect felt that one has to be really careful, and sometimes be strong enough to resist certain requests. However, this can be difficult when the main aim of the client (central/local government) is to please the people. For example, some of the contentious issues were: objections to removal of parking; disagreement with the use or non-use of vegetation; and rigid and imposing requirements regarding the operations for the local feast.

In one of the cases environmental NGOs were also given importance at an early stage because the project required the removal of existing trees. While this was positive and advice was taken on how best to transplant the trees and keep them within the locality, at the same time, it was clear that the motivation for this move was simply to satisfy the project's public relations.

#### **5.4.4 The Planning Process: Observations**

##### **General**

Permit applications for public spaces are not reviewed by the same team. They are assigned depending on size, whether it is a major project or falls within an Urban Conservation Area and according to locality. The focus then tends to vary depending on the team or case officer to whom it is assigned. It also varies depending on the case officer's perspective since many open space policies are vague and there doesn't

seem to be a uniform approach being adopted. Stakeholder consultation takes place through a system where a list of consultees is automatically consulted.

Interestingly, a minor amendment application<sup>77</sup> is not reviewed by the same case officer or team who would have seen the original application and awarded the full permit. The minor amendment process is governed by a different law. In one case, a minor amendment was submitted due to the rock levels which were found. A comparison of the drawings shows quite substantial changes in the layout of the originally proposed design.

Transportation aspects are usually discussed by the Transport Planning Unit<sup>78</sup> (TPU) within the PA which liaises with TM. Meetings are held between the PA and TM, called TRACC meetings, where projects which concern them both are discussed.

Two strategy groups also exist. One is an internal discussion group made up of members of the directorates, which represent the four planning units: Forward Planning, Development Control, Transport Planning and Heritage. There would also be the directors present, where they discuss at a higher level the principles of the proposal. The Environment Protection Directorate (EPD)<sup>79</sup> would have also been involved when it existed. This group is usually involved where major projects are concerned or where there are contentious issues relating to policy.

The case officers' knowledge of the project and design objectives varied. In one case the case officer remembered having meetings where the project and ideas behind it were explained. However, this is not always the case. For another case the architect felt that it would be useful to have an opportunity to explain the design ideas and objectives to the case officer and the Planning Board<sup>80</sup> as these were not really discussed. Communication with the PA was more about clarifying technicalities or functional aspects in the drawings. This was very often i.r.t. requests from stakeholders. Additionally, the board hearing tends to raise new issues at the final stage of the permit being awarded, without giving the architect time to think adequately about the best design response. Often the architect will then simply implement what is requested so as to obtain the permit approval.

In terms of open spaces provision for recreational purposes it emerged that this is an issue even simply at the strategic planning scale. Development for buildings is being prioritised. "With all due respect we are talking about a racing track for cars in Malta, but we are not looking at an area where tomorrow's generation is going to enjoy itself...Well just to find an area which they will give you as an open space is difficult...So if there is even a potential that a developer would start looking at it and develop it, it is automatically given to him." (Appendix C9iii, p.7)

Additionally, it was felt that it is hard to develop proposals for open spaces or to do something proactive with protected open spaces. The lack of guidelines makes it hard to know what will be acceptable to the authorities so time, money and resources are wasted in trying to develop something which is constantly rejected. The PA does not facilitate this process by trying to suggest what might be considered acceptable.

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<sup>77</sup> This is a permitting process for minor changes made to a full permit application which has already been awarded.

<sup>78</sup> Throughout the course of the research the TPU was dissolved.

<sup>79</sup> This department existed prior to 2002, since it then merged with the then Planning Authority (PA) to form the Malta Environment and Planning Authority (MEPA) which demerged in 2016 to form the PA and Environment and Resources Authority (ERA).

<sup>80</sup> The Planning Board is responsible for the issue of development permissions (PA, n.d.).



With protected areas the process and studies required are very bureaucratic and extensive, which hinders any opportunity to do something practical, useful or sustainable. The planning approach leans towards a very conservative one with too many restrictions.

“...sometimes it’s easier if you build a block of flats, because you have rules, you know what you can and cannot do. When it comes to open space there are a lot of new things... When we do restoration projects I don’t have a problem because you have to follow the rules...but these spaces, in Malta when there is something new and it is innovative, the first thing they tell you is no...no...” (Appendix C9iii, p.7)

It was also suggested that a gap exists in the process between the planning and design of open spaces, or urban design. It was felt that “there is always a big disconnect between the planning process which then eventually goes towards providing real live hard solutions without there having been a creative process to actually define that.” (Appendix C11iii, p.3) It was suggested that development briefs for example should be executed by somebody who is proficient in design – urban design or architecture, rather than somebody whose core skills are planning. The development brief could take a step back and be more of a design brief with a strong commercial aspect or which stimulates development aspects and also the environmental aspect. It could be a design competition in itself.

Another challenge faced by architects is where the line is drawn between policy, planning and architectural design. One architect stressed that the planning process can be very subjective and design discussions often focused on the aesthetics and contextual nature of the design from a subjective point of view. This was not helpful and often reduced the quality of the proposal because so many different entities and persons are involved in the process.

### **The Use of Planning Policy during the Design and Planning Review Process**

There was a general consensus from the architects that there isn’t much policy on public open spaces to refer to. Policies which existed usually relate to: land use; ‘Access for All’ guidelines; standards for the design of roads; requirements for types of vegetation species; and archaeological considerations. Additionally, the policies which do exist are vague and therefore not helpful and can have various interpretations.

Two of the architects, were sceptical about the introduction of policy or guidelines for public spaces. Guidelines were seen as more positive however again they were not truly convinced. They felt this would be restrictive. On the provision of guidelines another architect said “the planning authority (PA) is the platform where a lot of disciplines and aspects of the built environment come together...but it’s a facilitator for that rather than the executor of them...” (Appendix C11iii, p.21) One architect believed that design competitions should be used for public open spaces and the decision would then be in the hands of a competent panel. Another architect suggested that a question-like checklist or series of questions would be useful to create more awareness about the various aspects which should be considered when designing public spaces.

One of the architects agreed that there should be guidelines or standards, but he was unsure about whether it should be the PA’s role, since in their opinion planning is mainly about land use. The option of building regulations was suggested, and that the dividing line between building regulations and policy is not clear. Two specific areas which policies should focus on were mentioned. These being: sustainability and the provision of vegetation; and designing for pedestrians rather than prioritising vehicles.

The discussions regarding use of policy during the planning review process revealed similar conclusions. The main documents which are consulted are the: SPED; local plans; and DC 2015. In general, the policies which do exist on open spaces tend to be strategic or generic in nature and there are no guidelines on how to interpret them. Additionally, they do not tend to go into design aspects. As a result, the onus is left very much to the architect. The policies which are more specific relate to: types of vegetation species allowed/not allowed; “Access of All” guidelines; and zoning regulations. More specific guidelines also exist when these are produced by other stakeholder or authorities such as the Commission for the Rights of Persons with Disability (CRPD) or TM. The requests then tend to be more precise.

Sometimes one may find more specific policies for an open space in the local plans, development briefs or action plans. Taking Paola square as an example, one case officer admitted that when indications for specific character requests, such as ‘provide a garden setting’ are included in policy, it could be more helpful to have guidelines for minimum vegetation percentages, for example. The ‘open storage area policy’ which requires 10% landscaping was given as an example. Another observation was that since the demand for public spaces is low, and there are few applications, then the demand for policy is low. It was felt that this is why such guidance probably does not exist. Additionally, such projects are one-offs and are often not innovative.

The most recent project revealed that a number of policies were consulted during the review process. Some of the policies which were listed in the case file were specifically discussed with the case officer to understand further how certain aspects were assessed. The policies concerned: the provision of reservoirs and water management; microclimatic considerations; the use of adequate materials; the provision of vegetation; and energy efficiency. The observations made as a result of these discussions are discussed in 5.4.6 p210, according to the design themes.

The case officers had mixed feelings about the lack of policy and guidance. While it was admitted that this was the case, there was hesitance as to their usefulness, as they felt that context was important and policies could be restrictive. For example, while there could be guidelines to ensure that public gardens have more vegetation and are not simply paved areas, it was felt that a space in Valletta might not need soft landscaping because of the context.

#### **5.4.5 Stakeholder Involvement during the Planning Process**

The stakeholders which featured most during the planning review process were the Transport Authority (TM) or Transport Planning Unit (TPU); heritage consultees such as SCH<sup>81</sup>, Cultural Heritage Advisory Committees<sup>82</sup> (CHAC), Heritage Planning Unit (HPU)<sup>83</sup> or Restoration Unit<sup>84</sup>; and the CRPD. Therefore, historical heritage, transportation aspects (mainly vehicular) and ‘Access for All’ proved to be important

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<sup>81</sup> The Superintendence of Cultural Heritage (SCH) was set up to fulfil the duties of the State in ensuring the protection and accessibility of Malta’s cultural heritage (GoM, n.d.).

<sup>82</sup> Since May of 2016, the Cultural Heritage Advisory Committee (CHAC), has been chaired by the Superintendent of Cultural Heritage, which has now assumed an advisory role directly to the Superintendence (GoM, n.d.).

<sup>83</sup> This is a unit within the Planning Directorate of the PA which reviews development permit applications i.r.t. heritage related policy.

<sup>84</sup> This is now the Restoration Directorate which offers specialised assistance to various public entities and institutions, amongst others on restoration, rehabilitation and conservation interventions (GoM, n.d.).

focus areas. Enemalta<sup>85</sup> also featured in all of the cases; however, discussions tended to take place in parallel with the planning process and not through it. The clearance from authorities such as TM, SCH, Enemalta and CRPD was also often tied to permit conditions and compliance certification.

The Civil Protection Department (CPD) also featured in two of the cases mainly with regard to the provision of fire hydrants and access for fire tenders.

The Environment Protection Department (EPD) featured in two of the projects. Their feedback was primarily related to permission required for transplanting of trees, compensatory planting or the species to be used. Comments on other aspects of the proposed vegetation rarely featured and when they did, it didn't seem to be given importance. With regard to the evaluation of vegetation, nowadays, the Environment and Resources Authority (ERA) should be playing the major role in this. However, this is a recently new set up<sup>86</sup> and overall feedback or requests regarding the design and use of vegetation were not noticed during the planning process. Objectives or policies set in this regard did not seem to be given much importance. There seemed to be voids also when considering policies on energy and water efficiency. It was not clear through the documents examined or the interviews conducted which authorities should be reviewing such aspects.

Consultation with the general public was primarily limited to their right to submit a representation within the given time period should they wish to. No additional meetings or consultation sessions were held as part of the planning process. Consultation or discussions with Local Councils were generally held in parallel to the planning process.

Other stakeholders who sometimes commented but did not feature consistently or to a large extent were the: Sanitary Office<sup>87</sup>; Design Advisory Committee (DAC)<sup>88</sup>; Malta Resource Authority (MRA) (MRA, n.d.); Malta Maritime Authority (MMA)<sup>89</sup>; Malta Tourism Authority (MTA) (MTA, n.d.); and Cottonera Rehabilitation Project (CRP). The involvement of such stakeholders was directly related to the project itself.

The Planning Commission<sup>90</sup> also provided input generally at the latest stages of the planning review, and they commented on whatever aspect they felt was important. One architect in particular felt that this part of the process was not very helpful and often one had to abide to their requests so as not to jeopardise the permit being awarded in the final stages.

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<sup>85</sup> Established in 1977, Enemalta is the main energy services provider in the Maltese Islands, entrusted with the distribution of electricity, and the development of the national electricity distribution network (Enemalta, n.d.).

<sup>86</sup> The Malta Environment and Planning Authority (MEPA) was demerged into the Planning Authority (PA) and Environment and Resources Authority (ERA) in April 2016.

<sup>87</sup> This is an office within the PA which reviews development permit applications i.r.t. sanitary regulations.

<sup>88</sup> An advisory committee within the PA which makes recommendations in relation to design in development applications related to urban conservation areas and major projects (PA, n.d.).

<sup>89</sup> The MMA used to be an independent government agency however since 2010 it forms an integral part of TM, the Authority for Transport in Malta.

<sup>90</sup> The Planning Commission within the PA carries out the function of determining development planning applications (PA, n.d.).

## 5.4.6 Design Themes during the Planning Process

### Spatial and Structuring Qualities

Open Space as a Structuring Element: This theme did not emerge in any of the case study discussions during the planning stage.

Connectivity: In two of the cases improving connectivity between existing spaces did emerge as an important theme. It was a policy objective in both cases through the development brief or local plan policy. It was taken on board as an important objective for the design by the architects and was clearly an important objective as part of the project review during planning stage. Connectivity was however limited to pedestrian connectivity and open space connectivity. The connectivity of vegetation in open spaces, integration of local biodiversity systems or habitat creation did not feature.

### Contextual Relationships

Physical: Concerning contextual relationships the discussions were mainly regarding physical aspects. For example, in one case the discussions focused on enclosure and the creation/obstruction of views in relation to the creation of green mounds. In another case, a representation was submitted from a resident in the vicinity (residential buildings which abut the proposed car park). The suggestion was made to include a garden/landscaped area as a buffer between the car park and existing residential buildings. However, this suggestion was not heeded.

In the third case, observations were made by the case officer that the proposal creates new spaces, with additional trees and benches. This was done through the relocation of one of the vehicular carriageways such that the central open space (pedestrian area) is shifted to one side to create one pedestrian space with the footpath. The church parvis was also redesigned to remove the existing balustrade enclosure and introduce stepping in concrete tiles. Such an open design was seen as an improvement on the existing and considered acceptable.

Functional: One of the project reviews did comment that the proposal did create a direct relation between the new pedestrian open spaces created to the uses in the square such as the health centre. Other than that, this theme did not really emerge in discussions. Policy did not really go into the types of open spaces which were to be created or their functionality. If requirements were made these were simply limited to the provision of open space and possibly their character in the form of green space.

Socio-Cultural: This theme did not emerge in any of the case study discussions during the planning stage.

### Character and Form

Typology: In two of the cases planning policy did give an indication of the character which the open space should provide. In one case it was referred to as a 'garden setting'. In another case it requested that the project serve as a 'green lung'. However, it was clear from the discussions and document review that no guidelines exist on what this might mean and it was simply up to the interpretation of the case officer or architect.

For example, the architect felt that that since more trees or soil area was provided than there was previously, this should be sufficient to create a 'garden setting'. Also, the fact that the space now related

to the frontages of the buildings like front gardens, the architect felt, also contributed to the 'garden setting'. The case officer also felt that this was subjective and that the policy was generic and not clear on how many trees should be provided. So, the fact that there was an effort to introduce a certain number of trees was sufficient. The case officer also felt that since the new connection which was being provided to the Mediterranean Gardens was listed as a 'green passage' this also contributed. There seemed to be no concern on whether this link actually provided a 'green' space/connection.

"I think in this case there was the effort to introduce an amount of trees...plus they also introduce the connection to the Mediterranean Gardens and they listed the space as a green passage..." (Appendix C10iv, p. 6)

In the other case, even though the aim was for a 'green lung', during the planning process there was a request by the authority for a proposed vertical green garden (where there was a substantial change in level) to be removed as it was considered out of place in an urban context. As a result, the area in question is quite bare and hard. When discussing this aspect with the case officer it was clear that there weren't any guidelines or policies which suggested what might be suitable when trying to provide a 'green lung'. The case officer did not feel that this was necessary. While agreeing that the policies are quite general, they give an indication. It is then up to the architect to interpret that and up to the case officer/professionals to judge whether the proposals are appropriate depending on the context.

In terms of character, the design intention of this same project was specifically to create different characters in the form of urban spaces and soft landscaped areas as well as children play areas. Different areas have been created such as the piazzas, church parvis, new street profile, grass dunes, and continuous promenade around the dock. However, this idea was not informed by the planning process or policy.

Visual Interest: This theme did not emerge in any of the case study discussions during the planning stage.

Spatial Proportions and Enclosure: This theme did not emerge in any of the case study discussions during the planning stage.

Responding to Site and Identity: This theme emerged in two cases which were in historically sensitive locations. The site of the third project was also quite specific in terms of identity due to its close location to the coast, natural areas and a Natura 2000 site. However, it seems that responding to the site and its identity was only prioritised during planning review, when historical heritage was concerned, and primarily when considering sites in urban conservation areas (UCAs).

For the first case, during the planning process there was a specific request from the SCH for the project to be in keeping with policies for UCA's. However, there were no specific discussions on this and there were no objections being made to the changes. They simply raised attention to the sensitive nature of the site. The project aimed at re-introducing an original feature (an archway) through a contemporary design based on the original volume of the masonry arch on site. The DPAR<sup>91</sup> report considered the proposal not to be visually dominant since it is a lightweight structure and is therefore found to be appropriate based purely on 'cosmetic' reasons.

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<sup>91</sup> Development Planning Application Report

With regards to aesthetics and character the primary concern in UCA areas is that there should be traditional use of materials and finishes. If contemporary designs are introduced they should be simple. The policies in this regard are primarily oriented toward building materials, apertures and balconies; however, it seems they are being applied to open spaces too.

In the second case, the project review included extensive discussion, consultation, requests and advice on the sensitivity of the cultural heritage of the site and the need for the proposals to take these into account. Various studies were requested from the applicant/architect and various requests for retention of specific features to ensure that links to the specific history and geography of the site were retained. Conditions were set in the permit to retain historic features; pebble-based aggregate, old paving found below the surface etc.

Through the discussions with the architect, it emerged that even though the relationship with SCH is quite good since heritage is always given importance, sometimes compromises must be reached as the approach tends to be different. The SCH is focused on the preservation of heritage. The architect on the other hand saw the need to respect this but at the same time readapt and reuse historic sites. Sometimes a contemporary intervention is seen as being beneficial. However, there was the feeling that overall healthy debates tend to take place with the SCH.

From the planning perspective, introducing a contemporary design without losing the history and character of the place was readily accepted. Elements such as materials, street furniture and street lighting are primarily reviewed in relation to their character and their contextual suitability. At the time such reviews were a combined effort between the case officer and the HPU. Through the discussions with the case officer, it did emerge however that such reviews and judgements are very much based on the subjective opinion of the case officer himself. Policies tend to be quite generic.

### Activities and Functionality

Recreational Facilities and Functionality: In two of the cases the materials used for paving or street furniture were discussed and details were requested. It was not clear against which guidelines these submissions were being assessed. The architects also felt that there aren't clear guidelines in this respect and the policy is quite vague. Through discussions with the two case officers, who assessed the two different cases, it emerged that the proposals are usually assessed primarily in relation to the contextual suitability of the materials and design of the chosen elements, rather than the functionality.

"Given that this is in the UCA and the buildings around it have a certain heritage value...this was a case where I asked them to bring a sample. Then when they bring the sample you will notice if there are going to be any problems." (Appendix C10iv. P.6)

The use and allocation of space, the provision of seating, whether it is comfortable or not and where it is placed, for example, are all aspects which are up to the architect, according to the case officer. For the third case this theme did not feature during planning review.

User Preferences, Multi-functionality and Flexibility: This theme did not feature during the planning review for two of the cases. In the third case, there were some observations about the type of spaces which were being created, for example that squares and pedestrian areas were proposed. However, there is no discussion about why these are considered suitable, or about whether the type of activities and use

of space being provided is suitable for the intended users. Additionally, some of the more innovative activities being proposed such as a 'beach' along the Dock area was removed as the PA were concerned that people might think it was allowed to swim there. Aspects such as multi-functionality, flexibility or adaptability of the design/space also do not emerge.

Supplementary Equipment: This theme did not emerge much in any of the cases. The only aspect which emerged in two of the cases was that the CPD requested that fire hydrants would be installed in two of the projects.

## Accessibility

Vicinity and Availability: In none of the cases was there any discussion about how the new open space would be specifically providing for the immediate residents, or at which scale it might be providing an important open space. There were also no considerations as to how the type of space being proposed related to any other open spaces or lack of open space in the locality.

Legibility: This theme did not feature in discussions during the planning review for any of the cases.

Movement: When assessing movement within a public space, the focus is on ensuring vehicular access according to design guidelines. The transport authority in particular never commented on whether the provision for pedestrians is suitable. In all three cases their main concern was how traffic flow would work and whether capacity would be reduced. Two of the proposals specifically tried to reduce traffic flow and the impact of vehicles in the spaces; however, they were met with strong resistance from the authority.

In two cases the design did focus on improving pedestrian flow, and the PA did comment that this was seen as positive, however they did not question or comment on whether the design for pedestrians was suitable. In the other case however, there was a lengthy discussion and appeals process where the PA insisted on retaining pedestrianisation in a specific area, whereas the architect wanted limited vehicular access for servicing of the buildings. Eventually, the PA lost the case and had to concede.

Parking was an important focus in all three cases. In two of the cases the architects tried to limit its impact by shifting or removing. In some cases, the case officers could see the benefit of this, however the overall concern of both the PA and TM was that the general supply was not reduced, or even increased if possible. Discussions on the provision of suitable access by public transport or cycling did not feature that much during the planning review.

Ensuring suitable provision for 'Access for All' featured in all of the cases, and was an important requirement for the PA. Audits of the designs were always carried out by the CRPD and any objections or requests made had to be adhered to.

## Climatic Response

This theme did not emerge as an important focus during the planning review. In one of the cases, the DPAR report noted that the proposal is better than previous ones since trees have been included which will provide shade. This is the extent of the discussion in relation to climatic response of the design. When 'microclimatic considerations', a term used in the policy itself, were discussed with the case officer to understand what was understood by this term, no response was forthcoming.

In the second case, the EPD commented with regards to the removal of soft landscaping in the kids play area as well as the need to provide trees to create shade. However, it is not clear which trees were actually provided in the amended drawings to create shade for the kids play area. In fact, there are no such trees providing shade to any play or seating areas on site.

### **Water Management and Use**

**Water Management:** All three projects provided traditional storm water management and the use of reservoirs for the collection of rain water. However, there is no specific policy which requires such storm water management, or any guidelines as to what is considered suitable. In one case a condition of the planning permit was that a water cistern with a volume of at least 30% of the total roof area of the hard-landscaped area would be constructed to store rainwater run-off from the built-up area of the development. This cistern was required to be completed and available for use prior to the development being first brought into use.

According to the case officer, at the time this was a requirement in the building code and a policy in DC 2007 (GoM, 2007). It was a standard condition which applied to buildings or any development and in this case was applied to the hard-landscaped area. The case officer commented that nowadays it is a building regulation and it isn't included in DC 2015 (GoM, 2015). However, in other cases this was not applied and the request for the use of reservoirs came from other entities such as the Malta Resources Authority or Heritage.

In fact, in another case the case officer said there was no specific policy on how to deal with this for open spaces. It was felt that the provision of a reservoir and the re-use of water for the vegetation should be a consideration; but there is no guideline or policy for this. Additionally, how big it is and how it is used, should be something determined by the architect and not the case officer. It emerged that there doesn't seem to be a consistent authority who is guiding or providing feedback through consultation to the PA on such aspects.

Sustainable water management therefore seemed to be subjective depending on the project and the particular case officer. One case officer felt that in some areas it was just not possible to provide such storm water management. Additionally, sometimes if currently no water issues are observed then it would be fine if no proposals to manage or re-use water are made. There did not seem to be awareness of the impact of the lack of storm water management on flooding issues in other areas or the value of collecting and re-using rain water (the issue of polluted water was cited). One case officer also admitted that there just isn't the local expertise and that makes a difference.

When queried about the various policies on water run-off and sustainable drainage in the local plans, the case officers commented that this is not something which the planning process really concerns itself with. It is primarily limited to requesting reservoirs. In order for more attention to be given to this, one case officer felt that more awareness on the matter would need to be created.

**Use of Water:** Even though this featured in all of the projects, there were no discussions regarding this theme during the planning review.



## Use of Vegetation

Presence and Location: Feedback and discussions during the planning review on the provision and location of vegetation were few and far between. One of the architects agreed that minimum standards for the provision of vegetation amongst other things should be provided. This could either happen in the form of guidance or policy through the planning process but also through the Buildings Regulations Office in the same way that building standards exist.

On another project, the case officer confirmed that the planning process doesn't really go into the design aspect of vegetation, other than the species type. Although comments were provided by EPD, to include more trees for shading, the case officer admitted that these seemed to be lacking. The case officer also assumed that there would be some kind of control from the EU since it was an EU funded project.

On another case, from the PA's perspective the fact that trees are provided was sufficient since in a previous application a permit had been awarded to remove all trees. Also, that some trees were provided for shade was sufficient.

When trying to discuss one of the SPED objectives with the case officer concerning "Protecting and greening open spaces...reduction of soil sealing and support biodiversity with a view to developing ecological corridors" (GoM, 2015, p. 24), it emerged that this is a broad requirement which isn't really followed up. With regard to the provision of a 'garden setting' and how many trees this required again it was felt that this is subjective. It was suggested that it should be up to ERA (which is automatically consulted) to provide feedback or make requests in relation to such objectives.

Form and Type: In general, the PAs requests are limited to the provision of specific species primarily related to guidelines on invasive/non-invasive species. In one case, the species were requested to be indicated on the drawings. Following the submissions, the planning permit still included a condition that all species were to be according to the Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands (GoM, 2002). In another project there was no discussion about the suitability of the type of vegetation.

In the third project the formal feedback was limited to advice regarding the trees which could be removed or transplanted, the requirements for compensatory planting and the issuing of permits in this regard. The only policy which existed was with regard to the type of species and in such an urban context it was not seen as very relevant by the case officer. The architect however recalled that many discussions had ensued because a particular species was proposed which was considered unsuitable by the PA as it was not local. When discussing the potential benefits of vegetation for environmental aspects or climatic comfort, the case officer did agree that this was important however he could not see how this could be encouraged through policy as one had to respond to the context.

Additional Points: The requirement for maintenance of the vegetation varied throughout the projects. In one case this was set as a permit condition for five years. In the other two cases it was not. In general, following the completion of the project the procedure used to be that the EPD carried out an inspection of the landscaping and reported on whether the layout of the trees and the shrubs was considered to be acceptable even though it might not adhere strictly to the landscaping plan. Such an inspection would be required for compliance to be issued. Nowadays, vegetation is still a planning condition and checked by the PA and not ERA. The PA checks that the conditions are adhered to. Mostly however a report is

requested from the architect or their consultant and they would take it upon themselves to illustrate that they have followed the plans. It was given to understand that the PA doesn't really have the time to make the checks.

In one of the projects, the client felt that sometimes the PA is too restrictive in allowing the removal of trees. Sometimes the existing trees just don't have value, or else they are not appropriate for the whole design which might require specific types of trees in specific locations. The authority however, sometimes does not see the problems and simply insists on retaining existing trees.

## Lighting

Concerning lighting this varied. One case officer mentioned that the Light Pollution Awareness Group had provided the PA with some guidelines. These are not necessarily followed however requests are made for lighting to be full cut off and have minimal impact. In some cases, lighting reports are requested. It is not clear what justifies these reports. These reports are certified by the author themselves so the system is seen as self-regulating.

In one project, the Light Pollution Awareness group made a request for cut off lights to be used. Additionally, this was requested as a condition in the planning permit. Moreover, a report was to be produced by an independent engineer that all lighting complies with this and the issuance of a compliance certificate for the project would be subject to this.

In another project, lighting was considered a reserved matter. The only requirement was that cut off light fixtures would be used. According to the case officer, that is seen as a requirement everywhere and in larger projects consultation takes place nowadays with ERA on lighting matters to minimise light pollution.

However, in the third project which was designed and implemented at a later stage this aspect was not mentioned. The case officer commented, that details are sometimes requested for street lighting however the concern will be primarily with the aesthetics of what is being proposed in relation to the context and usually in a UCA area. The functionality is not really assessed.

"...and street lighting, I will want the details, in order to check whether the design is suitable for the UCA. For example, for street lighting in the UCA, less is more, so we want something which as much as possible is simple...it's nice but simple." (Appendix C10iv, p.7)

## Resource Management

In two cases there were no particular comments at planning stage. In the third project, a request was made during the Planning Board meeting for Solar Panels to be placed on the roof of the bus shelter. This project also listed the SPED objective "To ensure that all new developments are energy and water efficient..." (GoM, 2015, p. 25) as one of the policies considered during review of the application. This was discussed with the case officer to understand the intent. However, he was not really clear about what this would entail, and suggested it should be the responsibility of the Water Services Co-operation, Enemalta or ERA to provide feedback or make requests regarding this as illustrated through this extract:

"Interviewer: Another Urban Objective 4 is 'To ensure that all new developments are energy and water efficient...' How would you assess that a development is energy and water efficient?"

*Case Officer: How am I going to know...*

...

*Case Officer: Energy efficient...like in this case...I mean energy and water efficient...what do you understand by it?*

Interviewer: Well water efficient could relate to how water is used, what happens to the rain water run-off...if you have an irrigation system etc.

*Case Officer: Well I assume that is why there is the water services corporation...*

Interviewer: Well that's why I am trying to understand which the authority who would request such aspects is?

*Case Officer: Well I assume that is why we consult the Water Services, Enemalta, ERA, I am not an expert on these things...I mean in reality I am seeing the case and assessing it with the policy...but then for vegetation there is ERA, for water there is Water Services...traffic there is Transport...that's why these entities are consulted. The SPED is there as framework for how the applications should be assessed. But when it comes to the details, everybody has to play their part..." (Appendix C10iv, p.5)*

## **5.4.7 Governance and Funding**

### **Governance**

All three case study projects were of a significant size and complexity. Such projects are not common in Malta. In all three cases, an authority led the project which had more resources than Local Councils and had direct access to central government i.e. ministries. This gave them more autonomy to take decisions and make the projects happen.

All three cases were public projects. There didn't seem to be a common trend with regard to how and if private entities were involved. One authority specifically did not want to include private entities as this could create more complex management issues. In one case, there was an attempt to include a private entity for the provision of underground car parking; however, this did not work out due to it being physically unfeasible. In the third case, the client managing the project specifically aimed to carry out PPP projects, however in this case it did not since there wasn't the scope for it. However, they did engage and liaise with existing operators and improved their facilities where possible. They saw this as a positive part of the project.

One of the case studies identified the tendering process, particularly when concerning EU funding, as being limiting. The tender is drawn up in advance and at an early stage in the project. As technology changes or things develop on site variations might be required however it is difficult to be flexible. This for example affected the possibility to change lighting specifications to energy saving ones when it had become more feasible to introduce them.

It was felt that some authorities lack vision and are too conservative when it came to open spaces such as Natura 2000 sites. The PA and ERA were mentioned in this regard. While it was felt that there does tend to be a lacuna in terms of governance of public spaces, it was found to be questionable as to whether the

PA or ERA would be the right authorities. The Grand Harbour Regeneration Cooperation (GHRC) commented that at the time, they realised that there was no entity or process to manage or develop public areas.

### **Funding**

In all three cases, funds other than those usually provided to local councils, were made available for the projects to happen. In two of the cases the projects were 85% co-funded by the EU. National funds directly allocated by central government were used for the third project.

#### **5.4.8 Maintenance and Management**

In all three projects, the initial funding which was made available did not cover future maintenance. However, all three recognised the importance of securing that future maintenance would take place. Two of the projects were specifically conscious of this since EU funding regulations required it. All three projects adopted a different approach.

The first approach adopted by the MTA is that maintenance and management is always retained within their remit and specific budgets exist for the projects which they develop. The second approach adopted by the Consultative Council for the Southern Region is that local councils should always take this over so as retain their autonomy. However, additional national funds had to be allocated for this at a later stage. The third approach, adopted for the project led by GHRC was developed as the project progressed. Some funds were allocated through the tender to ensure certain levels of maintenance for the first three years. There was the intention to involve some entity which would include the local council to take over the project but that did not materialise and it was clear that the local council alone would not have the resources to manage and maintain it. It was therefore handed over to the Works Department functioning under Central Government. Neither of the interviewees knew whether this arrangement was still currently on-going.

What emerges is that under normal circumstances Local Councils would and do not have the resources or funds to manage and maintain such projects. The level of maintenance they would manage would probably be limited to cleaning. Additionally, the management and maintenance, and the funds which would be available, was not something which the architects were generally aware of. Therefore, this did not really influence the design approach other than simply trying to adopt a low maintenance approach where possible. Another complication which sometimes emerges when central authorities initiate and develop projects is that the project may then fall under two Local Councils which would create issues when considering eventual operation and management. The other side of this is that when these Local Councils would consider the same project, if they did, they would limit the project to their locality boundaries, even if this did not always make sense.

The lack of enforcement was another reason raised for hesitating to introduce third parties in the operations of public spaces. One client felt that 3<sup>rd</sup> parties tend to abuse their rights and there would be no enforcement to control this.

## 5.5 User Survey: The User Perspective

### 5.5.1 Introduction

A survey was carried out to understand the user perspective with regard to particular themes which could not be judged using the physical survey. The themes were: availability and use of recreational open spaces; character and identity; and functionality. The survey was distributed online via social media platforms as well as via email networks. A total of 127 responses were collected. The survey questions and raw data may be found in Appendix B7ii and C13.

Figure 123 - Figure 125 illustrate the demographics of the respondents. The locations in which the respondents resided were quite varied. Besides those shown in the graph the following locations had either one or two respondents: Luqa; Gudja, Floriana, Santa Lucija, Bahar ic-Caqhaq, Mqabba, Msida, Safi, Balzan, Xemxija, Birgu, Gharghur, Fgura, Mellieha, Birguma, Santa Venera, Marsaxlokk, Zurrieq, Iklin, Pembroke, Birzebugia, Isla, Victoria, Mgarr and Lija. In total 43 different locations.

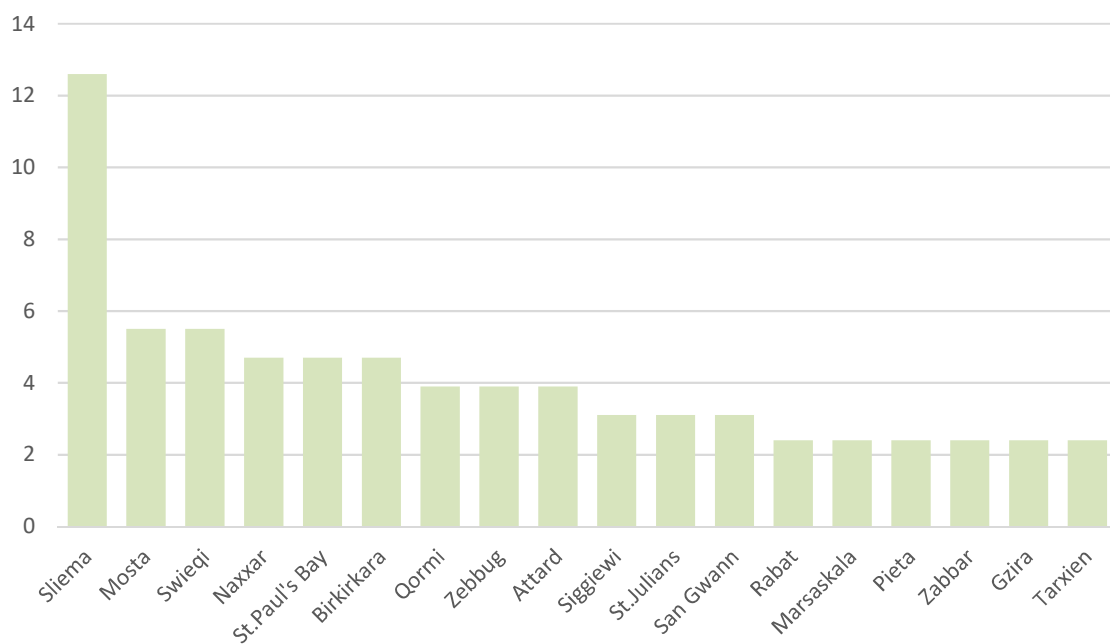


Figure 123: Number of responses according to location (for those >2)

With respect to the participants' characteristics, there was a higher response from the 35-44-year olds, and the majority of the respondents, 60.6%, were full-time employed.

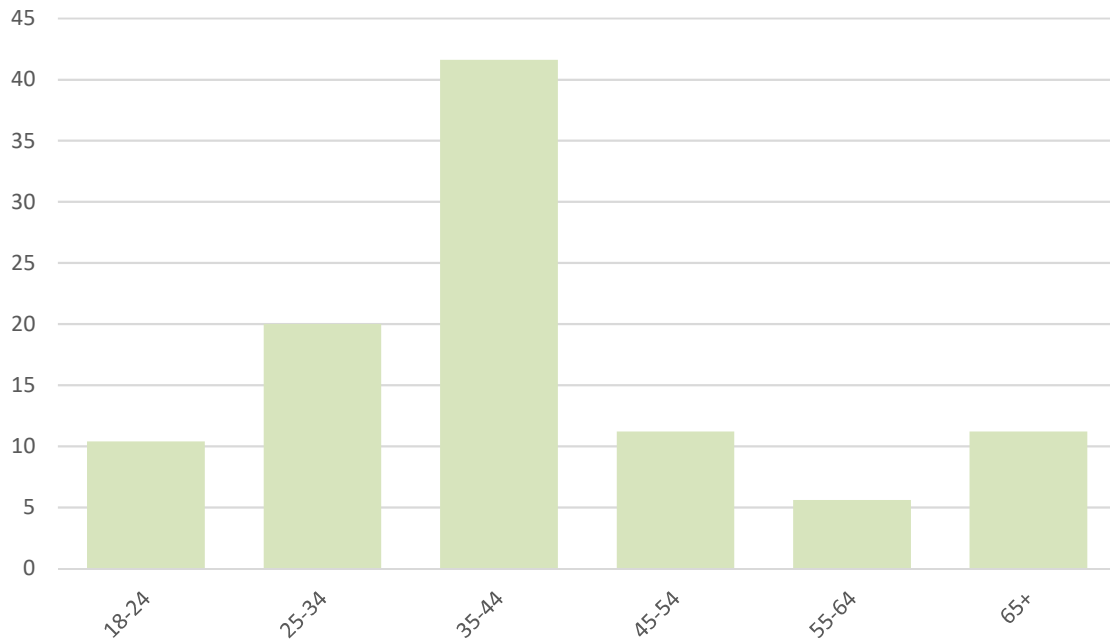


Figure 124: Number of responses according to age

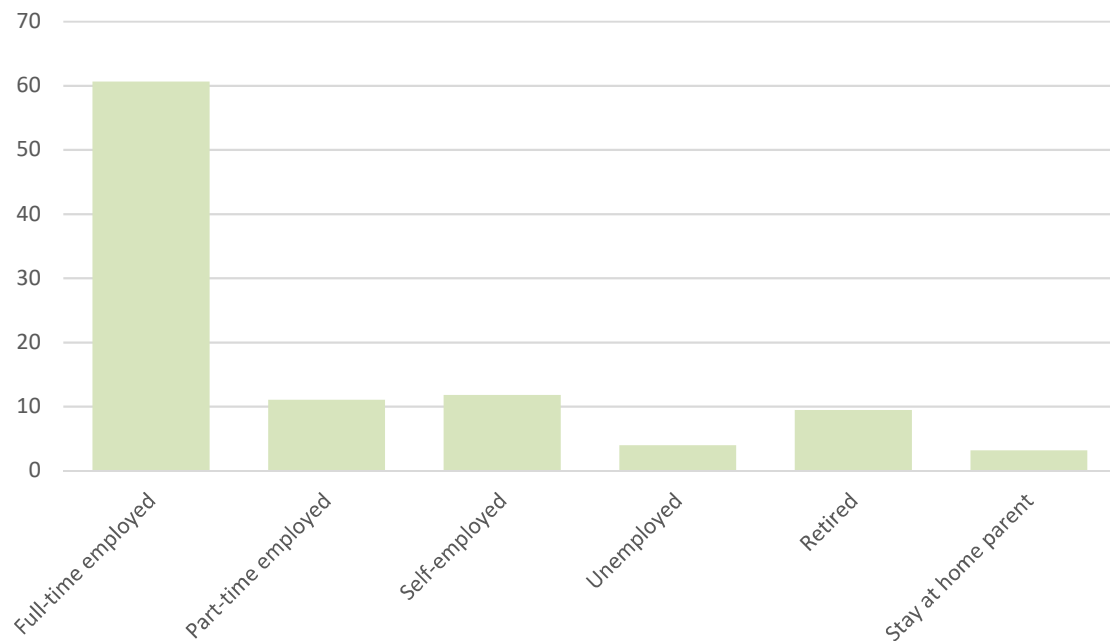


Figure 125: Percentage of responses according to employment

### 5.5.2 Availability and Use

The first set of questions was aimed at understanding the availability of open spaces for recreation as perceived by the user, the extent to which they are being used and the activities for which they are used. 95.3% of the respondents stated that they have a recreational open space with walking distance of their homes. The type of space available is illustrated in Figure 126. The first four types were given as options to choose from, while the remaining types were listed under the 'other' option.

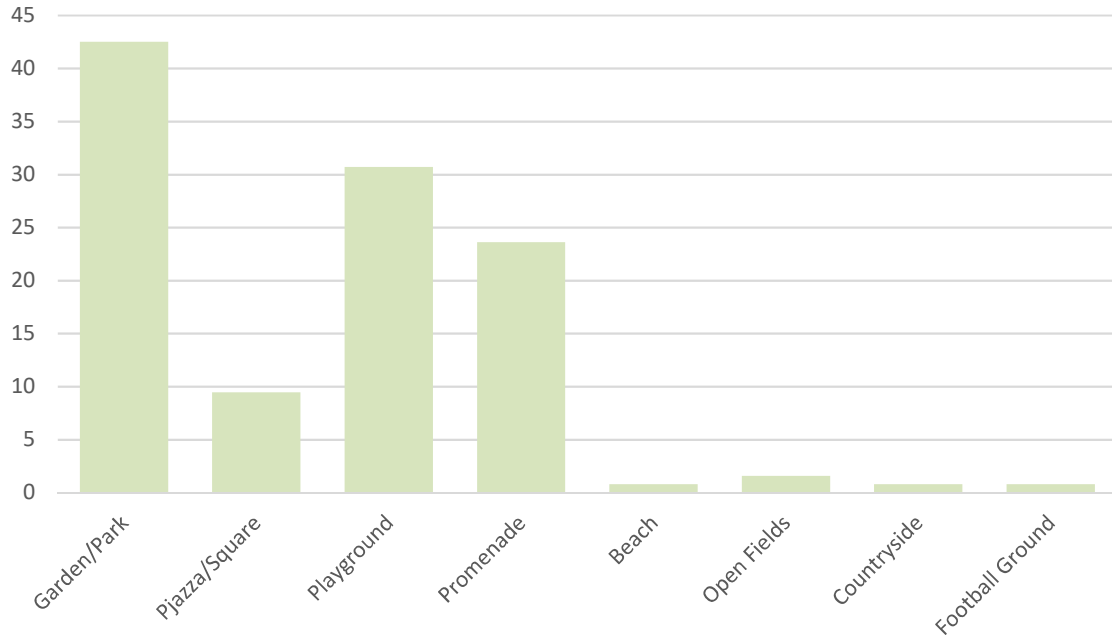


Figure 126: Percentage of spaces available with walking distance of participants' homes according to the type

Respondents were also asked whether they use spaces, not within walking distance, and the types which were identified are illustrated in Figure 127. Again, the first four types were listed as options, whereas the other types were listed by the respondents under the 'other' option.

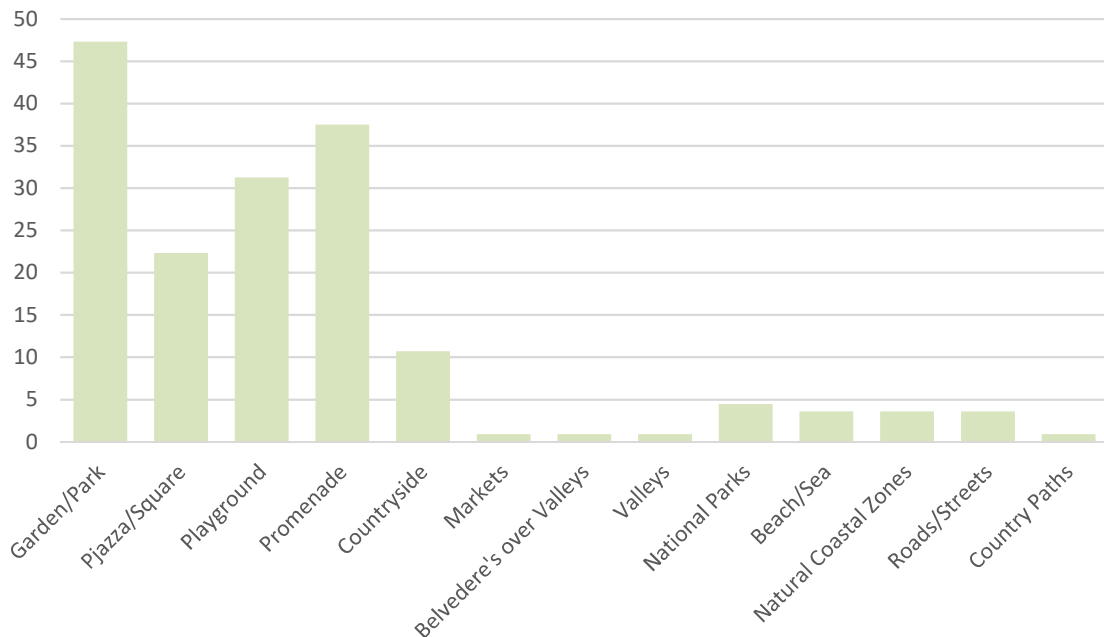


Figure 127: Percentage of spaces used not within walking distance according to the type

With regard to use, 65.4% stated that they did use the space within walking distance from their home, while 78.8% also used other open spaces. This illustrates that a slightly higher percentage use open spaces which are further away from their homes. Additionally, as illustrated in Figure 128 and Figure 129, it shows that the spaces which are not within walking distance are used slightly more often.

