

# STRATEGIC ENVIRONMENTAL ASSESSMENT OF MALTA'S NATIONAL TRANSPORT STRATEGY AND MASTER PLAN

ENVIRONMENTAL REPORT & APPROPRIATE ASSESSMENT



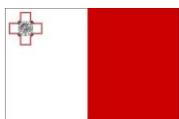
# Development of a National Transport Model Supporting Strategy Development in Malta



## Strategic Environmental Assessment on Malta's National Transport Strategy and Master Plan

*Environmental Report*

Version 1.1



Operational Programme I – Cohesion Policy 2007-2013  
*Investing in Competitiveness for a Better Quality of Life*  
 Event part-financed by the European Union  
 European Regional Development Fund (ERDF)  
 Co-financing rate: 85% EU Funds; 15% National Funds





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Development of a National Transport Model Supporting  
Strategy Development in Malta:

**Strategic Environmental Assessment Report**

  Systematica

  
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Revision Details		
Version	Date	Remarks
1.0	10/10/2016	Environmental Report, for consultation
1.1	25/11/2016	Environmental Report, Final

***Please cite this publication as:***

Transport Malta (2016), *National Transport Strategy – Strategic Environmental Assessment Environmental Report*

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## Appendices (separate reports)

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Appendix 1: Scoping Report

Appendix 2: Appropriate Assessment

## Glossary

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AAI	Area of Archaeological Importance
AHLV	Areas of High Landscape Value
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
EC	European Commission
EEA	European Environment Agency
EIA	Environmental Impact Assessment
ERA	Environment & Resources Authority
ETS	European Trading Scheme
EU	European Union
GHG	Greenhouse Gas
GI	Green Infrastructure
GMO	Genetically Modified Organism
GRDP	Greening Regional Development Programme
IBA	Important Bird Area
ICT	Information and Communications Technology
LN	Legal Notice
LULUCF	Land–use, Land-use Change and Forestry
NTS	National Transport Strategy 2050
MDG	Millennium Development Goal
MEAIEM	Ministry for European Affairs and Implementation of the Electoral Manifesto
MEPA	Malta Environment and Planning Authority
MRA	Malta Resources Authority
MTP	Mechanical Treatment Plant
NFRP	National Flood Relief Project
NO	Nitrogen oxide
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>X</sub>	Oxides of nitrogen
NREAP	National Renewable Energy Action Plan
NSO	National Statistics Office
O <sub>3</sub>	Ozone
OP	Operational Programme

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PA	Planning Authority
PAH	Poly-aromatic Hydrocarbons
PCB	Poly-chlorinated Biphenyls
PM	Particulate matter
PTQC	Public Transit Quality Corridors
R&I	Research and Innovation
RES	Renewable Energy Sources
SEA	Strategic Environmental Assessment
SMEs	Small and Medium Enterprises
SO <sub>2</sub>	Sulphur dioxide
TEN-T	Trans-European Transport Network
TM	Transport Malta
TMP	Transport Master Plan 2025
UK	United Kingdom
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UNESCO	United Nations Educational, Scientific and Cultural Organization
UCA	Urban Conservation Area ( )
VOCs	Volatile organic compounds
WEEE	Waste Electrical and Electronic Equipment
WFD	Water Framework Directive
WHO	World Health Organisation
WSC	Water Services Corporation

# Non-Technical Summary

1. This non-technical summary summarises the Environmental Report, which describes the Strategic Environmental Assessment (SEA) in relation on the National Transport Strategy 2050 (NTS) and the Transport Master Plan (TMP) 2025.
2. The assessment was carried out in accordance with the SEA Regulations (Legal Notice 497 of 2010), which transpose the European Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment.

## National Transport Strategy and Master Plan

3. The **National Transport Strategy** provides a vision for the transport sector in Malta. It goes on to describe the strategic goals and direction to achieve these goals as well as identifying indicators to measure progress.

4. The vision for the NTS is:

*To provide a sustainable transport system which is efficient, inclusive, safe, integrated and reliable for people and freight, and which supports attractive urban, rural and coastal environments and communities where people want to live and work: now and in the future.*

5. Six strategic goals have been developed in the context of the vision. The goals were developed based on research, policy review and analysis described within the introductory chapters of the NTS. The table below summarises the strategic goals.

Table 1: Strategic goals of the Transport Strategy

<b>Strategic Goal 1: Transport to Support Economic Development</b>
Reduced congestion and removal of traffic bottlenecks improves travel times thereby supporting competitiveness.
Improved reliability and efficiency can allow for better journey planning.
Strengthening transport links and connectivity, nationally and internationally increases access to markets.
Reduced operational costs and improved seamless interconnectivity increases profitability and can support competitiveness.
Improved experience and ease of access for non-regular users can support the tourism product.
<b>Strategic Goal 2: Transport to Promote Environmental and Urban Sustainability</b>

Reduce and mitigate greenhouse gas emissions
Ensure efficient and sustainable use and management of resources
Ensure adaptation to climate change
Minimise impact of transport to enhance the landscape and townscape
Preserve the natural habitats and biodiversity
Respect historical and heritage resources
<b>Strategic Goal 3: Transport to Support Social Development and Inclusion</b>
Ensure travel options and journey quality are suitable for all user groups
Ensure affordability for targeted social groups
Increasing societal awareness on the need for sustainable travel choices
Reduce severance and adverse impacts on specific communities
Integration of isolated communities
<b>Strategic Goal 4: Transport to Provide Accessibility and Mobility</b>
Easy access to daily facilities
Convenient and reliable journey times
Ensuring an equitable and sustainable approach to all transport modes
Managing freight and urban logistics
<b>Strategic Goal 5: Transport to be Safe and Secure</b>
Resilient critical infrastructure
Extending the lifetime of high quality infrastructure
Reduction in injuries and loss of life relating to transport accidents
Rapid response to emergencies and accidents
Crime and terrorism
<b>Strategic Goal 6: Transport to Work towards Public Health</b>
A clean and pleasant public realm
Active lifestyles
Reduced pollution (air, noise and light)

6. The NTS also defines eight key guiding principles based on European and national policy as well as trends identified in the NTS. The Master Plan then identifies operational objectives that were developed from the guiding principles, providing a more detailed way forward in working towards the strategic goals outlined in **Table 1**

above.

7. Chapter 5 of the NTS identifies indicators and targets for achieving each of the strategic goals.
8. The **Transport Master Plan** aims to achieve the goals set out in the NTS through a number of measures that have been designed to be implemented within the short to medium term (within 10 years).
9. The TMP first provides a detailed description of the current situation of the transport sector in Malta. A SWOT analysis of all transport subsectors is presented.
10. Operational objectives and subsequent measures were developed based on identifying those aspects in the transport sector that require addressing in order to ensure effective and efficient management of the sector and reduce externalities. This was done through a number of exercises including analysis of existing national and EU policies and plans, data gathering, computer modelling and forecasting through the application of a four-stage transport mathematical model for estimating transportation demand as well as public consultation. The model outputs include aspects such as daily trips, modal share and distance, time and speed, which together allow for the analysis of transport network performance and externalities both of the base year (2014) as well as allowing the planners to forecast how implementation of certain measures might affect these aspects. Feedback obtained during the public consultation process on the TMP will also affect the final list of measures as well as the findings from the SEA and potentially the Appropriate Assessment.
11. **Table 2.2** in the Environment Report lists the Operational Objectives and Measures for implementation and are divided into the various transport sectors or aspects as follows:
  - Road;
  - Public transport;
  - Intermodal;
  - Internal maritime;
  - External maritime; and
  - Aviation.
12. There are also a number of common measures that apply horizontally.

## Strategic Environmental Assessment framework

13. The objective of the SEA Directive is to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development. It is the process of evaluating the environmental impacts of any proposed plan/programme likely to have significant effects on the environment. The SEA process helps to inform the decision making process with the aim of improving the final plan or programme and promoting sustainable development. In addition, the SEA process aims to increase public involvement in decision making at a strategic level, with consultation at various stages in the SEA process being a requirement of the Regulations.
14. The five main steps required as part of the SEA process are summarised in **Table 2** below.

Table 2: Key stages in the SEA process

Stage in SEA Process	Details of Process Required
Screening	Screening is required to determine whether the proposed plan/programme is likely to have significant environmental effects and whether an SEA is required.
Scoping	Scoping enables the coverage and level of detail of the Environmental Report to be determined in conjunction with the statutory consultee/s.
Environmental Report	The Environmental Report details the anticipated environmental impacts of the programme and any proposed amendments to the plan to mitigate its effects. It must be consulted upon.
Adoption	The Adoption Report details the results of consultation; how comments have been incorporated into the programme; the final programme; and the proposals for monitoring the environmental impacts of the programme.
Monitoring	The Monitoring stage is undertaken during implementation of the programme and serves to identify the level of monitoring required and, should adverse impacts be identified, any remediation proposals.

15. A Scoping Report was prepared and is included in **Appendix 1** of the Environment Report. Consultation on the draft Scoping Report was undertaken with a number of identified stakeholders, including the SEA Focal Point, the former Malta Environment and Planning Authority (MEPA), the Malta Resources Authority (MRA), the Ministry for Energy and Health, the Ministry for Sustainable Development, the Environment and Climate Change, the Environmental Health Directorate, and the Agriculture & Fisheries Regulation Department.
16. Consultation with the general public was undertaken from 27<sup>th</sup> March 2015, when the Scoping Report was made available through Transport Malta's website.
17. This Environmental Report is based on the Scoping Report. It outlines the assessment of the impacts of the NTS and TMP on various environmental

parameters, as described in **Chapter 7**.

18. The Scoping Report is reproduced in **Appendix 1** of the Environment Report.
19. An Appropriate Assessment, which considers the impact of the Strategy and Master Plan on Special Areas of Conservation (SACs) and Special Protected areas (SPAs) in accordance with the Habitats Directive has also been prepared and is reproduced in **Appendix 2** of the Environment Report.

#### **Assessment Methodology**

20. Although the SEA Directive does not specifically require the use of objectives or indicators in SEA, they are a recognised way through which environmental effects can be described, analysed, and compared. SEA objectives encompass the relevant national and EU environmental priorities that can be inferred from a number of relevant national documents as outlined below (in the absence of a national environmental strategy). The Strategy and Master Plan are assessed in light of the SEA objectives. The performance of the Strategy and the Master Plan was assessed against the SEA objectives. The SEA objectives are separate from the Strategy and Master Plan objectives, although the two influence each other and may overlap. To fulfil the requirements of the SEA Directive and the SEA Regulations, 2010, the SEA objectives must cover biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape, and inter-relationships between them, where these are relevant to the sector being addressed by the plan or programme. The SEA objectives were developed on the basis of the aforementioned topics and their relevance to the OP; these are described in **Table 3**.

#### *SEA objectives & indicators*

21. **Table 3** defines the set of objectives relating to environmental issues, in support of which, relevant assessment criteria and possible data sources have also been identified.
22. The SEA indicators are measurements of trends over time. Changes in the indicators show whether the implementation of the Strategy and Master Plan would be or has been successful in improving the environment. It is to be noted, however, that changes in the indicators could be the result of factors outside the influence of the Strategy / Master Plan.



Table 3: SEA Environmental Objectives & Indicators for Assessing Impacts

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
Biodiversity, Flora & Fauna	<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites / national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	<ul style="list-style-type: none"> <li>Number of developments / interventions in protected areas</li> <li>Number of developments / interventions in Natura 2000 / SACs of national importance</li> <li>Conservation status of habitats and species</li> <li>Conservation status of habitats and species in Natura 2000 sites and SACs of national importance</li> <li>Number of developments / interventions on greenfield sites / undeveloped land</li> <li>Number of developments/interventions resulting in habitat fragmentation</li> <li>New or enhanced green infrastructure elements in urban areas</li> <li>Quality of the marine environment in terms of biological and physico-chemical elements</li> </ul>	<p>Environmental monitoring through Environmental Impact Assessment (EIA), Appropriate Assessment (AA), or other regulatory requirements as relevant.</p> <p>Environment &amp; Resources Authority (ERA)</p>
Population and Human health	<ul style="list-style-type: none"> <li>To reduce noise / vibration and</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with air quality</li> </ul>	<p>Transport Malta, ERA, OPM (Energy), Energy and Water Agency</p>

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
	light pollution <ul style="list-style-type: none"> <li>• To reduce air pollution</li> <li>• To improve road safety</li> <li>• To improve overall levels of health</li> <li>• To enhance well-being<sup>1</sup></li> <li>• To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>• To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	from traffic? <ul style="list-style-type: none"> <li>• Affect noise and vibration from traffic?</li> <li>• Affect light pollution from transport associated development?</li> <li>• Affect road safety?</li> <li>• Reduce traffic congestion?</li> <li>• Promote modal shift to more sustainable options?</li> <li>• Improve accessibility and transport links to services, facilities and opportunities?</li> <li>• Promote an active lifestyle?</li> </ul>	emission level standards <ul style="list-style-type: none"> <li>• Noise levels</li> <li>• Number of noise complaints related to transport related activities</li> <li>• Number of road accidents/injuries</li> <li>• Access to services and facilities by public transport, walking and/or cycling</li> <li>• Number of improvement schemes for pedestrian and cycle routes</li> <li>• % of bus fleet with facilities for accessibility for the disabled and people with impaired mobility</li> <li>• Modal split</li> <li>• Bus services running on time</li> <li>• Journey times</li> <li>• Public transport patronage</li> <li>• Satisfaction with local bus</li> </ul>	

<sup>1</sup> In a consultation meeting held with the Department of Environmental Health (at its request), it was recommended that the environmental assessment should consider also well-being.

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
			service <ul style="list-style-type: none"> <li>• Number of schemes for improving transport coordination and integration including interchange between cycling / walking and other forms of travel</li> <li>• Life expectancy</li> <li>• Proportion of street lamps with downward beam</li> </ul>	
Water	<ul style="list-style-type: none"> <li>• To maintain or improve the quantity and quality of ground and sea water</li> <li>• To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of the marine environment</li> <li>• Bathing water quality</li> <li>• Number of pollution incidents attributable to transport related activities</li> <li>• Quality of the marine environment in terms of biological and physico-chemical elements</li> <li>• Quality of groundwater in the vicinity of any projects related to the transport sector</li> <li>• % of rainwater harvested</li> </ul>	PA and ERA, potential permit requirements  Sustainable Energy and Water Conservation Unit, OPM (Energy), Energy and Water Agency

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
Emissions to air	<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	<ul style="list-style-type: none"> <li>Emission trends of key pollutants (such as NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>) over time</li> </ul>	ERA
Climatic factors and climate change	<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect reduce transport related CO<sub>2</sub> emissions?</li> </ul>	<ul style="list-style-type: none"> <li>CO<sub>2</sub> emission trends over time</li> <li>Area of land at risk of flooding</li> <li>Number of projects in flood risk areas</li> <li>Number of projects that feature energy efficient design and/or use of renewable energy</li> <li>Proportion of fuel using alternative fuel technology</li> <li>Modes of transport</li> </ul>	ERA, Transport Malta, MRA, OPM (Energy), Energy and Water Agency
Soil	<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	<ul style="list-style-type: none"> <li>Soil conservation in the vicinity of any projects related to the transport sector</li> <li>Number of pollution incidents attributable to transport related activities</li> <li>Area affected by new developments</li> <li>Number of soil permits issued by the Department of Agriculture</li> </ul>	Environmental Impact Assessment, Environmental monitoring as part of permit, Department of Agriculture
Material assets	<ul style="list-style-type: none"> <li>To maintain and include green</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> </ul>	<ul style="list-style-type: none"> <li>Number of measures/actions</li> </ul>	ERA, Transport Malta

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
	<p>infrastructure as relevant</p> <ul style="list-style-type: none"> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Affect sustainable transport modes?</li> </ul>	<p>that include green infrastructure</p> <ul style="list-style-type: none"> <li>Number of vehicles on the road over time</li> <li>Number of schemes aiming to modernise and upgrade the transport systems</li> </ul>	
Cultural heritage	<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	<ul style="list-style-type: none"> <li>Number of developments / operations located away from cultural heritage sites / areas or areas with known cultural / archaeological remains as a percentage of the total number of operations</li> <li>Number of projects targeting the improvement of the cultural landscape, townscape or quality/amenity of Urban Conservation Areas</li> </ul>	PA, Resources Management Unit Heritage Malta Superintendent of Cultural Heritage
Landscape	<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Impact Assessment results on landscape assessment</li> <li>Number of transport measures aimed at improving local landscape character</li> </ul>	ERA, PA, Transport Malta

#### 1.1.1.1 Assessing significance

23. Significance is assessed in accordance with the criteria listed in Schedule 2 of the SEA Regulations, 2010. It is already well established in Environmental Impact Assessment (EIA) literature whereby significance is a function of impact magnitude and the sensitivity of receptors. Significance may be determined in a number of ways, including expert judgement, the use of thresholds, reference to legislation, and consultation with stakeholders. Although this SEA draws on each of these methods, expert judgement and consultation predominate.
24. The assessment of significance is based on the probability of the impact occurring, on the scale of the impact, its duration, reversibility, whether it has transboundary effects, and the certainty of impact prediction.

#### Assessment of Alternatives

25. The SEA Directive requires the assessment to identify the likely significant effects on the environment of implementing the plan or programme, as well as considering reasonable alternatives, taking into account the objectives and the geographical scope of the plan or programme. **Chapter 6** of the Environment Report provides an assessment of alternatives considered when developing the Master Plan.
26. The Transport Master Plan has considered a number of scenarios in developing the measures. The following scenarios have been considered:
  - Scenario 1: Do nothing;
  - Scenario 2: Do minimum;
  - Scenario 3: Do-something 1; and
  - Scenario 4: Do something 2.
27. Based on the above, the following alternatives have been assessed:
  - **Scenario 1: Do nothing:** no changes to the network or implementation of any transport related actions;
  - **Scenario 2: Do minimum:** minimum expected changes and those committed developments. It includes all the recently implemented and committed developments from the base-year (2014) to 2020;
  - **Scenario 3: Do-something 1:** Moderate restraint in the use of private cars and increased support of public transport; and
  - **Scenario 4: Do-something 2:** Stronger restraint in the use of private cars and strong support to public transport.

28. To summarise the assessment, the Do Nothing and the Do Minimum Option provide the least opportunity for positive environmental impacts because all the measures contained in the Strategy and the Master Plan will not be implemented. This is particularly relevant for those SEA objectives related to air quality, climate change, and population and human health. The Do Nothing and Do Minimum options are likely to result in increased congestion and little regulation in the sector which are likely to lead to increased GHG emissions, air pollution, more accidents and degradation of infrastructure. The implementation of the Do Nothing Scenario was not taken forward in the Master Plan. Instead Scenario 2 (Do Minimum) was used as the comparative for the other two scenarios.
29. The modelling of the three scenarios (2,3, and 4) undertaken as part of the development of the Master Plan showed that Scenario 4 is the best option, environmentally.
30. Scenario 4 is therefore the option that is assessed in detail in **Chapter 7** of the Environment Report.

### Impact assessment

31. In summary, the assessment of the various operational objectives and their implementing measures has shown that positive impacts are expected in terms of the important SEA objectives related to emissions to air and climate change. The provision of facilities and infrastructure and additional soft measures to support modal shift are viewed positively and are likely to contribute to improving air quality and reducing GHG emissions from the transport sector.
32. The provision of facilities for cyclists, pedestrians and public transport is also considered positive in terms of supporting modal shift as well as improving transport infrastructure.
33. Negative impacts are expected from the implementation of infrastructure at a local level and where proposals seek to increase traffic especially in the maritime and aviation sectors. In particular, those projects located in sensitive areas such as Mgarr and Ċirkewwa could have an effect on the marine Special Areas of Conservation and Special Protection Areas as relevant. Development in the ports could have potential negative impacts on nearby close sensitive receptors. Interventions in Valletta and the Grand Harbour could result in potential impacts on cultural heritage and landscape.
34. The assessment also concludes that no transboundary effects are anticipated from the implementation of the various operational objectives and measures because the latter are targeted towards localised infrastructure and interventions that are unlikely to yield impacts of a transboundary nature.
35. In terms of the impact of the Strategy and Master Plan on the Natura 2000 network

and national SACs, the Appropriate Assessment considers that the main sites that could potentially be affected are:

- Il-Bahar fil-Grigal ta' Malta (SAC);
- Il-Bahar tal-Lbic (SPA);
- Rdimijiet ta' Malta: Ir-Ramla tac-Cirkewwa sa il-Ponta ta' Benghisa (SAC/SPA);  
and
- Wied Harq Hamiem (SAC).

### Cumulative & Synergistic Impacts

36. Cumulative effects are those effects that result from incremental changes caused by other past, present, or reasonably foreseeable, actions together with the proposal. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.
37. Synergistic effects interact to produce a total effect that is greater than the sum of the individual effects.
38. **Table 4** provides a general overview of the key issues identified for each environmental topic considered within the assessment process.

Table 4: Summary of cumulative environmental effects of the Transport Master Plan

SEA Theme	Potential cumulative significant effects
Biodiversity, Flora and Fauna	<p>Impacts on biodiversity, flora and fauna, could be potentially negative when new infrastructure is envisaged both on land and in the marine environment. The SEA makes specific recommendations for interventions in sensitive areas such as the marine environment at Mgarr (Gozo), Ċirkewwa and Comino where protected habitats and species are found.</p> <p>While one of the Strategy objectives is to <i>preserve the natural habitats and biodiversity</i> this objective does not directly translate into any measures in the Master Plan.</p>
Human health	<p>The TMP is beneficial in terms of human health through measures that seek to reduce emissions through promotion of modal shift. Where noise mitigation is proposed in, for example, the aviation sector, these are also considered to contribute to human health. Negative noise impacts from proposed infrastructure such as interventions in the ports are anticipated. Improvements to road safety to reduce the number of accidents / injuries will also be accrued through the road transport operational objectives. Increased cycling and pedestrian facilities are also envisaged in the Master Plan road transport operational objectives. Public transport measures are also expected to improve public transport patronage and potentially reduce use of the private car with a consequent</p>

SEA Theme	Potential cumulative significant effects
	potential reduction in emissions.
Emissions	Emissions are targeted through several operational objectives that encourage modal shift and seek to provide infrastructure to support modal shift. The provision of pedestrian, cycling and public transport infrastructure through various measures will also positively affect emissions especially if this is coupled with a decline in car usage. The replacement of conventionally fuelled buses to electric buses will also reduce emissions. Increased air traffic (as a result of aviation measures) would be detrimental in terms of emissions, however there is potential to reduce emissions through reduced waiting times from improvements to the taxiways.
Climate change	Although there are no specific climate change mitigation or adaptation measures that specifically address a reduction in GHG emissions or proposed interventions for climate change adaptation, there are several operational objectives that target increase public transport patronage, improved facilities for cyclists and pedestrians in order to encourage modal shift. Other measures include reduction in the average age of vehicles, increase in car sharing and conversion of some conventionally fuelled buses. All are expected to contribute to reducing GHG emissions from the transport sector.
Water	<p>Fresh water is only indirectly affected by the Master Plan. While there is only one measure targeting storm water infrastructure, the SEA recommends that rainwater harvesting and storm water management infrastructure are considered at a strategic level when implementing projects on the TEN-T network.</p> <p>With regards to the marine environment, a number of physical interventions are envisaged both on the coast and potentially in the sea. Since the Master Plan focuses on the TEN-T network especially for ports, any projects that address intermodal objectives or internal and external maritime should be viewed holistically so that any studies required target all the infrastructure projects envisaged by the Master Plan.</p>
Soil	The impact on soils is neutral to negative as the objectives do not directly affect soils. However, whenever infrastructure on land is proposed, the SEA recommends that soils are considered.
Material Assets	The impact on material assets is generally considered positive throughout the assessment primarily through the improvement of road space through the provision of facilities for pedestrians, cyclists and public transport. The SEA considers the sharing of road space an important component to attract modal shift away from the private car.
Cultural heritage	Cultural heritage impacts are only accrued when infrastructure projects are proposed especially in sensitive areas such as Valletta. The impacts are uncertain as artefacts may be unearthed when dredging in the marine environment or excavating on land. The

SEA Theme	Potential cumulative significant effects
	planning of projects in and around the Grand Harbour and Valletta should be assessed holistically also in the context of the cultural landscape. The potential reduction in emissions especially in congested areas could have indirect positive impacts on cultural heritage buildings and monuments.
Landscape	Landscape impacts are mainly expected when infrastructure projects are proposed especially in sensitive areas. Projects that are within close proximity to designated areas should be assessed holistically for their landscape impacts.

## Mitigation & Recommendations

39. Potential mitigation measures for each of the operational objectives and the measures are described in **Chapter 7** of the Environment Report. During the finalisation of the Master Plan and the Strategy, following the issuance of the Environmental Report and the public consultation, these measures should be considered. These mitigation measures are discussed below.

### Meeting targets to address national and international obligations

40. One of the key recommendations emerging from the SEA is the need to ensure that the operational objectives and corresponding measures work towards the implementation of targets in particular with respect to GHG emissions<sup>2</sup>. While the assessment notes that the Master Plan has the potential to yield positive environmental effects, the assessment is based on the implementation of all the proposed measures as described in the Master Plan which favours the Do-Something 2 Scenario. The targets described in Chapter 7 of the Master plan would need to be carefully monitored over the life time of the Master plan to ensure they are being met.

### Siting of new infrastructure

41. Certain interventions in the Master Plan will require the construction of new facilities / infrastructure. Many of the proposed mitigation measures for those measures that require upgrading of existing infrastructure or provision of new infrastructure (both marine and on land) require the consideration of biodiversity, soil, cultural heritage and landscape issues. In particular, developments within Valletta and the Grand Harbour need to assess impacts of proposed projects cumulatively across operational objectives addressing different transport modes; for example, roads and internal and external maritime objectives, especially in the formulation of Master Plans for these areas. The need for the assessment of alternatives is also highlighted in the SEA as

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<sup>2</sup> By 2030, the goal for transport will be to reduce GHG emissions to around 20% below their 2008 level.

well as the importance of including environmental considerations in feasibility studies. Other sensitive areas such as the marine environment at Mgarr and Ċirkewwa should be carefully considered in view of the presence of protected habitats and species. Early consultation with competent authorities such as the Environment and Resources Authority and the Superintendence of Cultural Heritage has also been recommended for the implementation of infrastructure projects.

### Specific recommendations

42. The Master Plan includes some measures that require the formulation of studies, master plans and action plans. While a Strategic Environmental Assessment has been carried out on the Transport Master Plan, this does not preclude other master plans to also be subject to SEA. Indeed it is a recommendation of the SEA that other studies are subject to the relevant assessments.
43. All the measures that target reduction in the use of the private car and use of public transport, cycling and walking should be prioritised for implementation. Setting national targets for climate change should also be prioritised.
44. The SEA recommends that the implementation start date of the operational objective that aims to reduce the use of the private car is brought forward from 2030. It is further recommends that this operational objective is closely linked to addressing illegal parking and other incentives to discourage car use. Other tangible measures should be included under this objective to effectively reduce the role of the car in the urban hub.
45. In the measures related to development in the ports it is recommended that measures that address noise and light impacts from the current operations are considered in detail. Any expansion of facilities should address noise and other impacts that arise from port operation.
46. Throughout the assessment of the operational objectives, in particular in relation to provision of transport infrastructure, the SEA recommends that green infrastructure is horizontally integrated throughout the Master Plan in order to also help in achieving targets, mitigating effects and maximising use of ecosystem services. Development of new infrastructure, in particular, new roads, should ensure that during the design phase issues related to the urban heat island effect, stormwater management from hard services and an improved environment for pedestrians and cyclists are considered.

### Monitoring

47. **Table 5** summarises the proposed monitoring plan of potential negative impacts identified in the assessment.

Table 5: Monitoring Plan

SEA Theme	Relevant Indicators (adapted from Table 5.1)
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SEA Theme	Relevant Indicators (adapted from Table 5.1)
Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> <li>• Number of developments / interventions in protected areas</li> <li>• Number of developments / interventions in Natura 2000 sites and national SACs</li> <li>• Number of developments / interventions on greenfield sites / undeveloped land</li> <li>• Number of developments/interventions resulting in habitat fragmentation (from surveys undertaken as part of projects)</li> <li>• New or enhanced green infrastructure elements in urban areas</li> <li>• Quality of the marine environment in terms of biological and physico-chemical elements</li> </ul>
Human health	<ul style="list-style-type: none"> <li>• Emissions from the transport sector</li> <li>• % reduction in transport derived noise levels in UCA's and tourism areas</li> <li>• Number of road accidents/injuries</li> <li>• Access to services and facilities by public transport, walking and/ or cycling</li> <li>• Number of improvement schemes for pedestrian and cycle routes</li> <li>• Modal split</li> <li>• Bus services running on time</li> <li>• Journey times</li> <li>• Public transport patronage</li> <li>• Satisfaction with local bus service</li> <li>• Number of schemes for improving transport coordination and integration including interchange between cycling / walking and other forms of travel</li> </ul>
Emissions	<ul style="list-style-type: none"> <li>• Litres of fuel used in transport per pkm and per inhabitant</li> <li>• Tonnes of PM<sub>10</sub> produced by transport per time period and per inhabitant</li> <li>• Tonnes of NO<sub>x</sub> derived from transport</li> <li>• % reduction air pollutants from road transport</li> </ul>
Climate change	<ul style="list-style-type: none"> <li>• CO<sub>2</sub> emissions from transport per time period</li> </ul>

SEA Theme	Relevant Indicators (adapted from Table 5.1)
	<ul style="list-style-type: none"> <li>• Number of projects that feature energy efficient design and/or use of renewable energy</li> <li>• Proportion of fleet using alternative fuel technology</li> <li>• Modal split</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Quality of the marine environment in terms of biological and physico-chemical elements in area of interventions</li> <li>• Number of pollution incidents attributable to transport related activities</li> <li>• Quality of groundwater in the vicinity of any projects related to the transport sector</li> <li>• % of rainwater falling on transport infrastructures that is harvested</li> </ul>
Soil	<ul style="list-style-type: none"> <li>• Soil conservation interventions in the vicinity of any projects related to the transport sector</li> <li>• Number of soil pollution incidents attributable to transport related activities</li> <li>• Area affected by new transport infrastructure</li> <li>• Number of soil permits issued by the Department of Agriculture for Transport projects</li> </ul>
Material Assets	<ul style="list-style-type: none"> <li>• Number of measures/actions that include green infrastructure</li> <li>• Number of vehicles on the road</li> <li>• Number of schemes aiming to modernise and upgrade the transport systems</li> </ul>
Cultural heritage	<ul style="list-style-type: none"> <li>• Number of developments / operations located in the immediate vicinity of cultural heritage sites / areas or areas with known cultural / archaeological remains as a percentage of the total number of operations</li> <li>• Number of projects targeting the improvement of the cultural landscape, townscape or quality/amenity of Urban Conservation Areas</li> </ul>
Landscape	<ul style="list-style-type: none"> <li>• Environmental Impact Assessment results on landscape assessment</li> <li>• Number of transport measures aimed at improving local landscape character</li> </ul>

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# 1 Introduction

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48. This Environmental Report presents the findings of the Strategic Environmental Assessment (SEA) that was carried out on the National Transport Strategy 2050 (NTS) and the Transport Master Plan (TMP) 2025.
49. The objective of the Strategic Environmental Assessment Directive is to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development. SEA is the process of evaluating the environmental impacts of any proposed plan / programme likely to have significant effects on the environment. The SEA process helps to inform the decision making process and the final plan / programme with the aim of improving it and promoting sustainable development. In addition, the SEA process aims to increase public involvement in decision making at a strategic level.

## 1.1 The SEA Process

50. The SEA on the National Transport Strategy and the Transport Master Plan began in April 2014. Adi Associates were sub-contracted by the Ineco - Systematica Consortium to prepare the SEA. The Consortium are responsible for the implementation of the Contract awarded to them by Transport Malta entitled “CT3088/2013 Tender for Professional Services for the development of a national transport model Supporting Strategy Development in Malta”.
51. The approach adopted during the SEA process an iterative one where the SEA Consultants were included during formulation of both the Strategy and the Master Plan. Several discussions were held with Transport Malta, the SEA Focal Point and the JASPERS wherein it was agreed that one SEA would be carried out on two documents: the National Transport Strategy and the Transport Master Plan since the latter builds on the NTS and both documents are being formulated concurrently.
52. During the preparation of this SEA Report, one of the key recommendations that emerged was the need to ensure that the operational objectives and corresponding measures in the Master Plan included targets for implementation in particular with respect to GHG emissions<sup>3</sup>. It was noted that while the Strategy contained targets for 2030 and 2050, the Master Plan did not have corresponding targets. Following feedback given to Transport Malta on this issue, intermediate

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<sup>3</sup> By 2030, the goal for transport will be to reduce GHG emissions to around 20% below their 2008 level.

targets for 2025 for implementation of the Master Plan were added. This was seen as a positive outcome of the SEA process on the formulation of the Master Plan and its amendment following the SEA process.

53. The draft TMP underwent public consultation between 24th June 2016 and 22nd July 2016. The public consultation documents were released by the Minister for Transport, published on Transport Malta’s website and Transport Malta’s News Portal and were supported by a similar publication on the consultations website of the Ministry of Social Dialogue, short slots on the media to draw attention and social media. The public consultation was also reported in the mainstream media. As outlined below another consultation process will be undertaken as part of the SEA process.
54. The SEA involves several key stages, as described in the table below. Importantly, the scoping stage aims to agree the scope and level of detail of information that must be included in the Environmental Report. It is one of the most important stages in the process as it identifies the issues for consideration in the Environmental Report. Although no longer a legal requirement, it is considered good practice to clearly document the scoping process. Preparation of the Environmental Report commences once all relevant information is collected.

Table 1.1: Key stages in the SEA process

Stage in SEA Process	Details of Process Required
Screening	Screening is required to determine whether the proposed plan/programme is likely to have significant environmental effects and whether an SEA is required.
Scoping	Scoping enables the coverage and level of detail of the Environmental Report to be determined in conjunction with the statutory consultee/s.
Environmental Report	The Environmental Report details the anticipated environmental impacts of the programme and any proposed amendments to the plan to mitigate its effects. It must be consulted upon.
Adoption	The Adoption Report details the results of consultation; how comments have been incorporated into the programme; the final programme; and the proposals for monitoring the environmental impacts of the programme.
Monitoring	The Monitoring stage is undertaken during implementation of the programme and serves to identify the level of monitoring required and, should adverse impacts be identified, any remediation proposals.

55. A Scoping Report was prepared and is included in **Appendix 2**. Consultation on the draft Scoping Report was undertaken with a number of identified stakeholders, including the SEA Focal Point, the former Malta Environment and Planning Authority (MEPA)<sup>4</sup>, the Malta Resources Authority (MRA), the Ministry for Energy and Health, the Ministry for Sustainable Development, the

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<sup>4</sup> Now the Planning Authority and the Environment & Resources Authority

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Environment and Climate Change, the Environmental Health Directorate, and the Agriculture & Fisheries Regulation Department.

56. Consultation with the general public was undertaken from 27<sup>th</sup> March 2015, when the Scoping Report was made available through Transport Malta's website.
57. This Environmental Report is based on the Scoping Report. It outlines the assessment of the impacts of the NTS and TMP on various environmental parameters, as described in **Chapter 7**.

#### 1.1.1 Guidance

58. Draft guidance on SEA for Malta has not yet been published. The Environmental Report therefore draws on other European Guidance, namely, the Greening Regional Development Programme (GRDP) (2006) "*Handbook on SEA for Cohesion Policy 2007- 2013*", the Commission's "*Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment*"<sup>5</sup> and the UK's (2005) "*A Practical Guide to the Implementation of the SEA Directive*".

#### 1.2 Structure of Environmental Report

59. The structure of the Environmental Report has been developed following consideration of European Guidance and as described in the Scoping Report. The Environmental Report structure is detailed below:
  - Non-technical summary;
  - Glossary of abbreviations;
  - **Chapter 1** – Introduction;
  - **Chapter 2** – Summary of the National Transport Strategy 2050 and the Transport Master Plan 2025;
  - **Chapter 3** – Methodology (identification of main options: approach taken, who has been consulted, and when);
  - **Chapter 4** – Baseline environmental information and trends (and limitations of data), including evolution of baseline without the implementation of the Strategy and Master Plan;
  - **Chapter 5** – SEA objectives and context (key environmental aspects,

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<sup>5</sup> DG Environment, Implementation of Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the Environment

relevant environmental objectives and criteria, and likely environmental implications without the SEA);

- **Chapter 6** – Assessment of alternatives, including reasons for selecting alternatives dealt with;
- **Chapter 7** – Assessment of environmental effects and proposed mitigation;
- **Chapter 8** – Recommendations; and
- **Chapter 9** – Monitoring requirements.

60. Moreover, it is noted here the Environment and Resources Authority (ERA) has requested that an Appropriate Assessment also be carried out on the Strategy and Master Plan.

61. An Appropriate Assessment, which considers the impact of the Strategy and Master Plan on the Natura 2000 network and relevant national SACs in accordance with the Habitats Directive has also been prepared and is reproduced in **Appendix 2** of the Environment Report.

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## 2 Malta's National Transport Strategy & Transport Master Plan

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### 2.1 Introduction

62. This chapter describes Malta's National Transport Strategy 2050 and the Transport Master Plan 2025.
63. Since its establishment in 2010, Transport Malta has been working on the development of a strategic approach to transportation that integrates planning of each of the transport sectors. To this end, an integrated National Transport Strategy with a time horizon of 2050 and a Transport Master Plan with a time horizon of 2025 have been developed.
64. As described above, the draft TMP underwent a first round of public consultation during June / July 2016. Following this consultation period the Master Plan was amended. This Environmental Report assesses the Strategy and Master Plan versions prior to 28<sup>th</sup> September 2016.

### 2.2 Malta's National Transport Strategy 2050

65. The NTS provides a vision for the transport sector in Malta. It goes on to describe the strategic goals and direction to achieve these goals as well as identifying indicators to measure progress.
66. The vision for the NTS is:

*To provide a sustainable transport system which is efficient, inclusive, safe, integrated and reliable for people and freight, and which supports attractive urban, rural and coastal environments and communities where people want to live and work: now and in the future.*
67. Six strategic goals have been developed in the context of the vision. The goals were developed based on research, policy review and analysis described within the introductory chapters of the NTS. The table below summarises the strategic goals.

Table 2.1: Strategic goals

<b>Strategic Goal 1: Transport to Support Economic Development</b>
Reduced congestion and removal of traffic bottlenecks improves travel times thereby supporting competitiveness.
Improved reliability and efficiency can allow for better journey planning.
Strengthening transport links and connectivity, nationally and internationally increases access to markets.
Reduced operational costs and improved seamless interconnectivity increases profitability and can support competitiveness.
Improved experience and ease of access for non-regular users can support the tourism product.
<b>Strategic Goal 2: Transport to Promote Environmental and Urban Sustainability</b>
Reduce and mitigate greenhouse gas emissions
Ensure efficient and sustainable use and management of resources
Ensure adaptation to climate change
Minimise impact of transport to enhance the landscape and townscape
Preserve the natural habitats and biodiversity
Respect historical and heritage resources
<b>Strategic Goal 3: Transport to Support Social Development and Inclusion</b>
Ensure travel options and journey quality are suitable for all user groups
Ensure affordability for targeted social groups
Increasing societal awareness on the need for sustainable travel choices
Reduce severance and adverse impacts on specific communities
Integration of isolated communities
<b>Strategic Goal 4: Transport to Provide Accessibility and Mobility</b>
Easy access to daily facilities
Convenient and reliable journey times
Ensuring an equitable and sustainable approach to all transport modes
Managing freight and urban logistics
<b>Strategic Goal 5: Transport to be Safe and Secure</b>
Resilient critical infrastructure
Extending the lifetime of high quality infrastructure
Reduction in injuries and loss of life relating to transport accidents

Rapid response to emergencies and accidents
Crime and terrorism
<b>Strategic Goal 6: Transport to Work towards Public Health</b>
A clean and pleasant public realm
Active lifestyles
Reduced pollution (air, noise and light)

68. The NTS also defines eight key guiding principles based on European and national policy as well as trends identified in the NTS. The TMP then identifies operational objectives that were developed from the guiding principles, providing a more detailed way forward in working towards the strategic goals outlined in **Table 2.1** above.

69. The following Guiding Principles were identified in the Strategy:

- Guiding Principle 1: Efficient utilisation of the existing transport system – traffic management, logistics planning and enforcement [Helping to meet Strategic Goals 1, 2, 4 and 6];
- Guiding Principle 2: Creating modal shift [Helping to meet Strategic Goals 1-5];
- Guiding Principle 3: Integrated approach to planning and design [Helping to meet all Strategic Goals];
- Guiding Principle 4: Encouraging use of greener vehicles and fuel [Helping to meet Strategic Goals 1, 3, 5 and 6];
- Guiding Principle 5: Modernisation, development and revitalisation of the strategic transport network to improve territorial cohesion [Helping to meet Strategic Goals 1,2 and 6];
- Guiding Principle 6: Investment in education, information and human resources [Helping to meet Strategic Goals 2, 4, 5 and 6];
- Guiding Principle 7: Making room for innovation and research [Helping to meet all Strategic Goals]; and
- Guiding Principle 8: Sustainable financing and fair competition [Helping to meet all Strategic Goals].

70. Chapter 5 of the NTS identifies indicators and targets for achieving each of the strategic goals.

### 2.3 Transport Master Plan 2025

71. The TMP aims to achieve the goals set out in the NTS through a number of measures that have been designed to be implemented within the short to medium term (within 10 years).
72. The TMP first provides a detailed description of the current situation of the transport sector in Malta. A SWOT analysis of all transport subsectors is presented.
73. Operational objectives and subsequent measures were developed based on identifying those aspects in the transport sector that require addressing in order to ensure effective and efficient management of the sector and reduce externalities. This was done through a number of exercises including analysis of existing national and EU policies and plans, data gathering, computer modelling and forecasting through the application of a four stage transport mathematical model for estimating transportation demand as well as public consultation. The model outputs include aspects such as daily trips, modal share and distance, time and speed, which together allow for the analysis of transport network performance and externalities both of the base year (2014) as well as allowing the planners to forecast how implementation of certain measures might affect these aspects. Feedback obtained during the public consultation process on the TMP will also affect the final list of measures as well as the findings from the SEA and potentially the Appropriate Assessment.
74. **Table 2.2** lists the Operational Objectives and Measures for implementation and are divided into the various transport sectors or aspects as follows:
  - Road;
  - Public transport;
  - Intermodal;
  - Internal maritime;
  - External maritime; and
  - Aviation.
75. There are also a number of common measures that apply horizontally.



Table 2.2: List of Operational Objectives and Measures found in the Master Plan

Operational Objective	TMP Ref	Measure
<b>Road</b>		
<b>2.2.1</b>		<b>IMPROVE INTEGRATED AND LONG TERM STRATEGIC TRANSPORT PLANNING AND DESIGN</b>
	2.2.1.1	Implement and monitor the long term integrated national transport strategy and short and medium term transport master plan
	2.2.1.2	Develop a framework with the spatial planning process to integrate land use and transport planning policies and move towards transit oriented development
	2.2.1.3	Master Plan for Mriehel Area
	2.2.1.4	Master Plan for Paceville, St Julian's
	2.2.1.5	Master Plan for Sliema
	2.2.1.6	Develop a framework to ensure that transport projects are developed by interdisciplinary teams to maximize opportunities for sustainable development
	2.2.1.7	Improve co-ordination and planning with service utility infrastructure authorities
	2.2.1.8	Carry out a national household travel survey by 2020
	2.2.1.9	Develop a framework for collating mobility data focusing on further analysis of multipurpose trips and efficient mobility
<b>2.2.2</b>		<b>PROVIDE ALTERNATIVES TO PRIVATE VEHICLES TO ENCOURAGE SUSTAINABLE TRAVEL PATTERNS AND REDUCE PRIVATE VEHICULAR DEMAND IN THE CONGESTED "HUB" AREA</b>
2.2.2	2.2.2.1	Develop awareness campaigns to improve the understanding of transportation aspects
	2.2.2.2	Develop and incentivise schemes to promote multiple occupancy, smaller vehicles and reduce the need to travel in peak hours
	2.2.2.3	Set up a multi-organisational team to develop a pedestrian infrastructure plan focussing on the "hub"
	2.2.2.4	Develop a cycling strategy focussing on the "hub"
	2.2.2.5	Develop pilot cycle corridors between Valletta and: i) St. Julian's, Sliema; ii) Three Cities and Fgura, and iii) between villages
	2.2.2.6	Develop a national bicycle / e-bicycle sharing scheme

Operational Objective	TMP Ref	Measure
	2.2.2.7	Develop a framework for the introduction and implementation of Sustainable Urban Mobility Plans (SUMPS) in Malta and Gozo
<b>2.2.3</b>		<b>REDUCING THE ROLE OF THE CAR IN THE BUSY CONGESTED URBAN ‘HUB’</b>
2.2.3	2.2.3.1	Develop a comprehensive parking management system to create a better balance between off-street and on-street parking
<b>2.2.4</b>		<b>REDUCE THE IMPACT OF HIGH POLLUTING VEHICLES IN INNER CONGESTED URBAN AREAS AND ON THE TEN-T NETWORK</b>
2.2.4	2.2.4.1	Study the potential to Introduce low emission zones in dense and polluted urban areas
	2.2.4.2	Study the potential to Introduce further financial differential incentives to reduce the average age of vehicles
	2.2.4.3	Introduce further fiscal measures and incentives to favour the purchase and use of clean fuel vehicles
	2.2.4.4	Continue implementing the electro-mobility action plan
	2.2.4.5	If feasible, implement LNG refuelling stations for land transport by 2025 along the Ten-T core network
	2.2.4.6	Implement CNG refuelling stations for land transport by 2025 along the TEN-T Core network
<b>2.2.5</b>		<b>REDUCE THE IMPACT (SOCIAL, ENVIRONMENTAL AND ECONOMIC) OF VEHICLES IN URBAN AREAS</b>
2.2.5	2.2.5.1	Develop a policy framework and design guidelines to create a balanced approach to different modes in urban streets and public space
	2.2.5.2	Develop mitigation measures so as to reduce the impact of noise levels in urban areas UCA’s and tourism areas
	2.2.5.3	Introduction of electric buses in Gozo
	2.2.5.4	Develop design guidelines for the development of Shared Space and Home Zones
	2.2.5.5	Set up a Sustainable Mobility Unit within Transport Malta to work with Local Councils in the redesign of local streets
	2.2.5.6	Develop a Funding Programme for the redesign/refurbishment of Local Street according to the Design Guidelines for Urban Streets and Home Zones

Operational Objective	TMP Ref	Measure
<b>2.2.6</b>		<b>REDUCE THE IMPACT OF HGVs ON URBAN AREAS AND THE ROAD NETWORK</b>
2.2.6	2.2.6.1	Review and update the policy framework for the regulation, monitoring and enforcement of HGV's
	2.2.6.2	Introduce provision of safe off-street overnight parking areas for heavy vehicles
	2.2.6.3	Develop an action plan for the management and regulation of freight transport and 'last mile' urban logistics
<b>2.2.7</b>		<b>ENSURE A HIGH LEVEL OF SERVICE ON THE TEN-T CORE AND THE COMPREHENSIVE NETWORK</b>
2.2.7	2.2.7.1-1	TEN-T Core and Comprehensive network – Marsa
2.2.7	2.2.7.1-2	TEN-T Core and Comprehensive network –Kappara
2.2.7	2.2.7.1-3	TEN-T Core and Comprehensive network – Marsa-Qormi
2.2.7	2.2.7.1-4a	TEN-T Core and Comprehensive network - Msida Phase I
2.2.7	2.2.7.1-4b	TEN-T Core and Comprehensive network - Msida Phase II
2.2.7	2.2.7.1-5	TEN-T Core and Comprehensive network – Blata I-Bajda
2.2.7	2.2.7.1-6	TEN-T Core and Comprehensive network – Paceville
2.2.7	2.2.7.7	TEN-T Core and Comprehensive network – further developments
<b>2.2.8</b>		<b>IMPROVE THE FUNCTIONALITY OF STRATEGIC ROADS PROVIDING SECONDARY CONNECTIVITY AND IMPROVING THE QUALITY OF URBAN AREAS</b>
2.2.8	2.2.8.1	Review and clarify the road network classification
	2.2.8.2	Classify route 120 (from Tal-Balal to Birguma) according to its design and build as a distributor road.
	2.2.8.3	Improve provision for pedestrians, cycling and public transport and change functionality of ND9 (Naxxar/Gharghur) to ED1 (San Gwann).
	2.2.8.4	Improve provision for pedestrians, cycling and public transport and change functionality of route 127 (St. Julian's to Ta' Xbiex)
	2.2.8.5	Improve provision for pedestrians, cycling and public transport and change functionality of EA16 (University Skatepark) – ED3 – ED3a (Msida) – ED4 – EA5 (Portes de Bombes)
	2.2.8.6	Improve provision for pedestrians, cycling and public transport and address conflicting traffic flows and urban activity at WD11 (Zebbug) – WA13 (Qormi)
	2.2.8.7	Review the strategic functionality of route 132 (Racecourse Road to P+R) between the Core TEN-T network and the Park & Ride to improve accessibility for active and public transport modes.

Operational Objective	TMP Ref	Measure
	2.2.8.8	Improve provision for pedestrians, cycling and public transport to encourage modal shift on the road section WD18 to WA24 (tunnel under runway)
<b>2.2.9</b>		<b>ENSURE EFFECTIVE AND EFFICIENT MANAGEMENT OF ROADS AND RELATED EQUIPMENT ENSURING QUALITY AND SUSTAINABILITY OF INVESTMENT THROUGH REGULAR MAINTENANCE</b>
2.2.9	2.2.9.1	Set up an asset management system and asset management plan for the road network
	2.2.9.2	Increase the implementation of service culverts and storm water management in local roads
	2.2.9.3	Develop an action plan to improve the quality of street furniture and information
	2.2.9.4	Review and update road specifications and standards
<b>2.2.10</b>		<b>IMPROVE ROAD SAFETY THROUGH BETTER RESEARCH, ENGINEERING, EDUCATION AND ENFORCEMENT</b>
2.2.10	2.2.10.1	Implement the Road Safety Strategy
	2.2.10.2	Improve the overall EuroNCap rating of the Maltese vehicle fleet
	2.2.10.3	Develop design guidelines for safety measures with respect to designing for e-bicycles, bicycles and motorcycles
	2.2.10.4	Develop bridge and tunnel management system
<b>2.2.11</b>		<b>ENSURE SAFE AND EFFICIENT TRAFFIC MANAGEMENT TO OPTIMISE THE USE OF EXISTING INFRASTRUCTURE</b>
2.2.11	2.2.11.1	Increase use of Intelligent Transport Systems in traffic management
	2.2.11.2	Pilot and analyze the potential for introducing tidal lanes
	2.2.11.3	Develop a framework for the national co-ordination and management of road works, road closures, road side maintenance and cleaning
	2.2.11.4	Introduce transport modelling and GIS in planning diversion routes for road works
	2.2.11.5	Review and update traffic management guidelines to improve traffic management and safety during road works
	2.2.11.6	Improve event management planning to improve coordination and traffic management for events
	2.2.11.7	Develop incident management plans

Operational Objective	TMP Ref	Measure
<b>2.2.12</b>		<b>IMPROVE THE EFFECTIVENESS OF ENFORCEMENT OF ROAD TRANSPORT REGULATIONS</b>
2.2.12	2.2.12.1	Increase presence and effectiveness of traffic police
	2.2.12.2	Review of Speed Camera System
	2.2.12.3	Introduce technology to reduce labour intensive enforcement (red light and bus lane cameras)
	2.2.12.4	Increase roadside checks and roadworthiness testing
	2.2.12.5	Review enforcement fine levels
	2.2.12.6	Review regulatory system to give enforcement officers more authority
	2.2.12.7	Introduce weighbridges at maritime terminals
<b>Public Transport</b>		
<b>2.3.1</b>		<b>IMPROVE SERVICE QUALITY AND MODAL SHARE ALONG STRATEGIC ROUTES BY INTRODUCING PUBLIC TRANSPORT QUALITY CORRIDORS</b>
2.3.1	2.3.1.1-1	Implement Public Transit Quality Corridors (PTQC) – (Sliema-Msida-Valletta)
2.3.1	2.3.1.1-2	Implement Public Transit Quality Corridors (PTQC) – (Tarxien-Fgura-Marsa-Valletta)
2.3.1	2.3.1.1-3	Implement Public Transit Quality Corridors (PTQC) – (Mosta-Birkirkara-Msida-Valletta)
2.3.1	2.3.1.1-4	Implement Public Transit Quality Corridors (PTQC) – (Naxxar-Birkirkara-Hamrun-Valletta)
2.3.1	2.3.1.1-5	Implement Public Transit Quality Corridors (PTQC) – (Mosta-Birkirkara-University-Msida)
2.3.1	2.3.1.1-6	Implement Public Transit Quality Corridors (PTQC) – (Attard-Birkirkara-Hamrun-Valletta)
2.3.1	2.3.1.1-7	Implement Public Transit Quality Corridors (PTQC) – (Qormi-Hamrun-Valletta)
	2.3.1.2	Develop a programme to upgrade main boarding bus stops
	2.3.1.3	Make better use of electronic data collected by the bus operator to quickly adapt bus routes timetables and combined frequencies to temporal and seasonal demand changes and identify additional PTQC
	2.3.1.4	Improve enforcement of PTQC through greater deployment of technology
	2.3.1.5	Develop and publish comprehensive route information
<b>2.3.2</b>		<b>IMPROVE PUBLIC TRANSPORT SERVICE QUALITY TO AND BETWEEN STRATEGIC EMPLOYMENT NODES, SERVICES OUTSIDE THE INNER HARBOUR REGIONS AND PERIPHERAL RESIDENTIAL AREAS</b>
2.3.2	2.3.2.1	Optimise use of existing Park and Ride facilities and develop new sites at strategic locations to encourage modal interchange

Operational Objective	TMP Ref	Measure
<b>2.3.3</b>		<b>EXPLORE OPPORTUNITIES TO MOVE TOWARDS TRANSIT ORIENTED DEVELOPMENT</b>
2.3.3	2.3.3.1	Analyze accessibility (PT) index for all transport zones and improve transit provision in relation to current development patterns
	2.3.3.2	Identify strategic transportation hubs and transit corridors where the concept of transit oriented development can be strengthened to inform the spatial planning process
<b>2.3.4</b>		<b>IMPROVE PHYSICAL ACCESSIBILITY OF PUBLIC TRANSPORT SERVICE</b>
2.3.4	2.3.4.1	Provide more accessible bus infrastructure in residential areas and commercial centres
	2.3.4.2	Increase enforcement of illegal parking and ensure proper use of bus bays
<b>2.3.5</b>		<b>IMPROVE THE QUALITY OF THE ENVIRONMENT AT PRIMARY AND SECONDARY PUBLIC TRANSPORT HUBS</b>
2.3.5	2.3.5.1	Carry out a quality audit of existing public transport hubs
	2.3.5.2	Improve the environment and accessibility at Valletta public transport hub
	2.3.5.3	Explore alternative forms of financing for public transport infrastructure
<b>2.3.6</b>		<b>IMPROVE AVAILABILITY AND QUALITY OF UNSCHEDULED PUBLIC TRANSPORT FOR SCHOOLS</b>
2.3.6	2.3.6.1	Review school transport services to identify issues and strategic interventions
<b>2.3.7</b>		<b>REDUCE THE IMPACT OF CLUSTERING OF UNSCHEDULED PUBLIC TRANSPORT PARTICULARLY IN TOURISM HOT-SPOTS AND COMMERCIAL AREAS</b>
2.3.7	2.3.7.1	Review and improve policies for traffic management demand management and operations of unscheduled public transport
<b>2.3.8</b>		<b>IMPROVE SUPPLY OF ALTERNATIVE FORMS OF SCHEDULED PUBLIC TRANSPORT</b>
2.3.8	2.3.8.1	Continue the planning and development of a Mass Rapid Transit system with a view to establishing a detailed proposal for public consultation
	2.3.8.2	Create a framework for introducing demand responsive transport

Operational Objective	TMP Ref	Measure
<b>Intermodal</b>		
<b>2.4.1</b>		<b>IMPROVE INTERMODAL SEAMLESS MOBILITY (TRAVEL INFORMATION, JOURNEY PLANNING SERVICES AND MULTI-MODAL TICKETING)</b>
2.4.1	2.4.1.1	Encourage operators of public transport to integrate and coordinate their operations of ticketing information and journey planning.
	2.4.1.2	Facilitate the development of a real time multi-modal journey planner
<b>2.4.2</b>		<b>DEVELOP TRANSPORT HUBS TO ENCOURAGE INTERMODALITY</b>
2.4.2	2.4.2.1	Improvement of the existing ferry landing places
	2.4.2.2	Study options available to improve wave climate in the Port of Marsamxetto
	2.4.2.3	Assess potential for new ferry landing places
	2.4.2.4	Improve the vertical and pedestrian connectivity between the Sliema-Valletta ferry service in Valletta and the city centre
	2.4.2.5	Provide and regulate space for use of bicycles
<b>2.4.3</b>		<b>IMPROVE LOGISTICS AND URBAN DISTRIBUTION OF GOODS IN THE MULTI-MODAL CHAIN BETWEEN PORTS, AIRPORT AND HINTERLAND</b>
2.4.3	2.4.3.1	Improve the management and regulation of freight transport and urban logistics
	2.4.3.2	Set up a national freight forum improve urban logistics
	2.4.3.3	Establish freight routes from ports that utilise appropriate roads for their weight and dimensions
	2.4.3.4	Improve Port-Port and Port-Airport connections for freight
<b>Internal Maritime</b>		
<b>2.5.1</b>		<b>ENSURE DEVELOPMENTS IN PORTS ARE BACKED UP BY LONG-TERM PLANNING TO SUPPORT LONG TERM MOBILITY PATTERNS, SAFETY AND SECURITY</b>
2.5.1	2.5.1.1	Review the financial sustainability of the Malta-Gozo link, including operations, maintenance and asset replacement to develop a business model that minimises the need of government financial support

Operational Objective	TMP Ref	Measure
	2.5.1.2	Improve the framework for collation, analysis and dissemination of meteorological and hydrographic data to support planning, design and operations of internal maritime transport
	2.5.1.3	Introduce maritime weather stations in ports to record trends which are necessary for planning and design
	2.5.1.4	Assess the potential for underutilised port areas to be used for internal transport / Master Plan for Secondary Ports
<b>2.5.2</b>		<b>IMPROVE OPERATIONS AND ENFORCEMENT SO THAT INTERNAL MARITIME TRANSPORT IS PROPERLY REGULATED AND MONITORED</b>
2.5.2	2.5.2.1	Introduce AIS on commercial vessels operating in internal ports
	2.5.2.2	Deploy systems to better identify internal maritime transport and their cargoes to improve traffic management, safety and security
	2.5.2.3	Improve visual information about vessel movement and location for traffic management
<b>2.5.3</b>		<b>ENSURE USERS COMPLY WITH CONDITIONS ESTABLISHED FOR PUBLIC ACCESSIBLE MARITIME FACILITIES AS SPECIFIED IN CONTRACTS FOR USE OF THESE INFRASTRUCTURES</b>
2.5.3	2.5.3.1	Establish clear guidelines with the port infrastructure users for operators to be aware of and use infrastructure within design limits
	2.5.3.2	Monitor and carry out enforcement on operators who make incorrect use of the infrastructure
<b>2.5.4</b>		<b>REMOVAL OF BOTTLENECKS AT TEN-T COMPREHENSIVE PORTS</b>
2.5.4	2.5.4.1	Improve Mgarr and Ċirkewwa breakwater systems
	2.5.4.2	Improve Ċirkewwa South Quay
	2.5.4.3	Improve quays and consider expansion of the Port of Mgarr
	2.5.4.4	Development of the landing places for the ferry service (including freight and high speed ferry) to/from Gozo
	2.5.4.5	Re-introduction of an express ferry link between Malta and Gozo
	2.5.4.6	Consider measures to improve wave climate in the Port of Marsamxetto
<b>External Maritime</b>		

Operational Objective	TMP Ref	Measure
<b>2.6.1</b>		<b>ENSURE CONTRACTED PARTIES COMPLY WITH CONDITIONS ESTABLISHED FOR THE OPERATION IF MARITIME FACILITIES AND AS SPECIFIED IN CONTRACTS FOR USE OF THESE INFRASTRUCTURES</b>
2.6.1	2.6.1.1	Develop contract management system to ensure Government obtains value for money
	2.6.1.2	Develop infrastructure asset management data base systems (including the milestones of contract and inspections to check whether or not they are met)
<b>2.6.2</b>		<b>ENSURE DEVELOPMENT OF PORTS AND CONTIGUOUS AREAS ARE BACKED UP BY LONG-TERM PLANNING TO SUPPORT SUSTAINABLE GROWTH IN LONG TERM MOBILITY PATTERNS, RESILIENCE, SAFETY AND SECURITY</b>
2.6.2	2.6.2.1	Develop 10-year port master plan designating future land uses – TEN-T Core port of Valletta
	2.6.2.2	Develop 10-year port master plan designating future land uses – TEN-T Core port of Marsaxlokk
	2.6.3.3	New Cargo Infrastructure in the Port of Valletta (Phase I)
<b>2.6.3</b>		<b>REMOVAL OF BOTTLENECKS IN THE TEN-T CORE PORT OF VALLETTA</b>
2.6.3	2.6.3.1	Deep Water Quay Phase II
	2.6.3.2	Improvement of harbour wave climate
<b>2.6.4</b>		<b>REMOVAL OF BOTTLENECKS IN THE TEN-T CORE PORT OF MARSAXLOKK</b>
2.6.4	2.6.4.1	Upgrade of the breakwater system
	2.6.4.2	Terminal 2 squaring off of north-west side (9)
	2.6.4.3	Procurement of 2 super post panamax cranes (10)
	2.6.4.4	Dredging of all mainline berths to 20m
	2.6.4.5	Investment in IT systems
	2.6.4.6	Development of engineering facilities (6)
	2.6.4.7	Service fuel station
	2.6.4.8	Upgrade of south road access to Freeport
	2.6.4.9	Oil terminal quay development
	2.6.4.10	Petroleum product discharge point replacement
	2.6.4.11	Assessment of MFT master plan - site expansion

Operational Objective	TMP Ref	Measure
<b>2.6.5</b>		<b>ENSURE EQUIPMENT, TOOLS AND HUMAN RESOURCES FOR THE USE, MONITORING AND ENFORCEMENT OF MARITIME AREAS ARE UPDATED AND TO IMPROVE SAFETY AND SECURITY</b>
2.6.5	2.6.5.1	Research new sources of funding to deal with monitoring requirements
	2.6.5.2	Ensure equipment and tools for the monitoring and enforcement of maritime areas are updated and enable the required regulatory control to ensure safety and security
	2.6.5.3	Upgrade VTMS to monitor and enforce maritime areas to ensure safety and security
	2.6.5.4	Upgrade ICT tools to interchange information with port stakeholders and operators to ensure safety and security of maritime areas
<b>2.6.6</b>		<b>REDUCE THE ENVIRONMENTAL IMPACT OF PORTS ON THE NEARBY URBAN AREA</b>
2.6.6	2.6.6.1	Check port infrastructures and operations comply with the conditions established in the environmental impact assessment
	2.6.6.2	Implement new pollution mitigation measures
	2.6.6.3	Support the use of less polluting equipment
<b>2.6.7</b>		<b>PROVIDE ALTERNATIVE FUEL INFRASTRUCTURE TO PROMOTE EFFICIENCY AND COMPETITIVENESS</b>
2.6.7	2.6.7.1	Develop an LNG deployment action plan for the TEN-T Core ports
	2.6.7.2	Develop a shore supply action plan for the TEN-T ports.
	2.6.7.3	Replace obsolete bunker discharge infrastructure
<b>Aviation</b>		
<b>2.7.1</b>		<b>SAFEGUARDING SPACE WITHIN THE AIRPORT AND ITS CONTIGUOUS AREA TO ENSURE DEVELOPMENTS SUPPORT LONG TERM SUSTAINABLE GROWTH IN THE AVIATION SECTOR</b>
2.7.1	2.7.1.1	Develop an airport master plan that prioritises developments and improvements airside to support long term air travel growth expected and improves the safety and security of this travel mode.
	2.7.1.2	Ensure that the airport and its surrounding areas are safeguarded for aeronautical developments

Operational Objective	TMP Ref	Measure
<b>2.7.2</b>		<b>REMOVE BOTTLENECKS AT THE TEN-T CORE AIRPORT</b>
2.7.2	2.7.2.1	Carry out feasibility studies for the development of the parallel taxiway to Runway 31/13 to ensure continued sustainability of the main runway and appropriate safety access to the distant points of the airport.
	2.7.2.2	Improve the manoeuvring areas for the runways where excessive runway occupancy causes bottlenecks in airside traffic and aircraft conflicts
	2.7.2.3	Maintain the shorter Runway 23/05 in full operational standard to ensure airport resilience and ability to maintain the primary runways
	2.7.2.4	Upgrade of the aeronautical infrastructure and technology to enable Runway 23/05 up to instrument landing system standard (ILS) and RNAV capability
	2.7.2.5	Enhancing the air navigation services facilities
<b>2.7.3</b>		<b>IMPROVE THE MANAGEMENT OF OPERATIONS, INFRASTRUCTURES AND EQUIPMENT BY TAKING ADVANTAGE OF NEW TECHNOLOGIES</b>
2.7.3	2.7.3.1	Develop asset management systems and databases to allow effective inspection and management of infrastructures (airfield)
	2.7.3.2	Develop asset management systems and databases to allow effective management of services and infrastructures (terminal & services)
	2.7.3.3	Introduction of A-CDM (Airport Collaborative Decision Making) procedures
<b>2.7.4</b>		<b>MAINTAIN HIGH LEVELS OF SAFETY AND SECURITY OF AIRCRAFT IN THE MALTA AIRSPACE AND THE AIRPORT</b>
2.7.4	2.7.4.1	Keep the safety programme updated
	2.7.4.2	Improve wildlife control systems in the airport
	2.7.4.3	Improve security of the remote aprons and parks on the airfield to a level relevant to their long term use
	2.7.4.4	Improve airfield safety by updating aerodrome ground traffic management.
	2.7.4.5	Improve aviation safety by mapping obstacle clearances and maintaining this obstacle clearance mapping to EU and international standards on the approaches of the airport
	2.7.4.6	Update service contracts of aeronautical importance
	2.7.4.7	Integrate new aviation technologies while safeguarding the safety of aviation services

Operational Objective	TMP Ref	Measure
<b>2.7.5</b>		<b>MITIGATE THE IMPACT OF THE AIRPORT ON THE SURROUNDING ENVIRONMENT</b>
2.7.5	2.7.5.1	Ensure that airport infrastructures and operations continue to comply with the conditions established in their planning and operational conditions
	2.7.5.2	Support the use of less polluting/noisy equipment
	2.7.5.3	Implement new mitigation measures
	2.7.5.4	Update obsolete refuelling infrastructure
<b>2.7.6</b>		<b>IMPROVE AVAILABILITY AND ACCESS TO AVIATION TRANSPORT STATISTICS</b>
2.7.6	2.7.6.1	Introduce contract clauses requiring concessionaires and contractors to provide regular information to the authorities
<b>2.7.7</b>		<b>IMPROVE AIR CONNECTIVITY FOR COMMERCIAL PASSENGERS, FREIGHT AND BUSINESS TRAVELLERS</b>
2.7.7	2.7.6.1	Establish new bilateral agreements with non-EU countries
	2.7.7.2	Improve the transparency and fairness of the allocation of airport slots
	2.7.7.3	Encourage route development to attract new aviation services
	2.7.7.4	Develop a policy framework that enables the domestic use of helicopters
	2.7.7.5	Reserve dedicated areas (like aircraft parking and terminal buildings) to support general aviation
	2.7.7.6	Improve airport traffic circulation to support business aviation
	2.7.7.7	Studies to consider the development of a terminal for business and general aviation
<b>2.7.8</b>		<b>IMPROVE THE FREIGHT CONNECTIVITY BETWEEN THE AIRPORT AND PORTS</b>
2.7.8	2.7.8.1	Coordinate with different authorities the simplification of the process for transit cargo between the airport and ports
	2.7.8.2	Consider fast routes between the cargo areas in the airport and ports
<b>2.7.9</b>		<b>PROVIDE ALTERNATIVE FUEL INFRASTRUCTURE TO PROMOTE EFFICIENCY AND COMPETITIVENESS</b>
2.7.9	2.7.9.1	Develop a deployment action plan for the TEN-T Core airport for current and alternative fuels
	2.7.9.2	Develop a ground supply action plan for the TEN-T Core airport

Operational Objective	TMP Ref	Measure
<b>Common</b>		
<b>2.8.1</b>		<b>SUSTAINABLE FINANCING</b>
2.8.1	2.8.1.1	Sources of financing that leverage potential revenue from transport infrastructures and operations
	2.8.1.2	Create direct links between revenue generation from transport and transport investment
<b>2.8.2</b>		<b>CLIMATE ADAPTATION AND MITIGATION</b>
2.8.2	2.8.2.1	Establish the share of Greenhouse Gases from transport that would fairly contribute to climate change targets and monitor progress of this master plan in line with these targets.
	2.8.2.2	Assess the impact of climate change and sea level rise on transport infrastructures
	2.8.2.3	Incorporate climate change considerations at the planning and design stage to reduce retro-fitting costs
<b>2.8.3</b>		<b>RESEARCH AND INNOVATION IN TRANSPORT</b>
2.8.3	2.8.3.1	Improve links between government and transport research establishments to encourage research in areas of policy relevance
	2.8.3.2	Develop a framework that facilitates the testing and piloting of innovative technologies and new materials in the development of transport infrastructures
	2.8.3.3	Use of transport infrastructure for energy generation
	2.8.3.4	Develop research capabilities to exploit new data sources including “big data”
	2.8.3.5	Develop processes that facilitate the procurement of temporary measures and their assessment
<b>2.8.4</b>		<b>TRANSPORT ACCIDENT SAFETY INVESTIGATIONS</b>
2.8.4	2.8.4.1	Further develop the transport accident investigation body to maintain appropriate resource levels as well as keeping it functionally, financially and legally distinct from the regulatory bodies
	2.8.4.2	Contribute to the action plan for response to national disasters and accidents on strategic infrastructure



## 2.4 Relation of the National Transport Strategy and the Transport Master Plan to other National Documents and legislation

76. Schedule 2 of the SEA Regulations requires a discussion of “*the degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources*” and “*the relevance of the plan or programme for the implementation of Community legislation on the environment, such as plans and programmes linked to waste-management or water protection*”.
77. A detailed analysis was carried out at the scoping stage and is presented in its entirety in the Scoping Report (see **Appendix 1**). The analysis was subdivided into the following main categories:
- (i) **International Commitments:** this category covers the international environment and sustainability policy framework within which Malta must work. It includes a selection of global commitments, such as those arising from the Millennium Development Goals (MDGs), UN Sustainable Development Goals (SDGs), UN Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol.
  - (ii) **EU requirements:** Relevant EU communications specifically concerning transport have been included. In the case of European Union Directives already transposed into national legislation, the Directives *per se* will not be discussed; the section on national legislation is described below;
  - (iii) **National Environmental & Planning Documents** including the Strategic Plan for Environment and Development, the National Sustainable Development Strategy, and the National Environment Policy. The review provided herein summarises the key issues raised; further information can be obtained from the original documents;
  - (iv) **National Sectoral Policies and Strategies:** this section covers highest-level policy and strategy documents published by the Government, such as the National Reform Programme. Rather than summarise entire documents this review seeks to emphasise the key sustainability objectives and priorities;
  - (v) **National legislation:** no attempt was made to assess the individual regulations, as is done at the project level EIA (Environmental Impact Assessment). However, the main areas of concern for the Strategy are highlighted. Given the scale (and evolutionary nature of this field) this review is not exhaustive and represents a current (October 2016) snapshot.

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## 3 Methodology

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### 3.1 Introduction

78. This chapter describes the approach adopted in this SEA, the SEA process itself, its limitations, and the consultation process.
79. As discussed in **Chapter 1**, the SEA process in Malta is regulated by Legal Notice 497 of 2010 (the SEA Regulations); this Legal Notice transposes Council Directive 2001/42/EC<sup>6</sup>. Since guidance on SEA for Malta has not yet been published, this assessment draws on other European Guidance, namely, the Greening Regional Development Programme's (GRDP) (2006) "*Handbook on SEA for Cohesion Policy 2007- 2013*", the Commission's "*Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment*", and the UK's (2005) "*A Practical Guide to the Implementation of the SEA Directive*".
80. As mentioned, this SEA began in April 2014, following a Call for Tenders by the TM. The Consultants (Adi Associates Environmental Consultants Ltd) have carried out the SEA in consultation with the proponents of the Strategy and Master Plan.

### 3.2 Determining the Scope of the SEA

81. The scope of the SEA is identified in the National Transport Strategy and Transport Master Plan SEA Scoping Report (see **Appendix 1**). The Scoping Report identifies a range of relevant policies and plans that could be influenced by, or which could influence, the Strategy.
82. The Scoping Report also contains an initial list of key environmental issues that were identified, and reasons for their inclusion in the Scoping Report are also provided. SEA objectives and indicators were also described. Monitoring, based on the chosen SEA indicators, will provide information on the effectiveness of the Strategy in achieving the SEA objectives.

### 3.3 Consultation

83. In addition to the general public, the following entities will be specifically consulted on the Environmental Report:
- Transport Malta;

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<sup>6</sup> Directive 2001/42/EC of the European Parliament and of the Council 27th June 2001 on the assessment of the effects of certain plans and programmes on the Environment

- Planning Authority (PA);
- Environment and Resources Authority (ERA);
- Ministry for Transport & Infrastructure;
- Ministry for Sustainable Development, the Environment and Climate Change;
- Environmental Health Directorate;
- Department of Agriculture;
- Relevant Local Councils; and
- Non-Governmental Organisations.

84. Comments were received on the Scoping Report from the:

- Sustainable Energy and Water Conservation Unit;
- Department of Environmental Health;
- Malta Resources Authority (at the time);
- Malta Environment and Planning Authority (at the time); and
- Directorate for the Environment and Climate Change (Ministry for Sustainable Development, the Environment and Climate Change).

85. These comments were addressed and the Scoping Report was amended as relevant.

### **3.4 Assessment Process**

86. The SEA process provides the start of the 'green thread', having identified:

- a) potential environmental impacts that could result from the implementation of the NTS and TMP;
- b) various mitigation strategies and measures that could be used to minimise or negate the impacts of these actions; and
- c) a number of future areas or activities for which further environmental assessment may be required before and during the implementation of the NTS and TMP.

#### **3.4.1 Link to other assessments**

87. The SEA takes into account environmental issues in accordance with Schedule I(f) of the SEA Regulations, 2010. An Appropriate Assessment is also being carried out on the NTS and TMP and is presented as a separate document.

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### 3.5 Alternatives

88. The SEA Directive requires the assessment to identify the likely significant effects on the environment of implementing the plan or programme, as well as considering reasonable alternatives, taking into account the objectives and the geographical scope of the plan or programme. **Chapter 6** provides an assessment of alternatives considered when developing the Master Plan.



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## 4 Environmental Baseline

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### 4.1 Introduction

89. A good understanding of the environment of the areas covered by the SEA is essential for the performance of a sound assessment. It is therefore necessary to establish the environmental baseline relevant to the plan or programme being proposed. This provides a snapshot of the existing state of the environment and a description of the likely future trends (based on past trends) without the programme being in place.
90. Schedule I of the SEA Regulations requires that the Environmental Report includes a description of "*the relevant aspects of the current state of the environment*". This Chapter provides summary information on the current state of Malta's environment, environmental trends (where available), and indicates those issues that are considered to be of particular relevance to the development of the NTS and the TMP.
91. The data replicated here were collated from a number of sources; the SEA relies on existing data. The description provided below is essentially a broad-brush<sup>7</sup> "State of the Environment" review of the Maltese Islands, focusing on the main environmental issues.
92. The *National Sustainable Development Strategy 2006 to 2016* identifies Malta's environmental challenges; it arises from a systematic review of official reports, including the State of the Environment Reports (1998, 2002, and 2005), State of the Environment Indicators (2006, 2007, 2009 and 2010 – 2011) and Malta's *National Report to the World Summit on Sustainable Development (2002)*, and an extensive consultation process. Malta's *National Environmental Policy 2012* further strengthens the environmental pillar of the Sustainable Development Strategy and seeks to integrate environment and development policies within the context of Europe 2020. The following environmental parameters were identified:
- Air quality;
  - Climatic factors and climate change;
  - Energy-efficiency and renewable energy resources;

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<sup>7</sup> This broad-brush review does not purport to be a complete treatise of environmental data available for the Maltese Islands but aims solely to give an overview of the main environmental issues and trends applicable to the sector under review in this SEA. Hence, there may be documents, papers, or reports that are not referenced or referred to in this Environmental Report; this does not in any way devalue the content of this environmental baseline.

- Biodiversity, including the marine environment;
- Freshwater;
- Waste;
- Land use;
- Soils;
- Landscape;
- Cultural heritage;
- Population and human health; and
- Material assets.

93. On the basis of the above, and the scope of the SEA, the table below shows how the Environmental Report draws together the relevant issues and baseline data.

Table 4.1: Environmental baseline

Issue	Relevant baseline data	Illustrative material
Emissions to air and climate change	<ul style="list-style-type: none"> <li>• GHG inventory</li> <li>• Air quality – CO2 emissions, PM10 emissions, NO2 concentrations</li> <li>• Coastal erosion, sea level rise, changing weather patterns resulting from climate change</li> <li>• Energy from renewables</li> <li>• Energy consumption</li> </ul>	Graphs and figures.
Biodiversity / fauna and flora	<ul style="list-style-type: none"> <li>• Areas protected and managed under international and local legislation</li> <li>• Areas known to support priority Annex I habitats under the Habitats Directive</li> <li>• Protected species and species of conservation interest</li> <li>• Conservation status of species of conservation interest</li> <li>• Areas for which surveys have been carried out</li> <li>• Natura 2000 Network, national SACs and Marine Protected Areas</li> </ul>	Designated, managed and surveyed areas; where relevant, any data related to areas, habitats and/or species that are not formally protected although they are considered to be of conservation value, will be included.

Issue	Relevant baseline data	Illustrative material
Water	<ul style="list-style-type: none"> <li>Information on the quality of the marine environment</li> <li>Information on the quality of groundwater</li> <li>Rainwater runoff management</li> <li>Water consumption by sector</li> <li>Water Framework Directive targets, objectives, protected areas</li> </ul>	Maps, graphs and tables
Soil	<ul style="list-style-type: none"> <li>Soil erosion</li> <li>Soil sealing</li> <li>Soil contamination</li> <li>Loss of soil</li> </ul>	Published data and figures
Landscape	<ul style="list-style-type: none"> <li>Areas protected for landscape value</li> </ul>	Landscape sensitivity areas and protective designations
Cultural heritage	<ul style="list-style-type: none"> <li>Sites protected for cultural heritage</li> <li>Townscape (where information is available)</li> </ul>	Maps Published data
Human health	<ul style="list-style-type: none"> <li>Environmental health data (where available)</li> <li>Bathing water quality data</li> <li>National noise mapping information</li> <li>Accidents data</li> <li>Physical fitness</li> <li>Obesity</li> </ul>	Graphs and tables Published data
Material assets and population	<ul style="list-style-type: none"> <li>Transport infrastructure (air, land and sea)</li> <li>Vehicle ownership</li> <li>Modal split</li> <li>Green infrastructure</li> </ul>	Maps / figures

94. Where possible, quantitative data are presented in the form of maps, tables and figures. A brief description of the baseline and any trends are given, where available.

#### 4.2 Limitations of data

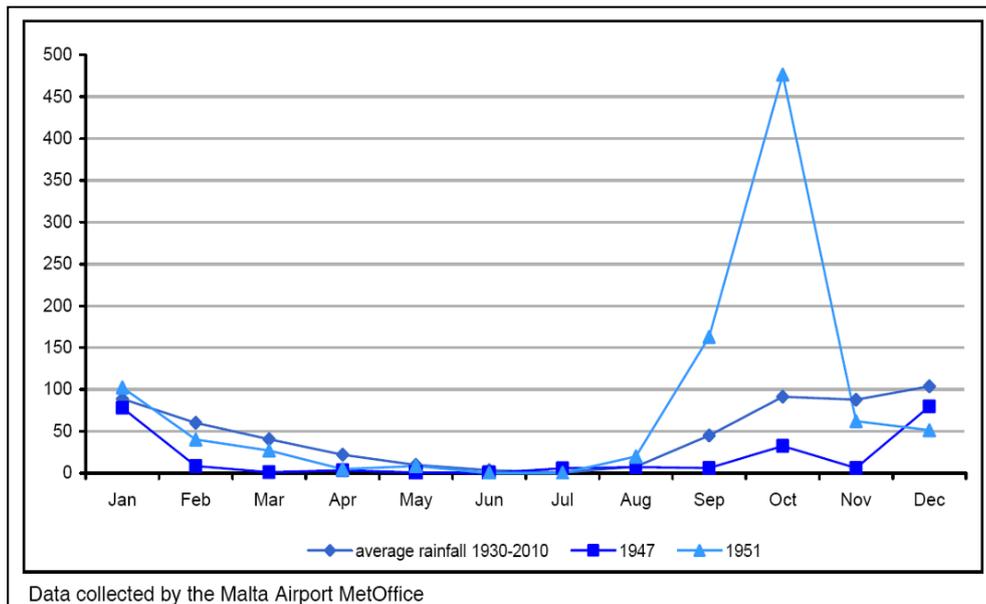
95. The data used to formulate the environment baseline were collated by a range of organisations, for a number of purposes. The only information that was collated specifically for the assessment of the environmental impacts of the NTS and TMP were a number of traffic counts; however, given the specificity of the sector, much of the information collected to date has a direct bearing on what the NTS and TMP aim to achieve, thus facilitating the inference of relationships between changes in the environmental baseline recorded and the potential effects of the NTS and TMP.

### 4.3 Climatic Conditions, Climate Change and Emissions to Air

#### 4.3.1 Climatic conditions

96. The climate of the Maltese Islands is a typical Mediterranean one, with mild wet winters and hot, dry summers. Precipitation is in the form of rain, hail, dew, and soft rime. The average precipitation rate calculated over 30 years (1961 - 2010) is that of 553.12mm with a standard deviation of 156.99mm (28.38 co-efficient of variation), see figure below.
97. The average annual temperature is 18.62°C, with a standard deviation of 0.40. The annual mean temperature varies from a minimum of 17.9 to a maximum of 19.7. The monthly temperature means vary from 12.4°C in winter to 26.3°C in summer. This variation is the result of the regional weather trends and the moderating influence of the sea, see figures below. Grass-height minimum temperature is also recorded by the Meteorological Office and, in this case, temperatures less than 0°C were also recorded. The lowest minimum grass-height temperature was recorded in February 1983, when the temperature dropped to -5.1°C<sup>8</sup>.

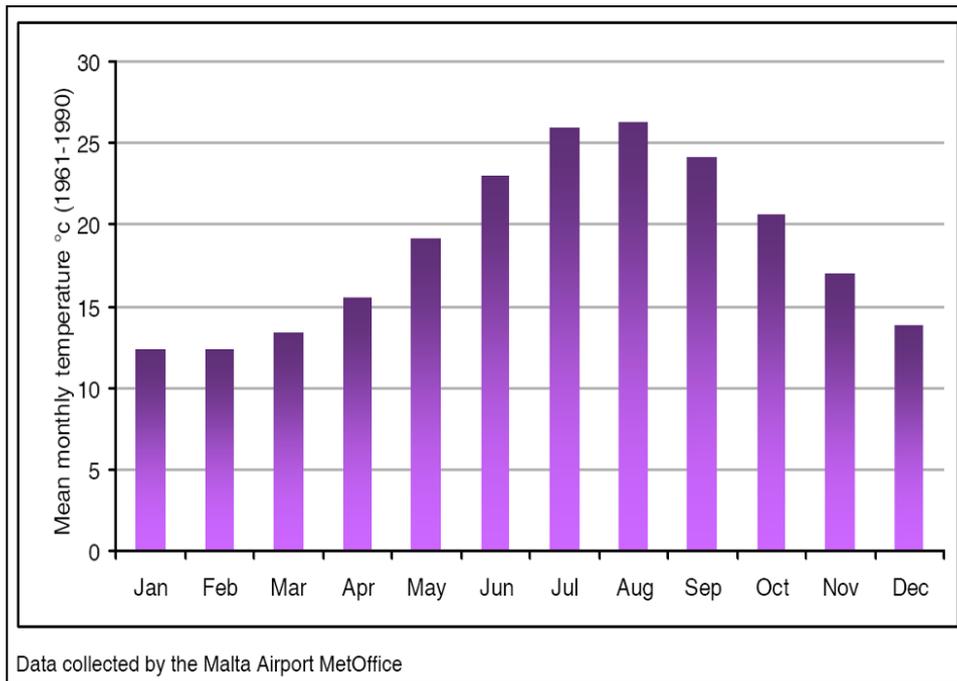
Figure 4.1: Precipitation; dry/wet yrs compared 1930–2010 averages



(Source: NSO (2011) *The Climate of Malta: statistics, trends and analysis 1951-2010*)

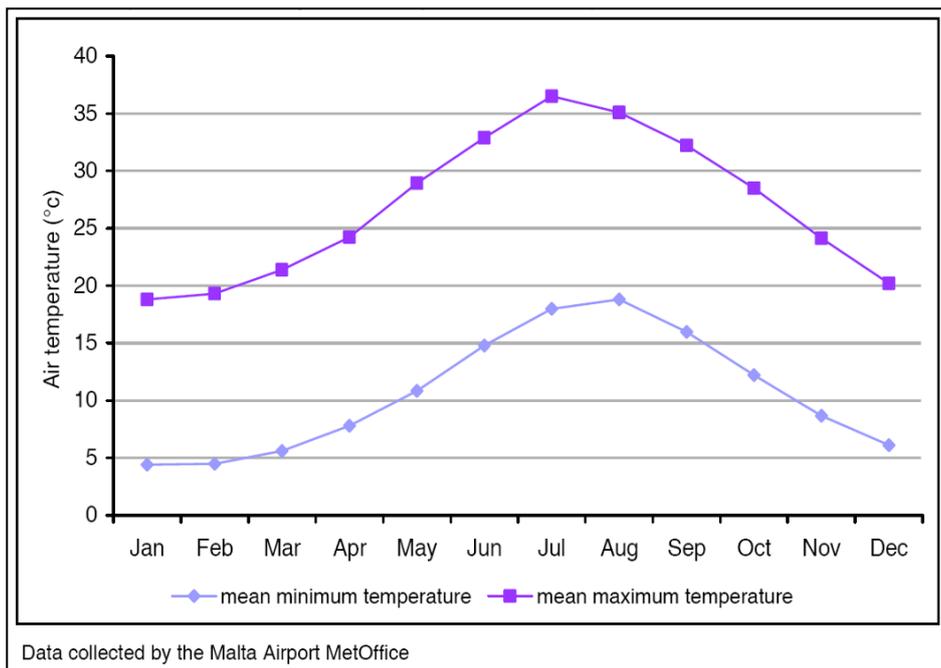
<sup>8</sup> NSO (2011) *The Climate of Malta: statistics, trends and analysis 1951-2010*

Figure 4.2: Mean monthly temperature



(Source: NSO (2011) The Climate of Malta: statistics, trends and analysis 1951-2010)

Figure 4.3: Mean minimum and maximum air temperature [Based on the 30-year climate period]



(Source: NSO (2011) The Climate of Malta: statistics, trends and analysis 1951-2010)

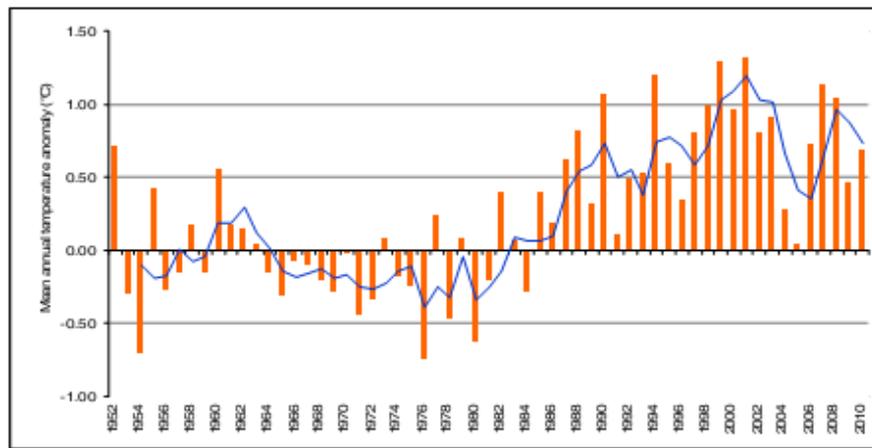
#### 4.3.1.1 Climate anomaly trends<sup>9</sup>

98. Climate anomalies take into account weather trends over a long period of time. Unlike the measurement of weather, climate is measured over a longer span of time, generally 30 years. Anomalies are the deviances from the mean annual values.