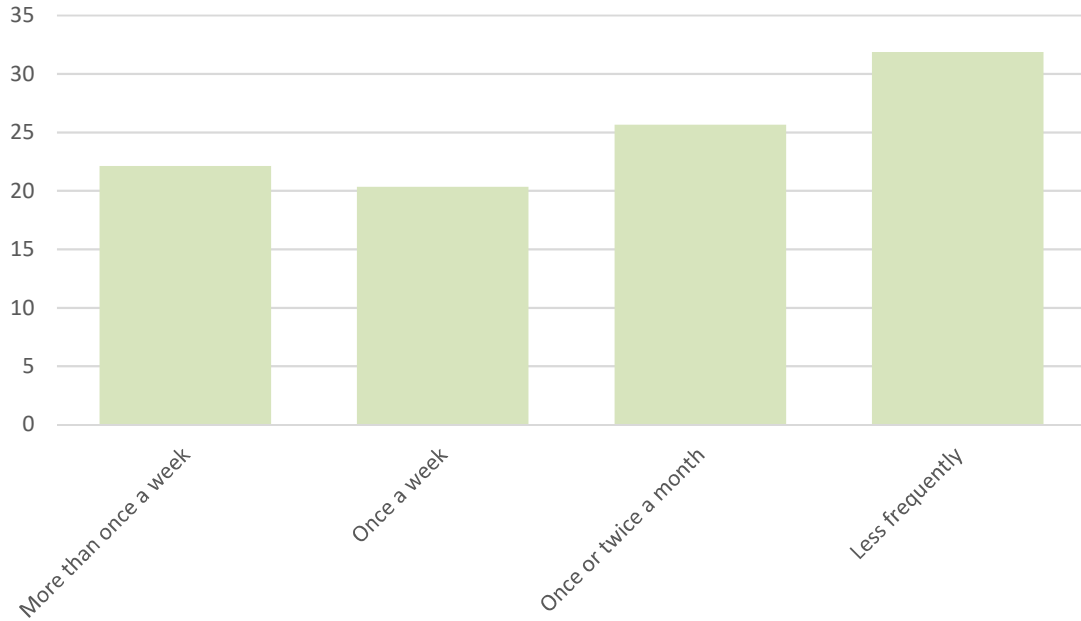


Figure 128: Frequency of use for open spaces within walking distance

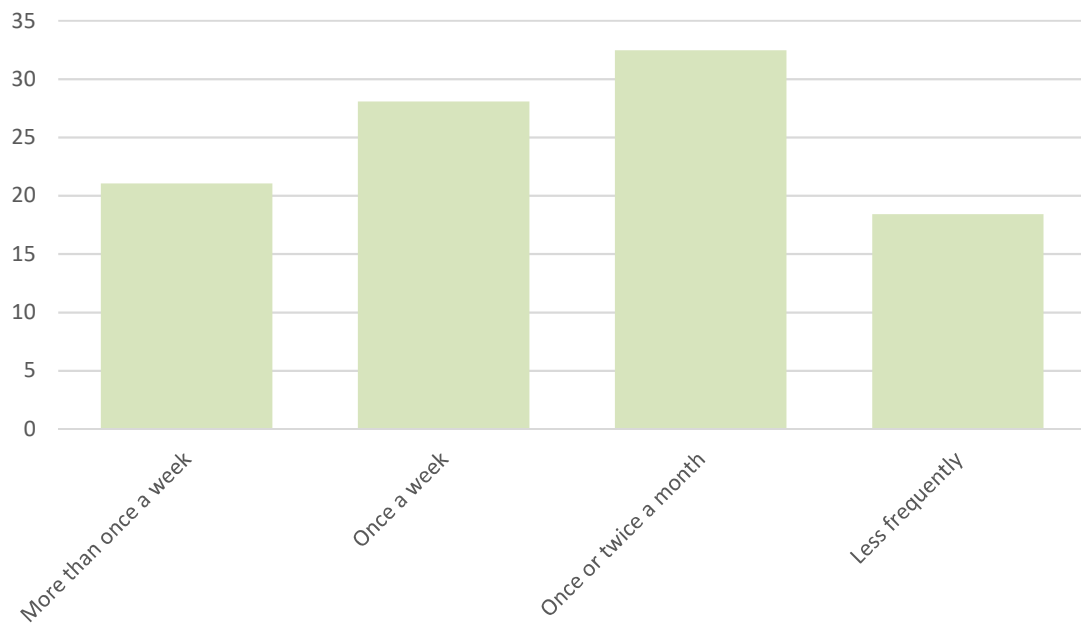


Figure 129: Frequency of use for open spaces not within walking distance

Respondents were also asked to give reasons as to why they didn't use the respective spaces. There were as much as two to three times more responses as to why people didn't use the spaces within walking distance as opposed to those further away. The most predominant reasons are listed in Table 13.



Table 13: Reasons for not using the open space within walking distance (>2 respondents)

Reasons	Number of Respondents	Percentage of Respondents
Mostly used/caters for young children/families	7	5.5
Area is small	7	5.5
Too much traffic/cars/roads	6	4.7
Dirty/not well kept	6	4.7
No time	4	3.1
Prefer somewhere open, peaceful, countryside	3	2.4
Not pleasant/not attractive/boring	3	2.4
Far away/out of my way	3	2.4

Other reasons listed by one or two respondents were: no dogs allowed; everywhere is built; prefer somewhere else; no shade; badly designed; prefer other activities; don't go out much; not well connected; nowhere to sit/picnic benches; it's mostly a parking space; noisy; open air gym doesn't attract me; no swings/play area for kids; no balls/bikes allowed; have our own garden; not safe; overcrowded; the type of people; no greenery.

With regard to spaces not within walking distance, the only reasons given which had more than one/two respondents were: too much traffic/cars/roads (4); prefer somewhere far/natural/picnics (3); too far (4); and overcrowded (3). Other reasons given were: mostly used/caters for young children/families; dirty; no time; no shade; not attractive; prefer indoors; nowhere to sit/picnic benches; no greenery; mobility issues; the one close by is enough; not designed for pedestrians; don't want to drive; and don't feel the need.

Respondents were also asked what they use open spaces for. Table 14 and Table 15 illustrate the reasons given (when more than three respondents). The other reasons given are listed after each table. As can be seen the most popular uses of open spaces are to go walking or to take children out to play both for spaces within walking distance as well as other spaces. For the other spaces, additional uses such as: relaxing; meeting friends; walking the dog; picnics; and recreation in general also featured more often. This could mean that in general, the spaces within walking distance are more limited in their type of use than other spaces further afield. It could also mean that people use spaces within walking distance mostly for walking and taking children to play, while they prefer to choose from other open spaces for other activities.

Table 14: Reasons for using the open spaces within walking distance (>3 respondents)

Reasons	Number of Respondents	Percentage of Respondents
Walking	37	29.1
Take children to play	29	22.8
Relaxing/quiet time/reflecting	12	9.4
Jogging/running	8	6.3
Take dog out	5	3.9
Meeting friends	5	3.9
To use café/restaurant	5	3.9
Walk through it (to get to somewhere)	4	3.1

Additional reasons given were: recreation time; sitting outside; swimming; fishing; fresh air; gardening; exercise; bike riding; enjoying nature; bird watching; photography; sun bathing; picnics; using facilities (bank, church); enjoying sun; reading; parking; enjoying views; and playing ball.

Table 15: Reasons for using the open spaces not within walking distance (>3 respondents)

Reasons	Number of Respondents	Percentage of Respondents
Walking	37	29.1
Take children to play	26	20.5
Relaxing/quiet time/reflecting	16	12.6
Meeting friends	13	10.2
Recreation/leisure	13	10.2
Picnics	9	7.1
Walk the dog	8	6.3
Jogging/running	5	3.9
Hiking/trekking	5	3.9
Family time	5	3.9
Enjoy nature/greenery/countryside	4	3.1

Additional reasons given were: fresh air; camping; exercising; enjoying scenery; using cafes/restaurants; sitting in the sun; waiting; bike riding; climbing; getting away; photography; bird watching; to work; being outside; yoga/tai chi; village feast; tree planting; to walk through; shopping; and cultural events.

### 5.5.3 Character and Identity

Here, the aim was to understand what qualities the users appreciated in the open spaces they frequent. Respondents were asked: 'What do you like/dislike about the open spaces you use?' The characteristics given by more than three respondents are listed in Table 16 and Table 17. Following each table is the list of other qualities given by fewer respondents.

Table 16: Characteristics respondents like about the open spaces they frequent (>3 respondents)

Characteristics	Number of Respondents	Percentage of Respondents
Trees/greenery	27	21.3
Peaceful/silence/tranquility	26	20.5
Fresh air	25	19.7
Nature/wilderness	20	15.7
Views of the sea	15	11.8
Openness/space to move and run around	12	9.4
Away from cars/exhaust	10	7.9
Safe for children	9	7.1
Scenery/views	8	6.3
Not overcrowded	8	6.3
Well-kept/clean	4	3.1
Other people's presence/people watching	4	3.1
Play areas	4	3.1

Additional reasons given by three or less respondents were: wifi; good for socialising; escape the dust; buffered from the roads; provide shade and wind protection; valley views; activity/village life; close to shops; cafes and restaurants; accessibility; birds/animals; no main roads; no buildings; sense of freedom; the sun; flexible space; safe feeling; pedestrianised; less noise; opportunity to admire crops in fields; and seating.

Table 17: Characteristics respondents dislike about the open spaces they frequent (>3 respondents)

Characteristics	Number of Respondents	Percentage of Respondents
Not clean	41	32.3
Too much traffic/roads around them	20	15.7
Not maintained	20	15.7
Too crowded	15	11.8
Too noisy	9	7.1
No shade	9	7.1
Air pollution	8	6.3
Minimal vegetation/lack greenery	8	6.3
Too small	6	4.7
There aren't enough of them	5	3.9
People smoking	4	3.1
Overly constructed/buildings in view	4	3.1
Inadequate/poorly planned/lack quality	4	3.1

Additional reasons given by three or less respondents were: smell of sea; inadequate playground equipment; sterile/restrictive/limited; too much concrete/floor finish; potholes; outdated street furniture/not attractive/no effort to beautify; unpleasant seaside wind; not safe; cranes/blocked streets; not interactive; lack of pavement space due to cafes and hawkers; lack proper access; no opportunity for continuous long walk without crossing roads; lack of lighting; boundary wall; lack amenities/dog bins/recycle bins; loud/disrespectful people; horrendous footpaths; no picnic benches; hunters; fountains not well designed; toilets not good for babies; no cycling/ball play allowed; and no public conveniences/broken.

Overall, it emerged that respondents mostly like open spaces which provide qualities associated with nature such as: trees and greenery; peacefulness; fresh air; wilderness; views of the sea and a sense of openness. Interestingly, qualities with respondents disliked reflected more the lack cleanliness and maintenance of open spaces. Also, frequently cited was the presence of too much traffic or open spaces which were too crowded. This really shows clearly that users would like to use open spaces as a place of refuge in nature.

Respondents were also asked whether they prefer to use an open space because they associate it with a particular meaning. This was to understand whether they use certain open spaces irrespective of their qualities and more in relation to the meaning they might provide. The majority, 71.8% said they did not. For those who did, the meanings given are listed in Table 18.

Table 18: Meanings associated with the use of open spaces

Meanings	Number of Respondents	Percentage of Respondents
Associations with a clear and open mind	7	5.5
Nostalgic feelings/memories/sentimental value	6	4.7
Comfort in greenery/nature	6	4.7
Feeling free	3	2.4
Feeling healthy	2	1.6
Feeling welcomed by the community	2	1.6
Family bonding	1	0.8
Since I grow vegetables	1	0.8

**5.5.4 Functionality**

To understand how the functionality of open spaces is responding to users’ requirements, two questions were asked: ‘Do you think our open spaces are missing something?’; and ‘Is there any activity you would like to do in an open space but there are no spaces which provide for it or allow it?’.

The majority of the respondents, 85.8% felt that our open spaces are missing something. The replies given (for more than 2 respondents), are listed in Table 19. Additional reasons given by 2 or less respondents were: benches; more parking around them; rubbish bins; flexibility in how to use; space for dogs; public conveniences; free space; ban on dogs; open spaces with no buildings; more publicly funded activities in civic squares; planning; government’s true desire to improve the situation; street lights; power outlets; cycle lanes; linking function; integration with surrounding streets and uses as opposed to roundabouts; proper parks with green grass to walk on; water fountains; to be able to bike comfortably; and soft areas for babies.

The percentage of respondents who felt that open spaces did not provide or allow for activities they wished to carry out, was less than half. However, 48.4% is still a substantial amount. The activities felt to be lacking by more than two respondents are illustrated in Table 20. Other reasons given by two or less respondents were: spaces to spend time informally for young adults/20-year olds; naked swim; slack lining; kite releasing/surfing; walking the dog off a lead/dog park; spaces to run on a soft surface; rock climbing; BBQ areas; physical activity; sleep on turf; playing fountains; and 24/7 football pitches.

Table 19: Aspects which are missing from open spaces (>2 respondents)

Aspects	Number of Respondents	Percentage of Respondents
Greenery/trees/nature	37	29.1
Not enough in general/too small	22	17.3
Cleanliness	14	11.0
Maintenance/upkeep	12	9.4
Shade	8	6.3
Aesthetically pleasing/attractive/originality	5	3.9
Play areas for different areas/interactive spaces	4	3.1
Different uses/informal play	4	3.1
Picnic areas	3	2.4
Tranquility	3	2.4
Fresh clean air	3	2.4
Safety	3	2.4
Enforcement patrolling/green wardens	3	2.4
Accessibility	3	2.4
Good design	3	2.4

Table 20: Activities which are not provided for in open spaces (>2 respondents)

Activities	Number of Respondents	Percentage of Respondents
Cycling	10	7.9
Picnics (especially close to home)	9	7.1
Ball play/basketball/free football	6	4.7
Reading in peace	5	3.9
Training/jungle gym/circuit training	5	3.9
Jogging/'a green' jog	5	3.9
Long walks/trekking/hiking	4	3.1
Biking and skating for kids	4	3.1
Camping	3	2.4
Yoga/outside fitness classes	3	2.4
Roller blading	3	2.4
Informal play/hide & seek/adventure parks	3	2.4

### 5.5.5 Statistical Analysis

Statistical tests were carried out to understand whether any relations exist between participants responses and the demographics of the participant sample. The Chi Square test was used to test statistical association as well as the Cramer's V test which is used to check the strength of the association (see section 3.4.3). The results are summarised in Table 21 and more detail is provided in Appendix C13iii.

Table 21: Overview of results of statistical analysis

Test Description	Chi-Square Result	P Value	Cramer's V Result	Value
Age Vs Use of space within walking distance of home	No Association	0.736		
Occupation Vs Use of space within walking distance of home	No Association	0.538		
Age Vs Frequency of use (space within walking distance of home)	<b>Association Exists</b>	0.040	Weak	0.271
Occupation Vs Frequency of use (space within walking distance of home)	No Association	0.173		
Age Vs Use of space (other)	No Association	0.309		
Occupation Vs Use of Space (other)	No Association	0.894		
Age Vs Frequency of use (other)	<b>Association Exists</b>	0.035	Weak	0.273
Occupation Vs Frequency of use (other)	No Association	0.969		
Age Vs Reason for using spaces within walking distance	<b>Association Exists</b>	0.015	Weak	0.286
Occupation Vs Reason for using spaces within walking distance	No Association	0.541		
Age Vs Reason for using spaces (other)	<b>Association Exists</b>	0.000	Weak	0.313
Occupation Vs Reason for using spaces (other)	No Association	0.674		
Age Vs Characteristics participants like about spaces they use	No Association	0.221		
Occupation Vs Characteristics participants like about spaces they use	No Association	0.306		
Age Vs Characteristics participants dislike about spaces they use	No Association	0.484		
Occupation Vs Characteristics participants dislike about spaces they use	No Association	0.429		

As the results illustrate for the most part there is no association between the responses given and the demographics of the respondents. An association exists for only 4 types of responses and these all relate to the age of the participants. There is therefore an association between age and: frequency of using spaces within walking distance from home and other spaces; and the reason for using spaces within walking distance and other spaces. Unfortunately, however in all cases the Cramer's V value is weak and so the association is not very strong. It is therefore not possible to identify further what the association is. The only evident trend based on the cluster diagrams is that respondents between the 35-44 age bracket are more likely to use spaces for activities relating to children's play.

## 5.6 Conclusion and Observations

This section summarises the compiled observations from the four data sources. The individual points extracted prior to consolidating and summarising and their data sources can also be found in Appendix

C15. The conclusions have been grouped into four themes: the design of existing urban open spaces; gaps in planning policy and project review; gaps in the planning process; and governance issues.

### **5.6.1 The Design of Urban Open Spaces**

This section concludes on how the design principles featured: in the surveyed existing open spaces; the case study projects; the local council interviews and the user surveys.

#### **Spatial and Structuring**

The policy review revealed the lack of strategic planning of open spaces. Policy fails to facilitate the creation of an open space system which would provide spatial structure and a sense of orientation to an urban area. It also translates into lack of planning to create a network of open spaces and a continuous system of green infrastructure.

The physical surveys confirmed this, as existing open spaces do not form a network of open spaces. While connections do tend to exist between the open spaces, the quality of the connections is poor in terms of pedestrian infrastructure. Also, often the spaces are not exploited as places to walk through and there is the need to reconsider the design of physical boundaries. Additionally, connectivity of vegetated open spaces and hence connectivity of habitats is not facilitated in most cases. So, while it can be said that there is the potential to create a network of green open spaces, this is currently not being exploited at the individual design of the open spaces due to the quality of connections.

The lack of connectivity was also mentioned in the user survey. On a more positive note, the case study projects did adopt a design approach which aimed to use open spaces as a structuring element at the strategic scale. Connectivity was an important focus where improving pedestrian connections, connecting with the urban surroundings and immediate open spaces featured in the project objectives from initial stages.

#### **Contextual Relationships**

From the physical surveys, it is clear that the design of the edges and boundaries of open spaces needs to be improved to provide softer transitions while still retaining clear definitions of space. The relationships between the open spaces and the surrounding buildings also need to be addressed as often open spaces are isolated due to road carriageways and on-street parking and the buildings do not interact with the open spaces. When public spaces are bound by private spaces blank walls are often created.

While policies may promote active frontages more guidance is needed on what is considered to be good design for edge conditions and for creating good relationships between public spaces and surrounding buildings. Policies may be stronger in suggesting that some parts of the open space should create a direct relationship with building facades as opposed to all edges of the space being surrounded by carriageways.

From the case study projects there seemed to be a good sense of responding to the physical and functional contexts. There is also awareness and a conscious effort that investment in public space can help the economic context. However, there should be more attention given to the socio-cultural contexts as this is too dependent on the architect's approach.

The user surveys revealed that open spaces are valued and used by the Maltese population. Both those within walking distance and those further afield. Spaces further afield tend to be used slightly more often and by more respondents reflecting a preference for such spaces. Spaces are mostly used for walking and taking children out to play. However, they are also used for a variety of activities.

The Local Council interviews, also confirmed that open spaces are valued by local communities and used in various ways by different demographics as meeting points. They are seen as important assets for cultural integration and Local Councils organise events to promote community cohesion. They are also commonly used by different community groups for informal activities, structured activities and traditional social practices.

### Character and Form

The physical surveys revealed that the characteristics of open spaces do not vary much and are predominately urban in character. They do not seem to be organised to provide specific characters or areas of different qualities within them. There is also scope to: increase the sense of refuge, providing spaces which give a sense of being in touch with nature; reduce the impact of vehicular traffic and provide more playful and adventurous spaces.

The user survey also revealed that certain characteristics of our open spaces are failing the users. Greenery/trees/nature are missing qualities and spaces are either not enough or too small. The most common reasons for not using open spaces were the: small size; traffic/cars; use/functionality not being suitable; need for different uses; dirt and lack of maintenance. A common use was for 'relaxing/quiet time' meaning that people are searching for places of refuge.

Respondents mostly like qualities associated with nature such as: trees and greenery, peacefulness, fresh air, wilderness, sea views and a sense of openness. Qualities which they disliked were: lack of cleanliness and maintenance; too much traffic; and too crowded. Thus, revealing again that open spaces need to provide places of refuge in nature.

In the case study projects there was a concerted effort to create green spaces or a natural feeling. To what extent this was achieved is, however, questionable. The understanding of what makes a space feel green or provide the experience of nature varied between architects, clients and case officers. Guidance would therefore prove beneficial.

Overall, existing open spaces do not provide a rich and varied aesthetic environment. There is scope for more attractive amenities and features so as to ensure more aesthetically pleasing environments. There is the need for improved detailing of street furniture, materials etc. In contrast, when discussing the more recent case study projects, the aesthetics of the design and focus on creating visual interest emerged as one of the most important design aspects.

Where relevant, there is scope to consider further the need for spatial enclosure, the provision of subspaces and the potential to create spatial contrasts so as to enrich the experience. The case study discussions also confirmed this. The design approach usually focused on the creation of sub spaces for providing different activities rather than different spatial experiences.

The physical surveys revealed the need to strengthen the design response to the history and identity of the site and create a stronger sense of place. Making environmental processes apparent and celebrating



them could also feature in this. On a positive note, for the case study projects, responding to site context and heritage featured strongly in the design approach.

### Activities and Functionality

The physical surveys identified the need to improve circulations paths particularly on the approach to open spaces meaning in streets and within natural/semi-natural areas. Concerning streets, the focus should be on increasing footpath widths and the provision of seating and vegetation. There is also the potential for seating areas to further maximise potential views. In terms of materials, there is the opportunity to explore the use of different materials for street carriageways which could improve the aesthetical impact of such surfaces or traffic calming requirements. The case studies revealed that circulation systems were given importance however; there could have been more focus on the functionality and performance of materials used.

The physical surveys also identified the need for spaces which allow for more varied activities such as: formal and informal recreation, physical exercise and flood mitigation. Two common reasons given in the user survey for not using open spaces were that the use/functionality were not suitable and that different uses are needed. The most common uses/activities which the respondents would like to see are: picnics, reading in peace, training options, long walks, trekking/hiking; biking and skating (kids), jogging, cycling, ball play i.e. active spaces. For the case studies, while the designs did consider the activities provided, the provision was still quite limited, and were mostly sitting or walking or typical play equipment.

In terms of responding to user preferences and diversity the physical survey identified some more specific needs. There is the potential for civic squares and natural/semi-natural areas to target more specific user groups and age groups while still providing for a range of demographics and users. Children's play areas need to increase the variety of playscapes on offer with more informal, adventurous, interactive and unstructured play. Also, more provision for activities suitable for 16-20-year olds/youths, as well as spaces which facilitate community activities. Thus, addressing user preferences needs more focus.

There is also scope for providing more spaces which mix compatible user groups rather than for example, separately/isolating children play areas. There is also the potential for open spaces to be more multi-functional through the activities they provide, particularly in the case of civic squares and to improve the flexibility and adaptability of children's playgrounds, natural/semi-natural areas and main streets. While flexibility and adaptability were considered in the case study projects, there is the potential to further involve the community when developing such spaces and thinking of potential activities, as well as to consider all aspects such as vegetation, climatic context etc. in order to really ensure multi-functionality.

Overall, the provision of supplementary equipment such as waste disposal facilities or drinking fountains needs more attention.

### Accessibility

The two study areas provided 3m<sup>2</sup> and 4.6m<sup>2</sup>/capita. Water bodies, natural and semi-natural areas, surface car parks and AGIR were not included due to inaccessibility. However, if 50% of this available space would be redesigned to be made accessible and provide recreational space, there is the potential to add another 4.3m<sup>2</sup> and 3.1m<sup>2</sup>/capita. It is therefore evident that there is the potential to increase the provision simply through the transformation or by making better use of existing spaces.

The lack of open spaces also featured through the user survey since one of the aspects which respondents disliked, was, that open spaces were often too crowded. The Local Councils also felt that there is a lack of open spaces. Particularly gardens and green areas were mentioned and spaces which allowed for different activities to bring different demographics together. On a positive note the case studies all revealed that the provision of more quality open spaces for the community was one of the main design objectives.

While smaller spaces ( $\leq 3,000\text{m}^2$ ), tend to be readily available within the required vicinity (400m) the availability of larger spaces ( $> 3,000\text{m}^2$  and  $> 2$  ha) requires attention. District parks greater than 20ha are lacking altogether. In order to provide local parks (i.e. parks  $> 2\text{ha}$ ), the potential of valleys and spaces such as the Pinetum in Floriana needs to be considered.

The physical surveys identified the need to improve the location and design of entrances and the circulation paths through the space so as to ensure legibility. While the case study projects did aim to provide a hierarchy of paths and the location of entrances did feature in the design approach, there could be scope to provide guidance according to typology of space.

In terms of movement the physical surveys identified the need to improve the: design of circulation routes through spaces and connecting to the surroundings; access and design for pedestrians, cyclists and 'Access for All'; access by public transport in the evenings; and traffic management measures to reduce the dominance of vehicles.

While an improvement can be noted, through the case study projects, in the provision and importance given to public transport access and abiding by 'Access for All' guidelines, the other aspects are still struggling. Transforming vehicular access informed all three projects. However, while architects were always keen to prioritise pedestrians; this was not given the same priority by authorities. Provision for cyclists is still not sufficient and the provision of parking close to the site was still an important focus. In the most recent project a shift in approach was evident where parking was relocated away from the open space.

### **Climatic Response**

The physical and user surveys and the case study projects revealed the need to create more climatically comfortable spaces. This would mean providing more areas which are shaded and useable during warmer months, while still retaining some areas to enjoy the sun during colder periods. Mitigation from wind exposure also requires attention. There is therefore scope for the design response to focus more on climatic conditions and provide climatic comfort.

### **Water Management and Use**

Storm water management needs attention particularly with regard to the use of sustainable approaches such as thinking about water infiltration, storage and re-use. In the case study projects, water management was mainly provided for in the traditional form and through the use of reservoirs. The use of SUDS did not feature much. The Local Council interviews revealed that existing wells tend not to be used due to lack of maintenance, funds for upgrading and sometimes expertise. There is awareness for the need to change this and also willingness to do this in new projects. There is also scope to increase the use of irrigation systems, reduce the use of bowsers and manual systems, and increase the re-use/use of second-class water.

The physical surveys identified scope to improve the use of water for benefits beyond aesthetic value. However, the issue of maintenance needs to be examined further as the main issue reported with water features is the need for constant repairing and a lack of expertise in constructing features which can be sustained. The use of water as a recreational element or natural feature was however present in the case study projects and operating as intended.

### **Use of Vegetation**

The physical surveys identified the need to increase vegetation in urban open spaces. With respect to trees, attention should be paid to their potential to provide shade. With respect to ground cover, there is scope for this to provide a greener environment and benefits such as wind protection and mitigate noise and air pollution. The case studies also confirmed this as there is scope to improve the design approach when considering the provision of vegetation and achieving objectives to create 'green' spaces, 'green lungs' or 'natural' spaces.

There is also scope to improve the level of visual interest and the use of vegetation which require lower maintenance levels. In the case studies, the choice of species was mostly related to aesthetics. Other functional benefits such as shading, safety, noise or pollution mitigation etc., were not really considered.

### **Lighting**

Lampposts, street lighting and flood lights were the predominant lighting forms, while the use of path, low level or target lighting was minimal. While the case studies showed an improvement in this regard, there is scope to give more consideration to energy efficiency as the design approach was primarily concerned with aesthetics.

### **Resource Management**

Overall, the use of renewable energy sources did not feature. Where present, this was limited to a PV panel to operate a flood light or CCTV camera. Additionally, the use of renewable or recycled materials did not seem to feature. The use of renewable resources in terms of energy provision or even recycled materials therefore requires more attention as does the provision of waste recycling facilities. Durability and maintenance of materials did feature however, in an ad hoc manner.

## **5.6.2 Gaps in Planning Policy and Project Planning Review**

This section reports on the gaps in planning policy in relation to the design themes and the extent to which they are featured during the project review process at planning stage. The conclusions are informed by the case studies and local council interviews.

### **General Observations**

Overall, a lack of policy concerning public open spaces is noted. Existing policy is limited to: land use; 'Access for All'; road design; invasive/non-invasive species; archaeological and contextual considerations. Existing policies tend to be strategic or generic and no guidelines exist on how to interpret them. There also seemed to be a lack of awareness from the case officers on how to apply recent existing policies in DC2015 (GoM, 2015) which relate to open spaces.

More specific objectives do exist in local plans for some open spaces but these are one-offs and there are no guidelines on how to apply them. While Local Councils are aware of local plan policies and that they should take initiatives to implement them, in general this does not happen. The reasons being: lack of expertise or resources to do so; the need for schemes which would allow LC's to take the initiative; they prefer to follow their own initiatives/ideas; the local plan policies don't necessarily address the community's needs; and a lack of communication with the PA and how to engage with it.

The vagueness and lacuna of guidelines regarding open spaces can lead to frustrating processes and a waste of resources by applicants as it is not clear what is considered acceptable. Therefore, initiatives to improve open spaces are not always facilitated by PA. It was felt that this lacuna should not necessarily be addressed by policy but also through the use of guidelines, awareness/knowledge building or building standards. There was a general feeling that creating more policies could be restrictive and not be flexible in allowing a response to context.

### **Spatial and Structuring**

Comments during planning review are limited to connectivity for pedestrians and connections between open spaces. Connectivity of vegetation, biodiversity and habitat creation did not feature.

### **Contextual Relationships**

Comments were limited to physical relationships. Responding to functional and socio-cultural contexts did not really feature.

### **Character and Form**

The interpretation of objectives (emerging through local plans or development briefs) relating to character varied depending on the case officer. Guidelines do not exist. The provision of particular uses/activities is not guided by planning policy, and so does not form part of wider planning objectives. Rather it is based on the architect's interpretation.

Creating visual interest and the spatial proportions and enclosure of the space did not really emerge in the discussions. However, responding to the site and identity of place featured as an important aspect. This was mostly about responding to historical contexts and respecting archaeological findings. Sometimes this is too focused on ensuring traditional use of materials and finishes. Policies intended for buildings are being applied to open spaces. The extent to which contemporary design, in response to a historical context, is considered appropriate depends on the case officer. It was not clear to what extent the Design Advisory Board now plays a role in this.

### **Activities and Functionality**

This theme was limited to the materials used. Details are sometimes requested but it is not clear against what they are assessed. Mostly the discussions related to contextual suitability rather than functionality. Guidelines/policy on the use of materials and detailing of street furniture in open spaces are vague or lacking. The provision of supplementary equipment did not feature except for the provision of fire hydrants.

The use and allocation of space, seating, provision of facilities etc., were not really part of the discussions. The design suitability in response to user needs/preferences, the type of activities which are provided for, the multi-functionality, flexibility or adaptability did not feature. A review of use value was therefore non-existent.

### **Accessibility**

No consideration was made as to how the type of open space is important for the locality or at which scale, or how it relates to other open spaces in the locality. The concept of legibility did not feature.

With movement, the focus was on vehicular access and on ensuring parking provision rather than restricting vehicular access. The transport authority does not seem to concern itself with pedestrian access. The PA also doesn't comment on the suitability of pedestrian provision. 'Access for All' did feature as an important focus.

### **Climatic Response**

This theme did not emerge as an important focus.

### **Water Management and Use**

Requests for the use or provision of water reservoirs generally come through entities other than the PA. Requests from the PA were dependent on the case officer's views. There are no guidelines of what sort of sizes should be requested or what is considered appropriate. Local plans policies are vague in the application of SUDS. Various suggestions exist however these are not applied. There are also no guidelines or standards on the provision of irrigation systems. There is a lack of awareness and expertise as part of the planning review process in this area. It is not clear who is responsible for reviewing such aspects.

Even though the use of water featured in all projects, there were no discussions on the suitability during the review process.

### **Use of Vegetation**

The planning reviews didn't really go into design aspects of vegetation. The fact that some vegetation was provided seemed to be sufficient. Requests by PA are limited to the type of species. Potential benefits of vegetation for environmental aspects, climatic comfort or benefits such as noise reduction did not feature. It also emerged that ERA should be responsible for reviewing such aspects however their role in this and if it is happening was not so clear. The provision and design of vegetation therefore requires more attention.

Requirements for maintenance of vegetation varied from project to project. Adherence to landscape proposals are checked, however, these can vary and the suitability of any changes is at the discretion of those checking the compliance.

### **Lighting**

Lighting reports are sometimes requested but it is not clear what guidelines are being followed, and how reports are assessed. It seems to be self-regulation. The use of cut-off lighting emerged as the main requirement.

## Resource Management

No real focus in this regard. The SPED<sup>92</sup> objective to be 'energy and water efficient' is not really understood or followed up.

### 5.6.3 Gaps in the Planning Process

This section focuses on gaps or issues identified with regard to the planning process in general, including stakeholder consultation during the planning review process.

#### Lack of Consistency

There is a lack of consistency in the review of public space projects and the applications of policies as the review of projects is allocated according to major projects, in scheme developments or UCA developments. Minor amendments are also reviewed by a different team and this could be a loophole in assessing open spaces. Finally, the planning commission/board feedback tends to be last minute and ad hoc.

#### Lack of Proactive and Creative Planning

The planning process lacks a proactive approach to the planning of open spaces: firstly, in terms of creating opportunities for the provision of open spaces; and secondly in increasing the usable value of existing open spaces rather than focusing simply on their conservation or protection. A creative process is also lacking. Sometimes specific objectives/solutions are created from policy without a creative design process. This was mentioned specifically in terms of the development of development briefs and action plans.

The review process lacks a formal opportunity for applicants/architects to present and explain the design to the case officer/Planning Board. The review process is more about responding to technicalities, clarifying the submission and making amendments to satisfy stakeholder requests. When design discussions do take place, they tend to focus on subjective aesthetic and contextual considerations.

#### Stakeholder Consultation during the Planning Project Review

At planning stage, the stakeholder input during the project review tends to focus on comments from: transport; heritage; Access for All; and the Civil Protection Department. TRACC meetings could be a potential platform for changing the approach for reviewing open spaces to favour pedestrian priority vs. vehicles.

Input from utility services is limited. Environmental input/review is lacking or limited to permits for transplanting/tree removal; compensatory planting; and the use of species (invasive/non-invasive). The exact role of the strategy groups is not clear. ERA's role as a consultee, who represents the environmental aspect is not clear and the policies which they are applying is not clear. With regard to ERA, there was a feeling that it would be useful for it to provide advice and expertise as opposed to just restrictive processes.

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<sup>92</sup> Strategic Plan for Environment and Development

The role and power of Ambient Malta and how it relates to PA and ERA is also not clear. There is also lack of clarity on who is reviewing aspects related to water and energy and according to which guidelines.

Public participation is very limited. Opportunities exist to submit representations; however, community participation is non-existent.

#### **5.6.4 Governance Issues**

This section reports on governance issues identified through the physical surveys, user surveys, case studies and Local Council interviews. The issues may be grouped as: lack of a driving entity; lack of adequate resources; lack of stakeholder participation; lack of community involvement; and poor management and maintenance.

##### **Lack of a Driving Entity**

A lacuna exists in terms of governance of public spaces in general. There is no entity or process to manage and facilitate the development or transformation of public areas. This is not the role of the PA or ERA. In the case studies the presence of an authority with direct access to central government was seen as an important model for realising open space projects of a significant size and complexity.

##### **Lack of Adequate Resources**

National or EU funds are generally required to carry out public open space projects which go beyond embellishment, and bring about change and substantial improvement.

The local council interviews identified a lack of staff resources when it comes to implementing new projects, as well as, a lack of contractors, suppliers and expertise. There is scope to improve the expertise/assistance in relation to the use of vegetation and water for Local Councils. The development of guidelines on aspects such as the use of soft landscaping could assist them and there is scope to have centralised resources at a regional level to also assist on technical issues. There could be some sort of platform which Local Councils could turn to for advice and expertise on planning aspects and developing project ideas.

Such a platform or centralised resources could also help with other issues such as: facilitate the use of PPP's so as to take advantage of its benefits; the lack of enforcement which was one of the reasons why entities did not like introducing third parties into the operations of public spaces; the tendering process which could be a limiting factor in realising innovative solutions, and addressing complications when transforming open spaces across Local Council boundaries.

##### **Lack of Stakeholder Participation during the Design Process**

There is scope to encourage a more structured and broader approach to stakeholder participation during the design process for open spaces; otherwise the extent of participation depends on the architect/client.

This is especially the case for community and Local Council involvement when they are not leading the projects. Hesitation often stems from anticipating their objection to the project but this is not always the case. Local Councils make a genuine effort to involve the community in the development of projects. However, this is a tedious process and the lack of resources hinders such efforts.

There is scope to facilitate discussions with the transport authority when trying to transform open spaces and reduce the impact of vehicles/vehicular flow on the quality of public spaces. Utility companies can also be difficult to deal with as they are not always organised and ready to provide input on what they need. Consultation with SCH and CRPD seemingly happens at an early stage and was always given importance. On the other hand, participation of environmental NGOs during the design process was minimal.

### **Community Involvement**

The use of voluntary community involvement schemes varied. Some Council's had positive experiences. There is scope to share such experiences and facilitate the development of such schemes in others. Neighbourhood watch schemes were considered to be more problematic.

### **Management and Maintenance**

The physical surveys identified that just over half of the spaces were 'very' well maintained or 'somewhat' maintained. Through the user survey one of the most common reasons for not using open spaces were that they were dirty and lacked maintenance. This was also commonly mentioned as a quality which they disliked. There is therefore scope to improve maintenance levels.

Local Council's tend to have contracts for general cleaning of public spaces. Budgets for upkeep and maintenance varied from 25 – 100, 000 Euros annually. Notably, the Local Councils had similar population sizes. The maintenance of soft landscaping was either part of the cleaning contract or separate. It was felt that contractors lacked expertise for this, or else dictated the supplies. Repairs beyond general maintenance are more problematic as it is difficult to find contractors for small jobs or the process itself is lengthy. There is scope to develop a system which facilitates this, possibly on a more regional level.

The case study projects revealed that the provision of funding for maintenance is not generally sourced upfront. National funds were required to keep up with commitments once projects were finalised. Local Councils do not under normal circumstances have the resources and funds to manage and maintain open space projects of a certain level.

### **5.6.5 Towards a Green Infrastructure Approach**

As urban challenges increase, the need to work towards sustainable development and mitigate and adapt to climate change is a priority. The potential role which urban open spaces can play in doing this is evident. The results presented in this Chapter are a strategic component of the research since, as a start, they provide the required evidence base on the situation in Malta, which was previously lacking. They have allowed for the identification of design principles which could be targeted so as to improve the potential environmental, social and economic benefits which urban open spaces in Malta can provide. It can be seen that urban open spaces in Malta are lacking in their potential contribution to sustainable development. Additionally, issues with the spatial planning of urban open spaces and their governance, have been identified as also contributing to the existing state of urban open spaces.

In recent years, the notion of green infrastructure (GI) has emerged in relation to the potential of urban open spaces to tackle urban challenges and contribute to sustainable development (Chapter 2). The success of GI is however also dependent on the planning process together with the engagement of



stakeholders and implementation. The governance aspect is therefore also a crucial part of the equation (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). As a result, the need for additional research on the planning and governance of urban open spaces with a focus on GI was identified. This is presented in Chapter 6.

## 6 Planning Urban Open Spaces: A Review of International Practice

### 6.1 The Development of Open Space and Green Infrastructure Planning

#### 6.1.1 Open Space Planning Models

The 18<sup>th</sup> and 19<sup>th</sup> century saw the first steps in open space planning through the establishment of public parks. This developed as a response to the expansion and crowding of cities during the industrial revolution. As urbanisation increased during the 20<sup>th</sup> century, the focus turned to the conservation of landscapes as an integral part of land use planning as well as increased attention towards the ecological aspect. As open space planning continued to develop two main types of approaches could be identified. One is a 'demand' approach which focuses on human needs and the provision of recreational amenities and differing typologies of open spaces. The other is the 'supply' approach which focuses on conservation and protecting existing landscapes and natural characteristics (Maruani & Amit-Cohen, 2007). These approaches were affected through a number of models as described in Table 22 below.

Table 22: Open Space Planning Models. Adapted from Maruani & Amnit-Cohen (2007, pp. 5-10)

Opportunistic Model	This is when open spaces are a result of opportunities which present themselves rather than systematic planning. For example, in London, Paris and other European cities parks were created when land was donated by the royal families to the citizens. The concept of SLOPE (Space left over after planning) is another example.
Space Standards – A Quantitative Model	This model adopts a quantitative approach where the aim is to provide a minimum amount of open space per person.
Park System Model	"A park system is a set of functionally interrelated open spaces – sometimes interconnected physically – in a given geographical area." Such systems can also set out a hierarchy relating to their size and functionality. Such a system/approach is for example Prospect Park in New York the Emerald Necklace in Boston, and Abercrombie's 1943/1944 plan for London.
Garden City – A Comprehensive Planning Model	This model creates open spaces as an integral part of development. "Though it was never fully realized, some of its principles – especially the structural – have inspired planners around the world" Shape related models such as green belts and green fingers originate here.
Shape Related Models	"Shape-related models refer to cases where the open space is defined by its shape, which in turn relates to the shape and spatial arrangement of the adjacent built-up zone or of elements within it. The best-known of these are 'greenbelt', 'green heart', 'green fingers' and 'greenways'."
Landscape Related Model	"This is a planning model based on visual landscape values. Its purpose was to conserve highly valued landscapes, especially topographical (mountains and ridges) and hydrological (rivers and streams) elements."
Ecological Determinism	"Ecological determinism means that planning is determined by the natural characteristics of the land." This means that allocating land for development or retaining as open space is based on the outcomes of an analysis process relating to the "natural features of the plan area"
Protected Landscapes	This concerns the use of legal measures to protect landscapes particularly "for conservation of outstanding, unique or endangered values of landscape, nature or heritage on a national scale."

Biosphere Reserves	“A biosphere reserve is composed of three concentric zones: (a) the core area that is essentially a protected space designated for maximum conservation; (b) a buffer zone around the core that includes natural and agricultural areas; and (c) a peripheral transition zone with various uses, including small settlements whose inhabitants cultivate the agricultural lands in the buffer zone. This structure was intended to enable research on structures and functions of natural ecosystems in the buffer zone, thus keeping unnecessary intervention out of the protected biological and genetic resources in the core area.”
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Contemporary open space planning is increasingly concerned with the loss of natural resources and biodiversity. As a result, the important role which green space networks play in cities and city regions is being recognised. Linked to this is the potential for open spaces to act as green infrastructure (GI). As outlined in Chapter 2 p58, this is one of the most recent discourses being advocated as an approach with the potential to address urban challenges such as climate change and contribute towards sustainable development (EEA, 2011; Austin, 2014; Benedict & MacMahon, 2002; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Galan, 2015).

At a European level, Green infrastructure (GI) has been defined as “a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services” (European Commission, 2019, p. 1) as well as “a concept addressing the connectivity of ecosystems, their protection and the provision of ecosystem services, while also addressing mitigation and adaptation to climate change”. (EEA, 2011, p. 6)

Davies et al. (2015) advocate that a GI approach contributes towards sustainable resource management. While Toth and Damyanovic (2019) advocate that GI planning “will continue to make a useful and necessary contribution to the sustainable and resilient development of cities and regions. GI is an urban amenity that supports a good quality of life for varying everyday realities of people” (Toth & Damyanovic, 2019, p. 4). GI is therefore linked to numerous benefits and through these it has close ties to planning, decision-making and policymaking.

The concept of GI differs from other open space planning models, because it attempts to integrate ecological and social values together with other land use values. It tries to propose a way for understanding the connection between ecosystem services and human wellbeing (Laforteza, Davies, Sanesi, & Konijnendijk, 2013). It is advocated that a GI approach “moves beyond traditional site-based approaches of ‘protect and preserve’ towards a more holistic approach that acknowledges the complexities of socio-ecological interactions”. (Lennon, Scott, Collier, & Foley, 2015, p. 4) It is therefore seen as an approach for “delivering essential goods and services to people whilst simultaneously reversing trends such as landscape and habitat fragmentation”. (Laforteza, Davies, Sanesi, & Konijnendijk, 2013, p. e1) The concept thus promotes “integrated spatial planning by identifying multifunctional zones and by incorporating habitat restoration measures and other connectivity elements into various land-use plans and policies, such as linking peri-urban and urban areas or in marine spatial planning policy”. (Laforteza, Davies, Sanesi, & Konijnendijk, 2013, p. e2)

In conclusion, it can be said that strategies such as GI and planning for Ecosystem Services is one of the most recent models present in contemporary international discourse relating to the planning of open spaces (Toth & Damyanovic, 2019).

### **6.1.2 Urban Open Spaces and Sustainable Development: Advocating an ‘Urban Green Infrastructure’ Approach?**

The role of urban open spaces in relation to the concept of GI is an important one. While increased urbanisation potentially presents a threat to urban open spaces, this threat also creates an opportunity. Environmental hazards such as severe flooding, has instigated the development of new planning strategies and ways of planning and managing urban open space, through GI, so as to mitigate such events (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

In 2013, the European Commission noted the potential which green spaces had for contributing to sustainable development (European Commission, 2013). The potential of GI to promote sustainability lies within its potential to increase biodiversity; improve well-being; and strengthen climate resiliency by mitigating flooding impacts and urban heat island effects. In a nutshell, it has the potential to deliver a range of cultural, regulating and supporting services (Im, 2019; van der Jagt, et al., 2018). If urban open spaces could therefore act as GI, they would then have the potential to contribute to sustainable development.

In fact, GI “is globally considered to be one of the most efficient strategic planning tools that help creating sustainable and resilient urban landscapes. It is an effective climate-change mitigation measure that provides a wide range of ecosystem services, as well as social, environmental and economic benefits.” (Toth & Damyanovic, 2019, p. 7) While Schiappacasse and Muller (2015) advocate that planning for GI is “a common topic of discussion for promoting sustainable and resilient urban areas.” (Schiappacasse & Muller, 2015, p. S13) and Pauleit et al. (2018) suggest that urban green infrastructure (UGI), in particular, “offers a gateway to urban sustainability”. (Pauleit, et al., 2018)

However, to unlock the full potential of urban open spaces to act as GI, an evidence-based approach is required. Hansen et al. (2017) advocate an ‘urban green infrastructure’ (UGI) planning approach. “Adopting a UGI planning approach can assist practitioners to productively link urban challenges with the unrealised potential of green spaces, in the interest of gaining support for planned measures and achieving policy objectives”. (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 7) It is important to explore however, what it means to adopt a ‘green infrastructure’ or ‘urban green infrastructure’ planning approach.

### **6.1.3 Urban Green Infrastructure Planning**

In relation to the ideas of GI the green surge project focuses more specifically on the idea of urban green infrastructure (UGI). The project developed what it calls an “Urban Green Infrastructure Planning Approach, defined as “...a strategic planning approach that aims to develop networks of green and blue spaces in urban areas, designed and managed to deliver a wide range of ecosystem services and other benefits at all spatial scales”. (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. iv)

The approach advocates four main principles: Green-grey integration; Connectivity; Multifunctionality; and Social Inclusion. Besides these four principles there are additional supporting principles which are important. One of these is the need to consider multiple spatial levels. Another is that all green and blue urban space typologies irrespective of ownership and origin have the potential to provide UGI. Additionally, the integration of different fields and disciplines is essential together with the integration of science, policy and practice. More specifically, knowledge from landscape ecology, urban and regional

planning, and landscape architecture should be created through collaborations between local authorities and other stakeholders (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

The 'green-grey integration' principle is about integrating and coordinating green space with grey infrastructure e.g. transport systems and utilities. It also suggests that urban green space could be a form of infrastructure in its own right, potentially even replacing grey infrastructure. The 'connectivity' principle focuses on the connections between open spaces which are necessary to ensure those processes, functions and benefits (for humans and wild life) which cannot be provided by individual green spaces. It requires planning at large spatial scales and should address the various scales from regional to city and local and also integrate across them. The 'multi-functionality' principle is concerned with the potential of providing many benefits (ecological, socio-cultural and economic) through the combination of different functions. The idea is also to create synergies, while reducing trade-offs. This principle suggests that a more proactive approach is required if urban challenges such as climate change are to be addressed. The 'social inclusion' principle promotes collaboration and the idea that the planning process should be open to all, so as to include the knowledge and needs of the different stakeholders. Social inclusion should also go beyond the planning process to include the care and management of UGI. Additionally, if green spaces are to address all demographics continuous investment is required (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

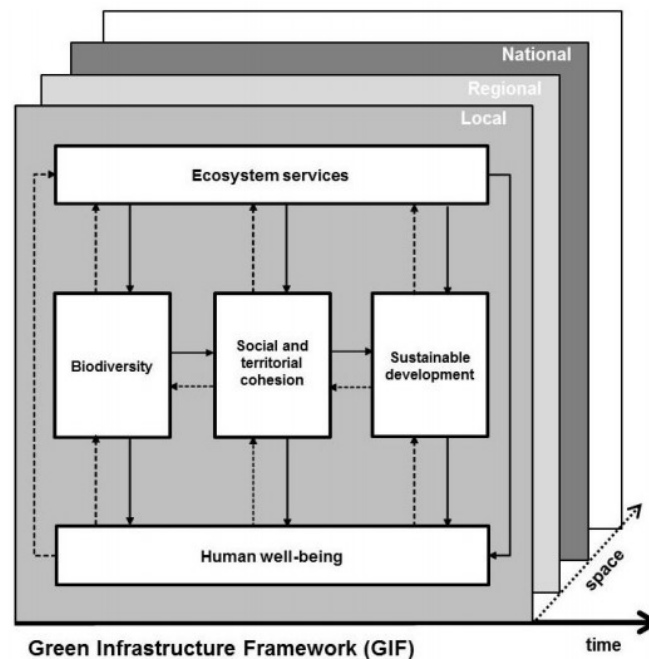


Figure 130: The Green Infrastructure Framework (GIF) (Laforteza, Davies, Sanesi, & Konijnendijk, 2013)

Le Fortezza et al. (2013) propose the Green Infrastructure Framework (GIF) which consists of five main blocks (Figure 130). This advocates multi-functionality together with a multi-scale perspective. This means applying the same approach and function for varying scales (space and time). In this way long-term planning and decision making for new GI can then be supported from a local to a regional, national, and trans-national level. Through this framework, the importance of adopting an integrated approach, the principle of connectivity, and also that of addressing different scales are also advocated. Additionally, the importance of creating a hierarchy of GI plans which are connected, as a means of creating strong transitions between the various scales, is advocated (Laforteza, Davies, Sanesi, & Konijnendijk, 2013).

Lennon et al. (2015) also advocate that more attention is required for the development of decision-making processes or tools to incorporate GI in spatial plans and guidance. Similarly, Schiappacasse and Muller (2015) feel that while GI planning has been recognised as a tool in itself, the literature on GI planning is not as extensive as the literature on GI itself. Moreover, they advocate that GI is not a new approach in spatial planning, rather, it is more about adopting specific planning approaches for the successful implementation of GI. It is therefore more about combining planning approaches such as “strategic, adaptive, participatory and collaborative planning” (Schiappacasse & Muller, 2015, p. S20) rather than a unique approach. They contend however that when it comes to planning approaches for the operationalisation of multi-functionality, this is still lacking. Additionally, “...as a new concept (not a new idea), the scope, implications, and implementation of green infrastructure and measures of its effectiveness must be defined and negotiated at all levels. As in other infrastructure systems, the role and function of the entities that regulate, build, operate and maintain green infrastructure must be defined. As in most negotiations, certain principles will prevail over others.” (Schiappacasse & Muller, 2015, p. S20)

Schiappacasse and Muller (2015) conclude that while spatial planning may provide a platform for the institutionalisation of GI, planners still need to consider how GI can be integrated into other policy sectors like social cohesion, water, energy, agriculture or transport. The focus therefore needs to be on “developing a compelling vision of the concept, on initiating extensive outreach and on promoting interdisciplinary and inter-sectoral cooperation.” (Schiappacasse & Muller, 2015, p. S20) Davies and Laforzezza (2017) also found that while there is evidence of strategic planning of greenspace, the use of “inter- and transdisciplinary and social inclusion processes are under-represented or lacking.” (Davies & Laforzezza, 2017, p. 99) Policy integration still requires attention since departments relating to the planning and development of grey infrastructure tend to be separate from those concerned with greenspace resulting in an evident policy contradiction. Lastly, the multi-scale approach also needs addressing which is also crucial for the effective management of urban open space (Haase, Pauleit, & Randrup, 2020).

Planning for GI may therefore be seen as a new planning approach or simply building on or combining different planning principles and approaches. Whichever the case, the emergence of this concept and the importance being given to the provision of GI can be seen as a potential tool to unlock the potential for urban open space in contributing to sustainable development. It is hence important to understand and break down the different spatial planning aspects and the operationalizing of it. That is the implementation and management of GI. The rest of this chapter therefore explores these two main avenues.

## **6.2 Urban Open Spaces and Green Infrastructure in Spatial Planning Agendas**

The provision of open spaces can experience market failure. This is when regular market mechanisms aren't sufficient to ensure that a limited resource is optimally allocated. Public intervention would therefore be required. With regard to open spaces, planning can be seen as one of the most recommended tools to achieve this (Maruani & Amit-Cohen, 2007). Additionally, the provision of GI should not be seen in isolation but as part of a functional coherent network which delivers valuable services and goods. One of the best ways to do this is through integrated spatial planning (Laforzezza, Davies, Sanesi, & Konijnendijk, 2013). The Urbspace project also advocates that “for urban open spaces

to be successful and to live up to their full and varied potentials, they need to be properly planned and designed.” (Stiles, 2009, p. 5)

Urban green spaces are not only the large parks and sports areas providing for recreation. They are also the smaller incidental spaces which one may enjoy on the way to work or as a quiet place for a quick lunch break. Such spaces need to form part of walking routes or to overlap with people’s daily life and activities. This is essential towards really improving the quality of life in urban areas (Brodhead, 2009). Creating and capitalising on such synergies requires a conscious planning attempt. Hanocq (2005) advocates that “structured green public space doesn’t result of ‘chance’”. (Hanocq, 2005, p. 305) Its development and maintenance are a result of municipal willpower which has been translated into planning and design documents.

It is often assumed that any action which allows for economic growth is positive as this will ensure that social needs and benefits can be provided for. However, this is not the case. Social goals can only be guaranteed if they become the primary and driving basis for planning and design. This approach aims “to make both economic and social outcomes cumulatively resilient and sustainable.” (Jain, 2013, p. 12) If declining public spaces are to be re-purposed, cities need deliberate strategies which will need “creative financing, management and maintenance methods along with appropriate regulatory structures and governance.” (Jain, 2013, p. 19) Social infrastructure such as public space should not remain a planning afterthought, it should be integrated at the earliest conceptual planning stages (Jain, 2013).

The UGI planning approach also advocates that the four principles need to be transformed into practical actions. These should address all stages of the planning process, including the engagement of stakeholders, early assessment, developing plans and implementation (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). Davies and Laforteza (2017) found that UGI principles do tend to be present in the strategic planning of green space in Europe. However, there is still a focus on conservation. Taking the UGI principles, the idea of restoration and creation of green spaces should be an important focus in the future, particularly due to the principle of network connectivity.

Following a UK study, Dunnett et al., (2002) advocate that “producing green space audits that incorporate qualitative as well as quantitative information, formulating green space categorisation systems and typologies that drive policy; and producing holistic green space strategies and green structure plans that consider parks as just one element in a larger environmental network are examples of emerging strategic developments related to urban green space”. (p. 93)

In trying to describe the instruments found in various spatial planning systems, five types have been identified: strategic initiatives; plans and associated programmes; guidelines and models; policy-oriented instruments including standards; and legislation. The following sections give a brief overview of these using examples from different cities.

### **6.2.1 Strategic Initiatives**

Since urban open spaces form part of a wider network of open spaces their design needs to respond to this larger matrix and to their surroundings. A strategic plan or framework which would guide their design is therefore essential. Such a strategic approach is also advocated through the European Landscape Convention (Stiles, 2009). Additionally, when considering biodiversity, the relevant spatial scale and boundaries may differ from those for the planning and management of cities. Meaning that planning at

multiple scales connecting planning strategies at the city scale to specific sites is crucial. Various types of plans and policies can be adopted. A strategic and long-term view at the city-wide or city regional scale would be essential so as to consider the network in its entirety. Such plans should be reviewed and updated regularly so as to ensure their accuracy, and provide a useful framework for action and implementation (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

In order to support the creation and protection of a network of high-quality open spaces and GI system, strategic initiatives are therefore essential (UN Habitat, 2015). A strategy should reflect a broadly shared vision, meaning that numerous and various stakeholders should be included in its development. The aim would be to “understand supply and demand for open spaces, to identify deficiencies, to secure new provision, and to improve quality through better management”. (CABE, 2009, p. 5) In the UK it is suggested that it should feed into the planning framework and be a material consideration in the determination of planning applications.

The Dutch Nature Policy Plan, for example, creates “a national ecological network consisting of core areas, nature development areas, and corridors.” (Beatley, 2012, p. 13) This is then worked out in more detail at a provincial and city level in the form of “ecological waterways (e.g. canal), tree corridors, and green connections between parks and open space systems.” (Beatley, 2012, p. 14) In Utrecht, at the city level, the green structure is part of the Utrecht Structure Vision (2015-2030) (Oppla, n.d.). This is then translated into a land use plan which has a legal basis (see Section 6.2.2 p248).

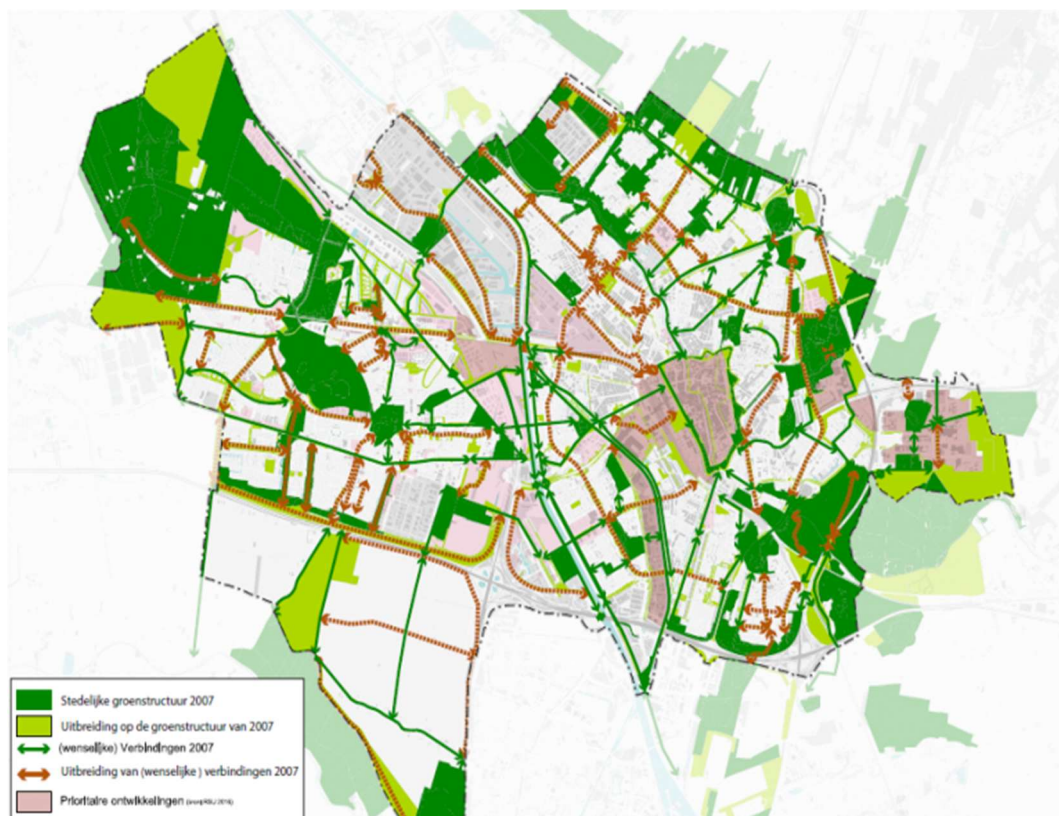


Figure 131: Vision Green Structure Utrecht 2030 (Oppla, n.d.)

Such strategic planning therefore forms an integral part of a city-wide planning strategy. In Malmö for example the planning of green space at a strategic level also forms part of the comprehensive plan. In this way GI services can better contribute to a number of policy objectives including social benefits, climate



change adaptation and biodiversity. Additionally, it considers the citizens requirements, and includes the input from different disciplines. This contributes to overcoming the 'silo thinking' which can often be a barrier for cross departmental collaboration. One of the aims is to connect the city's parks and recreational areas through green links to make them more accessible and easier to use (Malmo City Council, 2014; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).



Figure 132: Principles Development Strategy and Green Structure of Malmo (Malmo City Council, 2014)

Carrying out a spatial audit is a crucial beginning for any strategy. It provides an important basis for the strategic planning and investment in green space, and allows the matching of provision to local need. It therefore allows strong arguments to be made for the provision and protection of open space (Dunnett, Swanwick, & Woolley, 2002). The development of Edinburgh's Open Space Strategy 2021 began with an audit of all spaces greater or equal to 500 sqm. Scottish planning policy encourages local authorities to develop such strategies and guidance on this is made available. Additionally, developers were also pushing for such a strategy as they were after a clear and consistent approach to open spaces requirements relating to development (The City of Edinburgh Council, 2016).



Figure 133: Edinburgh's Open Space Strategy and North West Locality Action Plan (The City of Edinburgh Council, 2017; The City of Edinburgh Council, 2016)

The strategy consists of three main parts: an audit, standards and action plans. Extensive citizen consultation also took place to understand their needs. The audit and consultation informed the development of the Edinburgh-specific open space standards. These were developed in relation to three types of spaces: local green spaces; large green spaces; and play space. The Council's planning department developed the action plans at neighbourhood level. The plans describe the necessary actions i.r.t. ensuring that more homes have access to good quality green space. For each action the timescale, lead

organisation, funding sources and an estimated cost are specified. An important factor was the collaboration which took place between the planning department and other departments so as to ensure coordinated usage, cross-department collaboration and strategic investment (The City of Edinburgh Council, 2016; The City of Edinburgh Council, 2017; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). It also illustrates the importance of translating strategic planning initiatives into more specific plans.

### **6.2.2 Plans and Implementation Programs**

For strategic initiative to bear fruition, they need to be supplemented by more specific plans and implementation programs. Berlin's city-wide Landscape Programme (LaPro) is a good example of this. Its urban landscape strategy is coordinated with planning mechanisms, pilot projects and dialogue forums. The LaPro is a binding plan and connected to the city's land use plan. Its objectives relate to four main aspects: natural environment including urban climate, habitat and species protection, recreation, and landscape aesthetics. It is also linked to the General Urban Compensation Plan (GAK). Through this, gaps in the city's green space network are identified and actions are proposed to address them. Funding for implementation is sourced from development compensation funds. Development projects need to provide mandatory impact mitigation and compensation. If such environmental impact mitigation is not possible developers need to pay for compensatory measures in other places. Implementation of the plan also tends to depend on external funding as municipal budgets are limited (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

Copenhagen is seeking to implement sustainable storm water drainage systems through its Cloudburst Management Plan 2012. Additionally, the redesign of streets improves their aesthetic and recreational quality and promotes biodiversity by introducing additional vegetation. The implementation of the plan was justified through a cost-benefit analysis which concluded that the implementation of the measures over the long term (up to 2033) would cost approximately €500 million. In comparison a single major rainstorm in 2011 caused €800 million of flooding damage (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

To build on the green structure outlined in its strategic vision, the primary tool for protecting and enhancing urban green space in Utrecht is the Urban Green Structure Plan of 2007. Utrecht has updated this to include GI and ecosystem services. One of the objectives is that public green spaces need to adapt to a city's growth. This means that they need to respond to changing functions and more intensive use. Their potential to make the city more resilient to effects of climate change was another important aspect. The plan is also connected to multi-annual green programmes identifying specific measures, their financing and an implementation schedule. Co-financing and cooperation are also specified. This programme is updated on a yearly basis. Public officials recognise the linking of the plan to an implementation programme, as one of the most important achievements in green space planning. However, there are still some challenges to overcome such as: continuity of the council and financial resources; critical citizens; dominance of sectors such as traffic and housing in decision making; social safety concerns; and traditions of 'greening coming second' (Buizer, 2015).

Malmo's comprehensive city plan is also translated into specific thematic plans geared towards implementation. To develop its blue-green infrastructure, a 'Green and Blue Plan' replaces the 2003 Green Plan. This is developed in collaboration with nine administrative units (including the Streets and Parks Department, City Planning Office, Real Estate Department, as well as the Culture Department and Leisure Department). This encouraged knowledge sharing between local experts and academics were also

involved. This inter and transdisciplinary exchange facilitated the development of an innovative plan. Additional thematic plans include the 2016 Water Plan and plans looking at the inclusion of ecosystem services within the planning system. While, these are not legally-binding, they have been adopted by political decision-makers at the highest level (Malmo City Council, 2014; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).



Figure 134: Overview of Malmo's Comprehensive Plan and Supplementary Planning Documents (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017)

Malmo also has a cloudburst plan which was approved by the city board in 2017 although storm water management policy existed before this plan. In 2000, informal efforts to provide ponds in open spaces for receiving peaks of storm water runoff were formalised in planning policy. As a result, parks and recreational spaces were required to include new storm water management. Implementating the plan requires coordination and integrated working by a number of city departments and private developers. Storm water management planners are introduced at the initial stages of the master planning process to calculate the minimum green space requirement for accommodating the anticipated run off. Various departments then work together to develop solutions. These include city planning, street and parks departments and the water and sewage authority. Managing such areas usually falls under the streets and parks department while maintenance is funded by the water and sewage authority (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

The legal framework and the local planning policies and funding for construction are considered to be the main aspects which support such an approach in Malmo. Such techniques were not always adopted. Pilot projects were used and a step by step approach was adopted so as to gain knowledge on how such integrated systems could be introduced and managed. An important insight was that maintenance planning and financing of such projects had to be coordinated upfront (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

In Stockholm a Park Programme has been developed which provides a comprehensive policy and strategy for the development of green space. The programme has three main goals. These are to have: a good supply of parks; sustainable park improvement; and a rich park culture. The goals are translated into more specific guidelines which are both qualitative and quantitative. Additionally, three main strategies were developed on how to specifically achieve the first goal. The first is expansion, meaning increasing open

space. The second is concentration, which means improving the quality of existing open space even if this might mean reducing the quantity. The last is maintenance, which means ensuring the quality of successful spaces and structures (Stahle A. , 2005). Another plan for Stockholm is the Green Walkable City Plan. This plan has a specific aim, that of connecting residents to green (and blue) areas together with the strategies and areas requiring attention. This forms part of the comprehensive city plan ‘The Walkable City: Stockholm City Plan’ (Stockholm City Council, 2010).

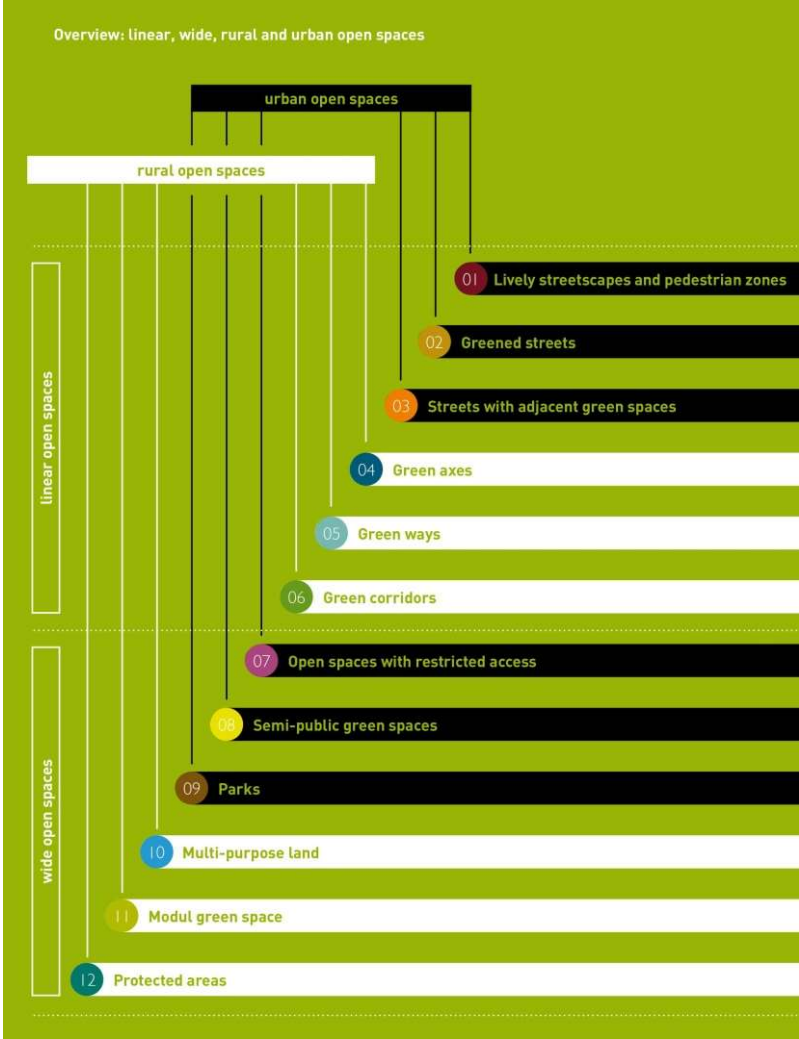


Figure 135: Vienna's Open Space Classification (Vienna City Administration, 2015)

Vienna’s planning instrument is a ‘Local Green Plan’ which builds on the City’s urban development plan 2025. As part of this plan, a classification (Figure 135) of different types of open spaces are developed, defined and assessed in relation to their supply. This tool allows the collection of basic information to inform the improvement of quality and the design of land use plans. Guiding actions are then developed for each type of open space. Additionally, supply standards (see section 6.2.5 p257) are developed with the aim of improving provision (Vienna City Administration, 2015).

Similarly, Graz, Austria also has a thematic programme for green space. This first became legally binding in 1997. In 2007 this became the ‘Green Net of Graz’ which is 560km long. Its aim is to connect green and open spaces across the urban landscape of the city. Tied to this, the ‘Green Space Offensive’ was launched in 2012, where the city buys land such as brownfield sites and turns them into green spaces that allows for water infiltration and contributes to the citizens’ quality of life (Toth & Damyanovic, 2019).

Recreational and green open spaces are connected with residential areas and the city centre to the countryside.

The concept for a 'green net' developed at the same time as pressure to develop open spaces was mounting due to an increase in population growth. In fact, measures to protect green spaces in Graz date back to 1980. The idea of green space was integrated into policy at a municipal level in the mid-1990s. The network actually forms a framework for planning the city in the long-term. It consists of the city's green and open spaces, and green routes between them. The network has four key functions: inter-linking; recreational; ecological and climate-regulating; and urban design (Schwabberger, 2011; Holstein & Schwabberger, 2011).

In Lisbon, open space and GI measures are implemented through a biodiversity strategy. This was formulated in 2012 together with a Local Action Plan in 2015. The plan is intended to not only target biodiversity but also indirectly improve environmental quality, climate change adaptation, resident wellbeing and city competitiveness. It is coordinated at a regional level; however, actions are developed at the local scale. The plan sets out actions in relation to three main points: improving environmental awareness; creating and sharing knowledge; and specific green space management actions. The implementation strategy is to include non-governmental actors. These could include collaborations with companies, NGOs and universities together with volunteering schemes. While the city's economic crisis has limited available budgets, the municipality see this as potential to involve citizens through such collaborations. In fact, Lisbon's action plan has been positively received by research institutions and environmental NGOs (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

New York City's World Class Streets Program is another example where a plan has been translated into specific projects for streets which are being developed according to a new set of design standards. The projects include the following aspects: public plaza program; Broadway boulevard projects; complete streets projects and design standards; safe streets for seniors and students; public art program; coordinated street furniture; and weekend pedestrian and cycling streets (New York City: Department of Transportation, n.d.).

### **6.2.3 Guidelines and Models**

The tools and methods used in forming the knowledge base for such planning are important (Stahle A. , 2006). Guidelines and models can serve to facilitate and promote good design. Cities need to consider reshaping and creating new green structure. In similar manner to how buildings are redeveloped so should the green and open space structure be planned, transformed and reshaped. The quality of the built environment can still be improved even if the quantity of green space reduces. In order to do this certain planning tools can be helpful (Stahle A. , 2006; Stahle A. , 2005).

Sweden's capital Stockholm uses an interesting mechanism called the Sociotope Map. Due to the pressure of development, in 1996 the City Council decided they needed a map of open spaces which was officially called 'Stockholms grönkarta' (Stockholm green map). This map needed to show its ecological, social and cultural values. The project was made up of two parts. One part which relates to ecological issues, called the biotope map and another part which relates to human issues, called the Sociotope map (Stahle A. , 2006). According to Stahle (2006) "A society which is turning increasingly postmodern, globalized and individualized can hardly plan, develop or grow without knowledge of the common use

values of urban public open space.” (Stahle A. , 2006, p. 59) The map was developed through public dialogue and extensive user studies. It therefore represents the “commonly perceived direct open use values of specific open space, of the citizens of Stockholm...Its representation of diversity of place (topos) is maybe just the level of reduction that makes the map true enough to the citizens and at the same time useful for the planners.” (Stahle A. , 2006, p. 59)

The EEC-financed research project GREENSCOM (Communicating Urban Growth and Green) writes in their final report that as an instrument the Sociotope map is socially and communicatively sustainable. It has found its use in varied applications. It has been used practically in EIA and SEA’s and also as empirical data as part of research methods (Stahle A. , 2005). The mapping also identified the lack of some fundamental open space use values and this was used as a justification for creating such values (Stahle A. , 2006). This informed the development of the Stockholm park program (section 6.2.2 p248) and guidelines which inform the supply of parks (Table 23) (Stahle A. , 2005).

Table 23: Guidelines for Park Distribution. Adapted from Stahle (2005).

Good Distribution of Parks
A) Quality dense
<b>Within 200 m (very close): green oasis, play, peacefulness, sit in the sun, walking</b>
<b>Within 500 m (close): flowers, lively place, picnic, soccer</b>
<b>Within 1 km (on distance): swimming, farming, events, fishing, sledge slope, skating, forest, history, view, water contact, wild nature</b>
B) Green structure
<b>Within 1 km – Nature reserve &gt;50ha</b>
<b>Within 500 m – City district park 5-50ha,</b>
<b>Within 200 m – Park block 1-5ha</b>

These guidelines assist the urban planning process in determining how to ensure a good supply of parks, what type of place they should be and what qualities they should provide. The Sociotope map and the guidelines have in fact informed various policies such as the development of new parks. Some cases involved decisions to build on areas previously designated as open space and proposals for new open spaces elsewhere. Also, in one case where the Sociotope map was ignored by planners, the public opposition to the plan/proposals was so strong that planners had to withdraw the proposal (Stahle A. , 2005).

Various types of guidelines exist with the aim of facilitating and promoting the good design of open spaces. Edinburgh’s design guidelines (Figure 136), for example, has two chapters specifically dealing with open spaces. One focuses on the landscape, biodiversity and the water environment, while the other on the design of streets (The City of Edinburgh Council, 2017). Another example relating to green infrastructure is the Commission for Architecture and the Built Environment’s (CABE) publication on how to encourage biodiversity in urban parks. These guidelines facilitate and build knowledge on what works and what does not in supporting biodiversity particularly in urban environments (CABE, 2006).

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Figure 136: Edinburgh Design Guidelines Table of Contents

Other types of tools include different types of software, manuals or models which are available to assist in the planning and design of sustainable storm water management systems. I-Tree Hydro is one such example. It is an application which simulates and quantifies the impact of vegetation on local hydrology. Such tools can help natural resource managers and urban planners in management and planning decisions (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

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Figure 137: Lynn Valley Town Centre: Public Realm and Design Guidelines, Table of Contents (Ramsay Worden Architects and PFS Studio, 2015).

The Lynn Valley Town Centre guidance (Figure 137) is another example which gives a lot of importance to the public realm. It provides generic guidelines for different types of streets and open spaces. It then also gives specific guidelines including profile sections for specific streets. It gives examples of how vegetation can be used in different types of spaces, and the different type of vegetation and water management techniques which could be employed. Moreover, it gives guidance to the type of street furniture which should be used, also with respect to their materiality (Ramsay Worden Architects and PFS Studio, 2015).

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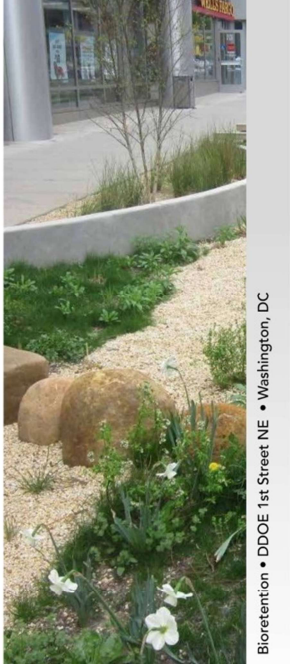


Figure 138: Green DC Streets Table of Contents (District Department of Transportation, 2014)

Guidelines can also be developed for specific types of open spaces. For example, some American cities have manuals specifically related to the design of ‘Green Streets’ (Figure 138). That is streets which: incorporate sustainable storm water management solutions; connect with other open spaces and are pedestrian-oriented; and contribute to the character of the city (District Department of Transportation, 2014; Im, 2019).

Meerow et al. (2016) developed a Green Infrastructure Spatial Planning Model (GISP) which provides an integrated planning model which evaluates synergies and trade-offs among the social and ecological benefits of GI. The GISP model provides a GIS-based multi-criteria approach which integrates six benefits: storm water management; social vulnerability; green space; air quality; urban heat island amelioration; and landscape connectivity. The framework incorporates stakeholder priorities such that the results serve as a collaborative decision-making support tool. It can enable planners to identify ‘hotspots’ where GI has the greatest potential to foster social and ecological resilience. Adopting such a strategic and integrated approach, could help in ensuring that multiple ecosystem services/benefits are provided to the areas in a city which need them most. Similarly, to ensure that GI projects deliver benefits in the places where they are most needed a Forest Research Project, focussing on Edinburgh, Scotland developed a modelling tool called SPADES (Spatial Decisions on Ecosystem Services). This was used in Edinburgh to map predicted cultural ecosystem service supply, demand and use, and highlight gaps and hotspots for targeting resources (Ecosystems Knowledge Network, n.d.).



Different planning systems therefore use different principles and measures to inform their planning approach. Additionally, different guidance documents focus on different aspects. The data from phase one of the research is therefore crucial in identifying which design categories require attention in the Maltese context and in relation to which aspects.

### 6.2.4 Policies and Standards

One of the first measures for the provision of open space in cities was quantitative measures and standards. These were developed in different forms such as the amount of open space area per person, or the open space area ratio. Patrick Abercrombie’s Greater London Plan from 1944 for example suggests that 40sqm of parks and playfields should be provided per person. While the Stockholm General Plan from 1952 sets a standard of at most 300m to playgrounds. Two types of open space measures are still used in current planning systems; the quantity of open space provided per person and the accessibility to open space in terms of distance (Stahle A. , 2010). A focus on quantitative as opposed to qualitative standards or qualities can however be questioned.

In the UK, planning for green space was given a boost through Planning Policy Guidance Note 17 (PPG 17), a planning policy guidance for ‘Open Space, Sport and Recreation’ (DCLG, 2002). This policy made it necessary for local planning authorities to carry out audits to understand provision and assessment of needs and use this to inform the development of standards in relation to the accessibility, quality and quantity of green spaces (Barber, 2005). Dunnet et al., (2002) also advocated that “developing local standards for provision enables provision of all types of green space to be matched to local social, economic and environmental need”. (p. 93) Unfortunately, this policy was superseded during an overhaul of planning policy due to a change of government in the UK in 2012.

However, the Accessible Natural Greenspace Standard (ANGST) for example still benchmarks the accessibility of green space (Natural England, 2010). It is based on three principles: improving access; improving naturalness; improving connectivity. The recommendations are outlined in Chapter 2, Table 2 p75. Vienna’s Local Green Plan (Vienna City Administration, 2015) also introduces standards regarding the supply of green space. They contain minimum dimensions as well as catchment areas. They do not only focus on residential environments but also provision for working areas as outlined in Figure 139.

GREEN AND OPEN SPACES	CATCHMENT AREA (m)	SIZES (hectare)	m <sup>2</sup> per inhabitant		
Neighbourhood	250	< 1	3.5		
Residential area	500	1–3	4.0	8.0	13.0
Urban quarter	1,000	3–10	4.0		
	1,500	10–50			
Region	6,000	> 50	5.0		
+ sports ground			3.5		
+ green spaces per working place (catchment area 250 m)			2.0		

Figure 139: Vienna's green and open spaces provision standards (Vienna City Administration, 2015)

Various cities use quantitative measures such as specifying the recommended amount of green open space to be provided per capita. Concerning distance, in Berlin it is recommended that every resident lives

within 500m of a minimum of 0.5 ha of urban green. While, in the Netherlands the guideline is 75m<sup>2</sup> per household within 500m (Kabisch, Strohbach, & Haase, n.d.; Kabisch N. , 2015). Hong Kong has perhaps the lowest value as a standard as it recommends that urban areas should have at least 1m<sup>2</sup> per person for district open space and an additional 1m<sup>2</sup> for local open space (Planning Department: The Government of the Hong Kong Special Administrative Region, 2005).

Whilst most hierarchies tend to focus on recreational open space, the Dundee hierarchy also includes sites of nature conservation, landscape, cultural and historical value. It also specifies that all open spaces should be multifunctional (Waters & Smith, 2002). This is interesting in relation to the Maltese context where Maltese valleys have the potential to play an important role as local parks.

Category	Minimum Size	Distance from Home
<b>City-Wide Open Space:</b>		
Country Parks	200 ha	-
City Recreation Parks:	10 ha	2.5 km
City Heritage Parks	Sites designated regardless of size.	Variable
<b>Local Open Space:</b>		
Neighbourhood Parks	1 ha	1.2 km
Local parks and play areas	100m <sup>2</sup>	up to 400 metres

Figure 140: The Dundee Hierarchy for Open Space Provision (Waters & Smith, 2002)

In Graz, Austria, one of the primary objectives of the city’s development plan is for green space to be used improve the quality of life, meaning various things. One is the adaptation of urban areas to better cope with the impact of extreme weather. As part of this, the Planning Department and the Department for Green Spaces and Water Bodies, in collaboration with external experts, developed open space standards for the municipal authority. “The standards cover the following: front gardens; inner courtyards; greening of basement garages; protection of trees; street trees; enclosures; greening of roofs; greening of noise protection walls; surface sealing; changes of use; playgrounds; and parking areas. Each of these elements has an open space standard that must be adhered to.” (Schwabberger, 2011, p. 5) In relation to parking areas for example at least one broad-leaved tree has to be planted and maintained for every four new parking spaces. Additionally, larger parking areas need to ensure certain levels of surface permeability (Schwabberger, 2011; Stadt Graz, n.d.; Toth & Damyanovic, 2019).

Hong Kong also has such standards and guidelines. For example, it is recommended that when “designing public open space, at least 20% of the land in active open space should be for soft landscaping, half of which should be for planting trees. For passive open space, 70% of the land should be used for soft landscaping, out of which 60% should be used for planting trees.” (Planning Department: The Government of the Hong Kong Special Administrative Region, 2005, p. 43)

A popular standard which is increasingly being used is the green factor method. Helsinki, Berlin, Malmo, Seattle and Toronto are all cities where such a method has been successfully used “as an important tool for maintaining and increasing the ecological and social advantages of green structures” and calculating green space requirements for new developments (IWATER, n.d.). The green space factor is generally a formula defining a minimum level of greenery. In Malmo, for example, this goes together with a system of green points (Beatley, 2012). When using this approach, a green factor target is set, which the designer can then achieve in a flexible manner, using whichever green interventions desired. It can also be included

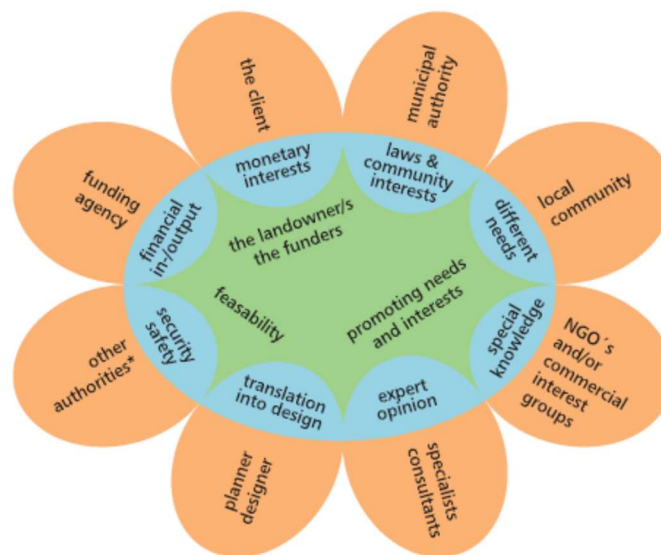
as part of zoning regulations. Vienna is also developing a Green and Open Space Factor (Toth & Damyanovic, 2019).

In Helsinki the development of the standard includes a list of 43 green elements relating not only to vegetation but also solutions for water run-off and permeable surfaces. Additionally, different levels are assigned for different land use classifications which also consider regional and site-specific characteristics. The method is said to provide an excellent way for improving the city’s urban planning because it makes it possible to “assess and develop alternative ways to build an ecological, climate-proof and dense city in which the social values of urban green areas are a priority.” (IWATER, n.d.; Kruuse, 2011)

In Berlin, the Biotope Area Factor (BAF) is used to provide minimum ecological standards. It is the site area which hosts species or other ecosystem functions, expressed as a ratio in relation to the total site area. It considers protection of ecosystems, biotopes and species as well as landscape appearance and recreational use. It would be applied as a requirement for specific sites which are to be developed to protect vegetation in the city (Taylor, 2013; Senate Department for the Environment, Transport and Climate Protection, n.d.).

### 6.2.5 Stakeholder Participation

The importance of social inclusion is being increasingly recognised in European cities. Planning policy may increasingly recognise the importance of green space and make provisions through standards and regulation to address various aspects such as the availability and distribution. However, citizen involvement in doing this still requires attention (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). According to Thompson (2002) there still exists tension between trying to restrict inappropriate behaviour in public spaces while at the same time trying to create more varied recreational opportunities for the users. And, it is only a true participatory planning process which can address this.



\* such as emergency services, waste disposal management, site managers

Figure 141: The main actors sitting around the 'green table' (Stiles, 2009)

Stiles (2009) also advocates, that the different stakeholder groups should be directly involved in the planning process. Differing demographics will have varying needs which should be considered in a

systematic way. Figure 141 identifies the main actors and various interests which should be considered. It is essential that the various actors are included at the initial stages of the planning and design process. Having said this, once the requirements of the various users have been understood, it is up to the designer to develop the actual layout.

Such stakeholder dialogues should be goal-oriented in relation to urban nature. The health benefits of such spaces need to be better recognised together with responsibilities for planning and management. For example, good planning “can make it easier for interactions with urban nature to be integrated into the everyday routines of kindergartens and schools”. (Paloniemi, Tiitu, Viinikka, Vikström, & Furman, 2017, p. 4) In fact, even children should be involved in such planning.

There are different forms of stakeholder participation. Charette or ‘inquiry by design’ for example is a workshop which would gather stakeholders to discuss. Citizens’ juries are another type where a group of individuals are selected according to specific characteristics in order to represent the community. PPGIS is also increasing in popularity as various mapping applications give citizens the opportunity to map out their views in a digital manner (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). This can help “to involve more residents and stakeholders more easily in the planning process. The use of mapping provides a tangible spatial result which can be used to support planning and management decisions.” (Ambrose-Oji, et al., 2017, p. 40) Participatory budgeting on the other hand gives residents an opportunity to be involved on how to spend an allocated amount of public funds. This increases transparency, education on the costs involved, engagement and empowerment.

Utrecht has been using this approach successfully. The aim was to specifically adopt a more bottom-up approach for citizen engagement. Additionally, the municipality wanted to encourage citizens to be more active in the eventual upkeep of such spaces. The initiative included ten neighbourhoods with an allocated budget of €500.000 each. From a governance point of view, the municipalities developed and drove the Neighbourhood Green Planning process per locality. However, the municipality consulted which each neighbourhood council and worked in tandem with them. In this way barriers to social inclusion were avoided. Various grassroots and civil society organisation formed part of the discussions in exploring and creating or improving green spaces. Project ideas included: adding pocket parks to their neighbourhoods; ideas for promoting biodiversity; creating pleasant meeting and sitting places; using GI to promote street and neighbourhood safety; and creating playing facilities (Ambrose-Oji, et al., 2017).

Neighbourhood planning also takes place in the UK through the Localism Act 2011. Neighbourhood development plans set out the location of green spaces, and their quality or function. In Bristol for example the Old Market Community Association facilitated a consultation process and managed to reach out to more vulnerable groups. It was felt that the emphasis of green space in the plan came about due to the inclusion of ‘ordinary’ voices. In Hungary, the greening of grey infrastructure is part of routine urban planning as opposed to formally included in planning documents. The municipality of the City of Szeged for example has a list of stakeholders indicating at which stage each should be involved in the planning or design process (Ambrose-Oji, et al., 2017).

URBACT has also produced a local support group toolkit with various resources to support the involvement of Stakeholder during local action planning which could include the planning of open space or GI. One tool is the ‘Stakeholder Analysis Method’ which helps in the identification of stakeholders, while another is the importance-influence matrix method which helps in the prioritisation of stakeholders together with facilitating how to approach each type (URBACT, 2013).