##### 4.3.1.1.1 Trends in the ambient air temperature

99. A rise in the mean air temperature was noted after 1981, where the highest anomaly was that of +1.2°C in 2001. 2004 and 2005 were slightly cooler than the previous years. The rate of change since 1951 was that of 1.1°C with a 99 per cent confidence level, see figure below. Analysis of the ambient air temperature between 1951 - 2010 in 30 year groupings shows that there has been a shift towards warmer and more varied temperatures, see figure below.

Figure 4.4: Annual mean air temperature anomaly for the period 1951-2010  
3-year running average shown in blue - Based on a 30-year climatology (1961-1990)

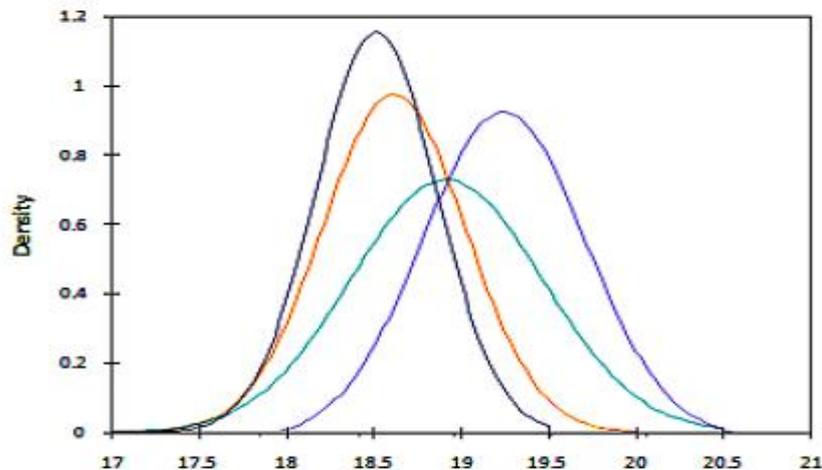


Note: For reasons of display, the chart may not show the whole time series of analysed data.  
Data collected by the Malta Airport MetOffice

(Source: NSO (2011) *The Climate of Malta: statistics, trends and analysis 1951-2010*)

<sup>9</sup> NSO (2011) *The Climate of Malta: statistics, trends and analysis 1951-2010*

Figure 4.5: Distribution fitting of the annual temperature (x-axis) taken during the periods 1951-1980 (dark blue), 1961-1990 (orange), 1971-2000 (light blue) and 1981-2010 (purple)



(Source: NSO (2011) The Climate of Malta: statistics, trends and analysis 1951-2010)

100. Temperature has an effect on various socio-economic aspects, such as fruit productivity, and mortality and infectious diseases. Statistics show that overall productivity increased; a peak was registered in 2006. This could be the result of the lowest anomaly of the mean air temperature measured in 2005 – 2007, which was the third highest anomaly from the mean led to lower productivity in the second half of 2007. The statistics also show that the optimal temperature when human mortality is at its lowest is 27°C. Increases in temperature result in an increased susceptibility of individuals with pre-existing medical conditions. Gatt and Calleja (2010) have identified a relationship between the evidence of Salmonella infection and increases in temperature.

#### 4.3.1.1.2 Trends in precipitation

101. No significant differences were observed in the total annual rainfall anomalies and the total 24-hour rainfall anomaly from 1951 to 2010. The total annual rainfall is indicative of periods of flooding or droughts, whilst the total 24-hour rainfall indicates the intensity of rainfall with the related flash floods.

#### 4.3.1.1.3 Trends in sea level pressure

102. Analysis of local atmospheric pressure from 1951 onwards shows that there is an increasingly positive trend by 0.6hPa. This is in line with the regional trends observed in Southern Europe and Northern Africa, which will lead to calmer and fairer weather and a decreased humidity.

#### 4.3.1.1.4 Trends in wind behaviour

103. From 1961 to 2010 there has been a negative trend in the occurrence of days with winds greater or equal to 34 knots; this trend has a 99 per cent confidence level.

These observations have been registered at Luqa airport, and so seaward winds can be stronger due to less friction and no topography.

4.3.1.1.5 Limitation in climatic data

- 104. National data for weather and climate is registered at Luqa airport. Discontinuities noted in the various climatic elements can be influenced by ‘external’ factors, such as changes in the type of instruments and methodologies used. Another external factor can be urbanisation, which might influence the local climatic conditions, even though it is difficult to register how this factor can alter ambient temperatures.
- 105. Climate change will result in various pressures on people and land resources, see table below.

Table 4.2: Summary of land use vulnerability from climate change (adapted from (MRRA, 2010))

Land use vulnerability
Low lying transport infrastructure in the North of Malta.
Any land reclamation projects near the coast which the Government is currently considering.
Low lying coastal areas that have been modified over the years through development on the coast, and which will be prone mostly to storm surges.
A total land area of 1.11 km <sup>2</sup> or 0.36 per cent of the land area will be affected by sea level rise.
Beaches will be particularly affected as they might be obliterated, reduced in size or, in the case of new beaches, replenishment will be very costly.
Increased rain intensity leading to more flooding in some urban areas, with some needing to eventually relocate to alleviate the problem.
Loss of soil and nutrients for agriculture from intense rain events.
Longer drought periods can lead to desertification, in particular the areas under dryland production.
Increase in wind gusting intensity will also affect the increasingly tall buildings which are being constructed mostly near the coast.
Extreme weather events, including the incidences of heavy hailstorms and thunderstorms will affect road surfaces, rubble walls (for the retention of soil in fields), retaining walls and power lines.
These impacts on agriculture, buildings and infrastructure will have a secondary impact on property values and insurance.

(Source: MRA obo MSDEC (2014) The Third, Fourth, Fifth and Sixth National Communication of Malta under the UNFCC)

- 106. The Transport Master Plan also identifies that climate change impacts such as increased rain intensity and, more especially, sea level rise, could cause flooding issues on the road network near the coast. The effects of climate change such as increased rain intensity, sea level rise, and extreme weather events could also have an impact on the operations of ferry links.

4.3.2 Emissions to air

- 107. Air quality is a particular indicator for both environmental quality and human health. At a national level, air quality is assessed by measuring the levels of the major pollutants: suspended particulate matter (PM) concentrations, ozone (O<sub>3</sub>), benzene and other volatile organic compounds (VOCs), nitrogen dioxide (NO<sub>2</sub>), and sulphur

dioxide (SO<sub>2</sub>). In Malta, these pollutants are mainly created by traffic and electricity generation plants.

108. The table below lists various pollutants, their source, and their effects on human health.

Table 4.3: Pollutants: source and effects

Pollutant	Source(s)	Effects
Particulate Matter	Fuel combustion in power Generation Fuel combustion in road transport Incineration Tyre and brake wear Road wear	Impacts on the central nervous system Irritation of eyes, nose and throat Breathing problems Cardiovascular diseases Impacts on the respiratory system: irritation, inflammation and infections Asthma and reduced lung function Chronic obstructive pulmonary disease Lung cancer Impacts on the reproductive system
Ozone	Is not emitted directly but results from reactions involving precursor gases such as volatile organic compounds and nitrogen oxides.	Irritation of eyes, nose and throat Breathing problems Cardiovascular diseases
Nitrogen Oxides (NO and NO <sub>2</sub> )	Combustion sources (results in NO mostly, which is subsequently oxidized to NO <sub>2</sub> ).	Irritation of eyes, nose and throat Breathing problems Impacts on liver, spleen and blood
Sulphur Dioxide (SO <sub>2</sub> )	Combustion of fuels containing high levels of sulphur (e.g. Heavy Fuel Oil in thermal power plants).	Headache and anxiety Irritation of eyes, nose and throat Breathing problems Cardiovascular diseases
Benzo[a]-pyrene	Incomplete combustion of fuels in road transport and rubber-tyre wear.	Lung cancer
Carbon monoxide	Incomplete combustion of fuels in road transport.	
Benzene	Incomplete combustion of fuel in road transport. Handling and distribution of petrol.	
Arsenic	Metal smelters. Coal combustion.	
Cadmium	Non-ferrous metal production. Iron and steel production	

Pollutant	Source(s)	Effects
	Cement production. Waste Incineration. Stationary combustion of fossil fuel.	
Nickel	Combustion of fuel oil and coal in stationary plants. Combustion of fuel in ships. Waste Incineration. Steel manufacture. Electroplating.	
Lead	Combustion of fossil fuel. Waste incineration. Production of non-ferrous metals. Production of iron and steel. Production of cement.	
Mercury	Combustion of coal.	

(Source: ERA [accessed on <http://era.org.mt/en/Pages/Sources-and-Health-Effects-of-air-pollution.aspx>])

#### 4.3.2.1 Particulate matter (PM)

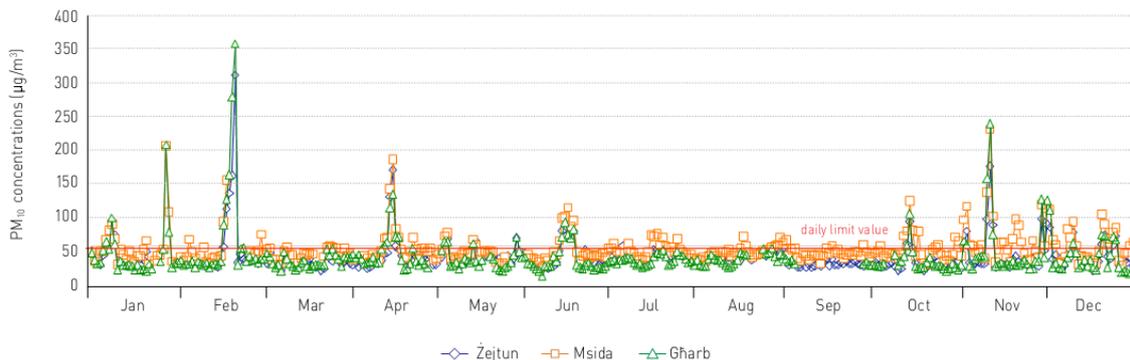
109. PM is solid or liquid particles. PM<sub>10</sub> is measured at three air monitoring stations - at Msida, Għarb and Żejtun. In 2010, high records of PM<sub>10</sub><sup>10</sup> were recorded in Malta. This might partially be the result of dust from natural sources (for example, Saharan dust episodes).
110. The PM<sub>10</sub> limit value is 50µg/m<sup>3</sup> that should not be exceeded more than 35 times a year (approximately 10 per cent of days measured). In 2010, the Msida station measured 80 exceedances over a period of 340 days; these exceedances went down to 37 after deducting the natural sources. The Għarb station measured 39 exceedances over a period of 326 days; these exceedances went down to one after deducting natural sources. The Żejtun station measured 33 exceedances<sup>11</sup>, see figure below.
111. The EU annual average limit value for PM<sub>2.5</sub> is 25µg/m<sup>3</sup>, to be attained by 2015. The annual averages measured in the three aforementioned monitoring stations were within the EU annual average limit value<sup>12</sup>.

<sup>10</sup> PM<sub>10</sub> refers to particles with an aerodynamic diameter smaller than 10µm while PM<sub>2.5</sub> refers to particles of diameter smaller than 2.5µm, with the latter being the more dangerous for human health due to their deeper lung penetration.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid.

Figure 4.6: PM10 concentrations in 2010



(Source: MEPA (2012) The Environment Report Indicators 2010-2011)

#### 4.3.2.2 Ozone (O<sub>3</sub>)

112. Ozone (O<sub>3</sub>) is formed from the chemical reaction between nitrogen oxides and volatile organic compounds from traffic and power generation emissions together with sunlight. The limit value for O<sub>3</sub> is 120µg/m<sup>3</sup> 8-hourly running average that is not exceeded more than 25 times per year. 180 µg/m<sup>3</sup> is the hourly value. In 2010 the 120µg/m<sup>3</sup> 8-hourly running average was exceeded 37 out of 335 days in Għarb and 3 out of 357 days in Żejtun<sup>13</sup>, see figure below.

#### 4.3.2.3 Benzene and other Volatile Organic Compounds (VOCs)

113. The ERA monitors the following Volatile Organic Compounds (VOCs): Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) using 131 diffusion tubes in 44 localities. There are also automatic analysers at Msida, Żejtun and Għarb<sup>14</sup>.
114. In 2010, no locality average exceeded the EU benzene limit. In 2010, the annual ambient concentrations for solvent toluene were at 7.3µg/m<sup>3</sup>, for ethylbenzene at 2.2µg/m<sup>3</sup>, for mp-xylene 6.5µg/m<sup>3</sup> and for the o-xylene 2.2µg/m<sup>3</sup><sup>15</sup>, see figure below.

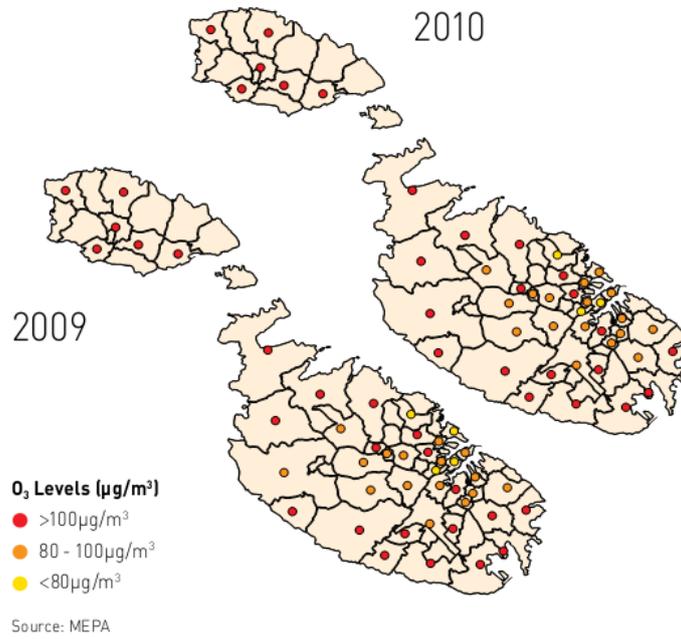
<sup>13</sup> MEPA (2012) *The Environment Report Indicators 2010-2011*, 19

<sup>14</sup> MEPA (2012) *The Environment Report Indicators 2010-2011*, 20

MEPA (2012) *The Environment Report Indicators 2010-2011*, 20

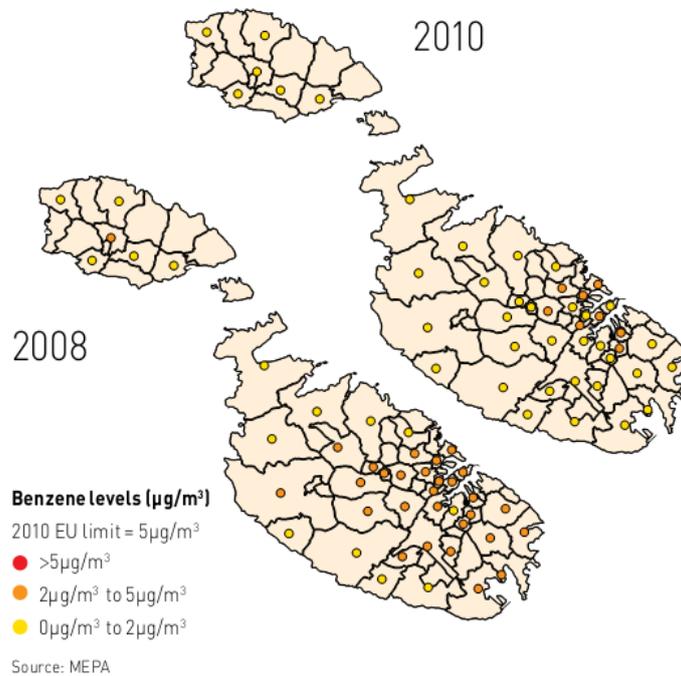
<sup>15</sup> MEPA (2012) *The Environment Report Indicators 2010-2011*, 20 - 21

Figure 4.7: Ozone concentrations in 2009 and 2010



(Source: MEPA (2012) The Environment Report Indicators 2010-2011)

Figure 4.8: Benzene concentrations in 2008 and 2010



(Source: MEPA (2012) The Environment Report Indicators 2010-2011)

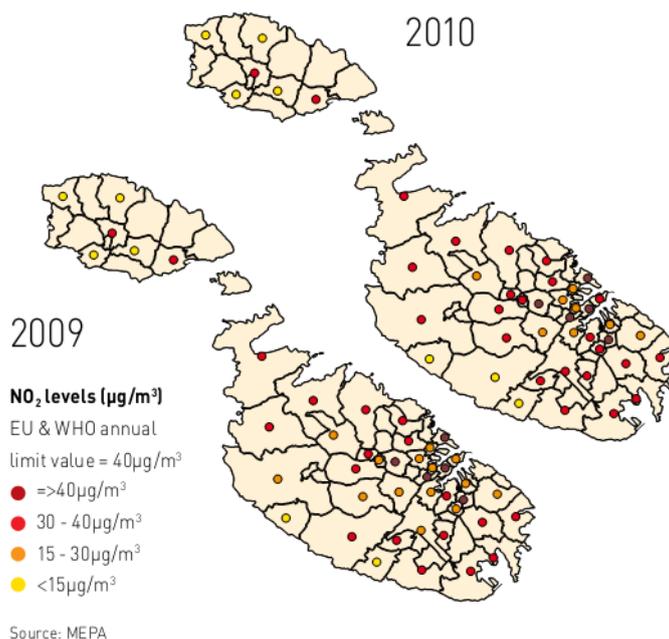
#### 4.3.2.4 Nitrogen dioxide (NO<sub>2</sub>)

115. The EU and World Health Organisation (WHO) limit for nitrogen dioxide (NO<sub>2</sub>) concentrations is 40µg/m<sup>3</sup>. In 2010, the annual average national NO<sub>2</sub> concentration was 26.3µg/m<sup>3</sup>. NO<sub>2</sub> concentrations higher than the annual EU standard were registered at Floriana (55.2 µg/m<sup>3</sup>), Ħamrun (46.4 µg/m<sup>3</sup>), Fgura (46µg/m<sup>3</sup>), Sliema (41.4µg/m<sup>3</sup>), and Birkirkara (40.9µg/m<sup>3</sup>). Eighteen individual sites registered exceedance of the EU standard. The hourly limit value (not to be surpassed more than 18 hours per year) was exceeded once at Kordin and 18 times at Msida<sup>16</sup>, see figure below.

#### 4.3.2.5 Sulphur dioxide (SO<sub>2</sub>)

116. Sulphur dioxide (SO<sub>2</sub>) is emitted from traffic and power generation. The EU limit for the protection of vegetation is 209µg/m<sup>3</sup>. The national average concentration in 2010 was 4.8µg/m<sup>3</sup>; the daily average limit value was surpassed only once at Kordin and the hourly limit value was surpassed only once at both Kordin and Msida<sup>17</sup>, see figure below.

Figure 4.9: Nitrogen dioxide concentrations in 2009 and 2010

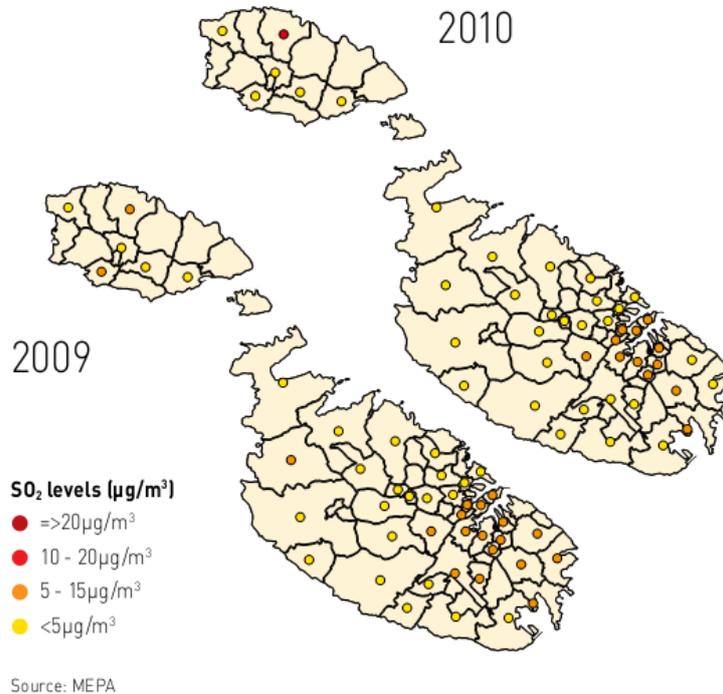


(Source: MEPA (2012) The Environment Report Indicators 2010-2011)

<sup>16</sup> MEPA (2012) *The Environment Report Indicators 2010-2011*, 22

<sup>17</sup> MEPA (2012) *The Environment Report Indicators 2010-2011*, 23

Figure 4.10: Sulphur dioxide concentrations in 2009 and 2010



(Source: MEPA (2012) The Environment Report Indicators 2010-2011)

#### 4.3.3 Greenhouse gases

117. Increases in anthropogenic greenhouse gases (GHGs) are the major contributor to climate change<sup>18</sup>.
118. The main GHG is carbon dioxide (CO<sub>2</sub>), which in 2014 contributed to 83.4 per cent of emissions. There has been an increase of 33.5 per cent in CO<sub>2</sub> emissions from 1990 to 2014<sup>19</sup>, see table below. In 2015, Malta experienced a 26.9 per cent decrease in CO<sub>2</sub> emissions from the previous year. This decrease represents the highest decrease amongst the 27 EU states. The average change in CO<sub>2</sub> emissions from 2014 at an EU level was a 0.7 per cent increase<sup>20</sup>.

<sup>18</sup> IPCC (Intergovernmental Panel on Climate Change), Climate Change 2007: The physical science Basis: Summary for Policy-makers, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007.

<sup>19</sup> Malta Resources Authority on behalf of the Ministry for Sustainable Development, Environment and Climate Change (2016) *National Greenhouse Gas Emissions Inventory for Malta – 2016: Annual Report for Submission under the United Nations Framework Convention on Climate Change and the European Union Monitoring Mechanism*

<sup>20</sup> Eurostat (2016) *Early estimates of CO<sub>2</sub> emissions from energy use 89/2016* [news release]

119. In 2014, the main contributor of GHG emissions in Malta was the energy sector. Following this sector, there were contributions from industrial processes, the waste sector and the agricultural sector<sup>21</sup>, see table below.
120. The percentage shares of emissions from the sectors have decreased from a share of 93.5 per cent in 1990 to a share of 83.9 per cent in 2014. However there was an increase in absolute terms. In 1990 the total emissions from this sector were 1,868.10 Gg CO<sub>2</sub>. This went up to a total emission of 2,495.65 Gg CO<sub>2</sub> in 2014<sup>22</sup>.
121. Transport is the second highest contributor within the energy sector. This subsection includes road transport, domestic aviation and national navigation. Road transport represents the bulk of overall GHG emissions from the transport category, see figure below.

Table 4.4: Emissions of greenhouse gases by gas for the years 1990 and 2014

	1990	2014	% change 1990-2014
Gg CO <sub>2</sub> equivalent			
CO <sub>2</sub> (without-LULUCF)	1,860.47	2,484.02	33.52
CO <sub>2</sub> (with- LULUCF)	1,857.90	2,481.19	33.55
CH <sub>4</sub>	78.28	196.50	151.02
N <sub>2</sub> O	61.49	64.54	4.97
HFCs	NO, NA, NE, IE	233.25	---
PFCs	NA	0.00	---
SF <sub>6</sub>	0.01	0.58	5,402.78
<b>Total (without-LULUCF)</b>	<b>2000.25</b>	<b>2,978.89</b>	<b>48.93</b>
<b>Total (with-LULUCF)</b>	<b>1,997.68</b>	<b>2,976.06</b>	<b>48.98</b>

(Source: Malta Resources Authority on behalf of the Ministry for Sustainable Development, Environment and Climate Change (2016) *National Greenhouse Gas Emissions Inventory for Malta – 2016: Annual Report for Submission under the United Nations Framework Convention on Climate Change and the European Union Monitoring Mechanism*).

<sup>21</sup> Malta Resources Authority on behalf of the Ministry for Sustainable Development, Environment and Climate Change (2016) *National Greenhouse Gas Emissions Inventory for Malta – 2016: Annual Report for Submission under the United Nations Framework Convention on Climate Change and the European Union Monitoring Mechanism*

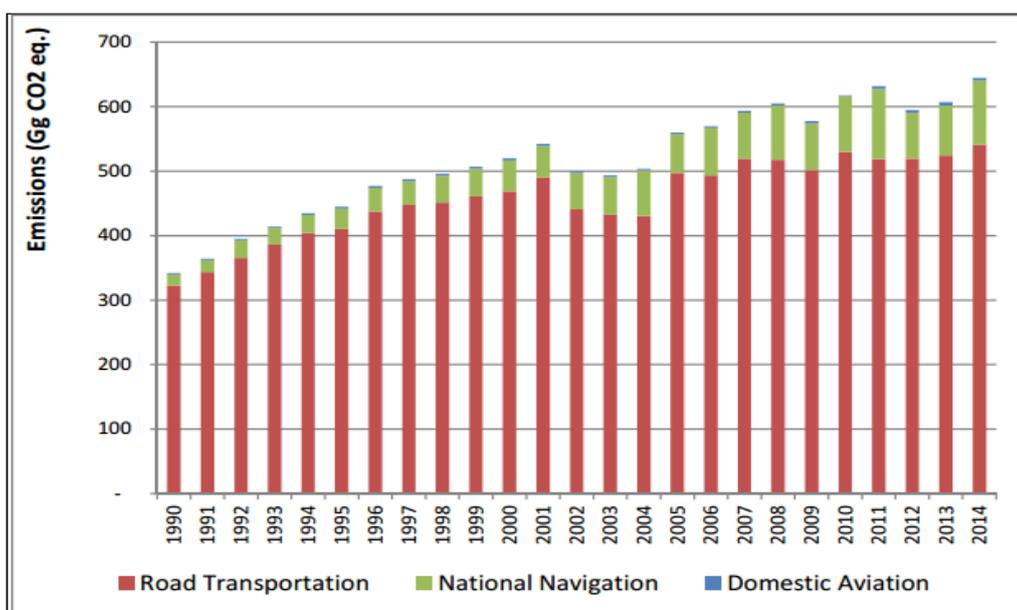
<sup>22</sup> Ibid.

Table 4.5: Emissions of greenhouse gases by sector for the years 1990 and 2014 and the corresponding change between the two years

	1990	2014	% change 1990-2014
Gg CO <sub>2</sub> equivalent			
Energy	1868.32	2495.65	33.58%
Industrial Processes and other product use	7.49	238.13	3078.78%
Agriculture	82.00	88.86	8.36%
LULUCF	-2.57	-2.83	9.95%
Waste	42.44	156.25	268.21%
Other	NA	NA	---
<b>Total (with LULUCF)</b>	<b>1997.68</b>	<b>2976.06</b>	<b>48.98%</b>

(Source: Malta Resources Authority on behalf of the Ministry for Sustainable Development, Environment and Climate Change (2016) National Greenhouse Gas Emissions Inventory for Malta – 2016: Annual Report for Submission under the United Nations Framework Convention on Climate Change and the European Union Monitoring Mechanism)

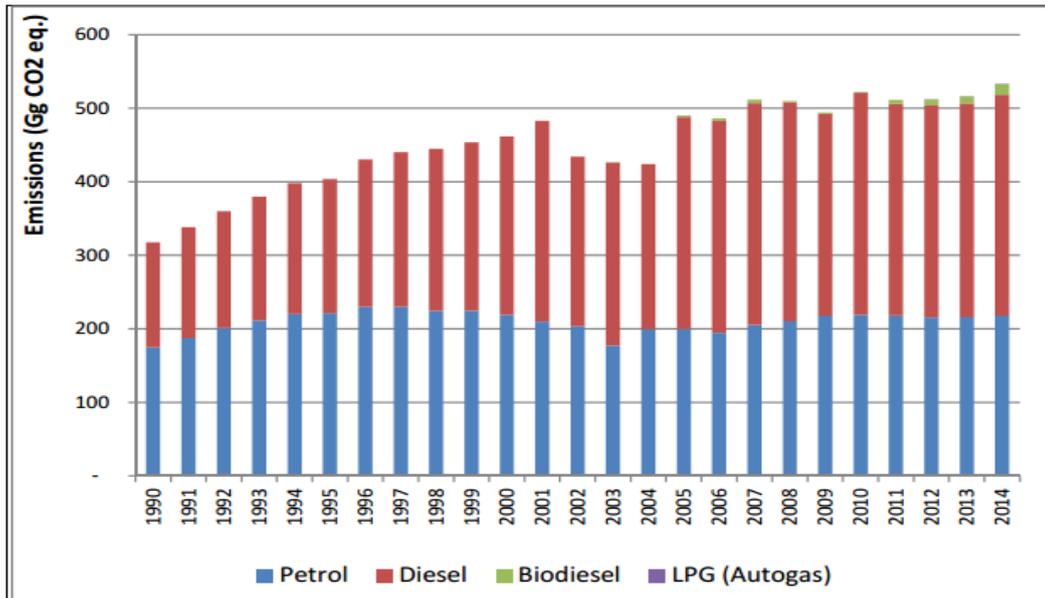
Figure 4.11: Emission trends in category Transport, by sub-category



(Source: Malta Resources Authority on behalf of the Ministry for Sustainable Development, Environment and Climate Change (2016) National Greenhouse Gas Emissions Inventory for Malta – 2016: Annual Report for Submission under the United Nations Framework Convention on Climate Change and the European Union Monitoring Mechanism)

122. It is noted that the European Union agreed to a limitation or reduction of 20 per cent GHG emissions compared to the 1990 levels, under the United Nations Framework Convention on Climate Change (UNFCCC) / Kyoto Protocol process. The European Union established the Effort Sharing Decision that created binding annual greenhouse gas emission targets. Through this decision, Malta has to limit its emissions to 5 per cent above the 2005 level.
123. In 2014, the share of vehicles using petrol, diesel and biodiesel (B100 and blended portion) was 42 per cent, 54 per cent and 2.7 per cent respectively, see figure below.

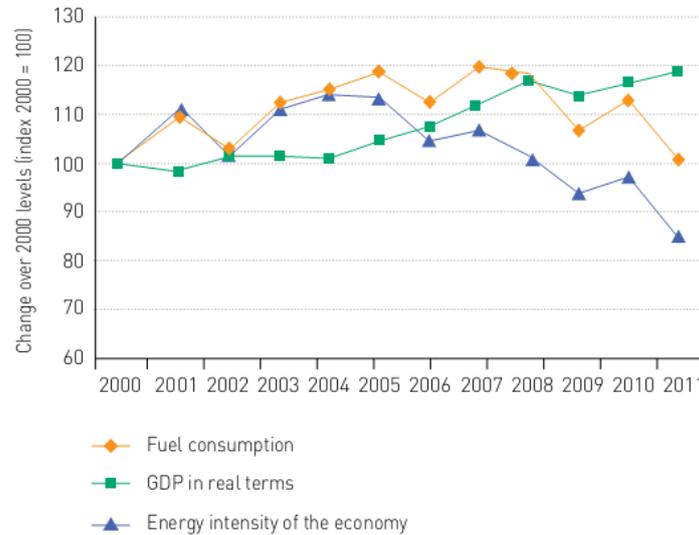
Figure 4.12: Emission trends in category Transport, by fuel type



124. Between 1990 and 2011, there was an increase of 50.6 per cent in Malta’s GHG emissions. The UNFCCC category ‘Land –use, Land-use Change and Forestry’ (LULUCF) refers to ‘estimates of carbon dioxide emissions and removal by particular vegetation types’ and has removed an estimated 2.0 per cent emissions for 2011. Energy intensity, which is “the ratio between gross inland consumption of energy and GDP at constant prices”, is on the decrease. This trend can result in “a relative decoupling of energy consumption from economic activity in the long term”<sup>23</sup>, see figure below.

<sup>23</sup> MEPA (2012) *The Environment Report Indicators 2010-2011*, 26 – 27

Figure 4.13: Energy intensity of the economy



(Source: Malta Resources Authority as cited in MEPA (2012) The Environment Report Indicators 2010-2011)

#### 4.3.4 Climate change

##### 4.3.4.1 Sea-level rise

125. In Malta's Third, Fourth, Fifth and Sixth Communication to the UNFCCC, the MAGICC / SCENGEN model resulted in the modelling of the sea level rise in centimetres for the years 2025, 2050, 2075 and 2100. The modelled rises are 7cm for 2025; 14cm for 2050; 23cm for 2075; and 30cm for 2100<sup>24</sup>.
126. Only 5 per cent of Malta's total landmass has an altitude of less than 7.6m and only 1 per cent has an altitude of 1m. Currently the information on sea-level rise is limited, since climate change has not been researched systematically<sup>25</sup>. The situation is more accentuated when one notes the results of a study conducted by MEPA in 2005, which revealed that coastal zone density increased from 5 to 26 per cent in the period 1990 to 2004<sup>26</sup>.

##### 4.3.4.2 Coastal erosion

127. One of the main effects of sea-level rise is an increase in coastal erosion. This phenomenon, like sea-level rise, has not been researched systematically. To date, no

<sup>24</sup> MRA obo MSDEC (2014) *The Third, Fourth, Fifth and Sixth National Communication of Malta under the UNFCCC*

<sup>25</sup> EC DG Maritime Affairs and Fisheries (2009) *The economics of climate change adaptation in EU coastal areas – Country overview and assessment (14. Malta)*

<sup>26</sup> MRA obo MSDEC (2014) *The Third, Fourth, Fifth and Sixth National Communication of Malta under the UNFCCC*

coastal defence works have been carried out to protect the coastal areas from flooding, extreme weather events, or potential sea-level rise. The existing coastal defences have been built in harbours for navigational purposes<sup>27</sup>.

#### 4.3.4.3 Transport infrastructure

128. Extreme weather conditions have a direct impact on transport infrastructure. They might lead to the closure of nodes and links and also to damage. Low-lying areas and places close to the sea are also vulnerable to flooding and inundation with all the resultant damage. Excess heat can also result in damages to the infrastructure particularly the thermal expansion of road surface, airport tarmac and concrete structures. Transport by ferry is also affected by extreme weather conditions.

#### 4.3.4.4 Renewable energy

129. The *National Renewable Energy Action Plan* sets a target of 10 per cent renewable energy in energy consumption by 2020. This target applies for the transportation sector too. These targets are established in Maltese legislation through Legal Notice 538 of 2010 (Promotion of Energy from Renewable Sources Regulations)<sup>28</sup>.
130. In 2014, the share of energy from renewable sources was 4.7 per cent. This was the second lowest share in renewable energy sources in the whole of the European Union<sup>29</sup>.
131. From 2010 to 2013, there has been a substantial increase in the electrical energy generated by photovoltaic cells, see **Table 4.6**.

Table 4.6: Renewable energy generated by households in Megawatt hours

	2011	2012	2013	2014
Total estimated renewable energy generated	13,942	22,540	36,692	75,493
Of which generated from:				
Photovoltaic cells	12,392	13,615	30,717	68,957
Other sources	1,550	8,925	5,975	6,536

(Source: NSO 2015, Energy Consumption in Malta: 2005-2014)

#### 4.3.4.5 Energy consumption

132. The highest generated power consumption at the Delimara and Marsa power stations was registered in 2007 (2,296,296 megawatt hours). Electricity generation peaked in the summer months; approximately 20 per cent of energy is generated in

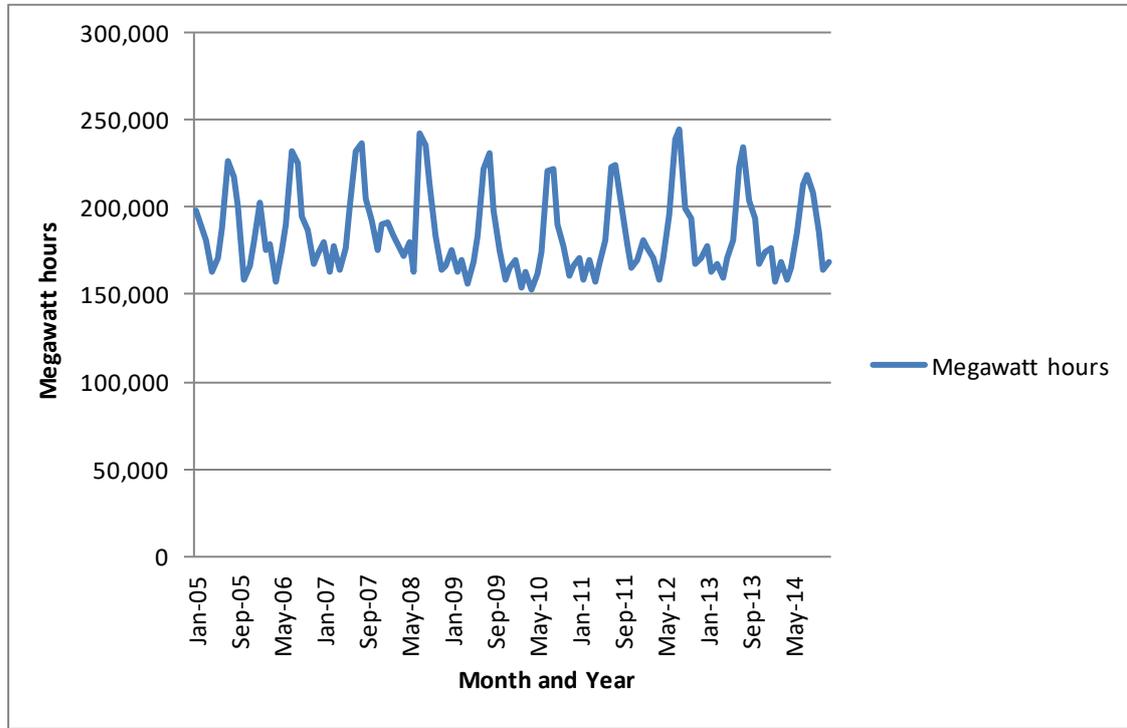
<sup>27</sup> EC DG Maritime Affairs and Fisheries (2009) *The economics of climate change adaptation in EU coastal areas – Country overview and assessment (14. Malta)*

<sup>28</sup> MRRRA (2012) *The National Energy Policy for the Maltese Islands*

<sup>29</sup> Eurostat (2016) *Renewable energy in the EU* (News release 30/2016)

July and August, see figure below. In 2011 and 2012, there was a doubling in the increase of power generated<sup>30</sup>, see figure below.

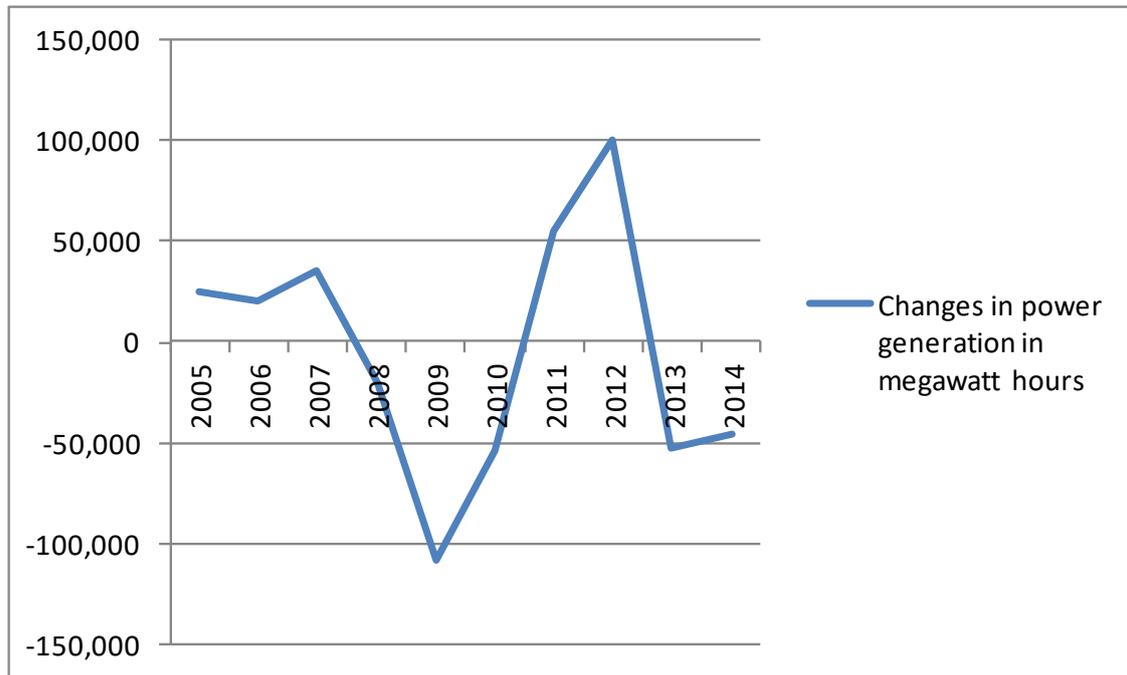
Figure 4.14: Power generated in megawatt hours



(Source: NSO 2015, Energy Consumption in Malta: 2005-2014)

<sup>30</sup> NSO 2014, *Energy Consumption in Malta: 2004-2013*

Figure 4.15: Changes in power generation in megawatt hours

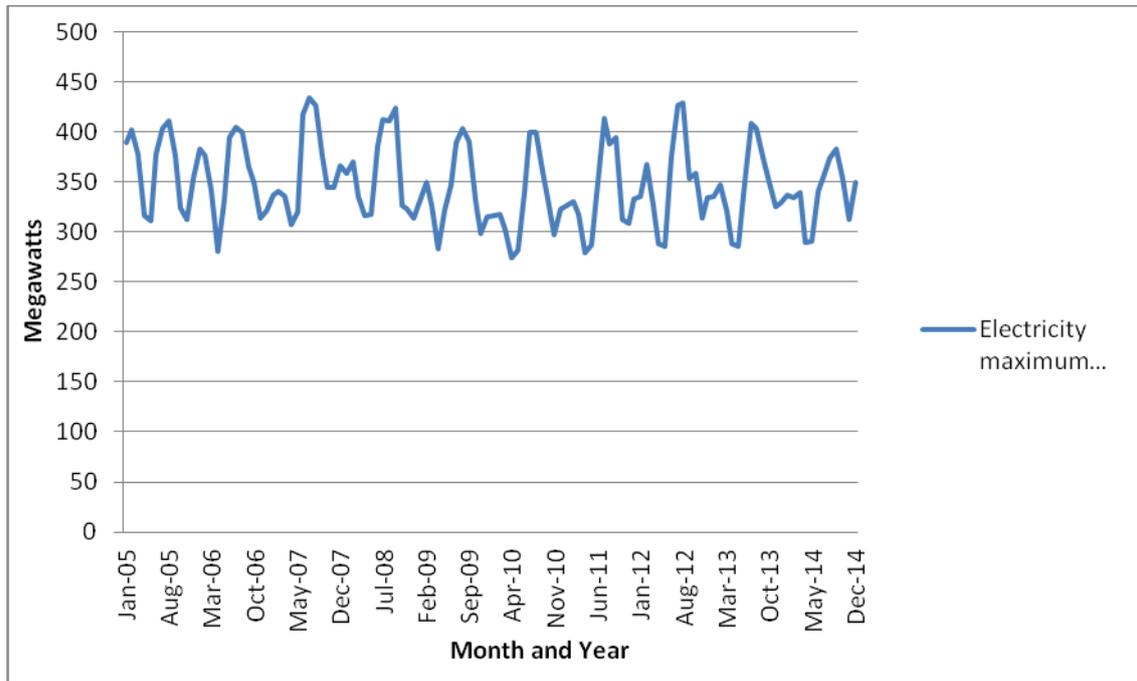


(Source: NSO 2015, Energy Consumption in Malta: 2005-2014)

133. The months with the highest electricity demand over the period 2005 to 2014 were generally July and August; smaller peaks were noted in the winter months<sup>31</sup>, see figure below.

<sup>31</sup> NSO 2015, *Energy Consumption in Malta: 2005-2014*

Figure 4.16: Electricity maximum demand



(Source: NSO 2015, Energy Consumption in Malta: 2005-2014)

#### 4.4 Biodiversity

134. Malta’s natural environment includes habitats such as cliffs, valleys, garrigue, and sand dunes. Natural vegetation covers only 18 per cent of Malta’s surface area. Nonetheless, the Islands have a rich biodiversity, which includes a large number of native plants and animals<sup>32</sup>.
135. The local vegetation community is mainly characterised by the sclerophyll series, comprising evergreen woods, maquis, garrigue, and steppe. Other vegetation communities include coastal cliffs, freshwater and saline wetlands, and sand dunes, together with a variety of marine habitats, such as seagrass meadows and habitats based on coralline red algae. The current status of selected groups of species is identified in the table below. This table is based on assessments carried out in relation to the reporting carried out in the implementation of the Habitats Directive. Of note is that the status of 36 per cent of the Maltese species listed in the Habitats Directive is unknown, whereas 44 per cent of species have an inadequate or bad conservation status<sup>33</sup>.
136. The main threats to local biodiversity are unsustainable development in rural and marine areas, the introduction of alien species (including Genetically Modified

<sup>32</sup> MEPA 2010, *The Environment Report 2008, Sub-report 8: Biodiversity*

<sup>33</sup> MEPA 2010, *The Environment Report 2008, Sub-report 8: Biodiversity*

Organisms), the exploitation of wildlife, including illegal collection, hunting and trapping, and climate change<sup>34</sup>.

Table 4.7: Current status of species

Species group	Status
<b>Plants</b>	Out of 14 assessed terrestrial species, 13 have an unfavourable status. Of the latter, eight have an unfavourable - inadequate status and five have an unfavourable - bad status. The status for the marine species could not be assigned in view of limited data.
<b>Fungi</b>	A detailed assessment of fungal diversity has not yet been carried out, and is urgently required. On the basis of existing information, it appears that many species are confined to a few areas, particularly forest remnants and selected garigue sites; however, a good number of such habitats are protected. Increased human disturbance in key areas is likely to be the principal cause leading to possible decline.
<b>Mammals</b>	Nine terrestrial and 12 marine species found in the Maltese Islands were assessed. The hedgehog and two species of bats are at a favourable conservation status, with four other bat species being at an inadequate status. The status for another bat species and for the Sicilian shrew is as yet unknown. The status of marine mammals remains unknown. One bat species and four cetaceans are considered occasional and hence not considered.
<b>Amphibians and Reptiles</b>	Only one amphibian, the Painted Frog ( <i>Discoglossus pictus pictus</i> ) is native to the Maltese Islands, with its status being inadequate and deteriorating. The eight species of Maltese terrestrial reptiles are all at a favourable conservation status, apart from one, this being the Selmunett Wall Lizard ( <i>Podarcis filfolensis kieselbachi</i> ), which is confined to St. Paul's Islands. The status of the Loggerhead Turtle ( <i>Caretta caretta</i> ) – a marine reptile – in Maltese waters, is as yet unknown.
<b>Fish</b>	Only two fish species were assessed, the Mediterranean Killifish ( <i>Aphanius fasciatus</i> ) and the Allis Shad ( <i>Alosa fallax</i> ). Whilst the Mediterranean Killifish has an unfavourable/inadequate conservation status, the status of the Allis Shad is as yet unknown.
<b>Invertebrates</b>	Six terrestrial and six marine invertebrate species were assessed. The status of five of the terrestrial species is unfavourable, while it is unknown for another. The general status of marine species is unknown.
<b>Birds</b>	There was a decrease in the Blue Rock Thrush ( <i>Monticola solitarius</i> ) population in the last 20 years and the Corn Bunting ( <i>Miliaria calandra</i> ) continues to decline. In 2007, Barn Swallows ( <i>Hirundo rustica</i> ), Spotted Flycatchers ( <i>Muscicapa striata</i> ) and Woodchat Shrike ( <i>Lanius senator</i> ) bred successfully at Buskett while the Spectacled Warbler ( <i>Sylvia conspicillata</i> ), the Collared Dove ( <i>Streptopelia decaocto</i> ) and the Little Ringed Plover ( <i>Charadrius dubius</i> ) populations increased. The status of migratory birds may be considered as threatened due to illegal hunting.

Source: MEPA, The Environment Report 2008, Sub-report 8: Biodiversity.

<sup>34</sup> Ibid.

#### 4.4.1 Protected areas

137. Biodiversity is safeguarded mainly through the protection and management of sites and areas. The figure below illustrates the designated and managed areas on the Islands as of March 2016.
138. The management of such sites helps to ensure that conservation goals are reached. Management plans for the terrestrial Natura 2000 network sites have been prepared, see figure below. To date, Malta has 42 Special Areas of Conservation (SACs): 35 of international importance and seven of national importance. Malta also has 21 Special Protected Areas (SPAs). The Natura 2000 network consists of the SACs of International Importance and the SPAs. In some cases SACs overlap with SPAs, whilst in others, they only overlap partially. The terrestrial sites cover an area of over 41 km<sup>2</sup> whilst the marine sites cover an area over 3,450 km<sup>2</sup>, see **Table 4.8**.
139. In addition to the SACs and the SPAs, there are also SACs of national importance and 74 Areas of Ecological Importance (AEI) and Sites of Scientific Importance (SSIs), 30 Tree Protection Areas and three Nature Reserves across the Islands. Beaches and swimming areas (including 11 specifically named beaches) are also protected from hunting activities<sup>35</sup>.

Table 4.8: List of SPAs, and SACs

Site Name	Designations
Buskett - Girgenti Area	SAC - International Importance; SPA
Dwejra - Qawra Area, inkluż Ғaġret il-Ġeneral	SAC - International Importance
Filfla	SAC - International Importance; SPA
Għajn Barrani Area	SAC - International Importance
Għar Dalam	SAC - International Importance
Iċ-Ċittadella	SAC - International Importance
Il-Ballut (I/o Marsaxlokk)	SAC - International Importance
Il-Ballut tal-Wardija (I/o San Pawl il-Baħar)	SAC - International Importance
Il-Gzejjer ta' San Pawl / Selmunett	SAC - International Importance
Il-Magħluq tal-Baħar (I/o Marsaskala)	SAC - International Importance
Il-Maqluba (I/o Qrendi)	SAC - International Importance
Il-Qortin tal-Magun u l-Qortin il-Kbir	SAC - International Importance
Ir-Ramla Area	SAC - International Importance
Is-Salini	SAC - International Importance
Is-Simar (I/o San Pawl il-Baħar)	SAC - International Importance; SPA
Ix-Xagħra tal-Kortin	SAC - International Importance
Kemmuna, Kemmunett, il-Ғaġriet ta' Bejn il-Kmiemen u l-Iskoll ta' Taħt il-Mazz	SAC - International Importance; SPA
L-Għadira Area	SAC - International Importance; SPA

<sup>35</sup> EIONET (2016) [accessed online: <http://cdr.eionet.europa.eu/mt/eea/cdda1/envvmmarw>]

Site Name	Designations
L-Għadira s-Safra	SAC - International Importance
L-Għar ta' l-Iburdan	SAC - International Importance
L-Imġiebaħ / Tal-Miġnuna Area	SAC - International Importance
L-Inħawi ta' Ta' Ċenċ	SAC - International Importance
Pembroke Area	SAC - International Importance
Ramla tat-Torri / Rdum tal-Madonna Area	SAC - International Importance; SPA
Rdumijiet ta' Għawdex: Ta' Ċenċ	SPA
Rdumijiet ta' Għawdex: Id-Dawra tas-Sanap sa tal-Ħajt	SPA
Rdumijiet ta' Għawdex: Il-Ponta ta' Ħarrux sa Il-Bajja tax-Xlendi	SPA
Rdumijiet ta' Għawdex: Il-Ponta ta' San Dimitri sa Il-Ponta ta' Ħarrux	SPA
Rdumijiet ta' Malta: Ir-Ramla taċ-Ċirkewwa sal-Ponta ta' Bengħisa	SAC - International Importance
Rdumijiet ta' Malta: Ix-Xaqqa sa Wied Moqbol	SPA
Rdumijiet ta' Malta: Ras il-Pellegrin sa ix-Xaqqa	SPA
Rdumijiet ta' Malta: Wied Moqbol sal-Ponta ta' Bengħisa	SPA
Xlendi - Wied tal-Kantra Area	SAC - International Importance
Wied il-Miżieb	SAC - International Importance
Il-Baħar bejn Rdum Majjiesa u Ras ir-Raheb	SAC - International Importance
Il-Baħar fl-Inħawi ta' Għar Lapsi u ta' Filfla	SAC - International Importance
Il-Baħar fl-Inħawi tad-Dwejra (Għawdex)	SAC - International Importance
Il-Baħar fl-Inħawi ta' Mgarr ix-Xini (Għawdex)	SAC - International Importance
Il-Baħar fil-Grigal ta' Malta	SAC - International Importance
Il-Baħar tal-Grigal	SPA
Il-Baħar tal-Lvant	SPA
Il-Baħar tax-Xlokk	SPA
Il-Baħar tal-Lbiċ	SPA
Il-Baħar ta' madwar Għawdex	SPA
Il-Baħar tal-Majjistral	SPA
Il-Baħar tal-Punent	SAC - International Importance
Il-Baħar tat-Tramuntana	SAC - International Importance; SPA
Il-Baħar tan-Nofsinhar	SAC - International Importance; SPA
Il-Ġebbla taċ-Ċawl	SAC - National Importance
Il-Ġebbla tal-Ħalfa	SAC - National Importance
In-Nuffara Area - In-Nuffara, Daħla tan-Nuffara, Tan-Nuffara	SAC - National Importance
L-Għadira ta' Sarraflu	SAC - National Importance
Ta' Bloq (l-Inħawi) / Wied Qirda	SAC - National Importance
Wied Għollieqa	SAC - National Importance

Site Name	Designations
Wied Ħarq Ħamiem Area	SAC - National Importance

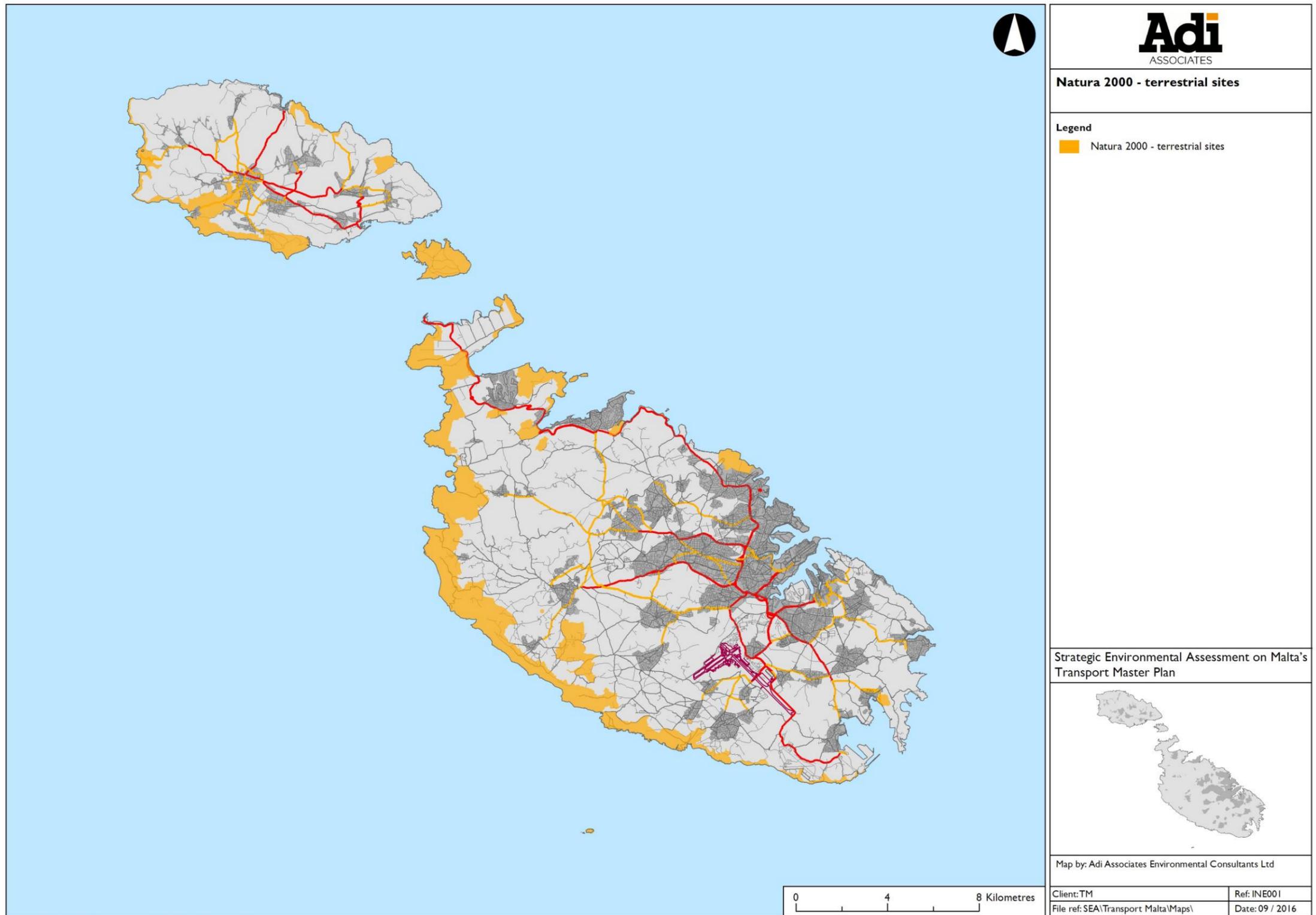
Figure 4.17: Designated areas



INDICATIVE ONLY - Not to be used for direct interpretation

(Source: EIONET, Common Database of Designated Areas (CDDA) 2016 Retrieved 02 September 2016 from <http://cdr.eionet.europa.eu/mt/eea/cdda1/envvmmarw>) (Excluding marine SPAs)

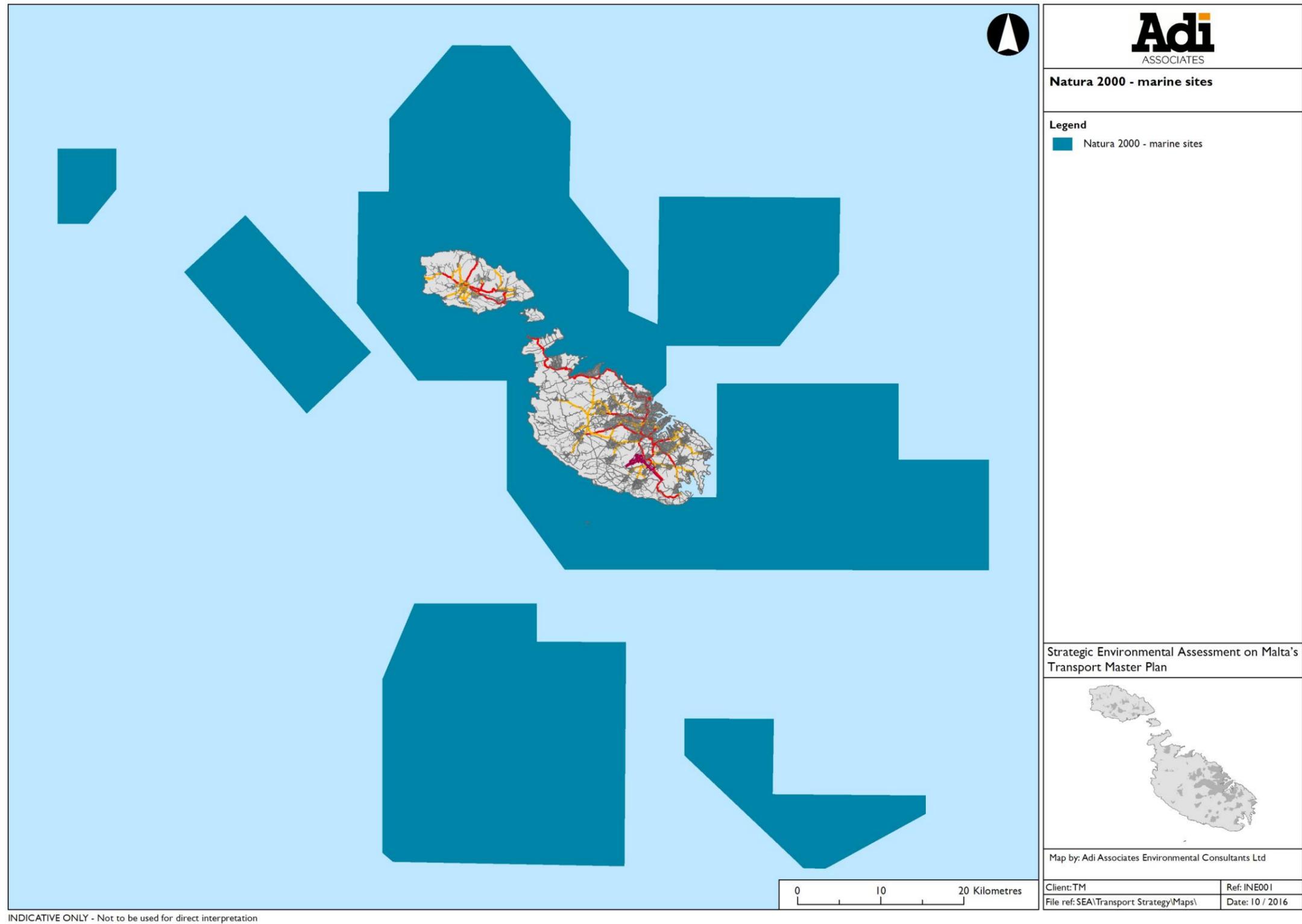
Figure 4.18: Natura 2000 – terrestrial sites



(Source: EIONET, Common Database of Designated Areas (CDDA) 2016 Retrieved 02 September 2016 from <http://cdr.eionet.europa.eu/mt/eea/cdda1/envvmarw>) (Excluding marine SPAs)



Figure 4.19: Natura 2000 – marine sites



(Source: EIONET, Common Database of Designated Areas (CDDA) 2016 Retrieved 02 September 2016 from <http://cdr.eionet.europa.eu/mt/eea/cdda1/envvmarw>) (excluding marine SPAs)



140. Malta has a number of Important Bird Areas (IBAs), see figure below. IBAs are not national designations but are designated under the BirdLife International IBA programme, which is aimed “*at identifying and protecting a network of critical sites for the conservation of birds*”. There are 16 IBAs, under three categories<sup>36</sup>:

Sites of Global importance:

- Ta’ Ċenċ Cliffs (supporting a large concentration of *Calonectris diomedea*) [MT001];
- Comino (breeding site for *Puffinus yelkouan*, and known also as a refuge for trans-saharan passerine migrants) [MT002].
- Filfla Islet (holding a large colony of *Hydrobates pelagicus melitensis*) [MT003];
- Buskett (a flyway for raptors mainly *Pernis apivorus* and *Circus aeruginosus*) [MT004];
- L-Aħrax tal-Madonna (with one of the largest known colony of *Puffinus yelkouan*) [MT005];

Sites of European Union importance:

- West of Wied ix-Xaqqa to Wied Maqbul cliffs [MT006];
- West of il-Ħaġra Sewda to ix-Xaqqa cliffs [MT007];
- Il-Kullana to ta’ Ġfien cliffs [MT008];
- Iċ-Ċnus to tal-Bardan cliffs [MT009];
- Xlendi Bay to Wardija Pt cliffs [MT010];
- Dwejra Bay to San Dimitri Cliffs [MT011]

(all holding colonies of *Calonectris diomedea* and *Puffinus yelkouan*).

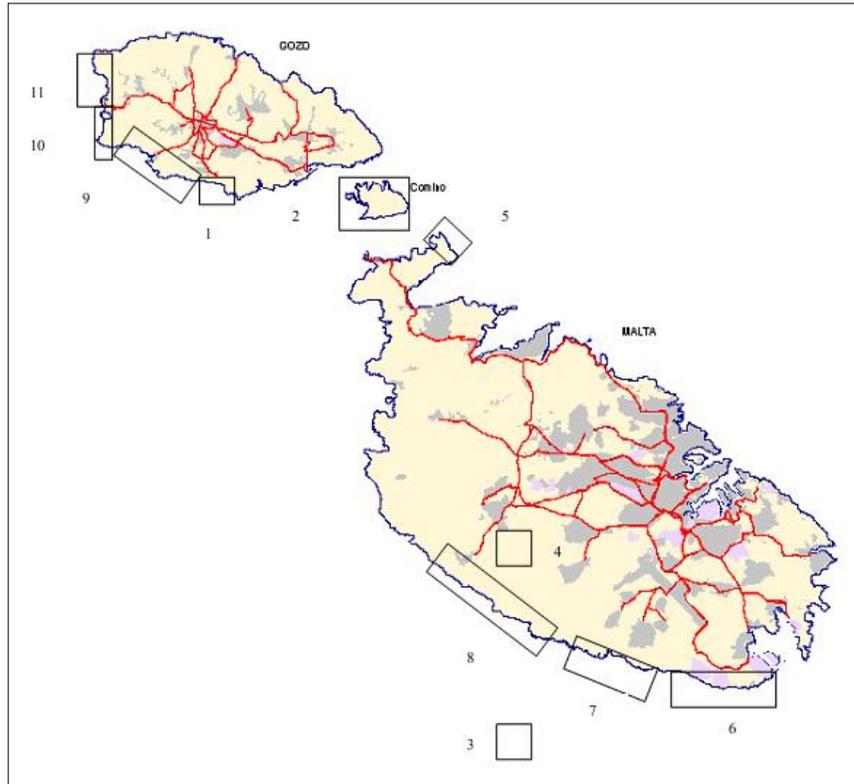
Sites of National Importance:

- Ġhadira,
- Simar,
- Salina
- Lunzjata Valley
- Ramla Valley and Wied il-Ħanaq

(feeding and resting places for a variety of resident, summer visitors migrant and wintering species).

<sup>36</sup> BirdLife Malta (2004) *Important Bird Areas of EU importance in Malta* compiled by Borg, J.J. and Sultana, J.

Figure 4.20: Important Bird Areas in Malta (International Importance)



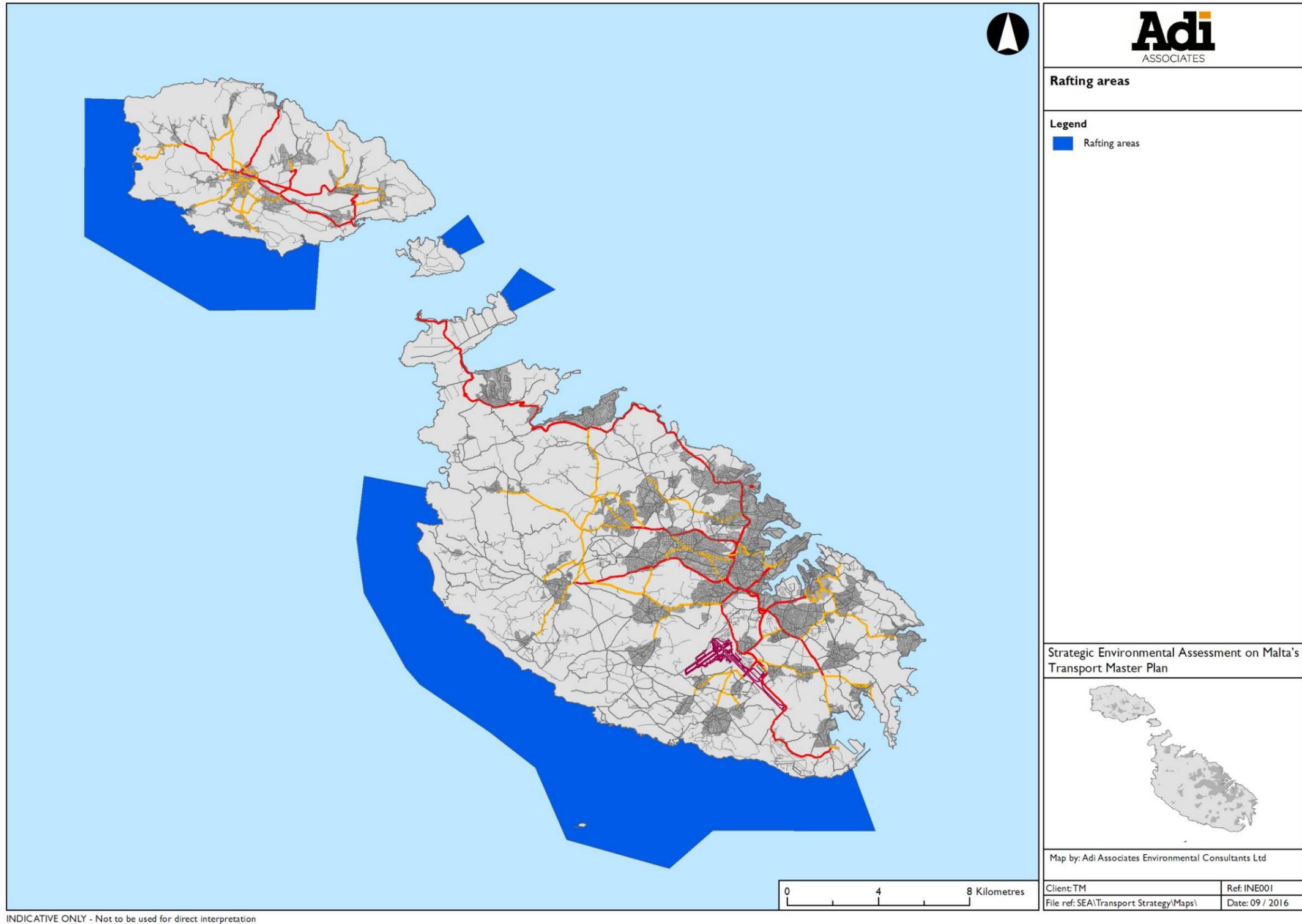
(Source: BirdLife Malta (2004) Important Bird Areas of EU importance in Malta compiled by Borg, J.J. and Sultana, J.)

141. The cliffs are important areas for colonies of breeding birds, such as the Cory's Shearwater. BirdLife Malta has identified areas opposite to these colonies which are used for rafting by these bird species<sup>37</sup>, see figure below.
142. The Maltese Islands have a strategic location when it comes to bird migratory routes. In autumn, Europe's birds migrate southwards in search of warmer climates and more hospitable conditions. These wintering locations span from South Africa to southern Europe. The migratory birds use three main routes: via Spain and Gibraltar, via Turkey, and via Italy and Malta. In spring, the birds migrate northwards to Europe, for the breeding season<sup>38</sup>.

<sup>37</sup> Sultana, J., Borg, J.J., Gauci, C. and Falzon, V. (2011) *The Breeding Birds of Malta* BirdLife Malta, Malta.

<sup>38</sup> BirdLife Malta (2012) Migration Routes [accessed online in April 2014 - <http://www.birdlifemalta.org/Content/trapping/migration/1130/#.U2DYpIGSwuc>]

Figure 4.21: Rafting areas



(Source: Sultana, J., Borg, J.J., Gauci, C. and Falzon, V. (2011) The Breeding Birds of Malta BirdLife Malta, Malta – Rafting areas opposite the main Cory's Shearwater colonies in the Maltese Islands)



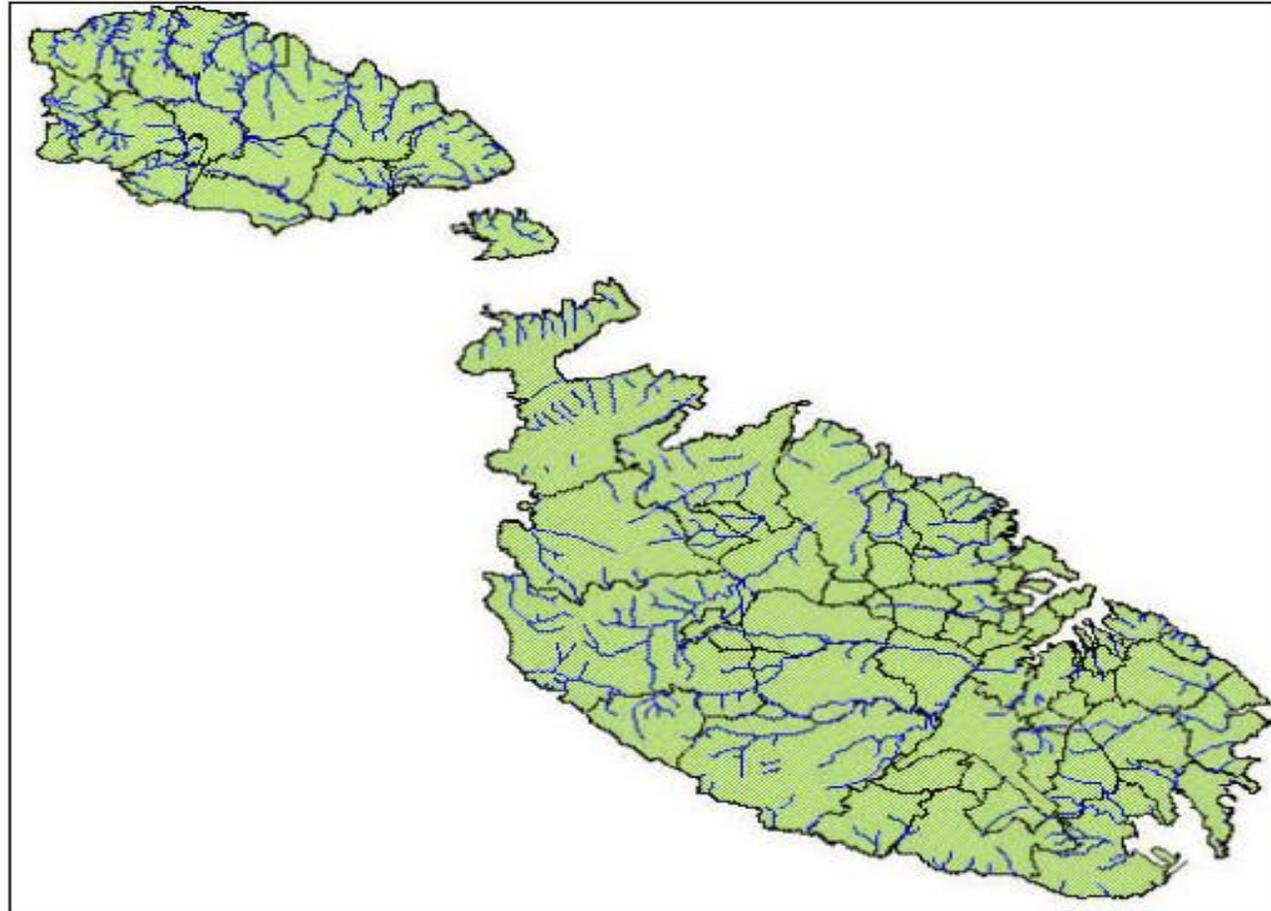
143. Another important aspect of the Maltese Islands in relation to biodiversity is the river valleys. Notwithstanding the size of the Islands, it has been calculated that there are a 100km of river valleys<sup>39</sup>. The *Structure Plan for the Maltese Islands 1990* describes valleys (*widien*) as “a valuable national resource in terms of water resources, agriculture, wildlife, landscape, soil conservation, and leisure”.
144. Malta has three main *widien* systems: River Għasel System, River Kbir System, and River Sewda System. There are other smaller *widien* across the Maltese Islands. The figure below shows the valleys and watercourses present in the Maltese Islands.
145. River valleys support a number of habitats and species. The different floral habitats within the river valley systems include those along and in streams, in damp places, and in shaded valleys, etc.; rock pools; valley woody plants; valley plants of rocky places; valley plants of arid places (where there is some habitat overlap with valley plants of rocky places); valley plants of the fields etc.; valley plants of waste places; valley plants of grassy places; and valley plants of more general habitats<sup>40</sup>.

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<sup>39</sup> Haslam, S.M. and Borg, J. (1998) *The River Valleys of the Maltese Islands: Environment and Human Impact*. Published by the Islands and Small States Institute of the Foundation for International Studies, Malta in collaboration with CIHEAM, Bari, Italy.

<sup>40</sup> Ibid.

Figure 4.22: Valleys and watercourses in the Maltese Islands



(Source: Euro-Mediterranean Information System (2001) Malta Focal Point [accessed online in May 2014 - <http://www.emwis-mt.org/>])

146. Other important areas that are not protected are the green spaces within the urban areas. Some of these areas are designated as Strategic Open Gaps / Public Open Spaces under their relevant Local Plans, or scheduled for their architecture (in the case of gardens); however, there is no proper protection of green spaces. Green spaces in urban areas are important for aesthetic, health, and for recreational reasons; they are also important from an ecological point of view.
147. Inland surface and transitional waters are described below.

## 4.5 Water

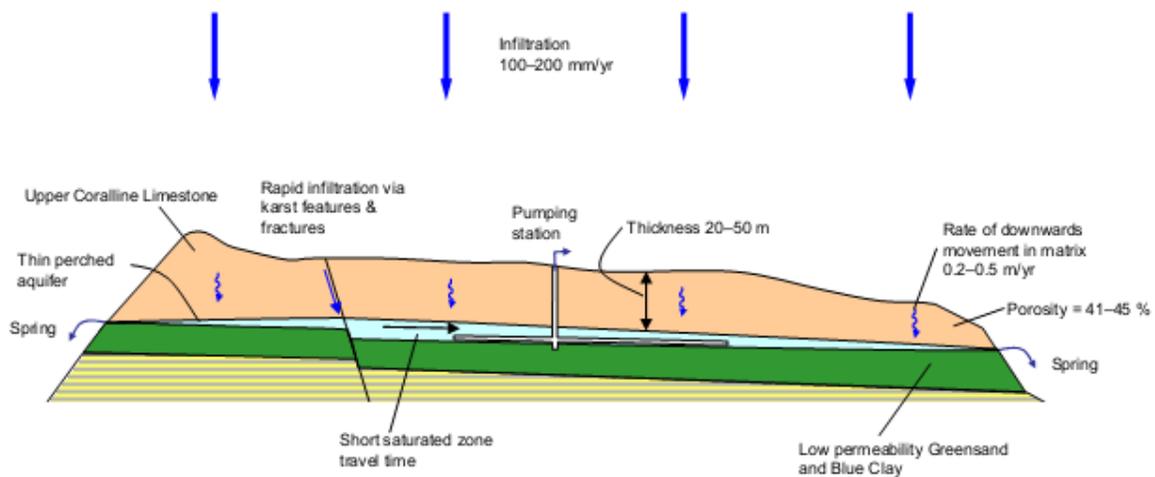
### 4.5.1 Fresh waters

148. Freshwater is a limited natural resource in the Maltese Islands. It derives from rainwater percolating through the porous limestone rock accumulating in aquifers, from where it either seeps out from fissures in the rock or is extracted for agricultural use or human consumption.
149. There are two main types of aquifers: the perched aquifers and the mean sea level aquifers. Perched aquifers are found within the Upper Coralline Limestone formation, above the impervious Blue Clay formation, and above sea level. Such aquifers are not in contact with seawater and hence do not suffer from saltwater intrusion. A perched aquifer is characterised by its low permeability (0.2 – 0.5m per year) and high porosity (41 - 45 per cent). This means that the rate of downwards movement in the aquifer matrix will be slow and the travel time in the unsaturated zone will be long in the thicker parts of the aquifer<sup>41</sup>. The depth of the perched aquifer varies between 20m and 50m, see figure below.

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<sup>41</sup> British Geological Society, A preliminary study on the identification of the sources of nitrate contamination in groundwater in Malta - Results and interpretation, 2008

Figure 4.23: Conceptual model of perched aquifer

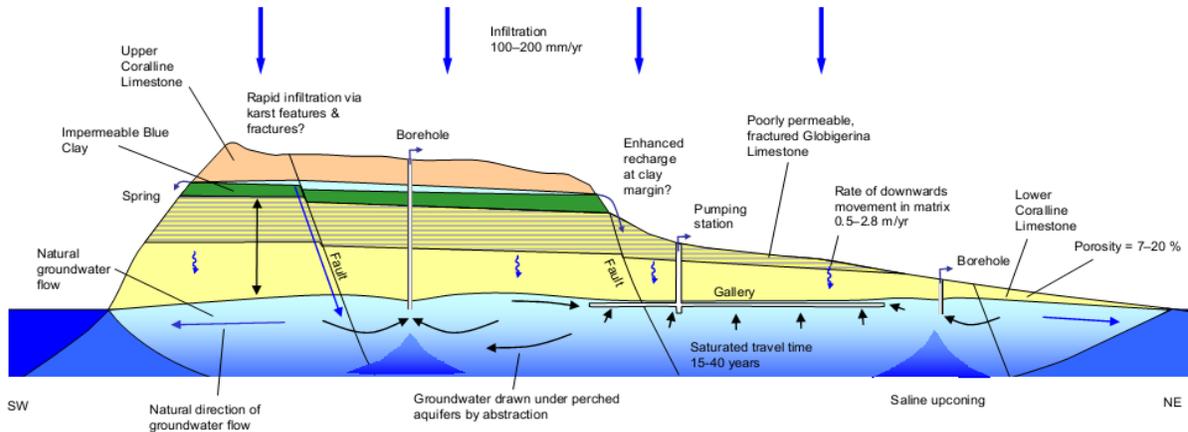


(Source: British Geological Society, A preliminary study on the identification of the sources of nitrate contamination in groundwater in Malta - Results and interpretation, 2008)

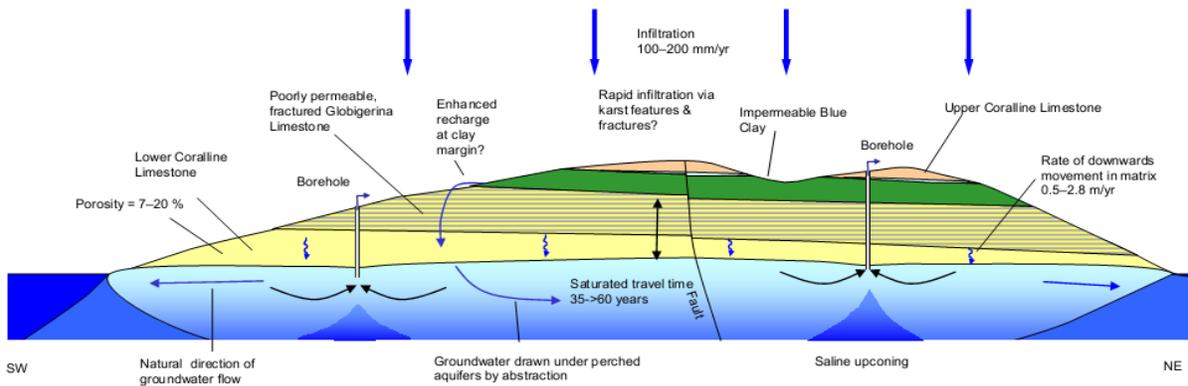
150. The Lower Coralline Limestone formation hosts the mean sea level aquifer. This aquifer consists of freshwater that floats in a lens-shaped formation above saline sea water, due to differences in water density. The current highest piezometric level in this aquifer is around 3m. Due to abstraction pressures, the piezometric levels in some central regions of Malta can reach levels as low as 1m above mean sea level. The mean sea level aquifer is characterised by relatively low porosity levels (7 – 20 per cent) and a downward movement rate of 0.5 – 2.8m per year. Yet, the thickness of the Maltese aquifers suggests that residence times in the saturated zone range from between 15 and 40 years. The longest residence times occur within the Gozo mean sea level aquifer and range from between 25 and 60 years<sup>42</sup>, see figure below.
151. There are a total of 15 groundwater bodies across the Maltese Islands. These are primarily located in the porous coralline limestone rock strata. The location of the groundwater bodies is shown in figure below.

<sup>42</sup> British Geological Society, A preliminary study on the identification of the sources of nitrate contamination in groundwater in Malta - Results and interpretation, 2008

Figure 4.24: Conceptual model of mean sea level aquifers  
Malta mean sea level aquifer



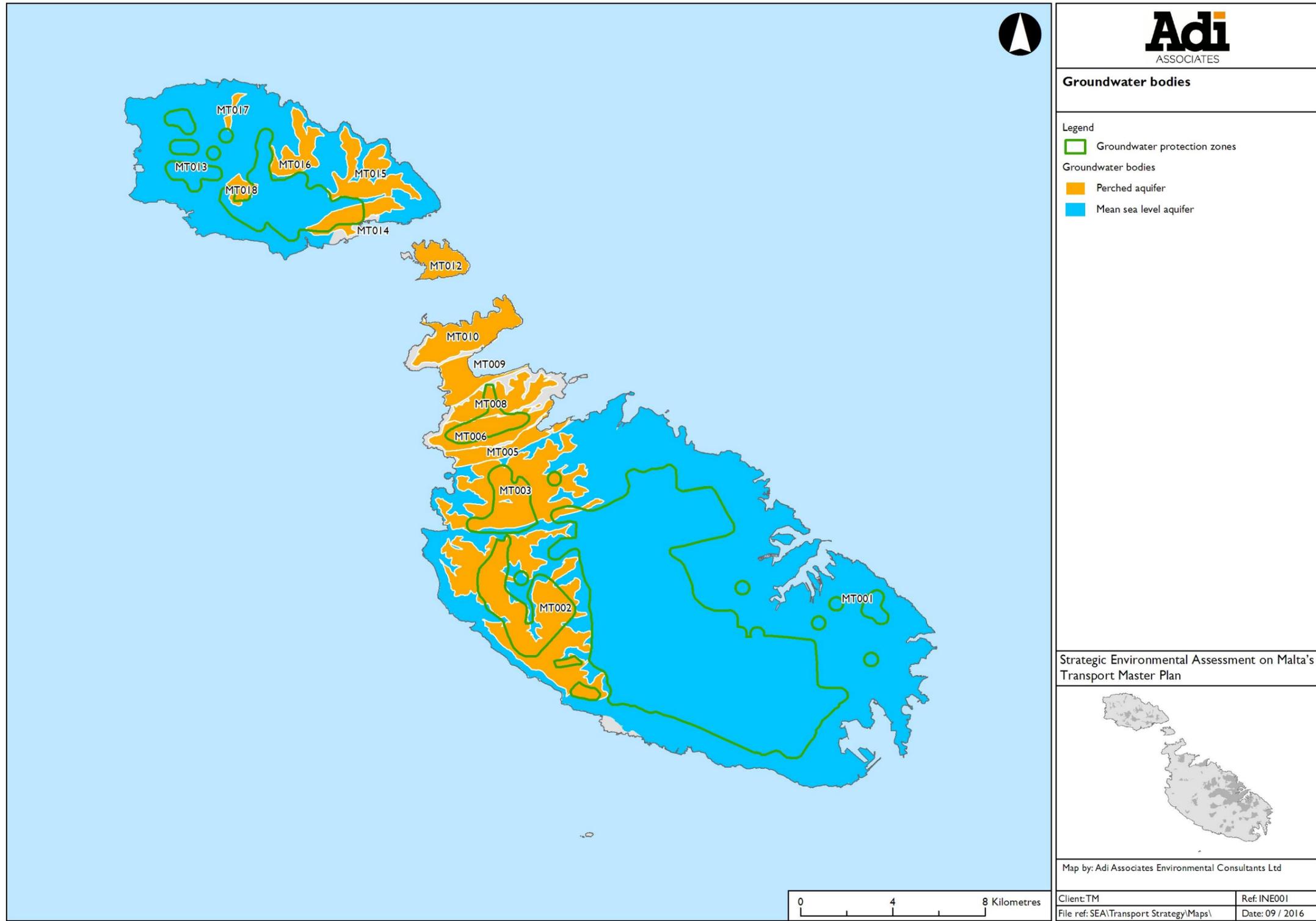
Gozo mean sea level aquifer



(Source: British Geological Society, A preliminary study on the identification of the sources of nitrate contamination in groundwater in Malta - Results and interpretation, 2008)



Figure 4.25: Groundwater bodies



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#### 4.5.2 Inland surface and transitional waters

152. Most inland surface waters in the Maltese Islands are related to river valleys ('widien') and their catchments whilst transitional waters are linked to coastal processes. Only a few watercourses and streams are permanent. These are linked to springs that are the result of the Blue Clay formation's impermeability. Due to their scarcity inland surface and transitional waters are often protected for their ecological value.