## 6.2.6 Legislation as a Supporting Mechanism

Legal requirements and political mandates play an important role in driving the planning and implementation of GI because this ensures higher (legal and political) commitment. Hansen et al. (2017) however advocate that “even without an official mandate, decision-makers such as local politicians can sometimes secure enough political support to trigger concrete actions.” (p. 50) ‘Hard’ instruments such as planning legislation including planning gain instruments, environmental impact charges or policies such as the green area factor are therefore important.

In the UK for example PPG 17 used to state that “Planning obligations should be used as a means to remedy local deficiencies in the quantity and quality of open space, sports and recreational provision. Local authorities will be justified in seeking planning obligations where the quantity or quality of provision is inadequate or under threat...”. (DCLG, 2002, p. 13) While in Sweden, planning legislation recommends that towns and cities “develop a green infrastructure plan as an essential part of the mandatory structure plan.” (Xiu, Ignatieva, & Van den Bosch, 2016, p. 168) However, in “the absence of sufficient legislation, and where municipal budgets are constrained, ‘soft’ instruments like incentives or voluntary rating schemes can provide a way forward.” (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 26)

UN-Habitat also advocates that legislation, regulation and enforcement are crucial in ensuring the supply, vitality and usefulness of public space in the long term. As part of this the “...definition, delimitation and protection of public space is the first and most important step of any planning exercise. The status of public space needs to be clearly defined in urban legislation and mechanisms for its protection to be enforced.” (UN Habitat, 2015, p. 38) In fact, they propose three legal mechanisms.

- Secure: this approach encourages the acquisition of land for public space through the planning process. If the minimum requirement of public space as part of an expansion is established then owners know in advance that they will have to use a certain amount of land and/or develop part of the public space.
- Regulate use: rules around uses and activities in public spaces should be established. They should give particular attention to how they might impact vulnerable groups.
- Protect and maintain: The legal framework for protecting public space is crucial. The institutional framework around its maintenance should be clear to ensure that public space contributes in a positive way (UN Habitat, 2015).

## 6.2.7 Conclusion: The Need to Adopt Multiple Tools at Varying Scales

In order to ensure sustainable urban design, the process is as important as the product and the two cannot be divorced. This means each stage from setting objectives, to developing guidelines and designing. In particular, the implementation aspect is crucial, requiring a focus on improving the efficiency and effectiveness of implementation tools (Aina, Al-Naser, & Garba, 2013).

It is also important to note that a GI System or Open Space Network is made up of different elements acting at various scales. Elements such as ‘tree lined streets’ or ‘neighbourhood parks’ function primarily at the local scale. On the other hand, to create a network or system where such elements work together requires consideration at a strategic larger scale (Davies, MacFarlane, McGloin, & Roe, 2015). This means that spatial planning for GI/open space systems needs to take place at various scales. The Strategic Plan for the Calderona Mountain Range for example, defines a regional green infrastructure but then zooms

in to define the implications for the main urban areas in the form of urban green infrastructure elements (Galan, 2015).

The EEA (2011) identifies three spatial groups: local, neighbourhood and village scale; town, city and district scale; city-region, region and national scale. In relation to this, the nesting of such plans is crucial, where strategic plans inform implementation plans which address a smaller local scale. While all plan levels are important, La Fortezza et al. (2013), have identified the city-region as a suitable scale for planning GI/open space systems. This is because it is “large enough to be strategic with identifiable ecological hubs and links, yet not too large to be remote from community level activities and local delivery plans that consider green-space as public amenity”. (Lafortezza, Davies, Sanesi, & Konijnendijk, 2013, p. e3)

Additionally, the implementation of GI elements requires the use of both formal and informal planning tools (Toth & Damyanovic, 2019). This is particularly important if we are to overcome one of the main problems of urban planning as outlined by Lefebvre (1992). This is that planning can sometimes lead to the separation of system worlds as understood by planners, architects, administrators etc., from the real-life world as experienced by people (Stahle A. , 2006). Planning sometimes fails to truly represent the complexities of urban life, which is something which Stahle (2005), aimed to address through the Sociotope map.

In conclusion, it can be said that in trying to facilitate and create a GI/open space system, the spatial planning process should be made up of a number of different tools and mechanisms acting at various scales. Spatial planning is therefore much more than a land use map especially when considering the planning and design of open space and green infrastructure systems.

### **6.3 Operationalizing the Planning of Urban Open Spaces and Green Infrastructure: Understanding the ‘Governance’ Aspect**

Despite its promise as a cost-effective and multi-beneficial strategy, green infrastructure faces open challenges to implementation. (Schiappacasse & Muller, 2015, p. S19)

Schiappacasse and Muller (2015) identify a number of institutional challenges which they consider to be consistent across various implementation scales. These can be summarised as: the lack of a multifunctional framework to capitalise the benefits; a mismatch between theory and practice; a gap in knowledge transfer; lack of formal planning status; the lack of a common management area, since different interests are constantly competing; lack of genuine participation incorporating all stakeholders; and financial constraints. Pauleit et al. (2018) also identify barriers to the wider uptake of UGI. These being: “physical constraints, low attentiveness of the planning system and other legal frameworks to UGI, a lack of discourses and champions supporting UGI, path dependency of institutions connected to the lack of human resources, limited awareness, knowledge and influence of professionals, and fiscal constraints.” (Pauleit, et al., 2018) It is therefore necessary to better understand and acknowledge the complexity i.r.t. the ‘governance’ of GI.

Planning approaches can sometimes be described as either ‘top-down’ or ‘bottom-up’. However, it can also be the case that both approaches merge together and the distinction is no longer that clear. In this case the concept of ‘governance’ has emerged where increasingly public authorities and grass root

initiatives work together particularly in relation to the production and management of green infrastructure. However, this idea doesn't automatically lead to good governance. The involvement of public authorities is still crucial if the right balance between economic motives, ecological interest and social inclusion is to be achieved (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

Vienna's urban development plan for 2025 (Vienna City Administration, 2014) for example adopts a holistic approach in that it unites various policy areas. However, this requires the ability to develop integrated solutions and thus there is the need to be open to new partnerships and participate in constructive dialogue with residents. In relation to this, one of the key concepts identified within the plan is the idea of governance. It states that when considering the collective regulation of social issues related to urban development, which is the case with GI, "...the public sector is increasingly taking on the role of a co-ordinator and manager of sometimes complex processes that involve various stakeholders". (Vienna City Administration, 2014, p. 26)

Thus, when policies are integrating and cross-disciplinary, as is the case with GI, their success can be limited due to the limitations of governance, regulatory and financing structures. Therefore, in order for such an approach to be successful, more comprehensive change throughout the system is required. Changing long-established administration and entrenched management structures is difficult, however, if this is not addressed, the realisation of sustainability as a concept, and in this case GI in particular, will be hindered (Jain, 2013). The following sections therefore discuss the various characteristics of governance structures and tools which have been successful in the production and management of GI in urban areas.

### **6.3.1 Long Term and Integrated Approach**

Green Urbanism is by definition interdisciplinary; it requires the collaboration of landscape architects, engineers, urban planners, ecologists, transport planners, physicists, psychologists, sociologists, economists and other specialists, in addition to architects and urban designers. (Lehmann, 2010, p. 2)

...to address the major barriers to sustainable development first requires a capacity for insight and integrated working in order to properly consider the wide range of viewpoints and the complex context impacting sustainability objectives. (Julien, Hamilton, & Croxford, 2014, p. 139)

These two quotes encapsulate the need to adopt an integrated approach. This was advocated in relation to the planning of cities as far back as 1968 (Mumford, 1968). It is important to ensure that the potential multiple roles played by green spaces together with their benefits are materialised. Good urban design is not about proving that a particular element is effective or irrelevant but rather it is the combination of elements which realise full value. If the right balance is not obtained then neither will the desired outcome. Therefore, each aspect should be coordinated in relation to each other (Ministry for the Environment, 2005).

This is also true for the planning and design of open spaces where physical elements such as vegetation, water drainage, lighting or access paths need to be integrated creating the required balance for the desired outcome. In relation to other landscape planning approaches, "green infrastructure is no longer a concept that focuses only on one aspect, but rather takes an overall view of planning and design including recreation, culture, ecology, energy, sewage, flood control, storm water management and so

on. It also reflects that a new multidisciplinary or even transdisciplinary approach to the planning and design of green space requires integration between the above aspects and the various disciplines and professionals involved.” (Xiu, Ignatieva, & Van den Bosch, 2016, p. 171)

Integrated and interdisciplinary approaches are not only necessary to address technical complexity, but also, to achieve coherence between objectives on multiple levels (Costa, Figueira de Sousa, & Silva, 2014). The integration of policies (social, economic or environmental) is also essential. If open spaces are designed to support biodiversity through vegetation or to sustainably manage water run-off, economic or social incentives can be used to complement this by ensuring water run-off from private households is appropriately stored or is not polluted. In relation to biodiversity, incentives could ensure that vegetation used in private gardens complement the system.

Such an integrated and transdisciplinary approach should however transcend the planning and design processes (Atiqul Haq, 2011; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Chini, Canning, Schreiner, & Stillwell, 2017; Broto & Bulkeley, 2013). Urban open spaces need to be managed across administrative borders (Haase, Pauleit, & Randrup, 2020). Institutions dealing with these aspects “tend to be independent, fragmented...working to relatively narrow mandates with closed decision processes”. (Brundtland, 1987, p. 305) Administrative fragmentation is one of the barriers to implementation. It is essential that policies and institutions tasked with sustainability, change in order to integrate social, economic and ecological systems. Additionally, addressing the lack of integration between various departments which sometimes even oppose each other is crucial (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Brundtland, 1987).

Hansen et al. (2017) advocate that the challenge is also in translating high level objectives into concrete measures at the local level. A variety of tools from legislative instruments to guidelines can encourage a more integrated approach. Over-coming silo thinking is particularly important to successfully plan for multifunctionality, one of the principles of urban green infrastructure. The same can be said for achieving connectivity objectives. The concept of integrated thinking however needs to be addressed not only across the different sectors but also multiple scales (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

In the publication, *The Value of Urban Design* (Ministry for the Environment, 2005) six areas are identified where integration is necessary in order to optimise the benefits of good urban design. From these, the following aspects relate particularly to the design of open spaces.

- The integration of public and private objectives and values due to the complexity of stakeholders and thus the need to integrate various visions in the definition of objectives and value of the space.
- The integration of public and private initiatives to fund the design and maintenance of public open spaces.
- The integration of policies across authorities, as otherwise the application of design principles in public spaces could fail. For example, if the majority of public spaces continue to be prioritised for vehicular use then the possibilities to increase the presence of vegetation or improve the quality of space for pedestrians would be limited.
- The integration of geographical scales in relation to increasing biodiversity for example, since biodiversity does not exist in isolation in individual spaces.
- The need for an integrated, interdisciplinary approach to management to ensure that a public space addresses a full range of criteria which can be successfully implemented. The ‘matrix’ organisational approach, where various professionals from different departments get together



on project teams and collaborate to create the best possible outcome is also applicable to the implementation and management of open space projects (Ministry for the Environment, 2005).

Moving towards a more integrated approach is challenging. In Berlin, the development of an informal planning strategy which used engaging graphics to illustrate the vision was a good tool to facilitate cooperation between departments because the ideas were explained in an easily and accessible manner. This also helped to promote networking and establishing relationships early on in the process. The level of integration should however go beyond this to incorporate motivated actors. Universities and scientific institutions for example can also play an important role (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

Toth and Damyanovic (2019) also advocate that transdisciplinary processes seeking solutions for climate-friendly and resilient cities should engage academic researchers, as well as government and corporate planners. "It is a partnership with grey infrastructure specialist, economists, social and health scientist as well as the public. There is a strong need for co-ordinated landscape policies..." (Toth & Damyanovic, 2019, p. 5)

Julien et al. (2014) suggest a process relating to a master planning approach in order to be more successful in achieving sustainable development. This would involve setting up a steering group to define sustainability and identify context-based themes; using a charette including experts and non-experts to confirm the objectives and develop a working brief; experts would then develop strategies to achieve sustainability, using a multi-layered approach which would be over-layered in a charette-like activity. Such a structured approach could also potentially be used in the development of an open space or green infrastructure strategy and plan due to the interdisciplinary approach required.

While the development of guidance and regulations leading to ever more energy efficient or sustainable buildings are constantly being developed, the same cannot be said for the planning and design of urban open spaces. Additionally, while ownership or responsibility for development and maintenance of the buildings tends to be clearly defined and therefore better organised and managed, the public realm is more complicated. The stakeholders are much more diverse. The needs are frequently more complex and competing; the responsibilities for different aspects present in the public realm can fall under numerous entities so the relevance of adopting an integrated approach for the planning, design and management of urban open space becomes ever more important.

### **6.3.2 Governance Structures**

Urban green space planning, governance and management have traditionally been the responsibility of government authorities. However, the reduction of public sector budgets, the failing of top-down planning processes and the increasing interest from civil society, has instigated local communities, enterprises and nongovernmental stakeholders to take a more active role in green space decision-making processes and management activities. This may be referred to as bottom-up. The idea of including various stakeholders as opposed to a top-down approach is referred to as the principles of 'governance' as opposed to 'government'. Such co-governance can lead to new roles for public authorities. However, the implementation of this, still needs a framework, rules and adequate resources (Ambrose-Oji, et al., 2017).

There are various ways for non-government actors to participate in planning processes or decision making. There can vary from formal consultation processes to more informal co-design workshops and self-governance initiatives. Also, such processes can work at different scales from tiny green verges or

ancillary green spaces to city wide green networks. The different models of governance can be distinguished depending on the level of involvement. While at one extreme, there is greater government influence, at the other, civil society has more control/involvement in the process and implementation (Figure 142). It is important to clearly define who is setting which objectives and the role which civil society is playing. In this way the discussion and decision-making processes can be facilitated (Ambrose-Oji, et al., 2017, p. 14).

When civil society organisations or individuals take an active role in contributing to green space governance, this is called active citizenship. Businesses can also get involved in active citizenship. Again, different active citizenship arrangements exist and these relate to the governance spectrum (see Figure 142). This represents the six most common models in relation to urban green space from research carried out in 12 European cities. The six models are described in Figure 143. They are: Grassroots initiatives; Organisation-initiated grassroots initiatives; Green Hubs; Co-governance; Green Barter, and Municipalities mobilising social capital (Ambrose-Oji, et al., 2017).

<i>Government actor role</i>	Leading				Enabling		None/ regulatory
<i>Form of Non-government actor participation in governance</i>	Information	Consultation	Involvement	Partnership	Empowerment		
<i>Non-government actor role</i>	Provide information and views about UGI plans and projects as part of decision making process	Some involvement in planning, management, care and maintenance of UGI	Shared roles and responsibilities around planning and management of UGI	Leasing or purchasing of public land	Management agreement, leasing or purchase of private land		
<i>Governance model</i>	Government actor led Consultative Democratic processes	Co-management	Co-governance/ co-production Consensus oriented	Non-government actor led governance Self governance			

Figure 142: Spectrum of government and non-government roles in different governance arrangements (Ambrose-Oji, et al., 2017, p. 15)

This research also identified a number of challenges (listed below) which typically need to be overcome when engaging in governance and active citizenship.

- Finding the most appropriate approaches to engage with non-state stakeholders.
- Building integration between decision making processes of non-state actors with the formal and codified systems of government.
- Finding non-state actors with the capacity and capability to engage in governance and active management.
- Avoiding narrow interests dominating governance processes and making sure they are inclusive rather than exclusive.
- Finding ways to manage trade-offs between the local site-specific views and the needs for local government and public agencies to maintain city-wide or regional strategic views, or between the generation of income and green economy initiatives against services that have traditionally been free.

- Adjusting to the transfer of power and responsibility from local government and public agencies to other non-state stakeholders.
- Building governance approaches that are sustainable and can maintain the quantity and quality of UGI into the future. (Ambrose-Oji, et al., 2017, p. 7)






<i>Governance model</i>	<i>Active Citizenship approach</i>	<i>Description</i>
<i>Non-Government led approaches</i>	<b>Grassroots initiatives</b> 	Relatively small scale initiatives, focused on a specific site, usually located on public or municipal land. Initiatives are normally started and maintained quite autonomously by local residents. Serve citizen and community objectives.
	<b>Organisation initiated grassroots initiatives</b>	NGOs or social enterprises mobilise active citizenship and community action. Usually conducted on public or municipal land, or on land with public access. There is power sharing between the organisation and citizens and there may be some coordination with municipalities. Serve citizen and community objectives. May serve strategic municipal objectives.
	<b>Green Hubs</b> 	Experimental, creative coalitions of public and private organisations, social enterprises, businesses and citizens building networks and creating knowledges to develop UGI on public and private land that serves community and municipal objectives.
<i>Co-governance</i>	<b>Co-governance</b> 	Partnerships between citizens or citizen organisations and municipalities with power being shared between those involved. Usually located on municipal land and may involve additional public assets. Sites may be large as well as small. Serves municipal as well as citizen and community objectives.
	<b>Green Barter</b> 	Businesses develop and/or maintain green space in exchange for a formalised right to use the values of those spaces for business purposes and profits. May involve small as well as medium sized sites. Serves municipal as well as business objectives. May serve community objectives.
<i>Government led processes and co-management</i>	<b>Municipalities mobilising social capital</b> 	Municipality led initiatives which invite grassroots and individual citizens to participate in strategic or site level actions, which may be about consultation and information sharing, involvement in planning, or contributions to management and maintenance (i.e. place keeping) of green spaces. Primarily serves municipal objectives, but also serves community and citizen objectives.

Figure 143: Typology characterising different kinds of active citizenship approaches in UGI governance (Ambrose-Oji, et al., 2017, p. 16)

### 6.3.3 Community Involvement and Grass Roots Initiatives

There are various reasons for advocating community involvement and grass roots initiatives in the implementation and management of GI, particularly in urban areas. Investment in green infrastructure can sometimes lead to gentrification as a result of improving a neighbourhood's character. One means of addressing this is to implement GI projects which are not over the top and which primarily serve to address local communities' concerns. This can serve to avoid attracting speculative investment. To achieve this, community involvement in the planning and design of GI is crucial (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

Having said that, without the appropriate strategies, this can still result in exclusion. For example, in Budapest, Hungary, the residents' involvement in the redesign of a square led to the implementation of some residents' wishes and not others. For example, street furniture is designed to prevent sleeping and eating and drinking was not allowed. This clearly served to restrict the use of the square by specific groups. Therefore, a participatory planning process which promotes inclusion is important however it will not automatically result in a socially cohesive public space (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

There are various ways in which citizens can be encouraged to express their views and participate in the design or implementation of GI. The right strategies need to be adopted and this often means investment to overcome the barriers to efficient public participation. Coordinating community involvement needs the right facilitation skills, for example a dedicated facilitator might be required. Additionally, when considering citizen involvement and volunteering, departments dealing with the management of green space still need to have the resources for organising, supporting and monitoring DIY activities as seen in the implementation of Berlin's Urban Landscape Strategy. This can make such projects cost and personnel intensive (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

Having said that, engaging the community in the management and maintenance of UGI, can reduce the burden for municipalities/local councils. In Milan for example, Boscoincitta (The forest in the city) is an example where abandoned farmland is managed by a non-profit organisation, Italia Nostra, supported by thousands of volunteers who participate in planting, maintenance and other activities. The land provides allotment gardens, footpaths, biking and horse-riding trails, recreational areas and event spaces which the local community can hire (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Italia Nostra, n.d.).

Another aspect to keep in mind when adopting such approaches is the importance of a do-it-yourself culture. One of the themes of Berlin's Urban Landscape Strategy is to improve the productivity of green space. The strategy seeks to involve the community in new ways such as: social and cultural activities; food production; urban cooling; and biomass production. The temporary use of space to house activities for individuals and groups, who would also carry out the implementation and maintenance, is another idea which contributes towards the sustainability of the green spaces. The willingness of society/individuals in Berlin to develop and be responsible for projects was seen as crucial for the strategy's implementation (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). It is important to consider how such a culture can be generated if such an approach is to be adopted.

A model which seems to successfully encourage grass roots initiatives is when local governments illustrate some sort of support while retaining a certain amount of flexibility. An example of this is the Granton Community Gardeners who are a grassroots community gardening initiative in one of the most socially deprived areas of Edinburgh, Scotland. It started when a group of local residents wanted to develop a sense of community in their neighbourhood. Additionally, they had no access to private gardens and felt that their locality lacked a diversity of public green spaces. They started planting gardens on public street corners, verges and abandoned waste land. The City Council neighbourhood office issued a letter showing their support and illustrating their consent. While this was not a formal agreement, it was significant and allowed the group to continue in their efforts and apply for funding for tools, improving communications and running gardening courses. Thus, being flexible in the use of government owned space and showing some level of support can result in multiple benefits for the community. In this case the benefits included: reduced maintenance costs; increased social cohesion; and a more aesthetically pleasing neighbourhood which improved the reputation for the area (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

In a similar example in Wales, a local community group has preserved and rehabilitated the Penllergare Valley Woods. Local people came together and formed a trust and started caring for the Valley Woods without ownership of tenancy agreements. Eventually the leases of the site were assigned to the trust allowing them to apply for funding. In such cases, what is also important is the presence of a coordinating NGO. In Wales it was the trust. In another example in the Netherlands, a small NGO called Steenbreek, encourages and organises local communities to actively find small patches of paved areas which can be removed and turned into small patches of green spaces (Ambrose-Oji, et al., 2017).

Such flexible approaches are also important to retain the idea of ‘loose-fit’ places which Thompson (2002) talks about. These would be spaces which can accommodate various functions and are frequently unregulated. “Ruins...and left over abandoned or ruined space often allows for a proliferation of activities that is more culturally inclusive than designed spaces. ‘Found’ spaces often serve people’s needs in ways that designed spaces do not. Loose spaces aren’t necessarily places with no rules, but places where we are continually inventing new rules. Such spaces may provide a semi-wild indeterminate environment where children can explore and be more in touch with nature.” (Thompson, 2002, p. 69) Additionally, Thompson (2002) goes on to advocate that “Residual spaces can become the test bed for new ideas such that we can forge a symbiotic relationship between the biological complexity of the landscape and the social and functional relevance of human infrastructure.” (Thompson, 2002, p. 70)



Figure 144: Liverpool bombed out church being used for community activities (Linzilooop, 2012)

In considering such bottom-up approaches, the level of participation needs to however consider the scale, context and required outcomes. While volunteering and grass roots initiatives may be sufficient at the local scale, at a larger scale, such approaches may need to work together/support traditional planning approaches (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). In fact, a difficulty concerning non-government led initiatives is how they relate to wider objectives and strategies. Because grass roots initiatives or even those led by industry tend to focus in specific areas, this has implications on for example the connectivity of GI. Models of co-governance may therefore also be suitable (Ambrose-Oji, et al., 2017).

In practice, the difference between 'top-down' and 'bottom-up' approaches, is not always that clear. This is where the idea of co-governance comes in (URBACT, 2016). Co-governance is when collaborations between government bodies and non-government actors or organisations are formalised. Additionally, the power and decision making is shared between the various parties. In Plymouth for example the Stepping Stones to Nature project, involved access improvements to green sites. "The project was based around an innovative partnership that included professionals with expertise from public health, parks, protected landscapes, neighbourhood renewal, play, rights of way, and outdoor education." (Ambrose-Oji, et al., 2017, p. 20) Community outreach officers were also engaged to encourage citizens to take part.

Lisbon is another example where participatory budgeting (see also section 6.2.5 p257) has been introduced to encourage citizens to get involved; however, the project is led by local government. The municipality allocated 2.5 Million euros for implementing selected projects. The aim was to increase participatory planning and really allow citizens to voice their opinion. After the ideas were submitted they were evaluated mostly in terms of technical viability. The ideas were then presented to the public and they could vote for the project which they preferred. The programme greatly influenced the implementation of GI in Lisbon and this was the first example of introducing participatory budgeting at such a large scale (Ambrose-Oji, et al., 2017; URBACT, 2016).

Adopting a co-governance approach also allows for increased social benefits to be facilitated. For example, Berlin has, since 1999, been implementing an initiative named the Neighbourhood Management Programme. Neighbourhood management offices, which employ about two to four social workers, exist to help deprived areas. Projects can involve re-greening an inner courtyard, a public square or a playground and this gives residents the opportunity to be part of the development and after care of the space, together with providing new spaces for social interaction. Research carried out on this program revealed "that social workers can help UGI planners to achieve positive social impacts with small, up-scalable green projects, activating different groups and engaging them in the design and long-term management of local green spaces." (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 54)

Another example of a local initiative supported by local government is the 'living wall' installed at a primary school in Chiswick, London. Parents of the school children successfully crowd funded over 90,000 sterling when a survey revealed that the school fell within the 50 most polluted schools in London. The project has been supported by the local community, businesses, parents and celebrities. It was also supported by the Crowdfund London initiative which was created to assist such community initiatives. According to Mayor Sadiq Khan "'Chiswick Oasis' is a brilliant example of what can be achieved when communities work together to find innovative solutions to local problems". (Chiswick Oasis, n.d.) Additionally, private industry has also stepped in. ANS Global who supplied the living wall will maintain the wall at no cost for 5 years. Additionally, they have trained the teachers and parents, to understand how the living wall works and the maintenance it requires (ansglobal, 2019). The involvement of private industry is another important governance model for UGI and examples of this are discussed in the next section.



Figure 145: Images of the Chiswick Oasis Green Wall (Chiswick Oasis, n.d.)

Participatory governance is therefore one way of responding to the lack of resources. However, there are a number of important factors to consider: policy and political context; design and management; funding and resources; and evaluation. Additionally, with such an approach, authorities still have an important role to play. They can provide support by leasing land or offering a sense of legitimacy to active citizenship activities. The existence of stable policies and plans for such spaces as well as the allocation of resources is also crucial. Finally, national legislation as outlined in section 6.2.6 p259, “can play an important role in empowering non-governmental actors to take on management of public green spaces when the municipality is not able to adequately maintain a place.” (Ambrose-Oji, et al., 2017, p. 73)

Mattijssen et al. (2017) also identify three important factors for involvement of citizens to be successful in the long-term. Firstly, a certain amount of formalisation seems to be essential in ensuring stability. Citizen involvement needs to be embedded within broader legal structures. Secondly is the ability to adapt as citizens need to continuously respond to continuous change. Resources such as social capital, funding and a strong network can contribute to this. Thirdly, the role of authorities is still a crucial aspect to retain a long-term perspective. Authorities should act as facilitators and regulators of citizen activities. They can contribute by creating a secure environment through stable policies which support citizen initiatives. Additionally, they can formally protect the spaces involved and offer long-term management contracts.

Finally, UN Habitat (2015) also advocate the importance of the political context, management environment and legal structures. They state that “successful participation, especially by civil society actors, requires certain preconditions which include a political system and a management environment that encourage active citizenship and are committed to accepting citizens and their organisations as real partners in development; a legal basis for participation and administrators and professionals committed to participation and well trained in the skills effective participatory processes demand.” (UN Habitat, 2015, p. 44)

### 6.3.4 Involving Private Industry

Private industry can be involved either through a non-government led approach or a co-governance approach. The non-government led approach can take the form of green hubs. “Green Hubs are innovative coalitions between citizens, businesses, and non-governmental organisations.” (Ambrose-Oji, et al., 2017, p. 19) They facilitate the exchange of knowledge, creativity and money by creating collaborations with different stakeholders from different social and professional backgrounds. In the case of ‘ParkHack’, for instance, landscape architects, artist and business came together to develop and raise funds for parks. The aim was that both businesses and the community would benefit from these

initiatives. One of the first projects was the TreeXOffice in London’s Hoxton Square. It provided a co-working/meeting space which could be rented to source funds which could then be used for the Borough’s parks and green spaces (Rethinking Parks, 2012; Ambrose-Oji, et al., 2017).

On the other hand, the co-governance approach is mainly in the form of public-private partnership (PPPs). In PPPs businesses are involved in financing, developing or taking care of green spaces which are publicly accessible. In such schemes there are usually benefits for both the private and public partners. They require clear contractual agreements and usually one of the challenges is ensuring the required transparency. It is important to acknowledge that the involvement of businesses is not based on pure altruism. Business opportunities/benefits for the private partner need to be provided (Ambrose-Oji, et al., 2017).

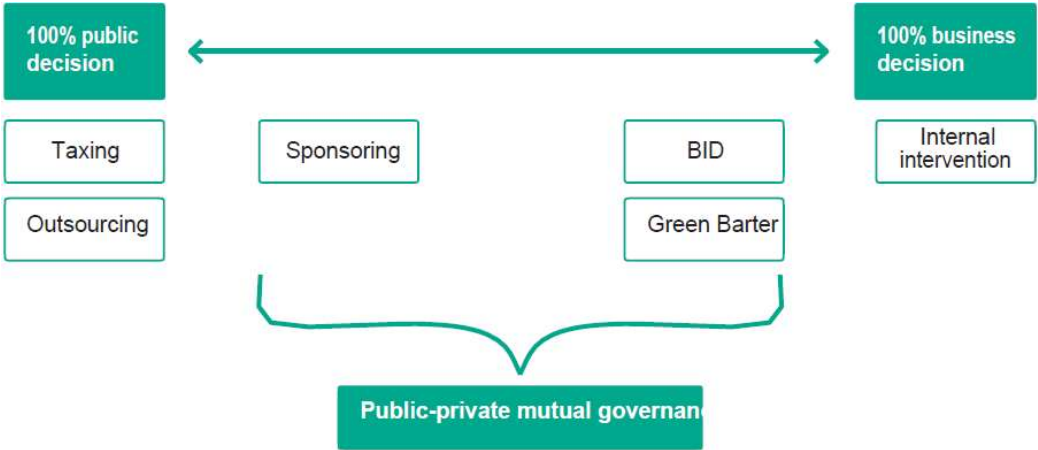


Figure 146: Shift of decision-making power between public and private actors (Ambrose-Oji, et al., 2017, p. 38)

The co-governance approach is explained in Figure 146. PPPs can take various forms, the main ones are: sponsorship, Business Improvement Districts (BID) and Green Barter. The main reasons for entering into PPPs are usually due to limited funding for green spaces and also ownership reasons when for example public services are provided on private property. Another reason would be when the aim is to manage GI at a strategic level and thus requires the involvement of private owners. Finally, businesses can usually generate funds more easily for example by providing commercial services e.g. tourism or catering related, in green spaces. This could provide financial basis for cooperation. From the private investor’s aspect, investment in green spaces may generate income again either through services or activities in such spaces, or by improving their image by marketing their contribution. Businesses may be involved by simply financing investment or by taking on a more active role in the implementation process (Ambrose-Oji, et al., 2017).

Business Improvement Districts (BID) are another model. An example of BID is in Hamburg, Germany. BIDs are made possible by a local regulation. In this case the traditional retail area of Tibarg was being threatened due to a new shopping mall. The business came together and applied for a BID. This consisted of investments in the public realm such as lighting, provision of green areas, street furniture, lay areas and improved bicycle access. It also allowed for improved cleaning and marketing of the area’s activities. The BID is possible through a tax on the business owners, which is possible through the local regulation. The owners pay 1.7% of their property value annually for 5 years to fund the project (TIBARG, n.d.; Behörde für Stadtentwicklung und Wohnen, n.d.).





Figure 147: Images of the BID in Tibarg (Behörde für Stadtentwicklung und Wohnen, n.d.)



Figure 148: The John Lewis Rain Garden designed by Prof Nigel Dunnett (Victoria BID, n.d.)

The Victoria BID in London is another good example. It is a “business-led funded body formed to support economic growth in Victoria and to create a vibrant destination for those who work, visit or live there...Established on 1st April 2010, it is a not-for-profit company limited by guarantee. Businesses eligible to pay an additional business levy were balloted in a process administered by the City of Westminster. The additional business levy is only used on work programmes, projects and services mandated by the BID's levy paying business partners.” (Victoria BID, n.d.) One of the on-going projects is the implementation of GI projects which were identified through the study commissioned for ‘A Green Infrastructure Audit of the Victoria BID’. One such project is a small rain garden which replaced a 75sqm patch of cobbled paving outside the John Lewis partnership head office (Victoria BID, n.d.).

Green Barter is another model involving private industry. In this scenario, business can develop or take care of green space in exchange for certain rights over the use of the space usually resulting in profit. Such agreements are generally formalised. For example, in Oradea, Romania, the municipality allowed private companies to ‘adopt’ smaller green spaces. Through such agreements, the companies signed contracts with the municipality to develop and maintain these parcels. Besides using the space, businesses can also put their name plates in the space as a form of advertising. Through this initiative residual public spaces are maintained (Ambrose-Oji, et al., 2017).

### 6.3.5 Management and Maintenance: Place keeping

Four main stages can be identified in the process for the creation or transformation of urban space. These are: preparation, design, implementation and maintenance, management and monitoring. Maintenance, management and monitoring are therefore a crucial part of the process (Arvanitidis, 2008; Stiles, 2009). Long-term management is sometimes referred to as place keeping. In relation to GI often much attention is given to its creation, however the on-going management is often neglected but is essential if such places are to maintain their value. Additionally, the integration of management practices with comprehensive planning frameworks is “critical for ensuring the functionality and continuous development of ecosystem services in urban open space (UOS)”. (Randrup, Lindholst, & Dempsey, 2020, p. 150)

As we have seen in section 6.3.3 p265, community-based models which involve citizens and voluntary organisations could be one means of doing this, however such an approach must be planned and integrated from the start. Policy and decision making are an essential part of long-term planning and legitimise place keeping activities. However, maintenance and management also require the necessary allocation of time and resources. Across Europe budgets have been under pressure to varying degrees and often the plans created for this are not necessarily put into practice (Ambrose-Oji, et al., 2017; Randrup, Lindholst, & Dempsey, 2020).

The EU funded project GreenKeys (Arvanitidis, 2008), which researched urban green space, identified the main best practice elements in relation to urban green space maintenance. The lack of money for both investment capital, and for on-going maintenance is a key aspect. The need for different funding models is therefore discussed in sections 6.3.3 265, 6.3.4 p269 and 6.3.8 p277. This however, is not the only aspect. The lack of statutory requirements to provide green spaces, which links to political will, often means that when funds become limited, their provision or maintenance are easy to neglect. Additionally, the short-term impacts of not providing such spaces as a service is not as immediately felt as the impact of reducing other services. There are, however, other important aspects.

The lack of an overall strategy for maintenance is one such facet. Often, organisational activities focus on “technical and budgetary questions rather than long-term planning, strategizing and policymaking.” (Randrup, Lindholst, & Dempsey, 2020, p. 151) This is also because the responsibility for various parts of green space maintenance is often fragmented across a number of authorities or departments. Frequently, there isn’t sufficient knowledge of the different roles played by these departments (UN Habitat, 2015). This repeatedly results in a lack of coordination of activities and thus the need for coordination mechanism (Arvanitidis, 2008; UN Habitat, 2015). The lack of information about urban open spaces is also important. Without detailed information it is difficult to efficiently plan for what is required. Finally, there is the lack of skills. “The urban green space maintenance sector is in many cases suffering not only from a limited workforce and a shortage of skills but also from a critical lack of management, promotional, presentational and interpersonal skills.” (Arvanitidis, 2008, p. 4) In response to these, Green Keys has made some recommendations.

The first is that a strategic approach to maintenance should be adopted. This should adopt a framework which brings together aspects from the strategy for green space development, to the management and maintenance such as that outlined in Figure 149. In order for this to be possible there needs to be the necessary information system which supports this. Figure 150 illustrates what this might entail (Arvanitidis, 2008). Additionally, maintenance plans are identified as an important tool for assessing, coordinating and delivering maintenance. These need to reflect workforce and organisational capacities.

They should also establish clear links between maintenance activities, management programs and policy priorities. With appropriate monitoring they can also establish trends in performance which can re inform policy and design approaches (Arvanitidis, 2008).

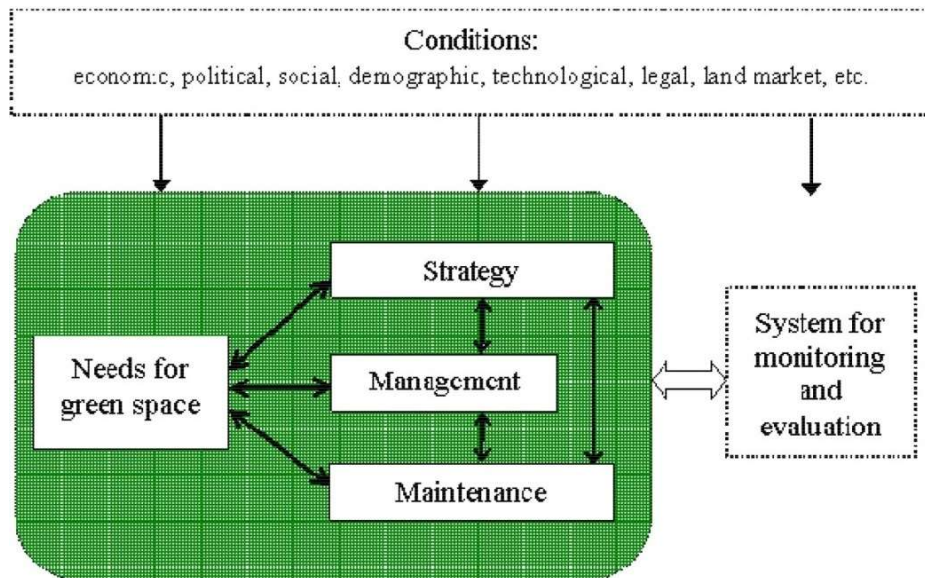


Figure 149: Maintenance in a strategic perspective (Arvanitidis, 2008, p. 5)

In order to support such a strategic approach, the establishment of a well-coordinated organisational structure is crucial. This should not only account for the on-going care but also periodic reinvestment with the aim of transforming or renewing of urban green infrastructure. Thus, the processes of reinvestment should not be different from the daily maintenance ones, rather they should be linked. Some tasks need daily attention, while others need to be addressed over longer periods (Arvanitidis, 2008).

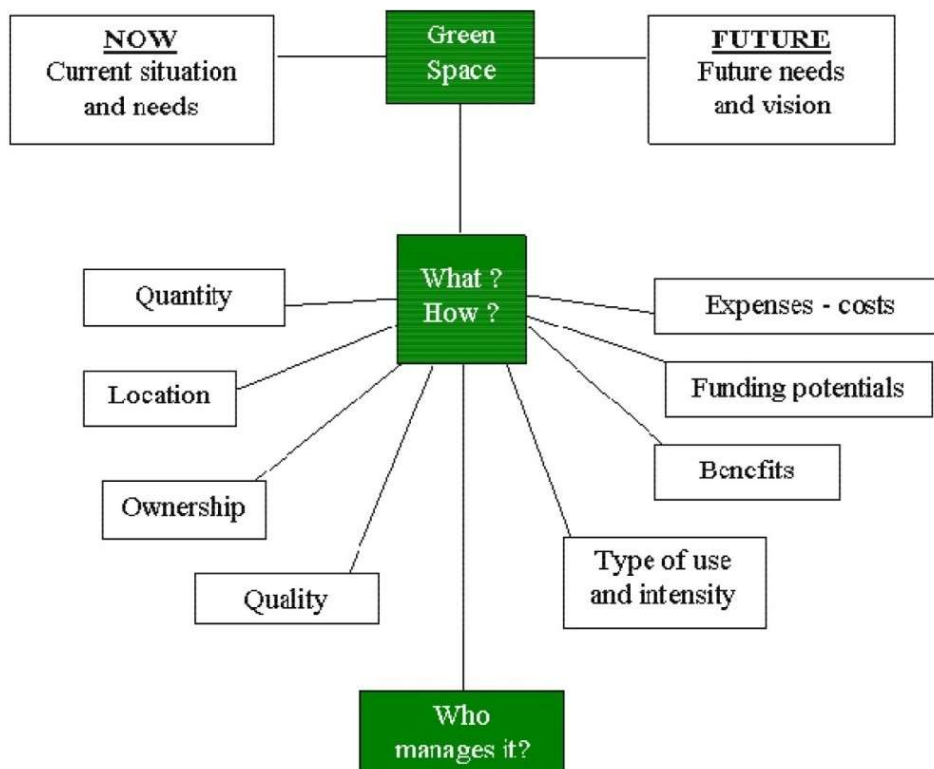


Figure 150: Required information for developing a strategic maintenance scheme (Arvanitidis, 2008, p. 6)

The principle of co-ordination is also important. Arvanitidis (2008) also found that in relation to urban green spaces responsibilities are often dispersed. This can be between different departments but also between different levels of government. The following departments/units are often involved: spatial planning; highways; environment; sports and leisure; real estate; and health. This fragmentation can be of serious hindrance to maintenance activities and lead to wasting of resources. It is not necessarily essential for the main personnel to fall within the same organisation. Rather, co-ordination is most effective, when key responsibilities are unified by having clearly identified lines of responsibility and utilising a single point of contact externally. The coordination of the responsibilities is more important than their formal distribution.

The organisational set up can be described as being state, market or community oriented. Combinations of the three models are often used within the same organisation. Market or community-oriented models are sometimes used to lower costs which can increase due to lack of competition when considering state models. Also, outsourcing sometimes allows for more flexibility to respond to changing demands. Unfortunately, contracting via the lowest price principle is then often adopted. "This is due to the lack of verified qualitative evaluation models for determining UOS<sup>93</sup> contracts". (Randrup, Lindholst, & Dempsey, 2020, p. 165) With outsourcing it is therefore important for this to be "outcomes-focused, mutually supportive, long-term partnerships between public and private sectors" (Arvanitidis, 2008, p. 7) rather than aiming to reduce costs in the short-term. Having clear specifications and delivery standards is therefore crucial. With this in place, efficient maintenance can take place either in house or through outsourced operations (Arvanitidis, 2008). Randrup et al. (2020) also advocate the potential for trust and function-based arrangements could also be explored. These would describe what a UOS should be but not necessarily how operations are performed or documented. It can be said therefore that overall, new ways of organising, describing and monitoring UOS maintenance are required.

When using public money, the importance of efficiency in spending is emphasised. However, more importantly is the quality delivered in relation to the investment which makes the importance of knowledge and skills building is crucial. This should include both the management and operational levels and also specialised degree programmes and continuing professional development (CPD) opportunities. Recruiting and retaining suitable personnel is also highlighted as an issue due to the sometimes poor image or recognition associated with working within the green space sector. Prioritisation of the sector's role is therefore crucial and the importance of increasing the overall prestige of providing green space services also emerges (Arvanitidis, 2008). This also relates to the importance of imaging and branding.

In terms of monitoring, good practice examples include the setting up of partnerships with universities who can monitor GI together with its benefits as part of their research programmes. Another good example is in Milan where, in one particular project, monitoring is carried out by the Mincio Park Voluntary Ecological Guards and a 24-hour camera is connected to the control centre of the Municipality of Mantua's local police force (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

Lastly, it can be said that the "process of developing the new green infrastructure technology within the urban environment requires an experimental and iterative mindset from policy. This experimental framework relies upon an iterative policy feedback cycle to implement green infrastructure in cities." (Chini, Canning, Schreiner, & Stillwell, 2017, p. 13) Two important aspects are to define clearly the

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boundaries of what is being tested and monitored as this affects motivation and data collection. Secondly, is the importance of generating interest by non-scientists and involving stakeholders. Another important point is: “the implementation of a recursive experimental framework to coincide with a policy feedback cycle that links knowledge production through a knowledge broker.” (Chini, Canning, Schreiner, & Stillwell, 2017, p. 13) In a study focusing on stormwater infrastructure, only 15 out of the 24 cities studied planned to establish an iterative process between GI experimentation and monitoring and evaluation so as to re-inform solutions. The study in fact advocates that in this respect, there “are opportunities for non-governmental organizations or research organizations to become knowledge brokers within the urban experimental framework.” (Chini, Canning, Schreiner, & Stillwell, 2017, p. 14)

### **6.3.6 Knowledge Building**

As already mentioned in the previous section knowledge and skills building is an important element. This not only counts in relation to maintenance and management but of course in ensuring an in depth understanding of GI and its benefits. While such knowledge building can of course be incorporated into formal educational processes, there are other ways in which this can be developed.

Continued professional development (CPD) courses is one way. In Boston, Massachusetts for example, the Boston Water and Sewer Commission run a National Green Infrastructure Certification Program (NGICP). They acknowledge that the “successful implementation of green infrastructure requires access to adequately skilled workforce available to perform the installation, inspection, and maintenance tasks”. (WEF, 2018) Another example is training organised by non-profit organisations such as the National Recreation and Park Association (NRPA). The training was actually held in collaboration with the Water Environment Federation (WEF) and at the end participants were also eligible to take the NGICP exam (NRPA, 2019).

Knowledge building can also be developed through informal learning opportunities. Lennon et al. (2015) suggest that a game-based approach to GI problem solving could be used to breakdown professional barriers through informal learning. They developed a specific deliberative toolkit to promote GI thinking which was developed with the aim of facilitating ideas from strategic to micro GI interventions. Through the research they advocate that such tools can be used for a ‘learning-by-doing’ approach which is more engaging than theoretical approaches. Having said that, the lessons learned might not necessarily extend into the daily working practice of the participants and further research on that would be required.