153. There are five protected transitional waters: Is-Salini; Il-Magħluq ta' Marsaskala; Il-Ballut ta' Marsaxlokk; Is-Simar and L-Għadira; three protected watercourses: Wied tal-Baħrija, Wied il-Luq and Wied il-Lunzjata; and two protected pools: Il-Qattara and L-Għadira ta' Sarraflu.

154. Table 4.9 and Table 4.10 show the ecological and chemical status of the protected inland surface and transitional water bodies mentioned above.

Table 4.9: Water status based on one year invertebrate monitoring and supporting parameters classification

Water body	Type	Method applied	Ecological status	Description of status	Main pressures effecting biological quality elements (BQEs)
Is-Salini	Transitional waters	Shannon Weiner index	Poor/Bad throughout the year	<ul style="list-style-type: none"> <li>• Compromised ecological status</li> <li>• Status ranged from altered to very altered regardless of sampling season/sampling point</li> <li>• Species present were of low ecological value (composed mainly of microaerophilic /anoxic tolerant groups)</li> <li>• Anoxic conditions brought about by natural decay of <i>Posidonia oceanica</i> foliage however presence of faecal coliforms indicates that contamination by sewage contributes to high organic loads found at bottom of water body.</li> </ul>	<ul style="list-style-type: none"> <li>• Sewage</li> <li>• Contaminated runoff</li> </ul>
Il-Magħluq ta' Marsaskala	Transitional waters	Shannon Weiner index	<i>Inner basin</i> ranges from good to moderate depending on season (good – winter and moderate summer)	<ul style="list-style-type: none"> <li>• Status mainly influenced by fluctuation of physico-chemical parameters, principally salinity throughout the year.</li> <li>• Points to possibility that method applied is not adequate for transitional waters where salinity plays an important role</li> <li>• Anoxic conditions found</li> </ul>	<ul style="list-style-type: none"> <li>• Hydromorphological influence</li> <li>• Seasonal nutrient enrichment related to seasonal inflow of freshwater</li> <li>• Litter</li> </ul>

Water body	Type	Method applied	Ecological status	Description of status	Main pressures effecting biological quality elements (BQEs)
			<i>Outer basin</i> – poor throughout	to be present. <ul style="list-style-type: none"> <li>• Lower species than expected for typical Mediterranean transitional water systems possibly due to artificial nature of basin's edges.</li> </ul>	
Il-Ballut ta' Marsaxlokk	Transitional waters	Shannon Weiner index	Good / moderate / Bad - Good status was reported during the wet season, whilst bad status was reported during the dry season.	<ul style="list-style-type: none"> <li>•Complex ecological assemblage influenced by periodical evaporation of the water body and levels of salinity.</li> <li>•Recolonisation process of assemblages begins at the end of the dry season. The first assemblages as highly unbalanced towards opportunistic species whilst a more structured assemblage follow this initial period – leading to an improvement in status.</li> </ul>	<ul style="list-style-type: none"> <li>•No perceived link with anthropogenic pressures since fluctuations in assemblage fits with physico-chemical and hydromorphological parameters.</li> <li>•Coastal erosion of water body is affecting size of water body</li> </ul>
L-Għadira*	Transitional waters	Chandler biotic score was applied since these waters were originally designated as 'pools'	Class – Moderate /Poor/Bad Since method is not suited to brackish water environments this classification is deemed to be inappropriate and requires revision	<ul style="list-style-type: none"> <li>• Relative stability in assemblages indicated by presence of crustaceans</li> <li>• Fluctuation in level of salinity accounts for the absence of strict freshwater arthropods – therefore method applied is not applicable.</li> </ul>	<ul style="list-style-type: none"> <li>• Seasonal nutrient enrichment from late spring through summer</li> </ul>
Is-Simar*	Transitional waters	Chandler biotic score was applied since these waters were originally designated	Class – Moderate Poor Since method is not suited to brackish water	<ul style="list-style-type: none"> <li>• Relative stability in assemblages indicated by presence of crustaceans</li> <li>• Fluctuation in level of salinity accounts for the absence of strict freshwater arthropods – therefore</li> </ul>	<ul style="list-style-type: none"> <li>• Nutrient enrichment during the end of summer</li> </ul>

Water body	Type	Method applied	Ecological status	Description of status	Main pressures effecting biological quality elements (BQEs)
		as 'pools'	environments this classification is deemed to be inappropriate and requires revision	method applied is not applicable	
Wied tal-Baħrija	Water Courses	Extended Biotic Index	Moderate /Poor/Bad depending on the water reach and season.	<ul style="list-style-type: none"> <li>•Appears to be in a good natural state in the Upper reaches.</li> <li>•Status ranged from moderate to bad and this was linked directly to water flow.</li> <li>•Fluctuation in water flow rates resulted in absence of species requiring high oxygen concentrations and fast-moving water – therefore status scored less using this method.</li> <li>•Community present described as resilient.</li> <li>•Presence of well-structured crustacean community.</li> <li>•Variation in flow regime and the organic load of the watercourse may contribute significantly to the observed assemblages.</li> </ul>	<ul style="list-style-type: none"> <li>•Eutrophication – extremely high nitrates.</li> <li>•Chemical contaminants.</li> <li>•Contaminated runoff.</li> <li>•Alterations in water flow rate due to the diversion, abstraction and use of water/ uptake of water by the Giant Reed.</li> </ul>
Wied il-Luq	Water Courses	Extended Biotic Index	Moderate /Poor/ Bad not linked to season	<ul style="list-style-type: none"> <li>•Results revealed an altered ecological situation, slightly less disturbed in the upper reaches and more impacted in the lower parts.</li> <li>•Species requiring high oxygen concentrations and fast-flowing water were not present.</li> <li>•As a consequence the assemblage is less structured than continental rivers and therefore scores lower values in biotic indices.</li> </ul>	<ul style="list-style-type: none"> <li>•Hydromorphological alterations is evident especially in upper and middle reaches.</li> <li>•Very high nitrates.</li> <li>•Dense reed beds compete for water.</li> </ul>

Water body	Type	Method applied	Ecological status	Description of status	Main pressures effecting biological quality elements (BQEs)
				<ul style="list-style-type: none"> <li>• Degradation is not linked to a particular season, suggesting that the whole watercourse undergoes temporary loss of its ecological function.</li> <li>• Alteration to the natural state of the watercourse, dense reed beds and human disturbance are related to the degradation apparent in the lower parts.</li> </ul>	
Wied il-Lunzjata	Water Courses	Extended Biotic Index	Moderate / Poor throughout	<ul style="list-style-type: none"> <li>• Moderately altered ecological status.</li> <li>• Retrieved assemblage conditioned by the fluctuation in the flow rate and by the presence of soft substrate; resulting in the absence of species requiring high oxygen concentration and fast flowing water.</li> <li>• Very diversified community however is present – comparable to that of continental environments.</li> <li>• Reed beds that surround upper and middle reaches believed to offer a stable environment for habitat therefore balance between the water take-up and habitat stabilisation properties need to be investigated further.</li> <li>• Direct abstraction from stream has been observed.</li> </ul>	<ul style="list-style-type: none"> <li>• Extremely high nitrates.</li> <li>• Contaminated runoff.</li> <li>• Alterations in water flow rate due to the diversion, abstraction, and use of water and the uptake of water by the Giant Reed.</li> <li>• (?) direct abstraction of water from the surface water body – unknown whether this is significant.</li> </ul>
Il-Qattara	Pools	Chandler Biotic Score and the extended biotic index	Good/ Moderate (Moderate during summer when water levels decreased).	<ul style="list-style-type: none"> <li>• Ecological situation reported to be close to the maximal ecological level achievable in a Maltese freshwater context.</li> <li>• Observed ecological values were assigned to a moderate class rather than to a good class due to the absence of highly sensitive</li> </ul>	<ul style="list-style-type: none"> <li>• Increased nitrate levels linked with winter rains (but low for the rest of the year).</li> <li>• Alien species.</li> </ul>

Water body	Type	Method applied	Ecological status	Description of status	Main pressures effecting biological quality elements (BQEs)
				<p>species and to the average level of biodiversity.</p> <ul style="list-style-type: none"> <li>• Lack of high scoring invertebrate groups (generally present in similar continental environments) negatively affects the outcome of the index.</li> <li>• Lower results scored during the summer months is expected to be attributed to the significant fluctuation of the water level.</li> </ul>	
L-Għadira ta' Sarraflu	Pools	Chandler Biotic Score and the extended biotic index	Bad throughout the year.	<ul style="list-style-type: none"> <li>• Highly altered ecological condition due to significant human impacts and modifications.</li> <li>• No structured assemblage of benthic invertebrates.</li> <li>• Anoxic conditions of the lower water layer stable throughout the year.</li> <li>• Vertical edges and depth of basin limit the number of available ecological niches to support a more diversified assemblage.</li> <li>• High presence of alien species predate on aquatic invertebrates.</li> <li>• Nitrate concentrations peak during winter months.</li> </ul>	<ul style="list-style-type: none"> <li>• Alien species.</li> </ul>

\* The two water bodies of Għadira and is-Simar were confirmed to be transitional waters since their physico-chemical makeup akin to that of the other transitional waters.

(Source: Sustainable Energy and Water Conservation Unit, Environment and Resources Authority 'The Second Water Catchment Management Plan for the Malta Water Catchment District 2015 – 2021', pp. 274, 277-278, 280)

Table 4.10: Chemical quality of inland surface waters based on monitoring in water and sediment

Ecological status	Description of status	Main pressures effecting biological quality elements (BQEs)
<b>Transitional water</b>		
Is-Salini	<p>Good - High confidence</p> <p>All parameters were below their respective EQS</p> <p>Lead (3.367 µg/l) was relatively high.</p>	<p>Good - High confidence</p> <p>All parameters were at levels below the guideline values of ecotoxicological significance in surface waters</p>
Il-Magħluq ta' Marsaskala	<p>Good - High confidence</p> <p>All parameters were below their</p>	<p>Bad - High confidence</p> <p>Fluoranthene, Benzo(a)pyrene,</p>

Ecological status	Description of status	Main pressures effecting biological quality elements (BQEs)
	respective EQS	Benzo(b)fluoranthene, and Benzo(g,h,i)-perylene, were at levels above or close to the guideline values of ecotoxicological significance
Il-Ballut ta' Marsaxlokk	Good - High confidence All parameters were below their respective EQS.	Bad - High confidence Fluoranthene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i)-perylene, and Nickel were at levels above or close to the guideline values of ecotoxicological significance.
Is-Simar	Good - High confidence All parameters were well below their respective EQS.	Good - High confidence All parameters were at levels below the guideline values of ecotoxicological significance in surface waters.
L-Għadira	Good - High confidence All parameters were well below their respective EQS	Good - High confidence All parameters were at levels below the guideline values of ecotoxicological significance in surface waters
<b>Water courses</b>		
Il-Baħrija	Good - Medium Confidence All parameters were below their EQS.	Good - High confidence All parameters were at levels below the guideline values of ecotoxicological significance in surface waters.
Wied il-Luq	Good - High confidence All parameters were well below their respective EQS.	Good - High confidence All parameters were at levels below the guideline values of ecotoxicological significance in surface waters.
Wied tal-Lunzjata	Good - High confidence Mercury (0.071 µg/l) exceeded the EQS (0.07 µg/l) in one sample. Other samples were very low and below detection.	Bad - High confidence Lead and dioxin like compounds were found to be above or close to the guideline values of ecotoxicological significance.
<b>Pools</b>		
Il-Qattara	Good - High confidence All parameters were well below their respective EQS.	Bad - High confidence Cadmium, Lead and Zinc were found to be above or close to the guideline values of ecotoxicological significance.
L-Għadira ta' Sarraflu	Good - High confidence All parameters were below their respective EQS.	Good - High confidence All parameters were at levels below the guideline values of ecotoxicological significance in surface waters.

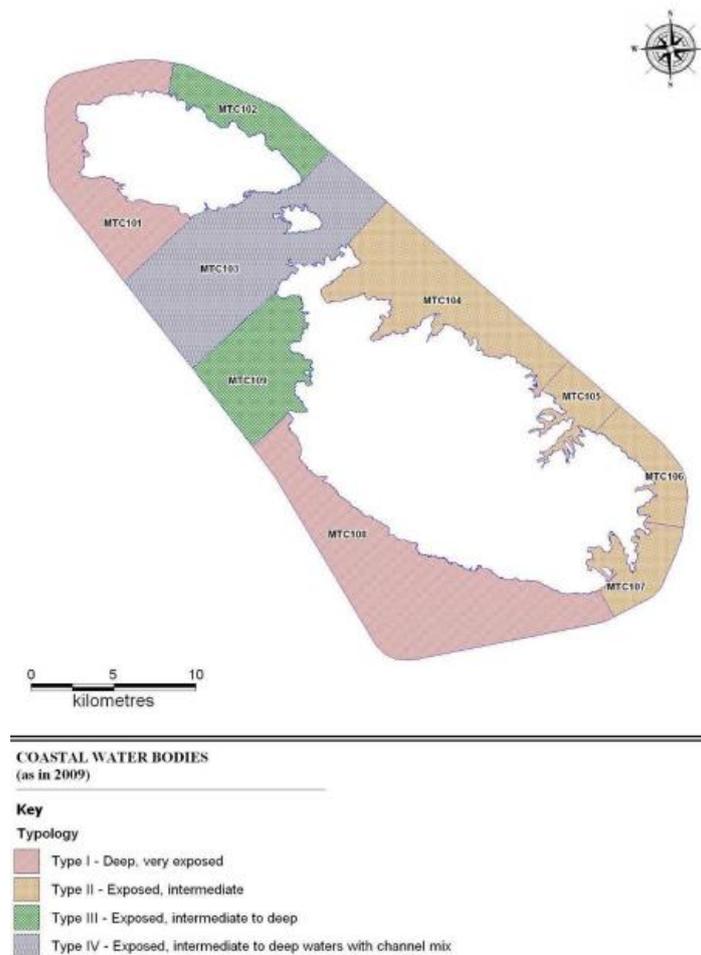
(Source: Sustainable Energy and Water Conservation Unit, Environment and Resources Authority 'The Second Water Catchment Management Plan for the Malta Water Catchment District 2015 – 2021', pp. 274, 277-278, 280)

#### 4.5.3 Coastal and Marine Environment

155. The Water Catchment Management Plan identified 9 distinct coastal water bodies. These water bodies were categorised into 4 classes. These classes included:

- Deep waters that are very exposed.
- Waters of intermediate depth and are exposed.
- Intermediate to deep waters that are exposed.
- Intermediate to deep waters characterised by alternating currents that are also exposed.

Figure 4.26: Typology of the Maltese Coastal Waters



(Source: SEWCU & ERA – The 2nd Water Catchment Management Plan for the Malta Water Catchment District 2015 – 2021)

## 4.6 Soil

156. Soil is a basic resource necessary for agriculture and horticulture. It has several functions such as maintaining and supporting vegetation, managing water quality and distribution, preserving archaeological heritage, and managing potential pollutants<sup>43</sup>.
157. There are seven major soil types with an intricate spatial distribution. This is mostly the result of the movement of excavated soil material, the replenishment of eroded or shallow soils, and the impacts of urbanisation. The combination of human factors with the underlying bedrock led to the formation of different types of soil landscapes as shown in **Figure 4.27**. These soil landscapes are classified into two: semi-natural landscapes and man-made landscapes.
158. Soil organic matter is a key determinant of soil productivity. It influences many functions such as exchange of nutrients, water retention, and soil ecology. A major threshold of soil organic matter content is two percent. Below this level, a potentially serious decline in soil quality will occur. In 2006, the average organic matter found in Maltese topsoil was 2.1 per cent; the highest level (four per cent) was recorded in Mellieħa, see **Figure 4.28, Table 4.11**.
159. Soil contamination is a result of pollution by heavy metals. In 2006, the average lead content in the monitored sites was found to be 125mg/kg. The Paola site registered the highest measurement, which was 451mg/kg, see **Table 4.11**. Soil can be contaminated either diffusely or locally. The former is difficult to trace and can be the result of atmospheric deposition, inadequate waste/wastewater management etc. The latter is the result of point source pollution and thus can be better traced. This type of pollution tends to affect highly dense urban areas that tend to have industrial or military land usage, see **Figure 4.29**. Another process leading to soil degradation is soil salinisation. This process is the result of excessive increases of salts (sodium chloride) in the soil. In 2006, the average soil conductivity (which indicates salinity in soil) is that of 756 $\mu$ S/cm. In 2006, the highest value was recorded at Mgarr 1,580  $\mu$ S/cm<sup>44</sup>, see **Figure 4.30, Table 4.11**.
160. A survey carried out between September 2006 and August 2007 showed that Malta has a very high gross nitrogen balance. The median of the gross nitrogen balance in EU Member States is 47kg N per hectare whereas that in Malta is 117kg N per hectare<sup>45</sup>.

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<sup>43</sup> MEPA, State of the Environment Report 2005, Sub-report 5: Soil, 2005.

<sup>44</sup> MEPA (2007) *State of the Environment Indicators 2006*

<sup>45</sup> NSO, Gross Nitrogen Balance for Malta 2007, 2008.

Table 4.11: Soil Quality Indicators

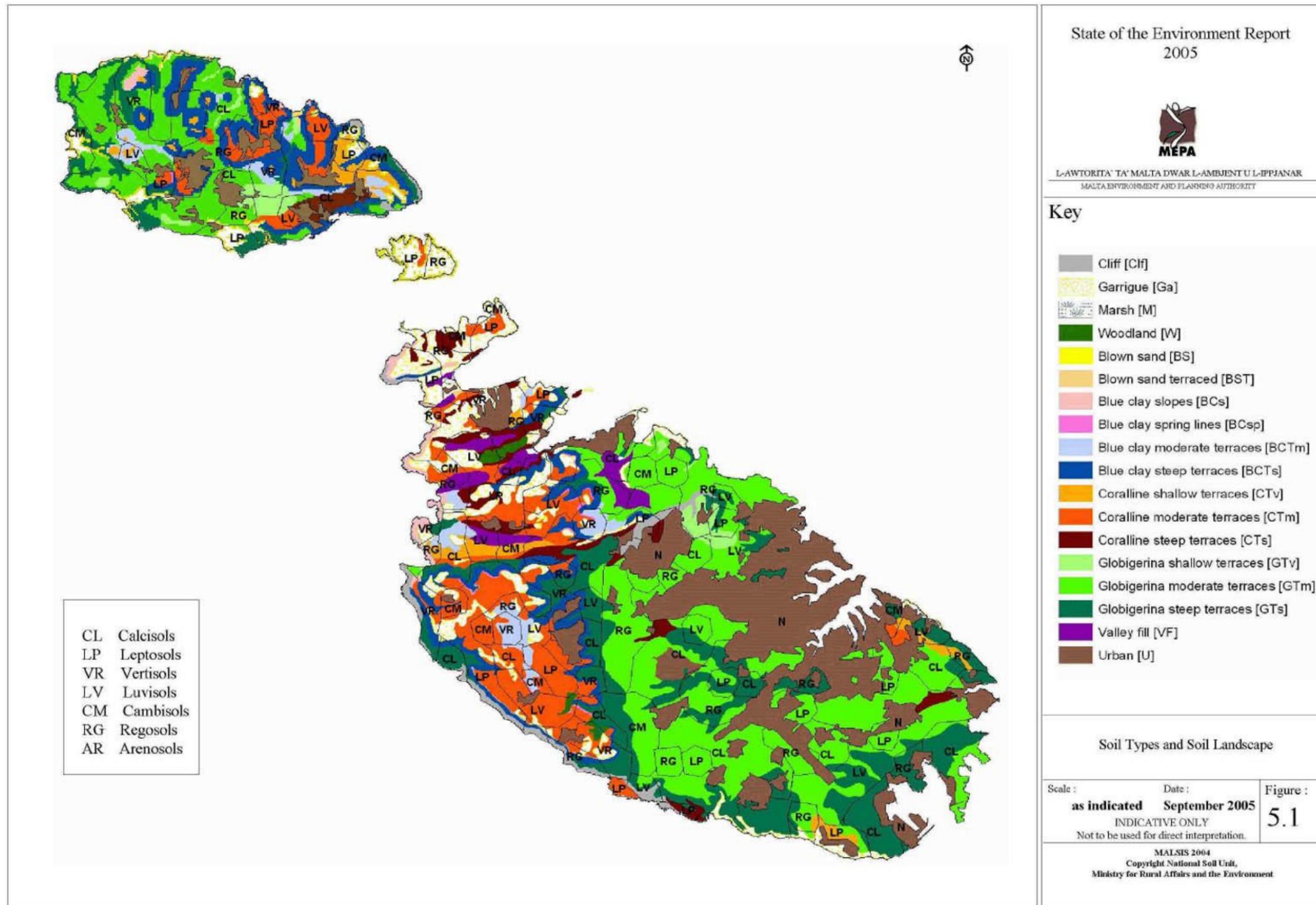
Local council	Electrical conductivity (EC) ( $\mu\text{S}/\text{cm}$ )	Organic Matter (per cent)	Lead (Pb) (mg/kg)
Għarb	721.00	1.95	91.98
Żebbuġ	644.00	2.00	66.88
Sannat	669.00	1.52	66.95
Għajnsielem	757.00	1.92	62.62
Mellieħa	1,256.00	3.99	42.09
Mellieħa	156.00	2.74	25.68
Mġarr	1,580.00	1.64	25.27
San Pawl il-Baħar	865.00	2.20	19.33
Għargħur	571.00	2.74	101.32
Rabat	1,198.00	1.87	166.44
Żebbuġ	486.00	1.96	216.38
Paola	573.00	2.23	451.04
Zabbar	598.00	1.43	243.55
Qrendi	697.00	2.02	263.94
Żurrieq	534.00	2.04	59.34
Marsaxlokk	796.00	1.41	90.52
Average	756.31	2.10	124.58

\* Electrical conductivity is an indicator of soil salinity  
 $\mu\text{S}/\text{cm}$  = micro Siemen per centimetre

(Source: MEPA (2007) State of the Environment Indicators 2006)



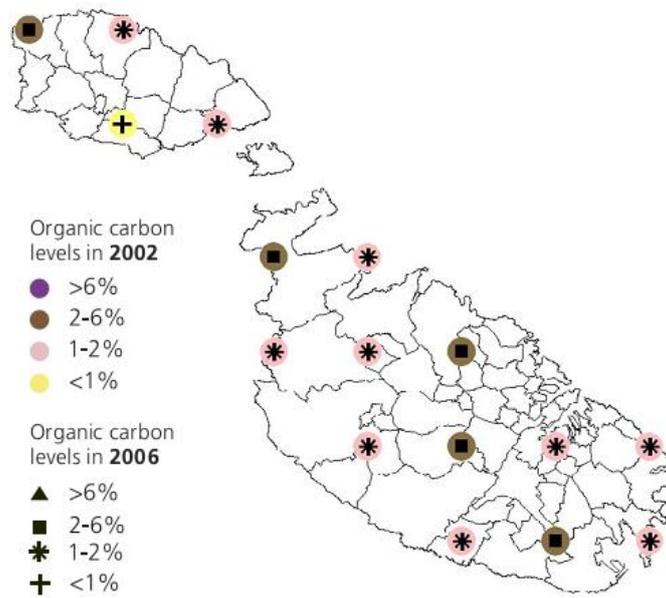
Figure 4.27: Soil types and soil landscape



Source: MEPA, State of the Environment Report 2005, Sub-report 5: Soil, 2005



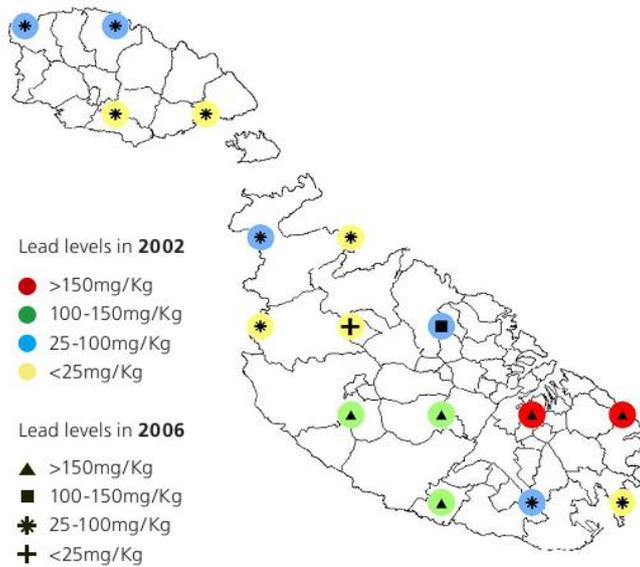
Figure 4.28: Soil organic matter



Source: National Soils Unit (MRAE)

(Source: MEPA (2007) State of the Environment Indicators 2006)

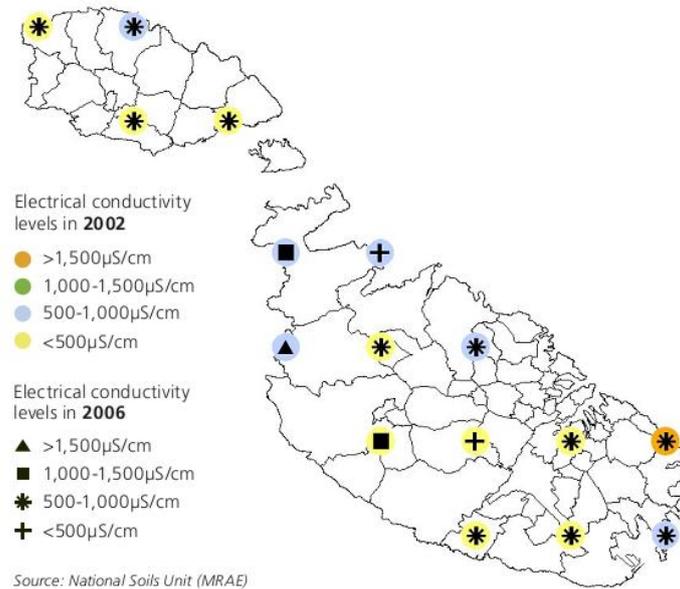
Figure 4.29: Lead concentrations in soil



Source: National Soils Unit (MRAE)

(Source: MEPA (2007) State of the Environment Indicators 2006)

Figure 4.30: Soil salinity

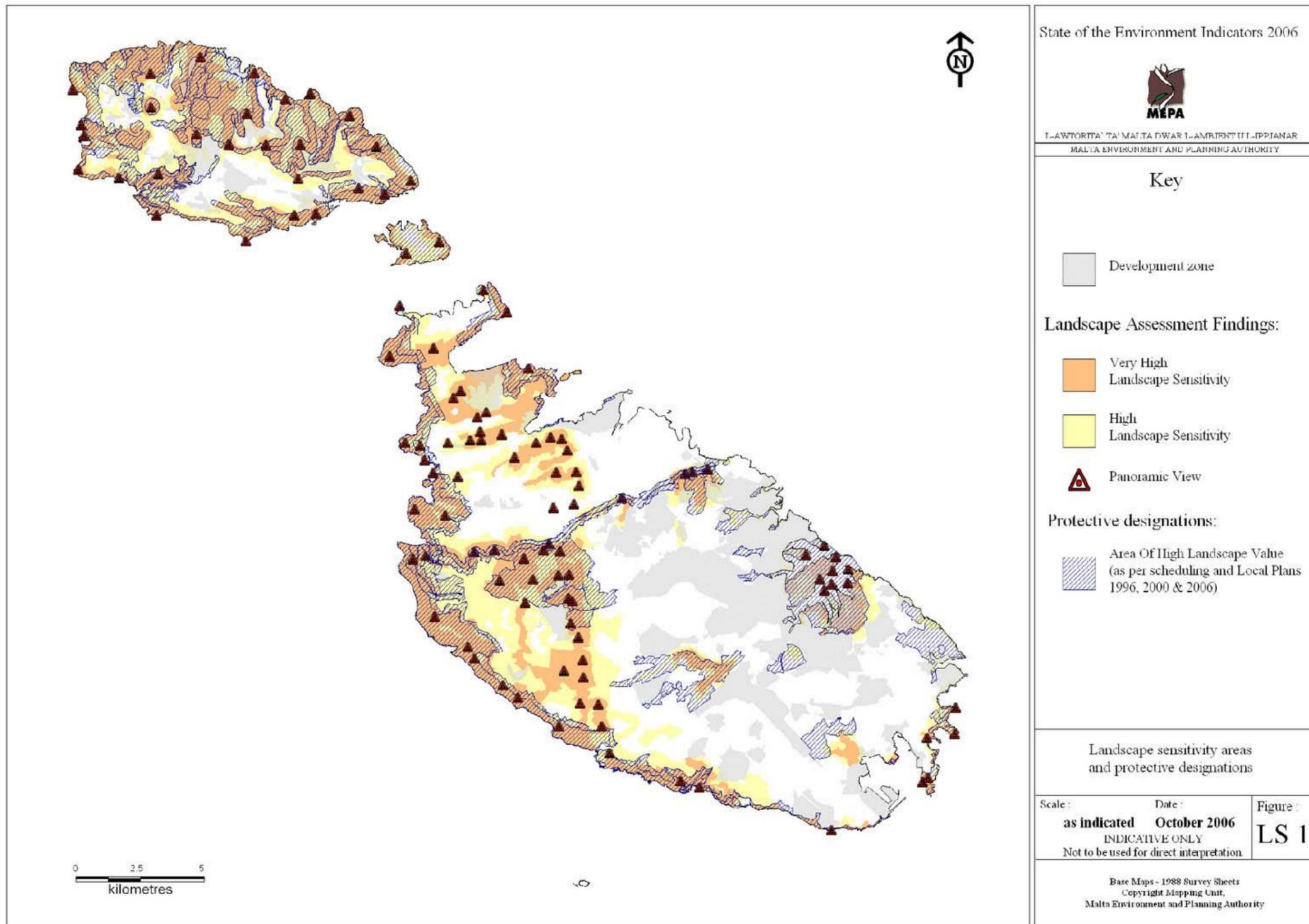


(Source: MEPA (2007) *State of the Environment Indicators 2006*)

## 4.7 Landscape

161. In 2004, MEPA published a Landscape Assessment Study. The Study concluded that 51 per cent of the landscape is of high or very high sensitivity, see **Figure 4.31**. Areas of High Landscape Value (AHLV), which cover 12 per cent of the Maltese Islands, were scheduled between 1996 and 2000. During 2006, the extent of AHLV increased to 33 per cent (106km<sup>2</sup>) of the Maltese Islands. Areas of High Landscape Value were designated under the former Structure Plan for the Maltese Islands (1990) to protect specific landscape features. Areas of High Landscape Value include Buskett, Mdina, the Coastal Cliffs running along the north west to south east coast, the Harbour Fortifications, the Victoria Lines, Cittadella, Dwejra / Qawra Area and Wied ix-Xlendi / Wied Lunzjata.

Figure 4.31: Landscape Sensitivity Areas and Landscape Protective Designations



(Source: MEPA, State of the Environment Indicators 2006, 2007)



#### 4.8 Cultural heritage

162. It is acknowledged that although Malta's heritage is varied and rich, it requires immediate attention and significant investment<sup>46</sup>. A Draft National Strategy for Cultural Heritage was published for consultation in May 2012 and the Tourism Policy for the Maltese Islands was published in July 2012. However, limited funding hinders the timely and efficient restoration and rehabilitation of the vast inventory of cultural heritage assets.
163. Buildings, monuments, and sites (including marine sites) are protected through the Cultural Heritage Act and Development Planning Act. The latter allows the PA to schedule culturally important buildings and sites. The PA Scheduling List contains 1,793 sites scheduled for architectural importance, 305 sites scheduled for archaeological importance, and 223 sites scheduled for ecological importance<sup>47</sup>. In addition, three sites, namely the city of Valletta, Ħal Saflieni Hypogeum, and the megalithic temples (Ħaġar Qim, Mnajdra, Tarxien, Skorba, Ta' Ħaġrat and Ġgantija) are UNESCO World Heritage Sites, see **Figure 4.32**.
164. In 2014 there were 72 active museums and historical sites.
165. In addition to scheduled properties there are scheduled areas for landscapes and archaeology. An Area of High Landscape Value (AHLV) has been defined as *"a cultural area of conservation value that encompasses an array of diverse components considered to be culturally significant. Distinct geographical areas or properties uniquely representing the combined work of nature and of man"*<sup>48</sup>. An Area of Archaeological Importance (AAI) is *"a specific geographic area in which a high incidence of archaeological remains has been recorded. These remains may not necessarily date to the same time period"*<sup>49</sup>.

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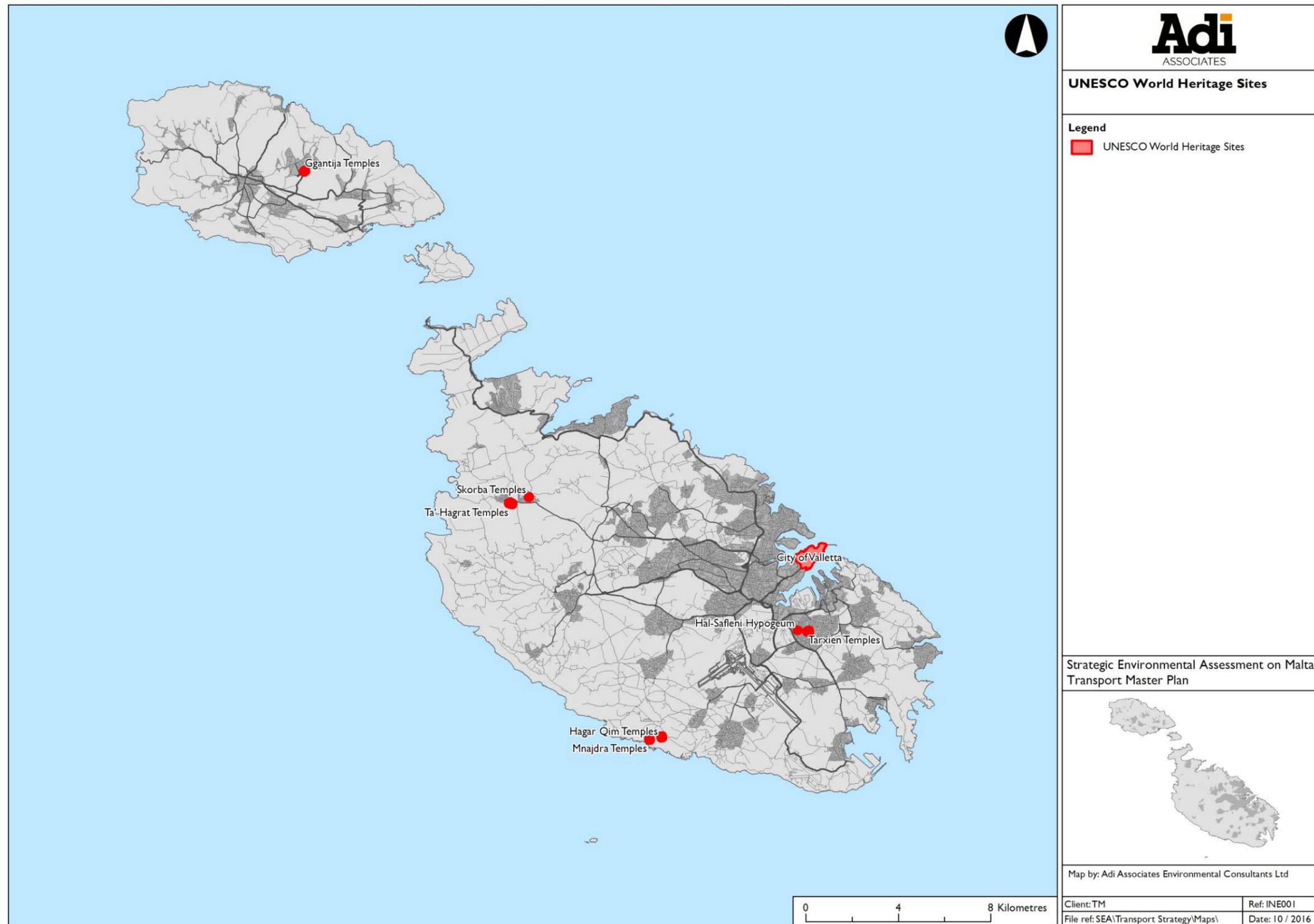
<sup>46</sup> Malta Government, 2006, A Sustainable Development Strategy for the Maltese Islands 2006 -2016, Third draft, National Commission for Sustainable Development.

<sup>47</sup> The Superintendence of Cultural Heritage (2011) *State of the Heritage Report 2010*

<sup>48</sup> MEPA - Cultural Landscapes definitions [accessed in May 2014 - <http://www.mepa.org.mt/malta-scheduled-property>]

<sup>49</sup> Ibid.

Figure 4.32: UNESCO World Heritage Sites



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166. Another important designated feature is the Urban Conservation Area (UCA) which has been defined as “*an urban area which has a distinctive character of heritage significance which is desirable to conserve*”<sup>50</sup>. The former MEPA categorized the streets within these areas according to the heritage value and the streetscape value. Urban Conservation Areas are protected from inadequate developments that can jeopardize the integrity of these zones. The Planning Authority’s ‘Traditional Maltese Wooden Balcony Restoration Grant Scheme’ aims at conserving the traditional balconies with the aim of maintaining and improving the character of the UCAs.

## 4.9 Population and Human Health

### 4.9.1 Population

167. In the 2011 Census, the population stood at 417,432 persons<sup>51</sup>. In 2013 this rose to 425,384 persons<sup>52</sup>.
168. In 2011, there were still more females than males. It has been noted that over the last decades this gap is narrowing. In 2011 there were 209,807 females and 207,625 males<sup>53</sup>.
169. Malta has an ageing population. This will pose multiple challenges on Malta’s health and welfare systems. The trend indicates that the age composition of the population is becoming older. In 2011 the average age was 40.5 years. The population aged 65 and over represents 16.3 per cent of the total population. On the other hand, the younger cohorts are shrinking and the people aged 14 and under represent 14.8 per cent of the population<sup>54</sup>, see **Figure 4.33**.
170. According to ‘The 2015 Ageing Report’, in 2013, 21.3 per cent of Malta’s population would be over 65 years. The projected figure for 2060 for the same age cohort would be 39 per cent<sup>55</sup>.

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<sup>50</sup> Ibid.

<sup>51</sup> NSO (2014) *Census of Population and Housing, Final Report*

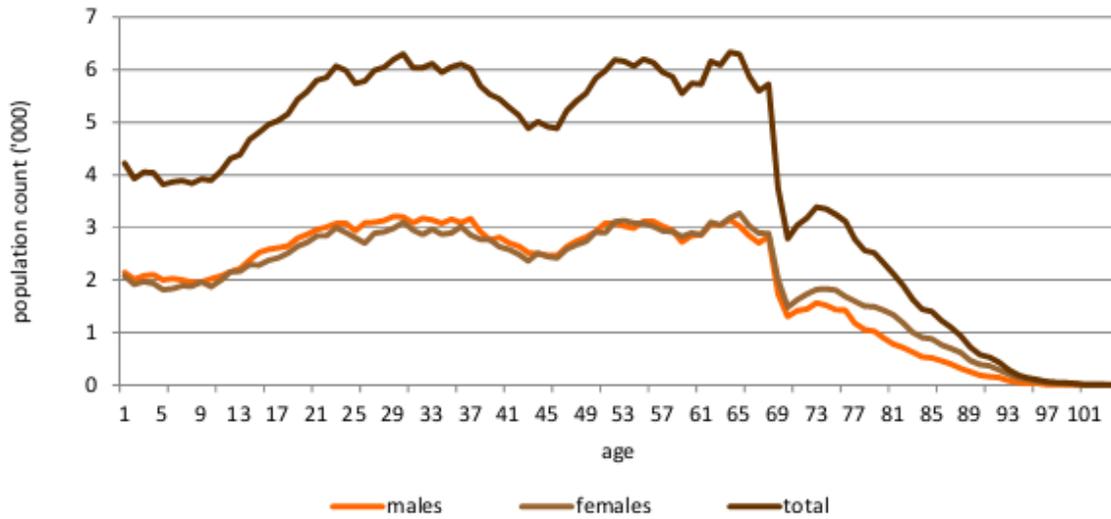
<sup>52</sup> NSO (2014) Malta in Figures

<sup>53</sup> NSO (2014) *Census of Population and Housing, Final Report*

<sup>54</sup> Ibid.

<sup>55</sup> European Commission (2015) *The 2015 Ageing Report: Economic and budgetary projections for the 28 EU Member States (2013 – 2060)*: European Economy 3/2015.

Figure 4.33: Age distribution by sex



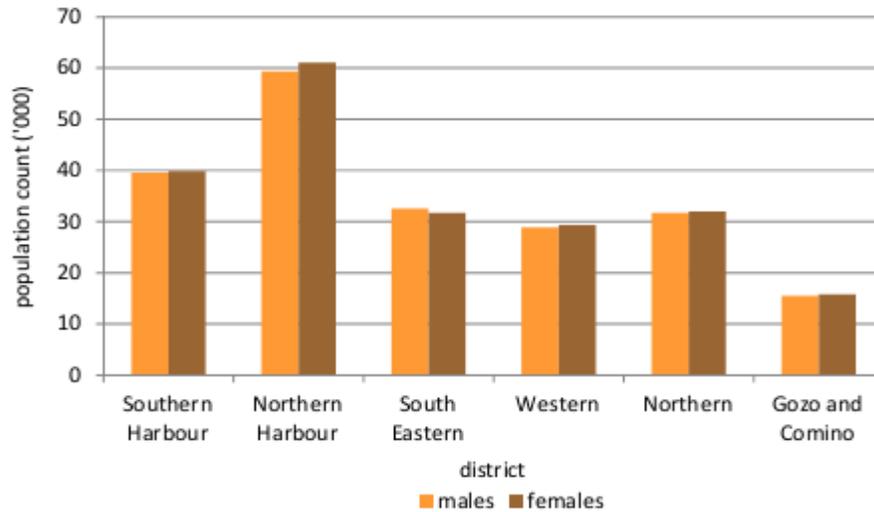
(Source: NSO (2014) Census of Population and Housing, Final Report)

#### 4.9.1.1 Geographical Distribution

171. The largest concentration of the population is found in the Northern Harbour District with 120,063 residents accounting to 28.9 per cent of the whole population. The smallest district is Gozo with 31,143 residents accounting to 7.5 per cent of the whole population, see **Figure 4.34**. The localities with the largest populations were Birkirkara with 21, 533 residents, Mosta with 19,560 residents and St. Paul’s Bay with 16,478 residents. The smallest locality is Mdina with 237 residents<sup>56</sup>.

<sup>56</sup> NSO (2014) *Census of Population and Housing, Final Report*

Figure 4.34: Geographical distribution by sex and district



#### 4.9.1.2 Population Density

172. Malta has the highest population density in the EU, see **Figure 4.35**. It has an average of 1,325 persons per square kilometre. In 2011<sup>57</sup>, the census districts with the highest population density are the Northern Harbour and Southern Harbour districts with 5,014 persons/km<sup>2</sup> and 3,035 persons/km<sup>2</sup> respectively. The latter is the only district that is experiencing a decrease in population density. The localities with the highest population densities are Sengela (17, 146 persons/km<sup>2</sup>), followed by Tas-Sliema (10,511 persons/km<sup>2</sup>) and Fgura (10,019 persons/km<sup>2</sup>), see **Figure 4.36**.
173. The National Transport Strategy shows a map (Figure 56 in the Strategy) showing the employee density. The Strategy also forecasts work intensification in 2050 in areas already prone to be congested (for example Valletta, Marsa, Mrieħel and Buġibba / Qawra).

<sup>57</sup> NSO (2014) *Census of Population and Housing, Final Report*

Figure 4.35: Population density by country

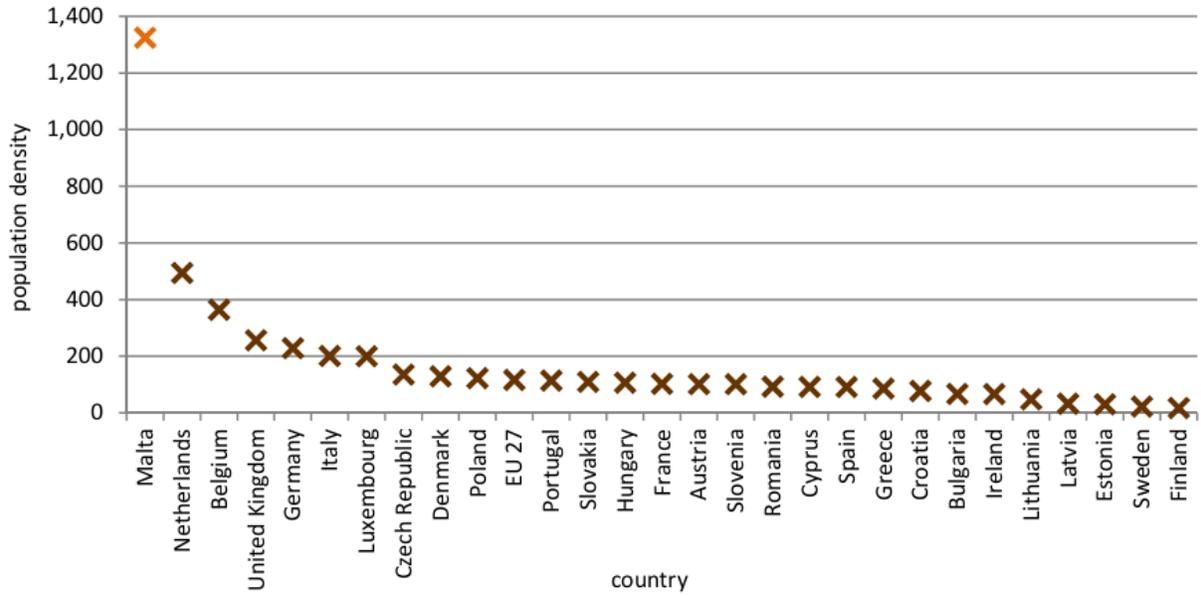
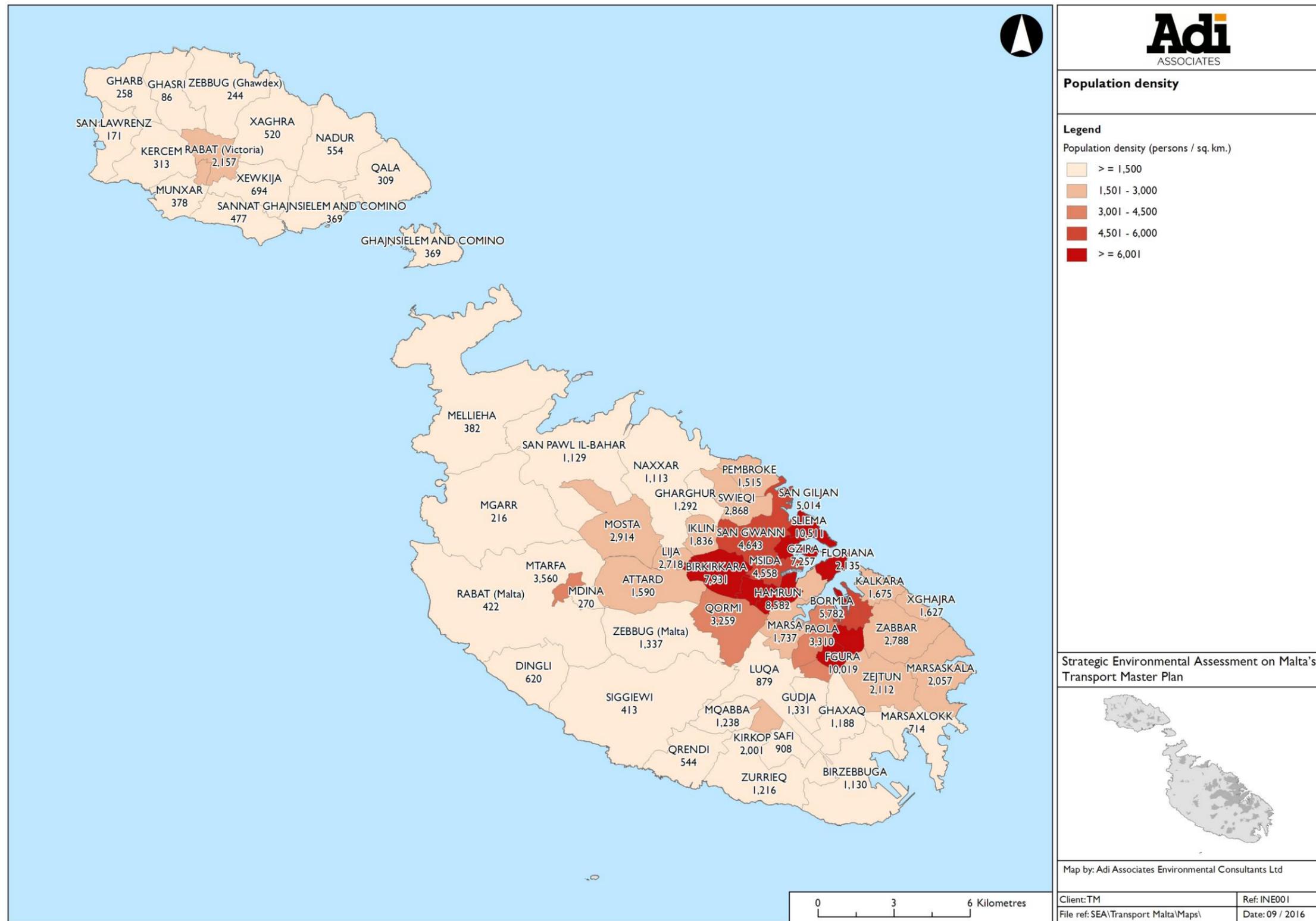


Figure 4.36: Locality population densities

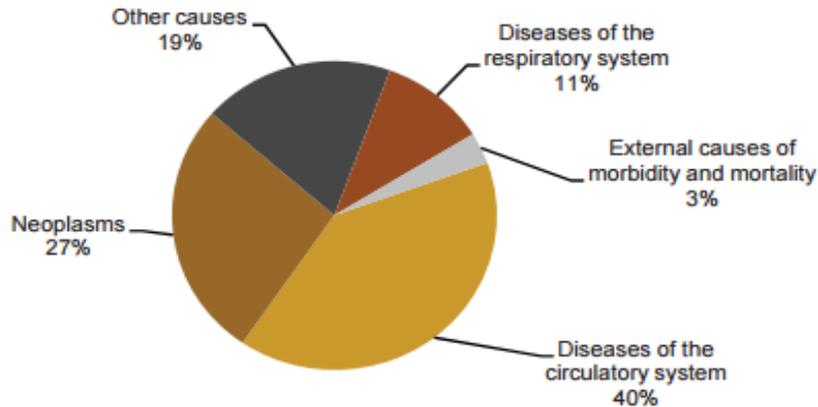




#### 4.9.2 Human Health

174. Life expectancy at birth is 81.9 years. The main cause of death in 2014 was of the circulatory system (40 per cent) followed by neoplasms (27 per cent), see **Figure 4.37**.

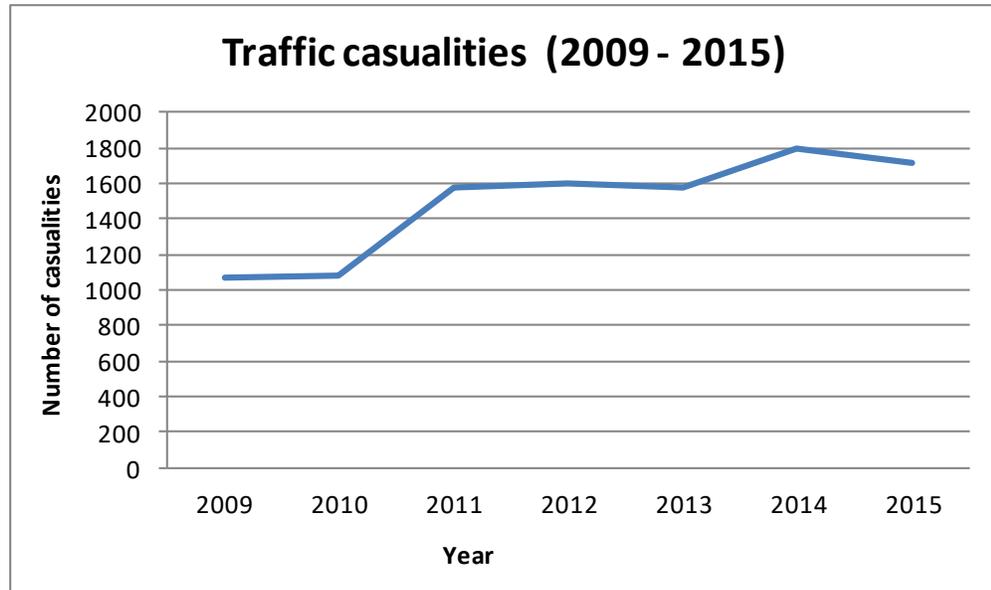
Figure 4.37: Major causes of death: 2014



175. A national health issue is related to overweight and obesity. In 2012, 'A Healthy Weight for Life: A National Strategy for Malta (2012-2020)' was launched. This study highlighted that international scientific and health agencies have shown that Maltese children and adults are amongst the heaviest both in Europe and globally. Overweight and obesity have many health implications on health and life expectancy. Overweight and obesity also results in an economic burden related to healthcare costs and loss of productivity. In 2008, it was estimated that the cost associated with overweight and obese persons over normal persons reaches the 20 million Euro per year, that is 5.7 per cent of the total health expenditure. This figure is higher if private healthcare costs are taken into account together with medication, surgery, ancillary services and loss of income.
176. The National Strategy pointed out that 36 per cent of the adult population are overweight and 22 per cent are obese. 32 per cent of the children population are either overweight or obese (measured by anthropometric studies). The aim of the Strategy is to reduce persons suffering from this health problem. The Strategy presented a number of actions in order to address this problem in a practical way. One of the measures is *"to work with stakeholders to encourage active transport action groups e.g. walking bus, cycle to work"*.
177. It is noteworthy that traffic casualties have increased over the last few years. There has been a reduction in accidents from 2014 to 2015, yet the general trend shows an

upward trend<sup>58</sup>, see **Figure 4.38**.

Figure 4.38: Traffic casualties from 2009 to 2015



#### 4.9.3 Noise Pollution

178. In line with the Noise Directive, Malta must adopt a policy that safeguards existing low background environmental noise, and to identify and reduce noise levels where they are excessive. ‘Strategic noise maps’ for major roads, airports and agglomerations have been prepared, see **Figure 4.39** to **Figure 4.44**. These strategic noise maps are useful to inform the public and the decision-makers, to develop action plans for the purpose of managing noise exposure and to assist the European commission in developing the European noise policy.
179. **Tables 4.12** to **Table 4.14** show the summarized results of the 2006 noise surveys conducted along Malta’s major roads.

<sup>58</sup> NSO, News Release 017/2010, Traffic accidents: Q4/2009; NSO News Release 021/2011, Traffic accidents: Q4/2010; NSO News Release 014/2012, Traffic accidents: Q4/2011; NSO News Release 014/2013, Traffic accidents: Q4/2012; NSO News Release 020/2014, Traffic accidents: Q4/2013; NSO News Release 020/2015, Traffic accidents: Q4/2014; NSO News Release 016/2016, Traffic accidents: Q4/2015

Table 4.12: Estimation of population exposure and number of noise sensitive premises per noise level contour bands ( $L_{den}$ )

Noise band ( $L_{den}$ )	Population exposure	Number of hospitals	Number of schools
55-59	8,800	1	6
60-64	6,100	2	2
65-69	5,700	1	-
70-74	2,600	-	2
$\geq 75$	100	-	-

(Source: MEPA, Noise Action Plan in accordance with the Environmental Noise Directive January 2013)

Table 4.13: Estimation of population exposure and number of noise sensitive premises per noise level contour bands ( $L_{night}$ )

Noise band ( $L_{night}$ )	Population exposure	Number of hospitals	Number of schools
50-54	6,300	2	2
55-59	5,700	1	-
60-64	2,800	-	2
65-69	100	-	-
$\geq 70$	0	-	-

(Source: MEPA, Noise Action Plan in accordance with the Environmental Noise Directive January 2013)

Table 4.14: Exposed area

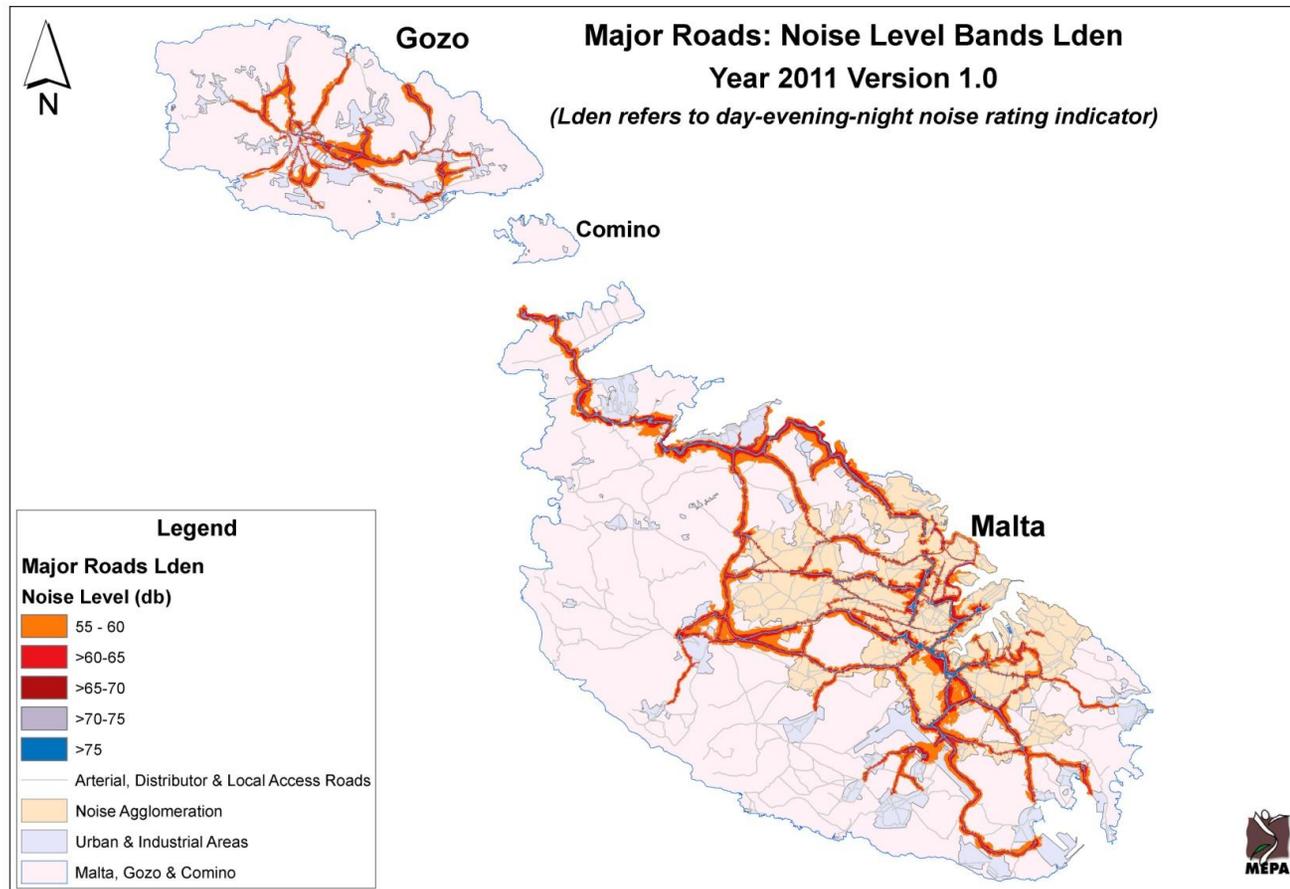
Area (km <sup>2</sup> ) exposed to $L_{den} > 55$	Area (km <sup>2</sup> ) exposed to $L_{den} > 65$	Area (km <sup>2</sup> ) exposed to $L_{den} > 75$
29.1	9	1.4

(Source: MEPA, Noise Action Plan in accordance with the Environmental Noise Directive January 2013)

Table 4.15: Number of dwellings exposed

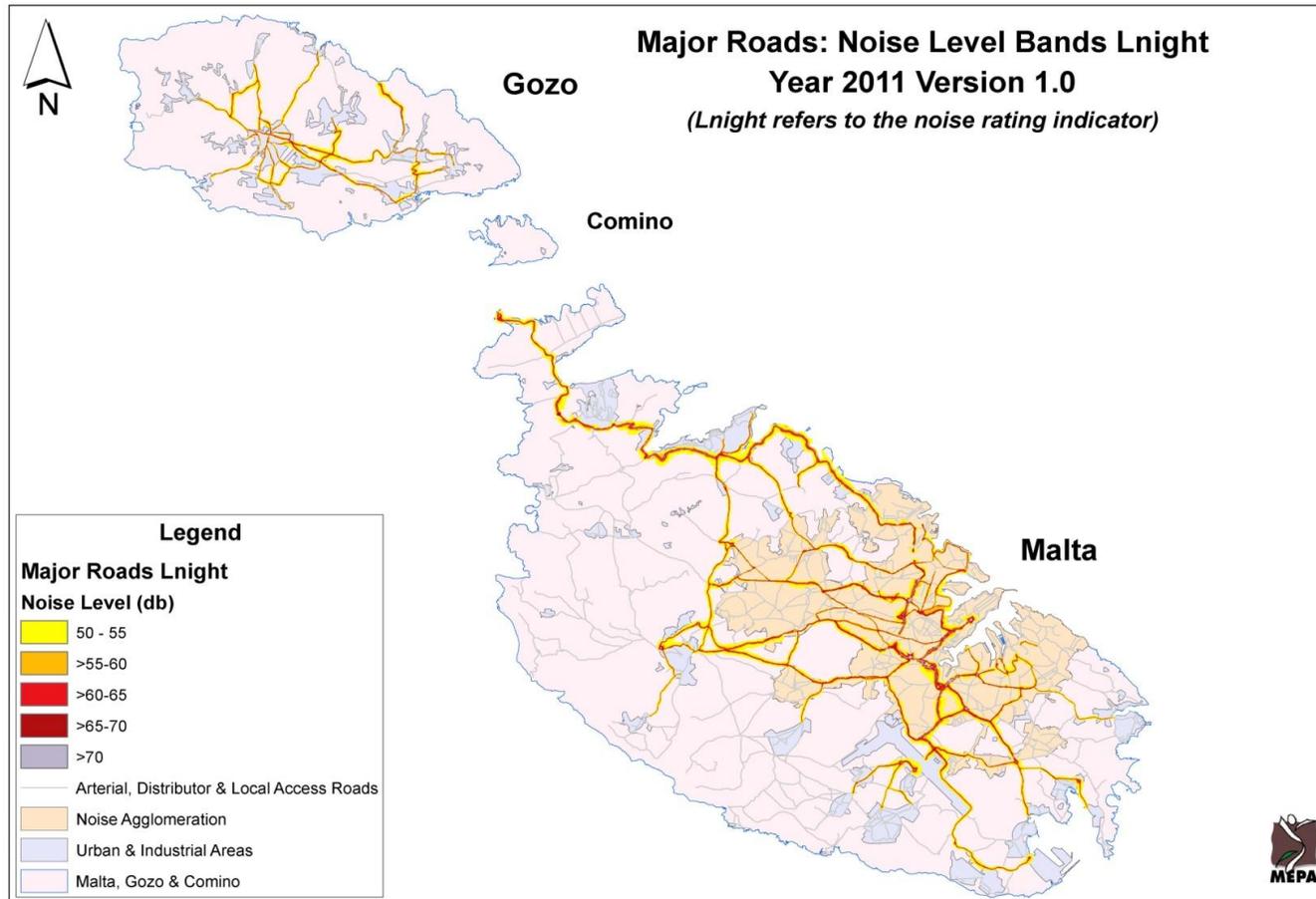
Dwellings exposed to $L_{den} > 55$	Dwellings exposed to $L_{den} > 65$	Dwellings exposed to $L_{den} > 75$
9700	3,600	0

Figure 4.39: Major Roads 2011 Noise Map Lden



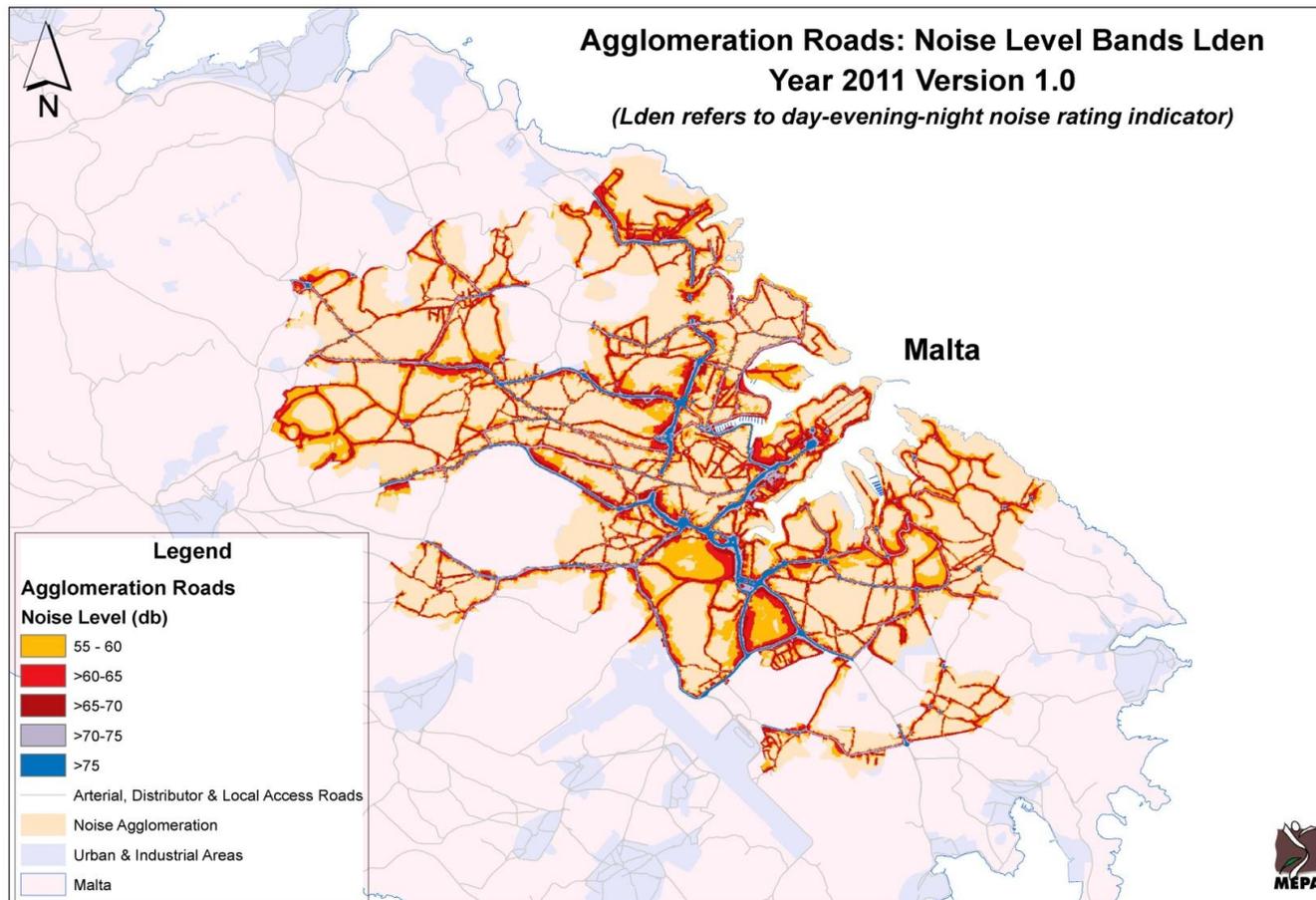
(Source: <http://era.org.mt/en/Pages/Noise-Maps0316-649.aspx> - accessed online on 5th October 2016)

Figure 4.40: Major Roads 2011 Noise Map Light



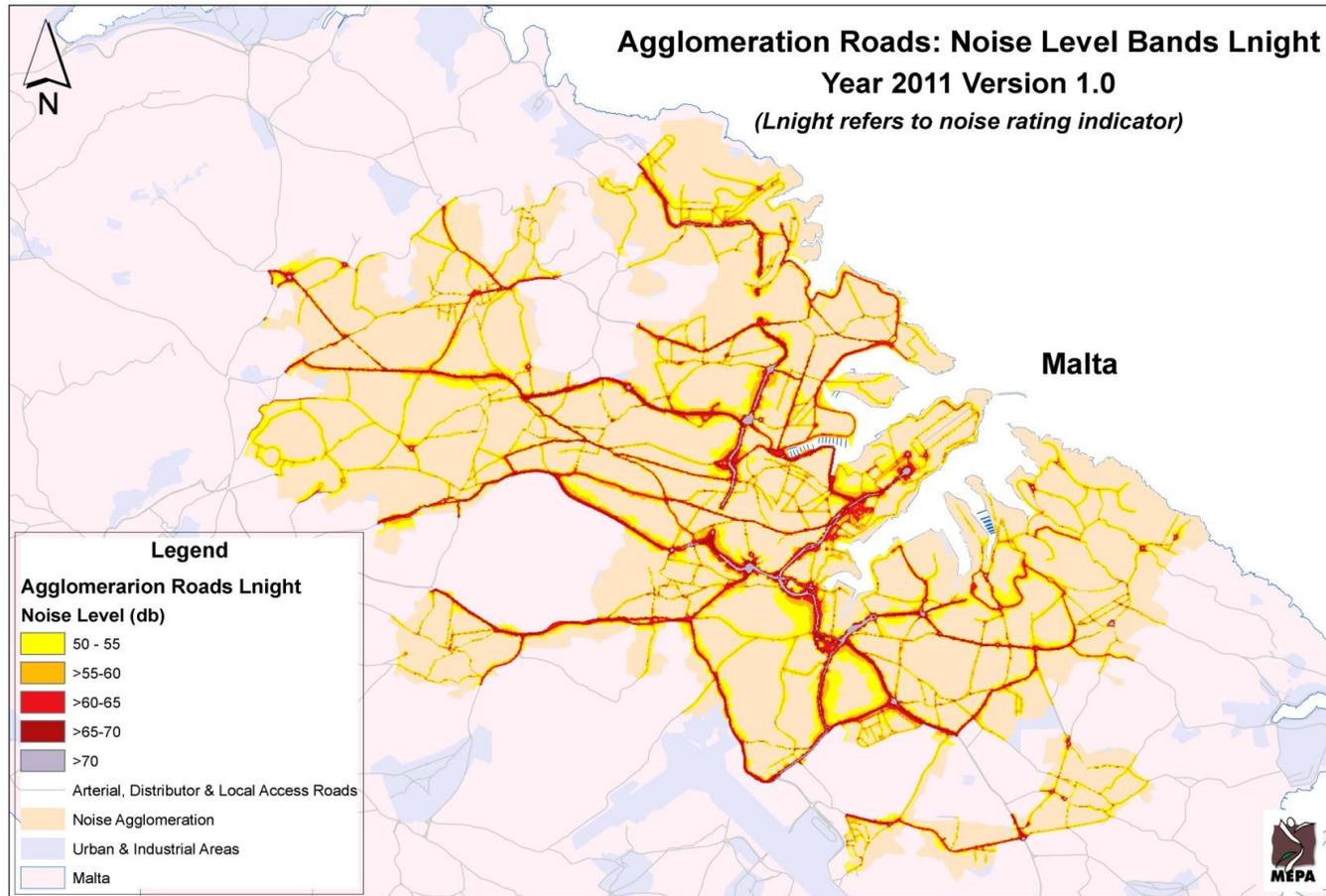
(Source: <http://era.org.mt/en/Pages/Noise-Maps0316-649.aspx> - accessed online on 5th October 2016)

Figure 4.41: Major Agglomeration Roads 2011 Noise Map Lden



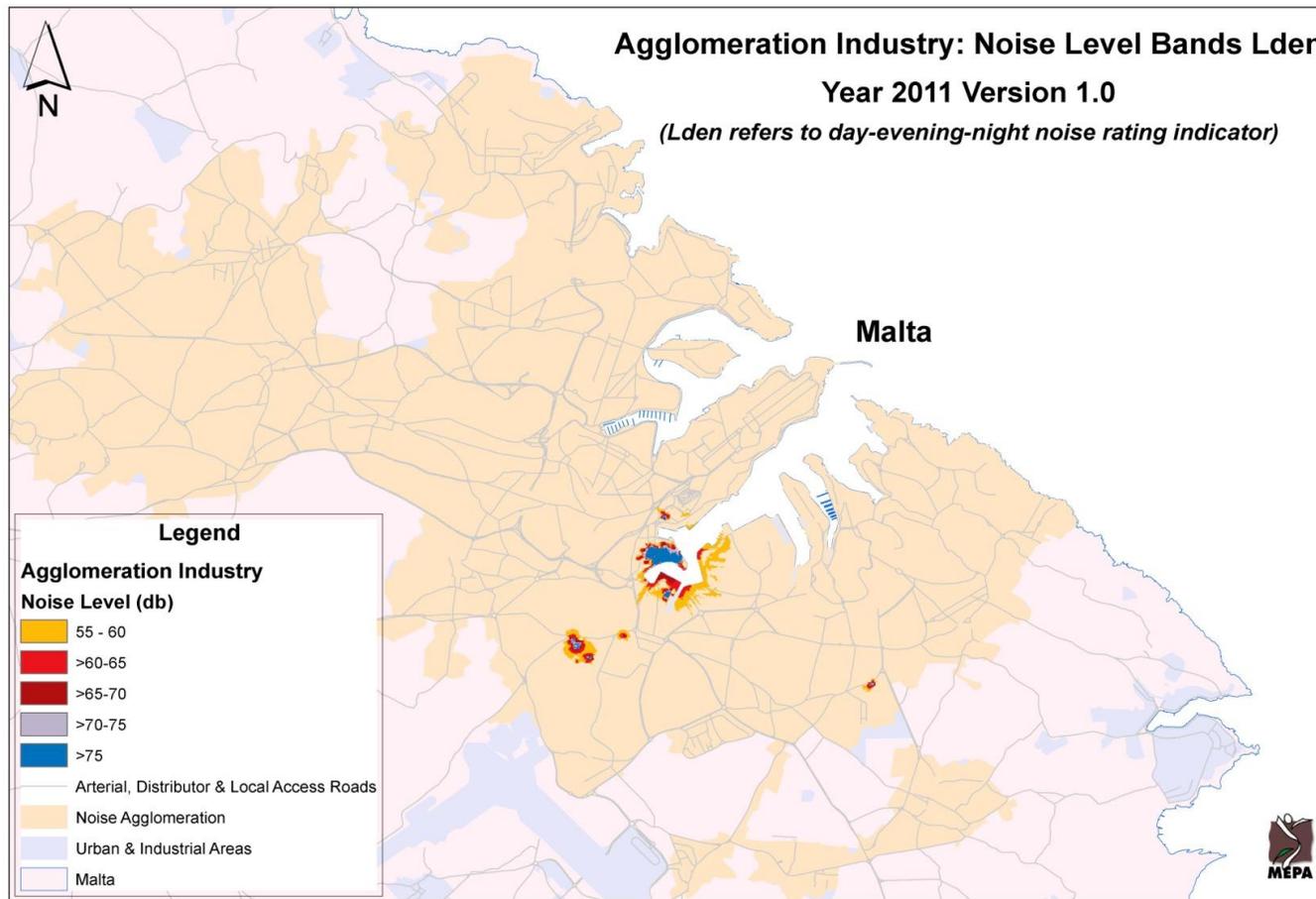
(Source: <http://era.org.mt/en/Pages/Noise-Maps0316-649.aspx> - accessed online on 5th October 2016)

Figure 4.42: Major Agglomeration Roads 2011



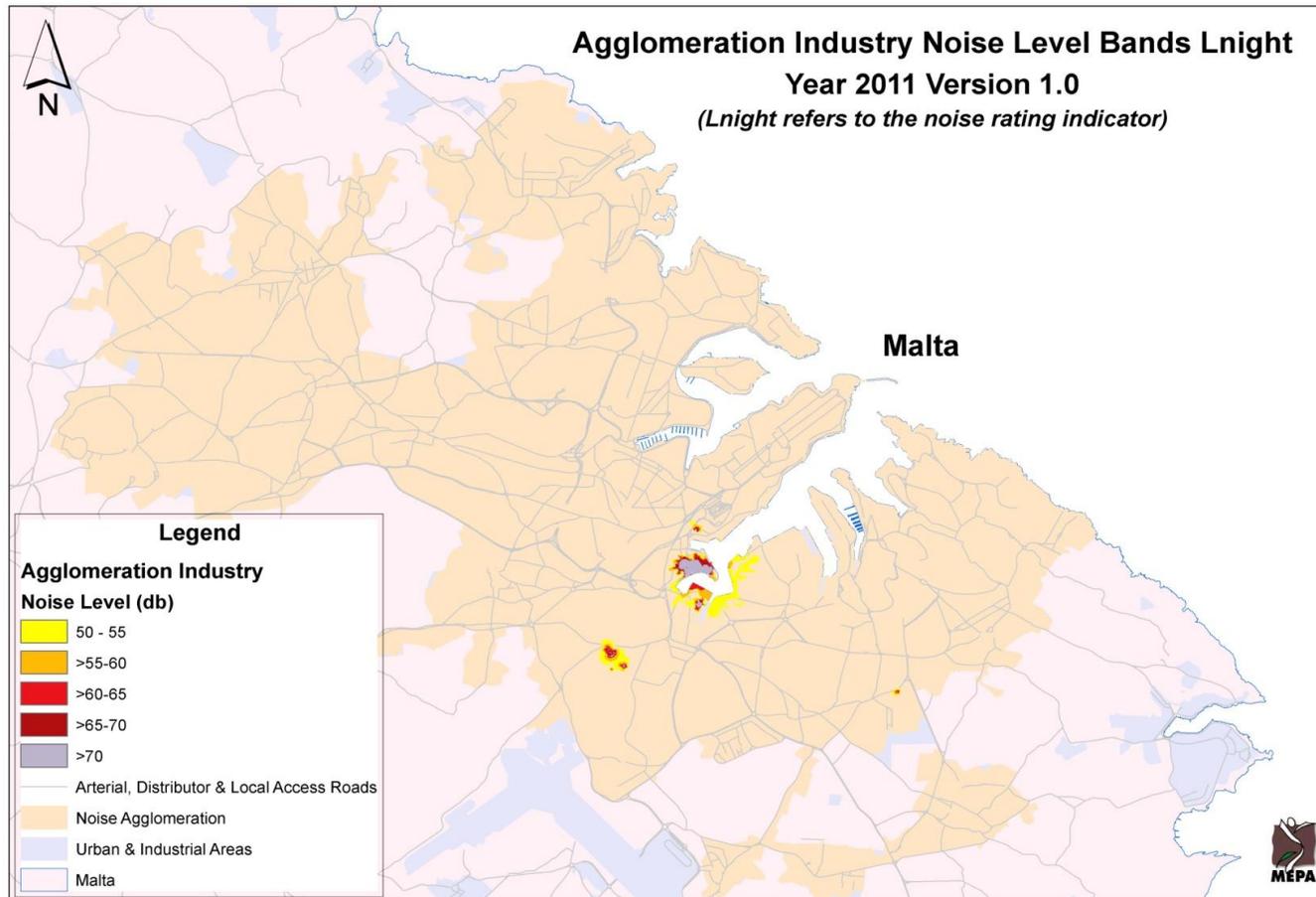
(Source: <http://era.org.mt/en/Pages/Noise-Maps0316-649.aspx> - accessed online on 5th October 2016)

Figure 4.43: Major Agglomeration Industry 2011 Noise Map Lden



(Source: <http://era.org.mt/en/Pages/Noise-Maps0316-649.aspx> - accessed online on 5th October 2016)

Figure 4.44: Major Agglomeration Industry 2011 Noise Map Lnight



(Source: <http://era.org.mt/en/Pages/Noise-Maps0316-649.aspx> - accessed online on 5th October 2016)

#### 4.9.4 Light Pollution

180. Urban light pollution threatens street trees, flora in nature reserves, parks and gardens. It has been estimated that 30 per cent of electricity generated for outdoor illumination is wasted.

#### 4.10 Material Assets

##### 4.10.1 Households and Dwellings

181. There is a continued trend towards smaller private households. The single-member households account to 34,637 or 22.6 per cent of private households. The majority of households (65 per cent) have no children residing on a regular basis.
182. The dwelling stock in 2011 stood at 223,850. 68.2 per cent of these dwellings were occupied, 13.3 per cent were seasonal/secondary residences whilst 18.4 per cent were completely vacant. The most common type of dwelling was the flat, apartment or penthouse at 36.9 per cent followed by terraced houses or townhouses at 31.8 per cent and maisonettes or ground floor tenements at 24.6 per cent.

##### 4.10.2 Waste management infrastructure

183. Waste in Malta is managed by WasteServ Malta Ltd which was established in November 2002. WasteServ 'is responsible for organizing, managing and operating integrated systems for waste management including integrated systems for minimisation, collection, transport, sorting, reuse, utilisation, recycling, treatment and disposal of solid and hazardous waste'<sup>59</sup>.
184. **Table 4.16** describes the different types of waste treatment in the Maltese Islands. The table clearly shows that landfilling remains the main choice of waste disposal. In 2011, 83 per cent and 59 per cent of municipal waste, and construction and demolition waste was landfilled respectively<sup>60</sup>.
185. Recycling accounts for 23 per cent of household waste (paper, plastic, glass and metal) and 67 per cent of commercial and industrial waste<sup>61</sup>.
186. The current issues within the local waste management sector that need to be addressed are the problems related to the compliance with the Producer Responsibility Directive, the lack of full treatment facilities that makes Malta dependant on the exportation of

<sup>59</sup> WasteServ Malta Ltd - <https://www.wasteservmalta.com> [accessed online in April 2014]

<sup>60</sup> Ministry for Tourism, the Environment and Culture (2012) *National Environment Policy*; Ministry for Sustainable Development, the Environment and Climate Change (2014) *Waste Management Plan for the Maltese Islands: A Resource Management Approach 2014-2020 – Final Document*

<sup>61</sup> Ministry for Sustainable Development, the Environment and Climate Change (2014) *Waste Management Plan for the Maltese Islands: A Resource Management Approach 2014-2020 – Final Document*.

waste and the high volumes of dredged material and clean inert geological material disposed at sea<sup>62</sup>.

Table 4.16: Waste treatment

Year	Backfilling	Landfilling	Incineration	Other disposal	Recycling	Pre-treatment	Total
2010	57,554	872,104	7,261	290,473	119,485	80,440	<b>1,427,317</b>
2011	51,128	631,910	6,457	149,120	145,521	105,759	<b>1,089,895</b>
2012	438,496	253,484	5,972	1,037,680	123,071	89,554	<b>1,948,257</b>
2013	841,993	246,801	6,586	663,940	378,453	88,899	<b>2,226,672</b>
2014	208,022	254,312	6,121	433,017	417,642	120,797	<b>1,439,910</b>

Note: Other disposal refers to disposal of inert waste at sea – Source: WasteServ Malta Ltd; MEPA; NSO

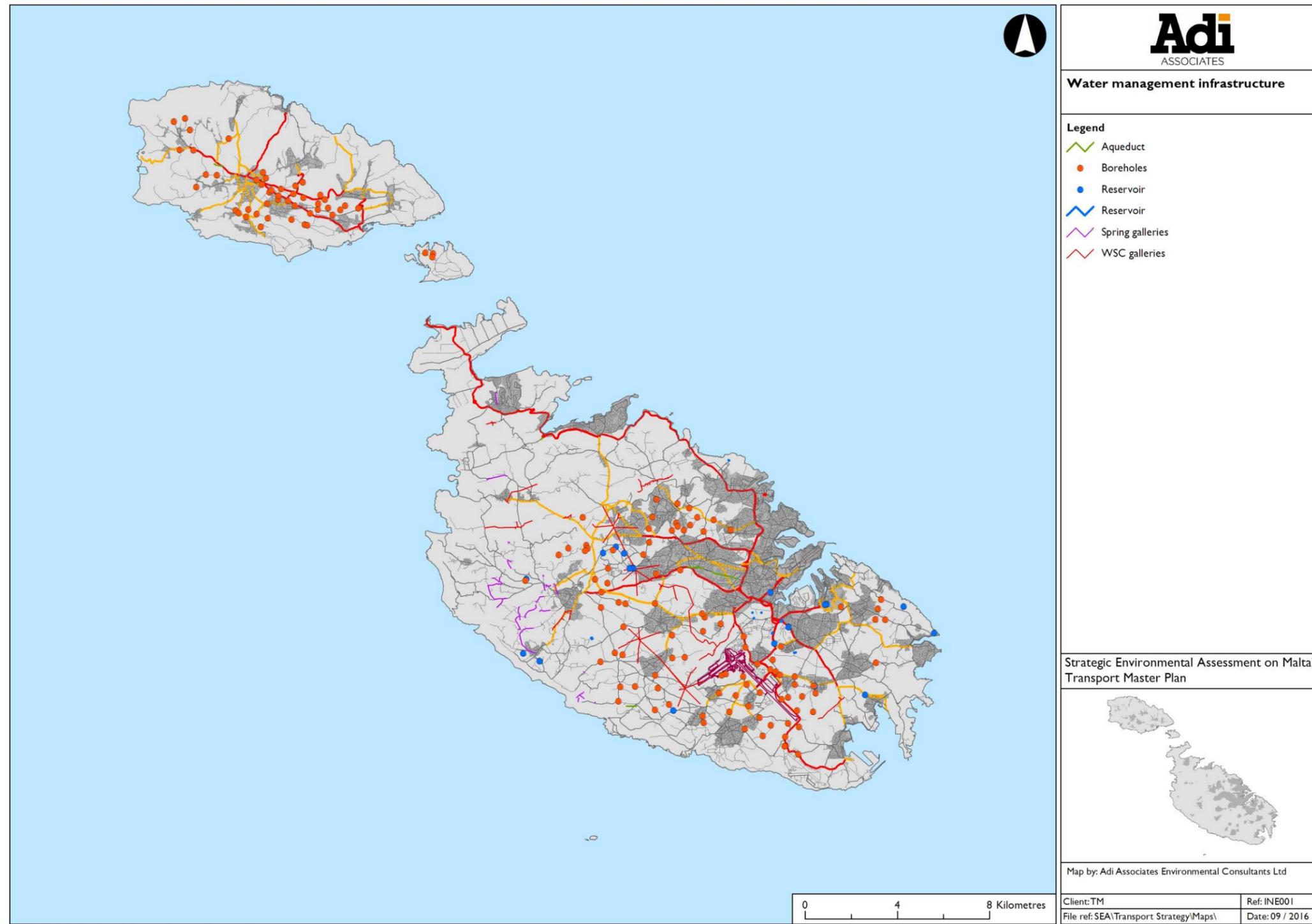
(Source: NSO (2016) Solid Waste Management in Malta: 2014 (007/2016))

#### 4.10.3 Water management infrastructure

187. Water management infrastructure in Malta is the responsibility of the Water Services Corporation (WSC) that was set up in 1992. It is responsible for the production and distribution of potable water, and the collection and treatment of wastewater. 57 per cent of this water is produced by the three reverse osmosis plants of the Corporation which are located at Pembroke, Ċirkewwa and Għar Lapsi. The rest of the groundwater is pumped from the mean sea level aquifer. One of the main pumping stations is the Ta' Kandia Pumping Station. Ta' Kandia Galleries consist of a 6.2km network of galleries. There are a total of 42km galleries across Malta. Water is stored in 24 reservoirs which have a total capacity of 400,000m<sup>3</sup>. The distribution network covers a length of over 2,136km of pipes, pumps, reservoirs, automated and manual valves and other components. WSC also runs three new wastewater treatment plants one in Gozo, one at Iċ-Ċumnija l/o Mellieħa and another one at Ta' Barkat l/o Xgħajra.
188. There are also a number of private groundwater extraction sites, see **Figure 4.45**.

<sup>62</sup> Ibid.

Figure 4.45: Water management infrastructure



#### 4.10.4 Flooding and storm water infrastructure

189. The topography and the urbanisation of the Maltese Islands have resulted in flooding problems in parts of the Maltese Islands. The Maltese Islands do not have rivers however they have dry valley systems which channel surface water during heavy rainfall occurrences. The increase in artificial surfaces has resulted in more rainwater runoff and the development of some of these valleys has resulted in water being channelled in urban areas. Even though this channelling of rain water is perceived to be flooding, it is actually a natural mechanism of the valley system.
190. Flash floods can have a severe disruptive effect on the road network and property. This led to the adoption of a Storm Water Master Plan in 2008. This plan identified the areas which have a flooding problem and proposed a number of measures to address it through flood relief and the utilisation of flood water.
191. A National Flood Relief Project (NFRP) is being implemented. The project is also known as 'An Integrated Water Management Approach to Flood Relief' (IWMAFR). The project aims at managing the impacts of storm water in flood-prone urban areas and promotes options for storm water harvesting. The project comprises five project components that will provide flood relief in different parts of Malta:
- Project Component 1: Birkirkara / Msida Valley;
  - Project Component 2: Gzira / Wied Ghollieqa;
  - Project Component 3: Qormi / Wied is-Sewda;
  - Project Component 4: Zebbug – Marsa; and
  - Project Component 5: Zabbar – Marsascalea<sup>63</sup>.
192. The project includes the construction of storm water collectors, underground tunnels, enlarging a number of collector basins and improving other existing infrastructure. This project is currently underway.
193. The *Preliminary Flood Risk Assessment* (2013) identified seven main areas that are prone to flooding during heavy rainfall:
- Birkirkara-Lija-Balzan-Attard-Msida
  - Gzira
    - Żebbuġ-Qormi-Marsa
    - Marsaskala
    - Burmarrad

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<sup>63</sup> Adi Associates Environmental Consultancy Ltd (2008) Project Description Status IWMAFR

Whilst in Gozo there are:

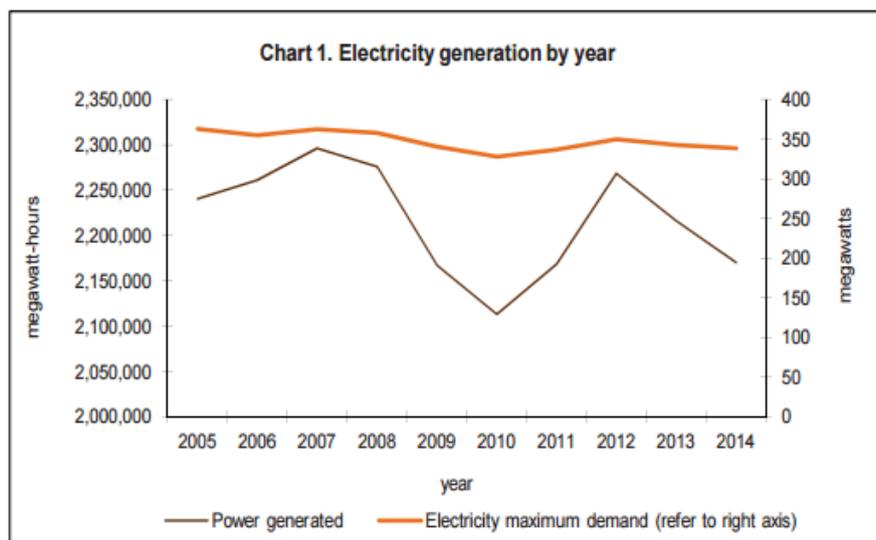
- Marsalforn
- Xlendi.<sup>64</sup>

#### 4.10.5 Energy

194. Energy in Malta is generated from the combustion of imported fossil fuels. Domestic transport, industry, and the power stations are the three major energy consumers. Energy generation is the responsibility of Enemalta. The amount of energy produced from renewable sources is on the increase. The estimated renewable energy generated rose from 10,368 megawatt-hours in 2011 to 75,493 megawatt-hours in 2014<sup>65</sup>.

195. Data shows that in 2014 demand for electricity fell by 2.1 per cent from the previous year, see **Figure 4.46**.

Figure 4.46: Electricity generation: 2005-2014



(Source: NSO, News Release (2015) Energy Consumption in Malta: 2005-2014)

#### 4.10.6 Transport infrastructure

196. Transport can be divided into three main branches: air transport; maritime transport and land transport. This transport infrastructure has been discussed in detail in the National Transport Strategy and will therefore not be repeated here.

<sup>64</sup> MRA (2013) *Preliminary Flood Risk Assessment*

<sup>65</sup> NSO, News Release (2015) *Energy Consumption in Malta: 2005-2014*

#### 4.10.7 Green infrastructure

197. Green infrastructure 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. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings”<sup>66</sup>.
198. The ‘Spatial analysis of green infrastructure in Europe’ (EEA, 2014) shows that both the conservation and the restoration GI networks applicable for Malta are 0.0 per cent. This value, which is also applicable to Cyprus, is explained through the fact that, when compared with the European average, Malta’s size does not allow it to be described as an optimal/maximum ecosystem service provider. It is more appropriate, therefore, to also consider GI at national and regional level rather than at European level when describing GI in the Maltese Islands.
199. To this end, Malta’s National Biodiversity Strategy and Action Plan makes reference to Malta’s National Ecological Network and seeks to strengthen it, including through the wider integration of biodiversity conservation in spatial planning aiming to safeguard the countryside from urban sprawl and improve and support urban biodiversity whilst also contributing to EU priorities on Green Infrastructure.

#### 4.11 Evaluation of the Baseline in the absence of the Implementation of the Strategy and Master Plan

200. The SEA Regulations require a description of the relevant aspects of the current state of the environment and the likely evolution thereof without the implementation of the Strategy and the Master Plan with a particular emphasis on the future developments arising from other relevant plans and programmes.
201. The description of the likely future trends should the Strategy and the Master Plan not be implemented is further constrained by uncertainties including availability of data on future economic development, technological progress or advancements in regulatory frameworks that collectively influence future trends. The following assessment, therefore, includes certain assumptions.
202. This analysis focuses on the main environmental issues that have been identified and described above. It includes a description of the past and current trends from data available from existing monitoring systems or through expert judgement (in cases where data are lacking). It also outlines the likely evolution of these trends, if the Strategy and Master Plan were not implemented.

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<sup>66</sup> EC (2013) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Green Infrastructure (GI) — Enhancing Europe’s Natural Capital

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#### 4.11.1 Emissions to air and climate change

203. Both emissions to air and climate change targets are regulated by legislation and requirements at EU level (refer to Appendix 1 of Scoping Report presented as an Appendix to this Environmental Report). It is anticipated that the Strategy and Master Plan will contribute positively to climate change as a number of actions are targeted at reducing private car use, increasing modal shift, reducing vehicle age, and improving infrastructure for pedestrians and cyclists with a view to reduce GHG emissions. The various measures are designed to contribute to the achievement of EU and national climate change targets. In the absence of the Strategy and Master Plan, the attainment of climate change targets and improved air quality will be more difficult and may take longer than those stipulated in the EU 2020 Strategy.
204. Current levels of transport related CO<sub>2</sub> in Malta are high; without intervention, overall traffic levels on the local highway network during the peak hours will increase. This will increase the level of CO<sub>2</sub> emissions from transport, counteracting technological improvements in the energy efficiency of vehicles.
205. The effects of climate change will become more apparent in the future, increasing the risk of flooding and intrusion of the sea. Transport infrastructure, in particular roads, is likely to be affected by flooding, and sea level rise. The use of public transport may also be affected by high summer temperatures. The actual impacts will depend on the climate change adaptation measures that are introduced.
206. Without the Strategy and Master Plan, despite technological improvements, localised air quality problems are likely to persist and may become worse due to increasing levels of traffic and congestion.

#### 4.11.2 Biodiversity

207. The main impacts resulting from the implementation of the Strategy and Master Plan on biodiversity are likely to result from the implementation of infrastructure projects both on land and in the marine environment in sensitive areas including Ċirkewwa, Mgarr, Marsaxlokk, the Malta-Gozo link as well as stretches of road close to sensitive areas. It is unclear whether in the absence of the Strategy and Master Plan such projects would be funded. However, it is noted that the Strategy directly addresses biodiversity through one of the Strategic Goals “*Transport to promote Environmental and Urban Sustainability*” specifically referring to the preservation of natural habitats and biodiversity. It states, *The NTS therefore identifies the need to: protect and enhance biodiversity when developing transportation measures; work towards using transport infrastructure as a means for supporting urban biodiversity to promote the quality of urban environment through the presence of nature; and mitigate and provide compensatory measures when negative effects by the transportation system cannot be avoided.*
208. In the absence of the Strategy and Master Plan, there is still likely to be pressure on the development and regeneration of greenfield and brownfield sites that have the potential to have negative effects on biodiversity. This may be offset by increasing

provision of open space, increasing awareness of biodiversity needs and sensitive design.

#### **4.11.3 Water**

209. The implementation of the Water Framework Directive is likely to result in improvements to the water environment. It is likely that the water environment will be safeguarded in the future and even in the absence of a Strategy and Master Plan, any projects that could affect inland and groundwater and the marine environment will require an impact assessment with implementation of mitigation measures as appropriate. .

#### **4.11.4 Landscape**

210. Landscape impacts from the Strategy and Master Plan are mainly related to the siting of certain infrastructure. Positive impacts could accrue in terms of improving the quality of both the urban and rural environment. Pressures for development have the potential to reduce landscape quality in the future, affecting the amount and quality of open space and green belt.

#### **4.11.5 Cultural Heritage**

211. In the absence of the Strategy and Master Plan, increasing traffic levels are likely to reduce the quality of the public realm and setting of cultural and heritage assets. Regeneration efforts are likely to offset these negative effects to some degree, improving the quality of the built environment.

#### **4.11.6 Human Health**

212. A continued reliance on private cars will continue to exacerbate problems related to air and noise pollution. In the absence of the Strategy and Master Plan, the sector will also be unlikely to help combat the issue of obesity in the Maltese Islands.

#### **4.11.7 Material Assets**

213. Local transport infrastructure requires significant investment and a number of regeneration initiatives are currently under way. However, successful completion of the ongoing projects without the Strategy and Master Plan in place may be undermined. Key routes operate at capacity and increasing congestion levels will further affect the efficiency of the transport network without the Strategy and Master Plan.



## 5 SEA Framework

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### 5.1 Introduction

214. This Chapter describes the identification of the SEA objectives against which the Strategy and Master Plan will be assessed in the SEA process.
215. Although the SEA Directive does not specifically require the use of objectives or indicators in SEA, they are a recognised way in which environmental effects can be described, analysed, and compared. SEA objectives encompass the relevant national and EU environmental priorities that can be inferred from a number of relevant national documents as outlined below. The Strategy and Master Plan are assessed in light of the SEA objectives. The Strategy and Master Plan's performance against the SEA objectives is generally measured by indicators. The SEA objectives are distinctly different from the Strategy and Master Plan objectives, though the two influence each other and may overlap. To fulfil the requirements of the SEA Directive and the SEA Regulations, 2010, the SEA objectives must cover biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape, and interrelationships between them where these are relevant to the sector being addressed by the plan or programme. Those objectives relevant to the Strategy and Master Plan are described in this chapter.
216. In developing appropriate objectives and indicators the following documents have been consulted:
- The GRDP Handbook on SEA for Cohesion Policy 2007- 2013;
  - The Commission's "Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment";
  - A Practical Guide to the Implementation of the SEA Directive, ODPM;
  - The SEA Directive 2001/42/EC;
  - SEA Regulations, 2010;
  - The Commission's Guidance on integrating Climate Change and Biodiversity into SEA.
217. In developing appropriate indicators the following documents have been consulted:
- National Environment Policy, 2012;
  - The Sustainable Development Strategy for the Maltese Islands, 2006-2016; and
  - Malta's State of the Environment Report, 2008 and subsequent updates.

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## 5.2 SEA Objectives & Indicators

218. **Table 5.1** defines the set of objectives relating to the environmental issues identified in **Chapter 4**, in support of which, relevant assessment criteria and possible data sources have also been identified.
219. The SEA indicators are measurements of trends over time. Changes in the indicators show whether the implementation of the Strategy would be or has been successful in improving the environment. It is to be noted, however, that changes in the indicators could be the result of factors outside the influence of the Strategy. Hence, the SEA process is both uncertain and constrained.
220. The proposed indicators will not all be relevant to all the recommendations. In the assessment, indicators relevant to particular measures were selected from the list presented in **Table 5.1**.

Table 5.1: SEA Environmental Objectives & Criteria for Assessing Impacts

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
Biodiversity, Flora & Fauna	<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	<ul style="list-style-type: none"> <li>Number of developments / interventions in protected areas</li> <li>Number of developments / interventions in Natura 2000 sites and national SACs</li> <li>Conservation status of habitats and species</li> <li>Conservation status of habitats and species in Natura 2000 sites and national SACs</li> <li>Number of developments / interventions on greenfield sites / undeveloped land</li> <li>Number of developments/interventions resulting in habitat fragmentation</li> <li>New or enhanced green infrastructure elements in urban areas</li> <li>Quality of the marine environment in terms of biological and physico-chemical elements</li> </ul>	<p>Environmental monitoring through Environmental Impact Assessment (EIA), Appropriate Assessment (AA), or other regulatory requirements as relevant.</p> <p>ERA</p>
Population and Human health	<ul style="list-style-type: none"> <li>To reduce noise / vibration and light pollution</li> <li>To reduce air pollution</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with air quality emission level standards</li> <li>Noise levels</li> <li>Number of noise</li> </ul>	<p>Transport Malta, ERA, OPM (Energy), Energy and Water Agency</p>

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
	<ul style="list-style-type: none"> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being<sup>67</sup></li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	<ul style="list-style-type: none"> <li>complaints related to transport related activities</li> <li>Number of road accidents/injuries</li> <li>Access to services and facilities by public transport, walking and/ or cycling</li> <li>Number of improvement schemes for pedestrian and cycle routes</li> <li>% of bus fleet with facilities for accessibility for the disabled and people with impaired mobility</li> <li>Modal split</li> <li>Bus services running on time</li> <li>Journey times</li> <li>Public transport patronage</li> <li>Satisfaction with local bus service</li> <li>Number of schemes for improving transport coordination and integration including interchange between cycling / walking and other</li> </ul>	

<sup>67</sup> In a consultation meeting held with the Department of Environmental Health (at its request), it was recommended that the environmental assessment should consider also well-being.

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
			forms of travel <ul style="list-style-type: none"> <li>Life expectancy</li> <li>Proportion of street lamps with downward beam</li> </ul>	
Water	<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	<ul style="list-style-type: none"> <li>Quality of the marine environment</li> <li>Bathing water quality</li> <li>Number of pollution incidents attributable to transport related activities</li> <li>Quality of the marine environment in terms of biological and physico-chemical elements</li> <li>Quality of groundwater in the vicinity of any projects related to the transport sector</li> <li>% of rainwater harvested</li> <li>Quality of surface inland waters</li> </ul>	PA, potential permit requirements  Sustainable Energy and Water Conservation Unit, OPM (Energy), Energy and Water Agency
Emissions to air	<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	<ul style="list-style-type: none"> <li>Emission trends of key pollutants (such as NO<sub>2</sub>, PM<sub>10</sub>) over time</li> </ul>	ERA
Climatic factors and climate change	<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy</li> </ul>	<ul style="list-style-type: none"> <li>CO<sub>2</sub> emission trends over time</li> <li>Area of land at risk of flooding</li> <li>Number of projects</li> </ul>	ERA, Transport Malta, MRA, OPM (Energy), Energy and Water Agency

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
	in weather conditions <ul style="list-style-type: none"> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	and GHGs)? <ul style="list-style-type: none"> <li>Affect reduce transport related CO<sub>2</sub> emissions?</li> </ul>	in flood risk areas <ul style="list-style-type: none"> <li>Number of projects that feature energy efficient design and/or use of renewable energy</li> <li>Proportion of felt using alternative fuel technology</li> <li>Modes of transport</li> </ul>	
Soil	<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	<ul style="list-style-type: none"> <li>Soil conservation in the vicinity of any projects related to the transport sector</li> <li>Number of pollution incidents attributable to transport related activities</li> <li>Area affected by new developments</li> <li>Number of soil permits issued by the Department of Agriculture</li> </ul>	Environmental Impact Assessment, Environmental monitoring as part of permit, Department of Agriculture
Material assets	<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	<ul style="list-style-type: none"> <li>Number of measures/actions that include green infrastructure</li> <li>Number of vehicles on the road over time</li> <li>Number of schemes aiming to modernise and upgrade the transport systems</li> </ul>	PA, Transport Malta
Cultural heritage	<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites /</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	<ul style="list-style-type: none"> <li>Number of developments / operations located away from cultural heritage sites /</li> </ul>	PA, Resources Management Unit Heritage Malta Superintendent of Cultural Heritage

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
	<p>areas with known cultural / archaeological remains</p> <ul style="list-style-type: none"> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>		<p>areas or areas with known cultural / archaeological remains as a percentage of the total number of operations</p> <ul style="list-style-type: none"> <li>Number of projects targeting the improvement of the cultural landscape, townscape or quality/amenity of Urban Conservation Areas</li> </ul>	
Landscape	<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Impact Assessment results on landscape assessment</li> <li>Number of transport measures aimed at improving local landscape character</li> </ul>	PA, Transport Malta

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## 6 Assessment of Alternatives

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221. The Transport Master Plan has considered a number of scenarios in developing the measures. The following scenarios have been considered:
- Scenario 1: Do nothing;
  - Scenario 2: Do minimum;
  - Scenario 3: Do-something 1; and
  - Scenario 4: Do something 2.
222. Based on the above, the following alternatives have been assessed:
- **Scenario 1: Do nothing:** no changes to the network or implementation of any transport related actions;
  - **Scenario 2: Do minimum:** minimum expected changes and those committed developments. It includes all the recently implemented and committed developments from the base-year (2014) to 2020 and includes the Salina Coast Road, the Msida and Gzira bus lanes as well as new transport routes, forecasted upgrades to the inner harbour ferries to increase capacity, and refurbishment and upgrading of Deep Water Quay in Valletta, and use of one berth on Terminal one for larger vessels at the Malta Freeport Terminals.
  - **Scenario 3: Do-something 1:** Moderate restraint in the use of private cars and increased support of public transport and alternative modes as described below; and
  - **Scenario 4: Do-something 2:** Stronger restraint in the use of private cars and strong support to public transport and alternative modes as described below.
223. Scenario 3 (Do-something 1) corresponds to a transport plan aimed at moderately restricting the use of private cars and increasing support for public transport. This scenario builds on the do-minimum scenario and comprises the following undertakings or packages of measures:
- a) High level of road infrastructure provision (six priority road projects);
  - b) Measures to increase average speed of public transport in the following segments: Sliema – Msida – Valletta and Tarxien – Fgura – Marsa – Valletta ;
  - c) Measures to improve ferry services (improving the service given by the Valletta – Sliema and Valletta – Bormla passengers’ ferries);
  - d) Implementation of one cycling corridor (develop pilot cycle corridor between Valletta and: i) St. Julian’s, Sliema;;

- e) Low emission zone in the Hub where a fee would be introduced to enter most critically congested zone in Malta that would apply for all vehicles manufactured 20 years or more ago (introduce further financial differential incentives to reduce the average age of vehicles); and
  - f) Promotion of multiple occupancy (to develop and incentivise schemes to promote multiple occupancy, smaller vehicles and reduce the need to travel in peak hours- passengers per vehicle increases from 1.207 to 1.30).
224. Scenario 4 (the Do-something 2 scenario) corresponds to a transport plan aimed at strongly restricting the use of private cars and strongly supporting public transport. This scenario builds on the do-minimum scenario and comprises the following undertakings or packages of measures:
- a) Moderate level of road infrastructure provision (only the four priority road projects);
  - b) Measures to increase average speed of public transport (implement Public Transit Quality Corridors for: Sliema – Msida – Valletta; Tarxien – Fgura – Marsa – Valletta; Mosta – Birkirkara – Hamrun – Valletta; Naxxar – Birkirkara – Hamrun – Valletta; Mosta - Birkirkara –University – Msida; Attard – Birkirkara – Hamrun – Valletta; Qormi – Hamrun – Valletta);
  - c) Measures to improve ferry services (improving the service given by the Valletta – Sliema and Valletta – Bormla passengers’ ferries);
  - d) Implementation of 2 cycling corridors (develop pilot cycle corridors between Valletta and: i) St. Julian’s, Sliema; ii) Three Cities and Fgura;
  - e) Low emission zone in the Hub where a fee would be introduced to enter most critically congested zone in Malta that would apply for all vehicles manufactured 15 years or more ago (introduce further financial differential incentives to reduce the average age of vehicles);
  - f) Promotion of multiple occupancy (passengers per vehicle increase from 1.207 to 1.40);
  - g) Fast ferry between Malta and Gozo; and
  - h) Freight ferry daily service between Malta and Gozo (determine the location of the landing place for the ferry service (including freight) to/from Gozo).
225. It is noted that the main differences between scenarios 3 and 4 relate to the number of road projects (slightly more in scenario 3), the number of public transit corridors (more in scenario 4), 1 more cycling corridor in Scenario 4, the introduction of a fee to enter a congested area (in Scenario 4 this fee would apply to vehicles that are 15 years or older whereas in Scenario 3 it would apply to vehicles that are 20 years or older),the fast ferry service between Malta and Gozo and the freight daily service, both of which are only found in scenario 4. In terms of passengers per vehicle in the promotion of multiple occupancy this is only slightly higher in scenario 4 (an increased target from 1.3 passengers per vehicle to 1.4 passengers per vehicle). With

regards to the roads projects, although interventions to the TEN-T network would require upgrades to 29 road stretches, the multi-criteria analysis carried out on these stretches points to six priority projects under Scenario 3 and four priority projects under Scenario 4 that could be implemented under the Master Plan. Chapter 4 of the Master Plan states that the introduction of the low emission hub and the fees associated with it are done for demonstration purposes only.

226. **Table 6.2** assesses the four scenarios against the SEA objectives. The assessment is necessarily high level and describes whether the impact is positive, neutral or negative (+, 0, -), long term or short term (LT, ST), direct or indirect (D, ID). **Table Figure 6.1** explains the assessment legend.

Table 6.1: Assessment legend

Impact character	Symbol	Description of Impact
Scale	+++	Large positive impact
	++	Moderate positive impact
	+	Slight Positive impact
	0	No impact
	-	Slight negative impact
	--	Moderate negative impact
	---	Large negative impact
Direct / Indirect	I	Indirect impact
	D	Direct impact
Frequency	LT	Long term
	ST	Short term
Transboundary dimension	TR	Possible transboundary effect

Table 6.2: Alternatives assessment

	Environmental Issue	Biodiversity	Human Health & Population	Water	Emission	Climate Change	Soil	Material Assets	Cultural Heritage	Landscape
<b>SEA Parameters</b>	<b>SEA Objectives</b>	Maintain or improve biodiversity (including terrestrial and marine)  Maintain or improve Natura 2000 sites and national SACs	Reduce noise / vibration and light pollution Reduce air pollution Improve road safety Improve overall levels of health Enhance well-being Reduce road traffic and congestion through modal shift to more sustainable options Improve accessibility and transport links to services, facilities and opportunities	Maintain or improve the quantity and quality of ground and sea water  Maintain or improve rainwater harvesting capacity	Improve air quality	Ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions  Decarbonise transport to reduce transport related CO2 emissions	Maintain the resource of productive soil	Maintain and include green infrastructure as relevant  Promote better use of road space  Improve efficiency of transport networks and physical infrastructure standards	Maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains  Maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant	To conserve or enhance landscape character and scenic value
	<b>Alternatives</b>	<b>Scenario 1: Do Nothing</b>	D - LT	D -- LT	D - LT	D -- LT	D -- LT	D - LT	D -- LT	I - LT
<b>Scenario 2: Do Minimum:</b>		D - LT	D - LT	D - LT	D -- LT	D -- LT	D - LT	D + LT	I - LT	I - LT
<b>Scenario 3: Do something 1</b>		D -- LT	D + LT	D +/- LT	D + LT	D + LT	D -- LT	D ++ LT	I -- LT	I -- LT
<b>Scenario 4 Do something 2</b>		D -- LT	D + LT	D +/- LT	D ++ LT	D ++ LT	D - LT	D ++ LT	I - LT	I - LT



## 6.1 Alternatives Assessment Conclusions

227. The assessment illustrated in **Table 6.2** provides a summary assessment. As illustrated, the Do Nothing and the Do Minimum Option provide the least opportunity for positive environmental impacts because all the measures contained in the Strategy and the Master Plan will not be implemented. This is particularly relevant for those SEA objectives related to air quality, climate change, material assets and population and human health. The Do Nothing and Do Minimum options are likely to result in increased congestion and little regulation in the sector which are likely to lead to increased GHG emissions, air pollution, more accidents and degradation of infrastructure. The Forecasting Report, developed during the formulation of the Master Plan, shows an increase in CO<sub>2</sub> emissions for Scenarios 1 and 2 for the year 2025; it shows that the increase is slightly less in Scenario 2. Road transport CO<sub>2</sub> emissions per capita are expected to increase between 2015 and 2025 in both scenarios.
228. Biodiversity impacts are also likely to accrue in all scenarios because of development that is likely to occur irrespective of the Master Plan. Impacts are expected to be more negative in Scenarios 3 and 4 because of the proposed infrastructure projects in these scenarios. Similarly there are likely to be impacts on cultural heritage and landscape in Scenarios 1 and 2 due to ongoing development. The impact is exacerbated in Scenarios 3 and 4 because of infrastructure interventions that could affect cultural heritage and landscape. In terms of groundwater and seawater impacts are still expected from Scenarios 1 and 2 because of ongoing development. However, in Scenarios 3 and 4 the impacts could be positive or negative, because on the one hand some projects provide for better storm water management (including new road infrastructure), while on the other hand marine infrastructure projects could negatively affect the marine environment in both Scenarios. The impacts on soils would vary depending on the extent of intervention of physical infrastructure, which in Scenario 3 is expected to be the highest due to construction of six roads sections.
229. The implementation of the Do Nothing Scenario was not taken forward in the Master Plan. Instead Scenario 2 (Do Minimum) was used as the comparative for the other two scenarios.
230. The modelling of the three scenarios (2, 3, and 4) undertaken as part of the development of the Master Plan has shown the following:
- Scenario 4 has the lowest travelled distance as an indicator of private traffic performance, which represents the total distance travelled by all the vehicles across the whole network.
  - In terms of modal split the following figures are relevant:

Mode	Scenario 2	Scenario 3	Scenario 4
Private Car	75.7%	73.5%	71.4%

Mode	Scenario 2	Scenario 3	Scenario 4
Public Transport	16.0%	18.1%	20.3%
Other Modes	8.4%	8.4%	8.3%

- In terms of the travelled distance as an indicator of public and private traffic performance, which represents the total distance travelled on board by all the passengers across the whole network, Scenario 4 shows that passenger kilometres travelled by private car is less than in the other 2 scenarios whereas passenger kilometres travelled by public transport is more.
- The average speed of the entire network for each mode, an indicator of public and private traffic performance, is calculated as the ratio between the travelled distance and the time spent by all the vehicles in the network. Scenario 4 again performs best under this indicator with speeds increased for both passenger car and public transport.
- The cost of congestion that is based on the evaluation of the lost time spent across the whole road network due to congestion as difference between the actual total time spent on the network and the total travelled time at ideal “free flow condition” was measured. It showed that in terms of cost as time and cost as fuel consumption Scenario 4 performs best.
- In terms of air pollution the following table summarises the results from the modelling of the 3 options:

Table 6.3: Estimation of yearly production of air pollutants, 2025 (NTM; Elaboration)

Air pollutants emissions [tons per year]											
CO [tons/year]			PM [tons/year]			NOx [tons/year]			NMVOC [tons/year]		
Do-minimum	Do-something 1	Do-something 2	Do-minimum	Do-something 1	Do-something 2	Do-minimum	Do-something 1	Do-something 2	Do-minimum	Do-something 1	Do-something 2
8,234	7,448	6,648	63.7	60	55	1,236	1,149	1,056	1,410	1,276	1,139

231. The above analysis indicates that in terms of emissions Scenario 4 is the best option. The implementation of Scenario 4, including the introduction of the Low Emissions Zone in the ‘Hub’ is the preferred option. It is recommended that this Option is fully implemented by the Master Plan so that effects on air quality and GHG are accrued as a result of this Master Plan.
232. In the alternative assessment of the Appropriate Assessment (Appendix 2), it is noted that the Do Minimum alternative (Scenario 2) includes the Salina Coast Road. This intervention has already been assessed at project level where both an Environmental Impact Assessment and an Appropriate Assessment were carried out prior to the receipt of planning permission. The road has been completed.

233. Scenarios 3 and 4 both include Project 2, which involves upgrading at Regional Road, Kappara Junction. This project is currently under construction and project level impact assessment was carried out that considered potential impacts to the SAC of National Importance, Wied Għollieqa and therefore impacts are not re-assessed here.
234. Scenarios 3 and 4 also include the proposed interventions between White Rocks Complex and Manuel Dimech Bridge (St Andrews). This project could result in impacts on the SAC of National Importance, Wied Ħarq Ħamiem. Potential impacts, including cumulative impacts on this SAC are assessed in the AA.
235. The AA also states that the location of the landing sites envisaged in Scenario 4 (for the fast ferry and freight service between Malta and Gozo) would need to be identified and the potential for impacts on marine and / or coastal SACs or SPAs will need to be identified when further detail is available.
236. At a strategic level, however, the AA concludes that the general direction to reduce reliance on road transport is considered more favourable and likely to result in less pressure on the terrestrial Natura 2000 network, potentially reducing the need for the construction of additional infrastructure in particular in localities and regions where important sites could be significantly affected. On the other hand, the shift to increased reliance on the use of the marine environment potentially adds pressures and threats to habitats and species of conservation significance. Thus, Strategy and Master Plan implementation must be executed in such a way as to avoid or reduce as far as possible any potential negative effects on marine SACs supporting particularly important habitats and species and SPAs that are important to breeding and migratory Annex I and Annex IV (Birds Directive) species in particular and must ensure that the integrity of the sites are not significantly negatively affected.



# 7 Assessment of Environmental Effects and Proposed Mitigation

## 7.1 Introduction

237. This Chapter describes the assessment process followed in the SEA, and describes the results of the assessment and mitigation measures recommended to minimise or negate the impacts.

## 7.2 Assessing Significance

238. Significance is assessed in accordance with the criteria listed in Schedule 2 of the SEA Regulations, 2010. It is already well established in Environmental Impact Assessment (EIA) literature whereby significance is a function of impact magnitude and the sensitivity of receptors. Significance may be determined in a number of ways, including expert judgement, the use of thresholds, reference to legislation, and consultation with stakeholders. Although this SEA draws on each of these methods, expert judgement and consultation predominate.

239. The assessment of significance is based on the probability of the impact occurring, on the scale of the impact, its duration, reversibility, whether it has transboundary effects, and the certainty of impact prediction. **Table 7.1** describes the assessment framework and symbols used to denote the various types of impact when assessing the NTS and TMP.

240. The relevant SEA objectives identified in **Chapter 5** are used to assess the measures in accordance with the significance criteria described below.

Table 7.1: Assessment legend

Impact character	Symbol	Description of Impact
Probability	IP	Impact unlikely to occur
	P	Impact likely to occur
	?	Impact uncertain
Scale	+++	Large positive impact
	++	Moderate positive impact
	+	Slight Positive impact
	0	No impact

Impact character	Symbol	Description of Impact
	-	Slight negative impact
	--	Moderate negative impact
	---	Large negative impact
Direct / Indirect	I	Indirect impact
	D	Direct impact
Frequency	LT	Long term
	ST	Short term
Transboundary dimension	TR	Possible transboundary effect

### 7.3 Impact Assessment - National Transport Strategy

241. Based on the methodology described above, the six Strategic Goals were assessed against each SEA objective. The results are presented in **Table 7.2**.

Table 7.2: National Transport Strategy: Impact assessment

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Strategic Goal 1: Transport to support economic development</b>					
<ul style="list-style-type: none"> <li>Reduced congestion and removal of traffic bottlenecks improves travel times thereby supporting competitiveness</li> <li>Improved reliability and efficiency can allow for better journey planning</li> <li>Strengthening transport links and connectivity, nationally and internationally increases access to markets</li> <li>Reduced operational costs and improved seamless interconnectivity increases profitability and can support competitiveness</li> <li>Improved experience and ease of access for non-regular uses can support the tourism product</li> </ul>					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	<p>This Strategic Goal aims to invest in transport infrastructure, ensuring that its development provides for sufficient capacity of the network. It also seeks to link more locations. Although it describes the need for investment, the need to do so in a sustainable manner is highlighted more than once in the document. Strategic Goal 1 also seeks to integrate the facilitation of walking and cycling within infrastructure design. This is also identified as an important aspect for the tourism industry and transportation is considered as part of the tourism product that should result in positive impacts on the industry. Travel planning and management is also identified as necessary to improve reliability and efficiency.</p>	<p>P - to --- D LT</p>	<p>Although the Strategy is cognisant that transport infrastructure could have <i>adverse impacts on our heritage and natural environment</i>, investment in transport infrastructure could potentially affect the integrity of designated areas, ecological connectivity, and if, development occurs in the marine environment, could also affect biodiversity in the marine environment. The potential impacts would range from minor to major depending on the type of intervention, its extent and location. At this Strategy level the nature of proposals are not described.</p>	<p>All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development.</p> <p>When considering the development of new infrastructure, planning is crucial. Developments of this nature are likely to require an Environmental Impact Assessment at project level and potentially also an Appropriate Assessment in line with the Habitats Directive depending on the proposed areas earmarked for development. Alternatives (location and design) should also be considered especially with regards to interventions in sensitive and rural areas.</p> <p>Green infrastructure (GI) solutions should be included at the design stage. Connectivity between green spaces should be maintained. The design of sustainable walking and cycling routes can contribute to ensured connectivity and provide ecological stepping stones. The planting of street trees also provides an opportunity for biodiversity as well as resulting in a number of other benefits including a reduction in the urban heat island index and improved air quality. Sustainable stormwater management solutions should also be considered.</p> <p>Importantly, and which should be considered throughout this assessment, is that connectivity between GI assets helps to maximise the benefits generated, providing an integrated approach to land and resource management and allowing</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	In order to support economic development, the direction proposed through this Strategic Goal includes aiming to reduce congestion and improve travel times, improving reliability and efficiency of the network and improving the experience of the transport system.	P + D/I ST/LT	Achieving the aims set out under this strategic goal will directly contribute to a number of SEA objectives related to reducing traffic and congestion through modal shift and improve accessibility and transport links to services, facilities and opportunities. Less congestion and increased efficiency of the network may result in a reduction of noise and air thus also indirectly contributing to improvements in overall health and enhancement of well-being.	<p>for adaptation to climate change. Importantly, the positive impacts may not be accrued if the growth in traffic is not appeased through the implementation of the NTS and TMP.</p> <p>It is however noted that the Strategy does not have a target for bus average speed at AM peak for the year 2050. Targets are an important means of ensuring Strategy implementation.</p>
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	This Strategic Goal aims to invest in transport infrastructure, ensuring that its development provides for sufficient capacity of the network. It also seeks to link more locations. Although it describes the need for investment, the need to do so in a sustainable manner is highlighted more than once in the document.	P - to --- D LT	The additional development of roads is likely to result in increased soil sealing and therefore could potentially affect groundwater recharge and the catchment areas that impact inland surface waters. Any development in the marine environment with the aim to improve interconnectivity and /or support modal shift could result in negative effects on the marine environment. This goal does not specifically address rainwater harvesting (the latter is addressed through another goal).	All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development. Environmental Impact Assessment at project level can identify appropriate mitigation measures aimed at attempting to appropriately channel or collect surface water run-off from new infrastructure. Similarly, assessment of any projects in the marine environment will highlight potential localised significant negative effects that will need to be mitigated for. Assessment of alternatives at project level will also assist in finding the most acceptable environmental solutions. .
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	In order to support economic development, the direction proposed through this Strategic Goal includes aiming to reduce congestion and improve travel times, as well as improving reliability and efficiency of the network.	P +/- D ST/LT	<p>Reducing travel times and congestion and improving efficiency of the transport network should result in positive effects with respect to emissions from transport on air. Investment in ensuring a modal shift will also likely result in a reduction in air pollution from this sector.</p> <p>An increase in the network to increase capacity could result in negative effects if measures to simultaneously promote modal shift are not implemented.</p>	<p>Importantly, the positive impacts may not be accrued if the growth in traffic is not appeased through the implementation of the NTS and TMP. Implementation should be managed to ensure that the Strategy's direction to ensure sustainability of the sector and encourage modal split is achieved.</p> <p>Targets for non-ETS Greenhouse Gas emissions from transport are not set</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	<p>This Strategic Goal aims to invest in transport infrastructure, ensuring that its development provides for sufficient capacity of the network. It also seeks to link more locations. Although it describes the need for investment, the need to do so in a sustainable manner is highlighted more than once in the document. Strategic Goal 1 also seeks to integrate the facilitation of walking and cycling within infrastructure design.</p>	P 0/(-)/+ D/(l) LT	<p>This Strategic Goal does not directly address resilience to climate change. In fact the risk of flooding could be increased as a result of an extension to paved / tarmaced surfaces. A reduction in CO<sub>2</sub> emissions is likely to occur as result of reduction in travel times, congestion, improved efficiency of the network and ensuring the network is developed and managed with a view to the promotion of modal shift.</p>	<p>for the year 2050.</p> <p>Green infrastructure should be included in the design of new roads, in particular for instance, to ensure as far as possible that the new infrastructure does not add on to the existing flood risks, thus, consideration of use of surfaces with better porosity, sustainable drainage channels, swales, etc, should be included both during strategic planning and at project design level. Better groundwater-infiltration rates will also increase local recharge of the water table and improve tolerance to periods of lower rainfall and drought.</p> <p>Importantly, the positive impacts may not be accrued if the growth in traffic is not appeased through the implementation of the NTS and TMP.</p> <p>Targets for non-ETS Greenhouse Gas emissions from transport are not set for the year 2050.</p>
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	<p>This Strategic Goal aims to invest in transport infrastructure, ensuring that its development provides for sufficient capacity of the network. It also seeks to link more locations. Although it describes the need for investment, the need to do so in a sustainable manner is highlighted more than once in the document.</p>	P - D LT	<p>Depending on where new centres and facilities are located, negative impacts with respect to soil sealing could be accrued.</p>	<p>Design measures should be included in the development proposals that address soil sealing and try to maximise recharge as, for instance, described above.</p>
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	<p>This Strategic Goal aims to invest in transport infrastructure, ensuring that its development provides for sufficient capacity of the network. It also seeks to link more locations. Although it describes the need for investment, the need to do so in a sustainable manner is highlighted more than once in the document.</p>	P -/+ D LT	<p>There is no reference to the maintenance or inclusion of any green infrastructure assets in the consideration of the approach behind this Strategic Goal.</p> <p>This Strategic Goal does, however, make direct reference to the need for improved efficiency of transport networks. It also seeks to promote modal shift and promote the use of public transport.</p>	<p>Any proposed new roads should include green infrastructure assets in the design in order to improve project sustainability and accrue the associated benefits as far as possible.</p>
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	<p>This Strategic Goal aims to invest in transport infrastructure, ensuring that its development provides for sufficient capacity of the network. It also seeks to link more locations. Although it describes the need for investment, the need to do so in a</p>	P - D LT	<p>In the absence of identified areas/sites in the Strategy, it is difficult to ascertain whether cultural assets will be affected. However, given Malta's rich history the potential to discover buried cultural heritage artefacts is not small. Also noting the length of the TEN-T network, it is likely</p>	<p>All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development. Once sites are known, potential impacts on cultural heritage can be identified and</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
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remains <ul style="list-style-type: none"> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>		sustainable manner is highlighted more than once in the document.		that there would be an effect on cultural heritage from new stretches of road or excavations.	assessed at project level and may be requested at application stage by the Competent Authority as relevant. The Superintendence of Cultural Heritage would normally require investigations especially in sensitive areas. Alternative assessment would help identify sites that are less vulnerable.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This Strategic Goal aims to invest in transport infrastructure, ensuring that its development provides for sufficient capacity of the network. It also seeks to link more locations. Although it describes the need for investment, the need to do so in a sustainable manner is highlighted more than once in the document. Strategic Goal 1 also seeks to integrate the facilitation of walking and cycling within infrastructure design. This is also identified as an important aspect for the tourism industry and transportation is considered as part of the tourism product that should result in positive impacts on the industry. Travel planning and management is also identified as necessary to improve reliability and efficiency.	P - D LT	In the absence of identified areas/sites in the Strategy, it is difficult to ascertain whether landscape quality will be affected. However, noting the length of the TEN-T network, it is likely that there would be an effect on landscape especially from new stretches of road.	All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development. Once sites are known, potential impacts on landscape quality can be identified and assessed at project level and will likely be requested at application stage by the Competent Authority as relevant.  Alternative assessment would help identify sites that are less susceptible to landscape impacts.
<b>Strategic Goal 2: Transport to promote environmental and urban sustainability</b> <ul style="list-style-type: none"> <li>Reduce and mitigate greenhouse gas emissions</li> <li>Ensure efficient and sustainable use and management of resources</li> <li>Ensure adaptation to climate change</li> <li>Minimise impact of transport to enhance the landscape and townscape</li> <li>Preserve the natural habitats and biodiversity</li> <li>Respect historical and heritage resources</li> </ul>					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	Strategic Goal 2 largely falls directly in line with the SEA objectives.	P 0/+ D LT	This Strategic Goal directly refers to the aim to preserve natural habitats and biodiversity. It makes reference to the use of transport infrastructure to support urban biodiversity. It is not clear what is meant by this but could include aspects such as the inclusion of street trees.	All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development.  The inclusion of Green Infrastructure elements could enhance biodiversity in the urban environment.  Proposals for new roads should ensure that the integrity of the areas of interest and associated species populations will not be significantly negatively affected through the

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
					Appropriate Assessment process.  Biodiversity targets should be included in the Strategy,
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This Strategic Goal gives importance to quality of life and seeks to reduce the noise impact from transport and traffic in town centre. It is thus in line with the SEA objectives.	P ++ / +++ D/I ST/LT	If measures reflecting this strategic direction are implemented, positive impacts can be identified.	Targets reflecting the strategic goal should be included especially with regards to average age of passenger cars for the year 2050 and emissions from transport for the year 2050.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	Reference is made to the importance of water management and the 'sustainable re-use of water through the transportation system' is referred to.	?	Although this Strategic Goal recognises the need to manage water and preserve it as a resource, it is difficult to understand what the proposal is with regards to some environmental aspects.	The Strategy should be clearer in what it actually aims to achieve. A target in this regard to help to understand the direction the Strategy wishes to go in terms of water conservation would be helpful.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	Although this Strategic Goal does not directly refer to air quality per se, the effort to reduce GHG emissions through encouraging the use of more sustainable modes such as walking and cycling is expected to improve air quality in general through reductions in particulate matter and NOx emissions.	P +++ D LT	The impacts on air quality are expected to be significantly positive over the lifetime of the strategy in the context of the targets in set in <b>Chapter 5</b> of the NTS. This presents a target of 0% conventionally fuelled cars by 2050. Moreover, the 2030 target for zero emission urban logistics has been set at 95% by 2030, however, there is no target included for 2050. Emissions will also be improved by the reduction in the average age of passenger cars	The indicators and targets describe how implementation of the various Strategic Goals will be monitored. Air quality should be identified as an important environmental aspect that requires management and should feature in the Strategy.  Where there are missing targets for 2050, these should be included.
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This Strategic Goal makes specific reference to the need to reduce and mitigate greenhouse gas emissions.	P +++ D/(I) LT	Within the lifetime of the Strategy, the aim is to have removed all conventionally fuelled cars from Maltese roads. This is expected to result in large positive effects with respect to these SEA objectives. Reference is also made to the increase use of vegetation in transport infrastructure.	Green infrastructure should be incorporated into the development of transport infrastructure in order to assist in mitigation and adaptation over the long term.  Where there are missing targets for 2050, these should be included.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
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transport related CO <sub>2</sub> emissions					
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	One of the aims within this Strategic Goal is to ensure efficiency in use of resources including land consumption.	P - D LT	Efficiency is important to reduce negative impacts as far as possible, however, the likelihood is that nonetheless soil sealing and soil loss will occur.	<p>All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development.</p> <p>Design measures should be included in the development proposals that address soil sealing and try to maximise recharge. Effective management of strategy follow-through and implementation is crucial to the realisation of certain aspects including the sustainable use of resources.</p>
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	Some reference is made to green infrastructure assets. Efficient use of resources and effective management are also identified as being an important aspect of this strategic goal. Giving over of space in town centres to people and reducing cars in town centres will also affect quality of life and well-being.	P + D LT	This Strategic Goal makes reference to the inclusion of vegetation when developing the transport infrastructure.	There are other green infrastructure assets as mentioned above that could also be implemented thus enhancing the overall benefits generated by GI. Indicators and targets in this respect should be included in the Strategy.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This Strategic Goal falls directly in line with the relevant SEA objectives.	P ++/+++ D LT	In the spirit of the SEA objective, this Strategic Goal directly seeks to minimise negative effects from transport infrastructure on the landscape and townscape as well as respecting historical and heritage resources. This Strategic Goal specifies that the aim is to reduce traffic in town centres and support the creation of streets with more space available which support quality of life in preference over traffic or parking.	All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This Strategic Goal falls directly in line with the relevant SEA objectives.	P + D LT	Apart from the positive aspects with respect to reduction of traffic in town centres and also increased vegetation associated with transport infrastructure, specific reference is made to reducing the visual impact of transport. Impacts and their extent will depend also on proposed location.	<p>All projects considered for implementation should be envisaged as part of a Master Plan or similar strategic plan to avoid piece-meal development.</p> <p>Sensitive planning will be important although detailed visual impact assessment should be carried out also at project level. Alternative</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
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					assessment will be important to reduce impacts from projects as much as possible.
<b>Strategic Goal 3: Transport to support social development and inclusion</b>					
<ul style="list-style-type: none"> <li>• Ensure travel options and journey quality are suitable for all user groups.</li> <li>• Ensure affordability for targeted social groups.</li> <li>• Increasing societal awareness on the need for sustainable travel choices.</li> <li>• Reduce severance and adverse impacts on specific communities</li> <li>• Integration of isolated communities</li> </ul>					
<ul style="list-style-type: none"> <li>• To maintain or improve biodiversity (including terrestrial and marine)</li> <li>• To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>• Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>• Affect protected species and habitats?</li> <li>• Affect ecological connectivity?</li> <li>• Contribute to generate ecosystem services?</li> <li>• Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	Strategic Goal 3 seeks to ensure accessibility to the transport infrastructure, raising awareness on the need for sustainable travel choices, aiming to avoid community severance and assuring affordability for disadvantaged social groups.	P - D LT	This Strategic Goal could affect these SEA objectives if reducing severance for communities and integrating isolated communities lead to creation of new infrastructure in rural or sensitive areas.	Creation of new access / roads would be subject to planning permission and the relevant assessments. Alternatives assessment would ensure that the most environmentally sensitive solution is found.
<ul style="list-style-type: none"> <li>• To reduce noise/vibration and light pollution</li> <li>• To reduce air pollution</li> <li>• To improve road safety</li> <li>• To improve overall levels of health</li> <li>• To enhance well-being</li> <li>• To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>• To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Affect air pollution generation from traffic?</li> <li>• Affect noise and vibration from traffic?</li> <li>• Affect light pollution from transport associated development?</li> <li>• Affect road safety?</li> <li>• Reduce traffic congestion?</li> <li>• Promote modal shift to more sustainable options?</li> <li>• Improve accessibility and transport links to services, facilities and opportunities?</li> <li>• Promote an active lifestyle?</li> </ul>	This Strategic Goal addresses the need to improve accessibility and transport links to services and facilities	P + D/I ST/LT	This aspect of the Strategic Goal is in line with one of the SEA environmental objectives and is therefore likely to result in positive effects.	Targets for 2050 are required.
<ul style="list-style-type: none"> <li>• To maintain or improve the quantity and quality of ground and sea water</li> <li>• To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	Strategic Goal 3 seeks to ensure accessibility to the transport infrastructure, raising awareness on the need for sustainable travel choices, aiming to avoid community severance and assuring affordability for disadvantaged social groups.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>• To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>• Affect air quality?</li> </ul>	Strategic Goal 3 seeks to educate people and raise awareness and	P +	There is one target associated with this Strategic Goal that seeks to reduce the	Targets for 2050 need to be determined in order to maximise the

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		changing behavioural patterns.	I LT	percentage of population that are more than 15 minutes on foot from the nearest bus stop by 1% by 2030. There are no targets for 2050.	positive benefits that will be accrued. In addition, indicators that help determine whether the Strategic Goal has been successful with increased awareness and evidence of actual change in behavioural patterns should be included in the Strategy.
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	As above	P + I LT	There is one target associated with this Strategic Goal that seeks to reduced the percentage of population that are more than 15 minutes on foot from the nearest bus stop by 1% by 2030. There are no targets for 2050.	Targets for 2050 need to be determined in order to maximise the positive benefits that will be accrued. In addition, indicators that help determine whether the Strategic Goal has been successful with increased awareness and evidence of actual change in behavioural patterns should be included in the Strategy.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	This Strategic Goal does not necessarily directly address this SEA objective, however, ensuring access to transport infrastructure could result in new construction.	P - I LT	Although not directly related, soil quality and potentially quantity are likely to be negatively affected nonetheless where new roads area constructed.	
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This Strategic Goal also promotes better use of road space.	P + D LT	Positive effects from the promotion of better road space.	
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	Strategic Goal 3 seeks to ensure accessibility to the transport infrastructure, raising awareness on the need for sustainable travel choices, aiming to avoid community severance and assuring affordability for disadvantaged social groups.	P - D LT	This Strategic Goal could affect these SEA objectives if reducing severance for communities and integrating isolated communities lead to creation of new infrastructure in rural or sensitive areas.	Creation of new access / roads would be subject to planning permission and the relevant assessments. Alternatives assessment would ensure that the most environmentally sensitive solution is found.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	Strategic Goal 3 seeks to ensure accessibility to the transport infrastructure, raising awareness on	P - D	This Strategic Goal could affect these SEA objectives if reducing severance for communities and integrating isolated	Creation of new access / roads would be subject to planning permission and the relevant assessments.

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character and scenic value		the need for sustainable travel choices, aiming to avoid community severance and assuring affordability for disadvantaged social groups.	LT	communities lead to creation of new infrastructure in rural or sensitive areas.	Alternatives assessment would ensure that the most environmentally sensitive solution is found.
<b>Strategic Goal 4: Transport to provide accessibility and mobility</b>					
<ul style="list-style-type: none"> <li>• Easy access to daily facilities</li> <li>• Convenient and reliable journey times</li> <li>• Ensuring an equitable and sustainable approach to all transport modes</li> <li>• Managing freight and urban logistics</li> </ul>					
<ul style="list-style-type: none"> <li>• To maintain or improve biodiversity (including terrestrial and marine)</li> <li>• To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>• Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>• Affect protected species and habitats?</li> <li>• Affect ecological connectivity?</li> <li>• Contribute to generate ecosystem services?</li> <li>• Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	Strategic Goal 4 focuses on accessibility and mobility. It targets a modal share of 0% car drivers for 2050 as well as an increase in public transport boardings between 2015 and 2030. There are no targets in this regard for 2050, however.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>• To reduce noise/vibration and light pollution</li> <li>• To reduce air pollution</li> <li>• To improve road safety</li> <li>• To improve overall levels of health</li> <li>• To enhance well-being</li> <li>• To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>• To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Affect air pollution generation from traffic?</li> <li>• Affect noise and vibration from traffic?</li> <li>• Affect light pollution from transport associated development?</li> <li>• Affect road safety?</li> <li>• Reduce traffic congestion?</li> <li>• Promote modal shift to more sustainable options?</li> <li>• Improve accessibility and transport links to services, facilities and opportunities?</li> <li>• Promote an active lifestyle?</li> </ul>	This Strategic Goal addresses the need to improve accessibility and transport links to services and facilities	P 0/+ D/I ST/LT	This aspect of the Strategic Goal is in line with one of the SEA environmental objectives and is therefore likely to result in positive effects.	N/A
<ul style="list-style-type: none"> <li>• To maintain or improve the quantity and quality of ground and sea water</li> <li>• To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	Strategic Goal 4 focuses on accessibility and mobility.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>• To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>• Affect air quality?</li> </ul>	Facilitating access and reducing the dependence on cars.	P +++	In the context of the indicators, including modal share and increased use of public	N/A

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
			I LT	transport due to successful implementation of this Strategic Goal, benefits to air quality will also be accrued indirectly.	
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	As above,	P +++ I LT	In the context of the indicators, including modal share and increased use of public transport due to successful implementation of this Strategic Goal, reduction in GHG emissions will also be accrued indirectly.	N/A
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	This Strategic Goal does not directly address this SEA objective.	0	This Strategic Goal is unlikely to affect this SEA objective.	N/A
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This Strategic Goal promotes walking and cycling and the exploration of other forms of transport.	P +++ D LT	Positive effects from the promotion of alternative forms of transport with a target of 0% car drivers by 2050.	Ensure a network of green Infrastructure assets to enhance positive effects.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This Strategic Goal does not directly address these SEA objectives.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This Strategic Goal also seeks to enhance attractiveness of communities and urban areas as integrated objectives of project as well as improving the quality of the public realm to support community cohesion.	P + D LT	A reduction in car use by approximately 50% (as per targets in Chapter 5) is considered likely to result in positive effects on landscape and scenic quality.	N/A.

**Strategic Goal 5: Transport to be safe and secure**

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>Resilient critical infrastructure</li> <li>Extending the lifetime of high quality infrastructure</li> <li>Reduction in injuries and loss of life relating to transport accidents</li> <li>Rapid response to emergencies and accidents</li> <li>Crime and terrorism</li> </ul>					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This Strategic Goal does not directly address these SEA objectives.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	Strategic Goal 5 makes reference to the National Road Safety Strategy which sets out the direction for a safer land transport system. It also makes reference to the need to create safer conditions for walking and cycling so as to encourage greater use of sustainable transport modes.	P + D LT	The Strategy includes a target of zero road fatalities by 2050 although there is no target set for road accidents resulting in grievous injuries. The Strategy itself does not provide any detail as to how the target will be achieved.	The Master Plan will need to include detail of implementation to ensure benefits are accrued and targets are reached.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	Strategic Goal 5 focuses on safety and security.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	Strategic Goal 5 focuses on safety and security.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	Strategic Goal 5 focuses on safety and security.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
changes in weather conditions • To decarbonise transport to reduce transport related CO <sub>2</sub> emissions					
• To maintain the resource of productive soil	• Affect soil quantity and quality?	This Strategic Goal does not directly address this SEA objective.	0	This Strategic Goal is unlikely to affect this SEA objective.	N/A
• To maintain and include green infrastructure as relevant • To promote better use of road space • To improve efficiency of transport networks and physical infrastructure standards	• Use green infrastructure? • Affect sustainable transport modes?	This Strategic Goal does not directly address this SEA objective.	0	This Strategic Goal is unlikely to affect this SEA objective.	N/A
• To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains • To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant	• Affect cultural heritage including archaeological heritage?	This Strategic Goal does not directly address these SEA objectives.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
• To conserve or enhance landscape character and scenic value	• Affect landscape character and scenic value?	This Strategic Goal does not directly address these SEA objectives.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<b>Strategic Goal 6: Transport to work towards public health</b>					
• A clean and pleasant public realm. • Active lifestyles. • Reduced pollution (air, noise and light)					
• To maintain or improve biodiversity (including terrestrial and marine) • To maintain or improve Natura 2000 sites and national	• Affect the integrity of designated areas, including Natura 2000 sites? • Affect protected species and habitats? • Affect ecological connectivity? • Contribute to generate ecosystem services? • Affect the achievement of Good Ecological Status of coastal waters and Good	This Strategic Goal does not directly address these SEA objectives.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
SACs	Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?				
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This Strategic Goal aims specifically to reduce air, noise and light pollution	P + D LT	<p>The Strategy recognises the contribution of transport to pollution levels. It recognises the need to consider the different types of pollution in the planning, design, regulation and operation of transportation.</p> <p>The Strategy does not go into details about how the goal will be achieved even in terms of setting any targets. It is therefore difficult to determine whether benefits will in fact be accrued and whether they will be significant.</p>	
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	This Strategic Goal does not directly address these SEA objectives.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	This Strategic Goal aims specifically to reduce air, noise and light pollution	P + D LT	<p>The Strategy recognises the contribution of transport to pollution levels. It recognises the need to consider the different types of pollution in the planning, design, regulation and operation of transportation.</p> <p>The Strategy does not go into details about how the goal will be achieved even in terms of setting any targets. It is therefore difficult to determine whether benefits will in fact be accrued and whether they will be significant. Implementation of the Master plan will be crucial for the realisation of these goals.</p>	
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This Strategic Goal aims specifically to reduce air, noise and light pollution	P + D LT	As above.	As above.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
to the predicted changes in weather conditions <ul style="list-style-type: none"> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>					
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	This Strategic Goal does not directly address this SEA objective.	0	This Strategic Goal is unlikely to affect this SEA objective.	N/A
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	The Strategic Goal seeks to improve opportunities for walking and cycling and maximising informal recreation space in urban cores.	P + D LT	The Strategic Goal is in line with these SEA objectives although there are no targets to this effect and there is little detail (for instance in the form of a road map) about how to meet the aim. Implementation of the Master plan will be crucial for the realisation of these goals.	
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This Strategic Goal does not directly address these SEA objectives.	0	This Strategic Goal is unlikely to affect these SEA objectives.	N/A
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This Strategic Goal aims to move towards a clean and pleasant public realm.	P + D LT	The Strategy identifies the need although the approach to achieve it and any targets are absent.	Include further detail on the approach to be taken.

### 7.3.1 Summary of the Assessment of the Strategy Goals against the SEA Objectives

242. The introductory chapters of the Strategy present a clear picture on the national transport sector, as well as Malta's commitments at national and EU level. Chapter 5 of the Strategy contains a list of targets for 2030 and 2050.
243. The general Strategy direction aims at ensuring that the transport sector becomes more sustainable. There, however, will be investment in new infrastructure and the negative effects that arise through the development of roads has emerged from the assessment. Management and implementation of the Strategic Goals will need to ensure that measures and actions aimed at modal shift are given as much, if not more importance in order to ensure a successful national move away from the use of the private car.
244. The assessment has identified a number of positive effects from the implementation of the Strategy. The Strategy makes reference to the European White Paper on Transport in particular a description of national and international commitments including the target of a 60% reduction from the 1990 level of transport GHG emissions. However, the Strategy only includes an indicator on the potential reduction of carbon dioxide emissions, but this is only given for 2030 and not 2050. The Strategy does not refer to the 10% share of renewable energy target that must be implemented in the transport sector final energy consumption.
245. It is further recommended that any Master Plans and Action Plans that emerge from the Strategy are subject to SEA and other assessments, as relevant.

## 7.4 Impact Assessment - Transport Master Plan

246. Based on the methodology described above, the operational objectives identified in the Transport Master Plan have been assessed. The objectives that are likely to have a significant environmental impact (whether positive or negative) are assessed against the SEA objectives in a matrix as shown below. The operational objectives (and corresponding measures) that are less likely to have significant environmental effects are discussed qualitatively. The assessment is split into operational objectives related to road transport, public transport, intermodal transport, internal and external maritime transport, aviation and common measures.

### 7.4.1 Road Transport Operational Objectives

247. The road transport operational objectives likely to have a significant environmental effect are:
- 2.2.1: Improve integrated and long term strategic transport planning and design;
  - 2.2.2: Provide alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area;

- 
- 2.2.3: Reducing the role of the car in the busy congested urban ‘hub’;
  - 2.2.4: Reduce the impact of high polluting vehicles in inner congested urban areas and on the TEN-T network;
  - 2.2.7: Ensure a high level of service on the TEN-T core and comprehensive network; and
  - 2.2.8: Improve the functionality of strategic roads providing secondary connectivity and improving the quality of urban areas.

248. These objectives are assessed in **Table 7.3**. The remaining operational objectives (2.2.5, 2.2.6, 2.2.9, 2.2.10, 2.2.11, and 2.2.12) are discussed after the table as they are not likely to have significant environmental effects.

Table 7.3: Transport Master plan operational objective assessment: roads

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Operational objective 2.2.1:</b> Improve integrated and long term strategic transport planning and design					
<b>Measures</b>					
Measure 2.2.1.1: Implement and monitor the long term integrated National Transport Strategy and short and medium term Transport Master Plan					
Measure 2.2.1.2: Develop a framework with the spatial planning process to integrate land use and transport planning policies and move towards transit oriented development					
Measure 2.2.1.3: Master plan for Mriehel Area					
Measure 2.2.1.4: Master plan for Paceville, St Julian's					
Measure 2.2.2.6: Master Plan for Sliema					
Measure 2.2.2.6: Develop a framework to ensure that transport projects are developed by interdisciplinary teams to maximize opportunities for sustainable development					
Measure 2.2.1.7: Improve coordination and planning with service utility infrastructure authorities					
Measure 2.2.1.8: Carry out National Household Travel Survey by 2020					
Measure 2.2.1.9: Develop a framework for collating mobility data focusing on further analysis of multipurpose trips and efficiency mobility					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This operational objective aims to improve integrated and long term strategic transport planning and design through the implementation of the Strategy and Master Plan, development of a framework with the spatial planning process to integrate land use and transport planning policies and move towards transit oriented development, preparation of Master Plans for Mriehel, Paceville, St Julian's and Sliema, carrying out a national household travel survey, developing a framework to maximize opportunities for sustainable development, improving co-ordination and planning with service utility infrastructure authorities and developing a framework for collating mobility data.	P 0/+ D LT	The effect on the SEA Objective on biodiversity is likely to be neutral to slightly positive because it is largely a planning and design measure. However, integration of transport planning and spatial planning could result in a greater awareness where rural areas are concerned and could result in better consideration of Natura 2000 sites.	It is recommended that the Master Plans would require their own strategic assessment that would consider alternative proposals and would address alternative modes of travel with a view to reduce environmental impacts from additional land take-up for new infrastructure. Master Plans for other areas in the Maltese Islands should also be considered when the Master Plans for the areas identified in the current Plan are underway. It is also recommended that when land use Master Plans issued by other authorities (such as the recent Master Plan for Paceville issued by the Planning Authority) Transport Malta is actively involved and dovetailing with its own Master Plans is considered.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This operational objective aims to improve integrated and long term strategic transport planning and design through the implementation of the Strategy and Master Plan, development of a framework with the spatial planning process to integrate land use and transport planning policies and move towards transit oriented development, preparation of Master Plans for Mriehel, Paceville, St Julian's and Sliema, carrying out a national household travel survey, developing a framework to maximize opportunities for sustainable	P 0/+ D LT	The effect on the SEA Objective on these objectives is likely to be neutral to slightly positive because it is largely a planning and design measure. However, integration of transport planning and spatial planning could result in a better understanding how specific land uses and transport affect each other which in turn could lead to positive impacts in terms of traffic management and congestion.	As above.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>		development, improving co-ordination and planning with service utility infrastructure authorities and developing a framework for collating mobility data.			
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	As above.	0	This operational objective is likely to have a neutral effect on groundwater and seawater as the operational objective addresses planning issues primarily.	
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	As above.	P 0/+ D LT	The integration of land use planning and transport planning could in the long term result in development that allows for modal shift. For example, schools could be developed close to transport corridors that would facilitate public transport and walking as opposed to private car use. Another example is that safe routes can be predetermined and developed for walking and/or cycling to school at development proposal stage of the school proposed.	
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	As above.	0		
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	As above.	P + D LT	The integration of land use planning and transport management especially in relation to providing development that allows for users to make use of public transport, cycling and walking as opposed to using the car is seen as positively impacting these SEA objectives.	The success of this Operational Objective will depend on the integration with land use planning and the number of projects where transport considerations, in particular the encouragement of modal shift, are implemented. The implementation of the Master Plans should address this need directly.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape,</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	As above.	P 0/+ D LT	The effect on the SEA Objective on cultural heritage is likely to be neutral to slightly because it is largely a planning and design measure. However, integration of transport planning and spatial planning could result in a greater awareness where sensitive areas are located. More integrated planning could also see improvements seen in Urban Conservation Areas.	As above.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
townscape or quality/amenity of Urban Conservation Areas as relevant					
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>		P 0/+ D LT	The effect on the SEA Objective on landscape is likely to be neutral to slightly because it is largely a planning and design measure. However, integration of transport planning and spatial planning could result in a greater awareness on landscape issues.	As above.
<p><b>Operational Objective 2.2.2:</b> Provide alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area</p> <p><b>Measures</b></p> <p>Measure 2.2.2.1: Develop awareness campaigns to improve the understanding of transportation aspects</p> <p>Measure 2.2.2.2: Develop and incentivise schemes to promote multiple occupancy, smaller vehicles and to reduce the need to travel in peak hours</p> <p>Measure 2.2.2.3: Set up a multi-organisational team to develop a pedestrian infrastructure plan focussing on the “hub”</p> <p>Measure 2.2.2.4: Develop a cycling strategy focussing on the “hub”</p> <p>Measure 2.2.2.5: Develop pilot cycle corridors between Valletta and i) St Julian’s, Sliema ii) Three cities and Fgura</p> <p>Measure 2.2.2.6: Develop a national bicycle / e-bicycle sharing scheme</p> <p>Measure 2.2.2.7: Develop a framework for the introduction and implementation of Sustainable Urban Mobility Plans (SUMPS) in Malta and Gozo</p>					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This operational objective and accompanying measures aim at providing alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area. The majority of measures are soft measures that relate to the development of campaigns, studies, schemes, plans and strategies. Additional measures include the introduction of pilot cycle corridors and a bicycle sharing scheme and the introduction of SUMPs.	0	This operational objective is focused on modal shift and reduction in the use of the private car. No direct impacts on biodiversity and flora and fauna are anticipated. No major new infrastructure is proposed that could affect protected areas.	None.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This operational objective and accompanying measures aim at providing alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area. The majority of measures are soft measures that relate to the development of campaigns, studies, schemes, plans and strategies. Additional measures include the introduction of pilot cycle corridors and a bicycle sharing scheme and the introduction of SUMPs.	P + D LT	The main SEA objectives that this operational objective meets are those related to improvement in overall levels of health through the increased provision of facilities for cycling and promotion of modal shift, reduction in road congestion and improving accessibility. While all the measures contribute to some extent to the SEA objectives, the effectiveness of the measures is uncertain because the description of the measures is sometimes vague. For example, the measure: <i>Develop and incentivise schemes to promote multiple occupancy, alternative modes and reduce the need to travel in peak hours</i> is unclear as to what schemes will be devised and what the expected outcome is.	<p>The measures should be further explained. It is recommended that a target associated with a reduced % of trips that are under 15 minutes should be associated with the operational objective.</p> <p>Any studies that are nationwide would need to undergo the relevant assessments.</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
accessibility and transport links to services, facilities and opportunities				Important measures to achieve modal shift include the introduction of bicycle sharing schemes, SUMP's and the pilot cycle corridors.	
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	As above.	0	The operational objective is not intended to meet this SEA objective.	None.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This operational objective and accompanying measures aim at providing alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area. The majority of measures are soft measures that relate to the development of campaigns, studies, schemes, plans and strategies. Additional measures include the introduction of pilot cycle corridors and a bicycle sharing scheme and the introduction of SUMP's.	P + D LT	The main SEA objectives that this operational objective meets are those related to improvement in overall levels of health through the increased provision of facilities for cycling and promotion of modal shift, reduction in road congestion and improving accessibility. While all the measures contribute to some extent to the SEA objectives, the effectiveness of the measures is uncertain because the description of the measures is sometimes vague, rendering potential benefits difficult to assess. For example, the measure: <i>Develop and incentivise schemes to promote multiple occupancy, alternative modes and reduce the need to travel in peak hours</i> is unclear as to what schemes will be devised and what the expected outcome is. Important measures to achieve modal shift include the introduction of bicycle sharing schemes, SUMP's and the pilot cycle corridors.	Any studies that are nationwide would need to undergo the relevant assessments.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	As above.	0	The operational objective is not intended to meet this SEA objective.	None.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This operational objective and accompanying measures aim at providing alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area. The majority of measures are soft measures that relate to the development of campaigns, studies, schemes, plans and strategies. Additional measures include the introduction of pilot cycle corridors and a bicycle sharing scheme and the introduction of SUMP's.	P + D LT	The proposed measures aim to directly address the SEA objective to better use road space especially through the introduction of pilot cycle corridors in several areas.	Mitigation as described above.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This operational objective and accompanying measures aim at providing alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area. The majority of measures are soft measures that relate to the development of campaigns, studies, schemes, plans and strategies. Additional measures include the introduction of pilot cycle corridors and a bicycle sharing scheme and the introduction of SUMP.	0	This operational objective is focused on modal shift and reduction in the use of the private car. No direct impacts on cultural heritage and townscape are anticipated.	None.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This operational objective and accompanying measures aim at providing alternatives to private vehicles to encourage sustainable travel patterns and reduce private vehicular demand in the congested hub area. The majority of measures are soft measures that relate to the development of campaigns, studies, schemes, plans and strategies. Additional measures include the introduction of pilot cycle corridors and a bicycle sharing scheme and the introduction of SUMP.	0	This operational objective is focused on modal shift and reduction in the use of the private car. No direct impacts on landscape and scenic value are anticipated.	None.

**Operational Objective 2.2.3: Reducing the role of the car in the busy congested urban 'hub'**

**Measures**

Measure 2.2.3.1: Develop a comprehensive parking management system to create a better balance between off-street and on-street parking

<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This operational objective and accompanying measure aims at incentivising a shift from crowded on-street parking to off-street parking. This would require the provision of new, additional off-street parking areas and therefore detailed studies on where a hierarchy of peripheral and centralised parking can be provided and ensuring good levels of accessibility to these parking areas by improving infrastructure for pedestrians. As part of such a scheme on-street parking located within the urban cores and town centres would need to be controlled through the introduction of parking	IP 0/- D LT	It is unlikely that biodiversity would be significantly affected by this measure. There could be an impact on biodiversity if off-street parking is provided through newly created car parks that would be built on greenfield sites.	Siting of any new infrastructure would consider biodiversity issues.
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SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
		demand management schemes designed to achieve the appropriate balance between residential parking, short-stay parking for visitors and priority car parking for car sharing and servicing of businesses.			
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	As described the objective is to render living spaces more attractive through the removal or management of on street parking.	P 0/+ D LT	<p>If properly implemented this measure has the potential to improve attractiveness of urban areas and potentially reduce congestion.</p> <p>As the measure does not specifically describe what actions will be taken and where and without any targets associated with the objective, the accrued positive impacts are difficult to quantify. It is also noted that the timeline for implementation is 2030 so benefits are expected in the long term.</p> <p>Although the operational objective is to reduce the role of the car, this is only supported by one measure related to parking. The objective would have been more effective if coupled with incentives to, for example, address multiple car ownership, and other incentives to discourage car use.</p>	<p>The Master Plan should include a target for achievement of this operational objective.</p> <p>The Master Plan should consider bringing the implementation start date forward from 2030.</p> <p>It is also recommended that this operational objective is closely linked to addressing illegal parking and other incentives to discourage car use.</p> <p>Displacement of parking spaces from one area to another should take into consideration noise and air quality impacts.</p> <p>Other tangible measures should be included under this objective to effectively reduce the role of the car in the urban hub.</p>
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	As described the objective is to render living spaces more attractive through the removal or management of on street parking.	0	It is unlikely that this operational objective would have an effect on the marine environment or freshwater.	None.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This operational objective and accompanying measure aims at incentivising a shift from crowded on-street parking to off-street parking. This would require the provision of new, additional off-street parking areas and therefore detailed studies on where a hierarchy of peripheral and centralised parking can be provided and ensuring good levels of accessibility to these parking areas by improving infrastructure for pedestrians. As part of such a scheme on-street parking located within the urban cores and town centres would need to be controlled through the introduction of parking	IP 0/+ I LT	<p>A reduction in GHGs and other emissions to air in urban areas is likely if the operational objective successfully achieves its goal of providing off street parking to reduce congestion in Urban Conservation Areas and in the Urban Hub. The Master Plan is unclear how this will be achieved in practice and a timeline of 2030 is given for commencement of implementation of the measure.</p> <p>Although the operational objective is to reduce the role of the car, this is only supported by one measure related to parking. The objective would have been more effective if coupled with incentives to, for example, address multiple car ownership, and other incentives to</p>	<p>The Master Plan should consider bringing the implementation start date forward from 2030.</p> <p>The Master Plan should consider other measurable targets to support this operational objective.</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
		demand management schemes designed to achieve the appropriate balance between residential parking, short-stay parking for visitors and priority car parking for car sharing and servicing of businesses.		discourage car use.	
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	As described the objective is to render living spaces more attractive through the removal or management of on street parking.	P 0/- D LT	There could be an impact on soil if off-street parking is provided through newly created car parks that would be built on greenfield sites.	Siting of new car parks should seek brownfield sites.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This operational objective and accompanying measure aims at incentivising a shift from crowded on-street parking to off-street parking. This would require the provision of new, additional off-street parking areas and therefore detailed studies on where a hierarchy of peripheral and centralised parking can be provided and ensuring good levels of accessibility to these parking areas by improving infrastructure for pedestrians. As part of such a scheme on-street parking located within the urban cores and town centres would need to be controlled through the introduction of parking demand management schemes designed to achieve the appropriate balance between residential parking, short-stay parking for visitors and priority car parking for car sharing and servicing of businesses.	P + D LT	This operational objective is directly linked to the SEA objective to promote better use of road space. However, the Master Plan is unclear how this will be achieved in practice and a timeline of 2030 is given for commencement of implementation of the measure.	<p>The Master Plan should consider bringing the implementation start date forward from 2030.</p> <p>The Master Plan should consider other measurable targets to support this operational objective.</p>
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This operational objective and accompanying measure aims at incentivising a shift from crowded on-street parking to off-street parking. This would require the provision of new, additional off-street parking areas and therefore detailed studies on where a hierarchy of peripheral and centralised parking can be provided and ensuring good levels of accessibility to these parking areas by improving infrastructure for pedestrians. As part of such a scheme on-street parking located within the urban cores and town centres would need to be controlled through the introduction of parking demand management schemes	? 0/+ D LT	The aim of the measure is directly linked to townscape especially in Urban Conservation Areas. Without a target, however, the degree of potential positive impact is uncertain.	Siting of new infrastructure would consider cultural heritage / archaeology assets as well as townscapes.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
		designed to achieve the appropriate balance between residential parking, short-stay parking for visitors and priority car parking for car sharing and servicing of businesses.			
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	The operational objective focuses on the urban hub.	? 0/+ D LT	Landscapes could be affected if new facilities are located in Greenfield sites.	Siting considerations would have to carefully consider landscape impacts.
<b>Operational Objective 2.2.4: Reduce the impact of high polluting vehicles in inner congested urban areas and on the TEN-T network</b>					
<b>Measures</b> Measure 2.2.4.1: Study the potential to introduce low emission zones in dense and polluted urban areas (pilot in Floriana) Measure 2.2.4.2: Introduce further financial differential incentives to reduce the average age of vehicles Measure 2.2.4.3: Introduce further fiscal measures and incentives to favour the purchase and use of clean fuel vehicles with a target of 5,000 vehicles by 2020 Measure 2.2.4.4: Continue implementing the electro-mobility action plan Measure 2.2.4.5: If feasible, implement LNG refuelling stations for land transport by 2025 along the Ten-T core network Measure 2.2.4.6: Implement CNG refuelling stations for land transport by 2025 along the TEN-T Core network					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This operational objective comprises a number of measures that aim to study the introduction of low emission zones, incentives to reduce average age of vehicles – although these incentives are not clearly explained, support for the introduction of clean or zero emission vehicles, the deployment of charging infrastructure for electric motorcycles and electric vehicles, a feasibility study for the deployment of LNG infrastructure to determine current and future demand in Malta for LNG fuelling facilities, and carrying out an analysis of current and future vehicle demand for CNG in Malta and the identification of the potential locations of publically available CNG supply infrastructure along the TEN-T core network.	0	The location of LNG and CNG stations could potentially affect biodiversity, but at this stage the feasibility of these refuelling stations is still being studied.	The feasibility studies on the LNG and CNG refuelling stations should take into account siting criteria including biodiversity considerations.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This operational objective comprises a number of measures that aim to study the introduction of low emission zones, incentives to reduce average age of vehicles – although these incentives are not clearly explained, support for the introduction of clean or zero emission vehicles, the deployment of charging infrastructure for electric motorcycles and electric vehicles, a feasibility study for the deployment of LNG infrastructure to determine	P 0/+ D LT	Although the Master Plan recognizes that <i>road transport is and is likely to remain a significant contributor to air pollution in Malta</i> , the only target associated with this operational objective is the introduction of 5,000 electric vehicles by 2020. Low emissions zones will be studied under this objective, but not necessarily implemented and fiscal incentives to reduce average age of vehicles are not clearly explained. While a positive impact is anticipated in terms of air quality, and has been modelled in Chapter 4 of the Master Plan, without commitment	The Master Plan should clearly describe what fiscal incentives will be introduced and by when in accordance with Do-Something 2 as described in the Master Plan where vehicles that are 15 years or older would pay a 1 euro fee to enter a congestion zone. .

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<p>and congestion through modal shift to more sustainable options</p> <ul style="list-style-type: none"> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>		<p>current and future demand in Malta for LNG fuelling facilities, and carrying out an analysis of current and future vehicle demand for CNG in Malta and the identification of the potential locations of publically available CNG supply infrastructure along the TEN-T core network.</p>		<p>for implementation it is difficult to clearly ascertain such impacts. The operational objective is, however, unlikely to reduce road congestion or contribute to modal shift.</p>	
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	As above.	0	<p>The operational objective and accompanying measures are unlikely to significantly affect ground water, sea water and rainwater harvesting capacity.</p>	None.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	<p>This operational objective comprises a number of measures that aim to study the introduction of low emission zones, incentives to reduce average age of vehicles – although these incentives are not clearly explained, support for the introduction of clean or zero emission vehicles, the deployment of charging infrastructure for electric motorcycles and electric vehicles, a feasibility study for the deployment of LNG infrastructure to determine current and future demand in Malta for LNG fuelling facilities, and carrying out an analysis of current and future vehicle demand for CNG in Malta and the identification of the potential locations of publically available CNG supply infrastructure along the TEN-T core network.</p>	P 0/+ D LT	<p>Although the Master Plan recognizes that <i>road transport is and is likely to remain a significant contributor to air pollution in Malta</i>, the only target associated with this operational objective is the introduction of 5,000 electric vehicles by 2020. Low emissions zones will be studied under this objective, but not necessarily implemented and fiscal incentives to reduce average age of vehicles are not clearly explained. While a positive impact is anticipated in terms of air quality, and has been modelled in Chapter 4 of the Master Plan, without commitment for implementation it is difficult to clearly ascertain such impacts.</p>	<p>The Master Plan should clearly describe what fiscal incentives will be introduced and by when in accordance with Do-Something 2 as described in the Master Plan where vehicles that are 15 years or older would pay a 1 euro fee to enter a congestion zone. .</p>
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	<p>This operational objective comprises a number of measures that aim to study the introduction of low emission zones, incentives to reduce average age of vehicles – although these incentives are not clearly explained, support for the introduction of clean or zero emission vehicles, the deployment of charging infrastructure for electric motorcycles and electric vehicles, a feasibility study for the deployment of LNG infrastructure to determine current and future demand in Malta for LNG fuelling facilities, and carrying out an analysis of current</p>	P 0/+ D LT	<p>Although the Master Plan recognizes that <i>road transport is and is likely to remain a significant contributor to air pollution in Malta</i>, the only target associated with this operational objective is the introduction of 5,000 electric vehicles by 2020. Low emissions zones will be studied under this objective, but not necessarily implemented and fiscal incentives to reduce average age of vehicles are not clearly explained. While a positive impact is anticipated in terms of reduction in transport related CO<sub>2</sub> emissions, and has been modelled in Chapter 4 of the Master Plan, without commitment for implementation it is difficult to clearly ascertain such impacts.</p>	<p>The Master Plan should clearly describe what fiscal incentives will be introduced and by when in accordance with Do-Something 2 as described in the Master Plan where vehicles that are 15 years or older would pay a 1 euro fee to enter a congestion zone. .</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
		and future vehicle demand for CNG in Malta and the identification of the potential locations of publically available CNG supply infrastructure along the TEN-T core network.			
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	As above.	0	The operational objectives and accompanying measures are unlikely to significantly affect productive soil as the measures are unlikely to affect land use. The location of LNG and CNG refuelling stations could potentially affect soil, but at this stage the feasibility of these stations is still being studied.	None.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	Relevant measures contributing to these SEA objectives are the introduction of electric vehicle charging stations and the consideration of introducing CNG and LNG refuelling stations.	P + D LT	The introduction of electric vehicle charging stations and the consideration of introducing CNG and LNG refuelling stations contribute to the SEA objective of improving physical infrastructure standards.	None.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	As above.	0	The operational objectives and accompanying measures are unlikely to significantly affect cultural heritage and landscape / townscape as the measures are unlikely to affect land use. The location of LNG and CNG refuelling stations could potentially affect cultural heritage and landscape / townscape, but at this stage the feasibility of these stations is still being studied.	The feasibility studies on the LNG and CNG refuelling stations should also take into account siting criteria including cultural heritage considerations.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	As above.	0	The operational objectives and accompanying measures are unlikely to significantly affect landscape as the measures are unlikely to affect land use. The location of LNG and CNG refuelling stations could potentially affect landscape, but at this stage the feasibility of these stations is still being studied.	The feasibility studies on the LNG and CNG refuelling stations should also take into account siting criteria including landscape considerations.