Another research project (URBACT, 2016) used ‘Urban Green Labs’ as a tool to promote citizen engagement in upgrading urban green spaces. The partners in the project specifically set out to mobilise citizens and promote grassroots initiatives and also to blend bottom-up and top-down initiatives so to “boost collaborative spatial policy-making and practices and realize sustainable governance of UGS through an integrated and participatory manner”. (URBACT, 2016, p. 2) In relation to this the urban living lab concept was introduced. The idea of a living lab was originally a research concept aimed at moving out of laboratories into real-life contexts. They build on four main elements: “co-creation, exploration, experimentation and evaluation of innovative ideas, scenarios, concepts and related technological artefacts in real life use cases.” (URBACT, 2016, p. 17) This approach could be seen as an important knowledge building mechanism as it creates the opportunity to empower and involve citizens, reconnect them with nature, raise awareness of the benefits of green spaces, “thus creating a public demand for healthy green urban environment”. (URBACT, 2016, p. 18)

In a similar manner, the GREEN SURGE project used the concept of Learning Alliances (LA) “as a tool for knowledge co-production around complex resource management challenges.” (Pauleit, et al., 2018) These involve the engagement of a defined group of stakeholders who meet on a regular basis including city officials and other local stakeholders. In parallel, urban learning labs (ULLs) were also used “to facilitate connectivity with other networks in the city and to engage in knowledge dissemination on broader UGI-related topics.” (Pauleit, et al., 2018) These however involved varying stakeholders depending on the topic to be addressed, and meetings were not held on a regular basis. The ULLs were also used to discuss the emerging themes of the research, validate concepts and understand further understand the practical barriers (Pauleit, et al., 2018).

### **6.3.7 Assessment and Auditing Tools**

GI strategies require long-term and short-term evaluation strategies (Ahern, 2007). The need for constant monitoring with respect to maintenance was also identified in section 6.3.5 p272. In relation to this various assessment or auditing tools exist which allow this to be done systematically. Such tools are also important in raising the awareness of GI’s multiple benefits particularly to decision makers, which is important in promoting investment in GI (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

One such tool is a green space audit or spatial assessment. Such top-down methods can assist in identifying which actions to prioritise. They assess and map city “green spaces along with their shortcomings, potential and accessibility for residents in different parts of the city.” (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 46). A systematic spatial assessment is important for building information about the various functionality and services provided by GI and understanding its spatial distribution within a city (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). “Tools such as multifunctionality inventories or ecosystem services assessments are useful to identify multiple green space functions and benefits. However, they should be supported by a sound understanding of the kind of interrelations, synergies and trade-offs that exist between these.” (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 35)

One way to assess the value of green space is to consider the social value by assessing resident perceptions. PPGIS<sup>94</sup> can improve on traditional survey methods to do this. An online PPGIS study was used in Berlin to understand the use and perception of green space. The responses provided rich detail about particular parks. The data spatially identified aspects such as overcrowding or lack of maintenance, activities taking place and where, and the cultural values respondents associated with particular green spaces. Such data is very useful to inform planning, management and design applications (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

GIS can also be used to facilitate the mapping of multifunctionality. Such an approach was developed by a UK-based network of woodlands and green spaces – the Mersey Forest in Liverpool (The Mersey Forest, 2011). It forms part of Liverpool’s Green Infrastructure mapping plan. “The methodology includes assessing data needs and acquiring data, ahead of mapping green infrastructure, its various functions and benefits, and associated needs. It is designed to be adaptable to a range of different projects and scales.” (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 90)

Another example is a scoring methodology for measuring biodiversity, as called the Singapore Index on Cities’ Biodiversity (CBI). This is a tool for cities to monitor progress i.r.t. biodiversity conservation. There

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<sup>94</sup> Participatory Planning Geographical Information Systems

are 23 indicators measuring: native biodiversity; ecosystem services; and governance and management of biodiversity (Convention on Biological Diversity, n.d.). Award or benchmarking systems, such as the Green Flag Award Benchmark standard for parks and green spaces in the UK, are also frequently used. The latter is based on 27 criteria across eight categories.

- A welcoming place.
- Healthy, safe and secure.
- Well maintained and clean.
- Environmental management.
- Biodiversity, landscape and heritage.
- Community involvement.
- Marketing and communication.
- Management (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

### **6.3.8 Resourcing and Funding**

The resourcing and funding of GI is a crucial aspect. As has been discussed, citizen involvement and partnering with voluntary organisations can be an important source of non-monetary resources (UN Habitat, 2015). Working with research entities provides the potential for tapping into expert knowledge. Having said this, monetary resources are also important. While research has found that external funding such as European or National funding programmes are important sources, other tools do exist (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Arvanitidis, 2008).

In the same way that maintenance needs to consider one-off improvements as well as day to day activities, so does funding need to consider capital funds to pay for the former, and revenue to pay for the latter (Arvanitidis, 2008). Some of the different sources for these funds are briefly presented below, these being: planning related funds; charity events and activities; taxes and regulatory instruments; business use of public spaces; and endowments.

Planning and development opportunities are when planning regulations require additional investment in green space. This is sometimes referred to as planning gain. Developers can be requested to make this provision and maintain it through their projects. Funds could also be extracted in relation to rental fees or tied to the sale of property. By obliging property occupiers to contribute, financing for maintenance can be secured. One of the downsides to this is that it can only be generated from new development projects (Arvanitidis, 2008). However, it is possible to develop regulation which allows such monetary sources to be linked to improvements not necessarily related to the project at hand as in the case of the LaPro program in Berlin.

Charity events and activities can also be an important source. Such activities are usually organised by non-profit organisations such as 'friends of parks' groups. For example, in Glasgow there is one such group called 'Friends of Glasgow Parks' (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Arvanitidis, 2008; Ambrose-Oji, et al., 2017) In Malta, this trend has also started to emerge. One example is the 'Friends of Villa Frere' group which voluntarily raises funds and cares for a historic garden in Malta's urban core. While this is a private garden, it is regularly opened for the public to enjoy (Facebook, n.d.).

Business use of public spaces is another opportunity where businesses rent part of a public space for commercial profit. Examples are when parts of a space are used for a kiosk or café, or even the provision

and management of sports activities. Another example could be the use of public space for environmental initiatives such as the production of alternative energy. Such set ups are usually organised through a lease of license provision (UN Habitat, 2015; Ambrose-Oji, et al., 2017; Arvanitidis, 2008).

Taxes and regulatory instruments are another funding source. Taxation can be charged in the whole area administered by a local authority or on those properties which benefit most from the open space (UN Habitat, 2015; Arvanitidis, 2008). User charges for waste water treatment are one such example. Most EU member states have such a tax however they are applied to different extents. Many times, these are tied to sewage treatment subsidies. Also called a waste water tax, this “is a classical emission tax on a flow pollutant and was among the first economic instruments to be introduced in environmental policy...A waste water tax scheme was introduced in France and in the Netherlands around 1970, while Germany followed suit with a scheme that took effect in 1981. Denmark recently introduced a waste water tax which took effect in 1997. In other Member States waste water taxes are applied at the regional level, such as in Flanders (Belgium) and in Italy and Spain.” (ECOTEC Research & Consulting, 2001, p. 77) The taxes are directly related to sewage production. These are charged to the owner according to the volume of sewage effluent produced by their property. While not a rain water tax, their introduction acts as an incentive to separate rainwater and seal sewer networks, to avoid additional water seeping in (ECOTEC Research & Consulting, 2001).

Another example is biodiversity offsets. This is a system where actions are taken to compensate for negative biodiversity impacts which result from development plans or projects, even if preventative and mitigation measures are taken. This action can be measured with the aim of no net loss on biodiversity and ideally a net gain. Offsets can be banked and in this way an NGO for example can sell offsets (related to their actions) to a developer (who would need to compensate due to their activities) (UNDP, n.d.; Tucker, 2016).

Biodiversity offsets can be set up as singular offsets (the offset is specially designed and carried out by the developer or by a subcontractor) and also through bio banking (the developer can buy offsets directly from a public or private bio bank that holds a repository of pre certified offset credits). Biodiversity offsetting has been a mandatory requirement in Germany since the 1970s. Habitat banking, where offsets are carried out without ex-ante links to specific development impacts, has been allowed since 2004, thereby enabling the storing and trading of offset credits. Offsetting is integrated with the planning system, enabling strategic planning of the location of offsets and the engagement of civil society in decision making on the acceptability of development projects and their offsets (UNDP, n.d.; Tucker, 2016).

Lastly, endowments have been found to be a successful way of securing a long-term, protected source of income. This would be an asset which provides income which can be used to maintain or fund green open space while its capital remains invested. For example, a property portfolio which generates rental income could be used in this way. Donations or income from fundraising activities could be used to fund an endowment which would then provide income over the long term. In this way a sustainable source of finance can be generated if the initial funds are invested as capital. An example of this is ‘Fund Stadtgrun Dresden’. The investment fund is managed by the city council since 1996 and it is exclusively funded through donations. A website exists as part of the city council to market the fund and the activities carried out as a result (Arvanitidis, 2008; Dresden, n.d.).

It can therefore be seen that a range of very different options can be used to generate funding. It is ideal to go for a combination of approaches. Whichever the case, it is always important to identify funding



sources as much as possible upfront. It is also important to note that while such opportunities do exist, it is likely that for funding to be sufficient, green open space also needs to depend on national funds and the commitment of politicians to convince other sectors to allocate such funds.

### 6.3.9 Pilot Projects

Pilot projects are an important tool in introducing new concepts. New York tested pilot projects using temporary materials such as paint to successfully pioneer controversial projects relating to mobility and reducing space allocations for vehicles to prioritise public space for pedestrians (New York City: Department of Transportation, n.d.).

Pilot projects are also being used with success in the introduction of GI. In particular they have been useful in the: testing of new ideas; promoting the potential of GI and convincing decision makers of its potential; fostering collaboration between different departments who need to be involved; and finally refining certain approaches prior to broader introduction (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).



Figure 151: Meat Market Plaza, Chelsea, New York City - Before and after a temporary intervention (PPS, 2014)

A good case study is the City of Ljubljana in Slovenia where such an approach was used to test a new planning and governance model which aimed to bring authorities, researchers, practitioners and various stakeholders together to transform 0.6 ha of public space. Through the researchers' involvement the whole process was comprehensively mapped and analysed. The NGO partner helped involve particular stakeholder groups who are often underrepresented in such projects. The researchers also facilitated the discussion of various practical questions. Through this approach, "a largely unused green space was transformed into one offering multiple benefits, ranging from sports to culture; from local food production to education about the rare biodiversity present at the site. This pilot project has inspired the city to explore whether to introduce the same governance model for other public green spaces." (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017, p. 56)

Chini et al. (2017) for example, advocate that in moving towards the sustainable management of urban storm water, a regime shift is required from existing structures. Such a shift can be facilitated through an experimental process. The City of Indianapolis has also used pilot projects extensively to test and implement their green infrastructure master plan. The pilot projects are aimed specifically to determine their benefits on both combined sewer overflows (CSOs) and the separate storm water system. One such example is the Ohio Street project which experienced a history of flooding and overflow problems. Old

sidewalks were replaced with porous pavement and rain gardens were installed to improve drainage (Smock Fansler Corporation, n.d.; NRDC, n.d.).



Figure 152: Images illustrating the Ohio Street Project (Smock Fansler Corporation, n.d.)

### 6.3.10 Conclusion: The Need for a Co-ordinating Body

This section has shown that there are various governance models, tools, instruments or mechanisms which can be adopted in relation to the successful planning, implementation and management of GI. What is evident is that it is not possible to think of a single collective way for including citizens, civil society and businesses. Quite the contrary, there is the need to consider the context and specific reasons for adopting a particular approach and this should be tailor made to specific needs.

In fact, Pauleit et al. (2018) advocate the importance of “coalitions, and their ‘contracts’”, however, it is “not a matter of using an either-or approach”. What is crucial though is that, “as a bottom-line, successfully engaging citizens and stakeholders in planning and implementation processes requires establishing participative approach as a basic mindset within the municipal administration”. (URBACT, 2016, p. 15) Additionally, the “challenge is to combine the strengths of different actors in order to match the needs of a specific situation”. (Pauleit, et al., 2018) This can be developed in the form of a “mosaic governance, conceptualized as a context-sensitive, flexible planning approach that integrates the spatial (ecological) and social dimension of UGI, aiming at a flexible mix of government-led strategic planning and local, bottom-up active citizenship initiatives”. (Pauleit, et al., 2018)

What also seems to emerge as a constant, is that there is always the presence to some extent of a local authority. This authority whether it is the city council or a local municipality always plays a particular role and is involved to varying degrees. Even in cases where various partnerships are established and various stakeholders are involved, potentially more than the local authority itself, there still always seems to be, at some point in the process, the presence of an established government body which plays a co-ordinating role. This aspect of co-ordination is therefore crucial. In fact, Dunnet et al. (2002) advocate that “fragmentation of responsibility for and ownership of, urban green spaces across different departments or directorates within a local authority is a barrier to efficiency and innovation, but also to community involvement.” (p. 14) There therefore needs to be a coordinating body which brings together the delivery of green space and provides a clear ‘one-stop-shop’ particularly for public contact.



## **7 Development and Testing of Proposals**

### **7.1 Introduction**

As identified in Chapter 2 urban open spaces have the potential to effectively address urban challenges and contribute to achieving sustainable development if they form part of a green infrastructure (GI) system. Chapter 6 identified that this could be done by adopting an urban green infrastructure (UGI) planning approach (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). The results in Chapter 5 have identified the design principles specific to the Maltese context which requires attention as well as issues with planning and governance challenges. The literature in Chapter 6 provides a framework for consolidating the results. Organising the results according to this framework clearly illustrates that urban open spaces in Malta are not acting as GI. This is discussed in section 7.2 p282.

The need to explore and develop proposals for urban open spaces to act as green infrastructure was therefore identified. This was done by carrying out a comparative literature review of best practice literature in relation to the findings as presented in Chapter 6. Three sets of proposals were developed: The Spatial Implications; The Planning Proposals and the Governance Proposals. These are presented in section 7.3 p287. Focus groups were then held to obtain feedback on these proposals as outlined in the research methodology (see Chapter 3). The output from the focus groups on the spatial implications also re-informed the set of planning and governance proposals presented to the focus groups. The results of focus groups on spatial implications can be found in section 7.3.2 p295. Those of the planning and governance sessions can be found in section 7.4 p300.

### **7.2 Malta's Urban Open Spaces and their potential to act as Urban Green Infrastructure**

The key findings were consolidated and organised in relation to green infrastructure principles relating to spatial aspects. The four main principles identified through the literature are: connectivity and networks; multi-functionality; integrated design approach (grey-green integration); and social inclusion (Davies, MacFarlane, McGloin, & Roe, 2015; European Commission, 2019; Benedict & MacMahon, 2002; Laforteza, Davies, Sanesi, & Konijnendijk, 2013; EEA, 2011; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). Appendix D1 provides a breakdown of the literature sources informing these principles and the discussion in the ensuing paragraphs, while Table 24 and Table 25 provide a summary of the findings in relation to these principles.

Having an interconnected network or system of green (and blue) spaces is a key principle for green infrastructure. In the Maltese conurbation this is lacking at the strategic level (lack of network which provides spatial structure/sense of orientation) and it is also not facilitated at the local level (spaces not designed as place to walk through). Additionally, ideas of vegetation connectivity to support biodiversity and habitat creation do not feature in planning review discussions. At a local level the lack of connectivity is also present with regard to contextual relationships such as the detachment of open spaces from building frontages and activity. In terms of accessibility there are various issues primarily surrounding the prioritisation of vehicular movement and access over pedestrians and other forms of sustainable mobility.

Table 24: Key findings relating to the principles of creating connectivity/networks and multi-functionality

	Consolidated GI Principle (literature)	Key Findings	Design Category / Emerging Theme (literature and data)
<b>Spatial Implications</b>	<b>Connectivity / Network</b>	Poor quality pedestrian infrastructure / circulation paths (widths, seating, vegetation provision) Potential to improve entrance locations i.r.t. circulation paths & connecting to surroundings In newer projects "Access for All" was an important focus but many existing spaces are lacking Lack of cyclist provision & scope to improve public transport access in the evenings Lack of traffic management measures to reduce vehicular impact and dominance on open spaces Planning review focuses on vehicular access/parking provision - not restricting vehicular access. Providing good pedestrian access not given importance. "Access for All" - important focus Potential to improve the use of materials in street design to improve traffic calming & aesthetics	<b>Accessibility</b>
		Lack of network of open spaces and green infrastructure system Lack of spaces which provide spatial structure / sense of orientation Spaces not designed as places to walk through Lack of planning review discussion i.r.t. connectivity of vegetation, biodiversity/habitat creation	<b>Spatial &amp; Structuring</b>
		Design of physical boundaries needs attention - softer edges and transitions Lack of good relationships between buildings and open spaces due to vehicular carriageways	<b>Contextual Relationships</b>
		Planning review discussions did not focus on use of space i.r.t. functional context	<b>Contextual Relationships</b>
		Lack of different characters e.g. being in touch with nature, quiet refuge areas, green space Lack of guidance on the creation of green spaces – inconsistency in interpretation of policies Provision of uses/activities or character is not guided by wider/holistic planning objectives	<b>Character &amp; Form</b>
		Potential for more varied activities & to bring different activities /demographics together Potential to improve flexibility/adaptability of playgrounds, natural/semi-natural areas & street Planning review of use value (user needs, multi-functionality, adaptability, supplementary equipment, use and allocation of space, seating, provision of facilities) is non-existent	<b>Activities &amp; Functionality</b>
	<b>Multi-Functionality</b>	Lack of larger spaces > 3000 sqm / lack of access to open spaces in urban areas	<b>Accessibility</b>
		Planning review: No consideration for how proposal is important for locality / at which scale	<b>Climatic Response</b>
		Lack of attention given to climatic comfort during design process and planning review	<b>Climatic Response</b>
		Potential to increase the use of water as a recreational or natural feature No discussions on the suitability of proposed water features during the review process	<b>Water Management</b>
		Potential to improve the design approach / knowledge for providing 'green space' Potential to improve vegetation use for benefits e.g. shading, safety, noise/pollution mitigation Planning review discussions didn't go into vegetation design. Provision of vegetation was seen as sufficient. Requests limited to species type. Not clear who is responsible for reviewing design. Requirements for maintenance of vegetation varied from project to project	<b>Use of Vegetation</b>

The next principle is the multi-functional nature of green infrastructure. In this respect open spaces in the Maltese conurbation are failing because the provision of uses and activities or the character is not guided by wider/holistic planning objectives. There is scope to provide more varied activities, address different demographic needs and facilitate flexibility and adaptability. There is also a lack of space which provides a sense of being in touch with nature or a sense of refuge. There is a lack of larger spaces (> 3,000 sqm)

and spaces which provide multiple benefits through the presence of vegetation and their potential function for sustainable water management.

Green infrastructure also needs to adopt an integrated design approach particularly with respect to coordinating the provision of urban green spaces with other infrastructure. In this case urban open spaces are lacking in their provision of vegetation overall as well as the use of sustainable urban drainage systems. The fourth principle concerns the idea that the planning and design of green infrastructure should include the knowledge and needs of different stakeholders. In the Maltese context, it was found that the planning and designs do not necessarily target the socio-cultural context. There is also potential to mix compatible user groups through the activities provided. From a process point of view, overall there is the lack of community engagement both during the planning and design process.

Table 25: Key findings relating to the principles of integrating the design of green and grey infrastructure and designing for social inclusion

	Consolidated GI Principle (literature)	Key Findings	Design Category / Emerging Theme (literature and data)
<b>Spatial Implications</b>	<b>Integrated Design Approach (Grey - Green)</b>	Lack of feedback on vegetation use i.r.t. benefits during planning review	<b>Use of Vegetation</b>
		Potential to improve awareness/design approach i.r.t. vegetation use for potential benefits	
		Lack of knowledge on how to design and manage green space	
		Lack of vegetation in open spaces	
		Lack of storm water management / SUDS in open spaces	
	<b>Water Management</b>	Lack of irrigation systems & use of reservoirs	<b>Water Management</b>
		Lack / inconsistency of requests for reservoirs during planning review	
		No guidelines/standards/policies for appropriate sizes / capacity reservoir, storm water management or provision of irrigation systems	
		Lack of awareness/ expertise during planning review & not clear who is responsible for reviewing	
		Lack of attention given to socio-cultural context during design process and planning review	
Demand exists for open spaces in urban areas - society & local councils actively seek & use them			
<b>Social Inclusion</b>	Potential to target specific user groups through the activities and functionality provided	<b>Activities &amp; Functionality</b>	
	Potential to mix compatible user groups through the activities provided	<b>Community Involvement in Operations</b>	
	Lack of voluntary community schemes		
	Extent of engagement and addressing social / user needs depends on architect & client	<b>Lack of Community Engagement During Design Process</b>	
	Hesitation to involve local councils - anticipation of objections Local councils - genuine effort to involve community - but tedious / difficult process coupled with lack of resources hinders efforts		
Public Engagement - limited to representations - actual affect is limited	<b>Lack of Community Engagement During Planning Processes</b>		

The spatial principles, however, need to be understood as part of a holistic approach adapted to suit the local context. The success of the UGI planning approach is dependent on the planning process together with the engagement of stakeholders and implementation. The governance (including political will) aspect is therefore also a crucial part of the equation. The results of the research concerning planning and

governance issues were also organised in relation to the key planning and governance principles emerging through the literature (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; European Commission, 2019; Toth & Damyanovic, 2019; Schiappacasse & Muller, 2015; Hansen & Pauleit, 2014; Lafortezza, Davies, Sanesi, & Konijnendijk, 2013; Pauleit, et al., 2018). Appendix D1 provides a breakdown of the literature sources informing these principles and the discussion in the ensuing paragraphs, while Table 26 and Table 27 provide an overview. It can be seen that the planning system and governance conditions do not facilitate the potential for Malta’s urban open spaces to act as green infrastructure.

Table 26: Key findings relating to the planning system

	Consolidated GI Principle (literature)	Key Findings	Design Category / Emerging Theme (literature and data)
<b>Planning</b>	<b>The Need for Strategic, Integrated and Proactive Planning across Multiple Scales</b>	No Strategy or Action Plan for: improving / creating new spaces / network; No framework for increasing use value / potential benefits  Policy simply identifies & protects existing spaces from development	<b>Lack of Proactive Approach for Planning and Transforming Urban Open Spaces</b>
		Policy / objectives to solutions (through development briefs/action plans) without creative design process Review process primarily responding to technicalities, stakeholder requests and clarifying drawings No formal opportunity for architects to discuss design with planning officers Limited design discussions are subjective and primarily about aesthetics / context considerations	<b>Lack of Creative Process</b>
		Environment & Resources Authority Role - Unclear / limited; Role & Power of Ambjent Malta - Unclear  The role of the strategy groups is not clear Unclear who is responsible for reviewing water & energy efficiency in projects Environment Resources Authority involvement as part of the reviewing process is not clear	<b>Lack of Clarity in Roles</b>
		Inconsistency in planning approach when reviewing open spaces - Planning officers apply policies / guidance according to their judgement / interpretation Planning officers not sure how to apply guidelines / policies (DC 2015 & SPED e.g. water & energy efficiency, biodiversity corridors) Projects allocated to different teams (major project, UCA, within scheme) - no specialisation for open space projects Planning board provides adhoc last minute feedback	<b>Lack of Consistency</b>
	<b>Guidelines, Policy, Standards</b>	Lack of plans & policies guiding the design / transformation of urban open spaces Existing policies tend to be strategic or generic and no guidelines exist on how to apply them Vagueness & lacuna - hinders initiatives to improve open spaces Where policies are specific to an open space in local plans there is still variation in interpretation Policy: Land Use; 'Access for All'; Road Design; Type of Species; Archaeological & Contextual considerations Lacking: Functionality, Character, Pedestrian Oriented Design, Use of Vegetation & Water Local Councils do not implement existing policies: lack of expertise; lack of schemes / resources; refer to follow their own ideas; policies don't address community's needs; lack of engagement with PA	<b>Lack of Policies &amp; Guidelines for Urban Open Spaces</b>

Table 27: Key findings relating to governance aspects

	Consolidated GI Principle (literature)	Key Findings	Design Category / Emerging Theme (literature and data)
<b>Governance</b>	<b>Stakeholder, Interdisciplinary &amp; Inter-sectoral Co-operation</b>	Difficulties are often encountered when consulting with and working with utility companies Liasing with SCH & CRPD - happens in early stages - given importance Participation of environmental NGO's is limited Liasing with transport authority requires facilitation - More effort required to reduce impact of vehicles - tendency is still to prioritise vehicles & parking provision - irrespective of policies	<b>Collaboration with Some Entities during Design Process is Particular Tricky</b>
		Some local councils reported positive experiences e.g. cleaning & caring for open spaces or neighbourhood watch Other local councils considered this problematic No formalised framework to support grass routes initiatives / civil society involvement Scope to share experiences / facilitate piloting of such schemes Liasing with SCH & CRPD - happens in early stages - given importance	<b>Lack of Collaboration with the Community</b>
		Stakeholder input focuses on: transportation (vehicles) (TM); cultural heritage (SCH); Access for All (CRPD); and civil protection (CPD) Environmental input / review is lacking - limited to transplanting / tree removal permits; compensatory planting; and the use of species	<b>Imbalances in Stakeholder Participation (vehicles Vs pedestrians &amp; environment) in Planning Processes</b>
	<b>Organisational Systems, Structures and Operations</b>	Lack of governance structure to support local governance and grass route initiatives Realising projects of significant size/complexity - presence of an authority leading project with direct access to central government & national/EU funds No entity or process to manage and facilitate the transformation of public areas	<b>Lack of a Driving Entity</b>
		Local councils responsible - upkeep & maintenance - but resources very limited - no funds / expertise to go beyond embellishment Local councils - lack staff dedicated to projects, availability of contractors (small projects), expertise (particularly vegetation & water management) It would be inefficient to provided certain expertise and staff availability at local council level due to small economies of scale Lack of schemes which would allow them to act on initiatives / project for open spaces Potential for development of best practice guidance to assist local councils in the development of open spaces Centralised resources/platform (to assist Local Councils): expertise (planning, project development); public private partnerships tendering process (limits innovative solutions) projects across locality boundaries Locality funding is insufficient to carry out maintenance and projects for open space - there is the need to tap into National or EU funding. Additional funds required to ensure appropriate management & maintenance levels - scope to explore community involvement	<b>Lack of Adequate Resources / Funding and Support Structures for Local Councils</b>
		Low levels of maintenance - dirt & lack of maintenance - common reason for not using open spaces Upkeep of vegetation often included in general cleaning contracts Budgets varied between 25-100,000 annually accross similar population sizes Repairs beyond general maintenace are problematic - availability of contractors, small jobs, lengthy engagement process Maintenance budgets for new projects - not identified upfront - case study projects needed additional funds / reources to manage and maintain open space projects of a certain level - not local councils	<b>Poor Maintenance Levels</b>
		Lack of awareness from case officers on how to apply existing policies e.g. DC2015 & SPED Lack of knowledge on how to design and manage green space Lack of awareness from case officers on how to apply existing policies in SPED relating to provision of green / biodiversity corridors Lack of awareness from case officers on how to apply existing policies relating to provision of energy efficient proposals	<b>Lack of Knowledge and Expertise</b>



When it comes to planning there is the need for the adoption of strategic, integrated and proactive approaches targeting the provision of green infrastructure. The results confirm the widely held view that this is currently lacking. This state-of-affairs can be broken down into the absence of: a proactive approach for planning and transforming urban open spaces; a creative process; consistency; and clarity in roles and responsibility. Guidelines, policies, and standards were also identified as important instruments for promoting and ensuring the implementation of green infrastructure principles. The results show that there is scope to introduce such instruments in the Maltese planning system.

With respect to governance the literature identified the need for stakeholder, interdisciplinary and inter-sectorial cooperation. Organisational systems, structures and operations are also necessary which support such cooperation and integrated working (Schiappacasse & Muller, 2015). In relation to this in the Maltese context, there is scope to: improve collaboration with some entities during the design process; improve collaboration with the community and address imbalances in stakeholder participation during the planning process; address the lacuna in governance when it comes to the transformation of urban open spaces; ensure that adequate resources, funding and support structures are provide for Local Councils; improve maintenance systems; and address the lack of knowledge and expertise relating to the planning, design and implementation of green infrastructure.

As urban challenges increase, the need to work towards achieving sustainable development objectives and mitigate and adapt to climate change is a priority. The potential role which urban open spaces can play in doing this is evident. Analysis of the phase one results in relation to the literature, illustrates that Malta needs to step up its game in relation to the planning and design of urban open spaces such that they can provide the necessary green infrastructure in urban areas. This evidence base is an important first step to understanding the situation as well as informing the development of potential solutions needed to address the situation. As a starting point the concept of adopting a green infrastructure approach for planning and designing urban open spaces provides a framework for focusing the results and developing the proposals.

### **7.3 The Initial Proposals**

Initially a set of proposals/ideas were developed in response to the consolidated key findings. These are outlined in Table 28, Table 29 and Table 30 below. Appendix D2 illustrates how the findings were broken down and informed this initial development of ideas.

Table 28: Initial set of spatial implications

	Typology of Space	Proposals / Design Categories Concerned	UGI Principle
<b>Spatial Implications</b>	<b>Network</b>	<ul style="list-style-type: none"> <li>Identify network of open spaces</li> <li>Identify sustainable water drainage network &amp; connection to storm water management network</li> <li>Improve pedestrian crossing points between spaces</li> <li>Create a hierarchy of typology of spaces (sizes, characters and functionality)</li> <li>Create a legible network</li> <li>Create a walking / jogging route to promote active lifestyles</li> </ul>	grey-green integration; connectivity; multi-functionality
	<b>Local Parks / Gardens</b>	<ul style="list-style-type: none"> <li>Identify the potential for larger open spaces &gt; 5,000 sqm</li> </ul>	multi-functionality
	<b>Small Spaces Playgrounds Civic Squares</b>	<ul style="list-style-type: none"> <li>Link open spaces to buildings or other open spaces</li> <li>Explore potential for small open spaces / green areas to flood during storms</li> <li>Maximise use of vegetation</li> <li>Link compatible activities and users</li> <li>Add informal recreation linked to natural environments</li> <li>Create open spaces with more natural character</li> <li>Create more adaptable / flexible spaces</li> <li>Introduce more varied activities / new uses based on social survey</li> <li>Identify which spaces should have public transport access in the evenings</li> <li>Introduce water as a recreational or natural feature</li> </ul>	grey-green integration; connectivity; multi-functionality; social inclusion
	<b>Streets</b>	<ul style="list-style-type: none"> <li>Introduce trees, vegetation and seating according to street typologies</li> <li>Introduce rain gardens, permeable paving &amp; swales</li> <li>Introduce reservoirs under open spaces, government buildings &amp; parking</li> <li>Connect water run off to reservoirs</li> <li>Widen footpaths</li> <li>Introduce peripheral parking and remove on-street parking</li> <li>Create tree canopies with creepers in narrow streets</li> <li>Green connections between open spaces / promote connectivity of habitats</li> <li>Pedestrian friendly streets / shared spaces</li> <li>Create a walking / running trail through urban neighbourhoods</li> <li>Introduce permeable paving / gratings for existing trees instead of concrete</li> <li>Narrow carriageways on over dimensioned streets to create space</li> <li>Create a movement hierarchy to promote sustainable mobility</li> <li>Identify and reduce speed limits through street alignments</li> <li>Change carriageway materials around open spaces &amp; to identify walking trail</li> </ul>	grey-green integration; connectivity; multi-functionality;
	<b>Surface Car Parks</b>	<ul style="list-style-type: none"> <li>Remove surface parking and introduce underground parking to create green open spaces</li> </ul>	grey-green integration; multi-functionality;

Table 29: Initial set of planning proposals

	Typology of Action	Proposals / Design Categories Concerned	UGI Principle
<b>Planning</b>	<b>Guidance &amp; Policy</b>	The data has identified which design principles need attention in Malta. The detailed proposals determine which areas require guidance and which require more specific policy.	All
	<b>Building Regulations / Standards</b>	Some of the design principles can also be targeted through standards / regulations. These could include: minimum vegetation requirements; provision of storm water management & reservoirs; minimum permeable surfaces; type of surface materials; pedestrian infrastructure requirements (footpath widths, materials to avoid slip, trip hazards etc.) ; and lighting requirements i.r.t. energy efficiency.	grey-green integration; connectivity;
	<b>Permit Application Process</b>	<ul style="list-style-type: none"> <li>Clarify authorities responsible for reviewing: vegetation design; water &amp; waste management and energy efficiency</li> <li>Formalise opportunity for discussions relating to design objectives / concepts</li> <li>Specific team responsible for reviewing of public urban open space projects</li> <li>Develop a more interactive process for public participation feedback</li> <li>Establish a clearer framework for which entities / stakeholders should be contacted in relation to which aspects specifically for open spaces</li> </ul>	All
	<b>Spatial Planning</b>	<ul style="list-style-type: none"> <li>Carry out spatial audits of open spaces at locality level</li> <li>Develop a structured integrated approach for the planning of GI / open space spatial plans which includes various authorities and stakeholders</li> <li>Develop a GI strategic plan at a national level setting out a vision, priorities, strategies and objectives for the different aspects of GI at a regional level</li> <li>Develop a spatial plan for a network of urban open spaces which adopts an urban green infrastructure planning approach potentially at the scale of the Primary Urban Area with the setting out of actions at a locality level in relation to objectives determined at the national / regional scale</li> </ul>	All

Table 30: Initial set of governance proposals

	Typology of Action	Proposals / Design Categories Concerned	UGI Principle
<b>Governance</b>	<b>Knowledge Building / Expertise</b>	Develop training sessions covering: qualities of different types of 'green space' / open spaces; vegetation management; pedestrian design & movement hierarchies; vegetation connectivity; designing for climatic comfort; and successful and quality urban open spaces. Also, more specialised sessions aimed at developing expertise on SUDS, construction and maintenance of wells, and sustainable water features.	grey-green integration; connectivity; multi-functionality
	<b>Pilot Projects</b>	Pilot projects could be used as a means to address resistance to change and to illustrate the success and benefits. Aspects to test include: integration of vegetation in grey infrastructure/streets; use of SUDS; community involvement in the design, development and then upkeep and maintenance of urban open spaces; new materials for traffic calming / permeable paving; natural water features which mitigate the presence of mosquitos; centralised parking strategies aimed at and removing on street parking; the inclusion of renewable energy sources in public spaces.	All
	<b>Funding Schemes</b>	Spatial plans and policies need to be accompanied by implementation programs providing funds and assistance for local councils to tap into. In particular funding schemes should be set up to improve: "Access for All"; cyclist provision; traffic management to reduce vehicular impact; spatial audits at locality level; restore, maintain & use existing wells; use of SUDS; and waste separation facilities.	grey-green integration; connectivity; multi-functionality
	<b>National Platform / Entity</b>	Set up a mechanism for the implementation of GI / open space networks identified through the spatial planning process especially at regional level across local council boundaries. This needs to integrate the actions of all authorities which should be involved in the transformation of open spaces. Create a national platform / entity to drive this. Role would be to: assist in the transformation of urban open spaces; have direct access to central government; provide expertise to local councils / act as a one stop shop; facilitate discussions between stakeholders & authorities / entities; develop and run funding schemes; develop and run training sessions; work together with relevant entities to develop guidelines / standards.	All
	<b>Maintenance</b>	Identify maintenance funds at project inception/design stage Explore potential for maintenance through community voluntary schemes Explore potential to organise contracts for certain maintenance at regional level due to economies of scale and lack of expertise	grey-green integration; social inclusion
	<b>Community &amp; Stakeholder Involvement</b>	Develop a program/framework to assist local councils/authorities in stakeholder participation when designing open spaces Explore the potential for social media platforms Explore potential for transferring responsibilities and power to grass roots initiatives for management and maintenance of urban open spaces Develop participatory budgets/community planning – allocation of funds	social inclusion

These ideas together with the literature presented in Chapter 6 led to the development of proposals using international case studies. These were used for the focus group presentations and surveys. They are presented further in sections 7.3.1 below, 7.3.3 p298 and 7.3.4 p299.

### 7.3.1 The Spatial Implications

The spatial implications identified in Table 28 were translated into a spatial conceptual proposal for a network of open spaces in a selected study area. This was used for the focus group discussions. Typical conceptual designs were developed. The aim was not to illustrate an exact solution but rather to visualize the approach. The concept designs illustrate how typical urban open spaces could act as GI. They address various typologies visualizing key design principles. The presentation used during the first focus group sessions on spatial implications can be found in Appendix D3. Figure 153 to Figure 161 illustrate some of the proposals developed together with the key principles.

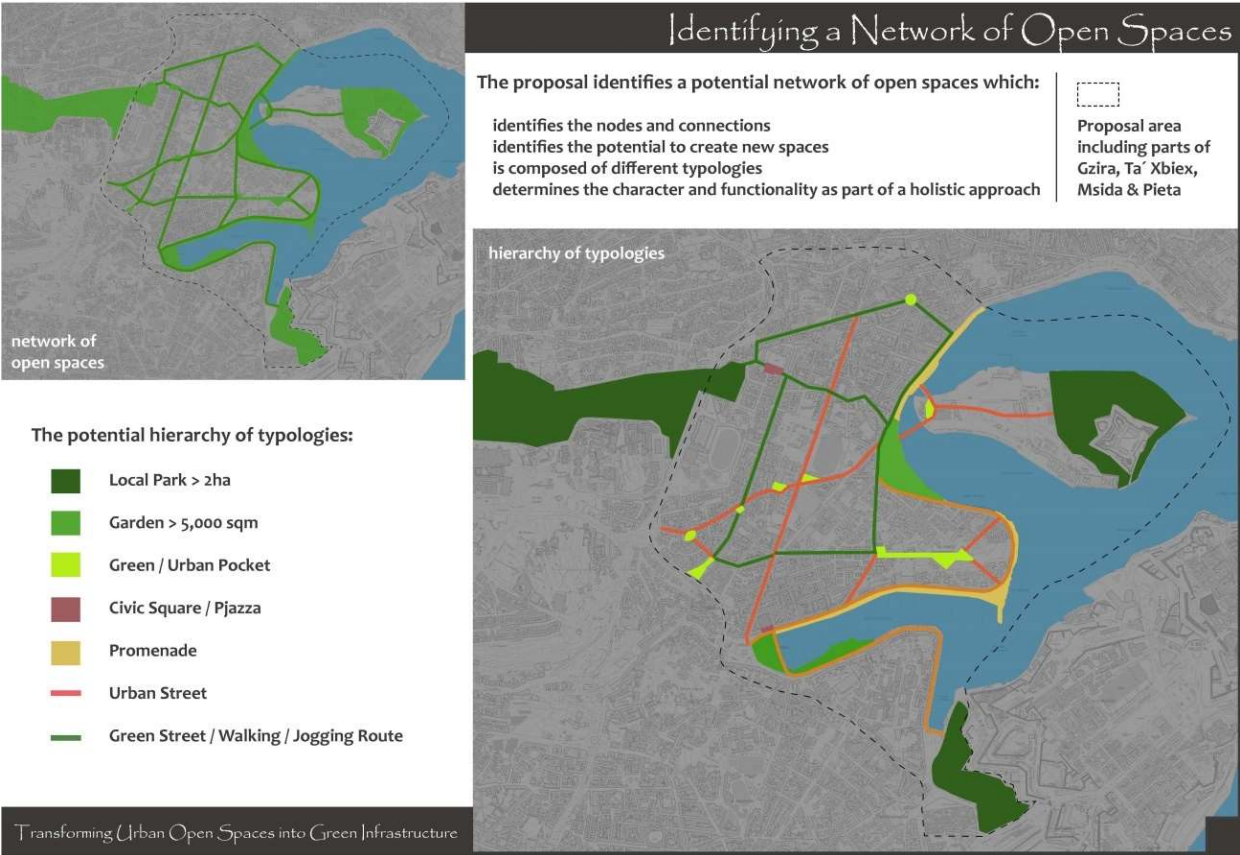
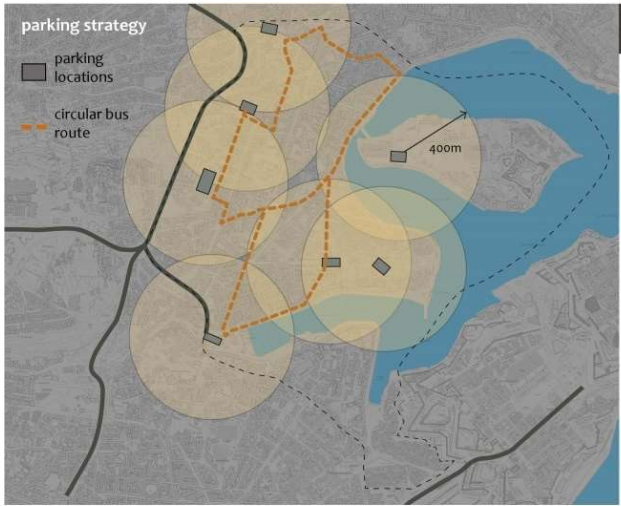


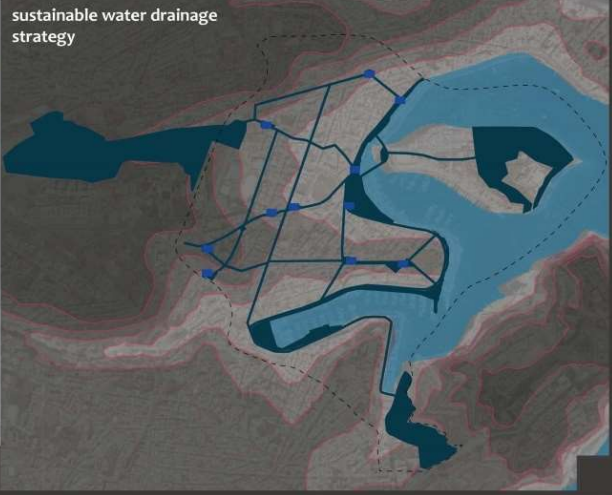
Figure 153: Defining a potential network of open spaces



## Integrating Movement and Water

The proposal includes a parking strategy which:

- shifts on-street parking to centralised underground / multistorey parking locations
- identifies potential locations such that all areas are within a 5 mins walk of a centralised parking service
- proposes a local circular public transport route to connect the car parks to main activity zones and services and ensure accessibility for those with reduced mobility

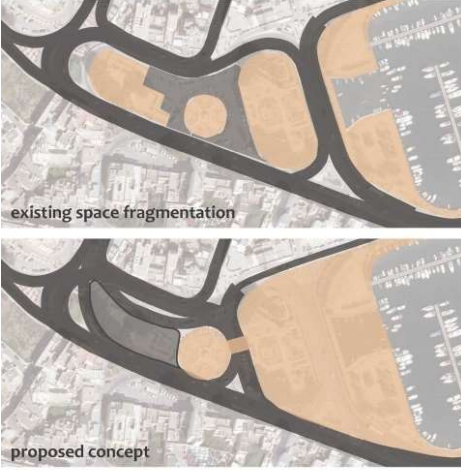


In parallel, the potential for a sustainable storm water drainage network is explored. This needs to consider:

- the potential for groundwater recharge or flood mitigation/attenuation
- the potential for reservoir overflows / controlled discharge points
- how to connect to an existing stormwater network
- the relationship between hydrological catchment boundaries & administrative ones

Transforming Urban Open Spaces into Green Infrastructure

Figure 154: Exploring the potential for sustainable water drainage and parking strategies



## Garden / Civic Square - 5th October, Msida



**Key Design Principles**

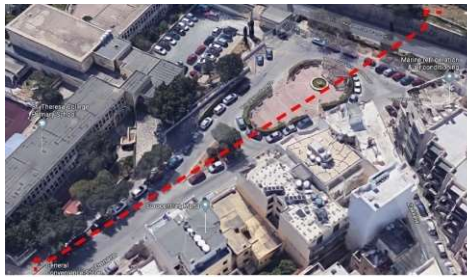
- Restructuring infrastructure to create & transform open spaces
- Reconnecting open spaces with buildings / other open spaces (removes isolated spaces) e.g. connecting to the promenade & church parvis
- Varied activities to bring different demographics together
- Use of salt resistance vegetation & minimum maintenance

**Activities:**

- Flexible space for community activities (including bocci pitch)
- Varied activities including a picnic garden / areas for ball play, scooters and a formal playground
- Areas with a green / more natural character with a sense of refuge and water play with potential to use sea water

Transforming Urban Open Spaces into Green Infrastructure

Figure 155: Illustrating the potential to create a new garden space



## Green Pocket Park - Piazza Victor Denaro, Msida

### Key Design Principles

- Create semi-basement parking by layering the landscape
- Reconnecting open spaces with buildings / other open spaces (removes isolated spaces) e.g. connect to school garden / frontage
- Maximise the use of vegetation to provide a green 'lung'

### reference images

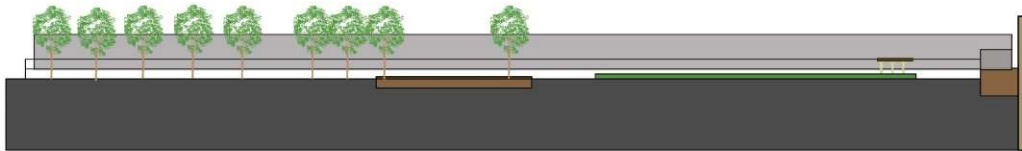


terraced landscape to maximise soil for planting above reservoir

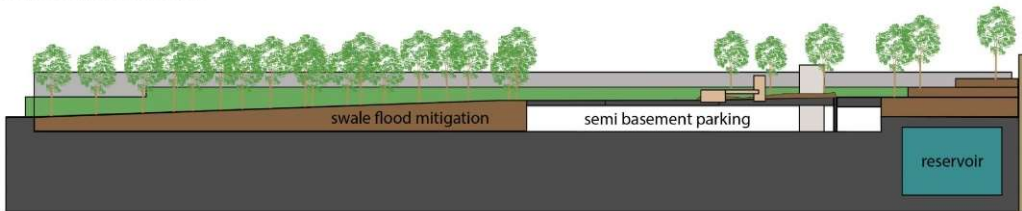


semi-basement parking with park above

### existing schematic longitudinal section



### proposed schematic longitudinal section



Transforming Urban Open Spaces into Green Infrastructure

Figure 156: Illustrating the potential for pocket parks



## Green Pocket Park - Piazza Victor Denaro, Msida

### reference images



informal / adventurous / water play



green wall



street swales / rain gardens



### Key Design Principles

- The informal and adventurous play areas combined with seating facilitate active lifestyles and social interaction
- The street swale / rain garden creates potential for water infiltration and flood mitigation
- The water reservoir allows for water storage reducing run off and re-use for irrigation
- The vegetation and water feature provides an informal play area and contact with nature
- The green walls maximise the use of vegetation to improve micro-climates through urban cooling and contribute in mitigating air pollution
- Maximising the use of trees ensures a comfortable micro-climate



Transforming Urban Open Spaces into Green Infrastructure

Figure 157: Illustrating the potential for pocket parks



Figure 158: Illustrating the potential for pocket parks



Figure 159: Illustrating the potential for pocket parks



Figure 160: Illustrating the potential for a 'green' street



Figure 161: Illustrating the potential for an 'urban' street



The next section gives an overview of the key themes emerging from the focus group discussions and surveys gathered from the authorities and ‘mixed’ stakeholder group which included: academics; NGOs and professionals with various backgrounds and interests (see Chapter 3 for more detail). The discussion notes and detailed compiled survey results can be found in Appendices E1-E5. The themes are presented in a combined manner for the authorities and ‘mixed’ stakeholders.