**Operational Objective 2.2.7: Ensure a high level of service on the TEN-T core network**

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Measures</b>					
Measure 2.2.7.1: TEN-T Core and Comprehensive network - Marsa Measure 2.2.7.2: TEN-T Core and Comprehensive network – Kappara Measure 2.2.7.3: TEN-T Core and Comprehensive network – Marsa – Qormi Measure 2.2.7.6: TEN-T Core and Comprehensive network – Paceville					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This objective focuses on transport infrastructure where the part of the TEN-T road network is being upgraded. The Master Plan highlights that the whole TEN-T network would eventually have to be upgraded but in the timeframe of the Master Plan only four stretches of road are being proposed for upgrading. The Kappara project is currently being implemented and plans and permits for the Marsa junction have already been finalised.	P - D LT	The proposed roads under the Master Plan are all located within urban areas. The Kappara junction project is currently underway and is located in close proximity to Wied Ghollieqa that is a protected site including a national Special Area of Conservation under the Habitats Directive. The proposal for interventions on Regional Road in St Andrew's (between the White Rocks Complex to Manuel Dimech Bridge) could affect Wied Harq Hamiem.	All proposed projects will necessarily require planning permission. Early consultation with the Environment & Resources Authority is recommended so that environmental requirements are addressed early in the process.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	The main SEA objectives being met by this operational objective relate to the reduction in air pollution, improvement in road safety and the improvement in accessibility and transport links to services, facilities and opportunities.	P +/- D LT	Four road stretches are envisaged under the Master Plan. Data on carbon dioxide emissions as a result of the proposed projects show that there will be a reduction in such emissions, thereby contributing to reducing air pollution.  While these transport infrastructure investments have a positive impact on economic growth, enhance geographical accessibility and the mobility of people, this operational objective, however, does not encourage modal shift.	Although the projects <i>per se</i> do not contribute directly to modal shift consideration should be given to include cycling lanes and appropriate infrastructure for public transport to facilitate cycling and walking along all or parts of the routes. The projects should be considered holistically with the rest of the TEN-T network to enable the routes to be continuous, and ensure at the design stage that there is enough space on the road to safely accommodate the cycling path.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	Although not directly related to ground and sea water, road infrastructure could facilitate rainwater harvesting by providing adequate infrastructure within the road network.	?	No details are provided in the Master Plan with regards to the infrastructure related to rainwater harvesting, so that impact of this operational objective on the SEA objective could not be assessed.	It is recommended that the TEN-T network is looked at holistically with a view to assist in implementation of infrastructure related to rainwater harvesting and sustainable urban drainage systems.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	This measure is a transport infrastructure measure where part of the TEN-T road network is being upgraded. Four stretches of road will be funded under the Master Plan.	P + D LT	Four road stretches are envisaged under the Master Plan. Data on carbon dioxide emissions as a result of the proposed projects show that there will be a reduction in such emissions, thereby contributing to reducing air pollution.	Monitoring post-project implementation to ascertain emissions have in fact reduced as compared to the forecasted reduction should be undertaken.  In order to achieve meaningful reductions in

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
					carbon dioxide emissions and meet air quality targets, improvements in road infrastructure need to be closely tied to modal shift and reduction in private car use such that an integrated approach with such measures in other sections of the Master Plan should be adopted.
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This measure is a transport infrastructure measure where part of the TEN-T road network is being upgraded. Four stretches of road will be funded under the Master Plan.	P + D LT	Four road stretches are envisaged under the Master Plan. Data on carbon dioxide emissions as a result of the proposed projects show that there will be a reduction in such emissions.	<p>Monitoring post-project implementation to ascertain emissions have in fact reduced as compared to the forecasted reduction should be undertaken.</p> <p>In order to achieve meaningful reductions in carbon dioxide emissions and meet air quality targets, improvements in road infrastructure need to be closely tied to modal shift and reduction in private car use such that an integrated approach with such measures in other sections of the Master Plan should be adopted.</p>
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	This measure is a transport infrastructure measure where part of the TEN-T road network is being upgraded. Four stretches of road will be funded under the Master Plan.	P - D LT	The construction of the roads has the potential to affect soil.	Conservation of soil during project implementation.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This measure is a transport infrastructure measure where part of the TEN-T road network is being upgraded. Four stretches of road will be funded under the Master Plan.	P + D LT	The construction of the road stretches proposed directly contributes to the SEA objective to improve efficiency of transport networks and physical infrastructure standards.	It is recommended that the design of the road considers green infrastructure, including the use of SUDS as described above, and promotion of better use of road space including allocation of appropriate space for public transport and cycling / walking.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This measure is a transport infrastructure measure where part of the TEN-T road network is being upgraded. Four stretches of road will be funded under the Master Plan.	?	Although none of the proposed four stretches of road pass through Urban Conservation Areas, potential excavation for road works could lead to archaeological finds. The impact is uncertain as this stage.	Early consultation with the Superintendence of Cultural Heritage should be carried out at the planning stage to determine sensitive areas, if any, along the proposed routes. Monitoring during works should also be carried out.
<ul style="list-style-type: none"> <li>To conserve or</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This measure is a transport	0	The proposed road projects comprise	Visual impact would have to be considered

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
enhance landscape character and scenic value		infrastructure measure where part of the TEN-T road network is being upgraded. Four stretches of road will be funded under the Master Plan.		upgrading of existing routes so no new land use is being proposed instead of the road. Landscape impacts are therefore unlikely.	during the planning process.
<b>Operational Objective 2.2.8: Improve the functionality of strategic roads providing secondary connectivity and improving the quality of urban areas</b>					
<b>Measures</b>					
Measure 2.2.8.1: Review and clarify the road network classification					
Measure 2.2.8.2: Classify route 120 (from Tal-Balal to Birguma) according to its design and build as a distributor road					
Measure 2.2.8.3: Improve provision for pedestrians, cycling and public transport and change functionality of ND9 (Naxxar/Gharghur) to ED1 (San Gwann)					
Measure 2.2.8.4: Improve provision for pedestrians, cycling and public transport and change functionality of route 127 (St. Julian's to Ta' Xbiex)					
Measure 2.2.8.5: Improve provision for pedestrians, cycling and public transport and change functionality of EA16 (University Skatepark) – ED3 – ED3a (Msida) – ED4 – EA5 (Portes de Bombes)					
Measure 2.2.8.6: Improve provision for pedestrians, cycling and public transport and address conflicting traffic flows and urban activity at WD11 (Zebbug) – WA13 (Qormi)					
Measure 2.2.8.7: Review the strategic functionality of route 132 (Racecourse Road to P+R) between the Core TEN-T network and the Park & Ride to improve accessibility for active and public transport modes					
Measure 2.2.8.8: Improve provision for pedestrians, cycling and public transport to encourage modal shift on the road section WD18 to WA24 (tunnel under runway)					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This operational objective includes one national study to redevelop the road and street classification to incorporate the concept and functionality of both place and movement thereby developing design guidelines according to the classification with both objectives in mind. The rest of the measures include provisions to improve provision facilities for pedestrians, cycling and public transport. These provisions are unclear with regards to most routes.	0	Although in many of the measures there is no description of the interventions involved, the provision of facilities is likely to take place on or in close proximity to the carriageway and unlikely to affect biodiversity.	None.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This operational objective includes one national study to redevelop the road and street classification to incorporate the concept and functionality of both place and movement thereby developing design guidelines according to the classification with both objectives in mind. The rest of the measures include provisions to improve provision facilities for pedestrians, cycling and public transport. These provisions are unclear with regards to most routes.	P +/0 D LT	Although the operational objective has a clear intent and the measure description is also positive, the Master Plan is unclear in how the measures will be implemented, what physical interventions will be included in the measure to actually promote modal shift (other than the inclusion of a bus lane and rerouting traffic away from one route only).	The Master Plan should clarify what the interventions will be and how these will affect modal shift..
<ul style="list-style-type: none"> <li>To maintain or</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface</li> </ul>	As above.	0	Although in many of the measures there is no description of the interventions involved,	None.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
improve the quantity and quality of ground and sea water <ul style="list-style-type: none"> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	waters and coastal waters?			the provision of facilities is likely to take place on or in close proximity to the carriageway and unlikely to affect groundwater.	
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	This operational objective includes one national study to redevelop the road and street classification to incorporate the concept and functionality of both place and movement thereby developing design guidelines according to the classification with both objectives in mind. The rest of the measures include provisions to improve provision facilities for pedestrians, cycling and public transport. These provisions are unclear with regards to most routes.	?	Although the operational objective has a clear intent and the measure description is also positive, the Master Plan is unclear in how the measures will be implemented, what physical interventions will be included in the measure to actually promote modal shift (other than the inclusion of a bus land and rerouting traffic away from one route only).	The Master Plan should clarify what the interventions will be and how these will affect modal shift.
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	As above.	?	The proposed measures do not directly affect climate change adaptation. It is unclear how the measures will affect private car use as the Master Plan.	The Master Plan should clarify what the interventions will be and how these will affect modal shift.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	As above.	0	This operational objective is unlikely to affect this SEA objective, because interventions are unlikely to affect soil because they will likely happen within current road footprints.	N/A
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	As above.	P + D LT	The operational objectives and identified measures for implementation are in line with the SEA objectives to promote better use of road space and to improve efficiency of transport networks and physical infrastructure standards. However, the extent of the positive impact is uncertain because details on the implementation of the measures are not available.	The Master Plan should clarify what the interventions will be and how these will affect modal shift.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural /</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	As above.	0	This operational objective is unlikely to affect this SEA objective, because interventions are unlikely to affect cultural heritage or townscape.	N/A

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
archaeological remains • To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant					
• To conserve or enhance landscape character and scenic value	• Affect landscape character and scenic value?	As above.	0	This operational objective is unlikely to affect this SEA objective, because interventions are unlikely to significantly affect landscape.	N/A

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249. In addition to the operational objectives assessed above, there are other operational objectives (and accompanying measures) that are included in the Master Plan. These are summarised hereunder:
- 2.2.5: Reduce the impact (social, environmental and economic) of vehicles in urban areas;
  - 2.2.6: Reduce the impact of HGVs on urban areas and the road network;
  - 2.2.9: Ensure effective and efficient management of roads and related equipment ensuring quality and sustainability of investment through regular maintenance;
  - 2.2.10: Improve road safety through better research, engineering, education and enforcement;
  - 2.2.11: Ensure safe and efficient traffic management to optimise the use of existing infrastructure; and
  - 2.2.12: Improve the effectiveness of enforcement of road transport regulations.
250. Most of the measures described in the list above are soft measures and are considered as supporting measures that would have a neutral effect on the SEA objectives. They are therefore assessed outside the structure of the matrix hereunder. It is recognised that many do, however, support other operational objectives.
251. **Operational objective 2.2.5** aims to reduce the impact (social, environmental and economic) of vehicles in urban areas. This aim will be achieved through three measures: to develop a policy framework and design guidelines to create a balanced approach to different modes in urban streets and public space, to develop mitigation measures to reduce noise levels in UCAs, and to introduce electric buses in Gozo. The first two measures comprise formulation of guidelines and the study of measures to attenuate traffic noise. The replacement of 12 diesel buses in Gozo is expected to yield positive air quality results, although these are not quantified in the Master Plan. The introduction of charging points in Gozo is not expected to result in significant environmental effects, other than to support other measures.
252. **Operational objective 2.2.6** aims to reduce the impact of HGVs on urban areas and the road network with three measures, two of which consist of updating a policy framework for regulation, monitoring and enforcement of HGVs and developing an action plan for regulation of freight transport. The introduction of safe off-street overnight parking areas for heavy vehicles as part of the implementation of the TEN-T Marsa junction project is also contemplated. The three measures are considered to meet SEA objectives related to improved transport infrastructure but are unlikely to have significant effects on GHG emissions and will not affect air quality or modal shift. The location of the new off street parking for HGVs is within the road network and is likely to be assessed at a local level under the planning process.

253. **Operational objective 2.2.9** aims to ensure effective and efficient management of roads and related equipment ensuring quality and sustainability of investment through regular maintenance through four measures. The measures comprise setting up an asset management system and asset management plan for the road network and to develop an action plan to improve the quality of street furniture and information and to update road specifications and standards. There is also a measure to increase implementation of service culverts and storm water management in local roads. This measure meets the SEA objective related to climate change adaptation as well as potential harvesting of rainwater. These measures are only likely to have a neutral affect on the SEA objectives; any potential positive impact would depend on the extent of the interventions over the lifetime of the Master Plan, which extent is not indicated in the document.
254. **Operational objective 2.2.10** aims to improve road safety through better research, engineering, education and enforcement by implementation of the Road Safety Strategy, improvement in the overall Euro NCAP<sup>68</sup> rating of Maltese vehicle fleet, and developing design guidelines for safety measures with respect to designing for e-bicycles, bicycles, and motorcycles. A management system for bridge and tunnel management is also proposed as a measure. These measures are considered as supporting measures and do not set out to directly address the significant impacts of the transport sector in relation to GHG emissions. The measures will contribute to SEA human health objectives related to potentially improving road safety, enhance well-being and to provide better transport facilities. It is important that design guidelines for shared road space are also accompanied by legislative measures to support such allocation of space.
255. **Operational objective 2.2.11** aims to ensure safe and efficient traffic management to optimise the use of existing infrastructure through the increased use of ITMS, piloting tidal lanes, coordinating road works and maintenance, introducing transport modelling and GIS, updating traffic management guidelines, improving event planning and developing incident management plans. Again the measures are soft measures that support the more direct measures that would seek to directly implement the SEA objectives. The measures are likely to contribute to potentially improving road safety, enhance well-being and to provide better transport facilities. Better modal choices will result from greater integration of the modal networks: airports, ports, and bus stations. Online information and electronic booking and payment systems integrating all means of transport should facilitate multimodal travel.
256. **Operational objective 2.2.12** aims to improve the effectiveness of enforcement of road transport regulations. The measures include increasing enforcement through increased review of enforcement powers, increased police presence and reviewing

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<sup>68</sup> European New Car Assessment Programme

finances, roadside checks and road worthiness testing, and improved technology for enforcement. All these soft measures are considered to be supporting measures and are likely to have a neutral effect on the SEA environmental objectives. They would contribute to increasing road safety. The measure to introduce weighbridges at maritime terminals is also expected to be neutral.

#### 7.4.1.1 *Conclusions on the Assessment of the Operational Objectives under Road Transport against the SEA Objectives*

257. The above assessment shows that there are a number of operational objectives that directly address modal shift and have the potential to reap positive environmental benefits mainly through a reduction in emissions. The inclusion of some implementation targets in Chapter 7 of the Master Plan is seen as a step in the right direction which will assist in the monitoring the implementation of the Master Plan operational objectives.. Where the assessment has shown that the description of the measures is not clear enough to allow for a detailed enough assessment, this should be improved at implementation. The inclusion of measurable targets such as the introduction of 5,000 electric vehicles by 2020 and the introduction of 12 electric buses in Gozo, is seen as good practice and assisted in the assessment of impacts against the SEA objectives. Measures to improve provision for public transport, cycling and pedestrians are considered to meet the SEA objectives.
258. While the operational objective 2.2.3 on *reducing the role of the car in the busy congested urban 'hub'* is considered a key objective to address modal shift in the Maltese Islands, in the Master Plan it is only implemented through one measure related to parking. The operational objective therefore falls short of its stated intent.
259. The link between the operational objectives and targets emerging from the Transport White Paper and the requirements of the 2020 climate and energy package and the Master Plan objectives is somewhat addressed in Chapter 7 of the Master Plan.
260. Since the road transport objectives address specific interventions on the Maltese Islands, no transboundary impacts are expected.

#### 7.4.2 **Public Transport Objectives**

261. The public transport objectives considered likely to have a significant environmental effect are:
  - 2.3.1: Improve service quality and modal share along strategic routes by introducing public transport quality corridors; and
  - 2.3.2: Improve public transport service quality to and between strategy employment nodes, services outside the inner harbour regions and peripheral residential areas
262. These objectives are assessed in **Table 7.4**. The rest of the operational objectives (2.3.3, 2.3.4, 2.3.5, 2.3.6, and 2.3.7) are discussed after the table as they are not likely

to have significant environmental effects.

Table 7.4: Transport Master plan operational objective assessment: public transport

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Operational Objective 2.3.1: Improve service quality and modal share along strategic routes by introducing public transport quality corridors</b>					
<b>Measures</b>					
Measure 2.3.1.1-1 Implement Public Transit Quality Corridors (PTQC) (Sliema-Msida-Valletta)					
Measure 2.3.1.1-2 Implement Public Transit Quality Corridors (PTQC) (Tarxien-Fgura-Marsa-Valletta)					
Measure 2.3.1.1-3 Implement Public Transit Quality Corridors (PTQC) (Mosta-Birkirkara-Msida-Valletta)					
Measure 2.3.1.1-4 Implement Public Transit Quality Corridors (PTQC) (Naxxar-Birkirkara-Hamrun-Valletta)					
Measure 2.3.1.1-5 Implement Public Transit Quality Corridors (PTQC) (Mosta-Birkirkara-University-Msida)					
Measure 2.3.1.1-6 Implement Public Transit Quality Corridors (PTQC) (Attard-Birkirkara-Hamrun-Valletta)					
Measure 2.3.1.1-7 Implement Public Transit Quality Corridors (PTQC) (Qormi-Hamrun-Valletta)					
Measure 2.3.1.2 Develop a programme to upgrade main boarding bus stops					
Measure 2.3.1.3 Make better use of electronic data collected by the bus operator to quickly adapt bus routes timetables and combined frequencies to temporal and seasonal demand changes and identify additional PTQC					
Measure 2.3.1.4 Improve enforcement of PTQC through greater deployment technology					
Measure 2.3.1.5 Develop and publish comprehensive route information					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	The improvement of service quality and modal share along strategic routes through the introduction of public transport quality corridors will be along existing urban routes and is unlikely to result in any impacts on protected areas.	0	It is unlikely that biodiversity would be significantly affected by these measures because the proposed measures are unlikely to take up additional undeveloped land.	None.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This operational objective seeks to improve the public transport service with an aim to support a modal shift from the private car to increased patronage of the public transport service.	P +/ ++ D LT	The inclusion of PTQCs along strategic sections of the network should help to reduce delays in the public transport system which would be expected to make the use of public transport more attractive and thus encourage modal shift. Investment in bus shelters and other measures to improve the overall service should also help to encourage its usage. If implementation of these measures does indeed result in a shift, impacts from traffic including pollution can also be expected to decrease.	Close monitoring of the implementation of this operational objective and its associated targets is necessary to evaluate the effectiveness of the measures.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	The improvement of service quality and modal share along strategic routes through the introduction of public transport quality corridors will	0	Significant effects are unlikely.	None

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To maintain or improve rainwater harvesting capacity</li> </ul>		be along existing urban routes and is unlikely to result in any additional impacts on groundwater, surface waters or coastal waters.			
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This operational objective seeks to improve the public transport service with an aim to support a modal shift from the private car to increased patronage of the public transport service.	P +/ D LT	The inclusion of PTQCs along strategic sections of the network should help to reduce delays in the public transport system which would be expected to make the use of public transport more attractive and thus encourage modal shift. Investment in bus shelters and other measures to improve the overall service should also help to encourage its usage. If implementation of these measures does indeed result in a shift, traffic emissions are also expected to decrease.	Close monitoring of the implementation of this operational objective and its associated targets is necessary to evaluate the effectiveness of the measures.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	The improvement of service quality and modal share along strategic routes through the introduction of public transport quality corridors will be along existing urban routes and is unlikely to result in any additional impacts on soil.	0	Significant effects are unlikely.	None
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This operational objective seeks to improve the public transport service with an aim to support a modal shift from the private car to increased patronage of the public transport service.	P +/ D LT	The inclusion of PTQCs along strategic sections of the network should help to reduce delays in the public transport system which would be expected to make the use of public transport more attractive and thus encourage modal shift. Investment in bus shelters and other measures to improve the overall service should also help to encourage its usage. Implementation should thus result in improved efficiency of the network along the identified key corridors.	None
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	The improvement of service quality and modal share along strategic routes through the introduction of public transport quality corridors will be along existing urban routes and is unlikely to result in any additional impacts on cultural and archaeological heritage.	0	Significant effects are unlikely.	None

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
Areas as relevant					
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This operational objective seeks to improve the public transport service with an aim to support a modal shift from the private car to increased patronage of the public transport service.	P 0/+ D LT	Measure implementation under this operational objective has the potential to reduce traffic congestion along key corridors that could result in an improvement to the character of the urban areas affected.	Close monitoring of the implementation of this operational objective and its associated targets is necessary to evaluate the effectiveness of the measures.
<b>Operational Objective 2.3.2: Improve public transport service quality to and between strategic employment nodes, services outside the inner harbor regions and peripheral residential areas</b>					
<b>Measures</b>					
Measure 2.3.2.1: Optimise use of existing Park and Ride facilities and develop new sites at strategic locations to encourage modal interchange.					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	? 0/--- D LT	<p>The measure includes exploring the possibility of developing additional Park and Ride facilities. The locations identified in Transport Malta's Measures Supporting Document and mapped include sites at/near Targa Gap, the Mosta technopark, University of Malta, Marsa junction and Fgura/Zabbar boundary.</p> <p>Negative impacts may be accrued if sites earmarked consist of green sites including sites within the urban area that may currently be providing ecosystem services or are important for ecological connectivity.</p>	A site selection exercise should be carried out to identify potential sites. This exercise should include environmental criteria related to the avoidance of impacts on areas important for biodiversity.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	P + D LT	This operational objective supports modal shift and if implemented in the context of operational objective 2.3.1 described above could result in cumulative positive effects that further enhance the efficiency of the public transport system and therefore potentially also enhance modal shift and associated reduction in transport emissions.	Close monitoring of the implementation of this operational objective and its associated targets is necessary to evaluate the effectiveness of the measures.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to	? 0/- D LT	The measure includes exploring the possibility of developing additional Park and Ride facilities. The locations identified in the Measures Supporting document and	A site selection exercise should be carried out to identify potential sites. This exercise should include environmental criteria related to the

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To maintain or improve rainwater harvesting capacity</li> </ul>		public transport at the periphery of the 'Hub'.		<p>mapped include sites at/near Targa Gap, the Mosta technopark, University, Marsa junction and Fgura/Zabbar boundary.</p> <p>Negative impacts may be accrued if sites earmarked consist of green sites including sites within the urban area that may currently be important for groundwater recharge and reducing flood risk. The significance of impact would depend on how many such sites were earmarked – there are no such details set in the Master Plan.</p>	avoidance of negative impacts that may affect groundwater recharge. Flooding risks of proposals should also be considered.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	P + D LT	This operational objective supports modal shift and if implemented in the context of operational objective 2.3.1 described above could result in cumulative positive effects that further enhance the efficiency of the public transport system and therefore potentially also enhance modal shift and associated reduction in transport emissions.	Close monitoring of the implementation of this operational objective and its associated targets is necessary to evaluate the effectiveness of the measures.
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	P + D LT	This operational objective supports modal shift and if implemented in the context of operational objective 2.3.1 described above could result in cumulative positive effects that further enhance the efficiency of the public transport system and therefore potentially also enhance modal shift and associated reduction in transport emissions.	Close monitoring of the implementation of this operational objective and its associated targets is necessary to evaluate the effectiveness of the measures.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	? 0/- D LT	<p>The measure includes exploring the possibility of developing additional Park and Ride facilities. The locations identified in the Measures Supporting document and mapped include sites at/near Targa Gap, the Mosta technopark, University, Marsa junction and Fgura/Zabbar boundary.</p> <p>Negative impacts may be accrued if sites earmarked consist of green sites including sites within the urban area that may result in soil sealing.</p>	A site selection exercise should be carried out to identify potential sites. This exercise should include environmental criteria related to the avoidance of negative impacts that may affect soils.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	? 0/-/+ D LT	The measure includes exploring the possibility of developing additional Park and Ride facilities. The locations identified in the Measures Supporting document and mapped include sites at/near Targa Gap, the Mosta technopark, University, Marsa junction and Fgura/Zabbar boundary.	A site selection exercise should be carried out at project level to identify potential sites. This exercise should include environmental criteria related to the avoidance of negative impacts that may affect ecosystem services.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
of transport networks and physical infrastructure standards				<p>Negative impacts may be accrued if sites earmarked consist of green sites including sites within the urban area that are part of green infrastructure.</p> <p>Cumulative positive impacts may be accrued through improved efficiency of the transport network.</p>	Close monitoring of the implementation of this operational objective and its associated targets is necessary to evaluate the effectiveness of the measures.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	? 0/- D LT	<p>The measure includes exploring the possibility of developing additional Park and Ride facilities. The locations identified in the Measures Supporting document and mapped include sites at/near Targa Gap, the Mosta technopark, University, Marsa junction and Fgura/Zabbar boundary.</p> <p>Negative impacts may be accrued if sites earmarked affect archaeology and cultural heritage including the cultural landscape.</p>	A site selection exercise should be carried out to identify potential sites. This exercise should include environmental criteria related to the avoidance of negative impacts that may affect archaeology, cultural heritage and the cultural heritage landscape.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This operational objective seeks to invest in existing and new Park and Ride facilities with the aim of facilitating modal shift from cars to public transport at the periphery of the 'Hub'.	? 0/- D LT	<p>The measure includes exploring the possibility of developing additional Park and Ride facilities. The locations identified in the Measures Supporting document and mapped include sites at/near Targa Gap, the Mosta technopark, University, Marsa junction and Fgura/Zabbar boundary.</p> <p>Negative impacts may be accrued if sites earmarked affect the local landscape character and/or scenic value.</p>	A site selection exercise should be carried out to identify potential sites. This exercise should include environmental criteria related to the avoidance of negative impacts that may affect landscape character and scenic value.

263. When carrying out the scoping exercise on the public transport operational objectives, the following were identified as having a neutral effect on the SEA objectives on an individual basis. These operational objectives (and measures for implementation) include:

- 2.3.3: Explore opportunities to move towards transit oriented development
  - Measure 2.3.3.1: Analyse accessibility (PT) index for all transport zones and improve transit provision in relation to current development patterns;
  - Measure 2.3.3.2: Identify strategic transportation hubs and transit corridors where the concept of transit oriented development can be strengthened to inform the spatial planning process;
- 2.3.4: Improve physical accessibility of public transport service
  - Measure 2.3.4.1: Provide more accessible bus infrastructure in residential areas and commercial centres;
  - Measure 2.3.4.2: Increase enforcement of illegal parking and ensure proper use of bus bays;
- 2.3.5: Improve the quality of the environment at primary and secondary public transport hubs
  - Measure 2.3.5.1: Carry out a quality audit of existing public transport hubs;
  - Measure 2.3.5.2: Improve the environment and accessibility at Valletta public transport hub;
  - Measure 2.3.5.3: Explore alternative forms of financing of public transport infrastructure;
- 2.3.6: Improve availability and quality of unscheduled public transport for schools;
  - Review and improve policies for traffic management, demand management and operations of unscheduled public transport;
- 2.3.7: Reduce the impact of clustering of unscheduled public transport particularly in tourism hot spots and commercial areas;
  - Measure 2.3.7.1: Review and improve policies for traffic management, demand management and operations of unscheduled public transport;
- 2.3.8: Improve supply of alternative forms of scheduled public transport;
  - Measure 2.3.8.1: Continue the planning and development of a Mass Rapid Transit system with a view to establishing a detailed proposal for public

consultation;

- Measure 2.3.8.2: Create a framework for introducing demand responsive transport.

264. Effectively, most of the above measures involve interventions in the form of analyses, investigations, enforcement, auditing, review of existing policies and services, and continued planning all with the aim to encourage a shift from the use of the public car to public transport. These measures largely do not involve physical interventions and when they do it is related to improving facilities in residential areas and commercial centres. Therefore, significant negative impacts from interventions targeting land use and potentially affecting land cover are not expected.

265. Given the soft nature of the above-listed measures, therefore, environmental impacts are best considered cumulatively in the context of whether effects can be expected if the overall aim of trying to create a shift from private car use to public transport use is realised. If successful, environmental benefits can be expected to be accrued with respect to SEA objectives that focus on bringing about a reduction in noise and air pollution, reducing road traffic, improving accessibility, improving air quality, and decarbonising road transport. However, the extent to which benefits will depend on the effectiveness in implementation and achievement of the 2025 targets as described in the Master Plan.

#### *7.4.2.1 Conclusions on the Assessment of the Operational Objectives under Public Transport against the SEA Objectives*

266. The assessment reveals that the Master Plan has potential in resulting in environmental impacts that can be expected through a modal shift, the effectiveness of which will depend on the reaching of the targets as set out in the Master Plan. In terms of mitigation, therefore, it is recommended that the Master Plan monitors closely implementation of the operational objectives and its progress towards achieving the targets contained in the Master Plan.

267. The impacts that will be accrued through the implementation of the public transport objectives and measures are likely to be realised locally. Transboundary impacts are unlikely.

### 7.4.3 Intermodal Transport Objectives

268. The intermodal transport objective considered likely to have a significant environmental effect is:

- 2.4.2: Develop transport hubs to encourage intermodality.

269. This objective is assessed in **Table 7.5**. The rest of the operational objectives (2.4.1, and 2.4.3) are discussed after the table as they are likely to have neutral environmental effects.

Table 7.5: Transport Master plan operational objective assessment: intermodal transport

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Operational Objective 2.4.2: Develop transport hubs to encourage intermodality</b>					
<b>Measures</b>					
Measure 2.4.2.1: Improvement of the existing ferry landing places					
Measures 2.4.2.2: Study options available to improve wave climate in the Port of Marsamxetto					
Measure 2.4.2.3: Assess potential and implement new ferry landing places					
Measure 2.4.2.4: Improve the vertical and pedestrian connectivity between the Sliema-Valletta ferry service in Valletta and the city centre					
Measure 2.4.2.5: Provide and regulate space for use of bicycles					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	<p>This operational objective seeks to encourage intermodality. The focus is on the ferry links and the need to upgrade existing facilities is recognised both on the seaward side as well as the land side to also include interventions including cycle racks, charging stations for e- bikes and circular bus routes that could connect to the main public transport service and to park and ride facilities. It is also considered through this operational objective that the potential for new ferry landing places should be explored and whilst specific sites are not identified, the areas of St Julian's, Msida and St Paul's Bay are considered to be opportune by the Master Plan.</p>	P - D LT	<p>St Paul's Bay and part of the St Julian's coastline lie within a marine SAC and developments in the marine environment could result in significant negative effects.</p> <p>The study of the wave climate at Marsamxetto is already contemplated under Operational Objective 2.5.4: Removal of bottlenecks at TEN-T comprehensive ports, measure 2.5.4.6 Consider measures to improve wave climate in the Port of Marsamxetto. Streamlining of these measures is required.</p>	<p>The feasibility of different landing places should also consider environmental parameters.</p> <p>Impact assessment at project level will be necessary in order to ensure any potential negative effects are identified and assessed.</p>
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	<p>This operational objective seeks to encourage intermodality. The focus is on the ferry links and the need to upgrade existing facilities is recognised both on the seaward side as well as the land side to also include interventions including cycle racks, charging stations for e- bikes and circular bus routes that could connect to the main public transport service and to park and ride facilities. It is also considered through this operational objective that the potential for new ferry landing places should be explored and whilst specific sites are not identified, the areas of St Julian's, Msida and St Paul's Bay are considered to be opportune by the Master Plan.</p>	P ++ D LT	<p>This operational objective addresses each of the SEA objectives of this aspect positively. It envisages where interventions need to take place as well as identifying how many and the general location of new ferry landing sites.</p>	<p>The Master Plan should monitor the success of this operational objective in particular how the targets in the Master Plan work towards meeting EU transport targets.</p> <p>The Master Plan should consider linking this operational objective with other operational objectives to ensure that the ferry service is effective for local users, so that the ferry service is not only viable for people living in close proximity to the landing point but also people living further away, where walking is not an option because of distance.</p> <p>The provision of car parking next to these landing places also needs to be considered as an option.</p>
<ul style="list-style-type: none"> <li>To maintain or improve the quantity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	<p>This operational objective identifies the need for seaside interventions at</p>	P -	<p>Implementation of this operational objective may result in negative impacts on</p>	<p>Feasibility studies for alternatives for ferry landing sites as well as the</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
and quality of ground and sea water <ul style="list-style-type: none"> <li>To maintain or improve rainwater harvesting capacity</li> </ul>		ferry landing sites and also identifies that preliminary studies indicate that additional breakwater facilities are likely to be necessary for optimal use of Marsamxetto harbour in this regard. New ferry landing sites are called for at St Julian's, Msida and St Paul's Bay	D LT	the marine environment from works to carry out interventions on existing sites in addition to affecting new areas. The wave climate study could lead to development of infrastructure in the marine environment that could adversely affect it.	wave climate studies should include environmental considerations.  Impact assessment at project level will be necessary to ensure appropriate sites are selected, any potential significant impacts are identified and mitigation measures prescribed.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	This operational objective seeks to encourage intermodality. The focus is on the ferry links and the need to upgrade existing facilities is recognised both on the seaward side as well as the land side to also include interventions including cycle racks, charging stations for e- bikes and circular bus routes that could connect to the main public transport service and to park and ride facilities. It is also considered through this operational objective that the potential for new ferry landing places should be explored and whilst specific sites are not identified, the areas of St Julian's, Msida and St Paul's Bay are considered to be opportune.	P ++ D LT	This operational objective addresses the SEA objectives related to air quality, GHG emissions and air quality positively by providing infrastructure that encourages modal shift. It envisages where interventions need to take place as well as identifying how many and the general location of new ferry landing sites.	The Master Plan should monitor the success of this operational objective in particular how the targets in the Master Plan . work towards meeting EU transport targets.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	This operational objective seeks to encourage intermodality. The focus is on the ferry links and the need to upgrade existing facilities is recognised both on the seaward side as well as the land side to also include interventions including cycle racks, charging stations for e- bikes and circular bus routes that could connect to the main public transport service and to park and ride facilities. It is also considered through this operational objective that the potential for new ferry landing places should be explored and whilst specific sites are not identified, the areas of St Julian's, Msida and St Paul's Bay are considered to be opportune.	0	Significant effects are unlikely because interventions are likely to be coastal / marine.	N/A
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This operational objective seeks to encourage intermodality. The focus is on the ferry links and the need to upgrade existing facilities is recognised both on the seaward side as well as the land side to also	P + D LT	If there is a greater uptake of intermodality as a result of this operational objective, the impact on the road network and efficiency of all transport networks could potentially significantly improve.	The Master Plan should monitor the success of this operational objective in particular how the targets in the Master Plan work towards meeting EU transport targets.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>		include interventions including cycle racks, charging stations for e- bikes and circular bus routes that could connect to the main public transport service and to park and ride facilities. It is also considered through this operational objective that the potential for new ferry landing places should be explored and whilst specific sites are not identified, the areas of St Julian's, Msida and St Paul's Bay are considered to be opportune.			
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	The current Sliema-Valletta ferry link remains relatively unsuccessful in its degree of use largely as a result of the difficulty of then reaching the city centre from the quay. The Master Plan calls for this link to be improved through the identification and implementation of a means to facilitate connectivity through Measure 2.4.2.4.	P - D LT	Developments aiming to improve connectivity could potentially have negative impacts on the cultural heritage landscape of the Valletta side.	Impact assessment at project level is necessary to ensure major significant negative impacts are not accrued.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	This operational objective seeks to encourage intermodality. The focus is on the ferry links and the need to upgrade existing facilities is recognised both on the seaward side as well as the land side to also include interventions including cycle racks, charging stations for e- bikes and circular bus routes that could connect to the main public transport service and to park and ride facilities. It is also considered through this operational objective that the potential for new ferry landing places should be explored and whilst specific sites are not identified, the areas of St Julian's, Msida and St Paul's Bay are considered to be opportune by the Master Plan.	P 0/+ D LT	Increased ferry links are likely to increase the number of movements in the harbour. This is in keeping with the current landscape character and significant negative effects are not envisaged. There may be negative effects associated with any vertical connectivity proposed on the Valletta quayside in linking to the city centre; this will need to be assessed at project level. On the landward side, reduced road traffic would result in positive effects.	Any proposed infrastructure in Valletta will require early consultation with the Superintendence of Cultural Heritage in view of Valletta's designation as a World Heritage Site.

270. When carrying out the scoping exercise on the intermodal operational objectives, the following were identified as unlikely to result in large significant effects on an individual basis. These operational objectives (and measures for implementation) include:

- 2.4.1: Improve intermodal seamless mobility (travel information, journey planning services and multi-modal ticketing)
  - Measure 2.4.1.1: Encourage operators of public transport to integrate and coordinate their operations of ticketing information and journey planning;
  - Measure 2.4.1.2: Facilitate the development of a real time multi modal journey planner;
- 2.4.3: Improve logistics and urban distribution of goods in the multi modal chain between ports, airport and hinterland
  - Measure 2.4.3.1: Improve the management and regulation of freight transport and urban logistics;
  - Measure 2.4.3.2: Set up a national freight forum to improve urban logistics;
  - Measure 2.4.3.3: Establish freight routes from ports that utilise appropriate roads for their weight and dimensions
  - Measure 2.4.3.4: Improve Port-Port and Port-Airport connections for freight.

271. The development of intermodal transport hubs could result in significant positive effects in terms of resulting in a reduction in road traffic and associated emissions.

272. Other measures involve investment in communication with operators, improving apps providing real-time data to passengers and investing in soft measures to explore improvement in logistics and urban distribution that should ultimately reduce traffic on the road and associated emissions.

#### *7.4.3.1 Conclusions on the Assessment of the Operational Objectives under Intermodal Transport against the SEA Objectives*

273. The measures envisaged as described above seek to make improvements in intermodal transport that ultimately should reduce traffic on the road. However, as identified throughout, the monitoring of the targets contained in Chapter 7 of the Master Plan will be important to assess the success of implementation.

274. In developing ferry links interventions in the marine and coastal environment could result in significant negative effects in particular during construction on marine habitats, water quality, and cultural heritage. Project level impact assessment will be

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necessary to identify, assess and describe potential mitigation of any potential negative significant impacts.

275. Since the Master Plan should cumulatively be aiming to reach EU targets with respect to a reduction in transport related emissions and investment in renewable energy, it is recommended that the operational objectives and the targets contained in the Master Plan are monitored closely for their implementation.
276. The impacts that will be accrued through the implementation of the intermodal transport objectives and measures are likely to be realised locally so transboundary impacts are unlikely.

#### 7.4.4 Internal Maritime Operational Objectives

277. The internal maritime objective likely to have a significant environmental effect is:
- 2.5.4: Removal of bottlenecks at TEN-T comprehensive ports.
278. This objective is assessed in **Table 7.6**. The rest of the objectives (2.5.1, 2.5.2, and 2.5.3) are considered unlikely to result in significant environmental effects as described in the assessment below.

Table 7.6: Transport Master Plan operational objective assessment: internal maritime

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Operational Objective 2.5.4: Removal of bottlenecks at TEN-T comprehensive ports</b>					
<b>Measures</b>					
Measure 2.5.4.1: Improve Mgarr and Ċirkewwa breakwater systems					
Measure 2.5.4.2: Improve Ċirkewwa South Quay					
Measure 2.5.4.3: Improve quays and consider expansion of the Port of Mgarr					
Measure 2.5.4.4: Development of the landing places for the ferry service (including freight and high speed ferry) to/from Gozo					
Measure 2.5.4.5: Re-introduction of an express ferry link between Malta and Gozo					
Measure 2.5.4.6: Consider measures to improve wave climate in the Port of Marsamxetto					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	The proposed measures include hard infrastructure mainly in ports but also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	P --- D LT	Although the Master Plan does not provide the details of the specific infrastructure works in the various ports, impacts on biodiversity and habitats including on marine Natura 2000 sites is likely given that in Mgarr and Ċirkewwa important benthic habitats and species exist (see <b>Chapter 4</b> ). The measures to improve wave climate in Marsamxetto could also affect the marine environment – the potential for an enhanced breakwater system to improve the wave climate at Marsamxett is mentioned under Measure 2.4.2.2. Circulation issues in the bay would also then need to be considered in terms of potential changes to water quality and subsequent changes to habitats.	<p>Close consultation with the Environment &amp; Resources Authority when undertaking infrastructure upgrade is considered important to flag environmental issues early in the process.</p> <p>Alternatives need to be considered as well as studies on hydromorphology, wave climate, etc to assess the potential impact of interventions on the natural and physical marine environment.</p>
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	The proposed measures include hard infrastructure mainly in ports but also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	P + D LT	The fast ferry service is likely to contribute towards modal shift through providing more sustainable transport options and improving accessibility to Gozo.	The project feasibility should include quantifying the effect of the fast ferry service on modal shift and the consequent reduction in emissions from reduced car use.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	The proposed measures include hard infrastructure mainly in ports but also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	P --- to - D LT	Although rainwater harvesting is unlikely to be affected by this operational objective, the marine environment is likely to be negatively affected through the	Close consultation with the Environment & Resources Authority when undertaking infrastructure upgrade is considered important to flag environmental issues early in the

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To maintain or improve rainwater harvesting capacity</li> </ul>				building of infrastructure in the sea. Maintenance of quays could result in increased turbidity and new physical interventions in the ports could affect seawater quality.	process.  Alternatives need to be considered as well as studies on hydromorphology, wave climate, etc to assess the potential impact of interventions on the natural and physical marine environment.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	The proposed measures include hard infrastructure mainly in ports but also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	P ? D LT	While the operational objective does not directly affect these SEA objectives, the provision of a fast ferry link to Gozo could reduce road transport if the number of passengers travelling to Gozo from Ċirkewwa is reduced. However, the impact is uncertain at this stage because the Master Plan does not describe the expected outcome of this measure in terms of emissions.	Project feasibility should consider GHG emissions savings from the implementation of the fast ferry.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	The proposed measures include hard infrastructure mainly in ports but also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	0	It is unlikely that soil would be affected as proposals are mainly coastal or within the marine environment.	None.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	The proposed measures include hard infrastructure mainly in ports but also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	P ++ D LT	The operational objective contributes directly to the SEA objectives to improve efficiency of transport networks and physical infrastructure standards.	Mitigation as described above.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	The proposed measures include hard infrastructure mainly in ports but also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	P - to --- D LT	The measures that affect Valletta are likely to have cultural heritage impacts due to the high cultural heritage value of Valletta. Undiscovered artefacts could be unearthed during any of the proposed works.	Early consultation with the Superintendence of Cultural Heritage for any projects in and around Valletta in view as Valletta's status as a Word Heritage Site.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	The proposed measures include hard infrastructure mainly in ports but	P 0/- to ---	Areas of high landscape value such as those in Valletta could be affected by any	As above.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
character and scenic value		also in the marine environment at Mgarr, Ċirkewwa, and Valletta.	D LT	interventions in the ports of Valletta and the surrounding marine environment.	

279. In addition to the operational objectives assessed above, there are other operational objectives (and accompanying measures) that are included in the Master Plan. These are summarised hereunder:

- Operational objective 2.5.1: ensure developments in ports are backed up by long-term planning to support long term mobility patterns safety and security;
- Operational objective 2.5.2: to improve operations and enforcement so that internal maritime transport is properly regulated and monitored; and
- Operational objective 2.5.3: to ensure users comply with conditions established for public accessible maritime facilities as specified in contracts for use of these infrastructures.

280. **Operational objective 2.5.1** is to ensure developments in ports are backed up by long-term planning to support long term mobility patterns safety and security through the implementation of four measures: to study the feasibility of the Malta – Gozo link, to improve data management for internal maritime transport, to introduce weather stations and to study the potential for using port areas for internal transport. Since the measures are mainly focused on studies and /or formulation of Master Plans, they could cumulatively potentially contribute to a better maritime service. The Malta – Gozo link has the potential to affect a significant number of protected areas both terrestrial and marine. The feasibility study should quantify both the environmental cost and the economic impact of affecting such sites including Comino. An alternatives assessment will be key in this regard. Cumulative impacts would also need to be assessed. Similarly, the creation of a Master Plan for the secondary ports such as Marsaxmett to determine the technical feasibility of utilising the available space for transport and/or other uses such as tourism will require in depth studies that would take into account environmental considerations as well as alternatives assessment.

281. **Operational objective 2.5.2** is to improve operations and enforcement so that internal maritime transport is properly regulated and monitored. Measures relate to systems and technology to improve vessel traffic management and security. The effect on the SEA objectives is neutral.

282. **Operational objective 2.5.3** it to ensure users comply with conditions established for public accessible maritime facilities as specified in contracts for use of these infrastructures. The two measures that implement this objective have a neutral effect on the SEA objectives.

#### 7.4.4.1 *Conclusions on the Assessment of the Operational Objectives under internal maritime transport against the SEA Objectives*

283. The internal maritime transport objectives focus on infrastructure requirements in the ports of Mgarr and Ċirkewwa and the addition of ferry landing places. Interventions in Marsamxetto are also considered. Given that the Master Plan

considers different interventions in Valletta to assist in modal shift, careful consideration must be given to cultural heritage and landscape issues in the provision of infrastructure. Projects in environmentally sensitive areas need to include environmental considerations in their feasibility studies.

284. The impacts that will be accrued through the implementation of the internal maritime transport objectives and measures are likely to be realised locally so transboundary impacts are unlikely.

#### 7.4.5 External Maritime Operational Objectives

285. The external maritime objectives likely to have significant environmental effects are:

- 2.6.3: Removal of bottlenecks in the TEN-T core Port of Valletta; and
- 2.6.4: Removal of bottlenecks in the TEN-T core Port of Marsaxlokk.

286. These objectives are assessed in **Table 7.7**. The rest of the objectives (2.6.1, 2.2.2, 2.6.5, and 2.6.6, 2.6.7) are qualitatively assessed following the table.

Table 7.7: Transport Master Plan operational objective assessment: external maritime

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Operational Objective 2.6.3: Removal of bottlenecks in the TEN-T core Port of Valletta</b>					
<b>Measures</b>					
Measure 2.6.3.1: Deep Water Quay Phase II					
Measure 2.6.3.2: Improvement in harbour wave climate					
Measure 2.6.3.3: New Cargo Infrastructure in the port of Valletta (Phase I)					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	The operational objective envisages improvement to Deep Water Quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructure and possibly adding new infrastructure, and to develop a new quay and cargo terminal area between Laboratory Wharf and Fuel Wharf.	P - D LT	This operational objective does not contribute to the SEA objective. On the contrary interventions in the marine environment are likely to affect marine species and habitats. Indirect impacts could also be accrued if the wave climate within the port changes as a result of the implementation of the measures. Water Framework Directive and Marine Strategy Framework Directive requirements including the ecological status of coastal waters could be affected and would need to be considered.	The affect on the ecological and environmental status need to be considered and monitored closely.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	The operational objective envisages improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.	P +/- D LT	The only SEA objective that will be met by this operational objective is the potential improvement in accessibility and transport links to services, facilities and opportunities through upgraded infrastructure. Noise pollution from construction and increased traffic in the port is likely. If the additional cargo infrastructure will attract more containers and transport vehicles to the port this would have adverse effects on congestion and air quality.	
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	The operational objective envisages improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.	P - D LT	Marine works are likely to adversely affect seawater quality.	Wave climate interventions would also need to consider circulation within the port. Any interventions would require mathematical and / or physical modelling of the whole port prior to implementation.
<ul style="list-style-type: none"> <li>To maintain or</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	The operational objective envisages	P	If the additional cargo infrastructure will	

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
improve air quality		improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.	- D LT	attract more containers and transport vehicles to the port this would have adverse effects on congestion and air quality.	
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	The operational objective envisages improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.	P - D LT	If the additional cargo infrastructure will attract more containers and transport vehicles to the port this would have adverse effects on congestion and air quality.	
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	The operational objective envisages improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.	0	Marine works are likely to adversely affect soil.	None.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	The operational objective envisages improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.	P + D LT	The operational objective is likely to positively affect the SEA objective to improve efficiency of transport networks and physical infrastructure standards.	None.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	The operational objective envisages improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.	P - D LT	Considering the cultural heritage status of Valletta as well as the possibility of finding artefacts in the marine environment, it is likely that marine infrastructure works could have an impact of these SEA objectives. Impacts are likely to be significant at project level.	Monitoring of works during project implementation.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<p>Areas as relevant</p> <ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	<p>The operational objective envisages improvement to deep water quay to increase freight capacity in the port, to improve wave climate by upgrading existing infrastructures and possibly adding new ones, and to develop a new quay and cargo terminal area between Laboratory and Fuel wharves.</p>	P - D LT	<p>Landscape impacts would be relevant especially noting the landscape protection of bastions in the Grand Harbour.</p>	<p>Siting of infrastructure would need to consider landscape impacts.</p>
<p><b>Operational objective 2.6.4:</b> Removal of bottlenecks in the TEN-T core port of Marsaxlokk</p> <p><b>Measures:</b></p> <ul style="list-style-type: none"> <li>Upgrade of the breakwater system</li> <li>Terminal 2 squaring off of north-west side</li> <li>Procurement of 2 super post panmax cranes</li> <li>Dredging of all mainline berths to 20m</li> <li>Investment in IT systems</li> <li>Development of engineering facilities</li> <li>Service fuel station</li> <li>Upgrade of south road access to Freeport</li> <li>Oil terminal quay development</li> <li>Petroleum product discharge point replacement</li> <li>Assessment of MFT master plan – site expansion</li> </ul>					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	<p>With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.</p>	P - to --- D LT	<p>Although the Malta Freeport area is committed as an industrial area, some of the proposed interventions in the marine environment as well as on land are likely to have impacts on biodiversity. To the south and southeast of the Freeport the coastal area is designated as a Special Area of Conservation, a Special Protected Area, and an Area of Ecological importance. Proposed developments in this area including oil terminal quay development would need to carefully consider such designations.</p> <p>Additionally dredging the berthlines to 20 metres could potentially have biodiversity impacts. It is unclear whether dredging of berthlines would lead to additional dredging of the entire area to accommodate the larger vessels. Disposal of dredging material is also a concern.</p>	<p>Early consultation with the Environment &amp; Resources Authority on any marine and terrestrial works to identify potential impacts as well as requirements. Careful siting of additional infrastructure.</p> <p>Necessarily, interventions will require assessments including cumulative assessment of projects that would required further down the line such as dredging of the entire area.</p>
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> </ul>	<p>With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development</p>	P --- D LT	<p>The Malta Freeport Terminal is located very close to the Birzebbugia residential area. Noise is a major concern for residents in the area as the Freeport operates continuously throughout the year. The proposed infrastructure works are targeted at increasing the capacity of the Freeport, and therefore noise levels are likely to increase.</p>	<p>The Master Plan should contain specific mitigation measures that address noise impacts of the proposed interventions.</p> <p>Detailed assessments of the proposed infrastructure on the nearest sensitive receptors are required.</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<p>levels of health</p> <ul style="list-style-type: none"> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	of the oil terminal quay and road upgrading. None of the measures have an environmental component.		<p>Potential site expansion in the area close to the residents would be of concern in this regard.</p> <p>The construction of a fuel service station would likely to have some air quality impacts, but its location away from residential sensitive receptors would mitigate such impacts.</p>	Consultation with local stakeholders is required when considering potential expansion of the Freeport outside its current boundary.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.	P --- D LT	Since the proposed infrastructure works are within the marine environment significant negative impacts are expected from projects such as dredging. As mentioned, although the Master Plan targets dredging of berth lines this may lead to additional dredging requirements in the whole area to accommodate larger ships.	<p>Detailed studies on the marine environment during the planning process.</p> <p>Assessment of cumulative impacts of dredging proposals at planning stage.</p>
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.	P - D LT	Air quality impacts are likely to result as a result in the increase in activity at the Freeport. The construction of a fuel filling station could also affect air quality.	Mitigation measures for emissions when purchasing equipment such as cranes and in the construction of the fuel filling station are required.
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.	P - D LT	Climate change considerations are not addressed in this operational objective. Emissions are likely to result as a result in the increase in activity at the Freeport.	The Master Plan for the area should consider climate change.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk	P - D LT	Construction of new facilities could negatively affect soil where this is present.	None.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
		breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.			
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.	0	Most of the SEA objectives are not relevant to this operational objective however the measure to upgrade the south road access to the Freeport has a slight impact on the SEA objective to improve physical infrastructure standards. The impact is not significant.	The Master Plan for the area should consider green infrastructure.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.	P - to --- D LT	Given that some of the proposed projects are within the footprint of committed industrial uses, cultural heritage impacts are not expected to be significant. However the proposed expansion of the Freeport as well as oil terminal quay development could result in cultural heritage impacts.	Consideration of cultural heritage impacts during development of new infrastructure. Careful monitoring during dredging.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	With the exception of investment in IT systems and assessment of the MFT master plan, the measures envisaged under this operational objective are mainly development of infrastructure including a fuelling station, upgrading of the Marsaxlokk breakwater, dredging, development of the oil terminal quay and road upgrading. None of the measures have an environmental component.	P - D LT	Given that some of the proposed projects are within the footprint of committed industrial uses, landscape impacts are expected not be significant. However the proposed expansion of the Freeport as well as oil terminal quay development could result in landscape impacts.	Consideration of landscape impacts during development of new infrastructure.

287. In addition to the operational objectives assessed above, there are other operational objectives (and accompanying measures) that are included in the Master Plan. These are summarised hereunder:
- Operational objective 2.6.1: ensure that contracted parties comply with conditions established for the operation of maritime facilities and as specified in contracts for use of these infrastructures;
  - Operational objective 2.6.2: ensure development of ports and contiguous areas are backed up by long-term planning to support sustainable growth in long term mobility patterns, resilience, safety and security;
  - Operational objective 2.6.5: to ensure that equipment, tools and human resources for the use, monitoring and enforcement of maritime areas are updated to improve safety and security;
  - Operational objective 2.6.6: reduce the environmental impact of ports; and
  - Operational objective 2.6.7: provide alternative fuel infrastructure to promote efficiency and competitiveness.
288. **Operational objective 2.6.1** is to ensure that contracted parties comply with conditions established for the operation of maritime facilities and as specified in contracts for use of these infrastructures. This operational objective has a neutral effect on the SEA objectives.
289. **Operational objective 2.6.2** is to ensure development of ports and contiguous areas are backed up by long-term planning to support sustainable growth in long term mobility patterns, resilience, safety and security. It proposes 2 measures to develop 10-year master plans designating further land uses for the TEN-T core ports of Valletta and Marsaxlokk. The development of master plans for these two ports is considered positive from an urban planning and environmental perspective as this will assist in assessing impacts at a holistic level. It is expected that the Planning Authority would take a lead role in the formulation of such master plans, which would also be subject to SEAs. The link between this operational objective and operational objective 2.6.4 is unclear as the latter objective appears to pre-empt the outcome of the master plan for Marsaxlokk. It is important that the master plans consider transport holistically and not just focus on external maritime transport as several other operational objectives are focussed in the Valletta area.
290. **Operational objective 2.6.5** is to ensure that equipment, tools and human resources for the use, monitoring and enforcement of maritime areas are updated to improve safety and security. As stated in the objective measures are related to funding, and updating and upgrading equipment. The operational objective has a neutral effect on the SEA objectives.
291. **Operational objective 2.6.6** is to reduce the environmental impact of ports on the nearby urban area through checking that ports and infrastructure meet

environmental conditions, implement new pollution mitigation measures and support the use of less polluting equipment. Monitoring of impacts in ports is suggested, however what monitoring will be carried out is unclear. With regards to the implementation of mitigation measures, the Master Plan explains that these measures basically involve the implementation of shore-supply infrastructures to enable ships that are alongside to connect to the electrical network, power down their auxiliary engines and thus reduce air, sea and noise pollution that would otherwise be generated. The land use requirements of such facilities need to be carefully considered. The Master Plan makes reference to fiscal incentives and disincentives to support change to newer equipment, however no further details are given. Although positive, these incentives are unlikely to reap significant environmental benefits.

292. **Operational objective 2.6.7** is to provide alternative fuel infrastructure to promote efficiency and competitiveness by developing an LNG deployment action plan for the TEN-T core ports, develop a shore action plan for the TEN-T ports and replace obsolete bunker discharge infrastructure. The Master Plan states that the Has-Saptan dolphins in Marsaxlokk need replacement. This replacement is likely to have a positive effect on the marine environment as more modern infrastructure is less likely to result in spills or other accidents at sea especially during the transfer of fuels.

#### 7.4.5.1 *Conclusions on the Assessment of the Operational Objectives under external maritime transport against the SEA Objectives*

293. The external maritime transport objectives focus on infrastructure requirements in the ports of Marsaxlokk and Valletta. It is important the projects contemplated under this Master Plan do not prejudice the outcomes of the master plans proposed for these two ports in this same Master Plan.
294. Few of the operational objectives seek to address environmental issues. In particular, the measures related to development in the Ports and expansion of current operations should consider impacts on nearby sensitive receptors.
295. The impacts that will be accrued through the implementation of the external maritime transport objectives and measures are likely to be realised locally so transboundary impacts are unlikely.

#### 7.4.6 **Aviation Operational Objectives**

296. The aviation operational objectives that are likely to have significant environmental effects are:
- 2.7.2: Removal of bottlenecks at TEN-T comprehensive ports; and
  - 2.7.7: Improve air connectivity for commercial passengers, freight and business travellers.
297. This objective is assessed in **Table 7.8**. The rest of the objectives (2.7.1, 2.7.3, 2.7.4,

2.7.5, 2.7.6) are assessed following the table.



Table 7.8: Transport Master Plan operational objective assessment: aviation

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Operational Objective 2.7.2: Remove bottlenecks at the TEN-T Core Airport</b>					
<b>Measures</b>					
<ul style="list-style-type: none"> <li>Carry out feasibility studies for the development of the parallel taxiway to Runway 31/13 to ensure continued sustainability of the main runway and appropriate safety access to the distant points of the airport</li> <li>Improve the manoeuvring areas for the runways where excessive runway occupancy causes bottlenecks in airside traffic and aircraft conflicts</li> <li>Maintain the shorter runway 23/05 in full operational standard to ensure airport resilience and ability to maintain the primary runways</li> <li>Upgrade of the aeronautical infrastructure and technology to enable runway 23/05 up to instrument landing system standard (ILS) and RNAV capability</li> <li>Enhancing the Air Navigation Services facilities.</li> </ul>					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	<p>The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.</p>	<p>P 0/- D LT</p>	<p>Biodiversity impacts are unlikely because the proposed developments are within the air port confines. The airport is designated as a bird sanctuary.</p> <p>The Dingli Primary Radar is located in a Special Area of Conservation (Natura 2000 site).</p>	<p>In view of airport's designation consultation with the Environment &amp; Resources Authority should be undertaken. Any works in Dingli should also be done in consultation with the ERA in view of the protected nature of the area.</p>
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	<p>The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.</p>	<p>P 0/+ D LT</p>	<p>This operational objective needs to be seen in junction with operational objective 2.7.5 where an engine testing bay is provided. Currently engine testing is done on the runway with consequent impacts on the infrastructure as well as on noise. A designed engine bay would mitigate these impacts as described below.</p> <p>The rest of the measures are aimed at upgrading the infrastructure of the airport. While the Master Plan highlights the fact that the proposed works wont impact capacity, they are likely to improve the usability of the runways / taxiways.</p>	<p>None.</p>
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	<p>The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control</p>	<p>0</p>	<p>The Operational Objective is unlikely to affect sea or groundwater.</p>	<p>None.</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
		(ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.			
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	<p>The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.</p>	0	The proposed measures are not directly related to air quality and emissions. The proposed measures are also unlikely to increase capacity but are intended to ensure airport resilience.	
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	<p>The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.</p>	0	The proposed measures are not directly related to climate change and emissions. The proposed measures are also unlikely to increase capacity but are intended to ensure airport resilience.	
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	<p>The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.</p>	0	It is unlikely that soil would be affected as measures mainly contemplate maintenance work.	
<ul style="list-style-type: none"> <li>To maintain and</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> </ul>	<p>The first measure is a detailed</p>	P	The operational objective aims at improving	Green infrastructure proposals should be

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
include green infrastructure as relevant <ul style="list-style-type: none"> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Affect sustainable transport modes?</li> </ul>	feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.	+ D LT	airport infrastructure to ensure resilience and is therefore expected to improve the efficiency of transport networks.	included when considering new infrastructure.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.	0	Since works are envisaged within the airport confines no cultural heritage impacts are expected.	Monitoring of works if required by the Superintendence of Cultural Heritage.
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	The first measure is a detailed feasibility of the development of the taxiway. Maintenance works are envisaged on the taxi ways and conversion of a taxiway to instrument landing standard. The final measure involves construction of an Air Traffic Control (ATC) tower close to the current one such that the controllers can have visuals of all parts of the airport. The measure also includes the replacement of the Dingli Primary Radar and upgrading of other similar equipment.	0	Since works are envisaged within the airport confines no landscape impacts are expected.	The visual impact of the ATC tower would need to be considered.

**Operational Objective 2.7.7:** Improve air connectivity for commercial passengers, freight and business travellers

**Measures**

- Establish new bilateral agreements with non-EU countries
- Improve the transparency and fairness of the allocation of airport slots
- Encourage route development to attract new aviation services
- Develop a policy framework that enables the domestic use of helicopters
- Reserve dedicated areas (like aircraft parking and terminal buildings) to support general aviation

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>Improve airport traffic circulation to support business aviation</li> <li>Studies to consider the development of a terminal for business and general aviation.</li> </ul>					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.	P - D LT	The measures are targeted to attract more business to the airport through a potential increase in routes as well as carriers. Additional supporting infrastructure is also being considered. Increased traffic could have an impact on wildlife (see Operational Objective 2.7.4). Additional facilities could have a potential impact on biodiversity, depending on their location.	Consideration of biodiversity issues in the development of studies concerning additional infrastructure. Such studies to consider the designation of the airport as a bird sanctuary.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.	P -- D LT	<p>The measures are likely to negatively affect air quality because of the likelihood that air traffic will increase. Although the Master Plan does not include specific mitigation measures to address emissions from aircraft as these are within the scope of the Emissions Trading Scheme, improvements proposed to taxiways including designated parking areas could reduce waiting time and thus could reduce emissions on the ground. Increased air traffic would also likely attract more people to the airport, thus potentially increasing road transport.</p> <p>While the measures are targeted at increasing air traffic and to provide supporting infrastructure, the provision of information to policy makers is also intended to improve integration of the transport by air with other modes such as public transport.</p>	Coordination between airport transport and public transport should be highlighted.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.	0	The Operational Objective is unlikely to affect sea or groundwater.	New facilities should including rainwater harvesting infrastructure.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> <li>To ensure resilience to climate change by minimising the risk of</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> </ul>	The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the	P -- D LT	The measures are likely to negatively affect air quality and GHG emissions because of the likelihood that air traffic will increase. Although the Master Plan does not include specific mitigation measures to address	Coordination between airport transport and public transport should be highlighted to ensure that increased air traffic is met by the provision of public transport.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<p>flooding and adapting to the predicted changes in weather conditions</p> <ul style="list-style-type: none"> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	<p>airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.</p>		<p>emissions from aircraft as these are within the scope of the Emissions Trading Scheme, improvements proposed to taxiways including designated parking areas could reduce waiting time and thus could reduce emissions on the ground. Increased air traffic would also likely attract more people to the airport, thus potentially increasing road transport.</p> <p>While the measures are targeted at increasing air traffic and to provide supporting infrastructure, the provision of information to policy makers is also intended to improve integration of the transport by air with other modes such as public transport.</p>	
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	<p>The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.</p>	0	<p>It is unlikely that soil would be affected as only one measure is contemplated involving potential use of land.</p>	<p>Soil should be considered when studying location of potential new infrastructure.</p>
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	<p>The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.</p>	0	<p>The operational objective aims at increasing air travel and therefore does not directly affect the SEA objectives.</p>	<p>Green infrastructure proposals should be included when considering new infrastructure.</p>
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	<p>The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.</p>	0	<p>The operational objective aims at increasing air travel and therefore does not directly affect the SEA objectives.</p>	<p>Cultural heritage issues should be considered when studying location of potential new infrastructure.</p>

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
quality/amenity of Urban Conservation Areas as relevant					
<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	<p>The measures are targeted to increase the carriers operating to /from Malta and the development of routes. There are measures to study potential dedicated areas in the airport to improve the premium user experience and to determine the feasibility of a general aviation and business jet terminal and its ideal location within the airport area.</p>	0	<p>The operational objective aims at increasing air travel and therefore does not directly affect the SEA objective.</p>	<p>Landscape issues should be considered when studying location of potential new infrastructure.</p>

298. **Operational objective 2.7.1** is to safeguard space within the airport and its contiguous area to ensure developments support long term sustainable growth in the aviation sector. The objective comprises two measures: (1) to develop an airport master plan that prioritises developments and improvements airside to support long term air travel growth expected and improves the safety and security of this travel mode; and (2) to ensure that the airport and its surrounding areas are safeguarded for aeronautical developments. The second measure builds on the first. Both are considered soft measures however their implementation could lead to environmental impacts especially if the capacity of the airport is set to increase, as described in the Transport Master Plan. The master plan for the airport would need to ensure that all local stakeholders are considered and that air quality, climate change, and noise impacts are carefully considered. An Environmental Assessment should also be carried out, which would address cumulative impacts of the proposals in the master plan. Conflicting land uses would also have to be addressed.
299. **Operational objective 2.7.3** is to improve the management of operations infrastructures and equipment by taking advantage of new technologies by developing asset management systems and databases to allow effective inspection and management of infrastructures for the airfield and terminal and services. This operational objective has a neutral effect on the SEA objectives as it is a soft measure to better manage existing systems.
300. **Operational objective 2.7.4** it to maintain high levels of safety and security of aircraft in the Malta airspace and the airport through the implementation of seven measures. These are to (i) To keep the safety programme updated; (2) To improve wildlife control systems in the airport; (3) To improve security of the remote aprons and parks on the airfield to a level relevant to their long term use; (4) To improve airfield safety by updating aerodrome ground traffic management; (5) To improve aviation safety by mapping obstacle clearances and maintaining this obstacle clearance mapping and regulation to EU and international standards on the approaches of the airport; (6) To update service contracts of aeronautical importance; and (7) To integrate new aviation technologies while safeguarding the safety of aviation services. All these measures address safety of aviation issues and therefore meet the SEA objective related to improve accessibility and transport links to services, facilities and opportunities. In terms of environmental impacts the wildlife control system needs to be discussed with the Environment & Resources Authority especially with regards to protected bird species.
301. **Operational Objective 2.7.5** is to mitigate the impact of the airport on the surrounding environment through ensuring that airport infrastructures and operations continue to comply with the conditions established in their planning and operational conditions; supporting the use of less polluting/noisy equipment; implementing new (noise) mitigation measures; and updating obsolete refuelling infrastructure. The operational objective is expected to contribute positively to the SEA objectives related to noise, groundwater and air quality in particular with regard to the implementation of noise mitigation measures and replacement of obsolete

refuelling infrastructure. The measure on noise mitigation mentions the construction of an engine testing bay (an open structure which would allow for engine testing). This would ensure that the structure is engineered to mitigate noise impacts; it would also remove the current practice of allowing engine testing to take place on the runway – a practice that has negative impacts on the infrastructure as well as noise impacts.

- 302. **Objective 2.7.6** is to introduce contract clauses requiring concessionaires and contractors to provide regular information to the authorities. It only includes one measure that aims to enable better integration of the transport by air with other modes such as public transport
- 303. **Objective 2.7.8** is to improve the freight connectivity between the airport and port by coordinating with different authorities to simplify the process for transit cargo between the airport and ports and considering fast routes between the cargo areas in the airport and ports. The operational objective is targeted at a very specific sector and only has a neutral effect on the SEA objectives.
- 304. **Objective 2.7.9** is to provide alternative fuel infrastructure to promote efficiency and competitiveness through the development of action plans for the TEN-T Core Airport for current and alternative fuels and for ground supply. This objective requires the preparation of action plans. At this stage the SEA objectives are not affected, however the Action Plans should take into account environmental objectives during their development. Any environmental assessments required should be identified early on in the process for formulation of the plans.

**7.4.6.1** *Conclusions on the Assessment of the Operational Objectives under aviation against the SEA Objectives*

- 305. The operational objectives mainly address infrastructure and technological requirements to allow for better efficiency at the Malta international Airport. Measures are aimed to increase air traffic and allow for infrastructure to ensure safe operation. Few of the measures directly address environmental issues; noise mitigation is addressed through an operational objective.
- 306. The impacts that will be accrued through the implementation of the aviation measures are addressed specifically at local infrastructure and interventions so not transboundary impacts are envisaged.

**7.4.7** **Common Objectives to all modes**

- 307. A number of objectives apply horizontally throughout all sectors addressed in the Master Plan.
- 308. The common objective considered to be of potential significance from an environmental approach is:
  - 2.8.2: Climate adaptation and mitigation.

309. This objective is assessed in **Table 7.9**. The rest of the objectives (2.8.1, 2.8.3, and 2.8.4) are addressed after the table.



Table 7.9: Transport Master Plan operational objective assessment: common objectives

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<b>Operational Objective 2.8.2: Climate change adaptation and mitigation</b>					
<b>Measures</b>					
Measure 2.8.2.1: Establish the share of Greenhouse Gases from transport that would fairly contribute to climate change targets and monitor progress of this Master Plan in line with these targets					
Measure 2.8.2.2: Assess the impact of climate change and sea level rise on transport infrastructure					
Measure 2.8.2.3: Incorporate climate change considerations at the planning and design stage to reduce retro-fitting costs					
<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites and national SACs</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	This operational objective includes a measure to establish GHG emissions from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.	0	The measures proposed are unlikely to result in significant effects as no concrete measures to reduce GHG emissions are proposed in this operational objective.	None.
<ul style="list-style-type: none"> <li>To reduce noise/vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being</li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	This operational objective includes a measure to establish GHG emissions from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.	0	The measures proposed are unlikely to result in significant effects. The operational objective should contain measures that are specifically designed to address climate change mitigation and adaptation. As they stand the measures proposed relate to data collation and impact assessment.	The operational objective should contain measures that are specifically designed to address climate change mitigation and adaptation.
<ul style="list-style-type: none"> <li>To maintain or improve the quantity and quality of ground and sea water</li> <li>To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	This operational objective includes a measure to establish GHG emissions from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.	0	The measures proposed are unlikely to result in significant effects.	Objectives, which link to other operational objectives in the Master Plan, to address rainwater harvesting capacity, should be considered as a way to address climate change adaptation.
<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	This operational objective includes a measure to establish GHG emissions	P 0	It is considered that Measure 2.8.2.1 is not a significant measure. The Master Plan	The transport sector significantly contributes to GHG emissions and

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect / reduce transport related CO<sub>2</sub> emissions</li> </ul>	from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.	D LT	identifies the contribution of the transport sector to GHG emissions, quoting the 2011 value. More recent data, from 2014, reveals that the transport sector contributes 44.7% of GHG emissions in the Maltese Islands. The operational objective as devised in terms of measures identified does not provide any detail as to how the Master Plan will address these emissions. There are some objectives that were devised under other operational objectives in the Master Plan that the assessment identified may result in a reduction in transport related CO <sub>2</sub> emissions. However, as identified through the assessment, no targets have been established in the context of national obligations.	Malta is obliged to meet EU targets in reducing emissions in this regard. The Master Plan targets must therefore be monitored and presented in the context of national obligations under EU regulations.
<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	This operational objective includes a measure to establish GHG emissions from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.	0	The measures proposed are unlikely to result in significant effects because the operational objective does not address soil issues.	None.
<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	This operational objective includes a measure to establish GHG emissions from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.	P 0 D LT	This objective missed the opportunity to include specific measures for the development of green infrastructure to adapt and mitigate climate change.	Measures for the specific inclusion of green infrastructure should be included as part of this operational objective.
<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	This operational objective includes a measure to establish GHG emissions from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.	0	The measures proposed are unlikely to result in significant effects.	None.

SEA Objective	Assessment Criteria: How will this Priority Axis...	Comment	Significance		Mitigation
			Symbols	Summary description	
<p>Areas as relevant</p> <ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	<p>This operational objective includes a measure to establish GHG emissions from transport and the need to monitor Master Plan progress and effect on GHG emissions in line with climate change targets. It also seeks to study the impact on sea level rise on transport infrastructure and identifies the need to incorporate climate change considerations at the planning and design stage.</p>	0	<p>The measures proposed are unlikely to result in significant effects.</p>	None.

310. When carrying out the scoping exercise on the common operational objectives, the following were identified as unlikely to result in large significant effects on an individual basis. These operational objectives (and measures for implementation) include:
- 2.8.1: Sustainable financing
    - Measure 2.8.1.1: Sources of financing that leverage potential revenue from transport infrastructures and operations;
    - Measure 2.8.1.2: Create direct links between revenue generation from transport and transport investment;
  - 2.8.3: Research and innovation in transport
    - Measure 2.8.3.1: Improve links between government and transport research establishments to encourage research in areas of policy relevance;
    - Measure 2.8.3.2: Develop a framework that facilitates the testing and piloting of innovative technologies and new materials in the development of transport infrastructure;
    - Measure 2.8.3.3: Use of transport infrastructure for energy generation;
    - Measure 2.8.3.4: Develop research capabilities to exploit new data sources including 'big data';
    - Measure 2.8.3.5: Develop processes that facilitate the procurement of temporary measures and their assessment;
    - Measure 2.8.3.6: Develop TM in-house capability for data analytics to better support internal decision-making and information available to external stakeholders.
  - 2.8.4: Transport accident safety investigations
    - Measure 2.8.4.1: Further develop the transport accident investigation body to maintain appropriate resource levels as well as keeping it functionally, financially and legally distinct from the regulatory bodies.
311. The operational objective related to sourcing financing (2.8.1) is not within the scope of the environmental assessment. Objective 2.8.3 is related to research and seeks to pilot and test new materials, technologies and work methods in the development of transport infrastructure. A measure is included for use of transport infrastructure for energy generation, which could be in line with SEA objectives related to climatic factors and climate change, however, there is no detail within the Master Plan as to what will be investigated specifically and to what timeframe.

312. A measure to further develop the transport accident investigation body is included. This measure is indirectly in line with the SEA objective ‘to improve road safety’ and could, in the long term, result in positive effects.

#### 7.4.7.1 *Conclusions on the Assessment of the Common Operational Objectives against the SEA Objectives*

313. Given the importance of the transport sector with respect to national GHG emissions, it is considered that the implementation of the operational objective on climate adaptation and mitigation should be brought forward (to 2020) so that an assessment as to how the Master Plan overall is contributing to achieving EU targets in this regard can be made during implementation of the Master Plan.

### 7.5 Conclusion

314. The assessment of the various operational objectives and their implementing measures has shown that positive impacts are expected in terms of the important SEA objectives related to emissions to air and climate change. The provision of facilities and infrastructure and additional soft measures to support modal shift are viewed positively and are likely to contribute to improving air quality and reducing GHG emissions from the transport sector. The extent of the positive impact will depend on the implementation of the measures and the achievement of the 2025 targets contained in the Master Plan.
315. The provision of facilities for cyclists, pedestrians and public transport is also considered positive in terms of supporting modal shift as well as improving transport infrastructure.
316. Negative impacts are expected from the implementation of infrastructure at a local level and where proposals seek to increase traffic especially in the maritime and aviation sectors. In particular, those projects located in sensitive areas such as Mgarr and Ċirkewwa could have an effect on the marine Special Areas of Conservation and Special Protection Areas as relevant. Development in ports is also likely to negatively affect the close sensitive receptors. Interventions in Valletta and the Grand Harbour could result in potential impacts on cultural heritage and landscape.
317. In terms of the impact of the Strategy and Master Plan on the Natura 2000 network, the Appropriate Assessment considers that the main sites that could potentially be affected are
- Il-Bahar fil-Grigal ta’ Malta (SAC);
  - Il-Bahar tal-Lbic (SPA);
  - Rđumijiet ta’ Malta: Ir-Ramla tac-Cirkewwa sa il-Ponta ta’ Benghisa (SAC/SPA); and Wied Ħarq Ħamiam.

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318. The distribution of *Posidonia* within the Il-Bahar fil-Grigal ta' Malta SAC demonstrates that this priority habitat that is found both in and around Mgarr harbour as well as Cirkewwa. Any interventions that affect the integrity of the meadows through either direct obliteration of the habitat or through the halo effect whereby the meadows in the vicinity of interventions such as construction works suffer in terms of health and can even die off within a certain distance of the disturbance, would be considered to be major negative impact. Other impacts from interventions in these areas could affect other benthic habitats in the SAC. These potentially include increased turbidity and changes in water quality. The significance of effects would depend on the extent of works.
319. Increased activity at the port of Marsaxlokk could have an impact on the breeding seabirds ecology if noise levels and light pollution increase. In order to identify the extent of such an effect, baseline levels and predicted impacts need to be compared and the impact on the seabirds considered, in particular their ecology at the site throughout the year. Project level impact assessment should be carried out to identify the potential extent of the impact
320. The TMP proposes to replace the primary radar at Dingli. The radar is located in the vicinity of three Annex I habitats – 5330, 5430 and 9320. Interventions at this site could result in overspill effects that impact these habitats if appropriate mitigation is not implemented. The impacts are likely to be localised, however, and would potentially be minor to not significant in the context of the integrity of the entire SAC. Refer to the Appropriate Assessment (in the Appendix).
321. The proposed road interventions on Regional Road in St Andrew's will occur in the vicinity of the Wied Harq Hamiem SAC. Similar to the project at Kappara Junction, TM indicates that the interventions will be confined to the existing carriageway. Notwithstanding, potential impacts may arise during the construction phase that could result in impacts on the valley including impacts from overspill, dust generation, run-off from the construction site, noise and vibration. Operational impacts would be expected to be similar to those present in the baseline situation.
322. The Master Plan also identifies a list of projects to be undertaken as part of the upgrades necessary to the TEN-T network and as identified in Chapter 2 of the AA. Many of these identified projects will be implemented in future Master Plans as only four have been identified for implementation in this Master Plan. Potential impacts arising from future Master Plans will also require Strategic Environmental Assessment and Appropriate Assessment at strategic level as relevant. However, given that the list of projects was included in this Master Plan, this Appropriate Assessment identifies potential significant negative effects to be studied further at the appropriate time whereby it is also assumed that more detail will also be available. Of particular relevance from an Appropriate Assessment point of view are the consideration of a bypass to avoid Xemxija, and the Malta-Gozo fixed link.

Table 7.10: Summary of impacts

SEA Theme	Potential cumulative significant effects
Biodiversity, Flora and Fauna	<p>Potential Impacts on biodiversity, flora and fauna, as discussed above are likely to be somewhat negative when new infrastructure is envisaged both on land and in the marine environment. The SEA makes specific recommendations for interventions in sensitive areas such as the marine environment at Mgarr (Gozo), Ċirkewwa and Comino where protected habitats and species are found.</p> <p>While one of the Strategy objectives is to <i>preserve the natural habitats and biodiversity</i> this objective does not directly translate into any measures in the Master Plan.</p>
Human health	<p>The TMP is beneficial in terms of human health through measures that seek to reduce emissions through promotion of modal shift. Where noise mitigation is proposed in, for example, the aviation sector, these are also considered to contribute to human health. Negative noise impacts from proposed infrastructure such as interventions in the ports are anticipated. Improvements to road safety to reduce the number of accidents / injuries will also be accrued through the road transport operational objectives. Increased cycling and pedestrian facilities are also envisaged in the Master Plan road transport operational objectives. Public transport measures are also expected to improve public transport patronage and potentially reduce use of the private car with a consequent potential reduction in emissions.</p>
Emissions	<p>Emissions are targeted through several operational objectives that encourage modal shift and seek to provide infrastructure to support modal shift. The provision of pedestrian, cycling and public transport infrastructure through various measures will also positively affect emissions especially if this is coupled with a decline in car usage. The replacement of conventionally fuelled buses to electric buses will also reduce emissions. Increased air traffic (as a result of aviation measures) would be detrimental in terms of emissions, although improving waiting times on the ground could result in less lower emissions on the ground.</p>
Climate change	<p>Although there are no specific climate change mitigation or adaptation measures that specifically address a reduction in GHG emissions or proposed interventions for climate change adaptation, there are several operational objectives that target increase public transport patronage, improved facilities for cyclists and pedestrians in order to encourage modal shift. Other measures include reduction in the average age of vehicles, increase in car sharing and conversion of some conventionally fuelled buses. All are expected to contribute to reducing GHG emissions from the transport sector.</p>
Water	<p>Fresh water is only indirectly affected by the Master Plan. While there is only one measure targeting storm water infrastructure, the SEA recommends that rainwater harvesting and storm water management infrastructure are considered at a strategic level when implementing projects on the TEN-T network.</p>

SEA Theme	Potential cumulative significant effects
	<p>With regards to the marine environment, a number of physical interventions are envisaged both on the coast and potentially in the sea. Since the Master Plan focuses on the TEN-T network especially for ports, any projects that address intermodal objectives or internal and external maritime should be viewed holistically so that any studies required target all the infrastructure projects envisaged by the Master Plan.</p>
Soil	<p>The impact on soils is neutral to negative as the objectives do not directly affect soils. However, whenever infrastructure on land is proposed, the SEA recommends that soils are considered.</p>
Material Assets	<p>The impact on material assets is generally considered positive throughout the assessment primarily through the improvement of road space through the provision of facilities for pedestrians, cyclists and public transport. The SEA considers the sharing of road space an important component to attract modal shift away from the private car.</p>
Cultural heritage	<p>Cultural heritage impacts are only accrued when infrastructure projects are proposed especially in sensitive areas such as Valletta. The impacts are uncertain as artefacts may be unearthed when dredging in the marine environment or excavating on land. The planning of projects in and around the Grand Harbour and Valletta should be assessed holistically also in the context of the cultural landscape. . The potential reduction in emissions especially in congested areas could have indirect positive impacts on cultural heritage buildings and monuments.</p>
Landscape	<p>Landscape impacts are mainly expected when infrastructure projects are proposed especially in sensitive areas. Projects that are within close proximity to designated areas should be assessed holistically for their landscape impacts.</p>

## 8 Recommendations

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323. When considering the need for mitigation, a hierarchy of mitigation measures was considered:
- Avoiding the implementation of unsustainable actions;
  - Reducing the extent of unsustainable actions;
  - Remedying or compensating for any negative impacts by incorporating mitigation measures into the actions to prevent or minimise the impacts; and
  - Enhancing positive impacts.
324. Potential mitigation measures for each of the operational objectives and the measures are described in **Chapter 7**. During the finalisation of the Master Plan and the Strategy, following the issuance of the Environmental Report and the public consultation, these measures should be considered. These mitigation measures are discussed below.

### 8.1 Meeting targets to address national and international obligations

325. One of the key recommendations emerging from the SEA is the need to ensure that the operational objectives and corresponding measures work towards the implementation of targets in particular with respect to GHG emissions<sup>69</sup>. While the assessment notes that the Master Plan has the potential to yield positive environmental effects, the assessment is based on the implementation of all the proposed measures as described in the Master Plan which favours the Do-Something 2 Scenario. The targets described in Chapter 7 of the Master plan would need to be carefully monitored over the life time of the Master plan to ensure they are being met.

### 8.2 Siting of new infrastructure

326. Certain interventions in the Master Plan will require the construction of new facilities / infrastructure. Many of the proposed mitigation measures for those measures that require upgrading of existing infrastructure or provision of new infrastructure (both marine and on land) require the consideration of biodiversity, soil, cultural heritage and landscape issues. In particular, developments within Valletta and the Grand Harbour need to assess impacts of proposed projects cumulatively across operational objectives addressing different transport modes; for example, roads and internal and

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<sup>69</sup> By 2030, the goal for transport will be to reduce GHG emissions to around 20% below their 2008 level.

external maritime objectives, especially in the formulation of Master Plans for these areas. The need for the assessment of alternatives is also highlighted in the SEA as well as the importance of including environmental considerations in feasibility studies. Other sensitive areas such as the marine environment at Mgarr and Ċirkewwa should be carefully considered in view of the presence of protected habitats and species. Early consultation with competent authorities such as the Environment and Resources Authority and the Superintendence of Cultural Heritage has also been recommended for the implementation of infrastructure projects.

### 8.3 Specific recommendations

327. The Master Plan includes some measures that require the formulation of studies, master plans and action plans. While a Strategic Environmental Assessment has been carried out on the Transport Master Plan, this does not preclude other master plans to also be subject to SEA. Indeed it is a recommendation of the SEA that other studies are subject to the relevant assessments.
328. It should also be noted that other plans and programmes would need to also take into account the cumulative effects of the Transport Strategy and Master Plan.
329. All the measures that target reduction in the use of the private car and use of public transport, cycling and walking should be prioritised for implementation. Setting national targets for climate change should also be prioritised.
330. The SEA recommends that the implementation start date of the operational objective that aims to reduce the use of the private car is brought forward from 2030. It is further recommends that this operational objective is closely linked to addressing illegal parking and other incentives to discourage car use. Other tangible measures should be included under this objective to effectively reduce the role of the car in the urban hub.
331. In the measures related to development in the ports it is recommended that measures that address noise and light impacts from the current operations are considered in detail. Any expansion of facilities should address noise and other impacts that arise from port operation.
332. Throughout the assessment of the operational objectives, in particular in relation to provision of transport infrastructure, the SEA recommends that green infrastructure is horizontally integrated throughout the Master Plan in order to also help in achieving targets, mitigating effects and maximising use of ecosystem services. Development of new infrastructure, in particular, new roads, should ensure that during the design phase issues related to the urban heat island effect, stormwater management from hard services and an improved environment for pedestrians and cyclists are considered.

## 9 Monitoring Requirements

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### 9.1 Introduction

333. Monitoring the environmental performance of the NTS and TMP should make it possible to identify corrective actions and establish how well the NTS and TMP conform to SEA objectives during implementation.
334. The European Commission Guidance suggests that SEA monitoring activities and reporting can be integrated into the regular planning cycle, or may coincide with the regular revision of a plan. Other SEA guidance indicates that the existing monitoring arrangements of the plan and that undertaken for other plans can be used to obtain the required information.
335. Monitoring significant environmental effects resulting from the implementation of the Strategy is an important aspect of the SEA process.
336. The SEA objectives and indicators outlined in **Table 5.1** provide the most appropriate tools for monitoring significant environmental impacts that may arise from implementation of the NTS and TMP. It is recommended that the NTS and TMP should include a monitoring framework. SEA monitoring can be carried out as part of the NTS and TMP monitoring framework, where possible. It is likely, however, that SEA monitoring will utilise data collected for the purposes of monitoring the NTS and TMP, or other sectoral strategies as relevant, so as to avoid duplication of effort.
337. Difficulties associated with monitoring include data collection itself. In addition, it may be difficult to relate data directly to the implementation of the NTS and TMP, given that there are other factors that may be affecting that data. This could present difficulties when deciding on appropriate remedial action.

#### 9.1.1 Monitoring Plan

338. **Table 9.1** summarises the proposed monitoring plan of potential negative impacts identified in **Chapter 7**. The implementation of the Monitoring Plan is the responsibility of Transport Malta. The timing of monitoring would be prior to the preparation of the next Master Plan or in the mid-term (2020) depending when data becomes available. However, data collection should be enforced on a project by project basis, and data gathering should be throughout the implementation of the Master Plan. Where data is gathered by other entities (for example air quality), it is the responsibility of Transport Malta to obtain that data.
339. A number of positive impacts are expected from the NTS and TMP as identified in **Chapter 7** and it is recommended that these impacts are also monitored. **Table 9.1** proposes a monitoring plan for such impacts.

Table 9.1: Monitoring Plan

SEA Theme	Relevant Indicators (adapted from Table 5.1)
Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> <li>• Number of developments / interventions in protected areas</li> <li>• Number of developments / interventions in Natura 2000 sites and national SACs</li> <li>• Number of developments / interventions on greenfield sites / undeveloped land</li> <li>• Number of developments/interventions resulting in habitat fragmentation (from surveys undertaken as part of projects)</li> <li>• New or enhanced green infrastructure elements in urban areas</li> <li>• Quality of the marine environment in terms of biological and physico-chemical elements</li> </ul>
Human health	<ul style="list-style-type: none"> <li>• Emissions from the transport sector</li> <li>• % reduction in transport derived noise levels in UCA's and tourism areas</li> <li>• Number of road accidents/injuries</li> <li>• Access to services and facilities by public transport, walking and/ or cycling</li> <li>• Number of improvement schemes for pedestrian and cycle routes</li> <li>• Modal split</li> <li>• Bus services running on time</li> <li>• Journey times</li> <li>• Public transport patronage</li> <li>• Satisfaction with local bus service</li> <li>• Number of schemes for improving transport coordination and integration including interchange between cycling / walking and other forms of travel</li> </ul>
Emissions	<ul style="list-style-type: none"> <li>• Litres of fuel used in transport per pkm and per inhabitant</li> <li>• Tonnes of PM<sub>10</sub> produced by transport per time period and per inhabitant</li> <li>• Tonnes of PM<sub>2.5</sub> produced by transport per time period and per inhabitant</li> </ul>

SEA Theme	Relevant Indicators (adapted from Table 5.1)
	<ul style="list-style-type: none"> <li>• Tonnes of NO<sub>x</sub> derived from transport</li> <li>• % reduction air pollutants from road transport</li> </ul>
Climate change	<ul style="list-style-type: none"> <li>• CO<sub>2</sub> emissions from transport per time period</li> <li>• Number of projects that feature energy efficient design and/or use of renewable energy</li> <li>• Proportion of fleet using alternative fuel technology</li> <li>• Modal split</li> </ul>
Water	<ul style="list-style-type: none"> <li>• Quality of the marine environment in terms of biological and physico-chemical elements in area of interventions</li> <li>• Number of pollution incidents attributable to transport related activities</li> <li>• Quality of groundwater in the vicinity of any projects related to the transport sector</li> <li>• % of rainwater falling on transport infrastructures that is harvested</li> <li>• Quality of surface inland waters in the vicinity of any projects related to the transport sector</li> </ul>
Soil	<ul style="list-style-type: none"> <li>• Soil conservation interventions in the vicinity of any projects related to the transport sector</li> <li>• Number of soil pollution incidents attributable to transport related activities</li> <li>• Area affected by new transport infrastructure</li> <li>• Number of soil permits issued by the Department of Agriculture for Transport projects</li> </ul>
Material Assets	<ul style="list-style-type: none"> <li>• Number of measures/actions that include green infrastructure</li> <li>• Number of vehicles on the road</li> <li>• Number of schemes aiming to modernise and upgrade the transport systems</li> </ul>
Cultural heritage	<ul style="list-style-type: none"> <li>• Number of developments / operations located in the immediate vicinity of cultural heritage sites / areas or areas with known cultural / archaeological remains as a percentage of the total number of operations</li> <li>• Number of projects targeting the improvement of the cultural landscape, townscape or quality/amenity of Urban Conservation Areas</li> </ul>
Landscape	<ul style="list-style-type: none"> <li>• Environmental Impact Assessment results on landscape assessment</li> <li>• Number of transport measures aimed at improving local landscape character</li> </ul>

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### 9.1.2 Other data sources

340. In addition to using the above framework to gather data, other assessments, both at project and at planning level, will likely gather monitoring data that can feed into the NTS and TMP SEA monitoring programme.
341. Projects developed through implementation of the NTS and TMP that require planning permission and possibly, depending on the project, an EIA, are likely to be monitored either through the EIA or by the Planning Authority to ensure permit conditions are being abided by. The information gathered can inform the NTS and TMP.

## 9.2 Next Steps

342. Following consultation on the SEA and the draft NTS and TMP, changes may be made to the draft NTS and TMP. Any significant changes will be reassessed.



# APPENDIX I: SCOPING REPORT

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# Development of a National Transport Model Supporting Strategy Development in Malta



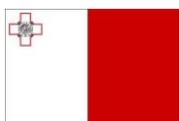
Strategic Environmental Assessment  
on Malta's National Transport  
Strategy and Master Plan

*Scoping Report*

Version 2.0



As a subcontractor:



Operational Programme I – Cohesion Policy 2007-2013  
*Investing in Competitiveness for a Better Quality of Life*  
 Event part-financed by the European Union  
 European Regional Development Fund (ERDF)  
 Co-financing rate: 85% EU Funds; 15% National Funds





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Development of a National Transport Model Supporting Strategy Development in Malta:

**Strategic Environmental Assessment Report. Scoping Report**



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Revision Details		
Version	Date	Remarks
0.1	13/01/2015	Draft Scoping Report, for review
1.0	30/01/2015	Scoping Report, for consultation
2.0	04/09/2015	Scoping Report, updated following consultation (consultation and feedback included as Appendix 2)

***Please cite this publication as:***

Transport Malta (2015), *National Transport Strategy – Strategic Environmental Assessment Report (Scoping Report)*

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# 1 Introduction

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1. Transport Malta (TM) is responsible for the preparation of the National Transport Strategy and Master Plan. The Transport Strategy outlines the direction for transport policy in Malta for the next 30-40 years and the Transport Master Plan describes in more detail Malta's transport needs and projects for the next 10 years. Although both documents are being formulated by Transport Malta, a consortium of international consultants (Ineco - Systematica Consortium) is assisting TM with the preparation of these documents. Adi Associates Environmental Consultants Ltd has been sub-contracted by the Ineco - Systematica Consortium to carry out the Strategic Environmental Statement (SEA).
2. This report is the Scoping Report for the Strategic Environmental Assessment (SEA) of Malta's Transport Strategy and Master Plan. The aim of the Report is to set out the framework for the SEA, including setting the context of the SEA, establishing the baseline, setting the SEA objectives and indicators for the assessment, and identifying any potential significant impacts of the Transport Strategy and Master Plan. The Report will also discuss the proposed contents of the Environmental Report and the next stages in the SEA process.