### 7.3.2 Reactions to the Spatial Implications

#### General Reactions

Overall there was a positive response from the ‘Authorities’ focus group to the proposals presented and participants agreed that such ideas are suitable and could be adapted to the Maltese context. The spatial ideas were also well received by the ‘mixed stakeholders’, with most respondents agreeing with the suitability of the proposals and moreover the need for them. In particular the need to maximise the use of trees in urban areas, bring nature and greenery back into our urban areas, and ensure that people have access to such spaces and nature close to where they live, was stressed.

There were a small number of participants who showed concern for the possible over formalisation of such spaces. The focus on creating natural spaces, and especially leaving natural spaces for nature rather than for people was mentioned/discussed. The introduction and provision of appropriately designed parking facilities as part of a parking management scheme was singled out as being important to the success of such proposals.

The results also identified a few aspects which require more focus than was potentially given in the proposals. These are the need to:

- focus more on the health benefits;
- identify biodiversity corridors which connect these urban spaces to the wider context; and
- ensure the consistency of the network as this is essential in providing for sustainable mobility.

#### Potential Barriers/Threats

The data also identified a number of potential barriers or threats to adopting such an approach or implementing such proposals. Table 31 summaries the main themes which were identified by both the ‘Authorities’ and ‘Mixed Stakeholder’ groups.

Table 31: Barriers and threats relating to the spatial implications emerging through the focus groups

Theme	Description/Quote
Lack of/Expense of Maintaining such Spaces	Maintenance of open spaces is often neglected or not prioritized. “I am still worried about afterwards, the implementation and maintenance. Who sustains it afterwards?”
Lack of Implementation/ Enforcement/Monitoring	The few existing policies are not being implemented. Where plans are strategic or set a vision or objectives, these are often ignored. This is linked to lack of enforcement. “All monitoring stops when the compliance certificate is issued”
Lack of Political Will	Current political will and institutional/government entities mandates/agendas do not support such proposals. “If we want to do

Theme	Description/Quote
	something we can do it (e.g. roundabouts with flowers, rigorously maintained, with all that water use etc.). It can happen, if the will is there.”
Cost Implications	The additional cost which such proposals may require was identified. “Underground costs are 10x the cost of level parking (capital cost)” The methodology for CBA <sup>95</sup> is prohibitive due to current weightings. “CBA is an economic exercise...we need to look at the environmental and social dimensions too, next to economic value.” The re-use of water is hindered due to CBA/MCA results. “In terms of water, the price of water is cheap, so any intervention will weigh heavier in the CBA.”
Lack of Popular Support/Predominance of Private Interests	Such proposals are not backed by popular support. There is the tendency to protect private property and interests over the public good. “What do Maltese people value? When they value their health, their wellbeing, at an equal footing as their income and way of movement (cars), then there would be more support for such proposals to succeed.”
Lack of/Apathy i.r.t. Public Engagement	Projects are not carried out in cooperation with the public. “you also see it is hard to convince the community, that they have a right, that they are entitled to that space. They feel resigned, that things are being decided for them.”
Car Lobby/Parking Provision	It is clear that the prioritization of cars and the demand for parking provision and vehicular access is one of the main barriers and competes for the allocation of space. “Car lobby is very powerful. The elephant in the room is that everyone wants to drive.” “Someone wanting to create a garage cannot be denied such a request...” “...if government agencies are going to keep...prioritizing cars over people, public space doesn’t stand a chance.”
Lack of Knowledge and Capacity	The question was raised as to whether the national capacity, in terms of policy makers and at a technical design level and implementation exists. Also, the lack of knowledge in relation to green infrastructure.
Lack of Integrated Approach	It was suggested that such an approach constitutes a new type of public infrastructure which requires a departure from the usual silo mentality. The various ministries take care of their own portfolio and there is no strategic coordination to address something like this and sustainable development for example. The SPED tried to adopt an integrated approach but this was not translated into educating and ensuring that the day to day activities carry it through. There is also fragmentation with regard to how legislation is enforced. It depends on which authority has control of the particular standards. It also requires consultation between Local Councils and others. This does not happen.

<sup>95</sup> Cost Benefit Analysis

Theme	Description/Quote
Lack of Supporting Framework/Driving Entity /Inappropriate Local Council Structures	“The problem is that there is no agency to develop or push for such projects.” The formation of such spaces needs to be initiated at a planning level. When local councils have ideas/plans which adopt an integrated approach it is unclear what they should do next to move forward with such proposals and get the backing and resources. It isn't clear who should drive such initiatives in the urban environment. It is also unclear as to who is responsible for enforcing and monitoring the implementation and functioning of the various aspects. This would depend on the various authorities' responsibilities. However, it is fragmented.
Lack of Guidance	“The policy regime tends to conserve the current open space. No guidance on how to improve or create new space” “What you put in the garden, what flowers, soil-sealing, there are no guidelines for this.”

A few more themes emerged which were not common to both groups. The Authorities also mentioned inadequacies in the planning system. For example, “...landscaping is overlooked in the planning process...it is retained as reserved matters...which is then not followed up.” and “Guidance is not policy. Even if a plan is against guidance, it can still be accepted.” While the ‘Mixed Stakeholders’ also identified the following barriers.

- Resistance to change.
- The time which adopting such an approach can take, especially when you consider the strategic approach to include parking management as well.
- Land availability, particularly when it comes to the larger type of spaces.

### Implications and Considerations

The data also revealed various implications or considerations which should be considered/acted upon if such an approach were to be adopted. These included the following aspects, listed in no particular order.

- The need for education of professionals and implementing parties, as well as creating more awareness and appreciation of the importance of nature in our urban areas.
- The need for sustainable development to be hierarchically higher than other ministries. The presence of a strategic coordinator, under OPM, would lead to more compliance from entities.
- The need for cabinet office to be a strategic department and not just an administrative one. This should form part of a strategic planning approach committed to at a political level.
- The need for an overriding maintenance body to integrate the needs and views of the wider context not just the local requirements of that space.
- The need to take advantage of the green deal and EU funds which in the next programming period need to be tied to climate change adaptation.
- The potential to use such projects to create green jobs.
- The need to emphasise that this is a new type of public infrastructure with benefits not limited to environmental factors but also health benefits.
- The need to consider the image and branding of this approach.
- The need for demonstration and testing through pilot projects.
- The need for, and importance of, policy to back up and strengthen the implementation of objectives. Guidance is not policy.

- The potential for planning gain/funds to facilitate and guide Local Councils in developing such projects.
- The need to consider looking at this regionally. There could already be a structure with the Local Council regions.
- The need to consider the potential for the impact assessment framework which is secondary legislation.
- The need to bring out and improve the multi-functionality of such spaces.
- The need for the network to be consistent as in order to really facilitate sustainable mobility, the whole network needs to support this and not just strategic links.
- Concurrently due to the long-term nature of a strategic approach, short-term intermediate solutions should also be devised, thus also identifying the importance of phasing.
- The need for such an approach to be encouraged and facilitated at policy level. Such spaces need to be informed at policy level, in this way actors would be more encouraged to push for such changes.
- The need to involve the local community in the design of the spaces and the policy proposals.
- The need to use such spaces to maximise the contact with nature so that people have the “opportunity to build a connection and relationship with nature from childhood.”
- The vegetation design would need to be developed in more detail so to ensure that it creates the positive impacts for biodiversity and benefits for the local community.
- The need for enforcement and control in terms of legislation and policy implementation as well as management of such spaces.
- The need to focus more on the health benefits of such spaces, in terms of the therapeutic aspects and also increase in social interaction.

### 7.3.3 Planning Proposals

Based on the initial set of proposals outlined in Table 29 and the literature presented in section 6.2 p244, the planning proposals were developed. The need for multiple tools to be adopted at varying scales was identified. Such tools could include: strategic initiatives; plans and implementation programs; guidelines and models; policies and standards; stakeholder participation and legislation. It was not possible to present all of the various tools to the focus group participants. Therefore, a presentation was developed including the ones which best addressed the results of phase one. The proposals were grouped according to four main categories.

- Spatial Planning Measures (1).
- Development of Guidance (2).
- Development of Policy and Standards (3).
- The Planning Review Process (4).

An overview of the proposals presented is provided in Figure 162. The detailed presentation can be found in Appendix D5 while the survey used during the sessions can be found in Appendix D7.

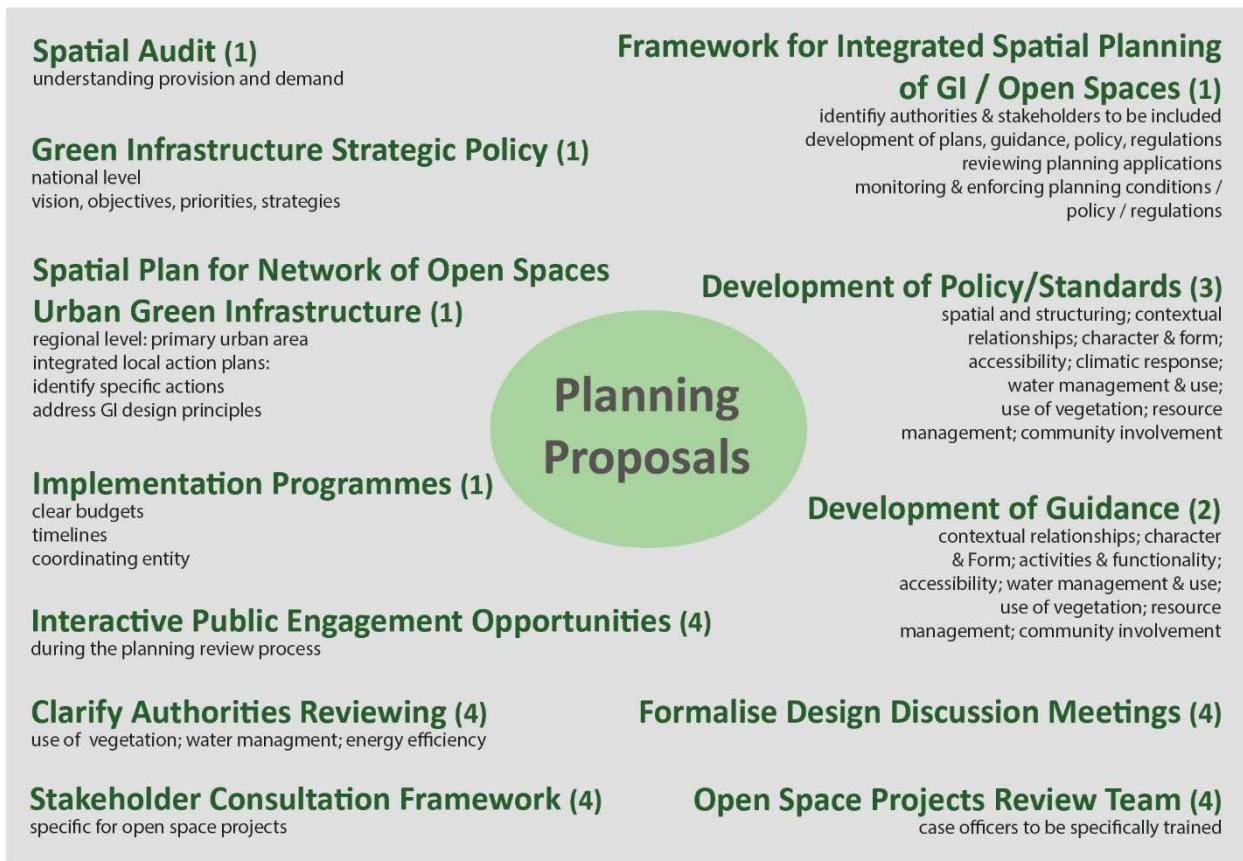


Figure 162: Planning proposals as developed for the focus groups

### 7.3.4 Governance Proposals

The governance proposals were also developed based on the initial set of proposals outlined in Table 30 and the literature presented in section 6.3 p260. The literature identified the need for a long term and integrated approach to be adopted as well as the use of innovative governance mechanisms such as active citizen approaches. The operationalization aspects identified relate to: community involvement and grass roots initiatives; involving the private sector; management and maintenance for place keeping; assessment and auditing tools; resourcing and funding; and the use of pilot projects.

Ultimately the literature also identified the need for a body to drive and coordinate such initiatives. Again, it was necessary to prioritise what to present to the focus group participants. The proposals were grouped according to the following categories.

- Developing Knowledge (1).
- Implementation and Generating Funding (2).
- Pilot Projects (3).
- Involving the Private Sector (4).
- Engaging Civil Society (5).
- Maintenance and Management (6).
- Potential 'Governance' Models (7).

An overview is provided in Figure 163. The detailed presentation can be found in Appendix D6 while the survey used during the sessions can be found in Appendix D8.

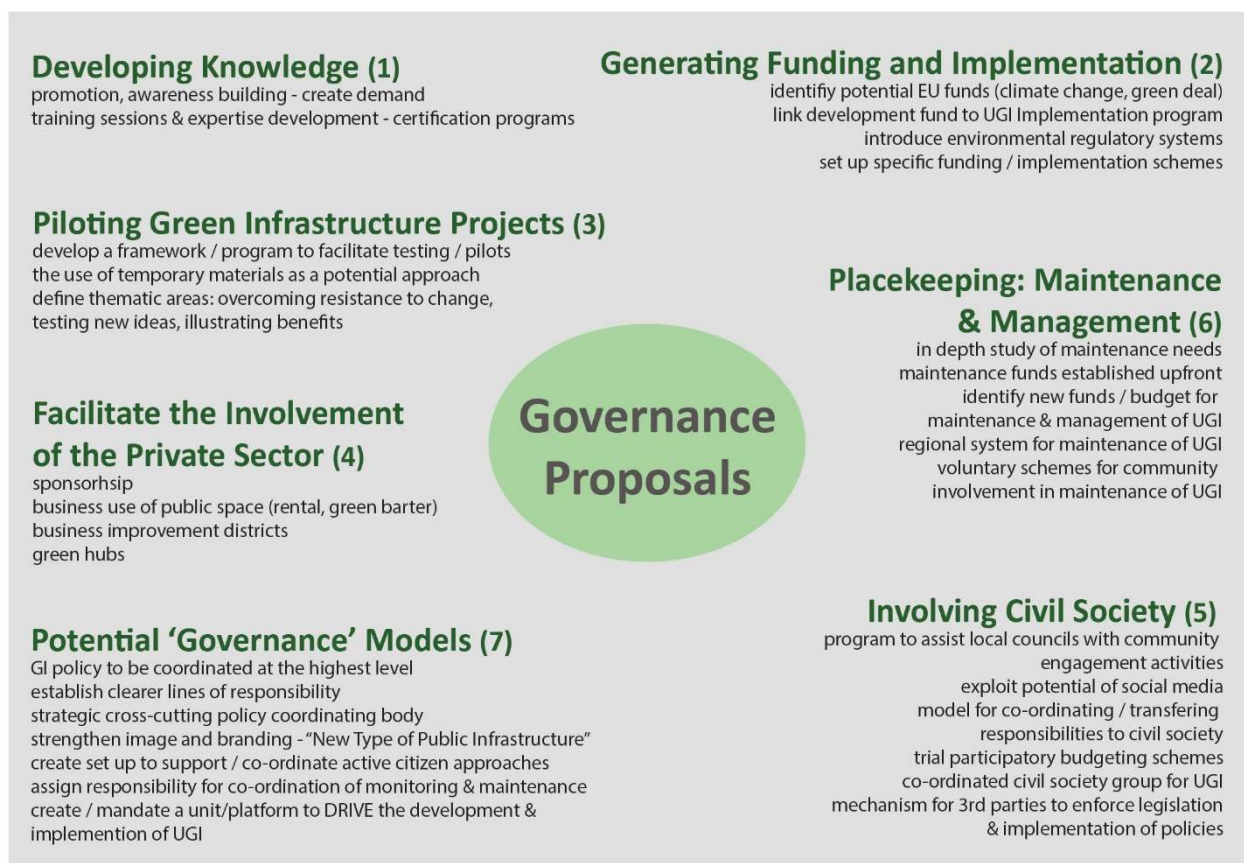


Figure 163: Governance proposals as developed for the focus groups

## 7.4 Results: Reactions to Planning and Governance Proposals

This section presents the compiled results of the focus groups concerning both the planning and governance proposals. They are consolidated according to four themes: Level of Agreement/Disagreement; Potential Barriers to Implementation; Addressing Multifunctionality and Identifying Remit; and Emerging Considerations. A more detailed account of the results can be found in Appendices E10 and E17.

### 7.4.1 Level of Agreement/Disagreement

#### Spatial Planning Measures

Overall most of the participants 'agreed' or 'strongly agreed' with all five of the proposals. These were to develop: Spatial Audits; A Stakeholder Framework for Integrated Planning of Open Spaces and Green Infrastructure; A Green Infrastructure Strategic Policy and Plan; A Spatial Plan for a network of Open Spaces/Urban Green Infrastructure; and Implementation Programmes. There was also agreement that:

- planning gain funds<sup>96</sup> should be directly linked to implementation programs for open space and green infrastructure projects; and

<sup>96</sup> See Section 6.3.8 p269

- legislation should require the development of planning tools such as a strategy and plan specific for green infrastructure/open space networks.

When asked whether they would change or add anything, some of the key suggestions made were to:

- include blue infrastructure and sustainable waste management within the themes to be addressed (while this was intended, it clearly needs stronger emphasis); and
- include agricultural areas.

### Development of Guidance and Policy/Standards

All the participants either 'strongly agreed' or 'agreed' with the principle of developing guidance and policy or standards. In general, most participants also 'strongly agreed' or 'agreed' with the design categories suggested as thematic areas for such guidance and also those suggested for policy/standards.

Some of the comments made in this regard were as follows.

- The guidance should be enlightened and not prescriptive.
- Both the guidelines/standards should ensure that through them a development is rendered more interesting due to the inclusion and integration of open spaces, otherwise they would be interpreted as a reduction of development space.
- Ensure that the policy should have a clear hierarchy of interrelated documentation with clear timelines and inbuilt mid-term reviews and flexibility to adapt.
- Ensure that the guidelines are subsidiary but that the policies request GI implementation especially in public and in major projects.
- Include enforcement policies for public entities which would condition the use of public funds to the fulfilment of national strategic objectives.
- With detailed policy in place, it would make it easier for case officers to have a stronger argument in favour of open space.
- A policy should exist where buildings/projects have to incorporate an 'X' amount of greening calculated according to the size of the project. This could be more of a guideline in the case of smaller projects.

### The Planning Review Process

In this case again most of the participants either 'strongly agreed' or 'agreed' with the proposals. In the case of the suggestion for a specialised team for reviewing open space projects there were two participants (1 from the 'authorities', and 1 from the 'mixed stakeholders') who disagreed with this idea.

When asked whether they would change or add anything, some of the key comments were as follow.

- A simpler and more coherent approach.
- That the non-response of external consultees is not assumed to be consent (as per S.L.552.13; LN 162 of 2016<sup>97</sup>).
- That public engagement should not only happen at review stage. The example of creative workshops at design stage was mentioned.

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<sup>97</sup> This subsidiary legislation regulates the procedure for planning applications and their determination. In relation to consultation this determines that failure by internal and external consultees (which includes public entities) to submit responses by the established time-frames, constitutes a no objection by the consultees (GoM, 2016).

- To eliminate the specialised team and placing decision-making in the hands of the community, whose members can decide based on the advice of experts/key authorities.
- To involve the community in the management and care of such spaces.
- If authorities were to publish requirements as subsidiary legislation, “then conformity would not need consultation for every project”. The responsibility would then also be on the designer to demonstrate compliance. “So, interaction with the public is very important. ‘Stakeholder’ consultation less so, if guidance is clear.”
- The creation of a specialised team would risk creating a minority since the rest of the units/sections will not appreciate the promotion of open spaces. “A more open approach across the different units/sections, such that most of the concerned staff embrace the concept of improving open spaces, may prove more beneficial in the long term.”
- The need for the involvement of multi-disciplinary competencies from national resources as the planning authority cannot realistically recruit all aspects of expertise itself.
- A consultative committee similar to the Agricultural Advisory Committee and Design Advisory Committee, with representation from relevant entities to assess planning application as a "one stop shop" from the point of view of GI.
- The inclusion of a CBA expert.

### Developing Knowledge: Expertise and Awareness

Almost all of the participants either ‘strongly agreed’ or ‘agreed’ with the three proposals put forward. There was just one participant who was neutral to the idea of training sessions. When asked whether they would change or add anything, some of the key suggestions were as follows.

- To include climate change adaptation and mitigation and the detailed study of storm water flows and the management of natural water courses in the list of themes for education at the professional level.
- To include the following themes: benefits of green infrastructure and nature-based solutions; using and upkeep of indigenous trees and planting; biodiversity and provision of ecosystem services; paths and street furniture; integration between different spaces and uses.
- For the training to be run by educational establishments so that certification would be possible and for it to be used as an asset for the persons to offer a service. Such certification could also be linked to the Malta Qualifications Framework.
- The establishment of a new role for professionals as opposed to relying on generalists.
- The inclusion of monitoring and research to investigate the rate of success and trends and contribute to knowledge building through research.
- To ensure that training also needs to engage experts in adult learning and not just experts in the study area as there are particular ways on how to train adults and communicate effectively.
- To ensure that a communication campaign is combined with what engages people and what could really create the desired behaviour change.
- To make such training a requirement for persons working in the planning sector, transport mobility and design of infrastructure.
- To use stakeholder surveys linked to information sessions as a kind of informal education.
- For such training to be online so that people can follow it in their own time.



## Generating Funding and Implementation

Again, the participant's mostly 'strongly agreed' or 'agreed' with the four main proposals. Four participants were neutral when it came to the creation and merging of new funds and a further four were neutral regarding the introduction of environmental regulatory systems (taxes). In relation to the different areas identified as requiring funding, again most participants 'agreed' or 'strongly agreed' with them. There were a few who scored neutral, while one participant disagreed with the thematic areas regarding: 'provision for cyclists' and 'traffic management schemes'. There were mixed feelings regarding how realistic it is to increase funding through tools such as taxation and planning gain, with the 'mixed stakeholder' group being slightly more optimistic than 'authorities'. These are summarised in Figure 164.

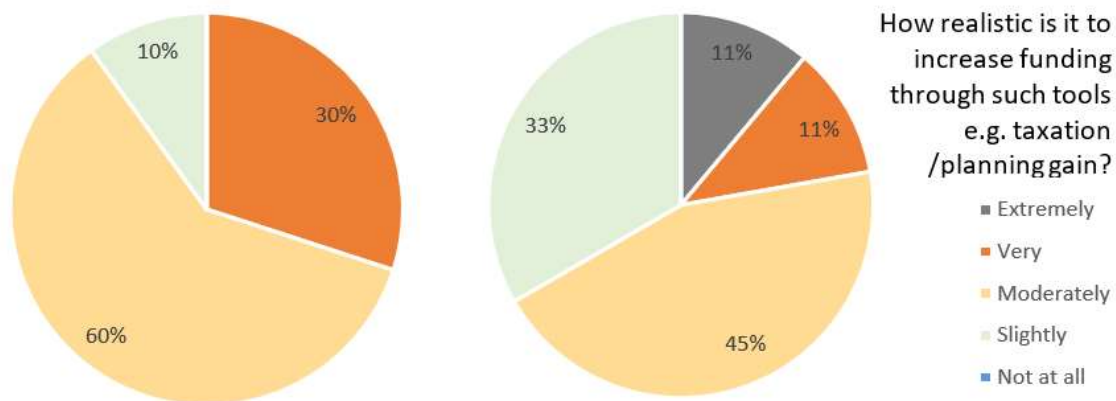


Figure 164: The scoring given by stakeholders and authorities respectively

The key suggestions and reasons given when participants disagreed are as follows.

- Funding should be organised to include various aspects and not just individual ones.
- Local Councils might require more assistance to encourage them to propose local improvement projects that can benefit from such funds.
- There could potentially be a specialised team for EU Funds directly related to environmental projects to facilitate the process to make the best of such funds and assist participants through the process.
- To ensure that national allocation of EU funds (Operational Programme) includes greening of accessible open spaces as part of urban infrastructure upgrading so that national funds are already directed there.
- Consider the creation of national trust funds.
- Consider linking the design improvements to the creation of ecosystem services as an approach.
- Some aspects should not be dependent on successful funding applications they should be improved as a priority.
- Develop a dedicated budget in relation to an integrated plan to be implemented by a government authority in collaboration with Local Councils.

## Program/Framework for Pilot Project

All participants either 'agreed' or 'strongly agreed' with the proposal to have a specific framework or program for the development of pilot projects. On the other hand, the proposal to use temporary materials as a potential approach had mixed responses as illustrated in Figure 165.

To what extent do you agree / disagree with the use of temporary material as a potential approach?

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

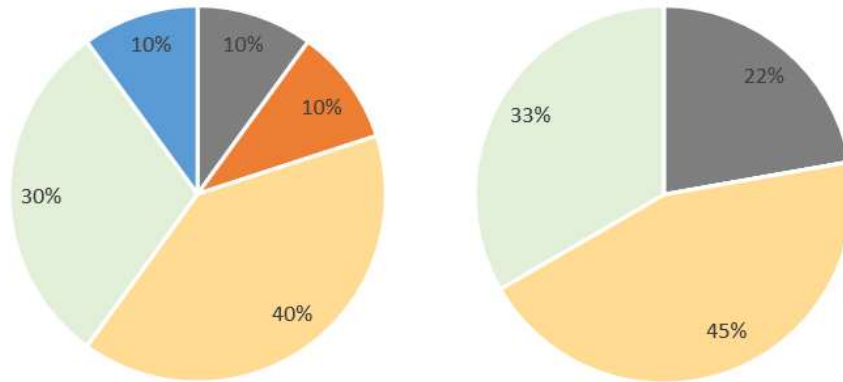


Figure 165: The scoring given by stakeholders and authorities respectively

Overall, the participants ‘strongly agreed’ or ‘agreed’ with the thematic areas identified in relation to the need for testing. There were one or two participants who ‘disagreed’ or ‘strongly disagreed’ with some of them. These concerned: sustainable urban drainage systems; the integration of vegetation in grey infrastructure; community involvement schemes; including renewable energy sources in open spaces; and shifting on-street parking to centralised parking locations. Some of the reasons given for such disagreement are as follows.

- To include the word ‘safe’ in the statement on integrating vegetation in grey infrastructure.
- Some of the aspects are urgent and cannot be limited to pilot projects but should already be mandatory and automatically included in new projects e.g. shifting of on-street parking.
- It was felt that since the shifting of on-street parking would require an initial capital cost for building parking facilities this might not work as a pilot project.

When asked for changes or additions, the key suggestions were as follows.

- Consider developing methodologies for feasibility/cost benefit assessment for GI projects which adequately represent environmental costs/benefits.
- Include intelligent and flexible waste management systems.
- Include gradual roll out in terms of time and not just space.
- Include the growing of food in an urban environment.
- Pilot projects should not stand alone but be part of a wider strategy and master plan with the intention to roll out nationwide.

### Involving the Private Sector

In relation to these proposals the participants mostly ‘strongly agreed’ or ‘agreed’. One of the proposals did have three participants who disagreed. This was the proposal where businesses use public space for commercial profit through payment (lease/licence). When asked for changes or additions, the key suggestions were to:

- clarify the role of public entities relative to businesses;
- establish clear and appropriate parameters and standards which protect the public interest and ensures that socio-ecological considerations are prioritised;
- include the involvement of the Chamber of Commerce and Malta Industrial Parks; and
- determine clearly the timeframes and permanency of such collaborations.

## Involving Civil Society

In this case most of the participants ‘strongly agreed’ or ‘agreed’ to all of the proposals. When asked for changes or additions, the key suggestions were to:

- include the introduction of small allotments in public owned land;
- include youth groups and schools and build on what ECO Skola are doing; and
- recognise the importance of engaging with people physically in the spaces and diversifying the outreach and not just to depend on social media.

## Place Keeping: Maintenance and Management

Overall, the participants ‘strongly agreed’ or ‘agreed’ with the proposals. One participant disagreed with ‘establishing maintenance funds at project inception’ and another with ‘community voluntary schemes for maintenance’. When asked whether maintenance should be outsourced admittedly a good proportion responded ‘I don’t know’. However, from those who felt confident in responding, most replied ‘yes’, while only one participant said ‘no’. The following key suggestions were also made.

- The use of bank guarantees to ensure upkeep.
- An emphasis on local climate needs to be included as part of the in-depth study.
- The focus of the regional system does not necessarily need to be on carrying out the maintenance but more on monitoring the maintenance levels and status particularly if the spaces are part of a network. It would need to safeguard the continuity and connectivity of the different maintenance parts which are assigned to different entities for example.
- Ensure that maintenance forms an integral part of project planning and design.
- To ensure that maintenance needs are also considered in decisions concerning materials and plants.
- Address the issue that tendering processes often demand that contractors go for cheapest solutions, when these may not be the most sustainable materials or the most durable.
- Draw up guidelines for architects and project managers to guide choices in the design phases and build a team who can coordinate maintenance for the future.
- Make a greater emphasis on the private sector involvement.
- Identify detailed maintenance needs as that will dictate whether it can be handled by volunteers.
- Consider not having a completely outsourced system so that the governing body/government agency managing a project would not lose all technical knowledge. This is important if the governing body is to retain the knowledge to challenge/monitor a third-party contractor’s maintenance performance.
- Outsourcing could be considered on a case-by-case basis as ideally it would be kept “at source”.

## Potential “Governance” Model

There were mixed feelings overall with regard to the proposals concerning governance as can be seen in Figure 166. By looking at how the responses are split the various proposals can be split as in Table 32. This gives an indication of the overall level of importance and how such proposals may be prioritised.

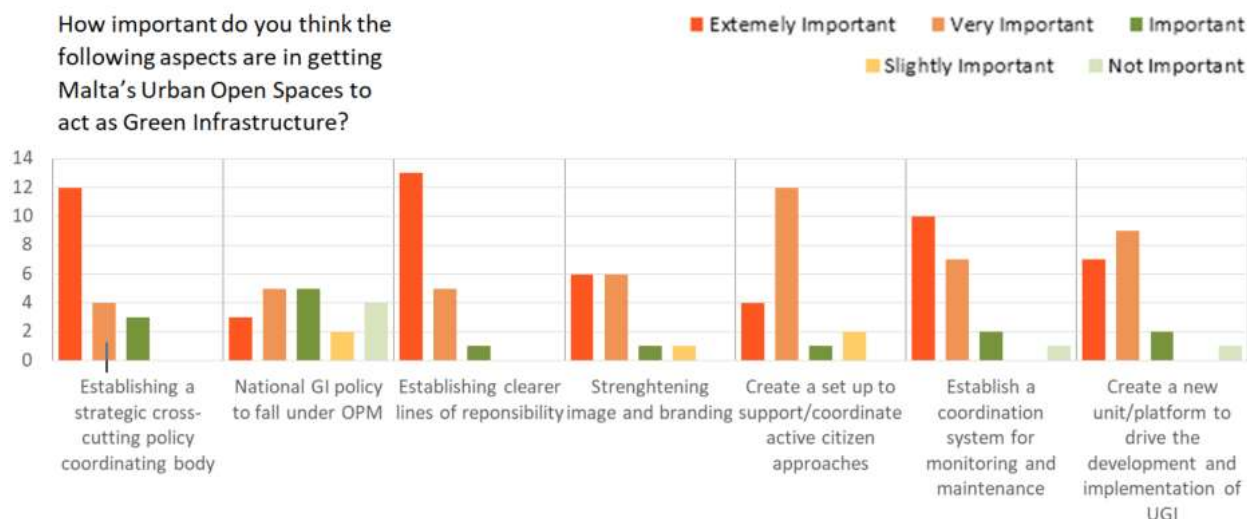


Figure 166: Compiled scoring as attributed by all participant groups

Table 32: level of importance associated with 'governance' model proposals

Preference for Extremely Important	Preference for Extremely Important or Very Important	Split Extremely Important, Very Important, Important	Mixed Scoring
Establishing a Strategic Cross-cutting Policy Coordinating Body	Establishing a Coordinated System for Maintenance	Strengthen Image and Branding	National GI Policy to fall under OPM
Establishing Clearer Lines of Responsibility	Create a new Unit/Platform to DRIVE the development and implementation of UGI	Create a set-up to support active Citizen approaches	

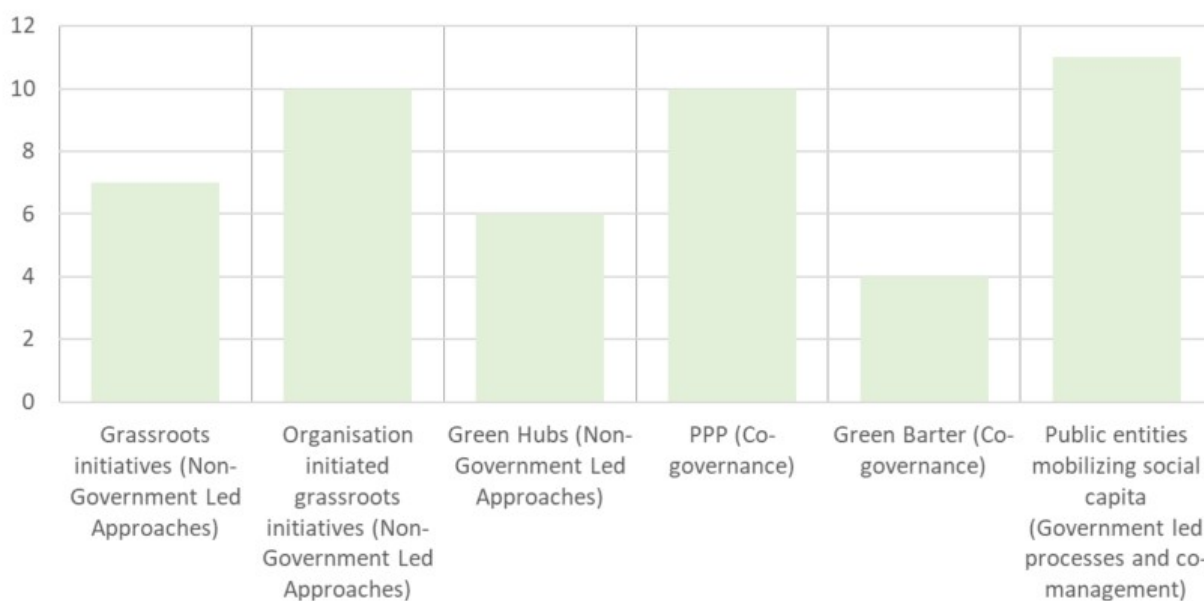


Figure 167: Which active citizen approach do you think would work best for Malta?

With regard to suitable active citizen approaches, Figure 167 shows which types the respondents preferred with the following three emerging as most popular: Public entities mobilizing social capita; Public Private Partnerships; and Organisation initiated grass roots initiatives.

When asked to suggest any changes or additions to the proposals under this section, the following key themes emerged.

- The use of intelligent monitoring systems to provide alerts and facilitate prioritisation of efforts.
- The need for proposals to be reflected in legislation.
- Rather than OPM having direct involvement or leading such initiatives, there would need to be cabinet endorsement.
- The need to create an annual budget for the development of new projects (CAPEX) and more importantly for their operations and maintenance (OPEX). There should be a line item in the National Budget.
- The potential for a guardian for open spaces approach rather than a new unit. This would include a green champion in each ministry with a clear set of terms of reference and a rotating chairmanship to coordinate the initiative.
- The potential for Infrastructure Malta to be responsible for the implementation and operational aspects as they should be responsible for good infrastructure in general and not just vehicular infrastructure.
- The need to meet with Local Councils to discuss their needs and views as part of establishing lines of responsibility. This is essential to ensure active participation and drive.
- In general NGOs provide the knowledge and motivation and the private sector can act as the commercial support with authorities facilitating the integration of both.

Finally, Figure 168 to Figure 170 illustrate the participants’ thoughts as to the potential responsibilities or characteristics of such a unit/platform. When the respondents were asked if they would include anything else, the following items were suggested.

- Serve as a consultee in the assessment of major projects with respect to GI implementation.
- Secure funding apart from coordinating funding schemes.

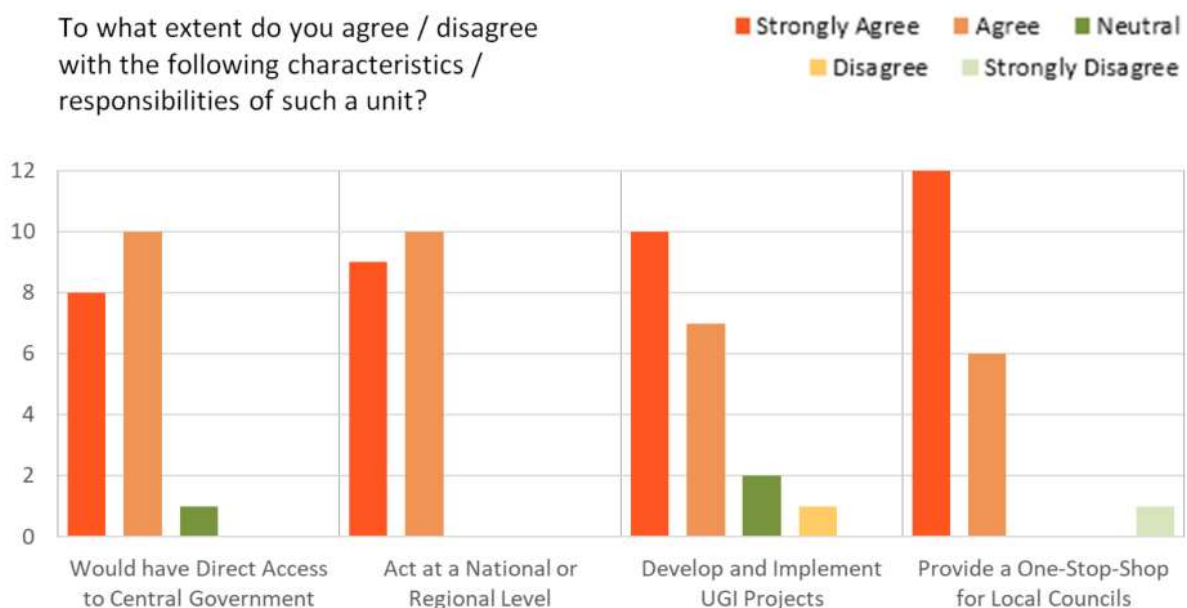


Figure 168: Compiled scoring as attributed by all participant groups

To what extent do you agree / disagree with the following characteristics / responsibilities of such a unit?

Strongly Agree Agree Neutral Disagree Strongly Disagree

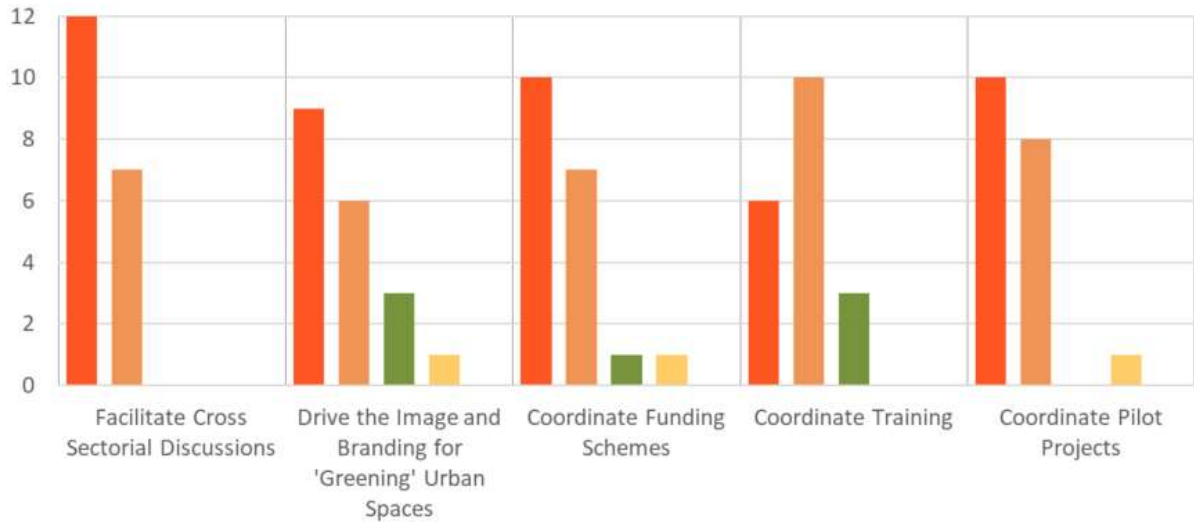


Figure 169: Compiled scoring as attributed by all participant groups

To what extent do you agree / disagree with the following characteristics / responsibilities of such a unit?

Strongly Agree Agree Neutral Disagree Strongly Disagree



Figure 170: Compiled scoring as attributed by all participant groups

### 7.4.2 Potential Barriers and Threats to Implementation

For each set of planning and governance proposals, the participants were asked to identify any potential barriers to implementation. Analysis of the responses identified a number of recurrent themes both in terms of barriers but also potential threats. Table 33 summaries the themes and identifies whether they were mentioned for planning or governance proposals or both. (1=Planning; 2=Governance) The first set of themes highlighted in green are those which emerged strongest.

Table 33: Barriers and threats emerging through the focus groups

Theme	Description/Quote	1	2
Car Centric Mentality/Lobby	The need to overcome the prioritisation of parking and vehicular movement over pedestrians/use of space for recreation and people was repeatedly mentioned. Resistance to shift parking to free up space would not only be from the authorities but society in general. People might not be willing to walk 5 mins to/from a centralised parking facility.		
Financing Availability and Cost Implications	The lack of sufficient funds for implementation, maintenance and even building the necessary capacity. "More specific funding is required to give steady development and direction." Resistance due to the associated costs particularly if planning gains or regularity instruments are imposed.		
Lack of Knowledge/Awareness/Human Resources/Skills/Capacity Building	The lack of capacity and expertise was mentioned as existing throughout authorities, entities, Local Councils and the profession in general. GI is a novel concept in Malta, and there can be misunderstandings in the actual meaning and also appreciating the value of such infrastructure. This could hinder/delay the development of proposals. This could result in difficulties to: source experts for training; implement pilot projects; carry out maintenance etc.		
Lack of Integrated Approach/Working	There is a general lack of collaboration and coordination between authorities and entities. The concept of interdisciplinary planning is not the norm and there could be institutional resistance when individual agendas/interests are prioritised. This working cultural also affects the implementation of projects.		
Fragmentation and Lack of Clarity/Ownership i.r.t. Remits	The overlap and fragmentation of remits between authorities/entities results in a fragmented approach at administrative level. A better definition of roles is required at the level of overall governance and with regard to implementation and enforcement. The aspect of who would take ownership was mentioned i.r.t. to: knowledge building; pilot projects; involvement of civil society; and maintenance.		
Lack of Political Will /Mandate	The need for political and stakeholder will and vision related to the fact that the provision of GI is currently not a priority emerged strongly.		
Socio-Cultural/Lack of Social Demand	The resistance by residents to such spaces primarily due to competing demands for use of space. In Malta GI is not yet seen as a priority by society. Such spaces are not necessarily what society wants. "Abroad you would be shot down if you suggested developing in a park. Here it seems to be acceptable, isn't that the biggest challenge? Creating a culture for wanting urban open spaces?" "...companies may struggle to 'sell' such involvement to their shareholders and to convince these of the long-term profitability of this."		