## 1.1 Strategic Environmental Assessment

3. European Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment requires that a SEA of a wide range of plans and programmes is carried out prior to the implementation of the plan or programme. The objective of the "SEA Directive" is to provide a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development. SEA comprises:
  - Preparing an Environmental Report on the likely significant effects of the draft Strategy and Master Plan;
  - Consulting on the Strategy and Master Plan and the accompanying Environmental Report;
  - Taking into account the Environmental Report and the results of consultation in decision making; and
  - A discussion of how the results of the environmental assessment would be taken into account in the Strategy and Plan.
4. The information to be included in the Environmental Report includes:
  - A description of the baseline environment;
  - Links between the Strategy and Master Plan and other relevant policies, plans, programmes, and environmental objectives;

- An identification of existing environmental problems affecting the Strategy and Master Plan;
  - The Strategy and Master Plan's likely significant effects on the environment, including issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climate change, material assets, cultural heritage, landscape, and the interrelationship between such factors;
  - The mitigation measures envisaged;
  - A description of the alternatives considered and those discarded in favour of the selected action(s);
  - Monitoring measures envisaged; and
  - A non-technical summary.
5. The SEA Directive (2001/42/EC) has been transposed into national legislation by the SEA Regulations, 2010 (Legal Notice 497 of 2010).
6. Guidance on SEA for Malta has not yet been published. The Scoping Report therefore draws on other European Guidance namely, the GRDP's (2006) "Handbook on SEA for Cohesion Policy 2007- 2013", the Commission's "Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment" and the UK's (2005) "A Practical Guide to the Implementation of the SEA Directive".

## 1.2 Malta's Transport Strategy and Master Plan

7. As explained above Transport Malta is preparing two documents:
- (i) A National Transport Strategy that outlines the direction for transport policy in Malta for the next 30-40 years; and
  - (ii) A National Transport Master Plan that describes in more detail Malta's transport needs and projects for the next 10 years.
8. The Transport Master Plan builds on the needs and objectives identified in the Transport Strategy. The two documents are considered highly interlinked and the timeframe for their preparation is simultaneous. On this basis and noting the advice given by the Joint Assistance to Support Projects in European Regions (JASPERS)<sup>1</sup>, Transport Malta will carry out a single SEA process for both the National Transport Strategy and National Transport Master Plan that will nonetheless ensure separate environmental assessments of each document. To this end, a Screening Template has been prepared that refers to both the National Transport Strategy and Master Plan.

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<sup>1</sup> During a meeting held on 8<sup>th</sup> October 2014 for which Transport Malta, Adi Associates, and the SEA Focal Point were present as well as JASPERS via conference call, JASPERS advised that it would consider a single SEA process to cover both the Strategy and the Master Plan to be a practical and acceptable way forward.

### **1.3 Malta's Transport Strategy**

9. Following its establishment in 2010 under the Authority for Transport in Malta Act (Act XV of 2009), Transport Malta embarked on preparations to establish a strategic approach to transportation which would integrate the planning of the different transportation sectors. These preparations laid the ground for the development of an integrated National Transport Strategy (NTS) with a time horizon of 2050 together with a Transport Master Plan (TMP) with a time horizon of 2025. The NTS consists of a vision outlining where Malta wants to be in the long term, the high-level objectives each with specific outcomes, the strategic direction on how to get there and the indicators necessary to measure the progress of this strategy.

### **1.4 Malta's Transport Master Plan**

10. The TMP is still being formulated and an initial draft is not yet available. It is likely that the Master Plan will clearly identify potential projects and actions for implementation until 2025. It will focus on transport sectors including land transport, public transport, ports, ferries and air transport and will include detailed sector action plans. The TMP will outline transport investment, regulatory change, safety improvement measures and institutional strengthening required to achieve the aims of the NTS for the period up to 2025. It will also identify the need for further studies or development of action plans in specific areas.
11. More detail of projects will be given when the first draft of the TMP becomes available.

## 2 The SEA Process

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12. The SEA on the NTS and TMP started in April 2014 once the contract was awarded to the Ineco - Systematica Consortium. The aim is for the SEA Consultants to be included during formulation of both the Strategy and the Master Plan. Several discussions were held with Transport Malta, the SEA Focal Point and the JASPERS wherein it was agreed that one SEA would be carried out on two documents: the NTS and the TMP since the latter builds on the NTS and both documents are being formulated concurrently.
13. The SEA involves several key stages:
- The *scoping stage* aims to agree the scope and level of detail of information which must be included in the Environmental Report. Several meetings are held regularly with the programme managers to ensure that the SEA Consultants are on board throughout the formulation of both the Strategy and the Master Plan. Scoping is one of the most important stages in the process as it identifies the issues for consideration in the Environmental Report. Although no longer a legal requirement, it is considered good practice to clearly document the scoping process. Consultation on the draft Scoping Report will be undertaken with a number of identified stakeholders including the SEA Focal Point, the Malta Environment and Planning Authority and the Malta Resources Authority.
  - The *collection of baseline data and analysis of relevant plans, programmes, and environmental objectives* has already commenced. The Consultants are collecting baseline data from a wide range of sources and analysing a wide range of plans/programmes/objectives using matrices to structure the data collection. Maps of key environmental issues are being prepared.
  - Preparation of the *Environmental Report* – this commences once all relevant information is collected and following consultation with the stakeholders, MEPA, and Transport Malta.
14. The Scoping Report (version 1.0) was made available for public consultation on 27<sup>th</sup> March 2015 on Transport Malta’s website. The Scoping Report was also sent directly to a number of stakeholders, as listed below:
- Environmental Health Directorate;
  - Malta Environment & Planning Authority;
  - Malta Resources Authority;
  - Ministry for Energy and Health;
  - Department of Agriculture; and
  - Ministry for Sustainable Development, the Environment and Climate Change.
15. The stakeholders were asked to submit their comments on the Scoping Report by end of April 2015.

16. During this consultation period, comments were received in writing from:
- Environmental Health Directorate;
  - Malta Environment & Planning Authority;
  - Malta Resources Authority;
  - Ministry for Energy and Health; and
  - Ministry for Sustainable Development, the Environment and Climate Change.
17. In addition, on its request, a meeting was held with the Department for Environmental Health on 20<sup>th</sup> April, in order to discuss their comments with the Consultants and Transport Malta.
18. The *Appendix 2: Response to Public Consultation on Scoping Report* lists all comments received and an accompanying response from the Consultants responsible for production of the Scoping Report. As a result of some comments, changes have also been made to the Scoping Report.

## 3 Relation of Malta’s Transport Strategy & Master Plan to other National Documents & Legislation

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19. Schedule 2 of the SEA Regulations requires a discussion of the “the degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources” and “the relevance of the plan or programme for the implementation of Community legislation on the environment, such as plans and programmes linked to waste-management or water protection”. **Appendix 1** provides a list of the policies, plans, and programmes relevant to the NTS and TMP, which have been analysed.
20. The analysis has been subdivided into five main categories:
- (i) **International Commitments:** this category covers the international environment and sustainability policy framework within which Malta must work. It includes a selection of global commitments, such as those arising from the Millennium Development Goals (MDGs), UN Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol.
  - (ii) **EU requirements:** Relevant EU communications have been included. In the case of European Union Directives already transposed into national legislation, the Directives *per se* will not be discussed; the section on national legislation is described below;
  - (iii) **National Environmental & Planning Documents** including the Structure Plan for the Maltese Islands, the National Sustainable Development Strategy, the National Environment Policy and the National Reform Programme. The review provided herein summarises the key issues raised; further information can be obtained from the original documents;
  - (iv) **National Sectorial Policies and Strategies:** this section covers highest-level policy and strategy documents published by the Government, such as the National Strategic Plan. Rather than summarise entire documents this review seeks to emphasise the key sustainability objectives and priorities;
  - (v) **National legislation:** no attempt will be made to assess the individual regulations, as is done at the project level EIA (Environmental Impact Assessment). However, the main areas of concern for the NTS and the TMP will be highlighted. Given the scale (and evolutionary nature of this field) this review is not exhaustive and represents a current (September 2014) snapshot.

## 4 Baseline Data

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21. A good understanding of the environment of the areas covered by the SEA is essential for the performance of a sound assessment. It is therefore necessary to establish the environmental baseline relevant to the plan or programme being proposed. This provides a snapshot of the existing state of the environment and a description of the likely future trends (based on past trends) without the programme being in place.
22. Existing environmental and sustainability data will be collected from a wide range of sources. **Table 1** summarises this broad-brush description. The list is not exhaustive, and may be modified in the Environmental Report. It will also depend on the availability of data.
23. The Sustainable Development Strategy 2006 – 2016 identifies Malta's environmental challenges; it arises from a systematic review of official published reports including the State of the Environment Report (2008 and subsequent updates) and Malta's National Report to the World Summit on Sustainable Development (2002), and an extensive consultation process. The later National Environment Policy (2012) identifies Malta's Environmental Objectives.
24. The following environmental parameters were identified:
  - Air quality;
  - Climatic factors and climate change;
  - Energy-efficiency and renewable energy resources;
  - Biodiversity including the marine environment;
  - Freshwater (including rainwater runoff);
  - Waste;
  - Land use;
  - Soils;
  - Landscape;
  - Cultural heritage;
  - Population and human health; and
  - Material assets.
25. The SEA baseline will focus on the parameters listed under Schedule 1(f) of the SEA Regulations, 2010 - Information to be included in the Environmental Report.
26. **Table 1** shows how the Environmental Report will draw together the issues and baseline data. Sources of information included the statistics produced by the National Statistics Office, the State of the Environment Report, 2008 (and subsequent updates) and the documents prepared

in connection with the Structure Plan Review process. As the Environmental Report is developed the baseline may be modified to reflect available and other relevant data.

Table 1. Environmental baseline

Issue	Relevant baseline data	Illustrative material
Emissions to air and climate change	<ul style="list-style-type: none"> <li>• GHG inventory</li> <li>• Air quality – CO<sub>2</sub> emissions, PM<sub>10</sub> emissions, NO<sub>2</sub> concentrations</li> <li>• Coastal erosion, sea level rise, changing weather patterns resulting from climate change</li> <li>• Energy from renewables</li> <li>• Energy consumption</li> </ul>	Graphs and figures.
Biodiversity / fauna and flora	<ul style="list-style-type: none"> <li>• Areas protected and managed under international and local legislation</li> <li>• Areas known to support priority Annex I habitats under the Habitats Directive</li> <li>• Protected species and species of conservation interest</li> </ul> <hr/> <ul style="list-style-type: none"> <li>• Conservation status of species of conservation interest</li> <li>• Areas for which surveys have been carried out</li> <li>• Natura 2000 Network and Marine Protected Areas</li> </ul>	Designated, managed and surveyed areas; where relevant, any data related to areas, habitats and/or species that are not formally protected although they are considered to be of conservation value, will be included.
Water	<ul style="list-style-type: none"> <li>• Information on the quality of the marine environment</li> <li>• Information on the quality of groundwater</li> <li>• Rainwater runoff management</li> <li>• Water consumption by sector</li> <li>• Water Framework Directive targets, objectives, protected areas</li> </ul>	Maps, graphs and tables
Soil	<ul style="list-style-type: none"> <li>• Soil erosion</li> <li>• Soil sealing</li> <li>• Soil contamination</li> <li>• Loss of soil</li> </ul>	Published data and figures

Issue	Relevant baseline data	Illustrative material
Landscape	<ul style="list-style-type: none"> <li>• Areas protected for landscape value</li> </ul>	Landscape sensitivity areas and protective designations
Cultural heritage	<ul style="list-style-type: none"> <li>• Sites protected for cultural heritage</li> <li>• Townscape (where information is available)</li> </ul>	Maps Published data
Human health	<ul style="list-style-type: none"> <li>• Environmental health data (where available)</li> <li>• Bathing water quality data</li> <li>• National noise mapping information</li> <li>• Accidents data</li> <li>• Physical fitness</li> <li>• Obesity</li> </ul>	Graphs and tables Published data
Material assets and population	<ul style="list-style-type: none"> <li>• Transport infrastructure (air, land and sea)</li> <li>• Vehicle ownership</li> <li>• Modal split</li> <li>• Green infrastructure</li> </ul>	Maps / figures

27. Quantitative data will be presented in the form of maps, tables, and figures, where possible. A brief description of the baseline and any trends will be given, where these are available. Where difficulties in obtaining data are encountered they will be described in the Environmental Report.

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## 5 Evaluation of the baseline in the absence of the implementation of the Strategy & Master Plan

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28. The SEA Regulations require a description of the relevant aspects of the current state of the environment and the likely evolution thereof without the implementation of the policy document with a particular emphasis on the future developments arising from other relevant plans and programmes.
29. This analysis will focus on the main environmental issues that have been identified in **Table 1**. It will include a description of the past and current trends from data available from existing monitoring systems or through expert judgements (in cases where data are lacking). It will also outline the likely evolution of these trends, if the Strategy and Master Plan were not implemented.
30. The description of the likely future trends should the NTS and TMP not be implemented is constrained by uncertainties, including availability of data on future economic development, technological progress, or advancements in regulatory frameworks that collectively influence future trends. The assessment will include a list of major uncertainties.

## 6 Evaluation of the NTS and TMP objectives

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31. Prior to undertaking the assessment of the NTS and TMP objectives against the SEA objectives, the objectives contained in the NTS and TMP will be assessed against each other to verify their compatibility or otherwise.

## 7 SEA Objectives

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32. The SEA Directive does not specifically require the use of objectives or indicators in SEA, although they are a recognised way through which environmental effects can be described, analysed, and compared.
33. It is therefore preferable to use indicators to monitor the performance of the plans against the SEA objectives. The SEA objectives are meant to be separate from the policy objectives, and provide a way to assess the potential environmental performance of the policy objectives. Thus, the environmental objectives should influence plan objectives, and the two may even overlap. To fulfil the requirements of the SEA Directive and the SEA Regulations, 2010, the SEA objectives must cover biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage, landscape, and interrelationships between them.
34. In developing appropriate objectives, the following documents have been consulted:
- GRDP’s Handbook on SEA for Cohesion Policy 2007- 2011;
  - The Commission’s *“Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment”*;
  - A Practical Guide to the Implementation of the SEA Directive, ODPM;
  - The SEA Directive 2001/42/EC;
  - SEA Regulations, 2010; and
  - The Commission’s *Guidance on integrating Climate Change and Biodiversity into SEA*
35. In developing appropriate indicators the following documents have been consulted:
- National Environment Policy, 2012;
  - The Sustainable Development Strategy for the Maltese Islands, 2006-2016; and
  - Malta’s State of the Environment Report, 2008 and subsequent updates.
36. **Table 2** defines the set of objectives relating to the environmental issues identified in **Table 1**. Alongside these, relevant criteria for assessment and possible data sources have been identified.
37. The SEA indicators are measurements of trends over time. They will be used as a means of ascertaining the success of implementation of the Strategy and Master Plan against the various SEA Objectives. Where possible the SEA process endeavours to identify how the Strategy and Master Plan would affect these indicators (i.e. the trends); such a process is constrained by the fact that the SEA indicators themselves depend on other factors outside the influence of the NTS and TMP.

Table 2. Environmental Objectives & Indicators for Assessing Impacts

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
Biodiversity, Flora & Fauna	<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> <li>To maintain or improve Natura 2000 sites</li> </ul>	<ul style="list-style-type: none"> <li>Affect the integrity of designated areas, including Natura 2000 sites?</li> <li>Affect protected species and habitats?</li> <li>Affect ecological connectivity?</li> <li>Contribute to generate ecosystem services?</li> <li>Affect the achievement of Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas (as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively)?</li> </ul>	<ul style="list-style-type: none"> <li>Number of developments / interventions in protected areas</li> <li>Number of developments / interventions in Natura 2000 sites</li> <li>Conservation status of habitats and species</li> <li>Conservation status of habitats and species in Natura 2000 sites</li> <li>Number of developments / interventions on greenfield sites / undeveloped land</li> <li>Number of developments/interventions resulting in habitat fragmentation</li> <li>New or enhanced green infrastructure elements in urban areas</li> <li>Quality of the marine environment in terms of biological and physico-chemical elements</li> </ul>	<p>Environmental monitoring through Environmental Impact Assessment (EIA), Appropriate Assessment (AA), or other regulatory requirements as relevant.</p> <p>Malta Environment and Planning Authority (MEPA)</p>

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
Population and Human health	<ul style="list-style-type: none"> <li>To reduce noise / vibration and light pollution</li> <li>To reduce air pollution</li> <li>To improve road safety</li> <li>To improve overall levels of health</li> <li>To enhance well-being<sup>2</sup></li> <li>To reduce road traffic and congestion through modal shift to more sustainable options</li> <li>To improve accessibility and transport links to services, facilities and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Affect air pollution generation from traffic?</li> <li>Affect noise and vibration from traffic?</li> <li>Affect light pollution from transport associated development?</li> <li>Affect road safety?</li> <li>Reduce traffic congestion?</li> <li>Promote modal shift to more sustainable options?</li> <li>Improve accessibility and transport links to services, facilities and opportunities?</li> <li>Promote an active lifestyle?</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with air quality emission level standards</li> <li>Noise levels</li> <li>Number of noise complaints related to transport related activities</li> <li>Number of road accidents/injuries</li> <li>Access to services and facilities by public transport, walking and/ or cycling</li> <li>Number of improvement schemes for pedestrian and cycle routes</li> <li>% of bus fleet with facilities for accessibility for the disabled and people with impaired mobility</li> <li>Modal split</li> <li>Bus services running on time</li> <li>Journey times</li> <li>Public transport patronage</li> </ul>	Transport Malta, MEPA, Ministry for Energy and Health

<sup>2</sup> In a consultation meeting held with the Department of Environmental Health (at its request), it was recommended that the environmental assessment should consider also well-being.

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
			<ul style="list-style-type: none"> <li>• Satisfaction with local bus service</li> <li>• Number of schemes for improving transport coordination and integration including interchange between cycling / walking and other forms of travel</li> <li>• Life expectancy</li> <li>• Proportion of street lamps with downward beam</li> </ul>	
Water	<ul style="list-style-type: none"> <li>• To maintain or improve the quantity and quality of ground and sea water</li> <li>• To maintain or improve rainwater harvesting capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Affect Malta's groundwater, inland surface waters and coastal waters?</li> </ul>	<ul style="list-style-type: none"> <li>• Quality of the marine environment</li> <li>• Bathing water quality</li> <li>• Number of pollution incidents attributable to transport related activities</li> <li>• Quality of the marine environment in terms of biological and physico-chemical elements</li> <li>• Quality of groundwater in the vicinity of any projects related to the transport sector</li> </ul>	<p>MEPA, potential permit requirements</p> <p>Sustainable Energy and Water Conservation Unit, Ministry for Energy and Health (MEH)</p>

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
			<ul style="list-style-type: none"> <li>% of rainwater harvested</li> </ul>	
Emissions to air	<ul style="list-style-type: none"> <li>To maintain or improve air quality</li> </ul>	<ul style="list-style-type: none"> <li>Affect air quality?</li> </ul>	<ul style="list-style-type: none"> <li>Emission trends of key pollutants (such as NO<sub>2</sub>, PM<sub>10</sub>) over time</li> </ul>	MEPA
Climatic factors and climate change	<ul style="list-style-type: none"> <li>To ensure resilience to climate change by minimising the risk of flooding and adapting to the predicted changes in weather conditions</li> <li>To decarbonise transport to reduce transport related CO<sub>2</sub> emissions</li> </ul>	<ul style="list-style-type: none"> <li>Affect climate change (considering in particular mitigation, adaptation renewable energy and GHGs)?</li> <li>Affect reduce transport related CO<sub>2</sub> emissions?</li> </ul>	<ul style="list-style-type: none"> <li>CO<sub>2</sub> emission trends over time</li> <li>Area of land at risk of flooding</li> <li>Number of projects in flood risk areas</li> <li>Number of projects that feature energy efficient design and/or use of renewable energy</li> <li>Proportion of fuel using alternative fuel technology</li> <li>Modes of transport</li> </ul>	MEPA, Transport Malta, MRA, Ministry for Health and Energy
Soil	<ul style="list-style-type: none"> <li>To maintain the resource of productive soil</li> </ul>	<ul style="list-style-type: none"> <li>Affect soil quantity and quality?</li> </ul>	<ul style="list-style-type: none"> <li>Soil conservation in the vicinity of any projects related to the transport sector</li> <li>Number of pollution incidents attributable to transport related activities</li> <li>Area affected by new developments</li> <li>Number of soil permits issued by</li> </ul>	Environmental Impact Assessment, Environmental monitoring as part of permit, Department of Agriculture

Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
			the Department of Agriculture	
Material assets	<ul style="list-style-type: none"> <li>To maintain and include green infrastructure as relevant</li> <li>To promote better use of road space</li> <li>To improve efficiency of transport networks and physical infrastructure standards</li> </ul>	<ul style="list-style-type: none"> <li>Use green infrastructure?</li> <li>Affect sustainable transport modes?</li> </ul>	<ul style="list-style-type: none"> <li>Number of measures/actions that include green infrastructure</li> <li>Number of vehicles on the road over time</li> <li>Number of schemes aiming to modernise and upgrade the transport systems</li> </ul>	MEPA, Transport Malta
Cultural heritage	<ul style="list-style-type: none"> <li>To maintain or improve the conservation status of cultural heritage sites / areas with known cultural / archaeological remains</li> <li>To maintain or improve the cultural landscape, townscape or quality/amenity of Urban Conservation Areas as relevant</li> </ul>	<ul style="list-style-type: none"> <li>Affect cultural heritage including archaeological heritage?</li> </ul>	<ul style="list-style-type: none"> <li>Number of developments / operations located away from cultural heritage sites / areas or areas with known cultural / archaeological remains as a percentage of the total number of operations</li> <li>Number of projects targeting the improvement of the cultural landscape, townscape or quality/amenity of Urban Conservation Areas</li> </ul>	MEPA, Resources Management Unit Heritage Malta Superintendent of Cultural Heritage
Landscape	<ul style="list-style-type: none"> <li>To conserve or enhance landscape character and scenic value</li> </ul>	<ul style="list-style-type: none"> <li>Affect landscape character and scenic value?</li> </ul>	<ul style="list-style-type: none"> <li>Environmental Impact Assessment results on landscape assessment</li> <li>Number of transport measures aimed at improving local</li> </ul>	MEPA, Transport Malta

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Issue	SEA Objective	Criteria How this action will...	SEA Indicator	Data source
			landscape character	

## 8 Likely Significant Effects and Constraints

38. Significance will also be assessed in accordance with the criteria listed in Schedule 4 of the SEA Regulations, 2010. Consultation will ensure that all factors are considered. Reference documents are listed in Appendix 1 and include the National Environment Policy, Sustainable Development Strategy and the State of the Environment Report, 2008 (and subsequent updates). Subsequent sections further describe how impacts will be assessed.
39. The assessment of significance is already well established in Environmental Impact Assessment (EIA) literature. Significance is a function of impact magnitude and the sensitivity of receptors. Various methods can be used to determine significance including expert judgements, the use of thresholds, reference to legislation, and consultation with stakeholders. It is expected that, in the course of the SEA process, all these techniques will be used.
40. The assessment of significance is based on the probability of the impact occurring, on the scale of the impact, its duration, reversibility, whether it has transboundary impacts, and whether the impact is uncertain. **Table 3** describes the assessment framework and the symbols used to denote the various types of impact.
41. The relevant SEA objectives identified in **Table 2** will then be used to assess the NTS and TMP in accordance with the significance criteria described in **Table 3**. It is proposed to present the results of the assessment in the format indicated in **Table 4**.

Table 3. Assessment legend

Impact character	Symbol	Description of Impact
Probability	IP	Impact unlikely to occur
	P	Impact likely to occur
	?	Impact uncertain
Scale	+++	Large positive impact
	++	Moderate positive impact
	+	Slight Positive impact
	0	No impact
	-	Slight negative impact
	--	Moderate negative impact
	---	Large negative impact

Impact character	Symbol	Description of Impact
Direct / Indirect	I	Indirect impact
	D	Direct impact
Frequency	LT	Long term
	ST	Short term
Transboundary dimension	TR	Possible transboundary effect

Table 4. Example Strategy and Master Plan Assessment framework and format for Environmental Report

Relevant SEA Aspect	SEA Objectives	Indicator	Comment	Significance		Mitigation
				Symbols	Summary description	
Strategy / Master Plan Objective						
Biodiversity, Fauna & Flora	<ul style="list-style-type: none"> <li>To maintain or improve biodiversity (including terrestrial and marine)</li> </ul>	<ul style="list-style-type: none"> <li>Number of developments in protected areas</li> <li>Conservation status of habitats and species</li> <li>New or enhanced green spaces in urban areas</li> </ul>	What is the potential impact of the proposed action / measure on protected areas?	Impact assessment in accordance with the criteria listed in Table 2	Justification of the impact assessment	Description of mitigation measures, if these are necessary

## 8.1 Cumulative & Synergistic Impacts

42. This stage of the process involves an assessment of the cumulative and synergistic effects of all proposed priorities in the NTS and TMP on the relevant environmental issues, objectives, and indicators. Cumulative effects are effects that result from incremental changes caused by other past, present, or reasonably foreseeable actions together with the proposal. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.
43. Synergistic effects interact to produce a total effect that is greater than the sum of the individual effects. Synergistic effects often happen as habitats or human communities begin to reach carrying capacity and/or non-renewable resources are depleted unsustainably.
44. The cumulative and synergistic impact assessment will be based on the information generated by the preceding assessments (described above) of the individual priorities. Any identified cumulative and synergistic effects will be summarised and used as recommendations for final adjustments to the planning documents.

## 9 Alternatives

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45. The SEA Directive requires that an assessment must identify the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme.
46. During the development of the NTS and TMP, feasible alternatives considered by Transport Malta will also be assessed from an environmental viewpoint against the SEA objectives identified in **Table 2**. The alternatives assessment will focus on alternative scenarios. The assessment will be summarised and presented in one table.

## 10 Monitoring

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47. The Environmental Report will include a section that describes how the success of the NTS and TMP's implementation will be measured with respect to the SEA objectives, by measuring (monitoring) the significant effects of the NTS and the TMP on the environment.
48. The SEA will assess the monitoring arrangements proposed for the NTS and TMP and may recommend incorporation of new indicators based on the relevant environmental issues, objectives, and indicators for the planning documents.
49. Again, it is noted that the correlation between indicators for monitoring and the NTS and TMP objectives may be constrained because indicators may be affected by other initiatives, including private sector initiatives, other plans and programmes, and legislative measures that are outside the scope of the Master Plan.

# 11 The Environmental Report

50. The proposed structure of the Environmental Report is as set out in **Table 5**. It is noted that as the Report develops the structure may change slightly; however, the following table gives the general framework. It is in accordance with the provisions of Schedule 1 of the SEA Regulations, 2010.

*Table 5.* Structure of the Environmental Report

Section	Content
Summary and outcomes	<ul style="list-style-type: none"> <li>Non-technical summary</li> <li>Statement on the difference the process has made</li> <li>Directions on how to comment on the assessment</li> </ul>
Introduction	<ul style="list-style-type: none"> <li>Strategic environmental assessment (compliance with the SEA Regulations, 2010)</li> <li>Aim and structure of the report</li> <li>NTS and TMP background</li> </ul>
Methodology	<ul style="list-style-type: none"> <li>Approach adopted</li> <li>Stages of SEA process (timings and responsibilities)</li> <li>Limitations</li> <li>Consultation</li> </ul>
Baseline	<ul style="list-style-type: none"> <li>The environmental baseline</li> <li>Summary of environmental issues</li> <li>Links to other relevant policies, plans, programmes</li> </ul>
SEA framework	<ul style="list-style-type: none"> <li>Objectives and indicators</li> <li>Assessment of significance</li> </ul>
Assessment of alternatives	<ul style="list-style-type: none"> <li>Alternatives considered</li> <li>Comparison of alternatives</li> <li>Consideration of environmental issues in development of alternatives</li> <li>Preferred alternative (including reasons for rejection of others)</li> </ul>

Section	Content
Detailed Assessment of the NTS and TMP	Assessment of each NTS and TMP Aspect Recommendations Recommended changes to the NTS and TMP Proposed mitigation Uncertainties and risks
Monitoring proposals	A description of the monitoring requirements
Appendices	As necessary

### 11.1 Guidance

51. Draft guidance on SEA for Malta has not yet been published. The Environmental Report therefore draws on other European Guidance, namely, the Greening Regional Development Programme (GRDP) (2006) *“Handbook on SEA for Cohesion Policy 2007 - 2013”*, the Commission’s *“Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment”* and the UK’s (2005) *“A Practical Guide to the Implementation of the SEA Directive”*.

## 12 Structure of Environmental Report

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52. The structure of the Environmental Report has been developed following consideration of European Guidance and as described in the Scoping Report. The Environmental Report structure is detailed below:

- Non-technical summary;
- Glossary of abbreviations;
- **Chapter 1** – Introduction (overview of the Strategy and its purpose; layout of report);
- **Chapter 2** – Summary of the Strategy and Master Plan and their context (brief description of the Strategy and the Master Plan and related documents; links to other plans / programmes);
- **Chapter 3** – Methodology (identification of main options: approach taken, who has been consulted, and when);
- **Chapter 4** – Baseline environmental information and trends (and limitations of data) including evolution of baseline without the implementation of the Strategy and Master Plan;
- **Chapter 5** – SEA objectives and context (key environmental aspects, relevant environmental objectives and criteria, and likely environmental implications without the SEA);
- **Chapter 6** – Assessment of Alternatives including reasons for selecting alternatives dealt with;
- **Chapter 7** – Assessment of environmental effects and proposed mitigation;
- **Chapter 8** – Recommendations; and
- **Chapter 9** – Monitoring requirements.

# Appendix 1: Analysis of Related Plans, Programmes, and Legislation

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Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
<b>1. International commitments</b>		
The UN Millennium Declaration and Millennium Development Goals (MDGs)	The United Nations Millennium Declaration arose from the meeting of UN Heads of State in New York, September 2000. The Declaration was aimed at revitalising international efforts to tackle critical development issues, and led to agreement on, and adoption of, the eighth Millennium Development Goals (MDG). Of relevance to the SEA is the seventh MDG: ensure environmental sustainability.	This is a national commitment and Malta's Transport Strategy and Transport Master Plan must play a role in its realisation.
UN Framework Convention on Climate Change	The ultimate objective of this Convention, and any related legal instruments that the Conference of the Parties may adopt, is to achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner. Following the Doha Amendment, Malta has taken on emission commitments for the second commitment period and it will be bound to meet targets jointly with the EU and other Member States when the Amendment comes into force. In the meantime, Malta supports efforts to reduce greenhouse gas emissions and is bound by EU legislation.	The Transport Strategy and Master Plan should be aware of Malta's efforts to combat and adapt to climate change and encourage efforts to reduce emissions. The SEA proposes indicators related to climate change.
Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	Malta is a party to the Bern Convention. The Convention aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices. The Parties to the Convention must undertake to take all appropriate measures to ensure the conservation of the habitats of the wild flora and fauna species. Such measures should be included in the Parties' planning and development policies and pollution control, with particular attention	The Transport Strategy and Master Plan should be aware of the endangered and vulnerable species of flora and fauna in Malta and ensure that its Transport Master Plan is not in conflict with measures for their protection and conservation and those of their habitats. This will be done through the assessment of the Transport Master Plan using the SEA objectives on biodiversity.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>to the conservation of wild flora and fauna. They should also undertake to promote education and disseminate general information concerning the need to conserve species of wild flora and fauna and their habitats.</p>	
<p>Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979)</p>	<p>This treaty provides a global platform for the conservation and sustainable use of migratory animals and their habitats. This Convention consolidates States through which migratory fauna pass, the Range States (any State that has jurisdiction over any part of the range of a migratory species) and sets the legal framework for internationally coordinated conservation of these species, which are listed in Appendix I of the treaty.</p>	<p>The Transport Strategy and Master Plan must ensure that their implementation will not jeopardise Malta's obligations under this treaty.</p>
<p>Ramsar Convention on Wetlands (1971)</p>	<p>The Conventions mission is:</p> <p><i>...the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world...</i></p> <p>The scope of the convention includes all lakes and rivers, underground aquifers, swamps and marshes, wet grasslands, peatlands, oases, estuaries, deltas and tidal flats, mangroves and other coastal areas, coral reefs and all human-made sites such as fish ponds, rice paddies, reservoirs and salt pans.</p> <p>The Convention is based on three pillars:</p> <ul style="list-style-type: none"> <li>• Work towards the wise use of all wetlands;</li> <li>• Designation of suitable wetlands as Wetlands of International Importance (the Ramsar List) and ensure their effective management</li> <li>• International cooperation on transboundary wetlands, shared wetland systems and shared species.</li> </ul>	<p>There are two designated Ramsar sites in the Maltese Islands. These are L-Ghadira and Is-Simar wetlands. The Transport Strategy and Master Plan must ensure that their implementation will not jeopardise Malta's obligations under this treaty.</p>

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
The United Nations Convention on the Law of the Sea, 1982	<p>The ability to deploy and utilise installations or structures in the marine environment is essentially one of property rights. The basis of ownership and property rights within the marine environment emanates from the provisions of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS).</p> <p>UNCLOS came into force on 16<sup>th</sup> November 1994 and among its provisions, it conveys rights to coastal states<sup>3</sup>, while imposing certain duties, among which is environmental protection<sup>4</sup> and safety to navigation.</p> <p>UNCLOS establishes the legal status of the territorial sea, of the air space over the territorial sea and of its bed and subsoil. It also sets down rules for the passage of ships through the seas and distinguishes between passenger ships, commercial ships and warships. Article 56, Part V establishes the rights, jurisdiction and duties of the coastal State in the exclusive economic zone, stating that:</p> <p><i>In the exclusive economic zone, the coastal State has:</i></p>	<p>The Transport Strategy and Master Plan must ensure to integrate and/or consider the relevant requirements contained in this Convention including those related to waste management, marine pollution and conservation of living resources. This Convention is specifically important because the Transport Strategy and Master Plan also address the maritime sector. This Convention and its integration in the Transport Strategy and Master Plan will be assessed in the Environmental Report.</p>

<sup>3</sup> Article 56

In the exclusive economic zone, the Coastal State has:

- (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds;
- (b) jurisdiction as provided for in the relevant provisions of this Convention with regard to:
  - (i) the establishment and use of artificial islands, installations and structures;
  - (ii) marine scientific research;
  - (iii) the protection and preservation of the marine environment;
- (c) other rights and duties provided for in this Convention.

<sup>4</sup> Article 194(1)

States are required to take "...all measures consistent with [the] Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source".

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p><i>Sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds;</i></p> <p><i>Jurisdiction as provided for in the relevant provisions of this Convention with regard to:</i></p> <p><i>The establishment and use of artificial islands, installations and structures;</i></p> <p><i>Marine scientific research;</i></p> <p><i>The protection and preservation of the marine environment;</i></p> <p><i>Other rights and duties provided for in this Convention.</i></p> <p>Within harbour areas, the placing of any sort of installation, even moorings, falls under the jurisdiction of harbour authorities (in Malta's case, Transport Malta), whose permission is required prior to the placing of any such structures (see National Legislation below).</p> <p>The protection of the marine environment is addressed in Part XII of the Convention. States have the obligation to protect and preserve the marine environment. With regards to marine pollution States are to take <i>"all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavour to harmonize their policies in this connection"</i>. The Convention applies to all sources of pollution including the release of toxic, harmful or noxious substances, pollution from vessels, and pollution from installations and devices operating in the marine environment. The measures taken to prevent pollution should include <i>those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other</i></p>	

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p><i>forms of marine life.</i></p> <p>Pollution from vessels in further addressed in Article 211.</p> <p>Like other Conventions, UNCLOS calls for an assessment of environmental impacts for planned activities that <i>may cause substantial pollution of or significant and harmful changes to the marine environment.</i></p>	
<p>The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, 1976 (the Barcelona Convention)</p>	<p>This Convention, known as the Barcelona Convention, requires the Contracting Parties to “...individually or jointly take all appropriate measures in accordance with the provisions of this Convention and those Protocols in force to which they are party to prevent, abate, combat and to the fullest possible extent eliminate pollution of the Mediterranean Sea Area and to protect and enhance the marine environment in that Area so as to contribute towards its sustainable development” (UNEP, 2004<sup>5</sup>).</p> <p>The Convention, as revised in 1995, strives to “take all appropriate measures to prevent, abate and to the fullest possible extent eliminate pollution of the Mediterranean Sea Area caused by dumping from ships and aircraft or incineration at sea.” This is in line with similar moves in other international and regional conventions (e.g. the London Dumping Convention, the Oslo Convention<sup>6</sup>, and the Helsinki Convention<sup>7</sup>), and is based on the precautionary principle, which has set a new level of priority in emerging international legislation, including EU Directives. These various amendments include the extension of the Convention's geographical field of application to the coast, the application of the</p>	<p>The application of the precautionary and "polluter pays" principles, the obligation on the Parties to carry out and promote impact assessments, protect and preserve the marine environment and biological diversity, and access to information and public participation are of relevance to the Transport Strategy and Master Plan which address the maritime sector too.</p>

<sup>5</sup> <http://www.unep.ch/seas/main/med/medconvii.html>. As accessed in March 2005.

<sup>6</sup> The Convention for the Prevention of Marine Pollution from Ships and Aircraft (1972).

<sup>7</sup> The Convention of the Protection of the Marine Environment of the Baltic Sea Area (1974 revised in 1992).

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>precautionary and "polluter pays" principles, the obligation on the Parties to carry out and promote impact assessments, protect and preserve biological diversity as well as combat pollution from cross-border movements of dangerous waste, and access to information and public participation (EU, 2005<sup>8</sup>).</p>	
<p>The Protocol of the Barcelona Convention concerning Specially Protected Areas and Biological Diversity in the Mediterranean, 1999</p>	<p>This Protocol, promulgated by the Contracting Parties to the Barcelona Convention in 1999, aims to protect, preserve, and manage in a sustainable and environmentally sound way the areas of particular natural or cultural value of the Mediterranean through the establishment of Specially Protected Areas (SPAs), and to protect, preserve and manage threatened or endangered species of flora and fauna. To date, 4 SPAs have been designated in Malta under this Protocol, namely I-Għadira, II-Gżejjer ta' San Pawl, Filfla &amp; surrounding islets and I-Ġebbla tal-Ġeneral.</p>	<p>Its relevance to the Transport Strategy and Master Plan lies in its requirement for EIA for any industrial or other projects that could significantly affect protected areas and species and their habitats (Article 17 of the Protocol). The requirement for EIA will also be highlighted in the Environmental Report.</p>
<p>The Convention on Biological Diversity, 1992</p>	<p>The Convention on Biological Diversity, also known as the Rio Convention, was enacted in 1992. Its objective is to "<i>conserve the maximum possible biological diversity for the benefit of present and future generations and for its intrinsic value</i>". This pact among the vast majority of the world's governments sets out commitments for maintaining the world's ecological underpinnings while maintaining economic development. The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources. Relevant aspects of the Convention are the emphasis on the sustainable use of components of biological diversity, the requirement for EIA, and the inclusion of biodiversity issues.</p>	<p>The sustainable conservation of biological diversity is particularly relevant to the Transport Strategy and Master Plan and will be assessed in the Environment Report.</p>

<sup>8</sup> Europa website. [http://europa.eu/legislation\\_summaries/environment/water\\_protection\\_management/l28084\\_en.htm](http://europa.eu/legislation_summaries/environment/water_protection_management/l28084_en.htm); Accessed January 2015.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>A direct result of the Rio Convention was the concept of Agenda 21 – a global partnership for sustainable development. Agenda 21 addresses today's pressing problems aiming to prepare the world to meet its challenges. It reflects a global consensus and political commitment at the highest level on development and environment cooperation. Its successful implementation is first and foremost the responsibility of Governments but the broadest public participation and the active involvement of the non-governmental organizations and other groups should also be encouraged. National strategies, plans, policies, and processes are crucial in achieving this (UNEP, 2005<sup>9</sup>).</p> <p>Agenda 21 has four sections:</p> <ul style="list-style-type: none"> <li>Social and economic dimensions;</li> <li>Conservation and management of resources for development;</li> <li>Strengthening the role of major groups; and</li> <li>Means of implementation.</li> </ul>	
Strategic Plan for Biodiversity 2011-2020	<p>At the tenth meeting at the Conference of the Parties of the Convention on Biological Diversity held in 2010 in Japan, a Strategic Plan for Biodiversity 2011-2020 was adopted. This new plan provides the new overarching international framework for biodiversity including the Aichi Biodiversity targets for the period 2011-2020. There are twenty targets in all, divided into five strategic goal areas as follows:</p> <p>Strategic Goal A: Address the underlying causes of biodiversity loss by</p>	The SEA will consider the Aichi Biodiversity Targets in the assessment of the Transport Strategy and Master Plan.

<sup>9</sup> UNEP Earthwatch website, 2005. Accessed at <http://earthwatch.grid.unep.ch/agenda21/> in March 2005.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>mainstreaming biodiversity across government and society;</p> <p>Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use;</p> <p>Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity;</p> <p>Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services; and</p> <p>Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.</p> <p>It was agreed that all signatories to the Convention would translate this Plan into national biodiversity strategies and action plans</p>	
<p>Nagoya Protocol on Access to Genetic Resources and their Fair and Equitable Sharing of Benefits arising from their Utilisation in the Union</p>	<p>This is a supplementary agreement to the Convention on Biological Diversity (adopted in 2010) and provides a legal framework for the implementation of one of the three objectives of the CBD in relation to the fair and equitable sharing of benefits arising out of the utilisation of genetic resources. The Protocol applies to genetic resources covered by the CBD and to the benefits accrued by their utilisation, it also covers traditional knowledge from the use and benefits from utilisation.</p>	<p>The SEA will consider the Nagaya Protocol in the assessment as relevant.</p>
<p><b>2. EU requirements</b></p>		
<p>The White Paper – Roadmap towards a Single European Transport Area – Towards a Competitive and resource efficient transport system (2011)</p>	<p>This White Paper aims at building a competitive transport system which will result in increased mobility, the removal of major barriers in key areas and will fuel growth and employment. It also aims at reducing dependency on fossil fuels. 40 initiatives have been identified in order to create a Single European Transport Area for the next decade.</p>	<p>The Transport Strategy and Master Plan should incorporate the vision and concrete initiatives put forward in this White Paper that aims to create a Single European Transport Area.</p>

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
EU energy and climate change policy, 2008: 20-20-20 targets	<p>The EU adopted an integrated energy and climate change policy in December 2008, aimed at achieving a low carbon, energy efficient economy as part of the action towards a sustainable future. The goals of this EU policy are better expressed in the so called 20-20-20 targets as follows:</p> <ul style="list-style-type: none"> <li>• Decrease the EU overall greenhouse gases by 20% over 1990 levels (30% if international agreement is reached) by 2020;</li> <li>• Reduce the EU overall energy consumption by 20% by 2020 through increased energy efficiency; and</li> <li>• Achieve a share of 20% renewable energy in the EU overall gross energy consumption by 2020</li> </ul> <p>The energy and climate change policy has resulted into a number of EU Directives, decisions which translate these goals into commitments for the EU Member states.</p>	The Transport Strategy and Master Plan need to be aligned with these commitments and contribute towards facilitating their achievement.
2030 Climate and Energy Framework	<p>In October 2014, EU leaders agreed on the domestic 2030 greenhouse gas reduction target of at least 40% below the 1990 level. This framework continues to drive progress towards a low-carbon economy. In reaching this target, the EU will ensure that it is on track to reach the target of a reduction in 80% emissions by 2050. In order to reach the 2030 target (40% emissions reduction), the sectors that fall within the EU emissions trading scheme (EU ETS) would need to reduce their emissions by 43% compared to 2005 whereas emissions from sectors outside the EU ETS Scheme (including transport) would need to be cut by 30% below the 2005 level. This needs to be reflected in Member States' targets.</p>	The Transport Strategy and Master Plan must be integrate consideration of these 2030 targets and how the sector will contribute to their achievement.
Directive 2009/29/EC of the European Parliament and of the Council of 23	This Directive intends to extend and improve the EU emissions trading scheme (EU ETS) applicable from 2013.	The effect of this Directive is that large installations, which in Malta include the generation plant of Enemalta will have to buy the CO <sub>2</sub> allowances through auctioning. An amount of allowances which will

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
<p>April 2009 amending Directive 2003/87/EC (as amended inter alia by Directive 2008/101/EC that extends the scope to aviation activities) so as to improve and extend the greenhouse gas emission allowance trading scheme in the Community</p>		<p>decrease every year up to 2020 will be allocated to Malta for auctioning.</p>
<p>Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.</p>	<p>This decision sets targets for Member States for greenhouse gas emissions that do not fall within the scope of the EU ETS.</p>	<p>The GHG emissions from the non EU ETS sector in Malta cannot increase by more than 5% (over the 2005 level) by 2020</p>
<p>Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing</p>	<p>This directive sets out new renewable energy targets for EU Member States aimed at reaching the overall EU share of 20% of energy from renewable energy sources by 2020. Member States may comply with their obligations under this Directive either by investing in renewable energy sources and/or using the flexible mechanisms provided by the same Directive such as statistical transfers and participation in joint projects in other Member States or in non-member states subject to a number of conditions.</p>	<p>Malta has an obligation to reach a 10% share of renewable energy in the energy consumption by 2020 (including a separate 10% target of renewable fuel in transport) with interim targets.</p>

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
Directives 2001/77/EC and 2003/30/EC		
European Commission Communication Energy Roadmap 2050	The EU is committed to reducing greenhouse gas emissions to 80-95% below 1990 levels by 2050 in the context of necessary reductions by developed countries as a group. In the Energy Roadmap 2050 the Commission explores the challenges posed by delivering the EU's decarbonisation objective while at the same time ensuring security of energy supply and competitiveness. The Energy Roadmap 2050 is the basis for developing a long-term European framework together with all stakeholders <sup>10</sup> .	The strategic direction of the Transport Strategy and Master Plan should reflect the spirit of the Energy Roadmap 2050.
Directive on the development of alternative fuels infrastructure (2014/94/EU)	In line with the White Paper 'Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System' that called for reducing the oil dependence of transport and set a target of 60% greenhouse gas emissions reduction from transport by 2050, this Directive sets out requirements on establishing national policy frameworks for the market development of alternative fuels and on a minimum infrastructure inclusion for alternative fuels, including the implementation of common technical specifications.	The Transport Strategy and Master Plan should be mindful of the requirements laid out in this Directive and the overall aim that it is seeking to contribute towards.
Directive 2009/30/EC amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and	The scope of this Directive includes road vehicles as well as inland waterway vessels when not at sea and sets technical specification on health and environmental grounds for fuels to be used with positive ignition and compression-ignition engines, taking account of the technical requirements of those engines; and a target for the reduction	The Transport Strategy and Master Plan should be mindful of the requirements laid out in this Directive as relevant.

<sup>10</sup> COM(2011)112 final: Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions: A Roadmap for moving to a competitive low carbon economy in 2050; <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0112>; Accessed January 2015

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
<p>introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC</p>	<p>of life cycle greenhouse gas emissions.</p>	
<p>Directive 2012/33/EU amending Council Directive 1999/32/EC as regards the sulphur content of marine fuels</p>	<p>Due to the potentially significant impacts resulting from emissions from shipping, this Directive sets new limits for sulphur content in marine fuels used in the EU and although use of fuel with higher sulphur content is still possible, appropriate exhaust cleaning systems must be in place. It also encourages the use of shore-side electricity.</p>	<p>The Transport Strategy and Master Plan should be mindful of the requirements laid out in this Directive as relevant.</p>
<p>Directive 2012/27/EU on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC</p>	<p>The Energy Efficiency Directive makes reference to the fact that the conclusions of the European Council of 4 February 2011 acknowledged that the Union is not on track with regards to the energy efficiency target and that action is required to ensure higher energy savings in a number of sectors including transport. The Directive establishes a set of binding measures that aim to help the EU reach its 20% energy efficiency target by 2020. Member States are required to use energy more efficiently throughout the energy chain.</p>	<p>The Transport Strategy and Master Plan should be mindful of the requirements laid out in this Directive as relevant.</p>
<p>EU Sustainable Development Strategy</p>	<p>The first EU SDS was launched at the Gothenburg Summit in June 2001. The strategy proposed objectives and policy measures to address key unsustainable trends and also the requirement for every new major policy to be submitted to an Impact Assessment. The SDS was revised and a renewed strategy was adopted in June 2006. Seven key priority</p>	<p>The priority challenge on sustainable transport is particularly relevant for the Transport Strategy and Master Plan.</p>

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>challenges were established for a period until 2010:</p> <ul style="list-style-type: none"> <li>• Climate change and clean energy;</li> <li>• Sustainable transport;</li> <li>• Sustainable consumption &amp; production;</li> <li>• Conservation and management of natural resources;</li> <li>• Public Health;</li> <li>• Social inclusion, demography and migration; and</li> <li>• Global poverty and sustainable development challenges</li> </ul> <p>The policy was reviewed again in July 2009.</p>	
EU Biodiversity Strategy to 2020	<p>This document aims to halt the loss of biodiversity and ecosystem services in the EU by 2020. There are six main targets and 20 actions to facilitate Europe to reach this goal. The six targets cover:</p> <ul style="list-style-type: none"> <li>• Full implementation of EU nature legislation to protect biodiversity;</li> <li>• Better protection for ecosystems, and more use of green infrastructure;</li> <li>• More sustainable agriculture and forestry;</li> <li>• Better management of fish stocks;</li> <li>• Tighter controls on invasive alien species; and</li> <li>• A bigger EU contribution to averting global biodiversity loss.</li> </ul>	The Transport Strategy and Master Plan should directly consider potential impacts on biodiversity and the increased use of green infrastructure. These will be assessed through the SEA.
Commission proposal for EU legislation to address invasive alien species and	The Commission has proposed a Regulation on the prevention and management of the introduction and spread of invasive alien species. The proposal is for three types of interventions. These are: prevention, early	The spirit of this proposal will be considered in the SEA during assessment of the Transport Strategy and Master Plan as relevant.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
protect biodiversity	warning and rapid response, and management.	
The Habitats Directive (92/43/EEC)	The Habitats Directive is one of two main nature conservation Directives (the other being the Birds Directive). It centres around two pillars, one being the Natura 2000 network (designating Special Conservation Areas), the largest network of protected areas in the world, and the other the protection of species of conservation interest. In the event that a proposed plan/programme or project could negatively affect the integrity of a Natura 2000 site or listed species therein, the Habitats Directive requires an Appropriate Assessment. Rather than being a decision-informing instrument, such as EIA and SEA, Appropriate Assessment is a decision-maker in that should significant negative impacts be identified, the associated plan/programme or project will not be allowed to move forward in accordance with the requirements of this Directive.	The Transport Strategy and Master Plan should seek to ensure that it does not affect the integrity of a Natura 2000 site or relevant species. Any risk of this will be identified through the SEA.
The Birds Directive (2009/147/EC)	The oldest piece of nature protection legislation in the EU, this Directive seeks to provide protection to all of Europe's natural species. The Directive was set up in response to a growing decline in many of Europe's bird species resulting from pollution, loss and degradation of habitat and unsustainable use. Recognising these threats, the Directive provides emphasis on conservation of habitats for both resident and migratory birds and allows for the designation of Special Protection Areas (SPAs), that together with the Special Conservation Areas assigned under the Habitats Directive forms the Natura 2000 network. This Directive also bans activities that have a negative impact on birds, including those resulting in taking of birds.	The Transport Strategy and Master Plan should seek to ensure that it does not affect the integrity of SPAs.
The Water Framework Directive (2000/60/EC)	The Water Framework Directive seeks to establish a structured framework for action in the field of water policy. It aims to establish a framework for the protection of inland surface waters, transitional waters, coastal waters	In accordance with this Directive, Malta is required to ensure that designated surface waters achieve good ecological and chemical status by 2015 and that this status is to be maintained. Article 17 also specifies the need to achieve good status for groundwater bodies. The

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>and groundwater that:</p> <ul style="list-style-type: none"> <li>- Prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;</li> <li>- Promotes sustainable water use based on a long-term protection of available water resources;</li> <li>- Aims at enhanced protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances;</li> <li>- Ensures the progressive reduction of pollution of groundwater and prevents its further pollution, and</li> <li>- Contributes to mitigating the effects of floods and droughts and will have a significant role to play in protecting and managing water resources.</li> </ul>	<p>Transport Strategy and Master Plan must have regard to this requirement. This will be assessed through the SEA.</p>
<p>Directive on the protection of groundwater against pollution and deterioration (2006/60/EC)</p>	<p>Groundwater is defined under the WFD as <i>all water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil</i>. The Groundwater Directive (GWD) establishes specific measures in light of Article 17 of the Water Framework Directive (WFD) with a view to prevent and control groundwater pollution. Thus, it establishes criteria as well as a procedure for assessing groundwater chemical status. Member States must characterise, monitor, classify, have objectives established for, protect and, where necessary improve groundwater. Like the WFD, the GWD takes a receptor-oriented and risk-based approach, in particular considering groundwater in terms of ecologically-oriented objectives including groundwater dependent terrestrial ecosystems and surface water ecosystems</p>	<p>As required under the WFD and the GWD in support of this requirement, Malta is required to ensure that groundwater bodies achieve good ecological and chemical status by 2015 and that this status is to be maintained. The Transport Strategy and Master Plan must have regard to this requirement. This will be assessed through the SEA.</p>

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
Directive on the assessment and management of flood risks (2007/60/EC)	The EU Floods Directive requires Member States to assess whether water courses and coast lines are at risk from flooding. Where these have been identified, the flood extent must be mapped as well as assets and people at risk in these areas. Measures to reduce this risk must be drawn up. This Directive should also be implemented in coordination with the WFD.	The Transport Strategy and Master Plan should be aware of areas that carry a flood risk, in particular, where interventions in such areas might be proposed.
Bathing Water Quality Directive (76/160/EEC)	This Directive provides a framework for the monitoring, assessment, and management of the quality of bathing water and defines minimum quality criteria that Member States must adhere to.	The Transport Strategy and Master Plan should be mindful of the need to abide by these standards. This will be assessed through the SEA as relevant.
Marine Strategy Framework Directive (2008/56/EC)	This Directive is the first all-encompassing piece of European legislation aimed at protection of the marine environment. The main aim is to achieve Good Environmental Status (GES) in European waters by 2020 through the adoption of an ecosystem-based approach to the management of all human activities that impact the marine environment. The regulation includes implementation of a number of key steps to achieve the overriding aim including an initial assessment of the current environmental status of marine waters as well as the environmental pressures and impacts on the marine environment. The initial assessment must include an economic and social analysis of the use and degradation of the marine environment. The determination of GES must then be carried out based on a number of qualitative descriptors. Environmental targets and associated indicators must then be set in order to guide progress towards the achievement of GES.	The Transport Strategy and Master Plan must operate within the spirit of this Directive.
European Communication Green Infrastructure (GI) – Enhancing Europe's Natural Capital	This Communication highlights the many benefits of GI solutions and the importance of integrating green infrastructure solutions in spatial planning. It notes that Cohesion Policy has identified GI as an investment priority for the next programming period.	The SEA will assess the significance of potential benefits proposed as well as identify any potential for improvement in proposals made in relation to GI.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
SEA Directive (2001/42/EC)	The SEA Directive requires that certain plans and programmes are subject to an environmental assessment prior to their implementation.	The Transport Strategy and Master Plan is undergoing an SEA in accordance with the Directive.
Environmental Noise Directive (2002/49/EC)	The Environmental Noise Directive (the END) aims to <i>define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure of environmental noise</i> . In addition, it aims to provide a framework for the development of EU measures to reduce noise from major noise emitters including road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery.	The Transport Strategy and Master Plan and SEA will consider this Directive during their development.
<b>3. Most Relevant National Environmental, Planning &amp; Sectorial Documents</b>		
A Civil Aviation Policy for Malta 2014-2020	This proposed policy aims at updating the policy for the aviation sector to 2020. The policy includes the enactment of a Civil Aviation Act and the setting up of a Civil Aviation Authority (CAA). Other initiatives put forward include: the re-establishment of an air-link between Malta and Gozo, the establishment of a General and Business Aviation Terminal and an Airport Zone Master Plan.	The Transport Strategy and Master Plan and SEA will take note of the proposals that have been put forward in this policy.
Budget 2015	The Budget 2015 document includes measures to address traffic congestion and incentives leading to the updating of the vehicle fleet.	The Transport Strategy and Master Plan will incorporate the relevant measures presented in the budget.
Public Transport in Malta – A vision for public transport (2008)	This document provides the vision for the reform of the public transport system. It includes the concepts of intermodal travel and integrated transport systems.	The Transport Strategy and Master Plan and SEA should take into consideration the integrated approach presented in this vision for public transport with the aim of supporting a shift from private to public transport.
National Strategy for Policy and Abatement Measures	This strategy, drawn up by the Climate Change Committee, presents 87 recommendations with the main principle to mitigate and embark upon	The Transport Strategy and Master Plan should aim to complement the

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
relating to the reduction of Greenhouse Gas emissions (2009)	adaptation measures to minimise impacts from climate change, particularly those arising from greenhouse gas emissions.	recommendations developed in this strategy as relevant.
National Renewable Energy Policy (2006)	This policy aims at moving towards a sustainable energy supply by finding a balance between security of supply, environmental protection and the social dimension (i.e. affordability and competitiveness). The policy includes the promotion of the use of bio-fuels for road transport.	The Transport Strategy and Master Plan should take into consideration the vision presented in this policy.
National Environment and Health Action Plan 2006-2010 (2006)	The revised National Environmental Health Action Plan (NEHAP), 2006-2010, includes the transport sector. In particular it deals with the correlation between high traffic and the incidence of related diseases.	The Transport Strategy and Master Plan and the SEA should take into account the findings of this Action Plan.
Healthy Weight for Life: A National Strategy for Malta 2012 - 2020	This policy document shows that measures to combat obesity need to be interlinked with other sectors including transport. The policy shows that decreasing private car usage and increasing public transport usage would result in people walking more. Furthermore non-motorised forms of transport should be promoted.	The Transport Strategy and Master Plan and the SEA should take into account the findings of this Strategy.
Development of Yachting Facilities in Malta: Identification of Potential Sites for All-Weather Marinas and Temporary Marinas (2009)	This document identifies sites that can be considered for new permanent yacht marinas and sites for seasonal or temporary marinas. It also analyses the current demands for this infrastructure and considers the criteria for the selection for these facilities and also discusses relevant issues.	The Transport Strategy and Master Plan should take into account the findings of this document.
National Intelligent Transport Systems Action Plan (2013)	The Action Plan presents a synthesis of how Transport Malta will deploy Intelligent Transport Systems (ITS) in two phases i.e. 2013-2017 and 2018-2020. The ITS sub-systems will include a CCTV network, a dynamic sign network updated with real time information, electronic parking guidance system, Urban Traffic Management and Control System (UTMC) and a road	The Transport Strategy and Master Plan and SEA will take note of the proposals that have been put forward in this Action Plan.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	flooding alert management system.	
Malta's National Renewable Energy Action Plan as required by Article 4(2) of Directive 2009/28/EC, 2010	This action plan identifies Malta's expected final energy consumption between 2010 and 2020 and sets out national targets for the share of energy from renewable sources consumed in transport, electricity and heating and cooling in 2020 within the context of the national energy policy as required by the RES Directive.	The Transport Strategy and Master Plan should refer to this document in setting targets and objectives.
National Energy Efficiency Action Plan (2008-2016)	<p>The aim of this Action Plan is to promote energy efficiency under Malta's EU obligations. The Action Plan is divided into three phases, comprising three years each:</p> <p>Phase I: 2008-2010;</p> <p>Phase II: 2011-2013; and</p> <p>Phase III: 2014-2016.</p> <p>In each of these phases, the Action Plan aims to achieve savings of 3% of the average energy consumption of the base period (September 2001-September 2006) as a result of improved energy efficiency resulting in a gradual reduction of total consumption by 9% until 2016. Measures include reduction of water demand, improved efficiency in buildings and in water production.</p>	Relevant Transport Strategy and Master Plan measures should complement and support measures set out in this Action Plan.
The National Energy Policy for the Maltese Islands, 2012	<p>Malta's National Energy Policy focuses on the following overall objectives:</p> <ul style="list-style-type: none"> <li>Energy efficiency;</li> <li>Reducing reliance on imported fuels;</li> <li>Security of supply;</li> <li>Reducing Emissions from the energy sector;</li> </ul>	Any measures related to the energy sector described in the Transport Strategy and Master Plan should be in line with the direction set out in the National Energy Policy. This will be evaluated through the SEA.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	Delivering energy economically, efficiently and effectively; and Ensuring the energy sector can deliver.	
Malta's National Reform Programme Under the Europe 2020 Strategy, April 2014	The National Reform Programme (NRP) aims to set out a comprehensive strategy to deliver growth and jobs in line with the refocus of the Lisbon Agenda agreed to in the Spring European Council. Several political, economic, social, technological, and environmental factors affect Malta's economic growth and international competitiveness and hence, the island's employment growth potential. The NRP includes measures that focus on the following thematic areas: employment, education, energy, research and innovation and social inclusion in particular through the reduction of poverty.	The Transport Strategy and Master Plan should be in line with the NRP's strategic direction.
Water Catchment Management Plan, 2011	Malta's Water Catchment Management Plan (WCMP) addresses all waters and its objectives focus on water resource management and conservation. The Plan is part of the implementation of the Water Framework Directive and takes an integrated approach and provides a single framework for the management of different water categories (surface and groundwater), integration of water policy across sectors, and promotes stakeholder and public participation dialogue.	The Transport Strategy and Master Plan must ensure an integrated approach with regards, in particular to the programme of measures and monitoring programme of the WCMP as relevant. The SEA considers impacts of the Strategy and Master Plan in relation to the requirements under the Water Framework Directive and the WCMP including impacts on water quality, and water-related ecology as relevant.
Storm Water Master Plan, 2008	This plan addresses the economic losses, social damage and environmental consequences caused by floods. It proposes alternative engineering options for storm water management and reuse, maintenance programmes and implementation measures. The key principles considered in the plan are sustainable development, the proximity principle and self-sufficiency, the precautionary principle and pollution prevention.	The Transport Strategy and Master Plan should be aware of the implications of the plan including the findings of its associated SEA.
A Strategy for the Prevention and Control of	The overall goal of this strategy is: <i>To develop a multifactorial approach to non-communicable disease (NCD)</i>	The Transport Strategy and Master Plan can contribute to ensuring an integrated approach, where relevant (as identified here), in considering

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<p>Noncommunicable Disease in Malta, 2010</p>	<p><i>prevention through tackling common risk factors targeting both at a population level, and also high-risk groups.</i></p> <p>The Strategy identifies environmental health related issues to NCD. In this regard, the Strategy identifies the increase in motorisation and vehicle use as contributing to air and noise pollution with ensuing effects on cardiopulmonary and mental health. Land transport-related air pollution has been linked to an increased risk of death, in particular from cardiopulmonary causes as well as an increased risk of respiratory symptoms and diseases that are not a result of allergies. In addition, land-transport related air pollution could increase the risk of developing allergies and can result in exacerbation of symptoms particularly in susceptible groups. Other identified risks include risk of myocardial infarction and lung cancer in people with long-term exposure. Long-term decreases in air pollution levels are associated with decreases in average annual deaths from all causes and declines in respiratory and cardiovascular diseases.</p> <p>The Strategy also identifies benefits associated with regular walking or cycling as an alternative to vehicular use in all age groups but especially in children and the elderly, enhancing well-being.</p> <p>In an attempt to address physical inactivity, strategy targets for 2020 are:</p> <p><i>To increase the proportion of the Maltese population who carry out a moderate or high level of physical activity daily or on most days, from the current 43.5% to 70%.</i></p> <p><i>To reduce the proportion of children and adolescents who never perform any exercise by 5%.</i></p> <p>With these in mind some of the strategies recommended to reduce the level of morbidity by increasing physical activity in the general population include:</p>	<p>how transport-related measures can also contribute to improved well-being of the population and reduced risk from NCD as a result of land-based air pollution. This issue will be considered in the SEA.</p>

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<ul style="list-style-type: none"> <li>• <i>Infrastructural changes through intersectoral collaboration to:</i> <ul style="list-style-type: none"> <li>- <i>Enhance public leisure areas</i></li> <li>- <i>Increase availability of areas for physical activity</i></li> <li>- <i>Make physical activity accessible to all.</i></li> </ul> </li> <li>• <i>To promote walking as a means of active transport.</i></li> <li>• <i>To promote physical activity in all setting.</i></li> </ul>	
The National Cancer Plan, 2011-2015	This Plan recognises the need for an integrated approach with other sectorial areas including transport. The Plan identifies environmental risk factors for cancer including combustion products and particulate matter. The Plan identifies the decrease in air pollution following the abolition of the use of leaded petrol in Malta. However, it notes that the number of vehicles per capita has risen well over the European average and levels of particulate matter are in excess of EU limit values.	The development of the Strategy and Master Plan will need to be mindful of the importance of land transport in contributing to environmental risk factors. This will also be addressed within the SEA process.
National Tourism Policy 2012-2016	Malta's Tourism Policy aims to take an integrated approach by including economic, environmental and social goals. It identifies niche markets and discusses the tourism product.	The Transport Strategy and Master Plan should steer within the same strategic direction as relevant.
National Environmental Health Action Plan, 2006 - 2010	The action plan is a policy framework document that sets targets and priority actions for the period 2006-2010. Actions are primarily concerned with the protection of public health through protection of the environment.	The Transport Strategy and Master Plan should integrate environmental health considerations as relevant. Impacts on human health are considered in the SEA.
A Draft Sustainable Strategy for the Maltese Islands 2006-2016	The Sustainable Strategy is centred on four main themes: <ul style="list-style-type: none"> <li>Managing the environment and resources;</li> <li>Promoting sustainable economic development;</li> <li>Fostering sustainable communities;</li> </ul>	Sustainable development principles must be integrated as part of the Transport Strategy and Master Plan. These will be assessed through the SEA.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>Cross-cutting strategic issues.</p> <p>Within these sectors the following priorities are identified:</p> <p>The Environment</p> <ol style="list-style-type: none"> <li>1. <u>Climate Change</u>: take steps to reduce greenhouse gas emissions through transport and energy policies that seek to promote environmental protection, competitiveness, and security of supplies and, as a result, decouple the rate of growth of Green House Gases (GHG) emissions from economic growth.</li> <li>2. <u>Air Quality</u>: take remedial action to control emissions of air pollutants and achieve compliance with European standards;</li> <li>3. <u>Nature and Biodiversity</u>: halt loss of biodiversity by 2010, and achieve management of protected areas by 2008;</li> <li>4. <u>Groundwater</u>: adopt a policy that safeguards the quality of groundwater resources to protect human health, and satisfy the requirements for human use and achieve good quantitative status by 2015;</li> <li>5. <u>Seawater</u>: sustain compliance with the Bathing Water Directive and achieve compliance with the Barcelona Convention standards;</li> <li>6. <u>Waste</u>: prevent and minimise waste by achieving EU waste-related objectives and targets, reviewing Malta's Waste Management Strategy by 2007;</li> <li>7. <u>Land use</u>: protect, maintain, and improve the urban and rural environment and through the planning system protect the open countryside from uses, particularly residences, which can be more appropriately located in urban areas;</li> <li>8. <u>Transport</u>: reduce car ownership rates to the EU average by 2014. Attain 1995 bus patronage levels by 2014 (40 million passengers);</li> </ol>	

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	<p>The Economy</p> <p>9. <u>Economic Growth</u>: adopt policy measures so that the GDP (Gross Domestic Product) per capita in real terms grows at a rate that will enable the Maltese economy to converge towards the EU average.</p> <p>10. <u>Employment</u>: create employment opportunities to generate income and improve the quality of life of the population, taking into consideration environmental and social impacts, and adopt policy measures so that the ratio of total employment to the working age population in Malta converges with the EU average and reaches at least 57% by 2010;</p> <p>11. <u>Labour productivity</u>: adopt policy measures to increase average labour productivity at a rate of 1% per annum over the EU average by 2010, while attempting to balance wages, taxation, and productivity, in collaboration with the social partners.</p> <p>Society</p> <p>12. <u>Poverty reduction</u>: reduce or at least sustain the current level of 15% of the population at risk of poverty and decrease the ratio of population aged over 65 at risk of poverty from 20% to 15%, by 2010;</p> <p>13. <u>Labour force participation of women</u>: adopt policy measures so that the labour force participation rate of women increases from 33% to 40.7% by 2010;</p> <p>14. <u>Health</u>: decrease ratio of overweight/obese population in line with the EU average by 2010 by, amongst other actions enhancing the focus on healthy living and prevention, to reduce the need for curative care;</p> <p>15. <u>Education</u>: continue to adopt measures to decrease the early school-leavers rate to 35% by 2010.</p> <p>Cross Cutting Issues</p>	

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	<p>16. <u>Spatial development plan</u>: by 2010 draw up an integrated spatial development plan to take forward the National Strategy for Sustainable Development, with the participation of major stakeholders;</p> <p>17. <u>Economic Instruments</u>: gradually adjust the present income tax regime so that the ratio of green taxation to total taxation reaches the EU average by 2010;</p> <p>18. <u>Enforcement</u>: by 2008, put in place an audit of enforcement arrangements to assess the adequacy of the current enforcement mechanisms and to promote integration of responsibilities and reduction of overlaps.</p> <p>Implementation</p> <p>19. <u>Institutional setup</u>: by 2008 put in place a permanent structure, appropriately staffed and funded, to revise and implement the National Strategy for Sustainable Development, on an ongoing basis, under the auspices of the National Commission for Sustainable Development, and hold an annual Conference with participation of major stakeholders to critically evaluate progress relating to the strategy;</p> <p>20. <u>Sustainability indicators</u>: by 2008, establish and fund an entity responsible for compiling and evaluating sustainability indicators. This entity should work closely with the National Commission for Sustainable Development and the National Statistics Office.</p>	
Structure Plan for the Maltese Islands, 1990	<p>This is the national planning document that sets out the development framework for the Maltese Islands for the twenty-year period to 2010. Its' three goals are:</p> <p>1. To encourage the further social and economic development of the Maltese islands, and to ensure as far as possible, that sufficient land and support infrastructure are available to accommodate it;</p>	The Transport Strategy and Master Plan must adhere to relevant policies within the Structure Plan.

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	<p>2. To use land and buildings efficiently, and consequently to channel urban development activity into existing and planned development areas, particularly through rehabilitation and upgrading of the existing fabric and infrastructure thus constraining further inroads into undeveloped land, and generally resulting in higher density development than at present;</p> <p>3. To radically improve the quality of all aspects of the environment of both urban and rural areas.</p>	
Strategic Plan for the Environment and Development (SPED), 2015	The new Environment and Development Planning Act (2010) requires the preparation of a Strategic Plan for the Environment and Development (SPED). This document is currently under preparation and the initial consultation document to establish the strategic objectives can be downloaded from the MEPA website. The SPED will replace the current Structure Plan, providing a strategic spatial planning framework up to 2020. The SPED will be based on an integrated planning system that aims to (i) ensure the sustainable management of land and sea resources together with the protection of the environment; and (ii) guides the development and use of land and sea space.	The Transport Strategy and Master Plan must consider the relevant spatial planning objectives. These will be considered in the Environment Report.
National Climate Change Adaptation Strategy (NCCAS), 2012	The National Climate Change Adaptation Strategy presents a series of actions aimed at various sectors that requires integration of such measures as part of the strategic planning in areas such as fisheries, agriculture, water management, etc.	The Strategy should have regard to the relevant actions and policy direction of the NCCAS.
National Strategy for Policy and Abatement Measures Relating to the Reduction of Greenhouse Gas Emissions, 2009	This strategy is based on a number of pillars including securing civil society and citizen participation, establishing an institutional framework for climate change and building the appropriate human capital, integrating the economics of climate change in policy design and the identification of abatement measures. Abatement measures in the following sectors: energy, waste and agriculture, water, and transport.	The Transport Strategy and Master Plan should be mindful of the objectives within the National Strategy for Policy and Abatement Measures relating to the Reduction of GHG emissions.

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National Air Quality Plan, 2010	This document provides policy guidance to reduce daily average PM <sub>10</sub> concentrations in ambient air in the Maltese Islands. Proposed measures target the major sources of PM <sub>10</sub> , including the construction industry, power generation and traffic (the major contributor to the exceedance of PM <sub>10</sub> concentrations in ambient air).	This Plan should be taken into consideration during the development of the Transport Strategy and Master Plan and the SEA.
National Noise Action Plan, 2013	The National Noise Action Plan was drafted to satisfy minimum requirements in accordance with the END Directive. It outlines a long-term strategy aimed at preventing and reducing environmental noise where necessary and in particular where exposure levels can result in harmful effects on human health and preserving environmental noise quality where it is good. It also sets out objectives for monitoring and management of environmental noise in the Maltese Islands.	This Plan should be taken into consideration during the development of the Transport Strategy and Master Plan and the SEA.
National Environment Policy, 2012	The final NEP was launched in February 2012 and covers all end sectors and natural resources, including air, waste, water, land, soil, climate, biodiversity, coastal and marine area, noise chemicals and mineral resources. The policy covers the period from 2012 to 2020.	This policy outlines the need to manage the coastal and marine areas in an environmentally-sustainable and integrated manner. The development of the SEA objectives consider the NEP objectives ensuring that the assessment is directly related to the national objectives in relation to the environment.
National Biodiversity Strategy & Action Plan (NBSAP) (2012-2020)	The NBSAP provides a vision that reflects the priorities for efficient use of resources and halting biodiversity loss in line with EU requirements and the Global Biodiversity Strategic Plan under the Convention on Biological Diversity.	The Transport Strategy and Master Plan and the accompanying SEA must consider the potential impacts clearly outlined in the NBSAP and ensure strategic measures to prevent and/or minimise as far as possible any negative effects.
National Report on the Strategic Action Plan for the Conservation of Maltese Coastal and Marine Biodiversity, 2002	This Report identifies priority actions in the field of marine and coastal biodiversity. These actions include the preparation of species and habitat action plans, declaration of marine and coastal protected areas, data compilation, monitoring proposals, upgrading research equipment, and effective enforcement.	The Transport Strategy and Master Plan should be cognisant of the requirements in the field of biodiversity and ensure integrated measures as relevant. These will be assessed through the SEA.

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Malta National Electromobility Action Plan (November 2013)	The MNEAP aims at increasing the Battery Electric Vehicles (BEV) on the Maltese roads. The target is that of 5,000 vehicles by 2020. The Action Plan presents a SWOT analysis and a three level phased approach of how to build an electromobility sector in Malta. The three levels will be implemented in parallel.	The Transport Strategy and Master Plan must consider this action plan and integrate measures where relevant.
Speed Management on Maltese Roads Policy and Technical Guidance Manual (Consultation Document)	This document focuses on the issue of speed limits on the Maltese Roads. It presents an overview of the current situation and presents a number of proposals for improving public awareness, law enforcement and road safety.	The Transport Strategy and Master Plan must consider this consultation document and integrate measures where relevant.
National Road Safety Strategy 2014-2024	<p>The National Road Safety Strategy aims to improve road safety, and in doing so has identified a number of objectives that are of particular relevance from an environmental and well-being point of view and that can be supported through the Transport Strategy and Master Plan. There is a focus on encouraging cycling, recognising it as an environmentally-friendly mode of transport and ensuring that this is a safe activity as well as promoting public transport to reduce air pollution. In conclusion the strategy considers that the proposed actions will support the following:</p> <ul style="list-style-type: none"> <li>- <i>A way of life which is more sustainable and active</i></li> <li>- <i>Reduced energy consumption and reduced greenhouse gas emissions</i></li> <li>- <i>Reduced trauma and substance abuse will reduce the work load on the health systems</i></li> <li>- <i>Safety at the workplace for professional drivers will be improved</i></li> <li>- <i>Land use planning will be improved and community severance will be reduced</i></li> <li>- <i>A reduction in traffic collisions will improve the productive</i></li> </ul>	The recommendations and actions of relevance made in this strategy need to be considered and in synchrony with the development of the Strategy and Master Plan.

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	<i>economy due to less queues and delays resulting from collisions.</i>	
Draft National Strategy for the Cultural Heritage (2012-2016)	<p>The draft National Strategy for Cultural Heritage 2012 addresses 22 inter-related objectives, that are grouped into four main areas:</p> <ul style="list-style-type: none"> <li>• Broadening citizen participation: cultural heritage and the local community;</li> <li>• Improving governance in the cultural heritage sector: Investment in the administration setup of the local cultural heritage;</li> <li>• Care and use of the cultural heritage resource: preservation and conservation;</li> <li>• Sustainable use of heritage resources: sustainable use of cultural heritage.</li> </ul>	The Transport Strategy and Master Plan must consider this draft strategy and integrate measures where relevant.
Malta's Partnership Agreement, 2013	This document provides the overall framework that will determine the areas for investment under the European Structural and Investment Funds. The Partnership Agreement sets the framework for Operational Programme I, Operational Programme II, the Rural Development Programme, and the Fisheries Operational Programme.	The Transport Master Plan is the main basis for obtaining funds during the 2014-2020 funding period and should therefore ensure coherence with the Partnership Agreement.
<b>4. National Legislation</b>		
Constitution of Malta	The Constitution of Malta (Section 9) declares that the State shall safeguard the landscape and the historical and artistic patrimony of the Nation. These are the only aspects of the environment referred to in the Constitution, underlining the importance of the landscape and historical heritage.	Landscape and historical heritage must be recognised as important assets in the Transport Strategy and Master Plan where relevant.

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<p>Environment and Development Planning Act, 2010</p>	<p>This Act seeks to protect the environment and make provision for the planning and management of development and establishes the Malta and Environment Planning Authority in relation to these requirements.</p> <p>The Act requires everyone together with the government to protect the environment and to assist in the taking of preventative and remedial measures to protect the environment and manage natural resources in a sustainable manner. Various duties that fall to the government are established including:</p> <p>4(a) to manage the environment in a sustainable manner by integrating and giving due consideration to environmental concerns in decisions on socioeconomic and other policies;</p> <p>4(b) to take such preventive and remedial measures as may be necessary to address and abate the problem of pollution and any other form of environmental degradation in Malta and beyond, in accordance with the polluter pays principle and the precautionary principle;</p> <p>4(e) to apply scientific and technical knowledge and resources in determining matters that affect the environment;</p> <p>4(g) to safeguard biological diversity;</p> <p>4(h) to combat all forms of pollution;</p> <p>4(i) to consider the environment as the common heritage and common concern of humankind; and</p> <p>4(j) to provide incentives leading to a higher level of environmental protection.</p>	<p>Projects resulting from the Transport Strategy and Master Plan must conform to the requirements of this Act.</p>
<p>Territorial Waters and Contiguous Zone Act, 1971</p>	<p>The Territorial Waters and Contiguous Zone Act (Chapter 226) was enacted in 1971 (and subsequently amended in 1975, 1978, 1981, and 2002) <i>“to extend the territorial waters of Malta and to make provision for a</i></p>	<p>The Transport Strategy and Master Plan take into account Malta's territorial waters.</p>

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p><i>contiguous zone". The Act declares the territorial waters of Malta as being "all parts of the open sea within twelve nautical miles of the coast of Malta measured from low-water mark on the method of straight baselines joining appropriate points".</i></p> <p>The Act empowers the Prime Minister to make regulations to control and regulate the passage of ships through the territorial waters and to regulate [Art. 7(1)]:</p> <p><i>Safety of navigation and marine traffic;</i></p> <p><i>The protection of navigational aids, facilities and other installations;</i></p> <p><i>The protection of cables and pipelines;</i></p> <p><i>The conservation of marine living resources;</i></p> <p><i>The prevention of infringement of fishery laws;</i></p> <p><i>The preservation of the environment;</i></p> <p><i>The prevention, reduction and control of marine pollution;</i></p> <p><i>Marine scientific research and hydrographic surveys;</i></p> <p><i>The prevention of infringement of customs, fiscal, immigration, or sanitary laws; and</i></p> <p><i>The arrest, detention, and seizure of ships to ensure compliance with laws and regulations.</i></p> <p>Although this Act provides for wide-ranging powers through enactment of regulations, none have been issued under this Act to date.</p>	
Malta Resources Authority Act, 2000	The Malta Resources Authority Act establishes the powers of the Malta Resources Authority whose regulatory functions centre around water, energy, and mineral resources. In relation to water specifically the	The National Water Policy and Energy Policy and Climate Change are under administration of the Malta Resources Authority.

Plan, Programme, Legislation	Description	Implications for Malta's Transport Strategy and Master Plan
	<p>Authority shall under provision 4(2)(b):</p> <ul style="list-style-type: none"> <li><i>(i) secure and regulate the acquisition, production, storage, distribution or other disposal of water for domestic, commercial, industrial or other purposes;</i></li> <li><i>(ii) secure and regulate the conservation, augmentation and operation of water resources and the sources of water supply;</i></li> <li><i>(iii) secure and regulate the treatment, storage, disposal, use or re-use, as appropriate, of sewage, waste water, sludge and storm water run-off;</i></li> <li><i>(iv) secure and regulate the provision of adequate systems of public sewers and to ascertain their cleanliness, safety and efficiency;</i></li> <li><i>(v) ensure the safe discharge, reception, treatment and disposal of trade effluent;</i></li> <li><i>(vi) encourage and regulate the re-use of treated effluent;</i></li> <li><i>(vii) ensure the proper and fit disposal of waste water sewage;</i></li> <li><i>(viii) maximise the use of storm water run-off;</i></li> </ul>	
<p>Authority for Transport in Malta Act, 2009</p>	<p>This Act provides for the establishment of the Authority for Transport in Malta, which assumes the functions previously exercised by the Malta Maritime Authority, the Malta Transport Authority and the Director and Directorate of Civil Aviation and for the exercise by or on behalf of that Authority of functions relating to roads, to transport by air, rail, road or sea, within ports and inland waters, and relating to merchant shipping.</p>	<p>The Authority for Transport in Malta is the client of the project.</p>

# Appendix 2: Response to Public Consultation on Scoping Report

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## Response to comments made by the Sustainable Energy and Water Conservation Unit within the Ministry for Energy and Health

Table 6. Response to Comments made by the Sustainable Energy and Water Conservation Unit within the Ministry for Energy and Health

Scoping Report Section	Comment	Consultants' Response
General	The lack of focus of surface water (rainwater runoff) in the scoping report is noted. One of the main issues in relation to the development of transport infrastructure is definitely its impact on the management of rainwater runoff. Therefore, it is suggested that this issued be included under the report's baseline issues.	<p>Paragraph 19, bullet on freshwater has been updated to include direct reference to rainwater runoff.</p> <p>Baseline data on rainwater runoff management has been referred to specifically in Table 1 under the issue of Water.</p>
General	Similarly the objectives of the SEA should not be solely focused on groundwater quality, but be more objective in considering rainwater runoff as a further national water resource. The potential for inclusion of rainwater harvesting facilities in transport infrastructure projects should thus be considered. Furthermore, the SEA should also consider the potential impact of the disposal of rainwater runoff generated through transport infrastructure development on groundwater quality and water management in valleys, since all too often these issues have been overlooked at planning stage.	Table 2 has been updated to include a SEA objective 'To maintain or improve rainwater harvesting capacity' and an appropriate indicator has also been identified. The assessment included within the Environmental Report will consider the issues identified by the Ministry in relation to rainwater runoff harvesting as well as impacts on groundwater quality and implications on water management in valleys in relation to runoff generated through transport infrastructure development.
General	With respect to legislative texts to be analysed under the scoping report, the inclusion of the EU Groundwater Directive and the EU Floods Directive is recommended.	These Directives have been added to the Appendix 1: Analysis of Related Plans, Programmes, and Legislation.

## Response to Comments made by the Department of Environmental Health within the Ministry for Energy and Health

Table 7. Response to Comments made by the Department of Environmental Health within the Ministry for Energy and Health

Scoping Report Section	Comment	Consultants' Response
Paragraph 19	Noise, bathing water quality (including chemical and physical parameters) should be included in the identified environmental parameters.	These aspects are considered within the parameter 'population and human health'.
Table 2	With regards to Population and Human health – all criteria (and indicators) listed seem to relate to road transport. Air pollution generation, noise and vibration, light pollution and safety must also be assessed in relation to maritime activities (e.g. air quality from/around shipping and other port activities; noise from shipping, port and recreational activities; safety at sea; etc) and air transport (noise and vibration from airfields/helipads; safety; light pollution; air quality; etc).	The Transport Strategy and Master Plan is largely concerned with internal transport as opposed to external transport. However, impacts from maritime activities (including port activities) and aviation activities will be considered as relevant, reflecting the level of consideration of these forms of transport within the Strategy and Master Plan.
General	Due to conflicting activities in port areas (including presence of resident populations), we recommend the development of master plans specific for port areas (detailed sector action plans). Therefore the environment report should include a baseline assessment of the activities around port areas including shipping and other transport related activities and industries which may affect nearby residences, institutional activities such as schools, hospitals etc.	Consideration of conflicting activities and uses in and around port areas lies within the scope of land use plans. However, the Environmental Report will consider potential impacts from the sector as relevant to the Strategy and Master Plan.
Paragraph 30	Why is reference given to 2005 SoER not later editions of these reports?	Bullet 3 has been updated to make reference to the 2008 edition and subsequent updates.

Scoping Report Section	Comment	Consultants' Response
General	Any reference to quality of sea/bathing water should include chemical and physical parameters	Agreed. MEPA has gathered data on both types of parameters, and these shall be referred to as relevant.
Appendix 1	<p>In list of Related Plans, Programmes, and Legislation please include:</p> <ol style="list-style-type: none"> <li>1. "A Strategy for the Prevention and Control of Noncommunicable Disease in Malta (April 2010)". "The ever-increasing motorisation and vehicle use" is identified in this document as "contributing largely to air and noise pollution with ensuing effects on cardiopulmonary and mental health". Strategies recommended in this document include: <ul style="list-style-type: none"> <li>○ Infrastructural changes through intersectoral collaboration to; <ul style="list-style-type: none"> <li>▪ Enhance public leisure areas</li> <li>▪ Increase availability of areas for physical activity</li> <li>▪ Make physical activity accessible to all</li> </ul> </li> <li>○ To promote physical activity in all settings.</li> <li>○ To promote walking as a means of active transport.</li> </ul> </li> <li>2. "The National Cancer Plan 2011-2015" which recognises air pollution especially from traffic as a risk factor for cancer. Included in the recommendations is "Taking steps to reduce National Emission Ceilings".</li> <li>3. National Road Safety Strategy</li> </ol>	The Table has been updated with these inclusions.

## Response to comments made by the Malta Resources Authority

Table 8. Response to Comments made by the Malta Resources Authority

Scoping Report Section	Comment	Consultants' Response
Energy	The strategy should take into account the requirements of Directive 2014/94/EC. This directive mandates alternative energy requirements for a transport policy.	Appendix 1 has been updated to include reference to this Directive.
	The strategy should take into consideration the requirements of Directive 98/70/EC relating to the quality of petrol and diesel fuels and Directive 2009/30/EC which amends Directive 98/70/EC as regards the specification of petrol, diesel and gasoil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending 1999/32/EC as regards the specification of fuel used by inland waterway vessels.	Appendix 1 has been updated to include reference to these Directives as relevant.
	The strategy should take into account the requirements of Council Directive 1999/32/EC as amended by Directive 2012/33/EU as regards the sulphur content of marine fuels. Apart from the sulphur level in marine fuels this directive indicates a number of measures such as the availability of shore-side electricity for ships.	Appendix 1 has been updated to include reference to these Directives as relevant.
	The strategy should take into consideration the Energy Efficiency Directive 2012/27/EU. Moreover, it should be noted that the National Energy Efficiency Action Plan (pg 47) has been updated in 2014. So as to fulfil the obligation under Article 7 of the same Directive, Malta has submitted a report which consisted of a collection of policy measures to achieve energy savings among final customers.	Appendix 1 has been updated to include reference to this Directive as relevant.

Scoping Report Section	Comment	Consultants' Response
Groundwater – pg 43	There is also an obligation for Malta to achieve good status for groundwater bodies, apart from surface water.	Noted. Appendix 1 has been updated to reflect this.
Climate Change	<p>The scoping report is not clear as to which transport modes will be covered by the Transport Strategy and Master Plan. However, the Transport Malta website states the following: "Transport Malta's Integrated Transport Strategy Directorate is driving the process of developing a National Transport Strategy (NTS) and Transport Master Plan (TMP) covering all relevant transport modes (land, public transport, maritime and aviation) for the short, medium and long term" (<a href="http://www.transport.gov.mt/transport-strategies/strategies-policies-actions/transport-strategies-in-development/national-transport-strategy-and-master-plan">http://www.transport.gov.mt/transport-strategies/strategies-policies-actions/transport-strategies-in-development/national-transport-strategy-and-master-plan</a>). If maritime and aviation transport modes are also to be covered, then due consideration should also be given to the following:</p> <ul style="list-style-type: none"> <li>▪ Ongoing discussions under the auspices of ICAO regarding a global market-based mechanism for international aviation;</li> <li>▪ Ongoing discussions under the auspices of IMO on global action (including global MRV; global market-based measures) for maritime activities;</li> <li>▪ The proposed EU regulation on maritime MRV for greenhouse gas emissions, on which political agreement has been reached.</li> </ul>	<p>Although the Transport Strategy and Master Plan will consider all modes as described on the website, the scope of measures will focus on internal transport and therefore, necessarily, road transport will be considered with a particular focus. However, the Strategy and Master Plan must be mindful of developments in the transport sector as these become available and the impacts from the different modes of transport will be assessed if these are addressed in the Strategy and/or Master Plan.</p>

Scoping Report Section	Comment	Consultants' Response
Page 39	<p>With regards to references to the EU ETS Directive, it would be more appropriate to make reference to Directive 2003/87/EC as amended (by, inter alia: Directive 2008/101/EC that extends the scope to aviation activities; Directive 2009/29/EC) rather than specifically to Directive 2009/29/EC.</p>	<p>Directive 2009/29/EC remains relevant. The title has been amended to include reference to 2008/101/EC in Appendix 1.</p>
	<p>With regards to EU climate policy, due consideration should also be given to the 2030 Climate and Energy Framework, as adopted by the European Council last October, in particular the overall target of 40% reductions compared to 1990 by 2030, and the consequential revisions that will be made to relevant legislation (especially with respect to new targets for Member States for non-ETS emissions, that would include transport sectors). [NOTE: it may also be pertinent to note the longer term policy perspective of the ERU, namely a reduction of 80-95% in GHG emissions, compared to 1990 levels, by 2050.]</p>	<p>Noted. Appendix 1 has been updated accordingly.</p>
	<p>It is important to note that Malta is required to set out a Low Carbon Development Strategy, which would also cover transport (from a climate action, environmental, economic and social development perspective). It is crucial to ensure that the linkages between the TM/TSR process(es) and the LCDS process are given due consideration.</p>	<p>Noted. However the LCDC has not been formulated to date; if it is formulated during the timelines of this SEA then it will definitely be taken into account.</p>

Scoping Report Section	Comment	Consultants' Response
	<p>It might also be useful to bring to the consultants' attention the fact that a Climate Action Bill has been drafted and is expected to be submitted for Parliament's discussion in the near future. Though a Climate Action Act would not necessarily have direct explicit regulatory effect on transport, it will provide the overarching legal framework for climate policy in Malta, including insofar as it relates to transport. Furthermore, discussions are also ongoing at an international level on a new protocol to replace the Kyoto Protocol to the UNFCCC – quantified emission limitation/reduction obligations under the new protocol would also cover transport. This gives additional context to climate policy making, and, subject to the extent to which aviation and maritime will be specifically addressed by the new protocol (this remains an element of controversy in the discussions), could be of direct interest to these two transport modes.</p>	<p>Noted. However, this Appendix only considers legislation that is currently in force.</p>

## Response to comments made by the Malta Environment and Planning Authority

Table 9. Response to Comments made by the Malta Environment and Planning Authority

Scoping Report Section	Comment	Consultants' Response
Plan level Appropriate Assessment	<p>During the SEA Screening process, MEPA could not determine whether the National Transport Strategy and National Transport Master Plan require a plan-level Appropriate Assessment, mainly due to the lack of information available at the time. <b>The Appropriate Assessment screening process for the National Transport Strategy and National Transport Master Plan, which is a requirement under Regulation 19 of the Flora, Fauna and Natural Habitats Protection Regulations of 2006 (L.N. 311 of 2006) as amended, is still pending.</b></p>	<p>Noted. Once the Strategy and Master Plan have been developed further, the details will be provided to MEPA to facilitate the Appropriate Assessment screening process.</p>
	<p>MEPA notes that more detailed information, including potential projects related to transport, will be available as part of these Plans. In order to conclude its Appropriate Assessment screening process, and therefore determine whether a plan-level Appropriate Assessment is required, MEPA requires submission of further information as part of the SEA process. <b>The SEA process should provide suitable and sufficient information on the likely significant impacts of these Plans on Special Areas of Conservation and Special Protection Areas / Natura 2000 sites.</b></p>	<p>See above.</p>

Scoping Report Section	Comment	Consultants' Response
Project-level Environmental Assessment	<p>Future proposals emerging from, or are connected to, the implementation of these Plans may also require separate project-level environmental assessment once more detailed information about the specific projects and alternatives are available. This may include an Environmental Impact Assessment (EIA) and/or an Appropriate Assessment in line with the requirements of the EIA Regulations of 2007 and the Flora, Fauna and Natural Habitats Protection Regulations of 2006, as amended, respectively.</p>	<p>Noted. This will be considered at the assessment stage of the Environmental Report.</p>
Chapter 4, Table 1	<p>With respect to the section <b>on biodiversity / fauna and flora</b>, it is recommended that the Environmental Report should report on the current conservation status of the areas, protected species, etc. listed in Table 1. This is important since the strategic assessment needs to evaluate the likely significant impacts on the conservation status of these protected areas, species, etc. as highlighted in Table 2 of the Scoping Report.</p>	<p>Noted. Reference to this has been included in Table 1.</p>
	<p>With respect to the section on <b>soil</b>, it is recommended that the Environmental Report could also report on the current situation vis-à-vis: soil organic matter biomass; soil compaction; soil ecology/underground biodiversity; soil landsliding (mass displacement issues); and soil salinisation. It is suggested that the authorities responsible for agriculture are contacted to determine whether any useful information and data is available on such matters.</p>	<p>Data gathered should reflect what could be affected as a result of implementation of the Strategy and/or Master Plan, and does not necessarily affect all existing data. The baseline data listed in Table 1 is considered to provide the type of information that is relevant to the potential impacts arising from Strategy and Master Plan implementation and that should be considered in the assessment. Nonetheless, the Department of Agriculture will be contacted during the development of the Environmental Report in order to determine whether additional data is collected on a regular basis that may be relevant for the purposes of the assessment.</p>

Scoping Report Section	Comment	Consultants' Response
Chapter 7, Table 2	<p>With respect to the section on <b>biodiversity / fauna and flora</b>, it is recommended that the assessment of impacts should also address, through the establishment of specific criteria and indicators:</p> <ul style="list-style-type: none"> <li>▪ the need for Malta to achieve Good Ecological Status of coastal waters and Good Environmental Status of marine waters beyond protected areas, as per Water Framework Directive and Marine Strategy Framework Directive requirements respectively;</li> <li>▪ any possible changes to visitor travel patterns, including car trips, which could put more pressure on sensitive environmental areas; and</li> <li>▪ any possible effects on greenfield sites / undeveloped land.</li> </ul>	Noted. Table 2 has been updated as considered relevant.
	<p>Moreover, better linkages are required between the criterion on ecosystems services and the associated indicators. At present, most of the indicators focus on the conservation status of protected area, species, etc.</p>	<p>Not all of the indicators focus on protected areas and conservation status, however. The last indicator in relation to this aspect in Table 2 has, however, been updated to refer to green infrastructure as opposed to solely green spaces, the inclusion of which can enhance ecosystem services provided in the existing environment.</p>
	<p>With respect to the section on <b>water</b>, it is acknowledged that the indicator 'quality of the marine environment' would cover all aspects covered by the WFD/MSFD. However, nutrient status seems to be singled out. It is recommended that reference should be made to 'quality of the marine environment in terms of biological and physico-chemical elements'.</p>	Noted. Table 2 has been updated accordingly.

Scoping Report Section	Comment	Consultants' Response
	<p>With respect to soil, it is recommended that the number of soil permits issued by the Agriculture authorities could also be included as another SEA indicator. MSDEC-AGR is the data holder/provider.</p>	<p>Noted. Table 2 has been updated accordingly.</p>
	<p>With respect to the section on <b>landscape</b>, it is recommended that the assessment could also consider, from a strategic perspective, any possible significant impacts on landscape features.</p>	<p>Landscape features are related to a given area, and therefore, are less strategic in their scope. However, Table 2 has been updated in terms of the SEA objective for landscape to specify consideration of landscape character and scenic value in line with the Landscape Institute and Institute of Environmental Management and Assessment (IEMA) Guidelines for Landscape and Visual Impact Assessment (2013)<sup>11</sup>.</p>
<p>Appendix 1</p>	<p>It is recommended that the Soil Thematic Strategy should be included in the list of relevant plans, programmes, etc and should be taken into consideration during the strategic assessment. This refers to the document Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Thematic Strategy for Soil Protection [SEC(2006)620] [SEC(2006)1165]: /* COM/2006/0231 final */.</p>	<p>Noted. Appendix 1 has been updated accordingly.</p>

<sup>11</sup> Landscape Institute & Institute of Environmental Management & Assessment. 2013. Guidelines for Landscape and Visual Impact Assessment. Third Edition. Routledge.

## Response to comments made by the Directorate for the Environment and Climate Change within the Ministry for Sustainable Development, the Environment and Climate Change

Table 10. Response to Comments made by the Directorate for the Environment and Climate Change within the Ministry for Sustainable Development, the Environment and Climate Change

Scoping Report Section	Comment	Consultants' Response
General	<p>Our general comments on the SEA centre on the fact that the whilst the various elements of what is expected to be included in an SEA Scoping Report from an environmental and climate change perspective are presented in the SEA the level of detail provided on such is rather limited. We feel that the level of information provided in the Scoping Report is not currently sufficient to allow stakeholders to provide meaningful and adequate feedback during the scoping consultations and hence this would be to the detriment of the final environmental report. Given the national importance of the NTS and MP for the transport sector we would strongly suggest the provision of more information on various environmental aspects as outlined below both in our general comments and specific comments section.</p>	<p>The aim of the Scoping Report is to provide the framework for the environmental assessment that is included in the Environmental Report. The Scoping Report lists all the tools that will be used for the assessment (including identifying baseline data to be obtained, and the setting out of the SEA Objectives together with appropriate indicators that will be used to carry out the assessment). As such, therefore, the Scoping Report does not (and is not meant to) provide any information on the various environmental aspects. This detail features in the Environmental Report. The consultation carried out on the Scoping Report is considered good practice and is carried out in order to facilitate the relevant stakeholders to identify whether all relevant considerations have been included in the Scoping Report that sets the appropriate framework for the Environmental Report.</p>

Scoping Report Section	Comment	Consultants' Response
	<p>We would expect the NTS and MP and thus the SEA Scoping Report should take into consideration the fact that any future NTS and MP would need to consider that Malta is developing a forwarding looking low carbon strategy. The transport sector in Malta plays a prominent role in various environmental aspects foremost of which are air quality and associated emission level and the impacts on health, society and the environment as a whole. The SEA Scoping Report to our mind does not place a sufficient level of importance and emphasis on this and as such we would wish to see mention of the shift towards a low carbon strategy as one of the elements to be considered as part of the SEA. This would also address our specific concerns regarding the exclusion on 2030 Climate and Energy Framework targets and the short comings in the SEA in this regard and the apparent lack of a longer term vision being taken into account as part of the SEA process.</p>	<p>Reference to the 2030 Climate and Energy Framework targets has been included in the updated Scoping Report (refer to Appendix I). The Scoping Report ensures that all environmental aspects listed in this comment (including others not mentioned here, as required by the Directive) will be assessed based on the SEA Objectives developed and presented in Table 2. All potential impacts on these aspects will thus be assessed in the Environmental Report and all have therefore been given their due importance, as required by the SEA Directive. With reference to a national Low Carbon Strategy that is still in the pipeline, in the absence of this Strategy, the Scoping Report cannot base the development of the SEA Objectives on this specific Strategy. If the DECC can identify specific SEA Objectives that should be included or that any of those presented should be modified to better reflect the strategic direction in this regard, this consultation period provides the opportunity for specific recommendations to be proposed.</p>

Scoping Report Section	Comment	Consultants' Response
	<p>A final general comment is that with regards to biodiversity and nature conservation the SEA Scoping Report does not to our mind place sufficient emphasis on the importance of biodiversity in the SEA process. Biodiversity conservation and the obligations that the national and international legislature place on Malta can and does have a significant impact on the 'environmental' assessment of any plans and programmes subject to SEA. However the current format and wording of the SEA Scoping Report is such that biodiversity has been combined into environment and sustainable development policy areas. This to our mind will place an inadequate level of importance on biodiversity and as such we would suggest that biodiversity and nature conservation should have a specific section within the upfront sections of the SEA Scoping Report.</p>	<p>We disagree that insufficient emphasis has been place on biodiversity and cannot understand why the comment suggests biodiversity has been subsumed into general aspects when it is specifically identified as one of a number of environmental aspects to be considered when carrying out impact assessment. Baseline data related specifically to biodiversity will be gathered as specified in Table 1 and specific SEA Objectives have been included (see Table 2) to ensure that impacts on biodiversity will be assessed in the Environmental Report in accordance with the SEA Directive requirements. It is further noted that the SEA is required to consider all environmental parameters as listed in the Directive, there is no requirement to give one parameter more importance than the others.</p>
Air quality	<p>Table 1, Page 13, Human Health Issue: Clarification is sought on whether data on air quality will be considered for the baseline in this section given the prominent role transport plays in influencing human health.</p>	<p>Refer to Table 2 where the SEA objectives clearly define what will be considered when carrying out the impact assessment. One SEA objective under 'human health' aims specifically 'to reduce air pollution'. An additional objective is found under air emissions underscoring the importance of emissions.</p>
Sustainable development	<p>On Page 10 the first bullet point also refers to Millennium Development Goals (MDGs) given the timeframe for implementation of these goal finishes in 2015 we would suggest that the SEA should instead reference the post 2015 Sustainable Development Goals.</p>	<p>The United Nations post-2015 development agenda will be launched in September 2015. Reference to the MDGs remains relevant.</p>

Scoping Report Section	Comment	Consultants' Response
	<p>Page 48 references the Draft Sustainable Strategy for Maltese Islands. In relation to biodiversity the Table references out of date targets or rather target timelines that have now passed and therefore we would suggest that this reference might now be inappropriate given the publication of the SEA in 2015. We would kindly suggest that the targets set out in the National Biodiversity Strategy and Action Plan would be more relevant.</p>	<p>Comment noted, however, given that this is the latest version of the Sustainable Strategy for the Maltese Islands, reference to it continues to be relevant (as for instance reference to the outdated Structure Plan continued to be relevant in the absence of an approved alternative). The National Biodiversity Strategy and Action Plan is also referenced in Appendix 1.</p>
Climate Change	<p>Section 4, Page 11 Baseline Data. With regards to climate change we would consider the following elements need to be considered as part of the SEA process; waste, f-gases and agriculture emissions.</p>	<p>This is a sectoral strategy that focuses on transport. Table 1 lists the baseline data that is relevant in this regard in relation to emissions to air and climate change. It is not clear why the DECC considers emissions from other sources to be relevant to the assessment of this strategy and master plan.</p>
	<p>As regards climate adaptation and mitigation these are well taken into consideration in the report together with the 2020 targets. On the other hand, given that the proposed strategy will outline the direction for transport policy in Malta for the next 30-40 years, this lacks to take into consideration the 2030 Climate and Energy Framework targets, together with the EU climate vision towards 2050. The transport sector in Malta is one of the highest contributing sectors to our national Green House Gas emissions, thus a more holistic approach needs to be taken which in turn will also contribute in reaching a low carbon development by decarbonised transport.</p>	<p>Appendix 1 has been updated to include reference to 2030 Climate and Energy Framework target.</p>

Scoping Report Section	Comment	Consultants' Response
Biodiversity	<p>We would expect at this stage that the Scoping Report would be able to identify which protected sites and species are likely to be affected by the development of NTS. Therefore we would suggest adding an additional section to the Scoping Report on Likely Environmental Impacts within which such information could be presented.</p>	<p>This assumption is incorrect as at this stage there are no details on protected sites for development under the Master Plan. Furthermore the Scoping Report is not the tool for consideration of potential impacts. Potential impacts on protected sites and species will be assessed in the Environmental Report (which will also be available for public consultation). It should also be noted that whilst sometimes possible, strategic assessment may not always be site specific precisely due to the strategic nature of plans/programmes (and therefore differs to EIA in this respect).</p>
	<p>Page 11 paragraph 18 references Malta's State of the Environment Report from 2005. It is our understanding that an updated version of this report was produced in 2008 title the Environment Report and as such it would be preferential to reference the 2008 report rather than the 2005. Additionally the 2015 EU State of the Environment Report might also be of relevance.</p>	<p>The Scoping Report has been updated accordingly.</p>

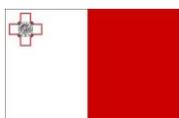
Scoping Report Section	Comment	Consultants' Response
	<p>Table 1 page 12. The section on biodiversity does on the whole include everything we would expect however there are some points not included that should be considered. Given the national scale of the Transport strategy we would expect the SEA to consider the impacts on biodiversity not only within protected sites but also out with such areas. Whilst the table makes some reference to this in point 3 (protected species) we would suggest that ecological connectivity needs to be considered too</p>	<p>It should be noted that Table 1 refers to baseline data that will be collected to provide a baseline against which to carry out the assessment. When collecting baseline data, one of the sources, as specified in Table 1, will be any relevant survey data that may exist in terms of ecology, even for sites that are not necessarily legally protected. Table 2 presents the SEA Objectives, against which the Strategy and Master Plan measures will be assessed. One of the SEA objectives in relation to biodiversity is 'To maintain or improve biodiversity (including terrestrial and marine.' This objective thus also encompasses biodiversity outside any legal protection considerations. Nonetheless, Table 2 has been updated to include an assessment criterion that will ensure that the assessment considers ecological connectivity.</p>
	<p>Page 16 paragraph 30 again references Malta's SOER of 2005 and subsequent updates. We would kindly suggest that this should just read as the 2008 version.</p> <p>Page 17. The Table highlights that the SEA objectives for biodiversity, flora and fauna are to (1) maintain or improve biodiversity (including terrestrial and marine) and (2) to maintain or improve Natura 2000 sites. On point (1) is this referring to a study across the whole of islands or just in areas close to transports links as to be delineated in the plan when it is developed? Clarification on this point is kindly suggested to provide a clearer definition of the geographical scope of the SEA.</p>	<p>Scoping Report has been updated accordingly.</p> <p>The SEA Objectives represent that which, from a strategic environmental point of view, the Strategy and Master Plan either help to achieve (resulting in a positive impact), not affect (resulting in a neutral impact), or go against (resulting in a negative impact). Each proposed measure in the Strategy and Master Plan will be assessed against each SEA objective (refer to Chapter 8). The Transport Strategy and Master Plan have a national scope. The assessment (against the SEA Objectives) will reflect the scope of the Strategy and Master Plan measures and will therefore be at national or area-based level depending on the scope of the Strategy or Master Plan measure/s being assessed.</p>

Scoping Report Section	Comment	Consultants' Response
	<p>Page 17. It is suggested that an additional criteria is added to the second column with respect to biodiversity. It is suggested that the SEA should consider ecological connectivity and how the objectives of the SEA in determining the effects of the NTS on such should be included as part of the assessment.</p>	<p>As identified also above, Table 2 has been updated to ensure that one of the criteria for assessment considers ecological connectivity.</p>
	<p>Page 17 table column on SEA indicator. We would seek clarification on the SEA indicators chosen. There would be a general presumption against developing within terrestrial Natura 2000 sites and other protected areas given their small size and as such we would seek clarification on the rationale for choosing both these SEA indicators.</p>	<p>Actually, although there are more conditions, it is still possible to have some types of development and/or interventions within protected areas. The selected indicators will highlight where such activity is occurring (and whether it is occurring as a result of Strategy/Master Plan implementation) and that therefore potentially significant negative impacts may be affecting protected areas. This data, gathered during SEA monitoring, when analysed, could prompt the potential need to revisit the Strategy and/or Master Plan.</p>
	<p>Page 32. We would suggest the inclusion of the both the Bonn Convention and Ramsar Convention with respect to international commitments.</p>	<p>Appendix 1 has been updated accordingly.</p>
Water	<p>Page 48 with reference to the water catchment management plan for Malta. We would kindly seek clarification as to whether this reference is solely to the first plan or whether the SEA will also consider the upcoming second water catchment plan.</p>	<p>Until the second water catchment plan is made available, the SEA can only consider the first plan. It is understood that the second plan will be available at the end of the year.</p>

Scoping Report Section	Comment	Consultants' Response
Summary	<p>Whilst the SEA Scoping Report does set out the proposed assessment of the NTS and MP we feel that in order for a thorough and complete scoping consultation process to be undertaken the above general and specific comments with regards to the various environmental impact should be taken into consideration. This is particularly important given the prominent role that the transport sector plays in Malta and the inherent implications of any future transport strategy will have on the environment. Further to this the critical role that consultation with stakeholders plays in the SEA process can be severely undermined by limited data presentation. As such we feel that increasing the level of information provide will not only improve the consultation process as well as the efficiency of such but will also result in an improved final environmental report that takes into account all the various environmental aspects to a level that is adequate for Malta to meet its national and international obligations.</p>	<p>See comments above. To clarify, the Scoping Report provides the framework for the Environmental Report and does not, at this stage include any environmental baseline data or impact assessment. Once a legal requirement, updates to the legislation (Legal Notice 497 of 2010) have resulted in it no longer including reference to a Scoping Report. However, the Consultants believe that producing a Scoping Report and consulting on it constitutes good practice and this is why it was produced nonetheless. Following updates to the Scoping Report that are based on relevant stakeholder comments, the next step in the SEA process is to carry out the impact assessment proper, which features in the Environmental Report. This report is also subjected to public consultation. Any comments received are addressed accordingly before the report is finalised. Findings of the Environmental Report are to be addressed during the Strategy and Master Plan development. It is further noted that there is limited information on the Strategy and Master Plan as these are still being developed. As is good practice, the aim of the SEA is to be carried out as the Strategy and Master Plan are being formulated.</p>



As a subcontractor: **Adi**  
ASSOCIATES



Operational Programme I – Cohesion Policy 2007-2013  
*Investing in Competitiveness for a Better Quality of Life*  
Event part-financed by the European Union  
European Regional Development Fund (ERDF)  
Co-financing rate: 85% EU Funds; 15% National Funds



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## APPENDIX II: APPROPRIATE ASSESSMENT

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# Development of a National Transport Model Supporting Strategy Development in Malta

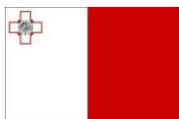


Strategic Environmental Assessment  
 on Malta's National Transport  
 Strategy and Master Plan  
*Appropriate Assessment*

Version 1.1



As a subcontractor:



Operational Programme I – Cohesion Policy 2007-2013  
*Investing in Competitiveness for a Better Quality of Life*  
 Event part-financed by the European Union  
 European Regional Development Fund (ERDF)  
 Co-financing rate: 85% EU Funds; 15% National Funds





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Development of a National Transport Model Supporting Strategy Development in Malta:

**Strategic Environmental Assessment Report - Appropriate Assessment**



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## Revision Details

Version	Date	Remarks
1.0	13/10/2016	Appropriate assessment, for consultation
1.1	25/11/2016	Appropriate assessment, Final

***Please cite this publication as:***

Transport Malta (2016), *National Transport Strategy – Strategic Environmental Assessment Report (Appropriate Assessment)*

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# 1 Non-Technical Summary

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## 1.1 Introduction

1. This Appropriate Assessment (AA) has been prepared for Transport Malta as part of its development of the National Transport Strategy 2050 (NTS) and Transport Master Plan 2025 (TMP).
2. In addition to an Appropriate Assessment, the NTS and TMP are also undergoing a Strategic Environmental Assessment (SEA). This document makes reference to the Environmental Report emerging from the SEA as appropriate.
3. This Appropriate Assessment is based on Terms of Reference (ToR) prepared by the Environment and Resources Authority (ERA).

## 1.2 Appropriate Assessment Objectives & Scope of Study

4. The aim of the Appropriate Assessment is to determine whether the effects of the NTS and TMP will have an impact on any terrestrial and marine Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).
5. The NTS provides a nation-wide strategic direction that covers the entire territory of the Maltese Islands. The TMP is also a national level document, drawn up to implement the NTS, however, it includes measures that are more specific, some of which include reference to interventions in specific locations for the period up to 2025. Given that the boundary of the NTS and TMP is nation-wide, all Natura 2000 sites in the Maltese Islands and two SACs of national importance lie within the scope of the AA. More detailed level assessment will, however, be carried out on those sites that may be impacted by certain measures proposed in the TMP.

## 1.3 Methodology

6. ERA issued Terms of Reference for the Appropriate Assessment.

### 1.3.1 Baseline study

7. A desk study was carried out with a specific focus on existing Management Plans and Standard Data Forms as relevant.

### 1.3.2 Impact Assessment

8. The Terms of Reference for the AA require 'An evaluation of the way in which the integrity of the site and their species, habitats and ecosystems are likely to be affected by the project...'. There is also a requirement to discuss the significance of relevant impacts.
9. In assessing the significance of the potential negative impacts arising from the NTS and TMP on the terrestrial and marine habitats and species of conservation interest in the affected area, the following criteria have been used:
  - **Not significant** - no material change in site integrity<sup>1</sup> and / or conservation status<sup>2</sup> of habitats and species of conservation interest in particular Annex I habitats and Annex II species as listed in the Habitats Directive. No material change expected to other species of ecological value and conservation interest including those listed in the Red Data Book for the Maltese Islands in terms of range, population and habitat important for the ecology of the species;
  - **Minor significance** - small-scale loss / disturbance including to species populations / extent of habitat that is unlikely to affect the integrity of the overall site/habitat and species populations of conservation interest; and
  - **Major significance** - large-scale loss / disturbance / change in habitat that is likely to affect the ecological integrity and/or species populations' viability whereby the conservation status of the habitat and/or species is likely to be compromised within the Natura 2000 area of interest.

### 1.4 National Transport Strategy and Transport Master Plan

10. The National Transport Strategy provides a vision for the transport sector in Malta. It goes on to describe the strategic goals and direction to achieve these goals as well as identifying indicators to measure progress.
11. The vision for the NTS is:

*To provide a sustainable transport system which is efficient, inclusive, safe, integrated and reliable for people and freight, and which supports attractive urban, rural and coastal environments and communities where people want to live and*

---

<sup>1</sup> Integrity is not defined in the Habitats Directive, although it is introduced under Article 6. Official guidance on nature conservation in the UK provides a definition in relation to European sites that can be applied more generally: 'The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and / or the levels of populations of the species for which it was classified.' (Box, J. 2006. A guide to Ecological Impact Assessment. Town and Country Planning).

<sup>2</sup> Conservation status for a natural habitat is defined under Article 1 (e) as follows: '...the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structures and functions as well as the long-term survival of its typical species within the territory...' Conservation of a species means: '...the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory...'

*work: now and in the future.*

12. Six strategic goals have been developed in the context of the vision. The goals were developed based on research, policy review and analysis described within the introductory chapters of the NTS. The table below summarises the strategic goals.

*Table 1. Strategic goals of the National Transport Strategy*

<b>Strategic Goal 1: Transport to Support Economic Development</b>
Reduced congestion and removal of traffic bottlenecks improves travel times thereby supporting competitiveness.
Improved reliability and efficiency can allow for better journey planning.
Strengthening transport links and connectivity, nationally and internationally increases access to markets.
Reduced operational costs and improved seamless interconnectivity increases profitability and can support competitiveness.
Improved experience and ease of access for non-regular users can support the tourism product.
<b>Strategic Goal 2: Transport to Promote Environmental and Urban Sustainability</b>
Reduce and mitigate greenhouse gas emissions
Ensure efficient and sustainable use and management of resources
Ensure adaptation to climate change
Minimise impact of transport to enhance the landscape and townscape
Preserve the natural habitats and biodiversity
Respect historical and heritage resources
<b>Strategic Goal 3: Transport to Support Social Development and Inclusion</b>
Ensure travel options and journey quality are suitable for all user groups
Ensure affordability for targeted social groups
Increasing societal awareness on the need for sustainable travel choices
Reduce severance and adverse impacts on specific communities
Integration of isolated communities
<b>Strategic Goal 4: Transport to Provide Accessibility and Mobility</b>
Easy access to daily facilities
Convenient and reliable journey times
Ensuring an equitable and sustainable approach to all transport modes
Managing freight and urban logistics
<b>Strategic Goal 5: Transport to be Safe and Secure</b>
Resilient critical infrastructure
Extending the lifetime of high quality infrastructure
Reduction in injuries and loss of life relating to transport accidents
Rapid response to emergencies and accidents
Crime and terrorism

<b>Strategic Goal 6: Transport to Work towards Public Health</b>
--

A clean and pleasant public realm
-----------------------------------

Active lifestyles
-------------------

Reduced pollution (air, noise and light)
--

13. The NTS also defines eight key guiding principles based on European and national policy as well as trends identified in the NTS. The TMP then identifies operational objectives that were developed from the guiding principles, providing a more detailed way forward in working towards the strategic goals outlined in Table 1 above.
14. Chapter 5 of the NTS identifies indicators and targets for achieving each of the strategic goals.
15. The Transport Master Plan aims to achieve the goals set out in the NTS through a number of measures that have been designed to be implemented within the short to medium term (within 10 years).
16. The TMP first provides a detailed description of the current situation of the transport sector in Malta. A SWOT analysis of all transport subsectors is presented.
17. Operational objectives and subsequent measures were developed based on identifying those aspects in the transport sector that require addressing in order to ensure effective and efficient management of the sector and reduce externalities. This was done through a number of exercises including analysis of existing national and EU policies and plans, data gathering, computer modelling and forecasting through the application of a four stage transport mathematical model for estimating transportation demand as well as public consultation. The model outputs include aspects such as daily trips, modal share and distance, time and speed, which together allow for the analysis of transport network performance and externalities both of the base year (2014) as well as allowing the planners to forecast how implementation of certain measures might affect these aspects. Feedback obtained during the public consultation process on the TMP will also affect the final list of measures as well as the findings from the SEA and potentially the Appropriate Assessment.
18. Table 2.2 in the Appropriate Assessment lists the Operational Objectives and Measures for implementation and are divided into the various transport sectors or aspects as follows:
  - Road;
  - Public transport;
  - Intermodal;
  - Internal maritime;
  - External maritime; and
  - Aviation.

19. There are also a number of common measures that apply horizontally.
20. Elements of the NTS and TMP that may give rise to impacts on the Natura 2000 network were identified for assessment.

## 1.5 Alternatives

21. The Transport Master Plan has considered a number of scenarios in developing the measures. The following scenarios have been considered:
  - Scenario 1: Do nothing;
  - Scenario 2: Do minimum;
  - Scenario 3: Do-something 1; and
  - Scenario 4: Do something 2.
22. Based on the above, the following alternatives have been assessed:
  - **Scenario 1: Do nothing:** no changes to the network or implementation of any transport related actions;
  - **Scenario 2: Do minimum:** minimum expected changes and those committed developments. It includes all the recently implemented and committed developments from the base-year (2014) to 2020;
  - **Scenario 3: Do-something 1:** Moderate restraint in the use of private cars and increased support of public transport; and
  - **Scenario 4: Do-something 2:** Stronger restraint in the use of private cars and strong support to public transport.
23. The Do Minimum alternative (Scenario 2) includes the Salina Coast Road. This intervention has already been assessed at project level where both an Environmental Impact Assessment and an Appropriate Assessment were carried out prior to the receipt of planning permission. The road has been completed.
24. Scenarios 3 and 4 both include Project 2, which involves upgrading at Regional Road, Kappara Junction. This project is currently under construction and project level impact assessment was carried out that considered potential impacts to the SAC of national importance, Wied Ghollieqa and therefore impacts are not re-assessed here.
25. Scenarios 3 and 4 also include the proposed interventions between White Rocks Complex and Manuel Dimech Bridge (St Andrews). This project could result in impacts on the SAC of National Importance, Wied Harq Hamiem, refer to **Chapter 6**.
26. Scenario 4 (Do Something 2) includes the introduction of a fast-ferry service between Malta and Gozo as well as a freight ferry daily service between Malta and Gozo. The location of the

landing sites would need to be identified and the potential for impacts on marine and / or coastal SACs or SPAs will need to be identified when further detail is available. At a strategic level, however, the general direction to reduce reliance on road transport is considered more favourable and likely to result in less pressure on the terrestrial Natura 2000 network, potentially reducing the need for the construction of additional infrastructure in particular in localities and regions where important sites could be significantly affected. On the other hand, the shift to increased reliance on the use of the marine environment potentially adds pressures and threats to habitats and species of conservation significance. Thus, NTS and TMP implementation must be executed in such a way as to avoid or reduce as far as possible any potential negative effects on marine SACs supporting particularly important habitats and SPAs that are important to breeding and migratory Annex I and Annex IV (Bird Directive) species in particular and must ensure that the integrity of the sites are not significantly negatively affected.

## 1.6 Natura 2000 sites & Impact assessment

27. The habitats and species of conservation interest, for which the sites were designated, were considered during the impact assessment with a view to ensuring that they maintain favourable conservation status.

### 1.6.1 *Impact assessment of the National Transport Strategy, 2050*

#### 1.6.1.1 *Natura 2000 Network & relevant SACs of national importance*

28. NTS implementation should result in a reduction in traffic and a reduction in the reliance on private cars. A significant positive result on air quality is considered to have a positive effect at a national ecosystem level. Inclusion of green infrastructure assets, also if significant, can help strengthen the network through enhancing or creating new green corridors. Moreover, a reduction in the pressure to develop new road infrastructure could also result in indirect positive effects, however, it is unlikely that plans to upgrade the TEN-T network will not be implemented in the medium term.
29. Negative effects could be accrued if implementation of certain large projects, both on land and in the marine environment, derived from measure implementation affect the integrity of Annex I habitats or Annex II species populations, richness, etc. This is particularly relevant where the construction of large infrastructure is envisaged that could result in impacts to Annex I habitats and/or Annex II species that negatively impact the integrity of the habitats or species populations for which the site may have been designated.

### 1.6.2 Impact assessment of Transport Master Plan, 2025

30. Figure 6 of the AA summarises the location of potential interventions that are expected to be implemented through the TMP that may have an impact on Natura 2000 sites and SACs of national importance as relevant, as described below.
31. There are various other proposals within the TMP which by their nature or land requirements may result in significant impacts on SACs/SPAs, depending on their siting, location and mitigation of operational impacts. These proposals potentially include off-street parking areas, the proposed LNG and CNG refuelling stations, review and clarification of the road network system. Project level screening and assessment will be required as the exact location of these facilities and interventions were not identified in the TMP, therefore an assessment at this stage was not possible.

#### 1.6.2.1 Il-Bahar fil-Grigal ta' Malta

32. The TMP calls for studies to identify the extent of required works at Cirkewwa and Mgarr harbours, including interventions to the breakwater systems, improvement of quays and expansion of the port of Mgarr. Engineering works would then likely be required that could result in direct interventions to the seabed, spillover effects during construction, impacts to water quality during construction, underwater noise, and hydrographical effects if changes are made to the port configuration that could result in indirect impacts on habitats and species.

##### Loss of benthic habitat & associated species

33. Figure 3 of the AA illustrates the distribution of Posidonia within this SAC and demonstrates that this priority habitat is found around Mgarr harbour and in and around Cirkewwa. Any interventions that affect the integrity of the meadows through either direct obliteration of the habitat or through the halo effect whereby the meadows in the vicinity of interventions such as construction works suffer in terms of health and can even die off within a certain distance of the disturbance, would be considered to be a major negative impact. The benthic environment within the Mgarr port is largely coarse sediment according to MEPA's 2003 Posidonia survey. If interventions are largely contained within the port, impacts on habitats of interest would be minimised. However, interventions carried out outside the port have a greater likelihood in resulting in significant effects given that the Posidonia beds lie just outside the harbour. However, benthic surveys would be required to verify that the data gathered in 2003 remains relevant and also to identify the presence of any species of conservation interest.

##### Damage or disturbance to benthic habitats and species of conservation interest

34. Other impacts from engineering works could affect the seagrasses and other benthic habitats and species in the SAC. These potentially include increased turbidity and changes

in water quality. The significance of effects would depend on the extent of works, their location, and duration.

#### 1.6.2.2 *Il-Bahar tal-Lbic ta' Malta*

35. The proposals envisaged through the TMP suggest increased activity at the port of Marsaxlokk and include proposals to upgrade the breakwater system, square off Terminal 2, dredging, development of a service fuel station, upgrading of the access road, development of an oil terminal quay and site expansion.

##### Disturbance to seabird ecology

36. Already a relatively noisy operation, increased activity at the port of Marsaxlokk could have an impact on the breeding sea birds' ecology if noise levels and light pollution also increase. In order to identify the extent of such an effect, baseline levels and predicted impacts need to be compared and the impact on the seabirds considered, in particular their ecology at the site throughout the year. Careful monitoring of the seabird populations and of noise and light emissions, as well as potentially the identification of critical levels, should be aimed for to avoid potential long-term negative effects.

#### 1.6.2.3 *Rdumijiet ta' Malta: Ir-Ramla tac-Cirkezza sa il-Ponta ta' Benghisa*

37. The TMP proposes to replace the primary radar at Dingli.

##### Disturbance to Annex I habitats

38. The radar is located in the vicinity of three Annex I habitats – 5330, 5430 and 9320 (refer to the Management Plan for Rdumijiet ta' Malta: Mir-Ramla ta' Ghajn Tuffieha sa' Xaqqa). Interventions at this site could result in overspill effects that impact these habitats if appropriate mitigation is not implemented. The impacts are likely to be localised, however, and would potentially be minor to not significant in the context of the integrity of the entire SAC.
39. A survey for Annex II species in the area would ensure that works would be able to be planned for and scheduled in such a way as to minimise any potentially significant negative effects on species populations in the area.

##### Disturbance to seabird colonies

40. Considering the conservation objectives listed above, construction impacts may also result in some negative, although temporary effects on birds in particular. Appropriate mitigation measures including timing of interventions must be put in place at project stage.

### **1.6.3 Wied Harq Hamiem**

41. The proposed road interventions in this area will occur in the vicinity of this SAC (refer to Figure 10 of the AA). However, similar to the project at Kappara Junction, TM indicates that the interventions will be confined to the existing carriageway.

#### Damage or disturbance to habitats and species of conservation interest

42. At this stage in the assessment, there is limited baseline data. Project level assessment including surveying would be necessary to ensure a more robust assessment. However, in general, potential impacts that may result in damage or disturbance to habitats and species populations could be accrued as a result of some or all of the following:
- Overspill during construction onto the valley;
  - Noise and vibration during construction;
  - Run-off during construction and operation;
  - Changes to lighting during operation(considering that a road already exists);
  - Changes to noise during operation (considering that road already exists); and
  - Escape of species used in landscaping.

#### Damage to Harq Hamiem cave

43. In the absence of any detailed plans, the AA identifies the potential for damage to the cave as a result of construction activity. Damage to this unique feature would potentially be significant. Project details and further information about the cave structure would be required to reduce uncertainty. Project level assessment would be required to carefully assess localized impacts.

### **1.6.4 Potential impacts beyond the Transport Master Plan, 2025**

44. The TMP identifies a list of projects to be undertaken as part of the upgrades necessary to the TEN-T network and as identified in Chapter 2 of the AA. Many of these identified projects will be implemented in future Master Plans as only four have been identified for implementation in this TMP. Potential impacts arising from future Master Plans will also require Strategic Environmental Assessment and Appropriate Assessment at strategic level as relevant. However, given that the list of projects was included in this TMP, this Appropriate Assessment identifies potential significant negative effects to be studied further at the appropriate time whereby it is also assumed that more detail will also be available.

#### *1.6.4.1 Ghadira, Is-Simar, Il-Mizieb*

45. The consideration of a bypass to avoid Xemxija suggests that the Natura 2000 sites of Ghadira, Is-Simar and Il-Mizieb may be affected (Figure 8 of the AA) illustrates the locations of these sites). Although not part of this TMP, when these interventions become higher on

the agenda, it is important to note that the impacts from the construction of new roads that may pass through or adjacent to these sites are likely to result in the most significant impacts identified from the implementation of the NTS and TMP, potentially resulting in a number of impacts including direct loss of habitat and species, habitat fragmentation, and disturbance to species from traffic noise and light pollution during operation. The need to consider alternatives to the proposals as summarised in the TMP must be stressed and should be considered during the Strategic Environmental Assessment of the next TMP as well as being important at project level.

#### 1.6.4.2 Comino & Il-Bahar ta' Madwar Ghawdex

46. With respect to implementation of interventions along the TEN-T network, although not directly within the lifetime of this TMP, the reference to a Malta-Gozo fixed link is nonetheless included as an envisaged project within the transport planning framework. No further detail of what form this link will take is provided. Given the sensitivity of Comino and its location between Malta and Gozo, this assessment identifies the potential for this SAC and SPA to be significantly negatively affected.
47. The SPA Il-Bahar ta' Madwar Ghawdex is also noted for its importance for breeding seabirds, *Calonectris diomedea* and *Puffinus yelkouan*. Any disturbance to the ecology of these species could potentially significantly negatively affect breeding populations. The importance of these breeding colonies for these species throughout the Mediterranean region means that potential impacts could negatively affect the integrity of the populations both locally, and potentially at a regional level.
48. Figure 8 presents the marine Natura 2000 sites in this area.
49. In order to allow for a more detailed assessment, further details on the proposal, including alternatives are required.

## 1.7 Cumulative impacts

50. The cumulative impact assessment described in the AA considers both spatial crowding and temporal overlap of plan/project implementation. Cumulative impacts may be additive, neutralizing or synergistic where more than one impact results in a greater impact than a sum of individual effects.
51. Assessment of cumulative impacts is integrated as part of the assessment of NTS implementation. As identified, therefore, at a strategic level, the attempted shift towards a reduction in private car dependence and an emphasis on modal shift could result in positive effects on air quality that at a national level as well as reduced pressure from road development which would translate to positive effects across the Natura 2000 network.
52. On the other hand, at a strategic level, a number of infrastructure projects are earmarked for implementation to improve the TEN-T network, as identified above. At this stage, through the implementation of the Transport Master Plan, there have been aspects of the network that have been identified as having potentially negative effects.

## 1.8 Mitigation

53. Mitigation measures identified for the NTS and TMP include:
- Reference should be made in the NTS and TMP text SACs and SPAs to demonstrate that their presence has been taken into account. Recognition of the requirement to avoid or where necessary reduce negative effects through appropriate mitigation measures should also be included.
  - Consideration of strategic alternatives in particular where potentially significant interventions are under consideration. This could include identification of alternative routes when considering new roads or consideration of alternative forms of transport to that where major impacts on SACs and SPAs are considered to be likely;
  - Implementation of a monitoring plan; and
  - Additional assessment at planning and project level assessment as more details become available. All plans or projects emerging from the implementation of this NTS and TMP that lie within or in the vicinity of a SAC or SPA should be screened to determine whether an Appropriate Assessment is required.

## 1.9 Residual impacts

54. The residual impacts resulting from implementation of the NTS and TMP will depend on the implementation of the mitigation measures identified above. If major projects that cumulatively will affect marine benthic habitats are all pursued, and at the same time in particular all the projects earmarked in the NTS, assessment of project level mitigation would be required. However, without project level details, it is considered that all residual impacts remain uncertain

## 1.10 Conclusions

55. The Appropriate Assessment identified specific interventions that could have a negative effect on a number of SACs and SPAs. Potential cumulative effects from interventions within the Malta-Comino-Gozo channel and also at three terrestrial sites over the lifetime of the NTS were also identified.
56. As a result a number of mitigation measures have been identified in order to ensure that the integrity of all affected SACs and SPAs would be maintained and the conservation objectives would be sustained.

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## 2 Introduction

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- 57. This Appropriate Assessment (AA) has been prepared for Transport Malta as part of its development of the National Transport Strategy 2050 (NTS) and Transport Master Plan 2025 (TMP).
- 58. In addition to an Appropriate Assessment, the NTS and TMP are also undergoing a Strategic Environmental Assessment (SEA). This document makes reference to the Environmental Report emerging from the SEA as appropriate.
- 59. This Appropriate Assessment is based on Terms of Reference (ToR) prepared by the Environment and Resources Authority (ERA).

### 2.1 Terms of Reference

- 60. The ToR required that the Appropriate Assessment should address the following:

*The Appropriate Assessment report should follow the following format:*

#### **1. Executive Non-Technical Summary**

*A description of the salient points of the AA study including any surveys, impacts and their significance, proposed revisions, and any residual impacts.*

#### **2. Plan Description**

*A description of the proposed plan, with particular emphasis on those elements that are likely to give rise to potentially significant effects on the integrity of protected sites, or on other relevant habitats, species and ecosystems. The description shall also address any foreseeable consequential requirements or implications of the proposal (e.g. need for new or altered access or infrastructure).*

#### **3. Impact Assessment**

*This section should identify all relevant protected sites<sup>3</sup> that are likely to be affected by the plan or by any of its ancillary projects and proposals, both directly and indirectly.*

*Interventions proposed within the plan that have the potential to affect protected sites or other relevant habitats, species or ecosystems, but for which no detailed information is as yet available due to the strategic*

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<sup>3</sup> As defined in Subsidiary Legislation 504.73. Flora, Fauna and Natural Habitats Protection Regulations, Legal Notic 311 of 2006 as amended.

*nature of the plan, must be acknowledged.*

*Interventions that are clearly proposed within the plan should be assessed, holistically and individually, to identify which protected sites are likely to be affected by their implementation. The AA should also discuss how these protected sites will be affected by these proposals and to what extent, i.e. whether such impacts are considered to affect the integrity of the protected sites, their habitats and species, or otherwise. This should also include an assessment of the likely cumulative impacts of these proposals on the protected sites. An exhaustive discussion, in so far as possible, is required in this regard.*

*Impact assessment should also take into account practical implications (e.g. conflicts with site protection or management plan implementation, any foreseeable constraints on future management plan formulation, implications arising via the displacement of other land/sea uses, etc.)*

#### **4. Alternatives**

*The AA should evaluate alternatives to those aspects of the plan that may give rise to significant impacts as identified in the section above. The zero-option (do-nothing scenario) should also be considered. Each alternative should be thoroughly assessed by comparing it with the respective plan content, clearly indicating the relative effects on relevant habitats, species, and protected sites as a whole.*

*This section should conclude with a set of recommended revisions to the plan.*

#### **5. Residual Impacts**

*The report should include a prediction of residual impacts and implications of the proposed plan on relevant species, habitats and ecosystems, following the implementation of the proposed revisions. The report shall also evaluate the significance of such residual impacts and implications.*

## **2.2 Appropriate Assessment Objectives & Scope of Study**

61. The aim of the Appropriate Assessment is to determine whether the effects of the NTS and TMP will have an impact on any terrestrial and marine Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).
62. The NTS provides a nation-wide strategic direction that covers the entire territory of the Maltese Islands. The TMP is also a national level document, drawn up to implement the NTS, however, it includes measures that are more specific, some of which include reference to interventions in specific locations for the period up to 2025. Given that the boundary of the NTS and TMP is nation-wide, all SAC and SPA sites in the Maltese Islands lie within the

scope of the AA. More detailed level assessment will, however, be carried out on those sites that may be impacted by certain measures proposed in the TMP. Figure 1 shows all the terrestrial sites in the Natura 2000 network including national SACs and Figure 2 shows all the marine sites in the Natura 2000 network.

## 2.3 Methodology

63. ERA issued Terms of Reference for the Appropriate Assessment.

### 2.3.1 Baseline study

64. A desk study was carried out with a specific focus on existing Management Plans and Standard Data Forms as relevant.

### 2.3.2 Impact Assessment

65. The Terms of Reference for the AA require 'An evaluation of the way in which the integrity of the site and their species, habitats and ecosystems are likely to be affected by the project...'. There is also a requirement to discuss the significance of relevant impacts.

66. In assessing the significance of the potential negative impacts arising from the NTS and TMP on the terrestrial and marine habitats and species of conservation interest in the affected area, the following criteria have been used:

- **Not significant** - no material change in site integrity<sup>4</sup> and / or conservation status<sup>5</sup> of habitats and species of conservation interest in particular Annex I habitats and Annex II species as listed in the Habitats Directive. No material change expected to other species of ecological value and conservation interest including those listed in the Red Data Book for the Maltese Islands in terms of range, population and habitat important for the ecology of the species;
- **Minor significance** - small-scale loss / disturbance including to species populations / extent of habitat that is unlikely to affect the integrity of the overall site/habitat and species populations of conservation interest; and
- **Major significance** - large-scale loss / disturbance / change in habitat that is likely to

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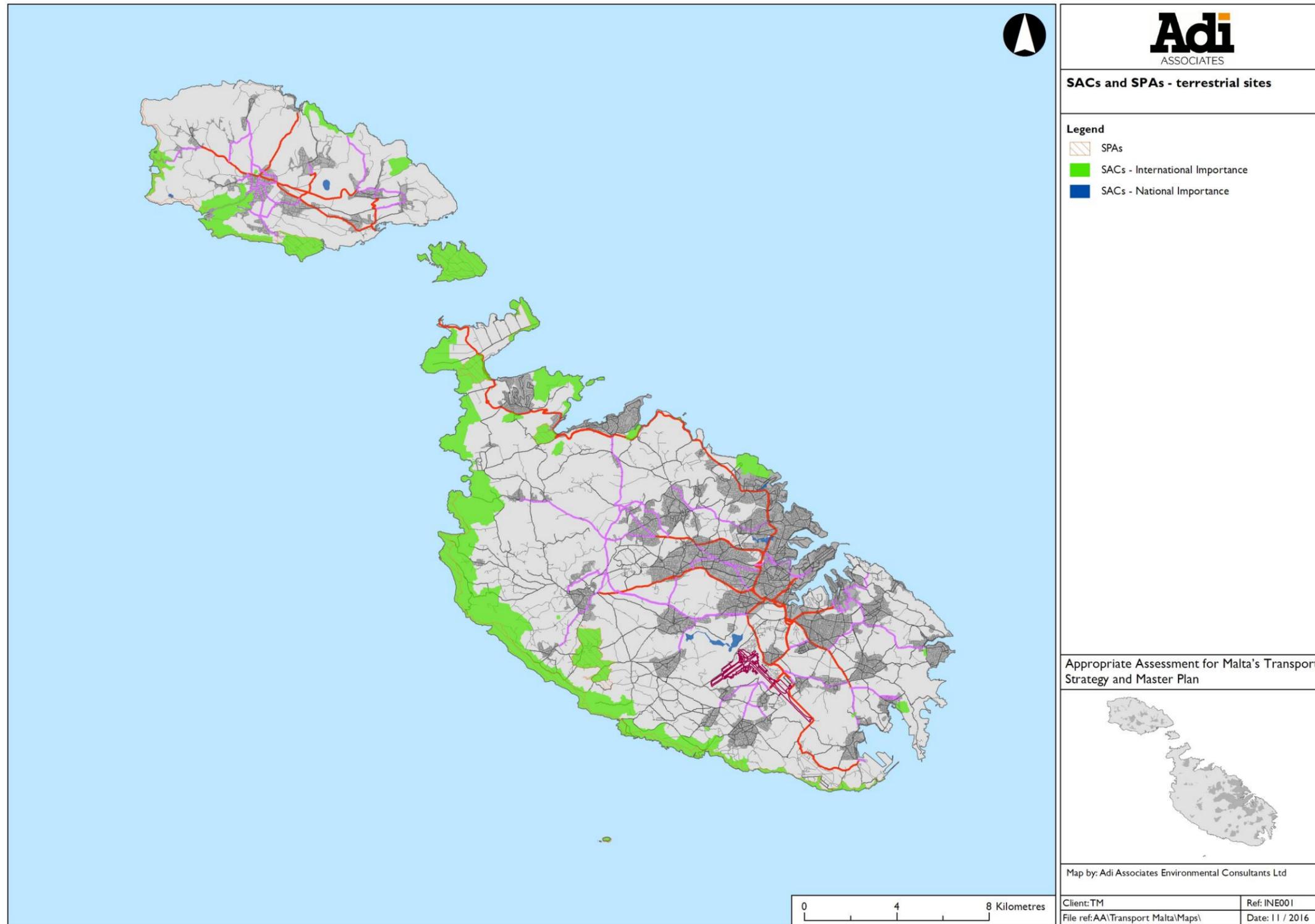
<sup>4</sup> Integrity is not defined in the Habitats Directive, although it is introduced under Article 6. Official guidance on nature conservation in the UK provides a definition in relation to European sites that can be applied more generally: 'The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and / or the levels of populations of the species for which it was classified.' (Box, J. 2006. A guide to Ecological Impact Assessment. Town and Country Planning).

<sup>5</sup> Conservation status for a natural habitat is defined under Article 1 (e) as follows: '...the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structures and functions as well as the long-term survival of its typical species within the territory...' Conservation of a species means: '...the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory...'

affect the ecological integrity and/or species populations' viability whereby the conservation status of the habitat and/or species is likely to be compromised within the SAC or SPA of interest.

67. The concept of "material change" needs to be viewed in the context of the NTS and TMP. For a change to be material, it must affect the long-term interactions of the species present at the site more than they would be affected by impacts from natural processes or by the continuation of the uses already extant in the area and to which the ecology may be accommodated.

Figure 1. Terrestrial Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) in the Maltese Islands



INDICATIVE ONLY - Not to be used for direct interpretation

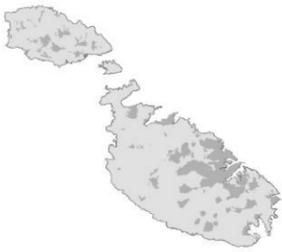
**Adi**  
ASSOCIATES

**SACs and SPAs - terrestrial sites**

**Legend**

-  SPAs
-  SACs - International Importance
-  SACs - National Importance

Appropriate Assessment for Malta's Transport Strategy and Master Plan



Map by: Adi Associates Environmental Consultants Ltd

Client: TM	Ref: INE001
File ref: AA\Transport Malta\Maps\	Date: 11 / 2016



Figure 2. Marine Natura 2000 network around the Maltese Islands



# 3 Malta’s National Transport Strategy & Transport Master Plan

## 3.1 Introduction

- 68. This chapter describes Malta’s National Transport Strategy 2050 and the Transport Master Plan 2025.
- 69. Since its establishment in 2010, Transport Malta has been working on the development of a strategic approach to transportation that integrates planning of each of the transport sectors. To this end, an integrated National Transport Strategy (NTS) with a time horizon of 2050 and a Transport Master Plan (TMP) with a time horizon of 2025 have been developed.
- 70. The Draft TMP has undergone a first round of public consultation during June / July 2016. Following this consultation period the document was amended. This Appropriate Assessment assesses the NTS and TMP versions prior to 28th September 2016. As mentioned, a Strategic Environmental Assessment has been prepared concurrently and presented as a separate report.

## 3.2 Malta’s National Transport Strategy 2050

- 71. The NTS provides a vision for the transport sector in Malta. It goes on to describe the strategic goals and direction to achieve these goals as well as identifying indicators to measure progress.
- 72. The vision for the NTS is:
 

*To provide a sustainable transport system which is efficient, inclusive, safe, integrated and reliable for people and freight, and which supports attractive urban, rural and coastal environments and communities where people want to live and work: now and in the future.*
- 73. Six strategic goals have been developed in the context of the vision. The goals were developed based on research, policy review and analysis described within the introductory chapters of the NTS. The table below summarises the strategic goals.

Table 2. Strategic goals

Strategic Goal 1: Transport to Support Economic Development
Reduced congestion and removal of traffic bottlenecks improves travel times thereby supporting competitiveness.
Improved reliability and efficiency can allow for better journey planning.

Strengthening transport links and connectivity, nationally and internationally increases access to markets.
Reduced operational costs and improved seamless interconnectivity increases profitability and can support competitiveness.
Improved experience and ease of access for non-regular users can support the tourism product.
<b>Strategic Goal 2: Transport to Promote Environmental and Urban Sustainability</b>
Reduce and mitigate greenhouse gas emissions
Ensure efficient and sustainable use and management of resources
Ensure adaptation to climate change
Minimise impact of transport to enhance the landscape and townscape
Preserve the natural habitats and biodiversity
Respect historical and heritage resources
<b>Strategic Goal 3: Transport to Support Social Development and Inclusion</b>
Ensure travel options and journey quality are suitable for all user groups
Ensure affordability for targeted social groups
Increasing societal awareness on the need for sustainable travel choices
Reduce severance and adverse impacts on specific communities
Integration of isolated communities
<b>Strategic Goal 4: Transport to Provide Accessibility and Mobility</b>
Easy access to daily facilities
Convenient and reliable journey times
Ensuring an equitable and sustainable approach to all transport modes
Managing freight and urban logistics
<b>Strategic Goal 5: Transport to be Safe and Secure</b>
Resilient critical infrastructure
Extending the lifetime of high quality infrastructure
Reduction in injuries and loss of life relating to transport accidents
Rapid response to emergencies and accidents
Crime and terrorism
<b>Strategic Goal 6: Transport to Work towards Public Health</b>
A clean and pleasant public realm
Active lifestyles

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Reduced pollution (air, noise and light)

74. The NTS also defines eight key guiding principles based on European and national policy as well as trends identified in the NTS. The TMP then identifies operational objectives that were developed from the guiding principles, providing a more detailed way forward in working towards the strategic goals outlined in Table 2 above.
75. The following Guiding Principles were identified in the NTS:
- Guiding Principle 1: Efficient utilisation of the existing transport system – traffic management, logistics planning and enforcement [Helping to meet Strategic Goals 1, 2, 4 and 6];
  - Guiding Principle 2: Creating modal shift [Helping to meet Strategic Goals 1-5];
  - Guiding Principle 3: Integrated approach to planning and design [Helping to meet all Strategic Goals];
  - Guiding Principle 4: Encouraging use of greener vehicles and fuel [Helping to meet Strategic Goals 1, 3, 5 and 6];
  - Guiding Principle 5: Modernisation, development and revitalisation of the strategic transport network to improve territorial cohesion [Helping to meet Strategic Goals 1,2 and 6];
  - Guiding Principle 6: Investment in education, information and human resources [Helping to meet Strategic Goals 2, 4, 5 and 6];
  - Guiding Principle 7: Making room for innovation and research [Helping to meet all Strategic Goals]; and
  - Guiding Principle 8: Sustainable financing and fair competition [Helping to meet all Strategic Goals].
76. Chapter 5 of the NTS identifies indicators and targets for achieving each of the strategic goals.

### 3.3 Transport Master Plan 2025

77. The TMP aims to achieve the goals set out in the NTS through a number of measures that have been designed to be implemented within the short to medium term (within 10 years).
78. The TMP first provides a detailed description of the current situation of the transport sector in Malta. A SWOT analysis of all transport subsectors is presented.
79. Operational objectives and subsequent measures were developed based on identifying those aspects in the transport sector that require addressing in order to ensure effective and efficient management of the sector and reduce externalities. This was done through a number of exercises including analysis of existing national and EU policies and plans, data gathering, computer modelling and forecasting through the application of a four stage transport mathematical model for estimating transportation demand as well as public consultation. The model outputs include aspects such as daily trips, modal share and

distance, time and speed, which together allow for the analysis of transport network performance and externalities both of the base year (2014) as well as allowing the planners to forecast how implementation of certain measures might affect these aspects. Feedback obtained during the public consultation process on the TMP will also affect the final list of measures as well as the findings from the SEA and potentially the Appropriate Assessment.

80. Table 3 lists the Operational Objectives and Measures for implementation and are divided into the various transport sectors or aspects as follows:

- Road;
- Public transport;
- Intermodal;
- Internal maritime;
- External maritime; and
- Aviation.

81. There are also a number of common measures that apply horizontally.



*Table 3.* List of Operational Objectives and Measures found in the Master Plan

## Road

### 2.2.1

#### IMPROVE INTEGRATED AND LONG TERM STRATEGIC TRANSPORT PLANNING AND DESIGN

- 2.2.1.1 Implement and monitor the long term integrated national transport strategy and short and medium term transport master plan
- 2.2.1.2 Develop a framework with the spatial planning process to integrate land use and transport planning policies and move towards transit oriented development
- 2.2.1.3 Master Plan for Mriehel Area
- 2.2.1.4 Master Plan for Paceville, St Julian's
- 2.2.1.5 Master Plan for Sliema
- 2.2.1.6 Develop a framework to ensure that transport projects are developed by interdisciplinary teams to maximize opportunities for sustainable development
- 2.2.1.7 Improve co-ordination and planning with service utility infrastructure authorities
- 2.2.1.8 Carry out a national household travel survey by 2020

2.2.1.9 Develop a framework for collating mobility data focusing on further analysis of multipurpose trips and efficient mobility

**2.2.2 PROVIDE ALTERNATIVES TO PRIVATE VEHICLES TO ENCOURAGE SUSTAINABLE TRAVEL PATTERNS AND REDUCE PRIVATE VEHICULAR DEMAND IN THE CONGESTED “HUB” AREA**

2.2.2.1 Develop awareness campaigns to improve the understanding of transportation aspects

2.2.2.2 Develop and incentivise schemes to promote multiple occupancy, smaller vehicles and reduce the need to travel in peak hours

2.2.2.3 Set up a multi-organisational team to develop a pedestrian infrastructure plan focussing on the “hub”

2.2.2.4 Develop a cycling strategy focussing on the “hub”

2.2.2.5 Develop pilot cycle corridors between Valletta and: i) St. Julian’s, Sliema; ii) Three Cities and Fgura, and iii) between villages

2.2.2.6 Develop a national bicycle / e-bicycle sharing scheme

2.2.2.7 Develop a framework for the introduction and implementation of Sustainable Urban Mobility Plans (SUMPS) in Malta and Gozo

**2.2.3 REDUCING THE ROLE OF THE CAR IN THE BUSY CONGESTED URBAN ‘HUB’**

2.2.3                      2.2.3.1                      Develop a comprehensive parking management system to create a better balance between off-street and on-street parking

**2.2.4                      REDUCE THE IMPACT OF HIGH POLLUTING VEHICLES IN INNER CONGESTED URBAN AREAS AND ON THE TEN-T NETWORK**

2.2.4                      2.2.4.1                      Study the potential to Introduce low emission zones in dense and polluted urban areas

2.2.4.2                      Study the potential to Introduce further financial differential incentives to reduce the average age of vehicles

2.2.4.3                      Introduce further fiscal measures and incentives to favour the purchase and use of clean fuel vehicles

2.2.4.4                      Continue implementing the electro-mobility action plan

2.2.4.5                      If feasible, implement LNG refuelling stations for land transport by 2025 along the Ten-T core network

2.2.4.6                      Implement CNG refuelling stations for land transport by 2025 along the TEN-T Core network

**2.2.5                      REDUCE THE IMPACT (SOCIAL, ENVIRONMENTAL AND ECONOMIC) OF VEHICLES IN URBAN AREAS**

2.2.5                      2.2.5.1                      Develop a policy framework and design guidelines to create a balanced approach to different modes in urban streets and public space

- 2.2.5.2 Develop mitigation measures so as to reduce the impact of noise levels in urban areas UCA's and tourism areas
- 2.2.5.3 Introduction of electric buses in Gozo
- 2.2.5.4 Develop design guidelines for the development of Shared Space and Home Zones
- 2.2.5.5 Set up a Sustainable Mobility Unit within Transport Malta to work with Local Councils in the redesign of local streets
- 2.2.5.6 Develop a Funding Programme for the redesign/refurbishment of Local Street according to the Design Guidelines for Urban Streets and Home Zones

## **2.2.6**

### **REDUCE THE IMPACT OF HGVs ON URBAN AREAS AND THE ROAD NETWORK**

- 2.2.6.1 Review and update the policy framework for the regulation, monitoring and enforcement of HGV's
- 2.2.6.2 Introduce provision of safe off-street overnight parking areas for heavy vehicles
- 2.2.6.3 Develop an action plan for the management and regulation of freight transport and 'last mile' urban logistics

## **2.2.7**

### **ENSURE A HIGH LEVEL OF SERVICE ON THE TEN-T CORE AND THE COMPREHENSIVE NETWORK**



- 2.2.8.4 Improve provision for pedestrians, cycling and public transport and change functionality of route 127 (St. Julian's to Ta' Xbiex)
- 2.2.8.5 Improve provision for pedestrians, cycling and public transport and change functionality of EA16 (University Skatepark) – ED3 – ED3a (Msida) – ED4 – EA5 (Portes de Bombes)
- 2.2.8.6 Improve provision for pedestrians, cycling and public transport and address conflicting traffic flows and urban activity at WD11 (Zebbug) – WA13 (Qormi)
- 2.2.8.7 Review the strategic functionality of route 132 (Racecourse Road to P+R) between the Core TEN-T network and the Park & Ride to improve accessibility for active and public transport modes.
- 2.2.8.8 Improve provision for pedestrians, cycling and public transport to encourage modal shift on the road section WD18 to WA24 (tunnel under runway)

**2.2.9 ENSURE EFFECTIVE AND EFFICIENT MANAGEMENT OF ROADS AND RELATED EQUIPMENT ENSURING QUALITY AND SUSTAINABILITY OF INVESTMENT THROUGH REGULAR MAINTENANCE**

- 2.2.9.1 Set up an asset management system and asset management plan for the road network
- 2.2.9.2 Increase the implementation of service culverts and storm water management in local roads
- 2.2.9.3 Develop an action plan to improve the quality of street furniture and information
- 2.2.9.4 Review and update road specifications and standards

**2.2.10 IMPROVE ROAD SAFETY THROUGH BETTER RESEARCH, ENGINEERING, EDUCATION AND ENFORCEMENT**

- 2.2.10.1 Implement the Road Safety Strategy
- 2.2.10.2 Improve the overall EuroNCap rating of the Maltese vehicle fleet
- 2.2.10.3 Develop design guidelines for safety measures with respect to designing for e-bicycles, bicycles and motorcycles
- 2.2.10.4 Develop bridge and tunnel management system

**2.2.11 ENSURE SAFE AND EFFICIENT TRAFFIC MANAGEMENT TO OPTIMISE THE USE OF EXISTING INFRASTRUCTURE**

- 2.2.11.1 Increase use of Intelligent Transport Systems in traffic management
- 2.2.11.2 Pilot and analyze the potential for introducing tidal lanes
- 2.2.11.3 Develop a framework for the national co-ordination and management of road works, road closures, road side maintenance and cleaning
- 2.2.11.4 Introduce transport modelling and GIS in planning diversion routes for road works
- 2.2.11.5 Review and update traffic management guidelines to improve traffic management and safety during road

works

2.2.11.6 Improve event management planning to improve coordination and traffic management for events

2.2.11.7 Develop incident management plans

## **2.2.12**

### **IMPROVE THE EFFECTIVENESS OF ENFORCEMENT OF ROAD TRANSPORT REGULATIONS**

## **2.2.12**

2.2.12.1 Increase presence and effectiveness of traffic police

2.2.12.2 Review of Speed Camera System

2.2.12.3 Introduce technology to reduce labour intensive enforcement (red light and bus lane cameras)

2.2.12.4 Increase roadside checks and roadworthiness testing

2.2.12.5 Review enforcement fine levels

2.2.12.6 Review regulatory system to give enforcement officers more authority

2.2.12.7 Introduce weighbridges at maritime terminals

## **Public Transport**

## **2.3.1**

### **IMPROVE SERVICE QUALITY AND MODAL SHARE ALONG STRATEGIC ROUTES BY INTRODUCING PUBLIC**

### TRANSPORT QUALITY CORRIDORS

- 2.3.1            2.3.1.1-1    Implement Public Transit Quality Corridors (PTQC) – (Sliema-Msida-Valletta)
- 2.3.1            2.3.1.1-2    Implement Public Transit Quality Corridors (PTQC) – (Tarxien-Fgura-Marsa-Valletta)
- 2.3.1            2.3.1.1-3    Implement Public Transit Quality Corridors (PTQC) – (Mosta-Birkirkara-Msida-Valletta)
- 2.3.1            2.3.1.1-4    Implement Public Transit Quality Corridors (PTQC) – (Naxxar-Birkirkara-Hamrun-Valletta)
- 2.3.1            2.3.1.1-5    Implement Public Transit Quality Corridors (PTQC) – (Mosta-Birkirkara-University-Msida)
- 2.3.1            2.3.1.1-6    Implement Public Transit Quality Corridors (PTQC) – (Attard-Birkirkara-Hamrun-Valletta)
- 2.3.1            2.3.1.1-7    Implement Public Transit Quality Corridors (PTQC) – (Qormi-Hamrun-Valletta)
- 2.3.1.2        Develop a programme to upgrade main boarding bus stops
- 2.3.1.3        Make better use of electronic data collected by the bus operator to quickly adapt bus routes timetables and combined frequencies to temporal and seasonal demand changes and identify additional PTQC
- 2.3.1.4        Improve enforcement of PTQC through greater deployment of technology
- 2.3.1.5        Develop and publish comprehensive route information

### 2.3.2            **IMPROVE PUBLIC TRANSPORT SERVICE QUALITY TO AND BETWEEN STRATEGIC EMPLOYMENT NODES, SERVICES OUTSIDE THE INNER HARBOUR REGIONS AND PERIPHERAL RESIDENTIAL AREAS**

2.3.2                    2.3.2.1            Optimise use of existing Park and Ride facilities and develop new sites at strategic locations to encourage modal interchange

**2.3.3                    EXPLORE OPPORTUNITIES TO MOVE TOWARDS TRANSIT ORIENTED DEVELOPMENT**

2.3.3                    2.3.3.1            Analyze accessibility (PT) index for all transport zones and improve transit provision in relation to current development patterns

2.3.3.2                Identify strategic transportation hubs and transit corridors where the concept of transit oriented development can be strengthened to inform the spatial planning process

**2.3.4                    IMPROVE PHYSICAL ACCESSIBILITY OF PUBLIC TRANSPORT SERVICE**

2.3.4                    2.3.4.1            Provide more accessible bus infrastructure in residential areas and commercial centres

2.3.4.2                Increase enforcement of illegal parking and ensure proper use of bus bays

**2.3.5                    IMPROVE THE QUALITY OF THE ENVIRONMENT AT PRIMARY AND SECONDARY PUBLIC TRANSPORT HUBS**

2.3.5                    2.3.5.1            Carry out a quality audit of existing public transport hubs

2.3.5.2                Improve the environment and accessibility at Valletta public transport hub

2.3.5.3 Explore alternative forms of financing for public transport infrastructure

**2.3.6 IMPROVE AVAILABILITY AND QUALITY OF UNSCHEDULED PUBLIC TRANSPORT FOR SCHOOLS**

2.3.6 2.3.6.1 Review school transport services to identify issues and strategic interventions

**2.3.7 REDUCE THE IMPACT OF CLUSTERING OF UNSCHEDULED PUBLIC TRANSPORT PARTICULARLY IN TOURISM HOT-SPOTS AND COMMERCIAL AREAS**

2.3.7 2.3.7.1 Review and improve policies for traffic management demand management and operations of unscheduled public transport

**2.3.8 IMPROVE SUPPLY OF ALTERNATIVE FORMS OF SCHEDULED PUBLIC TRANSPORT**

2.3.8 2.3.8.1 Continue the planning and development of a Mass Rapid Transit system with a view to establishing a detailed proposal for public consultation

2.3.8.2 Create a framework for introducing demand responsive transport

**Intermodal**

**2.4.1 IMPROVE INTERMODAL SEAMLESS MOBILITY (TRAVEL INFORMATION, JOURNEY PLANNING SERVICES AND MULTI-MODAL TICKETING)**

2.4.1 2.4.1.1 Encourage operators of public transport to integrate and coordinate their operations of ticketing information and journey planning.

2.4.1.2 Facilitate the development of a real time multi-modal journey planner

**2.4.2 DEVELOP TRANSPORT HUBS TO ENCOURAGE INTERMODALITY**

2.4.2 2.4.2.1 Improvement of the existing ferry landing places

2.4.2.2 Study options available to improve wave climate in the Port of Marsamxetto

2.4.2.3 Assess potential for new ferry landing places

2.4.2.4 Improve the vertical and pedestrian connectivity between the Sliema-Valletta ferry service in Valletta and the city centre

2.4.2.5 Provide and regulate space for use of bicycles

**2.4.3 IMPROVE LOGISTICS AND URBAN DISTRIBUTION OF GOODS IN THE MULTI-MODAL CHAIN BETWEEN PORTS, AIRPORT AND HINTERLAND**

- 2.4.3
  - 2.4.3.1 Improve the management and regulation of freight transport and urban logistics
  - 2.4.3.2 Set up a national freight forum improve urban logistics
  - 2.4.3.3 Establish freight routes from ports that utilise appropriate roads for their weight and dimensions
  - 2.4.3.4 Improve Port-Port and Port-Airport connections for freight

#### Internal Maritime

- 2.5.1 **ENSURE DEVELOPMENTS IN PORTS ARE BACKED UP BY LONG-TERM PLANNING TO SUPPORT LONG TERM MOBILITY PATTERNS, SAFETY AND SECURITY**
- 2.5.1
  - 2.5.1.1 Review the financial sustainability of the Malta-Gozo link, including operations, maintenance and asset replacement to develop a business model that minimises the need of government financial support
  - 2.5.1.2 Improve the framework for collation, analysis and dissemination of meteorological and hydrographic data to support planning, design and operations of internal maritime transport
  - 2.5.1.3 Introduce maritime weather stations in ports to record trends which are necessary for planning and design
  - 2.5.1.4 Assess the potential for underutilised port areas to be used for internal transport / Master Plan for Secondary Ports

**2.5.2 IMPROVE OPERATIONS AND ENFORCEMENT SO THAT INTERNAL MARITIME TRANSPORT IS PROPERLY REGULATED AND MONITORED**

- 2.5.2.1 Introduce AIS on commercial vessels operating in internal ports
- 2.5.2.2 Deploy systems to better identify internal maritime transport and their cargoes to improve traffic management, safety and security
- 2.5.2.3 Improve visual information about vessel movement and location for traffic management

**2.5.3 ENSURE USERS COMPLY WITH CONDITIONS ESTABLISHED FOR PUBLIC ACCESSIBLE MARITIME FACILITIES AS SPECIFIED IN CONTRACTS FOR USE OF THESE INFRASTRUCTURES**

- 2.5.3.1 Establish clear guidelines with the port infrastructure users for operators to be aware of and use infrastructure within design limits
- 2.5.3.2 Monitor and carry out enforcement on operators who make incorrect use of the infrastructure

**2.5.4 REMOVAL OF BOTTLENECKS AT TEN-T COMPREHENSIVE PORTS**

- 2.5.4.1 Improve Mgarr and Cirkewwa breakwater systems
- 2.5.4.2 Improve Cirkewwa South Quay

- 2.5.4.3 Improve quays and consider expansion of the Port of Mgarr
- 2.5.4.4 Development of the-landing places for the ferry service (including freight and high speed ferry) to/from Gozo
- 2.5.4.5 Re-introduction of an express ferry link between Malta and Gozo
- 2.5.4.6 Consider measures to improve wave climate in the Port of Marsamxetto

## External Maritime

- 2.6.1 **ENSURE CONTRACTED PARTIES COMPLY WITH CONDITIONS ESTABLISHED FOR THE OPERATION IF MARITIME FACILITIES AND AS SPECIFIED IN CONTRACTS FOR USE OF THESE INFRASTRUCTURES**
- 2.6.1
  - 2.6.1.1 Develop contract management system to ensure Government obtains value for money
  - 2.6.1.2 Develop infrastructure asset management data base systems (including the milestones of contract and inspections to check whether or not they are met)
- 2.6.2 **ENSURE DEVELOPMENT OF PORTS AND CONTIGUOUS AREAS ARE BACKED UP BY LONG-TERM PLANNING TO SUPPORT SUSTAINABLE GROWTH IN LONG TERM MOBILITY PATTERNS, RESILIENCE, SAFETY AND SECURITY**
- 2.6.2
  - 2.6.2.1 Develop 10-year port master plan designating future land uses – TEN-T Core port of Valletta

2.6.2.2 Develop 10-year port master plan designating future land uses – TEN-T Core port of Marsaxlokk

2.6.3.3 New Cargo Infrastructure in the Port of Valletta (Phase I)

**2.6.3 REMOVAL OF BOTTLENECKS IN THE TEN-T CORE PORT OF VALLETTA**

2.6.3 2.6.3.1 Deep Water Quay Phase II

2.6.3.2 Improvement of harbour wave climate

**2.6.4 REMOVAL OF BOTTLENECKS IN THE TEN-T CORE PORT OF MARSAXLOKK**

2.6.4 2.6.4.1 Upgrade of the breakwater system

2.6.4.2 Terminal 2 squaring off of north-west side (9)

2.6.4.3 Procurement of 2 super post panamax cranes (10)

2.6.4.4 Dredging of all mainline berths to 20m

2.6.4.5 Investment in IT systems

2.6.4.6 Development of engineering facilities (6)

- 2.6.4.7 Service fuel station
- 2.6.4.8 Upgrade of south road access to Freeport
- 2.6.4.9 Oil terminal quay development
- 2.6.4.10 Petroleum product discharge point replacement
- 2.6.4.11 Assessment of MFT master plan - site expansion

**2.6.5 ENSURE EQUIPMENT, TOOLS AND HUMAN RESOURCES FOR THE USE, MONITORING AND ENFORCEMENT OF MARITIME AREAS ARE UPDATED AND TO IMPROVE SAFETY AND SECURITY**

- 2.6.5.1 Research new sources of funding to deal with monitoring requirements
- 2.6.5.2 Ensure equipment and tools for the monitoring and enforcement of maritime areas are updated and enable the required regulatory control to ensure safety and security
- 2.6.5.3 Upgrade VTMS to monitor and enforce maritime areas to ensure safety and security
- 2.6.5.4 Upgrade ICT tools to interchange information with port stakeholders and operators to ensure safety and security of maritime areas

**2.6.6 REDUCE THE ENVIRONMENTAL IMPACT OF PORTS ON THE NEARBY URBAN AREA**

- 
- 2.6.6
    - 2.6.6.1 Check port infrastructures and operations comply with the conditions established in the environmental impact assessment
    - 2.6.6.2 Implement new pollution mitigation measures
    - 2.6.6.3 Support the use of less polluting equipment

**2.6.7 PROVIDE ALTERNATIVE FUEL INFRASTRUCTURE TO PROMOTE EFFICIENCY AND COMPETITIVENESS**

- 2.6.7
  - 2.6.7.1 Develop an LNG deployment action plan for the TEN-T Core ports
  - 2.6.7.2 Develop a shore supply action plan for the TEN-T ports.
  - 2.6.7.3 Replace obsolete bunker discharge infrastructure

**Aviation**

**2.7.1 SAFEGUARDING SPACE WITHIN THE AIRPORT AND ITS CONTIGUOUS AREA TO ENSURE DEVELOPMENTS SUPPORT LONG TERM SUSTAINABLE GROWTH IN THE AVIATION SECTOR**

- 2.7.1
  - 2.7.1.1 Develop an airport master plan that prioritises developments and improvements airside to support long term air travel growth expected and improves the safety and security of this travel mode.
  - 2.7.1.2 Ensure that the airport and its surrounding areas are safeguarded for aeronautical developments

**2.7.2**

**REMOVE BOTTLENECKS AT THE TEN-T CORE AIRPORT**

2.7.2

2.7.2.1

Carry out feasibility studies for the development of the parallel taxiway to Runway 31/13 to ensure continued sustainability of the main runway and appropriate safety access to the distant points of the airport.

2.7.2.2

Improve the manoeuvring areas for the runways where excessive runway occupancy causes bottlenecks in airside traffic and aircraft conflicts

2.7.2.3

Maintain the shorter Runway 23/05 in full operational standard to ensure airport resilience and ability to maintain the primary runways

2.7.2.4

Upgrade of the aeronautical infrastructure and technology to enable Runway 23/05 up to instrument landing system standard (ILS) and RNAV capability

2.7.2.5

Enhancing the air navigation services facilities

**2.7.3**

**IMPROVE THE MANAGEMENT OF OPERATIONS, INFRASTRUCTURES AND EQUIPMENT BY TAKING ADVANTAGE OF NEW TECHNOLOGIES**

2.7.3

2.7.3.1

Develop asset management systems and databases to allow effective inspection and management of infrastructures (airfield)

2.7.3.2

Develop asset management systems and databases to allow effective management of services and

infrastructures (terminal & services)

2.7.3.3 Introduction of A-CDM (Airport Collaborative Decision Making) procedures

**2.7.4 MAINTAIN HIGH LEVELS OF SAFETY AND SECURITY OF AIRCRAFT IN THE MALTA AIRSPACE AND THE AIRPORT**

2.7.4 2.7.4.1 Keep the safety programme updated

2.7.4.2 Improve wildlife control systems in the airport

2.7.4.3 Improve security of the remote aprons and parks on the airfield to a level relevant to their long term use

2.7.4.4 Improve airfield safety by updating aerodrome ground traffic management.

2.7.4.5 Improve aviation safety by mapping obstacle clearances and maintaining this obstacle clearance mapping to EU and international standards on the approaches of the airport

2.7.4.6 Update service contracts of aeronautical importance

2.7.4.7 Integrate new aviation technologies while safeguarding the safety of aviation services

**2.7.5 MITIGATE THE IMPACT OF THE AIRPORT ON THE SURROUNDING ENVIRONMENT**

- 
- |              |         |  |
|--------------|---------|--|
| 2.7.5        | 2.7.5.1 | Ensure that airport infrastructures and operations continue to comply with the conditions established in their planning and operational conditions |
|              | 2.7.5.2 | Support the use of less polluting/noisy equipment  |
|              | 2.7.5.3 | Implement new mitigation measures  |
|              | 2.7.5.4 | Update obsolete refuelling infrastructure  |
| <b>2.7.6</b> |         | <b>IMPROVE AVAILABILITY AND ACCESS TO AVIATION TRANSPORT STATISTICS</b>  |
| 2.7.6        | 2.7.6.1 | Introduce contract clauses requiring concessionaires and contractors to provide regular information to the authorities                             |
| <b>2.7.7</b> |         | <b>IMPROVE AIR CONNECTIVITY FOR COMMERCIAL PASSENGERS, FREIGHT AND BUSINESS TRAVELLERS</b>   |
| 2.7.7        | 2.7.6.1 | Establish new bilateral agreements with non-EU countries   |
|              | 2.7.7.2 | Improve the transparency and fairness of the allocation of airport slots   |
|              | 2.7.7.3 | Encourage route development to attract new aviation services   |
|              | 2.7.7.4 | Develop a policy framework that enables the domestic use of helicopters  |

2.7.7.5 Reserve dedicated areas (like aircraft parking and terminal buildings) to support general aviation

2.7.7.6 Improve airport traffic circulation to support business aviation

2.7.7.7 Studies to consider the development of a terminal for business and general aviation

**2.7.8 IMPROVE THE FREIGHT CONNECTIVITY BETWEEN THE AIRPORT AND PORTS**

2.7.8.1 Coordinate with different authorities the simplification of the process for transit cargo between the airport and ports

2.7.8.2 Consider fast routes between the cargo areas in the airport and ports

**2.7.9 PROVIDE ALTERNATIVE FUEL INFRASTRUCTURE TO PROMOTE EFFICIENCY AND COMPETITIVENESS**

2.7.9.1 Develop a deployment action plan for the TEN-T Core airport for current and alternative fuels

2.7.9.2 Develop a ground supply action plan for the TEN-T Core airport

**Common**

**2.8.1 SUSTAINABLE FINANCING**

- |              |         |  |
|--------------|---------|--|
| 2.8.1        | 2.8.1.1 | Sources of financing that leverage potential revenue from transport infrastructures and operations   |
|              | 2.8.1.2 | Create direct links between revenue generation from transport and transport investment   |
| <b>2.8.2</b> |         | <b>CLIMATE ADAPTATION AND MITIGATION</b>   |
| 2.8.2        | 2.8.2.1 | Establish the share of Greenhouse Gases from transport that would fairly contribute to climate change targets and monitor progress of this master plan in line with these targets. |
|              | 2.8.2.2 | Assess the impact of climate change and sea level rise on transport infrastructures  |
|              | 2.8.2.3 | Incorporate climate change considerations at the planning and design stage to reduce retro-fitting costs   |
| <b>2.8.3</b> |         | <b>RESEARCH AND INNOVATION IN TRANSPORT</b>  |
| 2.8.3        | 2.8.3.1 | Improve links between government and transport research establishments to encourage research in areas of policy relevance  |
|              | 2.8.3.2 | Develop a framework that facilitates the testing and piloting of innovative technologies and new materials in the development of transport infrastructures                         |
|              | 2.8.3.3 | Use of transport infrastructure for energy generation  |
|              | 2.8.3.4 | Develop research capabilities to exploit new data sources including “big data”   |

2.8.3.5 Develop processes that facilitate the procurement of temporary measures and their assessment

## **2.8.4**

### **TRANSPORT ACCIDENT SAFETY INVESTIGATIONS**

## 2.8.4

2.8.4.1 Further develop the transport accident investigation body to maintain appropriate resource levels as well as keeping it functionally, financially and legally distinct from the regulatory bodies

2.8.4.2 Contribute to the action plan for response to national disasters and accidents on strategic infrastructure

### 3.4 National Transport Strategy and Transport Master Plan elements that may give rise to impacts

82. This section identifies potential aspects of the NTS and TMP which, at this strategic level, were identified as potentially resulting in negative effects on SACs /SPAs. It should be noted that strategic level assessment reflects the strategic level of the NTS and Plan and does not replace project level assessment. Moreover, it may be the case that potential impacts identified at strategic level Appropriate Assessment may have been mitigated or identified as no longer potentially significant depending on the additional detail available when project level assessment is required.
83. The general strategic direction is presented in the NTS through the strategic goals and guiding principles as identified above. The strategic goals that could have an impact on the Natura 2000 network in the Maltese Islands include:
- Transport to support economic development (Strategic Goal 1) in particular with respect to any new roads to improve links and connectivity;
  - Transport to promote environmental and urban sustainability could result in positive effects in some parts of the Natura 2000 network; and
  - Transport to support social development and inclusion where this may lead to the development of new infrastructure in areas where the SACs / SPAs may be affected.
84. The TMP includes a number of objectives and measures that could result in impacts on SACs and SPAs depending on the proposed intervention. These are summarised here:
- Review and clarify the road network classification (Operational Objective 2.2.8, Measure 2.2.8.1);
  - Investigation for the identification of new ferry landing sites, considering in particular St Paul's Bay and St Julian's (although Msida is also considered) (Operational Objective 2.4.2, Measure 2.4.2.3);
  - Removal of bottlenecks at TEN-T ports with inclusion of specific measures for interventions at Mgarr and Cirkewwa as well as Marsaxlokk (Operational Objective 2.5.4 and Operational Objective 2.6.4);
  - Ensure a high level of service on the TEN-T core and comprehensive network (Measure 2.2.7.1); and (
  - Removal of bottlenecks at the TEN-T core airport (Operational Objective 2.7.2).
85. On further discussion with the plan maker (TM) it was confirmed that identification of new landing sites would involve exploring the use of quays that already exist and therefore development of new infrastructure is not expected in this regard.
86. Operational objective 2.2.7 seeks to ensure a high level of service on the TEN-T core and comprehensive network. In identifying the issues, the TMP lists a number of TEN-T sections

that will eventually require some interventions that could include upgrading, redesigning and road improvements, most of which lie outside the scope of the TMP as they will not be implemented by 2025. Four road projects will be taken forward through this TMP as described in **Chapter 4** of the AA.