Theme	Description/Quote	1	2
Land Ownership/ Property Rights	There is the perception of ownership of public space in Malta, the need to try and claim space for oneself, the prioritising of vested interests and the concept of Nimbyism. Land ownership and property right were mentioned as an initial hurdle to the pilot projects.		
Lack of Implementation and Enforcement	There was a strong sentiment that unfortunately even though plans and guidance are developed, they are often not implemented, are disregarded and not enforced. The importance of mandatory prescriptive obligations as opposed to “guidance” was mentioned.		
Lack of Interest	This could affect the: involvement of civil society; and the take up of training particularly by those who need it most. “The enlightened would take the courses. Those who badly need them would not.”		
Lack of Continuity	This was raised in relation to: administrative changes in Local Councils; pilot projects not leading to further projects; transfer of knowledge building; long term volunteering; and maintenance requirements.		
Unbalance Use by the Private Sector	In relation to involving the private sector, agreements might be abused, or not honored (e.g. providing space for the public) such that private business interest will take over the public’s right to enjoy such spaces.		
Maintenance Requirements	Such spaces are considered difficult to maintain and locally there is a trend in the inadequacy to plan and implement maintenance programs.		
Development Lobby	The constant pressure to use any open space as development potential. This could hinder some of the proposals for generating funding.		
Lengthy Processes/ Time Implications	The time to develop such measures and the possibility that some of the measures might lengthen the procedure for assessing planning applications. Also, “Pilot projects can take very long and in urgent projects, they may not make sense.”		
Resistance to Change/New Methods	The concept of resistance to change, for whatever reason or difficulty which such changes would bring, not because of the particular issue but simply because it is a change in the current way of doing things. Also, if challenges are faced during pilot projects this might be used as an excuse/justification to abandon such initiatives.		
Lack of Long-Term Planning/Vision	The short term 5-year political cycles tend to govern/influence planning approaches. The short time frames which are often allocated to various task forces to develop a way forward on the topic is often too short to develop ideas sufficiently.		
Economic Model/ Valuation of Open Space	Such proposals could be seen as happening at the expense of economic development/growth. The use of floor space for GI might be considered as insuring only costs without profits, as opposed to other potential uses. Post COVID 19 the question of whether the economic model needs to take account of socio-ecological pillars so as to ensure a more resilient and sustainable development is being raised. “The demand to strengthen/enhance the economy is much stronger than the perceived importance of such policy.”		



Theme	Description/Quote	1	2
Planning Gain Abuse	<p>Planning gain as an instrument can be abused of and used to justify anything done by a developer. It is often used as an excuse to justify negative impacts of developments without the casual mitigating actions being implemented, resulting in merely the transfers of funds from one authority to another (e.g. Infrastructure Malta to Planning Authority).</p> <p>“...one has to have a robust planning policy so as to ensure that such instruments are not abused or used to validate anything.”</p> <p>“Sometimes it is as though because a construction is made through planning gain then it’s ok to have the negative impacts.”</p>		
Implementation: Development Permits	The extent to which the principles identified under the knowledge building proposals will actually be applied to development applications. GI is sometimes incorrectly looked at as a landscaping/aesthetic aspect which is often retained as a “reserved matter” in planning permits.		
Lack of Measurement Tools	“Lack of interdisciplinary tools and methodologies that can be used to assess the effectiveness of measures”		
Lack of Trust	“lack of trust by the different stakeholders”		
Dependence on Retrofitting Potential	The fact that this would have to be done as a retrofitting exercise which could limit the potential of what can actually be achieved.		
Water Scarcity	The availability of water as a natural resource which would be needed to maintain such spaces.		
Civil Service Performance	This might hinder the maintenance of such open spaces.		
Cultural Lethargy	Indifference by citizens stemming from a lack of faith in authorities due to a history of not engaging with the community could hinder initiatives to involve and engage with civil society.		
Green washing	Calling projects “green” but in actual fact they wouldn’t be.		
Inadequacies with Funding processes	These include: laborious and inflexible processes; unrealistic timeframes; and matching needs to funding period can be tricky.		
Lack of Agreement	Agreeing on a common approach. “society is very complex and the needs and gains of different people are diverse”		
Lack of Commitment to GI/Lack of Vision /The Wrong Perspective	The real commitment to GI is not there yet and when things become difficult or affect other stronger sectors, there will be a pull back. Also having the wrong perspective about what such improvements are about. Sometimes the agenda of what wants to be achieved is not necessarily clear or open to the real goals of GI.		
Lack of Education Options	The lack of inclusion of such training in CPD modules within professional institutions.		
Existing Work Load	Existing workloads could hinder the take up of training initiatives.		

Theme	Description/Quote	1	2
Legal	The possibility of legal barriers was mentioned particularly i.r.t. the private sector involvement. However, this can be overcome “since knowledge on private sector involvement in managing public infrastructure is available and there have been positive experiences in this respect.”		
Political Influence	The influence of political power often determines where projects happen, in which constituencies. It can also lead to the wrong people being assigned to an important job.		
Public Procurement Limitations	Public procurement limitations could hinder the involvement of civil society.		
Reluctance to Share Authority with Citizens	The involvement of civil society could be hindered by the reluctance to share authority with citizens.		
Public Engagement Skills	If public engagement is not done well and doesn’t adopt the right skills it can do more harm than good.		
Unlinked Taxes	“Taxes go into one pot and are not earmarked so that could be a problem.”		
Vandalism	The possibility of vandalism might discourage commitment.		

### 7.4.3 Addressing Multifunctionality and Identifying Remit

Through the survey the focus group participants were asked to comment on which authority/entity would be responsible for leading the various proposals (section 7.3.3 p298 and 7.3.4 p299). The compiled analysis of the responses in relation to each set of proposals can be found in Appendix E10 and E17. The sub sections below give an overview of the key suggestions.

#### Planning Proposals

Firstly, the diversity in responses confirms the lack of clarity in who should be leading or coordinating on such measures. In relation to the spatial planning measures, responses varied with the PA, ERA, the Ministry for the Environment and even Local Councils being mentioned. It was also acknowledged that this needs to be a collaborative approach between different entities depending on the different functions. Furthermore, it was suggested that strategic measures such as the national strategy would happen at ministerial level, while a legislative/policy framework would be more the remit of PA and ERA to take the lead but in direct communication with other entities such as TM/IM, WSC, Local Councils, Ambient Malta etc. It was also suggested that:

“There should be an entity which is set up with this particular aim. This should be a new entity which would need to work with other existing entities and it would need enough personnel and budget to connect the existing entities (such as PA, ERA, AM etc.), together.”

However, one might argue that this would replicate or create overlapping of existing remits. In relation to the development of guidance, policy and standards the idea of a multidisciplinary team surfaced which could be a working group with representatives from various entities and led by PA, ERA or even the

Ministry for Environment and Planning. Various entities or institutions would need to contribute depending on expertise and because of overlapping remits. It could also include stakeholders such as NGOs, BRO, the Maltese Standards Body, University of Malta and the Chamber of Planners. Again, the suggestion was made that:

“...there should be a fresh entity set up to lead this. Input from various existing authorities will surely be required. This should be an effort on a national scale.”

### Governance Proposals

In relation to the development of knowledge, various options were mentioned which would include collaboration between various entities, sectorial experts and educational institutions. There could also be scope to: obtain external guidance from experts from EU countries/cities; or train the trainers in specialised institutes overseas and then organise training sessions in Malta. Candidates mentioned as potentially taking the lead included: PA, ERA, LCs, Environment Ministry, Ambient Malta, Parks Malta, LCA, BICC, UOM, and MCAST. It was also suggested an academy would exist for this specific purpose including all leading experts in the field. However, this seems unnecessary considering that various educational institutions exist which could provide such a function. The point of collaboration between different entities and institutions is, however, important.

In relation to generating funding and implementation, there were some suggestions which retained a fragmented approach. Such as “Each Ministry would be responsible for submitting its own applications” or “The competent authority responsible for the regulatory aspect e.g. Water (ERA), Mobility (TM) etc.” However, such projects would include various remits and GI aspects within the same project. Other participants acknowledged this and leaned towards a more co-ordinated approach with different entities identified as potentially taking the lead such as PA, Ambient Malta, ERA, PPCD<sup>98</sup>, Finance Ministry, LCA or Projects Malta. It seemed clear however for the ‘Authorities’, that an existing entity should be identified and not necessarily a new one. The fact that different suggestions were made, makes it apparent that currently the remit for managing the implementation/funding programs of such projects is not clear. A point was made that this can be given to whichever entity is given the overall responsibility, however, if the funds are linked to planning gain then probably it would be the planning authority which is involved, though this need not necessarily be the case.

Concerning the pilot projects while it is true that such projects are usually proponent driven and could include entities such as: Infrastructure Malta, Local Councils, Ambient Malta and even developers of private major projects, there needs to be an element of coordination. The issue with proposals which suggest “the respective entity”, is that such projects would probably concern different entities e.g. water, transport, vegetation, so who would actually lead the project? It was suggested that the University of Malta could also potentially play a strong role since these are new areas for the Maltese Islands and there will necessarily be a strong element of needing to research, try things out and learn as we go along. Another was that different collaborations could be set up depending on the thematic area. For example, Friends of the Earth is already involved with initiatives to develop urban gardens for food cultivation, so they would be a useful partner if looking at pilot projects in this area.

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<sup>98</sup> Planning and Priorities Co-ordination Division

However, a very relevant point was made, that due to technology involved, this could need the expertise of a professional body coordinated under a centralised body. Another potential suggestion was that the entity responsible for the strategic policy for the provision of green open spaces in Malta, should oversee the process whilst implementation of projects could then be done or led by a respective entity at community level which could be Local Councils, government departments or even private sector or public private initiatives. In conclusion therefore, it could be established that while collaborations could be created for projects, and various public or private parties could be project proponents, there needs to be an element of coordination overseeing the implementation due to the various expertise and input of different sectors which would be required. This role therefore needs to be properly mandated and resourced with the aim of driving, coordinating and researching the implementation of such projects.

There were various suggestions in relation to who would lead or coordinate the involvement of the private sector. Naturally the type of initiatives mentioned are entirely up to the private entity themselves such as sponsorship, or for example in the case of BIDs<sup>99</sup>, which would be led by the private sector. However, there could still be a coordinating role to oversee and facilitate how such schemes could work. This was recognised in some of the suggestions, with Ambjent Malta being mentioned as a potential candidate, the Ministry for Environment, the Malta Tourism Authority, the Lands Authority, the Ministry for Sustainable Development or any entity really which is actually given the governing role but naturally allowing initiatives from businesses and the community. It was also suggested that a new entity or agency could be set up, which connects the private sector with the Local Councils.

With regard to the proposals for engaging civil society, it was suggested that such proposals could be led by civil society that gathers support from government or by government which would put forward funding mechanisms for the Public and Local Councils to take up. Several entities or organisations were mentioned these being: Ambjent Malta; Ministry for Social Dialogue; Local Councils; Lands Authority; NGOs/Civil Society Organisations; Schools; Ministry of Finance; Local Council Association. One suggestion was that this would be the remit of “Entities which are involved in the matters in question”. However, such initiatives would include various matters concerning a number of entities. So again, there needs to be a coordinating role. Ultimately, as one of the participants suggested, this would probably need to be coordinated by Local Councils and central government through a specifically appointed authority dedicated to such green initiatives.

In relation to the proposals concerning maintenance and management, the participants were asked: “If a regional system for maintenance had to be set up, who/how would this be co-ordinated?” The main suggestions included the following.

- The Local Council Regions could oversee the process. These are set up by law under Local Government Act. However, they need to be considerably beefed up.
- The entity responsible for the strategy would need to be the coordinator.
- There could be a national system which would be coordinated by Ambjent Malta and/or Tisbieh Malta.
- Led by central government/one entity with coordination with the regions and the local councils.
- The finished projects would be handed over to a central body or unit to coordinate the management. They would need to have a budget for this and could then work together with Local Councils or even NGOs/community for simpler tasks (planting, weeding, cleaning). In the

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<sup>99</sup> Business Improvement Districts

Netherlands there is a day ([www.natuurwerkdag.nl](http://www.natuurwerkdag.nl)) when people can help out with maintenance of landscapes in their locality. There is a coordinating body, a list of tasks, instructions etc., but then the work is just carried out by members of the public who want to contribute and spend a day working in nature.

- The Local Council Association.
- Environment Resources Authority.

Finally, the last set of proposals was in relation to potential governance models. The proposal was made for the setting up of a new unit or platform. The participants were then asked: “In the case of a new unit/platform, which entity/ministry would manage it? Or how would you see it working?” The following is a summary of the relevant suggestions.

- The Ministry responsible for Environment and Planning.
- Ambjent Malta or the Regional Councils. However, they need to be given the mandate and the resources.
- The ministry responsible for the overall strategic policy to deliver green spaces.
- A project-oriented platform such as Projects Malta in close contact with Regional Councils and Local Councils.
- Noting the various remits involved, a possibility would be to have the platform under the auspices of the ministries responsible for environment, planning and sustainable development.
- Ambjent Malta for small projects potentially upgrading existing open spaces. However new major national projects should be undertaken by Infrastructure Malta.
- Either one of MTIP, MECP, ERA, PA, as long as the roles are clear and they are at par when the strategic vision is developed (not developed as an initiative by one and then asking others to join) It would be best if it is started through cabinet with direct involvement/identification of the other key players from the start, top-down in parallel, not top-down and then sideways.
- A new Unit: The Green Infrastructure Coordinating Unit/Agency under OPM.
- The Environment Ministry together with SD (sustainable development or social dialogue??) Ministries.
- An OPM task force. It's so open to abuse/interference it needs very high-level authorization. In fact, I'd make it the President's remit.
- Local Council Association.
- Infrastructure Malta should actually be responsible for the implementation and operational aspects as really, they should be responsible for good infrastructure in general...all infrastructure and not just vehicular infrastructure.

#### **7.4.4 Understanding the Implications for Implementation**

Through the surveys and discussions various points were mentioned which did not necessarily classify as a barrier or a threat. The participants also mentioned potential implications to consider in adopting or implementing such proposals. These have been summarised in Table 34 and have served to refine the framework presented in section 7.5 p320. In some cases, they have also led to new proposals when they hadn't been previously considered or helped to emphasis others.

Table 34: Overview of emerging considerations and implications

Theme	Description
Mandatory Prescriptive Obligations	<ul style="list-style-type: none"> <li>• The importance of mandatory prescriptive obligations as opposed to “guidance” was stressed</li> <li>• The need for legislation to provide for these processes and limit any opportunity for exception.</li> <li>• Planning measures should be directly linked to environmental and air quality tests to create a mandatory action</li> </ul>
Financial Resources/Funding	<ul style="list-style-type: none"> <li>• The need for financial resources to be dedicated at a national level so as to kick-start the relevant initiatives/activities</li> <li>• Recurring funds would be more appropriate</li> <li>• The need to coordinate both EU fund and local funds and use these efficiently.</li> <li>• The need for revenue generated through taxation to be targeted at financing social services.</li> </ul>
Regulation: Implementation, Monitoring and Enforcement	<ul style="list-style-type: none"> <li>• The need for enforcement of existing policies and legislation</li> <li>• The need to acknowledge the importance of regulation, not just having it, but implementing it and enforcing it. There needs to be close monitoring.</li> <li>• The need to better equip Local Councils to monitor what is going on in their localities.</li> <li>• Private sector involvement: “There needs to be some sort of monitoring of the efforts being made, they need to be answerable to an authority that can guide them and ensure that what they implement is in line with a plan for the area and other standards”</li> <li>• It is important that “first and foremost we need to improve the extent to which existing laws and policies are respected. A unit responsible for urban planning that reviews applications in the public or public/private sphere could make sure that requirements are met and potential opportunities (for storm water management, greening, renewable energy generation) are taken into account.”</li> </ul>
Identifying Ownership/ Remit	<ul style="list-style-type: none"> <li>• The need for a governance model which identifies ownership/ remit of the various planning proposals as well as implementation</li> <li>• Establish the roles at different levels and coordination between each stage/mechanism e.g. policy formulation, strategic planning, project planning (master plans) project design and engineering, implementation and maintenance.</li> <li>• The need for more formal recognition of roles i.r.t. regulatory aspects and implementation functions within government and authorities.</li> <li>• This should not only include responsibility but also accountability</li> </ul>

Theme	Description
Integrated Approach/ Working	<ul style="list-style-type: none"> <li>• The need to ensure the complementarity of design guidance relating to different design parameters</li> <li>• The need to ensure an interdisciplinary, collaborative and integrated approach</li> <li>• The need to acknowledge that there are various different views and so such proposals need to create a balanced approach and consider such views especially those of vulnerable groups.</li> <li>• The potential to create some sort of consortium formed of different entities and institutions to take things forward. A sort of middle-up approach.</li> <li>• The need to adopt an integrated approach and work collectively and integrate expertise. There needs to be coordination between ministries but the coordinating role/leader needs to be identified together with the different actors and their remit. Collaboration and sense of ownership is key. The issue of multi-functionality is an important consideration in assigning the coordinating role so as to avoid adopting a sectorial approach.</li> <li>• The need for project planning to incorporate full assessments, scoping and needs identification which inform the development of the project objectives.</li> </ul>
Economic Model	<ul style="list-style-type: none"> <li>• The need to think of a more environmentally conscious economic model which invests in the socio-ecological pillars of sustainable development to have a more resilient and sustainable development rather than just focusing on physical development.</li> </ul>
Strategic Approach	<ul style="list-style-type: none"> <li>• The need to adopt a strategic thinking approach</li> </ul>
Transparency and Trust	<ul style="list-style-type: none"> <li>• The need for transparency in the processes</li> <li>• A publicly available plan which shows the public spaces that belong to the community</li> <li>• The need to foster a culture of trust</li> <li>• Clear standards need to be set which are available for all. "How will the state and private sector and civil society work together? Who gets what and where? We are talking about spaces and ultimately the citizen is benefiting but there are clever ways in which we can integrate environmental and economic issues."</li> <li>• The need for all the processes to be public and clearly accessible in order to create more interest and awareness by the public.</li> </ul>
Capacity Building	<ul style="list-style-type: none"> <li>• The need to focus on building the capacity within institutions with respect to education and having the human resources with the right set of skills to deliver.</li> <li>• An adequate size of professionals and skilled persons with also local knowledge i.r.t. suitable GI for Malta and its delivery</li> <li>• Capacity refers to the ability of actors in society to understand the need for such criteria and spans across a wide range of</li> </ul>

Theme	Description
	disciplines not only of a scientific or environmental nature. It permeates across formal, informal and non-formal learning and across disciplines such as law, built environment, earth systems, science, finance and law
Promote Inclusivity	<ul style="list-style-type: none"> <li>• The need to acknowledge that there are various different views and so such proposals need to create a balanced approach and consider such views especially those of vulnerable groups.</li> <li>• The “need to involve stakeholders throughout review process and then policy development process and clearly communicate to stakeholders at each stage in the process.”</li> </ul>
The Role of Civil Society	<ul style="list-style-type: none"> <li>• The need to acknowledge and foster the responsibility which the community has in being involved in the care of such spaces.</li> <li>• The need to consider diffusing the power of authorities and put certain decisions more in the hands of the people. E.g. through referendums.</li> <li>• The potential for society/a bottom up approach to push politicians to change their ideas together with the need to strengthen and promote the aspect of empowerment...to get society to speak up and voice their opinions.</li> </ul>
COVID 19/Pandemics	<ul style="list-style-type: none"> <li>• The need to consider the impact of COVID 19. Potentially open spaces will be the focus of tourism and their improvement could be strategic in attracting tourists back. Meanwhile, there could be the lack of commercial sponsorship or funding due to other COVID budgetary requirements.</li> </ul>
Promotion/Awareness Building/Creating Social Demand	<ul style="list-style-type: none"> <li>• The need to create more awareness as to the benefits of Green infrastructure and as one participant called it “Reverse Brainwashing”. There needs to be constant communication as to why this needs to be done/is being done.</li> <li>• The need to also identify measures that can focus on selling the idea to the public.</li> <li>• “It’s important to identify what people want and give them the opportunity to experience it, and then enable a change.”</li> </ul>
Emergency Powers	<ul style="list-style-type: none"> <li>• The need for “emergency powers” ... “the COVID-19 type of intervention”</li> </ul>
The Role of the European Union	<ul style="list-style-type: none"> <li>• The European Union has an important role to play in promoting and facilitating such an approach. Funding is being linked to GI benefits and urban greening is an important focus in the Green Deal.</li> <li>• The potential for the EU Biodiversity Strategy 2030 which refers to urban greening and will potentially require an urban greening plan to play an important role</li> </ul>



Theme	Description
Sense of Ownership/ Corporate Social Responsibility	<ul style="list-style-type: none"> <li>• There is the need to create a sense of ownership amongst the community and a sense of love for such places. Giving limited property rights could help achieve this. The ownership of a common vision and project objectives also needs to be created amongst authorities not just the community.</li> <li>• Ensure public involvement as public ownership of such projects is critical</li> <li>• “It’s very important that businesses feel the need that they need to contribute financially, because it’s an obligation towards the community.”</li> </ul>
Maintenance	<ul style="list-style-type: none"> <li>• The need for maintenance to be an integral part of project planning and design. It should also be an integral part of any permitting or funding program.</li> </ul>
A Clear Mandate	<ul style="list-style-type: none"> <li>• The need for the mandate to be given to lead on this. Accountability and authority to take decisions is also crucial and well as providing the required resources. The mandate also needs to be given/initiated at cabinet level.</li> <li>• Discussion is important but ultimately decisions have to be taken on how to move forward.</li> <li>• Identify an entity - main candidates Ambjent Malta or Regional Council. However, both need significant capacity. Moreover, they need a strong mandate from Cabinet to lead other entities, if need be by stealth.</li> </ul>
Political Will and Commitment	<ul style="list-style-type: none"> <li>• The need to have political will is crucial as one of the drivers of change.</li> </ul>
Planning System	<ul style="list-style-type: none"> <li>• The need for GI to be an integral part of the planning system. If there are policy instruments the inclusion of GI would be automatically part of the permitting process, together with its maintenance.</li> </ul>
Strategic Community Groups	<ul style="list-style-type: none"> <li>• The potential for the church to play a role not from a purely religious approach but more of a moral approach to protect the environment. They have the power to influence society.</li> <li>• The need to consider the involvement of youth groups so as to address the lack of faith in public engagement.</li> </ul>
Private Sector Involvement	<ul style="list-style-type: none"> <li>• With regard to private sector involvement, the idea needs to be sold effectively.</li> <li>• Such proposals need to ensure that legislation and planning regulations are also introduced to ensure that spaces are indeed safeguarded for future generations, such that everybody can enjoy them. This could also include the assignment of limited property rights to stakeholders. This would need to include “clear rules so this involvement doesn't mean appropriation of public space”</li> </ul>
Health Benefits	<ul style="list-style-type: none"> <li>• The potential to focus on the health benefits as a strategic approach in bringing society on board.</li> </ul>

### 7.5 The Refined Framework

In response to the results, this section presents the proposed refined framework for adopting a GI approach. Based on the various proposals (spatial, planning and governance) developed for the focus groups discussions, the framework considers three main aspects: spatial principles; planning mechanisms; and governance requirements.

#### 7.5.1 Spatial Principles

This section summarises the design principles which require attention in the Maltese context when transforming urban open spaces with the aim of providing green infrastructure. The general guiding principles can be summarised as follows.

- Improve the multi-functionality of spaces.
- Maximise the presence of tree cover, dense vegetation and contact with nature.
- Ensure detailed design of vegetation which creates positive impacts for biodiversity and benefits for the local community.
- Explore potential for restructuring transport infrastructure to create/transform open spaces.
- Consider the potential for flexible and adaptable spaces.
- Explore the potential for informal playscapes.
- Explore potential for flood mitigation during storms.
- Explore the potential provision of activities and uses in response to the communities’ needs and strategic objectives.
- Consider the potential for rain gardens, permeable paving, tree pits and swales which maximise water infiltration or flood mitigation as may be appropriate.
- Maximise the use of reservoirs for storm water collection and link to irrigation systems.
- Maximise vegetation connectivity to facilitate habitat creation.
- Introduce the use of efficient waste separation facilities.
- Design vegetation to ensure climatic comfort throughout the seasons.
- Design spaces as places to walk through to enhance connectivity.

Furthermore, the principles specific to the typology of space are summarised in Table 35 below.

Table 35: Guiding principles according to the typology of space

Typology Specific	
<b>Network</b>	<ul style="list-style-type: none"> <li>• Identify a network of open spaces</li> <li>• Define the potential hierarchy and typologies in terms of size, character and functionality</li> <li>• Define the potential for a sustainable storm water network to manage water runoff (through groundwater recharge or flood mitigation/attenuation; the use/provision of reservoirs and the connection to traditional storm water networks)</li> <li>• Improve connectivity between spaces for pedestrians</li> <li>• Ensure the legibility of the network (e.g. use of materials, landscaping etc.)</li> <li>• Facilitate the creation of a walking/jogging route to promote active lifestyles</li> </ul>

Typology Specific	
	<ul style="list-style-type: none"> <li>• Ensure consistency in the network – the whole network needs to support sustainable mobility. A network is as strong as its weakest link.</li> <li>• Define a parking strategy to shift on street parking to centralised underground/multi-storey parking facilities</li> <li>• Introduce circular public transport services connecting parking facilities to activity zones/services ensuring access for those with reduced mobility</li> <li>• Identify the need for public transport access in the evenings</li> <li>• Define a movement hierarchy (keeping in mind impact on neighbouring areas) which promotes sustainable mobility</li> </ul>
<b>Local Parks (&gt; 2 ha)</b>	<ul style="list-style-type: none"> <li>• Explore the potential of valleys as natural local parks</li> <li>• Introduce walking/jogging paths and picnic areas</li> <li>• Explore the potential for informal adventurous play and water play</li> </ul>
<b>Gardens (&gt; 5,000 sqm)</b>	<ul style="list-style-type: none"> <li>• Identify the potential for larger open spaces &gt; 5,000 sqm</li> <li>• Explore the potential for varied compatible activities which bring demographics together</li> <li>• Consider the potential for activities which are currently lacking (picnicking, ball play, riding scooters and bikes)</li> <li>• Consider the suitability for introducing water as an interactive recreational or natural feature</li> </ul>
<b>Pocket Parks Playgrounds Civic Squares</b>	<ul style="list-style-type: none"> <li>• Connect open spaces to buildings or other open spaces to maximise relationships</li> <li>• Explore the potential for shifting surface parking underground, semi-underground or off site</li> <li>• Link compatible activities and users</li> <li>• Consider the suitability for introducing water as an interactive recreational or natural feature</li> <li>• Adopt street alignments which induce traffic calming</li> </ul>
<b>Urban Streets</b>	<ul style="list-style-type: none"> <li>• Maximise the presence of trees, vegetation and seating depending on the street typologies</li> <li>• Maximise footpath widths</li> <li>• Design street furniture in an integrated manner to ensure adherence to minimum footpath standards</li> <li>• Shift on street parking to peripheral centralise parking facilities</li> <li>• Explore potential for vegetation canopies using creepers in narrow streets</li> <li>• Promote pedestrian friendly streets</li> <li>• Explore potential for shared spaces where suitable</li> <li>• Maximise potential for permeable paving versus concrete</li> <li>• Ensure the use of appropriately specified tree pits suitable for urban contexts and to mitigate water run-off</li> <li>• Adopt street alignments and carriageway widths which induce traffic calming</li> <li>• Explore the use of vegetation to mitigate the impact of vehicles and improve air quality</li> </ul>
<b>Surface Car Parks</b>	<ul style="list-style-type: none"> <li>• Shift surface parking to centralised parking facilities to create green open spaces</li> </ul>

## 7.5.2 Planning Mechanisms

This section presents the refined planning mechanisms in relation to:

- Spatial planning measures
- The development of guidance
- The development of policy and standards
- The planning review process

### Spatial Planning Measures

#### **Spatial Audit:**

Open space audits starting at locality level to understand provision and demand. This understanding should be used to inform spatial planning at the regional level. One of the outcomes would be the publication of a plan (available for public access and use) identifying all publicly owned spaces which are accessible for community use.

#### **Framework for Integrated Spatial Planning of GI/Open Spaces:**

This concerns the identification of authorities and stakeholders which should be included in the development of strategies, policies, plans and guidance. Indicating when and how each stakeholder would be included creating a framework for integrated planning. In particular, the use of vegetation, water management and energy efficiency require more clarity in this respect. It also needs to identify responsibility in relation to monitoring and enforcing of regulation, policy and planning conditions established as part of the development permitting process. This should be identified at different levels together with the coordination required between each stage/mechanism e.g. policy formulation, strategic planning, project planning (master plans), project design and engineering, implementation and maintenance.

#### **National Green Infrastructure Strategic Policy/Plan:**

Develop a GI strategic plan at a national level setting out a vision, priorities, strategies and objectives for the different aspects of GI. It should establish the priorities and various components for GI planning at a regional and local scale and how these contribute to the national scale.

#### **Regional Spatial Plan for a Network of Open Spaces/Green Infrastructure within the Urban Conurbation:**

A spatial plan for an open space network adopting an urban green infrastructure planning approach. This should address the urban conurbation, potentially the Primary Urban Area, including specific actions and targets at a locality level, in relation to the vision, strategies and objectives determined at the national and regional scale. The plan should provide the following.

- A spatial structure and sense of orientation within urban areas.
- Objectives for each open space in terms of character and scale as part of a hierarchy of open spaces for the region and localities.
- The use value of open spaces so that the activities provided are informed by wider objectives such as: variation of activities; integration of activities and demographics; responding to different user groups; flexibility and adaptability; provision of supplementary equipment; temporary use for community events/activities.
- Provision of activities identified as lacking, including: pet friendly areas, gardens which target specific users such as people with dementia or autism; skating/scooters/biking; picnic areas;

areas of tranquillity; training/work out areas; walking/hiking/jogging; ball play; informal play/adventure parks.

- Address negative qualities identified such as: impact of traffic/cars; area too small; caters mainly for families/children; not attractive/boring; lack of cleanliness; lack of vegetation/nature; lack of shade; lack of interactive spaces/informal play areas.
- A focus on providing 'green' space.
- The identification of new spaces within urban areas and the potential to create larger green recreational spaces which could have a regional function in the urban area.
- Identify strategic streets which can be used to create the network of spaces.
- Determine strategic links through existing spaces to enhance connectivity.
- Establish objectives i.r.t. connectivity of vegetation to promote habitat creation and biodiversity.
- Establish objectives i.r.t. sustainable water management so as to identify how each space can/should contribute to the wider regional network in terms of water management.
- Consider whether there is the need to plan for sustainable waste management at the regional scale and how this informs the local scale.
- Work in parallel with a centralised parking management plan to shift on street parking.

#### **Centralised Parking Management Plan for the Urban Conurbation:**

Define a parking strategy to shift on street parking to central underground/multi-storey parking. Included in such a parking management plan would be the identification of parking locations such that all areas are within 5 minutes' walk of centralised parking facilities. A circular public transport route connecting the car parks to activity zones and services would also be introduced for those with reduced mobility, together with other parking management measures. Such a plan should form part of an overall vehicular demand management strategy which would seek to reduce car use.

#### **Implementation Programs:**

The strategies and plans should be translated into implementation programs. Such programs would identify specific projects, with allocated clear budgets and timelines as well as the coordinating entity/entities for each project. Project planning would need to incorporate full assessments, scoping and needs identification so that the development of project objectives is informed by a strategic and integrated approach. Such programs should be reviewed every 1-2 years.

#### **The Development of Guidance**

Guidance should be developed relating to the design categories identified below. They would vary depending on the open space typology. The nature would be enlightening rather than prescriptive. This could be subsidiary guidance which would then inform the provision of such GI. More prescriptive aspects could then be formulated as additional specific policy requirements (next section). This could also request the implementation of specific green infrastructure requirements especially in public and major projects.

#### **Contextual Relationships:**

Design of boundaries; Physical context considerations (things to look out for); Responding to the socio-cultural context. This could be in question format to inform the thought process and guide planning officers on what to look for.

#### **Character and Form:**

Outline different open space typologies and characters illustrating potential characteristics. Principles for creating visual interest. Illustrate the potential for creating spatial contrasts and enclosure.

**Activities and Functionality:**

Outline functionality of open spaces e.g. type of seating, facilities required, potential supplementary equipment etc. Considerations for user needs, flexibility, multi-functionality etc. This could be in the form of a series of questions to trigger/inform the thought process and assist planning officers when reviewing project in terms of the activities provided, integration of activities, response to user needs etc.

**Accessibility:**

Designing for pedestrians/pedestrian friendly urban spaces/green walkable streets. Designing for reducing vehicular impact in open spaces e.g. speeds, materials, carriageway widths, car parking etc. Guidelines on the size/type of open space which should be available for recreation within a certain distance of one's home.

**Climatic Response:**

Designing for climatic comfort (shade and wind protection), including the use of vegetation.

**Water Management and Use:**

Potential use of SUDS, according to different types of spaces. Use of water for recreational value and additional benefits e.g. noise mitigation or cooling.

**Use of Vegetation:**

Appropriate types of vegetation (quantity and form) i.r.t. the typology and character of open space being designed. Principles and ideas on how to use vegetation to maximise benefits including supporting biodiversity and developing ecological corridors. Management and maintenance of green space/vegetation maintenance.

**Resource Management:**

Objectives such as the need to be energy efficient (SPED urban objective 4) require guidance in their potential application to urban open spaces e.g. the potential inclusion of renewable energy sources.

**Community Involvement:**

Guidance on stakeholder participation in the design and planning process. Could also be in question format to trigger ideas on how to engage with the community.

**The Development of Policy and Standards**

Development of a clear hierarchy of interrelated policy documentation with clear timelines, in built mid-term reviews and flexibility to adapt. The presence of detailed policy is necessary in ensuring that the development permitting process can create strong arguments in favour of open spaces/projects for or with green infrastructure. Policies can be developed within the development permitting system or as standalone standards to which the planning system can refer. It is important to ensure that policy or standards (even guidance) relating to different design parameters complement each other. The design categories (together with potential principles) for which more prescriptive policies could be developed are as follows.

**Spatial and Structuring:**

The definition of a network of open spaces which positions existing and proposed open spaces within a wider holistic hierarchy. Identification of strategic/hierarchy of connections and their importance in relation to habitat provision.

**Contextual Relationships:**

Connecting the space to the surrounding building/activity. Determining functionality required in relation to surrounding uses and overall hierarchy as part of a strategic spatial plan.

**Character and Form:**

Definition of a hierarchy of open spaces with varying typologies in terms of size and character. Specify appropriate characters i.r.t. existing contexts.

**Activities and Functionality:**

Determine appropriate uses and activities in local action plans i.r.t. objectives set out in the regional plans. Appropriate use of materials in terms of: traffic calming; slip and trip hazards; durability etc.

**Accessibility:**

Requirements for pedestrians and public transport infrastructure: shelter provision, minimum footpath widths i.r.t. street types; speed limits; seating; maximum carriageway widths in residential areas, use of materials i.r.t. slip and trip hazards, provision for sustainable transport modes e.g. car sharing, scooter rentals etc. Rebuilding/resurfacing of roads to require rebuilding/resurfacing of footpaths.

**Climatic Response:**

Minimum shading requirements during particular times of year

**Water Management and Use:**

Policies to be made applicable to open spaces. Requirements for reservoirs of a specific catchment depending on non-permeable surfaces, use of SUDS, minimum permeable areas/green space factor, temporary water catchment functionality. Irrigation systems to be required and connected to reservoirs etc.

**Use of Vegetation:**

Requirements for minimum amounts of vegetation (depending on type of space), maintenance as part of permit conditions, tree pit/planter standards, use of species (not just invasive considerations, maintenance related, air quality benefits) etc.

**Resource Management:**

Standards on waste separation and collection systems (e.g. require recycling bins designed into the space rather than ad hoc additions); standards for energy efficient lighting.

**Community Involvement:**

Requirement for designers to illustrate how stakeholders have been engaged and how their interests have been incorporated.

**The Planning Permit Review Process****Stakeholder Consultation Framework for Open Space Projects:**

Develop a list of entities/stakeholders to be contacted i.r.t. open space projects. Clarification is required regarding which entities will review: the use of vegetation; water management; and energy efficiency. The permitting process should involve multi-disciplinary competencies from national resources as the planning authority cannot realistically recruit all expertise itself. The framework should also identify at which stage in the process they should be consulted (design stage or planning review). Amendments could also ensure that the non-response of external consultees is not assumed to be consent (GoM, 2016).

Additionally, if policies/standards were published as requirements as part of subsidiary legislation, then conformity would be the responsibility of the designer to demonstrate compliance. This would reduce pressure on stakeholders to review every aspect. Such approaches could be defined as part of this framework. Monitoring would however be essential to ensure enforcement of adherence to standards/legislation. There could also be the potential to set up “A consultative committee similar to the Agricultural Advisory Committee and Design Advisory Committee, with representation from relevant entities to assess planning application as a ‘one stop shop’ from the point of view of GI”. (Appendix E9ii p.12)

**Training/Creating Awareness Amongst Case Officers:**

Training to develop knowledge in relation to the benefits and good design of open spaces. Create more general knowledge amongst the staff concerned such that all embrace the concept of improving open spaces, as well as develop a resource of ‘experts’ who would work throughout the existing teams in an integrated manner when it comes to the reviewing of projects for open spaces. Such training should actually extend beyond the planning officers to also include Planning Board members.

**Establish Formal Design Discussion Meetings:**

Pre-application meetings should be formalised to facilitate discussions on the design intent during the permit application process. This would facilitate the reviewing process in relation to the design categories.

**Interactive Public Engagement Opportunities:**

Public participation needs to be more interactive if the aim is to engage with the public and really understand and provide for their needs. The review process could require applicants to show that there was an element of co-creation of the design with stakeholders, as public engagement should not be something which only happens at the review stage. There could be a requirement for creative workshops to be held with the community at the design stage. A framework needs to be established on how to absorb relevant feedback from the community in the most appropriate manner.

### **7.5.3 Governance Requirements**

This section presents the refined governance requirements in relation to:

- developing knowledge: expertise and awareness building;
- implementation and generating funding;
- pilot projects;
- involving the private sector;
- involving civil society;
- place keeping: maintenance and management; and
- ‘organisational’ requirements.

#### **Developing Knowledge: Expertise and Awareness Building**

**Training Sessions:**

Develop a lecture series on urban open spaces. Such training could be informal and would target different stakeholders/sectors of society. There could also be stakeholder surveys linked to information sessions or workshops as a kind of informal education. It would cover the following aspects:

- different types of ‘green space’/open spaces;
- the type/amount of vegetation to achieve different types/characters of spaces;



- creating functionality and character;
- vegetation management;
- designing for pedestrians and movement hierarchies;
- connectivity of vegetation for habitat creation and biodiversity;
- designing for climatic comfort in open spaces;
- successful and quality urban open spaces; and
- benefits of green infrastructure and nature-based solutions.

**Expertise Development:**

Develop expertise in: sustainable urban drainage systems; studying storm water flows and management of natural water courses; construction and maintenance of reservoirs; designing, constructing and maintaining water features; using, designing for and maintaining indigenous trees and plants; biodiversity and the provision of ecosystems services; and climate change adaptation and mitigation. Courses could be run and certified by MCAST or UOM and linked to the MQF levels. Some of the lecture series could be made mandatory for particular job descriptions e.g. people working in the planning sector, transport mobility and design of infrastructure.

It is also important to acknowledge that there are particular ways on how to train adults and how to communicate effectively. The development of such training/courses should therefore also engage experts in adult learning and not just experts in the study area.

**Promotion and Awareness Building:**

The need to create popular demand was identified. Image and branding is therefore crucial. There needs to be constant promotion and communication regarding the importance and benefits of such infrastructure. This needs to acknowledge that a nice-looking marketing campaign doesn't necessarily create behavioural change. It needs to be combined with what engages people, what could really create the desired behaviour change.

**Monitoring and Research:**

Part of knowledge development includes monitoring of delivered projects to investigate rate of success and trends. A research-based component should therefore also be included.

**Capacity Building Strategy:**

Capacity refers to the ability of actors in society to understand the need for such criteria and spans across a wide range of disciplines not only of a scientific or environmental nature. It permeates across formal, informal and non-formal learning and across disciplines such as law, built environment, earth systems, science, finance and law.

**Implementation and Generating Funding**

**Targeting EU Funds:**

If urban open spaces projects function as GI then there is the potential to tap into EU funds relating to climate change mitigation and adaptation including carbon offsetting. There is the potential to have a specialised team for EU Funds directly related to environmental projects e.g. Horizon 2020 and Life. Such a team could facilitate the process to make the best of these funds. The national allocation of EU funds (Operational Programme) also needs to include the greening of accessible open spaces as part of urban infrastructure upgrading. The creation of a national trust fund can also be considered.

**Dedicated Budget linked to an Implementation Program:**

Local Council funding for projects aiming to transform and redevelop an open space are insufficient. While EU funds can be a potential source there is also the need to create a specific national budget for the transformation and maintenance of urban open spaces. This is essential as some of the improvements are needed as a priority and not only depending whether or not funds are available. “Creating an annual budget for the development of new projects (CAPEX) and more importantly for their operations and maintenance (OPEX). There should be a line item in the National Budget.” (Appendix E16ii p.22)

**Link Development Planning Fund to an Urban Green Infrastructure Implementation Program:**

Spatial plans and policies need to be accompanied by implementation programs providing funds and assistance for Local Councils to tap into. Such programs however, should not only be limited to Local Council and NGO initiatives. There should be an action plan with specific measures and projects identified in relation to the idea of creating a network of urban open spaces/green infrastructure system. This action plan would be funded through different sources. EU funds and the national budget would be two sources. The development planning fund would be an additional source.

**Introduce Environmental Regulatory Systems:**

Additional environmental regulatory systems such as waste water taxes should be introduced to create new funding sources for such implementation programs. Such systems could be linked to waste water production; the lack of cisterns (fines); environmental mitigation and biodiversity offsetting.

**Areas Requiring Funding Implementation Programs:**

Funding schemes or implementation programs should be aimed at projects which target the aspects below. Depending on the scale of the project, improvements could target individual criteria or multiple ones as part of an integrated project.

- Spatial audits at locality level for urban open spaces.
- Assistance (skills and funds) to local councils for stakeholder engagement (design process).
- ‘Access for All’ in existing open spaces.
- Infrastructure and facilities for pedestrians and cyclists.
- Reduce vehicular impact and promote traffic calming in urban open spaces.
- Restore, maintain and use existing wells.
- Irrigation systems/other systems which are more sustainable in terms of water management (including SUDS).
- Provision of biodiversity and ecosystem services.

The funding could also be targeted such that it is more generic to include various aspects and not just specific foci. As one participant put it “e.g. to strengthen parallel consideration of hydrology, recreation, micro-climate/comfort, ecology as multiple ecosystem services that need to be brought in harmony” This could therefore be linked to adopting an ecosystem services approach and identifying which ecosystem services need to be strengthened.

**Pilot Projects****Framework to facilitate Pilot Projects and Testing of Innovative ideas:**

Resistance to change is one of the threats. Pilot projects could be used to illustrate the success and benefits, thus creating the opportunity to experience change. Existing processes and procurement procedures may hinder the development of pilot projects and testing of new ideas. A framework set up to specifically address such aspects could potentially hasten/help the process. This could also include the

use of temporary materials to start the reallocation of space. Piloting can also include gradual roll out in terms of time, not only space. It is important that such projects do not stand alone but are part of a wider strategy contributing towards a master plan. A pilot should have the intention to roll out nationwide.

#### **Thematic Areas:**

A number of areas have been identified where pilot projects could be used to address: resistance to change, testing and showcasing benefits.

- Integration of vegetation in grey infrastructure.
- Transforming a street using an urban green infrastructure approach.
- The use of SUDS for water management.
- Community involvement during design process, development and upkeep of urban open spaces.
- Testing of carriageway materials for traffic calming/permeable paving.
- Natural water features which mitigate the presence of mosquitos.
- Centralised parking facilities and removal of on street parking.
- The inclusion of renewable energy sources in public spaces.
- Developing methodologies for the feasibility/cost benefit analysis of green infrastructure projects so as to represent environmental costs/benefits adequately.
- Introducing intelligent and flexible waste management systems.
- Urban farming.

### **Involving the Private Sector**

#### **Programs to Facilitate/Stimulate the Involvement of the Private Sector:**

Facilitating and stimulating the involvement of the private sector requires a framework within which to work. Different schemes/programs could be developed which could include the following.

- Sponsorship: where companies may 'adopt' trees or green spaces and maintain them.
- Green Barter: where business pay a fee (lease or license) to use a public space for commercial profit e.g. a park café or kiosk.
- Business Improvement Districts: business led partnerships that fund projects within the district boundaries.
- Green Hubs: innovative coalitions between citizens, businesses, and non-governmental organisations. Engaging stakeholders with various social and professional backgrounds. They could also include partnerships with educational establishments.