87. Project 6 listed in the TMP, is identified as one of the sections to be implemented (Scenario Do Something 2). Project 6 involves removing the bottleneck and reducing severance between communities at Regional Road (Nodes NA11-EA13] – White Rocks Complex to Manuel Dimech Bridge, St Andrew's. As shown in Figure 10, this road stretch passes in the vicinity of the Special Area of Conservation of National Importance, Wied Harq Hamiem.
88. Besides the projects identified as part of this TMP, the full list of interventions makes reference to a list of projects along the TEN-T including: (i) Malta-Gozo Fixed Link; (ii) redesign to address conflicting road function (high traffic volume and high urban activity area) in Ghadira, Mellieha; and (iii) remove the bottleneck and functional conflict between high traffic volume and urban activity at Xemxija Road, mentioning a Xemxija bypass. These may also affect Natura 2000 sites as highlighted in **Chapter 6** of the AA.

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## 4 Alternatives

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89. The Transport Master Plan has considered a number of scenarios in developing the measures. These are:
- **Scenario 1: Do nothing:** no changes to the network or implementation of any transport related actions;
  - **Scenario 2: Do minimum:** minimum expected changes and those committed developments. It includes all the recently implemented and committed developments from the base-year (2014) to 2020 and includes the Salina Coast Road, the Msida and Gzira bus lanes as well as new transport routes, forecasted upgrades to the inner harbour ferries to increase capacity, and refurbishment and upgrading of Deep Water Quay in Valletta, and use of one berth on Terminal one for larger vessels at the Malta Freeport Terminals;
  - **Scenario 3: Do Something 1:** Moderate restraint in the use of private cars and increased support of public transport and alternative modes as described below; and
  - **Scenario 4: Do Something 2:** Stronger restraint in the use of private cars and strong support to public transport and alternative modes as described below.
90. Scenario 3 (Do-something 1) corresponds to a transport plan aimed at moderately restricting the use of private cars and increasing support for public transport. This scenario builds on the do-minimum scenario and comprises the following undertakings or packages of measures:
- a) High level road infrastructure provision - six priority road projects involving interventions at: (i) Adolorata Junction (Marsa), (ii) Regional Road (Kappara), (iii) December 13<sup>th</sup> Road (Marsa), (iv) Regional Road (Msida), (v) Route 6 (Blata l-Bajda to Valletta), and (vi) White Rocks Complex to Manuel Dimech Bridge ( St Andrews);
  - b) Measures to increase average speed of public transport in the following segments: Sliema – Msida – Valletta and Tarxien – Fgura – Marsa – Valletta ;
  - c) Measures to improve ferry services (improving the service given by the Valletta – Sliema and Valletta – Bormla passengers’ ferries);
  - d) Implementation of a cycling corridor (develop pilot cycle corridors between Valletta and St. Julian’s, Sliema);
  - e) Low emission zone in the Hub (introduce further financial differential incentives to reduce the average age of vehicles), in this scenario a user charge will be directed for the use of vehicles older than 20 years; and

- f) Promotion of multiple occupancy (to develop and incentivise schemes to promote multiple occupancy, smaller vehicles and reduce the need to travel in peak hours-passengers per vehicle increases from 1.207 to 1.30).
91. Scenario 4 (the Do Something 2 scenario) corresponds to a transport plan aimed at strongly restricting the use of private cars and strongly supporting public transport. This scenario builds on the do-minimum scenario and comprises the following undertakings or packages of measures:
- a) Moderate level road infrastructure provision , four priority road projects: (i) Adolorata Junction (Marsa), (ii) Regional Road (Kappara), (iii) December 13<sup>th</sup> Road (Marsa), and (vi) White Rocks Complex to Manuel Dimech Bridge ( St Andrews);
  - b) Measures to increase average speed of public transport (implement Public Transit Quality Corridors for: Sliema – Msida – Valletta; Tarxien – Fgura – Marsa – Valletta; Mosta – Birkirkara – Hamrun – Valletta; Naxxar – Birkirkara – Hamrun – Valletta; Mosta - Birkirkara –University – Msida; Attard – Birkirkara – Hamrun – Valletta; Qormi – Hamrun – Valletta);
  - c) Measures to improve ferry services (improving the service given by the Valletta – Sliema and Valletta – Bormla passengers’ ferries);
  - d) Implementation of cycling corridors (develop pilot cycle corridors between Valletta and: i) St. Julian’s, Sliema; and ii) Three Cities and Fgura;
  - e) Low emission zone in the Hub (introduce further financial differential incentives to reduce the average age of vehicles). In this scenario the vehicle restraint measure applies a user charge for vehicles older than 15 years;
  - f) Promotion of multiple occupancy (passengers per vehicle increase from 1.207 to 1.40);
  - g) Fast ferry between Malta and Gozo; and
  - h) Freight ferry daily service between Malta and Gozo (determine the location of the landing place for the ferry service (including freight) to/from Gozo).
92. It is noted that the main differences between scenarios 3 and 4 relate to the number of road projects (slightly more in scenario 3), the number of public transit corridors (more in scenario 4), the number of cycling corridors, the number of vehicles impacted by low emission zones, the fast ferry service between Malta and Gozo and the freight daily service, both of which are only found in scenario 4. In terms of passengers per vehicle in the promotion of multiple occupancy this is only slightly higher in scenario 4 (an increased target from 1.3 passengers per vehicle to 1.4 passengers per vehicle). With regards to the roads projects, although interventions to the TEN-T network would require upgrades to 29 road stretches, the multi-criteria analysis carried out in the TMP on these stretches points to six priority projects under Scenario 3 and four priority projects under Scenario 4 that could be implemented under the TMP.

93. The Do Minimum alternative (Scenario 2) includes the Salina Coast Road. This intervention has already been assessed at project level where both an Environmental Impact Assessment and an Appropriate Assessment were carried out prior to the receipt of planning permission. The road has been completed.
94. Scenarios 3 and 4 both include Project 2, which involves upgrading at Regional Road, Kappara Junction. This project is currently under construction and project level impact assessment was carried out that considered potential impacts to the SAC of National Importance, Wied Ghollieqa and therefore impacts are not re-assessed here.
95. Scenarios 3 and 4 also include the proposed interventions between White Rocks Complex and Manuel Dimech Bridge (St Andrews). This project could result in impacts on the SAC of National Importance, Wied Harq Hamiem, refer to **Chapter 6**.
96. Scenario 4 (Do Something 2) includes the introduction of a fast-ferry service between Malta and Gozo as well as a freight ferry daily service between Malta and Gozo. The location of the landing sites would need to be identified and the potential for impacts on marine and / or coastal SACs or SPAs will need to be identified when further detail is available. At a strategic level, however, the general direction to reduce reliance on road transport is considered more favourable and likely to result in less pressure on the terrestrial Natura 2000 network, potentially reducing the need for the construction of additional infrastructure in particular in localities and regions where important sites could be significantly affected. On the other hand, the shift to increased reliance on the use of the marine environment potentially adds pressures and threats to habitats and species of conservation significance. Thus, NTS and TMP implementation must be executed in such a way as to avoid or reduce as far as possible any potential negative effects on marine SACs supporting particularly important habitats and SPAs that are important to breeding and migratory Annex I and Annex IV (Bird Directive) species in particular and must ensure that the integrity of the sites are not significantly negatively affected.

## 5 Description of the SACs & SPAs

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97. As identified in Section 3.4, the NTS includes a number of goals that could result in an impact to the Natura 2000 network and SACs of national importance. The goals are highly strategic in nature and the NTS is developed at a national level. To this end, it cannot be excluded that through NTS implementation, even beyond this Master Plan, the SACs/SPAs could be impacted both directly and indirectly at various sites.
98. This chapter lists all international Natura 2000 sites in the Maltese Islands as well as national SACs that are relevant in the context of this TMP. Refer also to section 6.1.2.1 for assessment of potential impacts on the network.

### 5.1 List of Special Areas of Conservation and Special Protection Areas in the Maltese Islands

99. Table 4 lists the Natura 2000 sites in the Maltese Islands and relevant SACs of national importance, summarising the qualifying features of conservation interest. Where management plans have been drawn up (for all terrestrial sites) sites have been grouped together in accordance with Management Plan boundaries.

Table 4. Natura 2000 sites in the Maltese Islands and relevant SACs of national importance

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
MT0000001	Ghajn Barrani Area	SAC (international importance); Area of Ecological Importance (AEI); Area of High Landscape Value (AHLV); Tree Protection Areas	<b>Annex I habitats</b> – 1240, 1510, 5330, 8210, 92D0 <b>Annex II plant species</b> – <i>Hyoseris frutescens</i>
MT0000002	Pembroke Area	SAC; AEI; SSI	<b>Annex I habitats</b> – 1240, 1410, 3140, 3170, 5330, 5410, 5420, 6220
MT0000003	Il-Ballut tal-Wardija (I/o San Pawl il-Bahar)	SAC; AEI; Tree Protected Area; AHLV	<b>Annex I habitats</b> – 3170, 5330, 9320, 9340, 9540 <b>Annex II plants</b> - <i>Anacamptis urvilleana</i> , <i>Elatine gussonei</i> <b>Annex IV / Red Data Book (RDB)</b> - plant species and invertebrate animal species
MT0000004	Il-Maqluba (I/o Qrendi)	SAC; AEI; Tree Protection Area; Tree Reserve	<b>Annex I habitats</b> – 5230, 8210, 9570*
MT0000005	Ir-Ramla Area	SAC; AEI	<b>Annex I habitats</b> – 1210, 1240, 2110, 2210, 2220, 8210, 92D0 <b>Annex II plants</b> – <i>Orobanche densiflora</i> , <i>Brachytrupes megacephalus</i> , <i>Pseudoseriscius cameroni</i>

<sup>6</sup> See **Appendix 1** for habitat description.

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
MT0000006	Is-Simar (l/o San Pawl il-Bahar)	SAC; SPA; AEI; SSI; Bird Sanctuary; Wetland of International Importance; AAI	<p><b>Annex I habitats</b> – 1150*, 3170, 5410</p> <p><b>Annex II plant species</b> – <i>Anacamptis urvilleana</i>, <i>Elatine gussonei</i>, <i>Ophrys melitensis</i></p> <p><b>Annex II fauna</b> – <i>Zamenis situla</i>, <i>Rhinolophus hipposideros</i>, <i>Aphanius fasciatus</i></p> <p><b>RDB species</b> – plants, reptiles, mammals, amphibian (only one species in the Maltese Islands) and invertebrates</p> <p><b>Birds</b> – <i>Himantopus himantopus</i> (Annex I), breeding wetland species, wintering wetland species, migratory waterfowl and waders including Annex I migratory herons, migratory wetland passerines, and migratory woodland passerines</p>
MT0000007	Is-Salini	SAC; Transitional Water Body; Bird Sanctuary; AEI; SSI; AAI	<p><b>Annex I habitats</b> – 1150*, 1160, 1310, 1410, 1420, 92D0, 5330</p> <p><b>Annex II fauna</b> – <i>Aphanius fasciatus</i></p> <p><b>Annex IV / RDB species</b> – molluscs, arthropods, moths, and other invertebrates</p> <p><b>Birds</b> – <i>Acrocephalus scirpaceus</i></p>
MT0000008	L-Ghadira s-Safra	SAC; AEI	<p><b>Annex I habitats</b> – 1420, 3170*</p> <p><b>Annex II</b> – <i>Riella helicophylla</i></p> <p><b>Annex IV / RDB species</b> – invertebrates</p>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
MT0000009	Ramla tat-Torri / Rdum tal-Madonna Area	SAC; SPA; AEI; IBA; AHLV (Important Bird Area)	<p><b>Annex I habitats</b> –1210, 1240, 2110, 2210, 2220, 5330, 5430, 5410, 8210</p> <p><b>Annex II plants</b> – <i>Anacamptis urvilleana</i>, <i>Orobanche densiflora</i></p> <p><b>Annex II fauna</b> – <i>Brachytrupes megacephalus</i>, <i>Pseudoseriscius cameroni</i>, <i>Zamenis situla</i></p> <p><b>Annex IV / RDB species</b> – plants, invertebrates, reptiles, mammals</p> <p><b>Birds</b> – <i>Puffinus yelkouan</i> (Annex I), <i>Calandrella brachydactyla</i> (Annex I), <i>Calonectris diomedea</i> (Annex I), <i>Monticola solitarius</i>, <i>Sylvia conspicillata</i>, <i>Sylvia melanocephala</i>, raptors, passerines</p>
MT0000010	Ix-Xaghra tal-Kortin	SAC; Transitional Water Body, AEI, SSI, AHLV	<p><b>Annex I habitats</b> –1240, 5330, 5410, 8210, 9320, 9540</p> <p><b>Annex II plants</b> – <i>Anacamptis urvilleana</i></p> <p><b>Annex II fauna</b> – <i>Brachytrupes megacephalus</i>, <i>Pseudoseriscius cameroni</i>, <i>Zamenis situla</i></p> <p><b>Annex IV / RDB species</b> – plants, invertebrates, and reptiles</p>
MT0000011	Ghar Dalam	SAC; Site of Archaeological Importance; Area of Archaeological Importance (AAI)	<p><b>Annex I habitats</b> – 8310</p> <p><b>Annex II fauna</b> – <i>Armadilidium ghardalamensis</i>, <i>Rhinolophus hipposideros</i></p> <p><b>Annex IV / RDB species</b> - Mammal</p>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
MT0000012	Wied il-Mizieb	SAC; AEI / SSI; Tree Protected Area, AHLV	<p><b>Annex I habitats</b> –5330, 9320, 9570</p> <p><b>Annex II plants</b> – <i>Anacamptis urvilleana</i>, <i>Ophrys melitensis</i></p> <p><b>Annex II fauna</b> – <i>Brachytrupes megacephalus</i>, <i>Pseudoseriscius cameroni</i>, <i>Zamenis situla</i></p> <p><b>Annex IV / RDB species</b> –invertebrates, mammals</p>
MT0000013	Ic-Cittadella	SAC; AAI; AHLV	<p><b>Annex I habitats</b> –1210, 1240, 2110, 2210, 2220, 5330, 5430, 5410, 8210</p> <p><b>Annex II plants</b> – <i>Linaria pseudolaxiflora</i></p> <p><b>Annex II fauna</b> – <i>Rhinolophus hipposideros</i>, <i>Myotis punicus</i></p> <p><b>Annex IV / RDB species</b> – plants, reptiles invertebrates, mammals</p>
MT0000014	Il-Ballut (l/o Marsaxlokk)	SAC; Bird Sanctuary; AEI / SSI	<p><b>Annex I habitats</b> –1310, 1410, 1420</p> <p><b>Annex II plants</b> – <i>Anacamptis urvilleana</i>, <i>Orobanche densiflora</i></p> <p><b>Annex II fauna</b> – <i>Brachytrupes megacephalus</i>, <i>Pseudoseriscius cameroni</i>, <i>Zamenis situla</i></p> <p><b>Annex IV / RDB species</b> –invertebrates</p>
MT0000015	L-Ghadira Area	SAC; SPA; AEI; SSI; Bird Sanctuary; Wetland of International Importance; AHLV	<p><b>Annex I habitats</b> –1150,1310, 1410, 1420, 2220, 5330, 5410, 6220</p> <p><b>Annex II plants</b> – <i>Anacamptis urvilleana</i>, <i>Ophrys melitensis</i>, <i>Orobanche densiflora</i></p>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
			<p><b>Annex II fauna</b> – <i>Rhinolophus hipposideros</i>, <i>Myotis punicus</i>, <i>Zamenis situla</i>, <i>Aphanius fasciatus</i>, <i>Brachytrupes megacephalus</i>, <i>Pseudoseriscius cameroni</i></p> <p><b>Annex IV / RDB species</b> – plants, mammals</p> <p><b>Birds</b> – <i>Himantopus himantopus</i> (Annex I), <i>Calandrella brachydactyla</i> (Annex I), non-Annex I breeding species, wintering wetland species, migratory waterfowl and waders including Annex I migratory herons, migratory raptors, wintering and staging Passeriformes</p>
MT0000016	Filfla	SAC; SPA; AEI; SSI; Filfla Nature Reserve; Bird Sanctuary	<p><b>Annex I habitats</b> – 1240, 1420, 8210</p> <p><b>Annex II fauna</b> – <i>Lampedusa imitatrix</i></p> <p><b>Annex IV / RDB species</b> – plants, invertebrates, reptiles</p> <p><b>Birds</b> – <i>Hydrobates pelagicus</i> (Annex I), <i>Calonectris diomedea</i> (Annex I)</p>
MT0000017	Kemmuna, Kemmunett, Il-Hagriet ta' Bejn il-Kmiemen u l-Iskoll ta' Taht il-Mazz	SAC; SPA; AEI; SSI; Tree Protection Area; Bird Sanctuary; Nature Reserve	<p><b>Annex I habitats</b> – 1240, 1420, 2210, 3140, 5330, 5410, 6220, 8210, 92D0, 9320, 9540</p> <p><b>Annex II plants</b> – <i>Anacamptis urvilleana</i>, <i>Linaria pseudolaxiflora</i>, <i>Ophrys melitensis</i>, <i>Orobanche densiflora</i></p> <p><b>Annex II fauna</b> – <i>Brachytrupes megacephalus</i>, <i>Pseudoseriscius cameroni</i>, <i>Zamenis situla</i></p>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
			<p><b>Annex IV / RDB species</b> – plants, invertebrates, reptiles, mammals</p> <p><b>Birds</b> – <i>Puffinus yelkouan</i> (Annex I), <i>Calandrella brachydactyla</i> (Annex I), <i>Calonectris diomedea</i> (Annex I), <i>Monticola solitarius</i>, <i>Sylvia conspicillata</i>, <i>Sylvia melanocephala</i>, <i>Sturnus vulgaris</i>, <i>Passer hispaniolensis</i>, raptors, passerines</p>
MT0000018	Buskett – Girgenti Area	SAC; SPA; Tree Protection Area; AEI / SSI; Bird Sanctuary; AHLV; AAI	<p><b>Annex I habitats</b> –3170, 5230, 5330, 8310, 92A0, 9320, 9340, 9540</p> <p><b>Annex II plants</b> – <i>Elatine gussonei</i>, <i>Petalophyllum ralfsii</i></p> <p><b>Annex II fauna</b> – <i>Myrmecophilus baronii</i>, <i>Zamenis situla</i>, <i>Rhinolophus hipposideros</i>, <i>Myotis punicus</i></p> <p><b>Annex IV / RDB species</b> – plants, fungi, invertebrates, amphibian, reptiles, mammals</p> <p><b>Birds</b> –Raptors, breeding and wintering passerines</p>
MT0000019; MT0000029; MT0000030	Dwejra – Qawra Area, inkluz Hagret il-General Rdumijiet ta’ Ghawdex: Il-Ponta ta’ Harrux sa il-Bajja tax-Xlendi Rdumijiet ta’ Ghawdex: Il-Ponta ta’ San Dimitri sa il-Ponta ta’ Harrux	SAC; SPA; AEI; SSI; Nature Reserve; Bird Sanctuary; AHLV; Tree Protection Area	<p><b>Annex I habitats</b> –1240, 1420, 3140, 5330, 5430, 8210, 92D0</p> <p><b>Annex II plants</b> – <i>Cremnophyton lanfranconi</i>, <i>Helichrysum melitense</i>, <i>Hyoseris frutescens</i>, <i>Linaria pseudolaxiflora</i>, <i>Anacamptis urvilleana</i>, <i>Palaeocyanus crassifolius</i></p> <p><b>Annex IV / RDB species</b> – plants, invertebrates, reptiles, amphibian, mammals</p>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
			<b>Birds</b> – <i>Puffinus yelkouan</i> (Annex I), <i>Calandrella brachydactyla</i> (Annex I), <i>Calonectris diomedea</i> (Annex I), <i>Monticola solitarius</i> , <i>Cisticola juncidis</i> , <i>Sylvia conspicillata</i> , <i>Sylvia melancocephala</i> , <i>Miliaria calandra</i> , waders and related species, birds of prey, passerines
MT0000020; MT0000028  MT0000029	Xlendi-Wied tal-Kantra Area Rdumijiet ta' Ghawdex: Id-Dawra tas-Sanap sa Tal-Hajt  Rdumijiet ta' Ghawdex: Il-Ponta ta' Harrux sa il-Bajja tax-Xlendi	SAC; SPA; AEI; SSI; AHLV; Site of Archaeological Importance	<b>Annex I habitats</b> –1240, 3140, 3170, 5330, 5430, 8210, 9320  <b>Annex II plants</b> – <i>Anacamptis urvilleana</i> , <i>Palaeocyanus crassifolius</i> , <i>Cremnophyton lanfrancoi</i> , <i>Elatine gussonei</i> , <i>Hyoseris frutescens</i> , <i>Linaria pseudolaxiflora</i>  <b>Annex II fauna</b> – <i>Rhinolophus hipposideros</i> , <i>Myotis punicus</i>  <b>Annex IV / RDB species</b> – plants, invertebrates, <b>Birds</b> – <i>Puffinus yelkouan</i> (Annex I), <i>Calandrella brachydactyla</i> (Annex I), <i>Calonectris diomedea</i> (Annex I), <i>Monticola solitarius</i> , waders and aquatic birds, raptors, passerines
MT0000021	L-Imgiebah / Tal-Mignuna Area	SAC; AEI; Tree Protected Area; AHLV	<b>Annex I habitats</b> –1240, 1510, 5330, 8210, 92D0, 9320, 9340, 9540  <b>Annex II plants</b> – <i>Anacamptis urvilleana</i> , <i>Linaria pseudolaxiflora</i>  <b>Annex II fauna</b> – <i>Zamenis situla</i>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
			<b>Annex IV / RDB species</b> – plants, amphibian, invertebrates
MT0000022	Il-Gzejjer ta' San Pawl /Selmunett	SAC; AEI; SSI; Bird Sanctuary; Nature Reserve	<b>Annex I habitats</b> –1170, 1240 <b>Annex II plants</b> – <i>Linaria pseudolaxiflora</i> <b>Annex II fauna</b> – <i>Brachytrupes megacephalus</i> , <i>Pseudoseriscius cameroni</i> , <i>Zamenis situla</i> <b>Annex IV / RDB species</b> – plants, invertebrates
MT0000023	Il-Magħluq tal-Baħar (l/o Marsascula)	SAC; Transitional Water Body; AEI / SSI	<b>Annex I habitats</b> –1150*; 1210; 1240; 1410; 1420; 1510; 2110; 3140; 5330; 5410; 5430; 6220; 8210; 92D0 <b>Annex II plants</b> – <i>Hyoseris frutescens</i> , <i>Anacamptis urvilleana</i> <b>Annex II fauna</b> – <i>Zamenis situla</i> <b>Birds</b> – <i>Puffinus yelkouan</i> , <i>Calandrella brachydactyla</i>
MT0000024; MT0000031 MT0000032	Rdumijiet ta' Malta: Ir-Ramla ta-Cirkewwa sa il-Ponta ta' Benghisa Rdumijiet ta' Malta: Ix-Xaqqa sa' Wied Moqbol Rdumijiet ta' Malta: Ras il-Pellegrin sax-Xaqqa	SAC; SPA; AEI; SSI; Protected Beach; AHLV; Tree Protected Area; Bird Sanctuary; AAI; Sites of Archaeological Importance	<b>Annex I habitats</b> –1240; 1410; 1510; 2110; 3140; 3170; 5330; 5410; 5430; 6220; 8210; 8330; 92A0; 9320; 9340 <b>Annex II plants</b> – <i>Palaeocyanus crassifolius</i> , <i>Anacamptis urvilleana</i> , <i>Crepis pusilla</i> , <i>Cremnophyton lanfrancoi</i> , <i>Elatine gussonei</i> , <i>Ophrys melitensis</i> , <i>Hyoseris frutescens</i> , <i>Petalophyllum ralfsii</i> , <i>Linaria pseudolaxiflora</i> <b>Annex II fauna</b> – <i>Myotis punicus</i> , <i>Rhinolophus hipposideros</i> , <i>Lampedusa melitensis</i> , <i>Lampedusa</i>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
			<i>imitatrix</i> , <i>Zamenis situla</i> <b>Annex IV / RDB species</b> – plants, invertebrates, reptiles, mammals <b>Birds</b> – <i>Puffinus yelkouan</i> (Annex I ), <i>Calonectris diomedea</i> (Annex I), <i>Calandrella brachydactyla</i> (Annex I), <i>Cisticola juncidis</i> , <i>Sylvia comspillata</i> , <i>Monticola solitarius</i> , <i>Larus michahellis</i>
MT0000025	L-Ghar ta' I-Iburdan	SAC; AEI; SSI	<b>Annex I habitats</b> –5330; 8310; 8330; 92A0; 9320 <b>Annex II fauna</b> – <i>Myotis punicus</i> , <i>Rhinolophus hipposideros</i>
MT0000026	Il-Qortin tal-Magun u l-Qortin il-Kbir	SAC; AEI; SSI;	<b>Annex I habitats</b> –1240; 1510; 5330; 5410; 9320 <b>Annex II plants</b> – <i>Ophrys melitensis</i> <b>Annex IV / RDB species</b> – plants, reptiles
MT0000034 MT0000027	L-Inhawi ta' Cenc Rdumijiet ta' Ghawdex: Ta' Cenc	SAC; SPA; AEI; SSI; Bird Sanctuary	<b>Annex I habitats</b> –1240; 1510; 3140; 3170; 5330; 5410; 5430; 6220; 8210 <b>Annex II plants</b> – <i>Palaeocyanus crassifolius</i> , <i>Cremnophyton lanfrancoi</i> , <i>Elatine gussonei</i> , <i>Hyoseris frutescens</i> , <i>Linaria pseudolaxiflora</i> <b>Annex IV / RDB species</b> – plants, invertebrates, reptiles, mammals, amphibian <b>Birds</b> – <i>Puffinus yelkouan</i> (Annex I ), <i>Calonectris diomedea</i> (Annex I), <i>Hydrobates pelagicus</i> (Annex I) <i>Calandrella brachydactyla</i> (Annex I), <i>Cisticola juncidis</i> , <i>Sylvia comspillata</i> , <i>Sylvia melancocephala</i> ,

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
			<i>Monticola solitarius, Miliaria calandra, Passer hispaniolensis</i> , aquatic and marine birds, birds of prey, passerines
MT0000101	Il-Bahar bejn Rdum Majjiesa u Ras ir-Raheb	SAC	<b>Annex I habitats</b> -1110, 1120, 1170, 8330 <b>Annex IV / RDB species</b> – plants, invertebrates
MT0000102	Il-Bahar fl-Inhawi ta' Ghar Lapsi u ta' Filfla	SAC	<b>Annex I habitats</b> - 1120, 1170 <b>Annex IV / RDB species</b> – plants, invertebrates
MT0000103	Il-Bahar fl-Inhawi tad-Dwejra (Ghawdex)	SAC	<b>Annex I habitats</b> - 1120, 1170, 8330 <b>Annex IV / RDB species</b> – plants, invertebrates, fish
MT0000104	Il-Bahar fl-Inhawi ta' Mgarr ix-Xini (Ghawdex)	SAC	<b>Annex I habitats:</b> 1110, 1120, 1170, 8330 <b>Annex IV / RDB species</b> – plants, invertebrates
MT0000105	Il-Bahar fil-Grigal ta' Malta	SAC	<b>Annex I habitats</b> - 1110, 1120, 1170, 8330 <b>Annex II fauna</b> – <i>Gibbula nivosa</i> <b>Annex IV / RDB species</b> – plants, invertebrates
MT0000106	Il-Bahar tat-Tramuntana	SAC; SPA	<b>Annex IV / RDB species</b> – reptiles, mammals <b>Birds</b> – <i>Calonectris diomedea</i>
MT0000107	Il-Bahar tal-Grigal	SPA	<b>Birds</b> – <i>Hydrobates pelagicus, Puffinus yelkouan</i>
MT0000108	Il-Bahar tal-Lvant	SPA	<b>Birds</b> – <i>Hydrobates pelagicus, Calonectris diomedea</i>
NAT002	Wied Harq Hamiem	National SAC	<b>Remnant valley system also contains entrance to scheduled Harq Hamiem cave. Supports rare species including <i>Rumex cristatus, Atractylis cancellata, Plantago bellardi, Selaginella denticulata</i> (the only species of club moss in the</b>

Site Code	Name	Designation	Qualifying features of conservation interest <sup>6</sup>
NAT003	Wied Ghollieqa	National SAC	<p>Maltese Islands) and <i>Scilla sicula</i>.</p> <p>Valley system with a variety of habitats including a narrow riparian community and maquis community providing ideal habitat for both migratory and breeding bird species. The valley is also known to support a population of the rare <i>Mustela nivalis</i> as well as rare fungi including <i>Inonotus indicus</i>.</p>

100. Of the sites identified above, review of the TMP reveals that the following areas may be specifically impacted through implementation of the TMP:
- Il-Bahar fil-Grigal ta' Malta (SAC);
  - Il-Bahar tal-Lbic (SPA);
  - Rdumijiet ta' Malta: Ir-Ramla tac-Cirkewwa sa il-Ponta ta' Benghisa (SAC/SPA); and
  - Wied Harq Hamiem (SAC).

#### **5.1.1 Il-Bahar fil-Grigal ta' Malta**

101. This SAC (see Figure 3) hosts the largest variety of *Posidonia* sub-types in the Natura 2000 network and they are each well represented within this site. *Posidonia* meadows are a priority habitat under the Habitats Directive. The meadows within this site exhibit relatively good connectivity and a high percentage coverage as identified in the Standard Data Form issued by ERA.
102. Sandbanks, formed by associations of *Cynodocea nodosa* are also present within this site and a number of subtypes noted. Reefs, occurring on hard beds and rocks were also identified within this SAC. Partially submerged caves (located mostly along the coast line of Comino) are also present.
103. Important species identified in the Standard Data Form include *Lithothamnion minervae* (a plant species of national importance) and *Gibbula nivososa*, considered as the only endemic marine mollusc of the Maltese Islands. *Centrostephanus longispinus* and *Pinna nobilis* are listed under Annex IV of the Habitats Directive and have been identified within the site. *Scyllarides latus* is an Annex V species and is found within the site.

#### **5.1.2 Il-Bahar tal-Lbic ta' Malta**

104. This marine SPA (see Figure 4) is important during the breeding season for the Annex I Birds Directive species *Calonectris diomedea*, *Puffinus yelkouan*, and *Hydrobates pelagicus* as identified in ERA's Standard Data Form and was thus recently included (2016) in the Natura 2000 network.

#### **5.1.3 Rdumijiet ta' Malta: Ir-Ramla tac-Cirkewwa sa il-Ponta ta' Benghisa**

105. This SAC (see Figure 4) includes two SPAs, and four separate Management Plans have been drawn up for the management of the SAC due to its relatively large size and the need to zoom in on areas for more effective management of the site. Of particular relevance in the context of the TMP is the Rdumijiet ta' Malta: Mir-Ramla ta' Ghajn Tuffieha sax-Xaqqa area (see Figure 5). A detailed Management Plan has been drawn up for this area. The Annex I habitats listed under the Habitats Directive that occur in this area are listed hereunder:
- 1240 – Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp.;
  - 1410 – Mediterranean salt meadow;

- 1510 – Mediterranean salt steppes;
  - 3140 – Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.;
  - 5330 – Thermo-Mediterranean and pre-desert scrub;
  - 5410 – West Mediterranean clifftop phrygas;
  - 5430 – Endemic phrygas of the Euphorbio-Verbascion;
  - 6220 – Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea;
  - 8210 – Calcareous rocky slopes with chasmopytic vegetation;
  - 8330 – Submerged or partially submerged sea caves;
  - 92A0 – *Salix alba* and *Populus alba* galleries;
  - 9320 – *Olea* and *Ceratonia* forests; and
  - 9340 – *Quercus ilex* and *Quercus rotundifolia* forests.
106. A number of Annex II plant species have been recorded from this site. These include *Palaeocyanus crassifolius*, *Anacamptis urvilleana*, *Crepis pusilla*, *Cremnophyton lanfrancoi*, *Elatine gussonei*, *Ophrys melitensis*, and *Hyoseris frutescens*. A number of other plant species of conservation interest are described in the Management Plan.
107. Annex II faunal species listed in the Habitats Directive and that been recorded at the site include *Lampedusa imitatrix*, *Lampedusa melitensis*, *Zamenis situla*, *Rhinolophus hipposideros* and *Myotis punicus*.
108. Two Annex I Birds Directive seabird species, *Calonectris diomedea* and *Puffinus yelkouan*, each have breeding colonies within this SAC / SPA. Other bird species of conservation interest are also known from this site.

#### 5.1.4 Wied Harq Hamiem

109. Given that this SAC is of National Importance, a Standard Data Form indicating Annex I habitats and Annex II species is not available for this site. This site was also not part of the then MEPA's project to develop Management Plans for SACs and SPAs in the Maltese Islands therefore habitats and species maps are also not available. The Environment and Resources Authority, however, lists a number of species of conservation significance for this site (see Table 4), most of which are listed in the Red Data Book for the Maltese Islands. Figure 6 demonstrates the extent of this SAC.
110. It is also important to note that the SAC includes the entrance to the Site of Scientific Interest, Harq Hamiem Cave. The cave itself is not within the SAC although it is nonetheless scheduled. It is a partially submerged cave system, a unique karstic feature in the Maltese Islands. Whilst this cave has been studied to a degree, also through the EIA process in

relation to PA2416/00, for example, as identified by Mangion 2001<sup>7</sup>, further investigation is required to understand the full extent of the underground network. Mangion (2001) recommends a 30m radius at least around the perimeter of the cave within which no excavations or any building development should be allowed.

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<sup>7</sup> Mangion, J, 2001. Baseline Hydrogeological Survey of Harq il-Hamiem Cave at St. George's Bay, St. Julian's.

Figure 3. Il-Bahar fil-Grigal ta' Malta Marine Special Area of Conservation

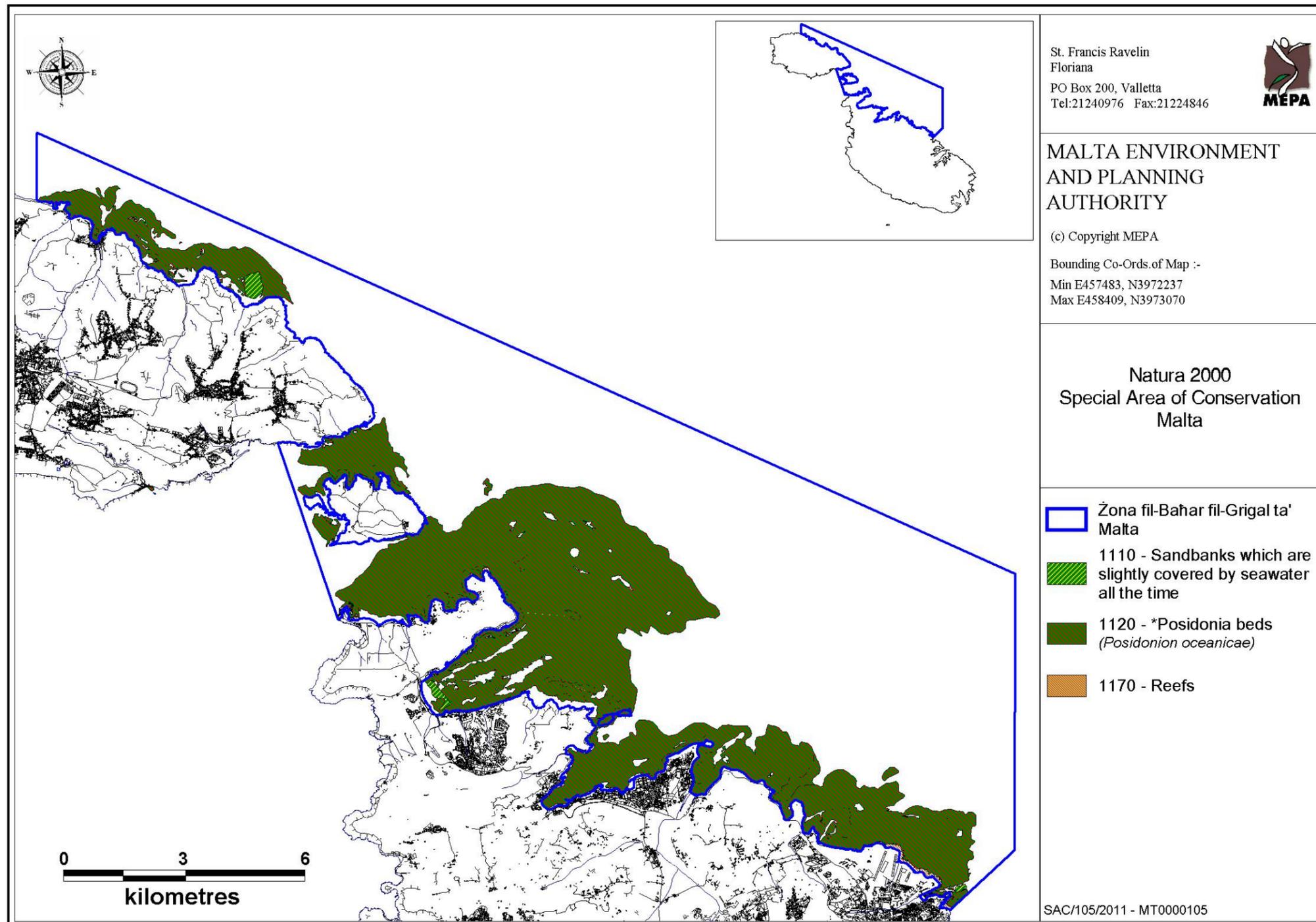
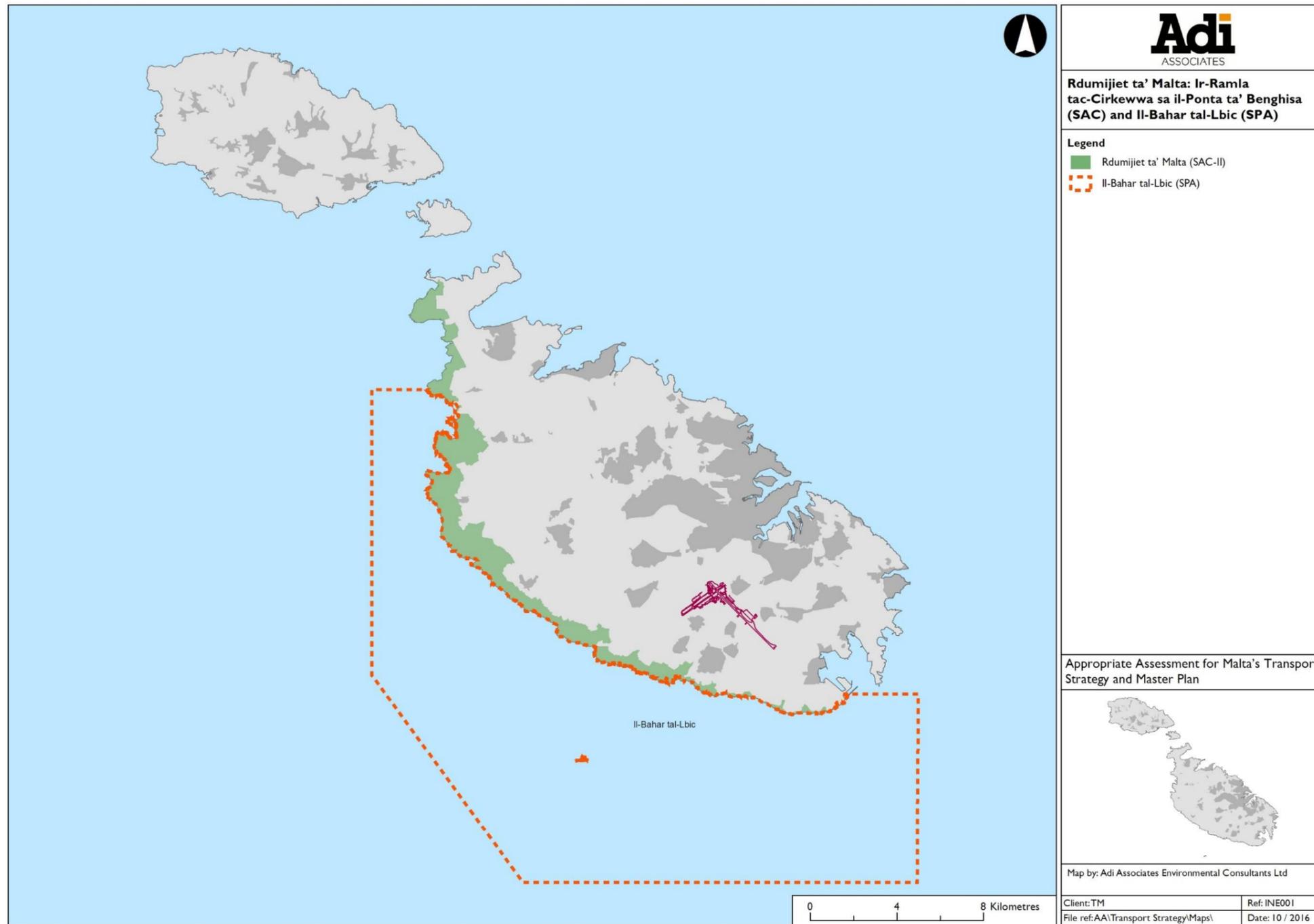




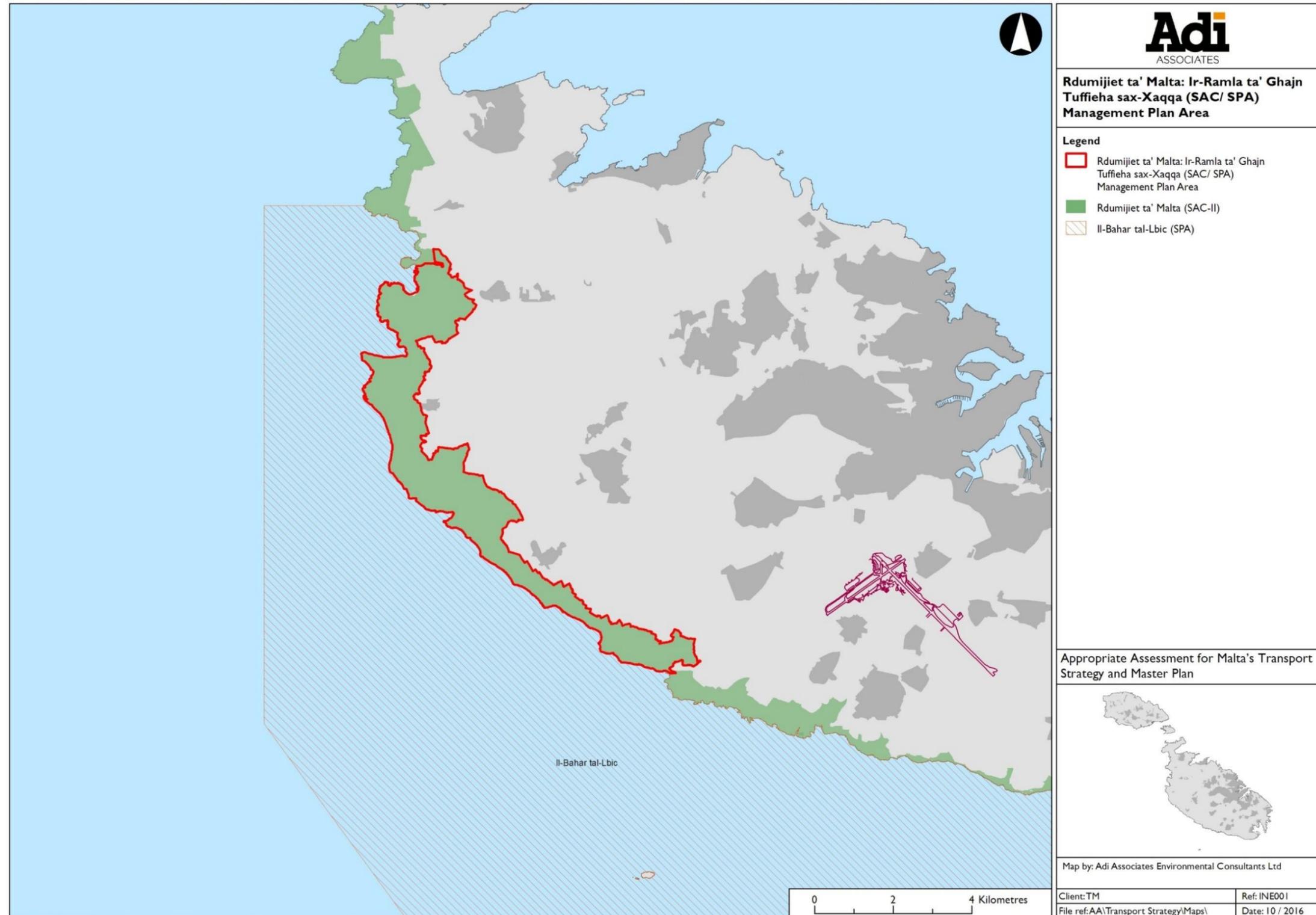
Figure 4. Il-Bahar tal-Lbic ta' Malta Marine Special Protection Area & Rdimijiet ta' Malta: Ir-Ramla tac-Cirkezza sa il-Ponta ta' Benghisa



INDICATIVE ONLY - Not to be used for direct interpretation



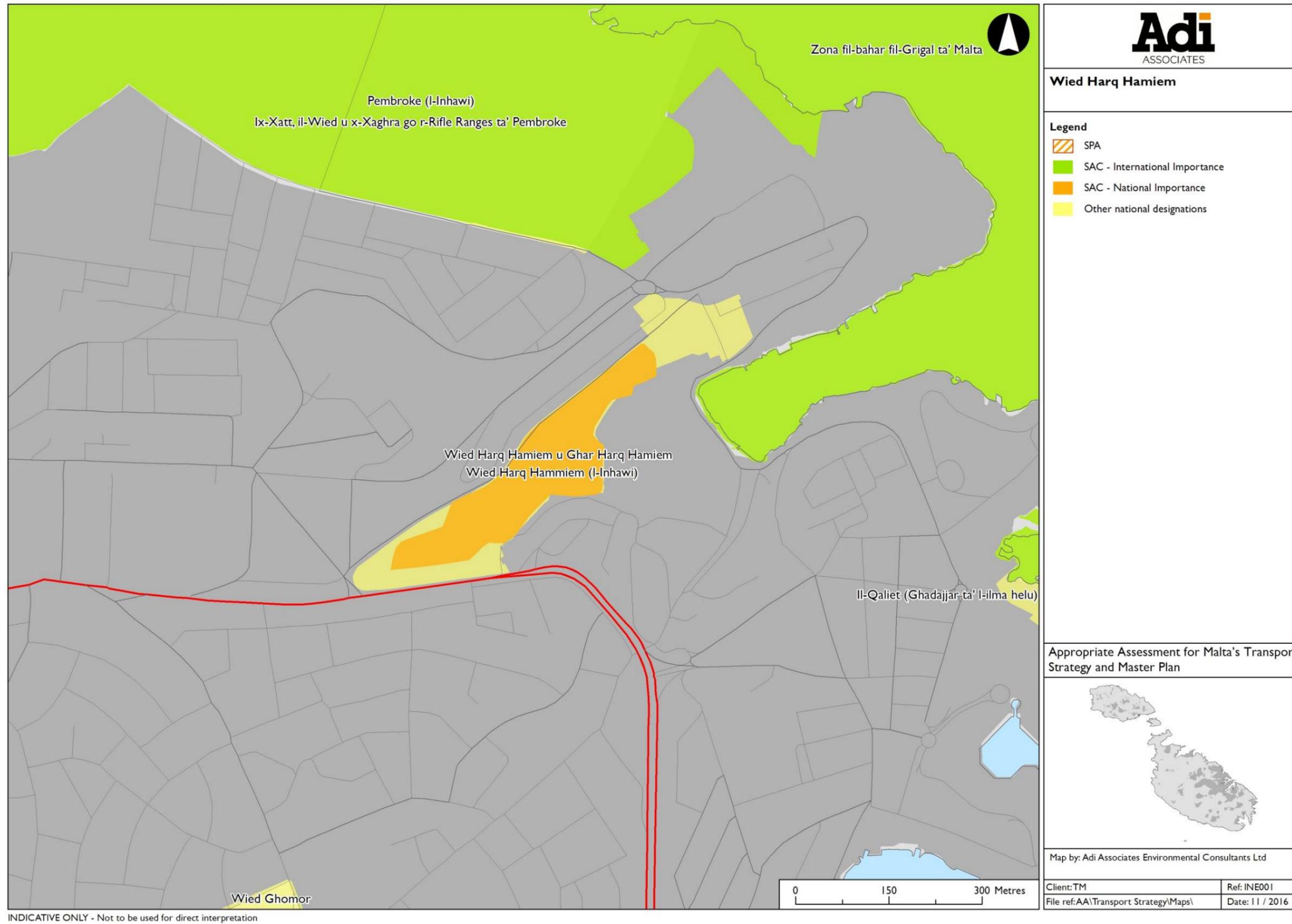
Figure 5. Rdumijiet ta' Malta: Mir-Ramla ta' Ghajn Tuffieha sax-Xaqqa



INDICATIVE ONLY - Not to be used for direct interpretation



Figure 6. Wied Harq Hamiem SAC



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## 6 Assessment

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### 6.1 Appropriate Assessment, Conservation Objectives and Significance

111. As described above, an Appropriate Assessment was requested to determine whether the effects of the NTS and TMP are likely to result in potentially significant impacts on the protected areas within the Maltese Islands. In determining impacts on conservation areas, an Appropriate Assessment is restricted to the effects of the plan or project on the conservation objectives of the specific SAC/SPA.

#### 6.1.1 Conservation objectives

112. The conservation objectives for SACs in general in the spirit of the Habitats Directive, focus on the need to maintain Annex I habitats and Annex II species for which sites are designated at favourable conservation status. Site specific conservation objectives are developed for individual sites where a Management Plan has been drawn up. At the time of writing (October 2016), a Management Plan or related Conservation Order has been drawn up for all terrestrial sites. Management Plans for most of the marine sites have not, however, been drawn up. For the marine sites, therefore, the general objectives described above will be considered for the assessment.
113. Given the extent of the SAC Rđumijiet ta' Malta: Ir-Ramla ta-Cirkewwa sa il-Ponta ta' Benghisa, which site is also divided into four SPAs, the management framework for this site is divided into four separate Management Plans. The Management Plan that includes Dingli (where the TMP proposes to upgrade the primary radar) covers the area Rđumijiet ta' Malta: Mir-Ramla ta' Ghajn Tuffieha sax-Xaqqa (see Figure 5). The conservation objectives considered of relevance to the operational objective include:
- To ensure that the habitat 5330 is allowed to naturally increase and its structure, function and future prospects are improved.
  - To ensure the long term maintenance of the area of habitat 5430, and improvement of its structure and function.
  - To expand the area of habitat 9320.
  - To ensure improvement and the long term maintenance of the structure and function of habitat 9320.
  - To extend the range of *Anacamptis urvilleana* at this site.
  - To ensure that the population size of *Anacamptis urvilleana* achieves a favourable status.
  - To improve the structure and function of the habitat for *Anacamptis urvilleana* and subsequently maintain it.

- To ensure that the range of *Ophrys melitensis* at this site improves and is subsequently maintained.
- To ensure that the population size of *Ophrys melitensis* at this site achieves a favourable status.
- To ensure that the habitat of *Ophrys melitensis* is improved and subsequently maintained.
- To ensure that the range, population size, habitat and future prospects for *Lampedusa imitatrix* are at least maintained.
- To ensure that the range and habitat of *Lampedusa melitensis* are maintained while its population size is increased and future prospects are improved.
- To ensure the long term maintenance of the range and habitat of *Rhinolophus hipposideros* and the increase of its population size.
- To ensure foraging grounds for *Rhinolophus hipposideros*, including relevant features, are maintained.
- To ensure conservation of roosting habitat of *Rhinolophus hipposideros*.
- To ensure the long term maintenance of the range and habitats of *Myotis punicus* and the increase of its population size.
- To ensure foraging grounds for *Myotis punicus*, including relevant features, are maintained.
- To ensure conservation of potential roosting habitat of *Myotis punicus*.
- To ensure the long term maintenance of the range, population size, habitat and future prospects of *Puffinus yelkouan* at this site.
- To ensure the long term maintenance of the range and habitat of *Calonectris diomedea*, the recovery of its population to past maximum records and the improvement of its future prospects.
- To ensure the long term maintenance of the range, population size and habitat of *Monticola solitarius* at this site.
- To ensure that the range, breeding population and habitat for *Larus michahellis* at this site are maintained at present levels.
- To maintain healthy populations of the RDB and Annex IV species present in the site.
- To ensure that no illegal activities take place within the site and to monitor the impacts of allowable activities for any future controls that may be required.
- To maintain healthy populations of the RDB and Annex IV species present in the site.
- To ensure that agricultural activities conform to legislation.
- To ensure that no illegal activities take place within the site and to monitor the impacts of

allowable activities for any future controls that may be required.

114. Figure 9 illustrates the Natura 2000 sites of Il-Bahar fil-Grigal ta' Malta and Il-Bahar tal-Lbic.

### **6.1.2 Impact assessment of National Transport Strategy, 2050**

#### *6.1.2.1 Natura 2000 Network*

115. NTS implementation should result in a reduction in traffic and a reduction in the reliance on private cars. A significant positive result on air quality is considered to have a positive effect at a national ecosystem level. Inclusion of green infrastructure assets, also if significant, can help strengthen the network through enhancing or creating new green corridors. Moreover, a reduction in the pressure to develop new road infrastructure could also result in indirect positive effects, however, it is unlikely that plans to upgrade the TEN-T network will not be implemented in the medium term.
116. Negative effects could be accrued if implementation of certain large projects, both on land and in the marine environment, derived from measure implementation affect the integrity of Annex I habitats or Annex II species populations, richness, etc. This is particularly relevant where the construction of large infrastructure is envisaged that could result in impacts to Annex I habitats and/or Annex II species that negatively impact the integrity of the habitats or species populations for which the site may have been designated.

### **6.1.3 Impact assessment of Transport Master Plan, 2025**

117. Figure 7 summarises the location of potential interventions that are expected to be implemented through the TMP that may have an impact on Natura 2000 sites as described below.
118. There are various other proposals within the Master Plan which by their nature or land requirements may result in significant impacts on SACs/SPAs, depending on their siting, location and mitigation of operational impacts. These proposals potentially include off-street parking areas, the proposed LNG and CNG refuelling stations, review and clarification of the road network system. Project level screening and assessment will be required as the exact location of these facilities and interventions were not identified in the TMP, therefore an assessment at this stage was not possible.

#### *6.1.3.1 Il-Bahar fil-Grigal ta' Malta*

119. The TMP calls for studies to identify the extent of required works at these harbours. Including interventions to the breakwater systems, improvement of quays and expansion of the port of Mgarr. Engineering works would then likely be required that could result in direct interventions to the seabed, spillover effects during construction, impacts to water quality during construction, underwater noise, and hydrographical effects if changes are made to the port configuration that could result in indirect impacts on habitats and species.

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#### Loss of benthic habitat & associated species

120. Figure 3 illustrates the distribution of Posidonia within this SAC and demonstrates that this priority habitat is found around Mgarr harbour and in and around Cirkewwa. Any interventions that affect the integrity of the meadows through either direct obliteration of the habitat or through the halo effect whereby the meadows in the vicinity of interventions such as construction works suffer in terms of health and can even die off within a certain distance of the disturbance, would be considered to be a major negative impact. The benthic environment within the Mgarr port is largely coarse sediment according to MEPA's 2003 Posidonia survey. If interventions are largely contained within the port, impacts on habitats of interest would be minimised. However, interventions carried out outside the port have a greater likelihood in resulting in significant effects given that the Posidonia beds lie just outside the harbour. However, benthic surveys would be required to verify that the data gathered in 2003 remains relevant and also to identify the presence of any species of conservation interest.

#### Damage or disturbance to benthic habitats and species of conservation interest

121. Other impacts from engineering works could affect the seagrasses and other benthic habitats and species in the SAC. These potentially include increased turbidity and changes in water quality. The significance of effects would depend on the extent of works, their location, and duration.

#### *6.1.3.2 Il-Bahar tal-Lbic ta' Malta*

122. The proposals envisaged through the TMP suggest increased activity at the port of Marsaxlokk and include proposals to upgrade the breakwater system, square off Terminal 2, dredging, development of a service fuel station, upgrading of the access road, development of an oil terminal quay and site expansion.

#### Disturbance to seabird ecology

123. Already a relatively noisy operation, increased activity at the port of Marsaxlokk could have an impact on the breeding seabirds ecology if noise levels and light pollution also increase. In order to identify the extent of such an effect, baseline levels and predicted impacts need to be compared and the impact on the seabirds considered, in particular their ecology at the site throughout the year. Careful monitoring of the seabird populations and of noise and light emissions, as well as potentially the identification of critical levels, should be aimed for to avoid potential long-term negative effects.

#### *6.1.3.3 Rdimijiet ta' Malta: Ir-Ramla tac-Cirkewwa sa il-Ponta ta' Bnghisa*

124. The TMP proposes to replace the primary radar at Dingli.

#### Disturbance to Annex I habitats

125. The radar is located in the vicinity of three Annex I habitats – 5330, 5430 and 9320 (refer to the Management Plan for Rdumijiet ta' Malta: Mir-Ramla ta' Ghajn Tuffieha sa' Xaqqa). Interventions at this site could result in overspill effects that impact these habitats if appropriate mitigation is not implemented. The impacts are likely to be localised, however, and would potentially be minor to not significant in the context of the integrity of the entire SAC.
126. A survey for Annex II species in the area would ensure that works would be able to be planned for and scheduled in such a way as to minimise any potentially significant negative effects on species populations in the area.

#### Disturbance to seabird colonies

127. Considering the conservation objectives listed above, construction impacts may also result in some negative, although temporary effects on birds in particular. Appropriate mitigation measures including timing of interventions must be put in place at project stage.

#### **6.1.4 Wied Harq Hamiem**

128. The proposed road interventions in this area will occur in the vicinity of this SAC (refer to Figure 10). Similar to the project at Kappara Junction, TM indicates that the interventions will be confined to the existing carriageway.

#### Damage or disturbance to habitats and species of conservation interest

129. At this stage in the assessment, there is limited baseline data. Project level assessment including surveying would be necessary to ensure a more robust assessment. However, in general, potential impacts that may result in damage or disturbance to habitats and species populations could be accrued as a result of some or all of the following:
- Overspill during construction onto the valley;
  - Noise and vibration during construction;
  - Run-off during construction and operation;
  - Changes to lighting during operation(considering that a road already exists);
  - Changes to noise during operation (considering that road already exists); and
  - Escape of species used in landscaping.

#### Damage to Harq Hamiem cave

130. In the absence of any detailed plans, the AA identifies the potential for damage to the cave as a result of construction activity. Damage to this unique feature would potentially be significant. Project details and further information about the cave structure would be required to reduce uncertainty.

### 6.1.5 Potential impacts beyond the Transport Master Plan, 2025

131. The TMP identifies a list of projects to be undertaken as part of the upgrades necessary to the TEN-T network and as identified in Chapter 2 of the AA. Many of these identified projects will be implemented in future Master Plans as only four have been identified for implementation in this TMP. Potential impacts arising from future Master Plans will also require Strategic Environmental Assessment and Appropriate Assessment at strategic level as relevant. However, given that the list of projects was included in this TMP, this Appropriate Assessment identifies potential significant negative effects to be studied further at the appropriate time whereby it is also assumed that more detail will also be available.

#### 6.1.5.1 Ghadira, Is-Simar, Il-Mizieb

132. The consideration of a bypass to avoid Xemxija suggests that the Natura 2000 sites of Ghadira, Is-Simar and Il-Mizieb may be affected (Figure 8 illustrates the locations of these sites). Although not part of this TMP when these interventions become higher on the agenda, it is important to note that the impacts from the construction of new roads that may pass through or adjacent to these sites are likely to result in the most significant impacts identified from the implementation of the NTS and TMP, potentially resulting in a number of impacts including direct loss of habitat and species, habitat fragmentation, and disturbance to species from traffic noise and light pollution during operation. The need to consider alternatives to the proposals as summarised in the TMP must be stressed and should be considered during the Strategic Environmental Assessment of the next TMP as well as being important at project level.

#### 6.1.5.2 Comino & Il-Bahar ta' Madwar Ghawdex

133. With respect to implementation of interventions along the TEN-T network, although not directly within the lifetime of this TMP, the reference to a Malta-Gozo fixed link is nonetheless included as an envisaged project within the transport planning framework. No further detail of what form this link will take is provided. Given the sensitivity of Comino and its location between Malta and Gozo, this assessment identifies the potential for this SAC and SPA to be significantly negatively affected.
134. The SPA Il-Bahar ta' Madwar Ghawdex is also noted for its importance for breeding seabirds, *Calonectris diomedea* and *Puffinus yelkouan*. Any disturbance to the ecology of these species could potentially significantly negatively affect breeding populations. The importance of these breeding colonies for these species throughout the Mediterranean region means that potential impacts could negatively affect the integrity of the populations both locally, and potentially at a regional level.
135. Figure 8 presents the marine Natura 2000 sites in this area.
136. In order to allow for a more detailed assessment, further details on the proposal, including alternatives are required.

## 6.2 Cumulative impacts

137. The cumulative impact assessment described here considers both spatial crowding and temporal overlap of plan/project implementation. Cumulative impacts may be additive, neutralizing or synergistic where more than one impact results in a greater impact than a sum of individual effects.
138. Assessment of cumulative impacts is integrated as part of the assessment of NTS implementation. As identified, therefore, at a strategic level, the attempted shift towards a reduction in private car dependence and an emphasis on modal shift could result in positive effects on air quality that at a national level as well as reduced pressure from road development which would translate to positive effects across the Natura 2000 network.
139. On the other hand, at a strategic level, a number of infrastructure projects are earmarked for implementation to improve the TEN-T network, as identified above. At this stage, through the implementation of the TMP, there have been aspects of the network that have been identified as having potentially negative effects.

### 6.2.1 *Potential cumulative impacts of the Transport Master Plan on the marine component of the N2K network*

#### 6.2.1.1 *Il-Bahar fil-Grigal ta' Malta*

140. In carrying out cumulative impact assessment, it is necessary to identify potential areas within which the effect of a number of sources, i.e. plans and projects, may together result in adverse effects. The assessment highlights the potential for cumulative impacts from implementation of a number of TMP measures to affect in particular the Malta-Comino-Gozo channel within this SAC. Potential impact sources within this channel identified from the TMP include the following measures:
  - Sub-measure 2.5.4.1: Improve Mgarr and Cirkewwa Breakwater Systems;
  - Sub-measures 2.5.4.2: Improve Cirkewwa South Quay;
  - Sub-measure: 2.5.4.3: Improve quays and consider expansion of the Port of Mgarr.
141. In 2003, the then Malta Maritime Authority had submitted a planning application as part of the Transport Infrastructure Needs Assessment (TINA) for Malta. The application involved environmental and feasibility studies for the construction of a cruise liner berth on the seaward side. The application was subjected to an Appropriate Assessment and the EIA process had commenced. However, following the AA, the application was not pursued. It is therefore not being considered further here.
142. There is a recent application (2016) for various works within the marina including for additional dredging to increase moorings, additional slipways and refurbishment of structures.
143. In addition to the above measures, beyond the TMP, a Malta-Gozo fixed link is envisaged under the list of TEN-T projects, which may also result in impacts on the SAC.

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144. However, cumulative impacts during the lifetime of this TMP consider potential impacts on the benthic environment including habitats and species of conservation interest, in particular, the priority habitat – Posidonia meadows.
145. Based on MEPA's 2003 Posidonia survey, works carried out within the Mgarr port area are unlikely to result in significant impacts on important habitats, which lie just outside the port. The benthic environment within the port consists largely of coarse sand according to the 2003 survey. However, this would need to be verified at project level through appropriate surveys.
146. With respect to Cirkewwa, however, it is considered more likely that impacts on habitats including coral and Posidonia habitats could be accrued.
147. The TMP calls for studies before work can be carried out and these in and of themselves are not expected to result in any significant direct impacts.
148. In addition to the proposals listed here, the Planning Authority is consulting on a Master Plan for Paceville.
149. This Paceville Master Plan calls for relatively extensive development of hotels along the coast; the marine environment in this area also lies within the Bahar fil-Grigal ta' Malta SAC. The envisaged projects include re-development of the Corinthia hotel, development at Dragonara and a land reclamation project for the construction of a new hotel at Portomaso.
150. In addition, the Paceville Master Plan promotes marine transport and identifies three potential sites for landing areas for a ferry system.
151. Whilst the Paceville Master Plan identifies the sensitivity of the area, when discussing impacts, impacts to the marine environment are not highlighted. Impacts from development on the coast can include spillover into the marine environment during the construction phase. Direct impacts can also be expected with respect to the construction of any infrastructure within the marine environment including land reclamation. Land reclamation may also be expected to potentially affect the hydrodynamics of the area, and this must be studied further at project level.
152. Impacts from implementation of the Paceville Master Plan may affect the benthos in the area. Cumulative impacts from the proposed developments in the Malta-Comino-Gozo channel would be considered to be significant if they were to result in extensive breaches to the marine habitat network, in particular the Posidonia meadows priority habitat, which currently extends throughout much of the site exhibiting relatively high continuity as shown in Figure 3. Project-level assessment will allow for more detailed qualification of the extent of potential impacts through detailed site-specific studies, which can also be assessed in terms of cumulative impacts.
153. As identified, the Malta-Comino-Gozo channel is important also with respect to bird species listed under the Birds Directive. Impacts on the SPAs and bird species that breed as well as species for which the channel is an important migratory route may be negatively affected as a result of these interventions. Cumulative effects would largely be expected if projects at each of the ports are timed to be carried out at the same time resulting in cumulative noise, dust and other issues. During operation, cumulative light pollution impacts would need to be assessed at project design stage in order to minimise disturbance to seabirds at night time.
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#### 6.2.1.2 *Il-Bahar tal-Lbic ta' Malta*

154. The following TMP sub-measures envisage development at the Freeport:
- Sub-measure 2.6.4.1: Upgrade of the breakwater system
  - Sub-measure 2.6.4.2: Terminal 2 squaring off at North West side
  - Sub-measure 2.6.4.7: Service fuel station
  - Sub-measure 2.6.4.9: Oil terminal quay development
  - Sub-measure 2.6.4.11: Assessment of MxFT Master Plan – site expansion
155. Increased development throughout the Freeport can result in cumulative impacts both during construction if projects are implemented simultaneously, however, also key impacts in terms of the seabirds will be operational impacts. Identification of overall changes to noise and light will need to be considered also at project level to allow for the identification of potential disturbance including identifying critical capacity with respect to noise, light, etc at which point disturbance is considered to be significant.

#### 6.2.1 *Potential cumulative impacts on the terrestrial component of the SAC ecological network*

156. Wied Harq Hamiem may be sensitive also to potential impacts that may arise from the implementation of the Paceville Master Plan. Impacts arising from the construction phase of various projects, including those earmarked at Villa Rosa, Corinthia, and the Institute of Tourism Studies in particular, together with road construction works may result in cumulative impacts from dust, noise and vibration and run-off as identified above.
157. The impact assessment also identifies the potential for certain specific interventions to affect more than one site in the north of Malta in particular at Ghadira, Simar and il-Mizieb. Depending on the timing of interventions and the extent of the interventions (construction of a new road vs upgrading) this could cumulatively affect bird species that make use of these three sites. Thus, impacts to each of these sites could negatively affect the ecology of bird species. However, this is to be considered further during impact assessment of the TMP within which this project will be envisaged. Mitigation
158. Mitigation measures identified for the NTS and TMP include:
- Reference should be made in the NTS and TMP text to SACs and SPAs to demonstrate that their presence has been taken into account. Recognition of the requirement to avoid or where necessary reduce negative effects through appropriate mitigation measures should also be included.
  - Consideration of strategic alternatives in particular where potentially significant interventions are under consideration. This could include identification of alternative routes when considering new roads or consideration of alternative forms of transport to that where major impacts on SACs and SPAs are considered to be likely;

- Implementation of a monitoring plan; and
- Additional assessment at planning and project level assessment as more details become available. All plans or projects emerging from the implementation of this NTS and Master Plan that lie within or in the vicinity of a SAC or SPA should be screened to determine whether an Appropriate Assessment is required.

### 6.3 Residual impacts

159. The residual impacts resulting from implementation of the NTS and Master Plan will depend on the implementation of the mitigation measures identified above. If major projects that cumulatively will affect marine benthic habitats are all pursued, and at the same time in particular all the projects earmarked in the NTS, assessment of project level mitigation would be required. However, without project level details, it is considered that all residual impacts remain uncertain

Figure 7 - Location of potential interventions to be implemented through the Master Plan 2025 that are located within or in the vicinity of Natura 2000 sites

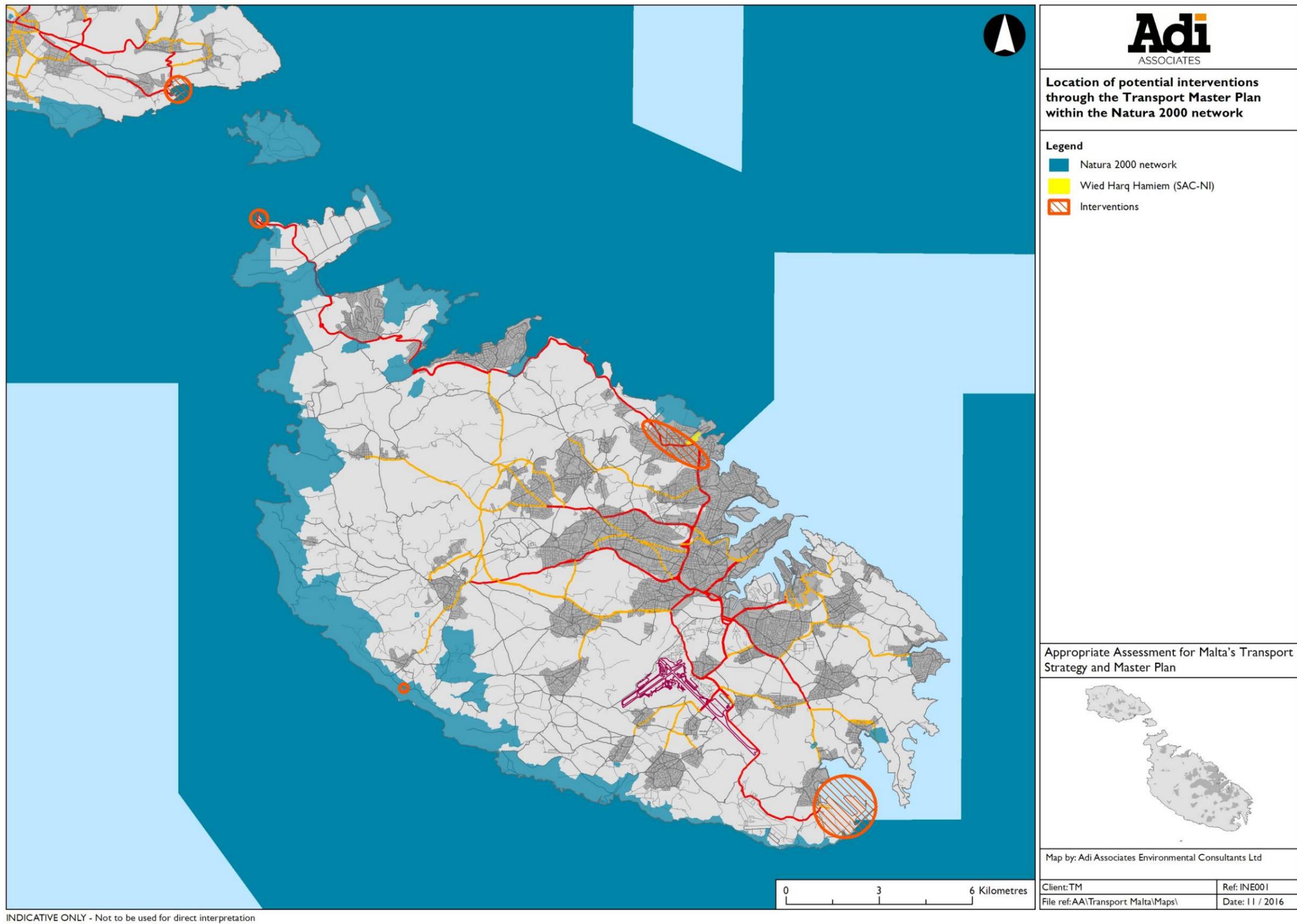
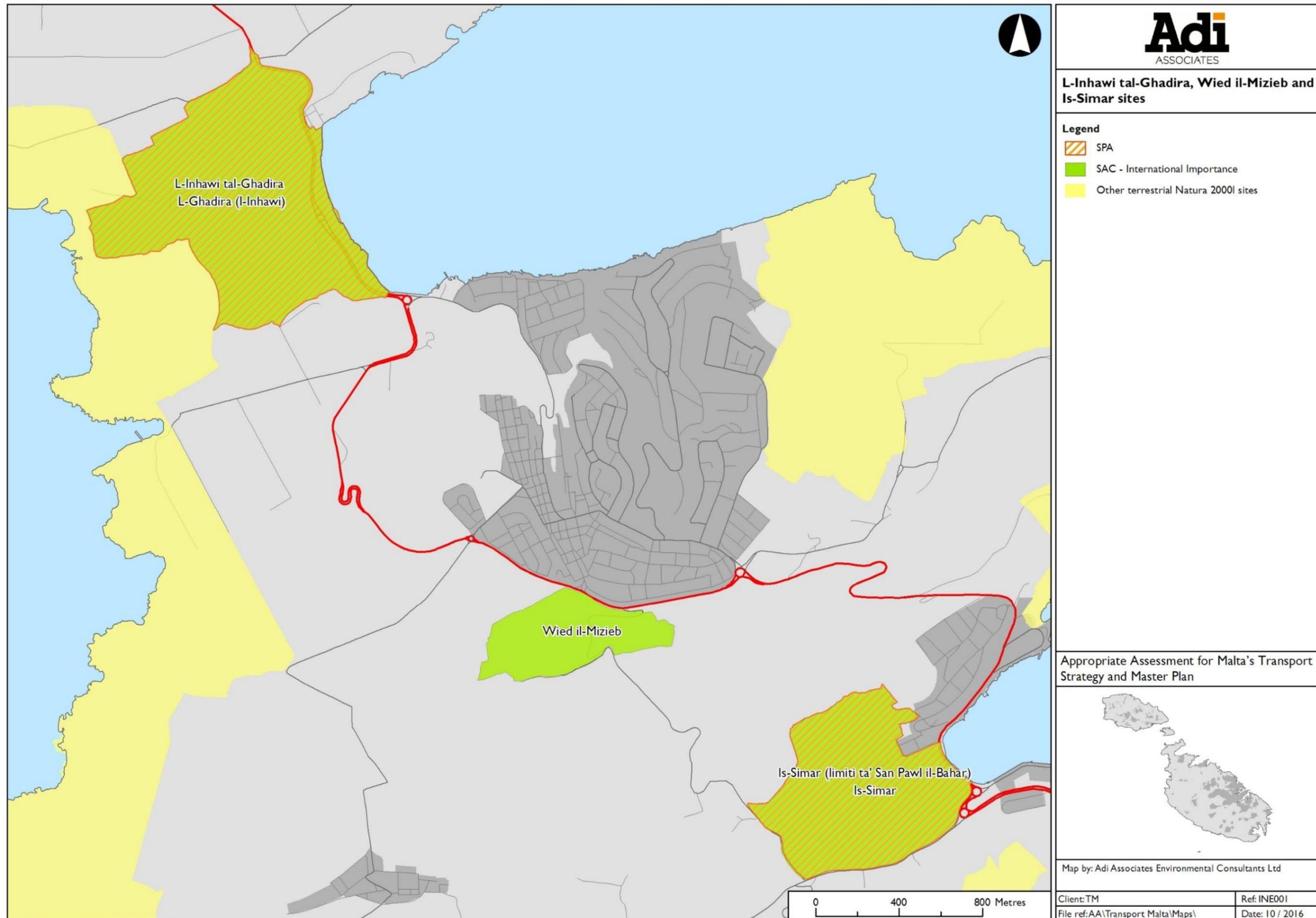


Figure 8 - Ghadira, Mizieb and Simar Natura 2000 sites



INDICATIVE ONLY - Not to be used for direct interpretation

Figure 9 - Marine Natura 2000 network at the Malta-Comino-Gozo channel

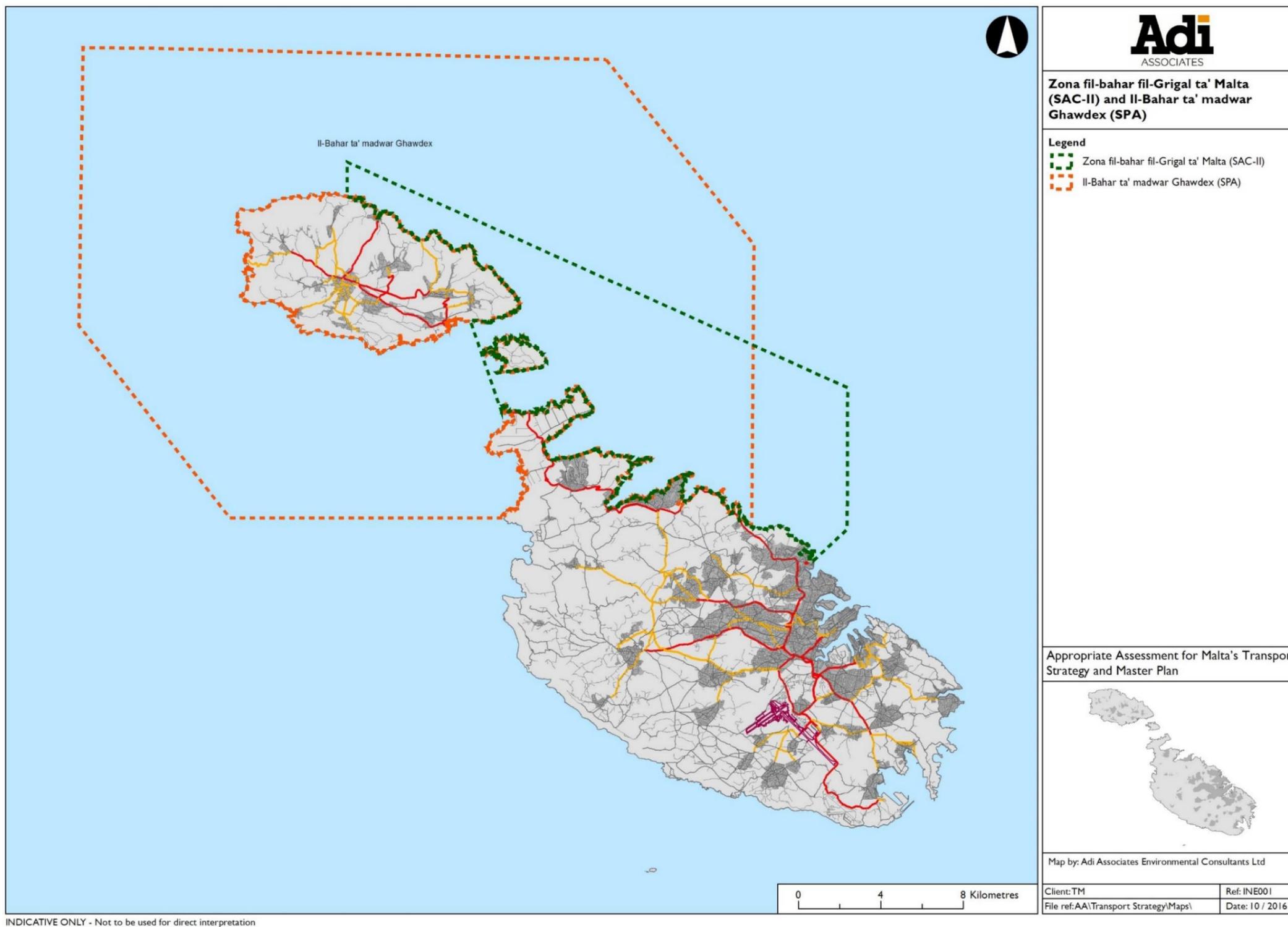
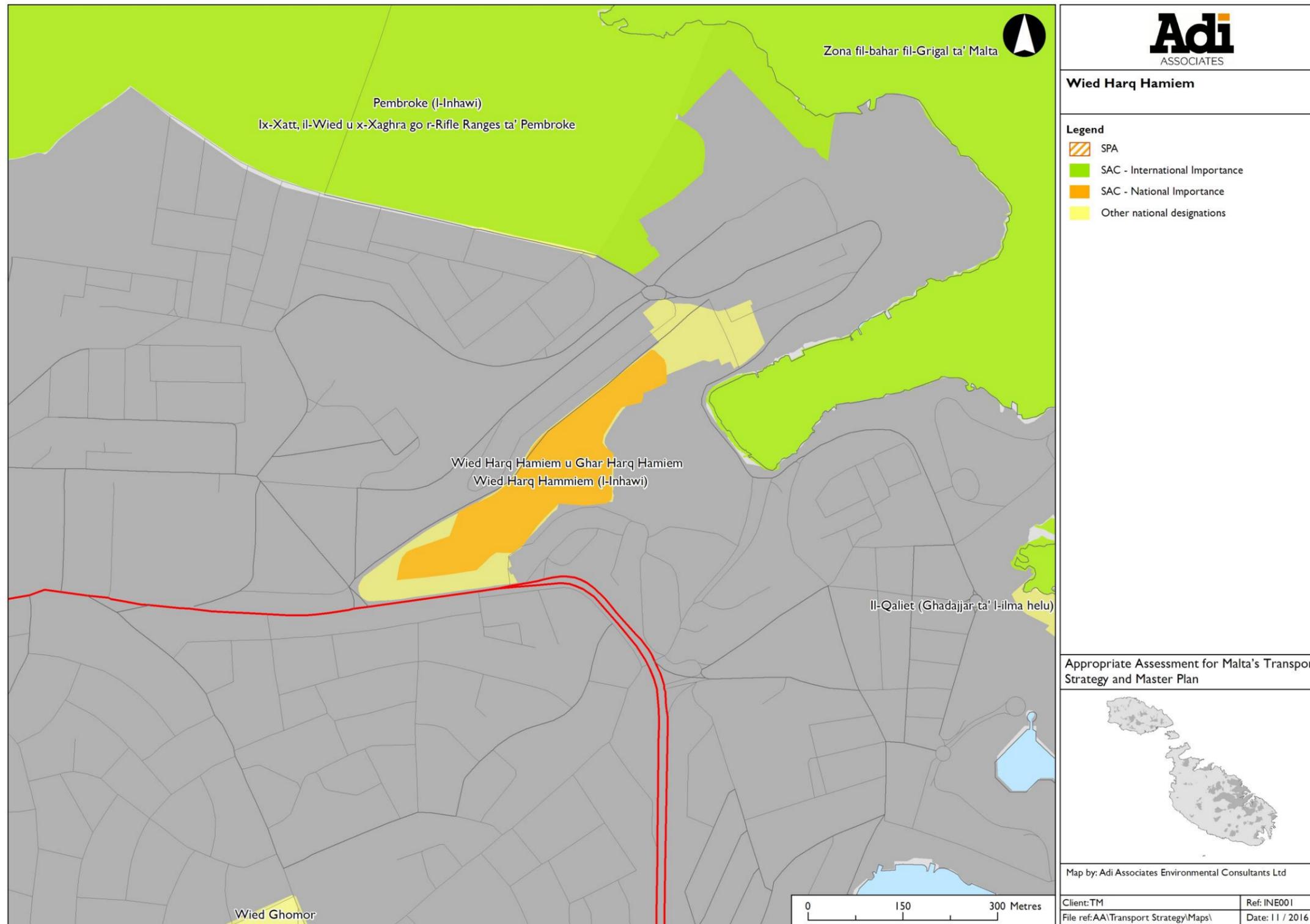


Figure 10: Regional Road, St Andrew's proposed intervention relative to Wied Harq Hamiem





## 7 Conclusion

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160. The Appropriate Assessment identified specific interventions that could have a negative effect on a number of SACs. Potential cumulative effects from interventions within the Malta-Comino-Gozo channel and also at relevant terrestrial sites over the lifetime of the NTS were also identified.
161. As a result a number of mitigation measures have been identified in order to ensure that that integrity of all affected SACs/SPAs sites would be maintained and the conservation objectives would be sustained.

# Appendix 1: List of Annex I Habitats in the Maltese Islands

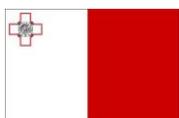
Table 5. Annex I habitats in the Maltese Islands

Habitat Code	Description
1110	Sandbanks which are slightly covered by sea water all the time
1120	* Posidonia beds ( <i>Posidonium oceanicae</i> )
1150	* Coastal lagoons
1160	Large shallow inlets and bays
1170	Reefs
1210	Annual vegetation of drift lines
1240	Vegetated sea cliffs of the Mediterranean coasts with endemic <i>Limonium</i> sp.
1310	<i>Salicornia</i> and other annuals colonising mud and sand
1410	Mediterranean salt meadows ( <i>Juncetalia maritimi</i> )
1420	Mediterranean and themo-Atlantic halophilous scrubs ( <i>Sarcocornetea fruticosi</i> )
1510	* Mediterranean salt steppes ( <i>Limonietalia</i> )
2110	Embryonic shifting dunes
2210	<i>Crucianellion maritimae</i> fixed beach dunes
2220	Dunes with <i>Euphorbia terracina</i>
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.
3170	* Mediterranean temporary ponds
5230	* Arborescent matorral with <i>Laurus nobilis</i>

Habitat Code	Description
5330	Thermo-Mediterranean and pre-desert scrub
5410	West Mediterranean clifftop phrygas ( <i>Astralo-Plantaginetum subulatae</i> )
5420	<i>Sarcopoterium spinosum</i> phrygas
5430	Endemic phrygas of the <i>Euphorbio-Verbascion</i>
6220	* Pseudo-steppe with grasses and annuals of the <i>Thero-Brachypodietea</i>
8210	Calcareous rocky slopes with chasmophytic vegetation
8310	Caves not open to the public
8330	Submerged or partially submerged sea caves
92A0	<i>Salix alba</i> and <i>Populus alba</i> galleries
92D0	Southern riparian galleries and thickets ( <i>Nerio-Tamaricetea</i> and <i>Securinegion tinctoriae</i> )
9320	<i>Olea</i> and <i>Ceratonia</i> forests
9340	<i>Quercus ilex</i> and <i>Quercus rotundifolia</i> forests
9540	Mediterranean pine forests with endemic Mesogean pines
9570	* <i>Tetraclinis articulata</i> forests



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Event part-financed by the European Union  
European Regional Development Fund (ERDF)  
Co-financing rate: 85% EU Funds; 15% National Funds



This document has been prepared with the technical support of the INECO-SYSTEMATICA Consortium and the environmental assessments have had the contribution of Adi Associates Ltd.



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