#### **Develop Clear Parameters Which Protect the Public Interest:**

The involvement of the private sector requires the establishment of clear standards and parameters which can be monitored so as to retain control. Initiatives need to be kept in line to ensure that the overall goal is a sustainable approach. There need to be clear specifications to guide businesses in developing a communal infrastructure where the priority is socio-ecological considerations. The role of the public entity in relation to businesses also needs to be clarified, particularly, the validity and permanency of such collaborations would need to be determined.

### **Involving Civil Society**

#### **Program to Assist Local Councils with Community Engagement:**

Develop a program which provides expertise and assistance with the co-creation of open spaces. This is necessary to ensure ownership and use of the spaces by the community. It aims to avoid Local Councils

getting disheartened when such processes become tricky and demanding. The stakeholder to be approached would be outlined and the different approaches which could be used. E.g. the potential of social media platforms but also the importance of physically engaging with people and different demographics and how best to do that. Engaging with society requires a balanced approach, respect for different views and ensuring outreach to vulnerable groups.

**A Model for Working with Civil Society:**

A set up for co-ordinating and transferring responsibilities and power to civil society. Grass roots initiatives need to be recognised and supported if they are to play a successful role in the management and maintenance of urban open spaces. Some degree of formalisation would be required. In this sense the role of the authorities in relation to grass root initiatives needs to be established.

**Participatory Budgeting Schemes:**

Introducing community planning through participatory budgeting schemes where the allocation of funds is made according to project ideas as put forward by the community.

**Coordinated Civil Society Lobby for Green Infrastructure in Urban Areas:**

While there are many active environmental NGOs, a more powerful co-ordinated lobby group which brings NGOs, businesses and the community together to push for green infrastructure is required. The co-ordination of NGOs in this sense has proved successful in relation to other efforts. Society needs to be empowered to speak up and voice opinions.

**Mechanism for 3rd Parties to Enforce Legislation and Implementation of Policies:**

Implementation and enforcement of legislation and policies is a key threat. Legislation could be introduced which would allow a third party to enforce contractual terms (e.g. implementation of policies) if they are affected by failure to do so.

**Programs to work with Strategic Community Groups:**

Activities relating to maintenance and caring for open spaces could be introduced within schools e.g. building on the ECO Skola initiative. This would also work towards environmental educations and engagement. Youth groups could be targeted to overcome cultural apathy to community involvement. Similarly, the church could play a role as it already advocates protection of the environment and could be targeted as a moral approach for creating social demand.

**Place Keeping: Maintenance and Management**

**In Depth Study on Maintenance Needs:**

A more detailed understanding is required. For example:

- local climate needs to re-inform designs and ensure that they are suitable for local conditions;
- the impact of the tendering process which pushes for the cheapest solutions which are not necessarily the most durable or sustainable; and
- clarity on the type/level of maintenance involved as this will dictate what can be handled by volunteers.

**Establish Maintenance Funds at Project Inception:**

Maintenance needs to be an integral part of the project planning and design. Funds for maintenance need to be made available at project inception/funding/design stage. The design needs to be directly linked to the maintenance system and funds to be allocated.

**Dedicated Budget for Maintenance and Management of Urban Open Spaces:**

Additional local funds/budgets are required to ensure appropriate management and maintenance levels for existing urban open spaces.

**Maintenance Volunteering Schemes for the Community:**

Develop community involvement/voluntary schemes for the maintenance of urban open spaces.

**Coordinated Regional Response for Monitoring and Maintenance of GI in Urban Areas:**

Some maintenance aspects are difficult to organise at the local scale due to small quantities of work and expertise requirements. A more detailed review of current maintenance requirements can inform the setting up of contracts for certain types of maintenance at a regional level. For example, contracts for specialised maintenance such as the maintenance of vegetation, water management systems and water features. Sometimes when this is included as part of general maintenance contracts, the workers do not have the necessary expertise. The system should cover new urban green infrastructure projects post compliance/certification stage. It could include spaces which are strategically identified to form part of an initial network (similar to arterial/distributor road network model). It could also introduce the use of bank guarantees to ensure upkeep for a fixed number of years. Such an approach is necessary to also integrate the needs and views of the wider context not just the local requirements of that space. It could also be said that the focus of the regional system does not necessarily need to be on carrying out the maintenance. Rather it could be more on monitoring the maintenance levels and status particularly if the spaces are part of a network. It would need to safeguard the continuity and connectivity of the different maintenance parts as assigned to different entities for example.

It also needs to explore the potential for private sector involvement. "In the case of maintenance, I would make a greater emphasis on the private sector involvement. Maintenance is linear and repetitive and can get out of hand very easily. The private sector who would have a vested interest in keeping the open spaces at a high standard will be best placed to maintain these spaces." (Appendix E15ii p.13) With regards to outsourcing, the point was also made that maintenance should not necessarily be completely outsourced so that the governing body/government agency managing a project would not lose all technical knowledge. This is important if the governing body is to retain the knowledge to challenge/monitor a third-party contractor's maintenance performance. Another point was made that outsourcing should be considered on a case-by-case basis as ideally it would be kept 'at source'. However, if not possible then outsourcing could be an option.

**Maintenance Guidelines:**

Development of guidelines for architects and project managers to guide choices in the design phases.

**'Organisational' Requirements****Establish a Strategic Cross-cutting Policy Co-ordinating Body:**

This is essential for coordinating the structuring and development of regulation and policy for driving the planning and implementation of green infrastructure. The multifunctional nature of GI requires an integrated approach which infiltrates across the different sectors and departs from a silo-mentality.

**Create a Set-Up to Support and Facilitate Active Citizen Approaches:**

This goes beyond simply recognising and supporting grass roots initiatives. It would explore innovative active citizen approaches and create a set up to instigate and facilitate this. The key term here would be collaboration. Creating collaborations and synergies between various stakeholders: the community; the

private sector; academic researchers, public entities etc. They could take different forms depending on the specific actions to be achieved.

#### **Establish a Unit/Platform to DRIVE the Transformation of Urban Open Spaces into GI:**

There is a lacuna in the governance of urban open spaces. A mechanism for the implementation of GI/open space networks would need to be identified through the spatial planning process. The actions of the various authorities involved in the transformation of urban open spaces would need to be integrated. A national platform/body would be necessary to drive this. It could be established in a similar manner to the Grand Harbour Regeneration Corporation. However, it need not be a new structure, an existing entity could be identified and given the mandate. It could also be set up through the collaboration of existing entities or authorities. What is important is that there would be a strong mandate/endorsement from Cabinet with a clear definition of remit and responsibilities and strong coordination (Arvanitidis, 2008). It could also adopt a guardian approach. Guardians of open spaces could be appointed within each ministry or authority to manage and facilitate coordination between departments. There would then be rotating chairmanships. Each green champion would have a clear set of terms of references. What is important is that the set up:

- has direct access to central government;
- acts at a national or regional level; and
- establishes clear lines of responsibility.

The potential role would be as follows.

- Drive the transformation of urban open spaces for the implementation of GI.
- Provide or source expertise for Local Councils on specific issues such as: acting on local plans/spatial planning/urban design training; design of public spaces; technical aspects i.r.t. the use of vegetation and water management; and funding opportunities. It would be a one stop shop for Local Councils to assist them with open space issues and provide a sort of buddy assistance system. The engagement of consultants at a locality level is too cost intensive.
- Facilitate cross departmental/entity/stakeholder discussions. (e.g. liaise with relevant authorities such as PA and ERA to facilitate necessary processes: planning permits, obtaining guidance on species to be used, disability and health and safety considerations, etc.).
- Assist with the translation and development of planning objectives into projects and in their implementation if required. Projects are very time intensive for Local Councils and they require expertise which Councils do not have. Such a platform could assist Local Councils specifically in the development and implementation of projects. It would be essential to facilitate collaboration between departments, entities or expertise to try and achieve multi-functionality.
- Drive the image and branding for the 'Greening' of Urban Open Spaces.
- Coordinate: funding schemes; knowledge development; pilot projects; monitoring and maintenance; involvement of civil society, private sector etc.
- Facilitate sharing of local best practice.
- Serve as a consultee in the assessment of major project with respect to GI implementation.

## **7.6 Discussion and Conclusion**

This chapter reported on phase 2 of the research which addressed the third and fourth objectives. These being to: develop a framework for the planning of urban open spaces in Malta including understanding the process for its development and implementation; and identify the barriers and implications for its

implementation. The framework was developed through a literature review on the planning and governance of open space and green infrastructure systems in relation to the results which emerged through phase 1 (Chapter 5). The barriers and implications to implementation were identified through focus groups. These served to refine the framework and develop an understanding on the process for its development and implementation.

In light of the findings, ten key barriers are presented in relation to the potential to adopt a green infrastructure approach for urban open space in Malta.

- A car centric mentality/lobby
- Financing availability/cost implications
- Lack of knowledge/awareness and skills
- Lack of an integrated approach/working
- Fragmentation and lack of clarity i.r.t. remits and ownership
- Lack of political will/mandate
- Socio-cultural tendencies leading to lack of popular demand and interest
- Land ownership issues linked to property rights
- Lack of implementation and enforcement of legislation/policies
- Lack of continuity and strategic long-term planning

These insights relating to the Maltese conurbation allow for comparison with other contexts. It can be noted that while similarities exist, differences can also be noted linked to Malta's particular context. It is clear that a strategic, integrated and proactive planning approach is required which needs to address multiple scales (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; European Commission, 2019; Schiappacasse & Muller, 2015; Laforteza, Davies, Sanesi, & Konijnendijk, 2013). However, these particular scales need to be determined in relation to the specific context. While initiatives at the locality (Local Councils) level and bottom-up grass root initiatives are important, in Malta's case the conurbation scale is considered important for coordinating initiatives and promoting strategic integrated planning. This is essential in moving towards a system or network of green infrastructure and promoting multi-functionality. In this sense, one needs to address the 'city' and 'regional' scale (Laforteza, Davies, Sanesi, & Konijnendijk, 2013) almost interchangeably while establishing strong relationships with the national scale. This then needs to be translated to the 'localities' which compares to the 'district' or 'neighbourhood' scale.

Finally, the socio-cultural context emerges as an extremely important consideration. Much of the governance models advocate the use of grassroots initiatives and transferring of responsibilities to civil society (Ambrose-Oji, et al., 2017). While grass-root initiatives for green infrastructure do exist in Malta, there is still the need to generate a kind of 'popular demand' where the majority of civil society really wants such open spaces. Whereas it could be said that society does want such space, it is questionable whether it would prioritise this. Such socio-cultural trends also effect the real political commitment to prioritise urban open spaces for green infrastructure over other requirements such as car parking or development. A multi-faceted approach needs to be adopted, to overcome such challenges and create the necessary organisational structures and resources. Chapter 8 explores this further as part of the concluding discussions of this research. By comparing the insights provided by the research of Malta's specific context to literature in the field, an understanding of how the planning systems could facilitate the potential for urban open spaces to act as green infrastructure is sought. In doing so, suggestions are also made for moving towards a system which promotes transparency and trust and successfully integrates active citizen approaches.

## 8 Conclusion

### 8.1 Recapitulation

This thesis focuses on the potential of urban open spaces to add value to the built environment. The original research proposal suggested that a 'gap' exists in relation to the planning and design of urban open spaces in Malta. As a result, the research set out to investigate the spatial planning and design of urban open spaces in Malta and use the understanding and knowledge gained to develop proposals for improving their contribution to sustainable development. The research question posed is:

How can the spatial planning system facilitate the potential for urban open spaces to add value (social, economic and social) to the built environment and hence improve their contribution to sustainable development?

To answer the research question, the objectives identified were as follows.

1. Identify design principles/themes relevant and specific to the design of urban open spaces in Malta in relation to their potential to contribute to sustainable development.
2. Understand existing urban open space policies and planning processes and identify gaps.
3. Develop a framework for the planning of urban open spaces in Malta including understanding the process for its development and implementation.
4. Identify potential barriers/implications for its implementation.

Objectives one and two were achieved through the first phase of the research where various data collection techniques were used to create an evidence base on the current situation. Following this, objectives three and four were achieved by: carrying out a comparative literature review in relation to the results from phase one; using this to develop potential proposals; and finally subjecting the proposals to a number of focus group sessions.

Chapter 5 has given a detailed account of results relating to objectives one and two. Chapter 7 has given a detailed account of the results relating to objectives three and four. This chapter concludes the research by discussing how these objectives have served to answer the research question set and ultimately achieve the research aim. It also outlines: the transferability of the research in relation to knowledge contribution; and the potential for further research in the field.

### 8.2 Answering the Research Question

This section discusses the main outcomes of the research which together serve to answer the research question. As a result, the research provides insight on whether spatial planning can indeed facilitate the potential for urban open spaces to add value to the built environment and hence improve their contribution to sustainable development. This is done by summarising the research results i.r.t. the following aspects.

- Urban open spaces in Malta and their contribution to sustainable development.
- Gaps in the planning of urban open spaces.
- Challenges relating to the governance of urban open spaces.



- The role of spatial planning: Towards green infrastructure planning.
- Acknowledging potential barriers and their implications.
- Emerging considerations and parallel mechanisms.

### **8.2.1 Urban Open Spaces in Malta and their contribution to Sustainable Development**

Chapter 2 identified the design categories and principles which impact the environmental, economic and social value which open spaces have the potential to provide and therefore impact their contribution to sustainable development. Chapter 5 reported on how these design principles fair in Malta's urban open spaces based on the physical audits carried out.

When considering environmental value, the provision of habitats to strengthen biodiversity is being hindered by the lack of connectivity between open spaces, a concerted effort to create a network of open spaces and the simple lack of vegetation in Malta's urban open spaces. This lack of vegetation also reduces opportunities to mitigate air and noise pollution. The orientation of the design of open spaces towards vehicles impacts the use of sustainable transport modes such as walking, cycling or public transport which, in themselves, could contribute towards reducing air and noise pollution. Lastly sustainable water management is hindered due to the lack of vegetation as well as the lack of design which considers storm water infiltration, storage and re-use.

The lack of vegetation also has implications on the potential economic value which open spaces can provide. The provision of vegetation can improve the quality of open spaces in terms of aesthetics which in turn can add to real estate value or the tourism product (Fausold & Lillieholm, 1996; Tuset, 2016). Green open spaces can also contribute to increased commercial value (Forest Research, 2010). Additionally, the possibility for varied or specific activities to take place can also increase real estate values. For example, if residential neighbourhoods have sufficient space within walking distance for children to play. Urban open spaces within the Maltese conurbation were found to be extremely limited in the play and recreational value they provide. Such economic value can also be increased if the quality of open space is improved in relation to the aesthetics. Currently most urban open spaces do not provide a rich and varied aesthetic environment.

Finally, the design principles which are lacking are also reducing the potential social value which open spaces can provide. Principles such as connectivity, the provision of paths of appropriate widths, open spaces which allow for physical activity or vegetation to ensure climatic comfort are all design aspects which could facilitate and hence encourage the use of open spaces for physical activities thereby promoting healthy lifestyles. The spatial relationship between buildings and open spaces, the impact of vehicles, the character of the open spaces and activities they provide for, the climatic comfort and simply the availability of open space are all factors which can affect the use of open spaces and their availability for leisure and recreation. The average or poor design of such factors is automatically hindering the potential for open spaces to provide for social interaction, cohesion and wellbeing.

The research has therefore shown that urban open spaces in Malta are lacking in their potential contribution to sustainable development. A strategic evidence base for the current situation, which was previously lacking, has been provided. The results allowed for the identification of design principles which

could be targeted so as to improve the potential environmental, social and economic benefits which urban open spaces in Malta can provide.

### **8.2.2 Gaps in the Planning of Urban Open Spaces**

Besides the design of urban open spaces, the planning, or rather lack thereof, of urban open spaces is also contributing to their existing state. There is a general lack of policy concerning open spaces. Existing policy is primarily limited to: land use; providing 'access for all'; road design; invasive/non-invasive species; archaeological and contextual considerations. Additionally, existing policy tends to be strategic or generic and no guidelines exist on how to interpret them. There also seems to be a lack of awareness on how to apply recent existing policies in DC2015 which relate to open spaces. The vagueness and lacuna of guidelines regarding open spaces can lead to frustrating processes and waste of resources by applicants as it is not clear what is considered acceptable. Therefore, the planning system does not facilitate initiatives to improve open spaces.

While Local Councils (LC) tend to be aware of local plan policies and that they should take the initiative to implement them, in general this does not happen. The reasons given were: lack of expertise or resources to do so; the need for schemes which would allow LC's to take the initiative; they prefer to follow their own initiatives/ideas; the local plan policies don't necessarily address the community's needs; and a lack of communication with the PA and how to engage with it.

The planning system also lacks a proactive approach to the planning of open spaces. There is no specific strategy or action plan. There is therefore no framework to create opportunities for new open spaces or increase the use value and potential benefits of existing open spaces. The limited policy which does exist simply identifies and protects existing open spaces from development. A creative process is also lacking. Sometimes solutions are created from specific policy objectives, through development briefs or action plans, without a creative design process. Additionally, architects felt that the planning process lacks a formal opportunity to present and explain design intent. It was felt that the review process is more about responding to technicalities, clarifying submission documents and making amendments to satisfy stakeholder requests. When design discussions do take place, they tend to focus on subjective aesthetic and contextual considerations.

A lack of consistency is evident when reviewing open space projects and applying policies. The projects are allocated to planning officers according to whether it is a major project, a project within a development scheme or within an Urban Conservation Area (UCA) resulting in differing foci when reviewing a project. Finally, the feedback received from the Planning Commission/Planning Board tends to be just before a decision for the planning application is taken and can be quite ad hoc, depending on the board's opinions at the time.

Stakeholder input during project review tends to be unbalanced with a focus on: transportation (TM); cultural heritage (SCH); and Access for All (CRPD). Input from utility services is limited. Environmental input and review is also lacking or limited to the requirements for: transplanting/tree removal permits; compensatory planting; and the use of species (invasive/non-invasive). The participation of the Environment and Resources Authority as a consultee is not very evident. It is not clear which policies or guidelines are being used to assess the design of urban open spaces, other than the Guidelines on Trees, Plants and Shrubs for Planting and Landscaping in the Maltese Islands (2002). The role and power of

Ambjent Malta and how it relates to the PA and ERA is also not clear. There is also lack of clarity on who is reviewing aspects related to water and energy efficiency and according to which guidelines.

Finally, opportunities for public participation are very limited. The public has the right to submit representations in writing; however, the extent to which these affect the outcome of a project application is quite limited. Additionally, proactive community participation is non-existent.

### **8.2.3 Challenges relating to the Governance of Urban Open Spaces**

While the research started out with a focus on investigating the planning and design of urban open spaces, as the field work progressed, it became evident that challenges also existed in relation to the governance of such spaces. Such challenges are already evident during the design process.

The extent of stakeholder participation during the design process varied depending on the architect and client. This is especially the case for community and Local Council involvement. Hesitation to involve the latter, when they are not leading the project, stems from anticipating their objection to the project. From the Local Council's end, there exists a genuine effort to involve the community. However, since this can often result in a tedious and difficult process, limited resources hinder such attempts. Community involvement in terms of voluntary schemes varied. Some Council's had positive experiences and schemes. There is scope to share these and facilitate such schemes in other Local Councils.

Liaising with the transport authority generally happened at an early stage in the process and their influence in such projects is evident. It is unfortunate however that even though various policies exist to promote pedestrian priority or traffic calming schemes, and architects are keen to adopt them, the case studies revealed that the transport authority still illustrated a tendency to prioritise vehicular provision and parking before anything else. Existing objectives and policies did not seem to count for much.

Dealing with utility companies can also be difficult as they are not always organised and ready to provide input. Consultation with the Superintendence of Cultural Heritage (SCH) and the Commission for the Rights of Persons with Disability (CRPD) seemingly happens at an early stage in the process and was always given importance. On the other hand, consultation/participation of environmental NGOs during the design process was minimal.

In terms of management, there is seemingly no entity or process to facilitate the development or transformation of public areas. This is not the role of the PA or ERA. The Local Councils are responsible for the upkeep and maintenance of urban open spaces within their locality; however, their resources are extremely limited. The case studies illustrated that the presence of an authority or entity leading the project with direct access to central government was an important model for realising projects of a significant size and complexity. These entities all had a specific mandate, with the necessary drive and resources. Additionally, National or EU funds (rather than simply Local Council funds) are required to carry out projects which go beyond embellishment to bring about change and substantial improvement. These entities all had the remit to be allocated, or resources to tap into, such funds.

Local Councils in fact lack the resources for implementing new projects. They require expertise and assistance especially for the use of vegetation and water management. There is scope to provide centralised resources to assist them on technical issues. There could be a platform which they would turn to for advice and expertise on planning aspects and developing project ideas. Other difficulties raised

included: the use of Private Public Partnerships; lack of enforcement which was one of the reasons why entities did not like introducing 3<sup>rd</sup> parties into the operations of public spaces; the tendering process which emerged as a limiting factor in realising innovative solutions; and addressing complications when transforming open spaces across Local Council boundaries.

Lastly, the maintenance of urban open space requires attention. The most common reasons for not using open spaces were that they were dirty and lacked maintenance. Local Council's tend to have contracts for general cleaning of public spaces. Maintenance of soft landscaping was either part of the general cleaning contract or separate. However, it was felt that current contractors lacked expertise for this, or else dictated supplies. Repairs beyond general maintenance are problematic as it is difficult to find contractors for small jobs or the process for engaging them is lengthy. Additionally, the provision of funding for maintenance is not generally sourced upfront as part of the project planning. National funds were required to keep up with commitments made once the case study projects were finalised. Local Councils normally do not have the resources and funds to manage and maintain open space projects of a certain level.

#### **8.2.4 The Role of Spatial Planning: Towards Green Infrastructure Planning**

Clearly the planning of open space has long played an important role in facilitating the potential of urban open spaces to add value to the built environment. This can be seen through the various planning models which have emerged since the 18<sup>th</sup> century (Maruani & Amit-Cohen, 2007). In considering the potential contribution of urban open spaces to sustainable development, the concept of planning for green infrastructure is being recognised as one of the more relevant planning approaches in moving towards sustainable and resilient urban areas (Toth & Damyanovic, 2019; Schiappacasse & Muller, 2015; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; European Commission, 2013; European Commission, 2019).

Consolidating and comparing the results to the green infrastructure framework as informed by literature (section 7.2 p282) clearly illustrates that urban open spaces in Malta are not acting as green infrastructure. There is much which the planning system can do to promote the principles of integration, connectivity, multifunctionality and social inclusion. As Schiappacasse (2015) believes, green infrastructure initiatives require specific planning approaches for its successful implementation. Hansen et al. (2017) also advocate that planning for GI is more about a synthesis of different approaches. Some of the key qualities identified through the literature are: a multi-scale perspective; strategic, integrated and adaptive approach; participatory and collaborative planning; clear definition at all levels of the role and function of entities; integration with other policy sectors; and promoting interdisciplinary and inter-sectorial cooperation (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Laforteza, Davies, Sanesi, & Konijnendijk, 2013; Pauleit, et al., 2018; Schiappacasse & Muller, 2015).

Such qualities need to be translated into practical tools, mechanism and actions on the ground. The literature (Chapter 6) has described various planning instruments which as illustrated through the research, are currently lacking in the Maltese context. There is therefore definitely scope for the planning system to play a role in facilitating the potential of urban open spaces to add value by planning for green infrastructure. This has been outlined through the framework provided in section 7.5.2 p322. However, through the research it is also evident that the planning system does not work in isolation. The need to advocate and move towards good governance is also evident. In this sense the research contributes to

understanding the parallel mechanisms which need to work in parallel with the planning system to facilitate the potential for urban open spaces to act as green infrastructure.

The concept of governance has emerged where increasingly, public authorities and grass roots initiatives work together. However, for good governance to be ensured a clear framework is required which creates and ensures the right balance between economic motives, ecological interest and social inclusion (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017). Due to the interdisciplinary and multifunctional nature of GI a more comprehensive change throughout the planning system is required in order to address the challenges identified in relation to the governance of urban open spaces. A framework for such change has also been developed as outlined in section 7.5.3 p326. It is therefore evident that while spatial planning does have an important role to play by adopting the concept of 'green infrastructure planning', the operationalization of such planning also needs to be addressed.

### **8.2.5 Acknowledging Potential Barriers and their Implications**

In striving to develop knowledge on the potential mechanisms which can facilitate the potential for urban open spaces to contribute to a more sustainable built environment, the focus isn't limited to the developed framework for the planning of our urban open spaces which due to the nature of this research, is context specific. The research has also identified the potential barriers and implications in moving towards or attempting to implement such a framework. This contributes to the development of knowledge when trying to understand and develop mechanisms which can assist practitioners in productively tapping into the potential of our urban open spaces to address urban challenges. This is also in light of the need to gain support for planned measures and actually achieve policy objectives (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017).

Looking at the barriers as identified and described in Chapter 7, it can be said that these could be organised into three main themes. These are: socio-cultural tendencies; lack of resources; and inadequacies relating to the planning and governance. The last theme links planning and governance together because very often the barriers identified are quite interlinked. While this has been developed based on findings from the specific case of Malta, the three themes suggest a framework for understanding and addressing potential barriers. What the framework also illustrates is that even though barriers do exist, which could be addressed independently of the planning system, there are a number of barriers with direct links to the operation and implementation of the spatial planning system. This reinforces the idea that the spatial planning system does have an important role to play.



Figure 171: A framework for understanding the barriers

## **8.2.6 Emerging Considerations and Parallel Mechanisms**

In a final attempt to try and really understand how spatial planning can facilitate the potential for urban open spaces to add value to our built environment and contribute to sustainable development, there are a number of considerations to be made and potential parallel mechanisms which emerge in relation to the barriers and implications identified.

### **A New Public Infrastructure: Image, Branding and Creating Social Demand**

In attempting to adopt a green infrastructure planning approach, the emphasis needs to be made that this is a new type of public infrastructure where the benefits are not just environmental but also social and economic. In this sense the image, branding and awareness building of the importance of this type of infrastructure is crucial. Additionally, in socio-cultural contexts where car centric mentalities still predominate, and there is tendency for a lack of contact with nature in daily lives, there is the need to create social demand for it. There needs to be constant communication on why such spaces and such an approach to planning and designing urban open space is important.

### **A Strategic Integrated Planning Approach**

The research outcomes support the idea that the multifunctional nature of GI requires an approach where interdisciplinary, integrated, collaborative and collective working is adopted. This needs to be part of a wider long-term strategy which is committed to at the highest government level. The research identified this as crucial since as a multifunctional infrastructural network, it is made up of different components, meaning, that this concerns multiple ministries whichever the context. There needs to be coordination between ministries, authorities and departments. Policy making from various sectors and at various levels needs to tie in and contribute so as to move away from a silo thinking sectorial approach. Green infrastructure needs to form an integral part of the planning system, meaning that the inclusion of green infrastructure and its maintenance should also form an integral part of the development permitting process.

### **A Regional Approach**

While advocating bottom-up initiatives is important, the principles of green infrastructure planning also require a regional approach to address the integration of different scale levels. This emerged clearly during the first phase of data gathering but also through the focus group discussions. Malta's particular scale means that locality sizes are quite small and the Local Council set up lacks resources and expertise. The importance of connectivity means that the planning of such infrastructure needs to happen regionally and the role of various spaces as part of a wider network/system needs to be determined. It would also be more efficient to coordinate aspects such as: provision of expertise; monitoring and maintenance (to some extent); or funding and implementation programs at a more regional level while still retaining strong local input and facilitating bottom-up initiatives. Developing the right framework and set up for coordinating and integrating the different scales is crucial.

### **An Implementation Driven Approach**

There is the need to develop mechanisms which ensure the implementation of plans and policies. So, while the planning system does play an important role, it needs to translate into enforceable legislation,

mandatory requirements and standards and primarily adopt an implementation driven approach. Visions, strategic objectives, guidelines and ‘goodwill’ are simply not sufficient in a context where popular demand and a cultural lethargy for activism are lacking. Implementation plans, which identify specific projects, ownership and implementation responsibility as well as envisaged timelines are required.

### **Emphasise the Health Benefits**

Often, the availability of green infrastructure or even simply open space is not common in highly urbanised contexts as is the case with Malta’s urban conurbation. As a result, this has resulted in limited contact and appreciation for nature and more often than not, the socio-cultural tendency is to prioritise other open space uses, such as development or the provision of vehicular movement and car parking. The presence of vegetation in urban areas is sometimes also seen as a nuisance (requires maintenance, creates dirt). Overcoming such tendencies requires a targeted approach. Focusing on the health benefits and the value for enhancing society’s wellbeing and quality of life emerged as a potential strategy in this regard.

### **Capacity Building Strategy**

The challenges and proposals identified the need for knowledge building in the form of training or building expertise through certification programs. Capacity building however moves beyond this. A strategy is required to target and build capacity within institutions with respect to having the human resources across the disciplines and with the different expertise and right skill sets to deliver. From planning to operational aspects; from central government to local bodies to the professional community, this needs to be addressed.

### **Ensuring Transparency and Building Trust**

Traditionally, in the Maltese context, public engagement as part of the planning or design process has not been forthcoming. Potential apathy towards what happens in the public realm and prioritizing the public good was identified. There is therefore the need to foster a culture of trust. Youth groups could be particularly targeted as a strategy. In tandem, introducing transparency in the processes to be adopted is crucial. Which spaces are public? Is the public actively engaged? How will the state, private sector and civil society work together? Who gets what and where? Additionally, clear standards need to be set which are known and available for all.

### **Creating a Sense of Ownership**

This ties in with the need to create social demand due to traditional socio-cultural tendencies. However, it goes beyond. It addresses the need to create a sense of love for such places, a sense of ownership amongst the community. Considering the provision of limited property rights could help address this. This sense of ownership is also important amongst the authorities. Fostering a common vision where project objectives are developed horizontally in parallel rather than top-down and then sideways is crucial.

### **Monitoring and Enforcement**

The need for maintenance to form an integral part of project planning and design emerged strongly. Moving beyond this however, was also the need for it to be part of any permitting or funding program. In order for this to be successful, constant monitoring is crucial, not only in relation to maintenance, but also with respect to learning and re-informing planning and design decisions. Here the need of enforcement



and control, in terms of legislation and policy implementation is essential. What emerged strongly is not simply the existence of regulation but the importance of implementing and enforcing it. Close monitoring in relation to the management and control of such spaces is therefore crucial.

### **The Role of Political Commitment**

While the research has shown that the political interest in the concept of green infrastructure seems to be increasing, the need for strong political will is vital in adopting such an approach. The various focus groups revealed that discussions and research initiatives have been taking place over the last few years, between authorities and various stakeholders. However, decisions still have to be taken to move forward. The need for real political commitment to do this was considered essential as one of the drivers for change.

### **A Clear Mandate**

Finally, in relation to the previous point, a clear mandate needs to be given. Due to the multi-functional nature, the mandate has to be given for the leadership and co-ordination of such an approach. This mandate also needs to include the identification of the collaborating actors and definition of the different remits, accountability and authority to take decisions. This is key for creating ownership. Recognizing, the multi-functional nature is an extremely important consideration in assigning a coordinating role so as to avoid adopting a sectorial approach. The mandate needs to be given both at a regulatory, policy and planning level as well as for the implementation, operational and maintenance side of things.

## **8.3 Final Reflection: Advocating a Multi-faceted and ‘Middle-Up’ Approach**

While spatial planning systems do have an important role to play, having planning instruments in place is simply not enough. The literature advocates the need for good governance or co-governance. The refined framework presented in section 7.5 p320, advocates a multi-faceted approach. This suggests that actually there are a number of measures which could or should be introduced. The question however is, what will it take for such proposals to be introduced? International best practice illustrates the potential role of grass roots initiatives. However, in a context where social demand is lacking and apathy towards common good, or activism in the voicing of opinions is evident, can such grass roots movements be the answer? In a socio-political context which lacks real commitment also stemming from socio-cultural tendencies which do not prioritise or appreciate the value of green open spaces, what are the answers? As a member state of the European Union, the role of EU funding mechanisms or directives was also raised but should it be a waiting game for successful funding applications or impositions from the European Union?

Figure 172 lists the various measures presented in the refined framework and attempts to identify which sort of governance approach could be adopted for each measure. The first approach would be a top-down approach which depends on political will. The second indicates that the measures could be initiated through a middle-up/co-governance approach, while the third identifies those measures which could be carried out by individual grass-root/bottom-up initiative. This analysis clearly illustrates that while a lot does depend on top-down initiatives, there is also a substantial amount which can be attempted through co-governance approaches.

Leaning on this idea, this dissertation recommends that there is scope to further explore a ‘middle-up’ co-governance approach in line with what Ambrose-Oji et al. (2017) advocate as ‘green hubs’. According to Schiappacasse et al. (2015) the operationalization of the multi-functionality of green infrastructure is missing. Could a ‘middle-up’ approach be one way to operationalize integration and multifunctionality? In contexts where the lack of real political commitment is evident a top-down approach and resultant lack of ownership which might ensue is clearly not the answer in modern day planning. If socio-cultural tendencies bring into question the real effectiveness of bottom-up initiatives particularly in relation to strategic level thinking, then clearly there needs to be a middle ground. Ambrose-Oji et al. (2017) acknowledge that active citizen approaches tend to be local but with the support of local governments/municipalities their efforts could contribute to more strategic aims. However, if such support is lacking how can it be instigated?

		Governance Approach		
		Top-down / Political Will Dependent	Middle - Up / Co-Governance	Bottom-Up / Grass Routes
<b>Measure/Proposal</b>	<b>Planning Mechanisms</b>			
	<b>Spatial Planning Measures</b>			
	Spatial Audit			
	Framework for Integrated Spatial Planning of GI/Open Spaces			
	National Green Infrastructure Strategic Policy/Plan			
	Regional Spatial Plan for a Network of Open Spaces / Green Infrastructure within the Urban Conurbation			
	Centralised Parking Management Plan for the Urban Conurbation			
	Implementation Programs			
	<b>The Development of Guidance</b>			
	<b>The Development of Policy and Standards</b>			
	<b>The Planning Permit Review Process</b>			
	Stakeholder Consultation Framework for Open Space Projects			
	Training / Creating Awareness Amongst Case Officers			
	Establish Formal Design Discussion Meetings			
	Interactive Public Engagement Opportunities			
	<b>Governance Requirements</b>			
	<b>Developing Knowledge: Expertise and Awareness Building</b>			
	Training Sessions			
	Expertise Development			
	Promotion & Awareness Building			
	Monitoring & Research			
	Capacity Building Strategy			
	<b>Implementation and Generating Funding</b>			
	Targeting EU Funds			
	Dedicated Budget linked to an Implementation Program			
	Link Development Planning Fund to an Urban Green Infrastructure Implementation Program			
	Introduce Environmental Regulatory Systems			
	<b>Pilot Projects</b>			
	Framework to facilitate Pilot Projects and Testing of Innovative ideas			
	<b>Involving the Private Sector</b>			
	Programs to Facilitate/Stimulate the Involvement of the Private Sector			
	Develop Clear Parameters Which Protect the Public Interest			
<b>Involving Civil Society</b>				
Program to Assist Local Councils with Community Engagement				
A Model for Working with Civil Society				
Participatory Budgeting Schemes				
Coordinated Civil Society Lobby for Green Infrastructure in Urban Areas				
Mechanism for 3rd Parties to Enforce Legislation & Implementation of Policies				
Programs to work with Strategic Community Groups				
<b>Place Keeping: Maintenance and Management</b>				
In Depth Study on Maintenance Needs				
Establish Maintenance Funds at Project Inception				
Dedicated Budget for Maintenance & Management of Urban Open Spaces				
Maintenance Volunteering Schemes for the Community				
Coordinated Regional Response for Monitoring and Maintenance of Green Infrastructure in Urban Areas				
Maintenance Guidelines				
<b>'Organisational' Requirements</b>				
Establish a Strategic Cross-cutting Policy Co-ordinating Body				
Create a Set-Up to Support and Facilitate Active Citizen Approaches				
Establish a Unit/Platform to DRIVE the Transformation of Urban Open Spaces into Green Infrastructure				

Figure 172: Proposals i.r.t. potential governance approach

The suggestion is made for a more collaborative approach of a ‘middle-up’ nature which brings together various institutions and entities, both public and private to adopt the concept of ‘urban learning labs’ or ‘urban green lab’ (Pauleit, et al., 2018; URBACT, 2016). This could be a means of instigating change through

supporting the spatial planning system in adopting a green infrastructure approach. This is advocated as a mechanism to reinforce the role of spatial planning in facilitating the potential for urban open spaces to contribute to sustainable development. This would see the creation of strong interdisciplinary collaborations, between academic and professional practitioners with the aim of creating 'knowledge lobbies' which actively target funding opportunities for research innovation and implementation in an integrated manner.

One of the strongest emerging thoughts throughout the literature is the need to adopt a multidisciplinary and integrated approach due to the multi-functionality of green infrastructure. In a context where fragmentation and lack of integrated working prevails, together with the lack of awareness of the real benefits of green infrastructure and the required human resource capacity with the appropriate expertise (across the disciplines concerned), it is now the time, more than ever, that authorities, professionals, academics, the private sector and the community come together to pool resources and knowledge, and combine initiatives to create a coordinated effort.

Yes, there is the need for a clear mandate. However, if the mandate isn't given, does one have to wait for it to be given? Is there a way to take ownership of the mandate? Could educational and research establishments take on this role and instigate collaborations in the form of 'green hubs', 'urban learning labs' or 'urban green labs' to drive things forward? GREEN SURGE (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Ambrose-Oji, et al., 2017) set a bench mark and paved the way for further studies related to GI planning. Various governance approaches are identified to support such planning. Grass roots initiatives and co-governance models are identified as best practice. This research adds to this by identifying socio-cultural trends as also playing an extremely important role. Planning and governance systems need to take these into account.

Lastly, previous research (Pauleit, et al., 2018; URBACT, 2016) adopted the concept of Urban Living Labs or Urban Green Labs. This study suggests that such labs are used as a research approach and strategic mechanism for addressing the barriers identified. In particular, the socio-cultural aspects. In conclusion, this thesis advocates the use of such 'middle-up' approaches as a strategic mechanism for supporting the strategic integrated planning and implementation of green infrastructure in urban areas.

#### **8.4 Research Contribution and Transferability**

Moving towards sustainable development requires a contextualised approach (Julien, Hamilton, & Croxford, 2014). This research used Malta as a case study to develop knowledge on how spatial planning can support and facilitate the potential role of urban open spaces to contribute to sustainable development. As the research progressed, it focused on how open spaces in urban areas can act as GI so as to address current urban challenges hindering sustainable development.

While the results provide insights specific to the Maltese conurbation, comparison to literature in the field allows the identification of similarities but also clear differences relating to Malta's particular context. For example, when considering such small scales, the national and local scale is often interchangeable. In parallel, policies tend to be developed nationally but then are applied locally. With respect to addressing multi-scale perspectives and nesting of plans (Lafortezza, Davies, Sanesi, & Konijnendijk, 2013), which GI requires, it is therefore important to define a 'regional' or 'city' scale, and develop planning instruments which address the urban conurbation of such city states holistically.

Another insight is that in contexts where the provision of infrastructure is still directly related to prioritising vehicular movement, despite policy which determines otherwise, the idea of green infrastructure as a new type of public infrastructure, in need of investment levels similar to other types of infrastructure, still needs to emerge. This requires the establishment of integrated organisational structures (Schiappacasse & Muller, 2015), starting at the highest ministerial levels, from planning to implementation and operation. The development of new forms of governance to address this is an important focus area. In highly urbanised contexts where socio-cultural and socio-political tendencies do not prioritise green open spaces over other forms of development a 'middle-up' approach vs 'top-down' or 'bottom-up' should be explored.

The findings of this research therefore continue to build on existing research in understanding the difficulties and realities in adopting a GI approach. Planning systems and governance structures emerged as two important aspects in recent research (Ambrose-Oji, et al., 2017; Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Schiappacasse & Muller, 2015). This study confirms this and also identifies socio-cultural considerations as playing an extremely important role. Specific measures need to be developed to address aspects such as: cultural lethargy, lack of interest or value of open spaces and lack of trust in planning and governance systems when it comes to providing for the greater public good. Thus, through the identification of barriers and implications specific to the Maltese context, and the potential for generalisation (Gerring, 2004) or contribution to theory of case study research designs (Riddler, 2017), the results also contribute to understanding the enablers and constraints involved in adopting a green infrastructure approach for the planning of urban open spaces.

Various parts of the methodology could also be adapted for different purposes. For example, the survey which was developed to physically assess existing open spaces was very fruitful in creating a substantial strategic evidence base and wealth of knowledge in relation to whether existing open spaces contribute to sustainable development. The survey is however, quite lengthy. There is scope to consolidate it and create a checklist for analysing existing open spaces and design proposals as a review process for improving existing spaces. It could also be adapted to develop various versions for different open space typologies.

Finally, it is also interesting to reflect on how this study relates to previous research relating to the planning and design of urban open spaces. Much research related to urban open spaces tends to focus in on specific aspects of design or planning. This study has attempted to adopt an integrated approach so as to understand how various aspects of planning and design come together. Additionally, the departure point is not a specific planning approach such as for example the concept of GI. Rather, the aim was to explore the planning and design of urban open spaces in relation to sustainable development. Thus, while similar research (section 2.2) might lean towards more social, environmental or economic aspects, this study attempted to address principles relating to the 3 pillars of sustainable development in a holistic manner.

This approach is in fact similar to that taken by Noguera et al. (2016). Having said that, as the research developed, strong parallels emerged relating to recent research on UGI (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017) as a planning approach. This ultimately provided a strong framework against which to consolidate the findings. In conclusion it can be said, that in studying the potential contribution of urban open spaces to sustainable development, the GREEN SURGE (Hansen, Rall, Chapman, Rolf, & Pauleit, 2017; Ambrose-Oji, et al., 2017) research could also provide a strong theoretical framework for future case studies. This could also have the potential to simplify the research design.

## 8.5 Further Research

This research set out to explore the physical design of urban open spaces in relation to sustainable development and in particular to understand how spatial planning can support such design principles. While section 8.3 p343, provides a discussion on the research conclusions, it is also important to acknowledge that it is unlikely that any solution or conclusion is sufficient to answer such complex problems. And while it is the nature of a piece of research to attempt to reach a conclusion, it is also dangerous to oversimplify the complexity of the planning and design of urban open spaces.

As a researcher who also practices in the field, my experience has often show me that planning and designing for sustainable development often implies going against what the majority want. So, what is the correct answer and how do we bring about change? This is the complexity of the situation which needs to be acknowledged. In fact, as the research progressed a number of interesting strands emerged relating to this. However due to the need to retain the research focus and purpose these could not be followed up. Some of these are therefore discussed with the aim of acknowledging the complexity of the topic and identifying scope for further research.

The implementation and enforcement of existing policy is one such tricky area. As the policy review progressed it became clear that policy does exist in relation to some of the design principles. However, its importance is somehow still not recognised and it fails to be implemented. Further research could focus in on this to really understand why this is. Is it really down to the lack of political will to implement unpopular policies or are there other factors such as the lack of knowledge or resources which compound this? Why is the lack of implementation of certain policies still prevalent? In relation to this, a suggestion was made during one of the focus groups for a mechanism to be introduced which would allow third parties to ensure that existing policies are implemented and enforced. Such a mechanism would need to be introduced through legislation. It would be extremely interesting for this to be researched further and understand what it would take to develop and introduce such legislation.

Additionally, while the planning and governance proposals were being presented to the focus groups, and even through the analysis of the results, it became clear that there tended to be a general agreement for most of the proposals. What could have been more interesting (as in fact suggested by one of the participants) is an attempt to prioritise the proposals and try and understand which would be most effective in bringing about change. As this emerged, the possibility to follow up the focus groups with a quick online survey (exploring prioritisation) was considered. However, once again time limitations had to be acknowledged. Additionally, such an endeavour would probably merit a much more in-depth research methodology and analysis and therefore could provide scope for a research proposal in itself.

Whilst this research has addressed a specific case-study and context, the research methodology developed provides a framework which could serve as a model to be applied to other contexts. The research therefore paves the way for further studies aimed at understanding the current or potential application of green infrastructure planning in urban areas. In particular, it would be interesting to apply this to southern European and Mediterranean countries with similar climates, governance structures and/or socio-economic backgrounds. As Taylor (2013) advocates, much of the research on green space, tends to have a northern European focus and bias. By applying the methodology to other case studies, the findings of this research could then be compared to findings from other similar or even dissimilar contexts.

Finally, while this dissertation advocates a 'middle-up' collaborative approach and the application of 'urban learning labs' as a means of driving change in contexts such as Malta, this in itself provides an area for further research. With appropriate funding, in Malta's case, the University of Malta could potentially play an important role and instigate such an approach. A set up could be created which brings together the multi-disciplinary expertise of its academics to work with public and private entities to develop and run targeted research programs. Through the engagement of additional professionals, the research could also be in the form of the implementation of pilot projects which are also essential for knowledge development. There is therefore scope to: set up and trial such a mechanism; explore how different entities could be involved; study the process; and finally understand its effectiveness, success or failure in practice.



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## **Appendices**

**Volume A: Theory Development**

**Volume B: Phase 1 Method Development and Materials**

**Volume C: Phase 1 Data and Analysis**

**Volume D: Phase 2 Method Development and Materials**

**Volume E: Phase 2 Data and Analysis**

**Volume F: Research Ethics**