



TRK. 145703

**BEACH REPLENISHMENT PROJECT
WITH ANCILLARY FACILITIES,**

AT,

**IR-RAMLTA TAL-PWALES, XATT IL-PWALES,
SAN PAWL IL-BAĦAR, MALTA.**

TERMS OF REFERENCE

FOR THE PREPARATION OF AN

ENVIRONMENTAL IMPACT STATEMENT

April 2012

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TERMS OF REFERENCE FOR THE PREPARATION OF AN
ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED

TRK. 145703

**BEACH REPLENISHMENT PROJECT WITH ANCILLARY FACILITIES,
SITE AT, IR-RAMLA TAL-PWALES, XATT IL-PWALES,
SAN PAWL IL-BAĦAR, MALTA.**

- Note 1: “*Environmental Impact Assessment is the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made*” (IAIA, 1999)¹. The EIA is to document clearly and impartially the impacts of the proposal, its impact significance and the proposed mitigation measures. This shall be carried out with best practice, professionalism, rigour, fairness, objectivity, impartiality and balance.
- Note 2: The Malta Environment and Planning Authority (MEPA) reserves the right to request additional studies should the findings of the EIA not be sufficient to adequately inform the decision making process or if the EIA identifies matters which should be subject to further (or new) studies.
- Note 3: Unless otherwise agreed, all requirements set out in these Terms of Reference must be complied with. If there are any sections/aspects that the consultant deems that they are not relevant to this study, the consultant shall inform MEPA accordingly fully justifying his/her reasoning.
- Should, during the process of the EIA the consultant discover that any environmental feature/s, not included in these Terms of Reference needs to be studied, the consultant shall inform MEPA immediately, justifying his/her reasoning.
- Note 4: MEPA may modify these Terms of Reference set out for this EIA according to the planning and environmental considerations for each and every development as may emerge at any relevant stage of the EIA and the Development Control process.
- Note 5: Difficulties, including technical difficulties and lack of information, encountered by the consultants in compiling the required information shall be made clear in the EIA. All references to published works and sources of information shall be duly acknowledged. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the consultation period. Any material which is based on proprietary data which is not available shall not be incorporated by reference.
- Note 6: Experts contributing to the EIA are to consider impact interactions and to communicate information between each other.
- Note 7: A list of all permits, licenses and other forms of authorisation (other than the development planning permit) which must be obtained by the applicant in terms of any other law in implementing the development if permission is granted must be included in the EIA. If consultants are uncertain whether an authorisation is necessary, they shall so indicate in the EIA.
- Note 8: Following the review of the EIA, MEPA submits comments to the EIA consultants for further clarifications. Once the consultants respond to these comments to the satisfaction of MEPA, a second draft of the EIA, that includes these clarifications, must be prepared. MEPA will only accept an Addendum containing these clarifications if the clarifications are few or where the EIA is still easy to follow with the Addendum.
- Note 9: Any requirement for confidentiality of any section of the EIA must be justified and a formal request in this regard must be submitted to MEPA. Should MEPA grant confidentiality for specified sections, alternate material that excludes confidential details must be provided for public consultation.

¹ International Association for Impact Assessment (IAIA). (1999). *Principles of Environmental Impact Assessment Best Practice*. Document published by the IAIA in cooperation with the Institute of Environmental Assessment, UK.

Note 10:	These Terms of Reference are not necessarily exhaustive. There may be cases when these Terms of Reference are issued in tendering documentation. The potential bidder should be aware that the content of these Terms of Reference may vary following technical discussions with MEPA, including the publication of new legislation or technical guidance documents, for example.
Note 11:	These Terms of Reference are limited to issues that MEPA and its consultees identified during the scoping stage. If the consultant or MEPA identifies any issues during the process which are deemed important, such issues are to be flagged at the appropriate stage of the process.
Note 12:	Although method statements are not legally required, preparation of such is recommended. To all parties interested, it is recommended that the consultant/s keep ongoing liaison with MEPA. MEPA has all the rights not to agree with the methodology proposed in such method statements.
Note 13:	In response to EIA and Development Control re-iterations, the consultants shall ensure traceability of the latest proposal's version being addressed.

An Environmental Impact Statement (EIS) is to be prepared for the *proposed beach replenishment project with ancillary facilities, at, Ir-Ramla tal-Pwales, Xatt il-Pwales, San Pawl il-Baħar, Malta, (TRK. 145703)* required by Schedule IA of the Environmental Impact Assessment Regulations 2007 (L.N. 114 of 2007, Schedule IA, Category I *Category 4.3.2.1: Enlargement of existing beaches involving the replenishment of an existing sandy beach and Provision 3(6) of the EIA Regulations, 2007*). The components of the EIS are to be:

- i. A **Coordinated Assessment Report**, in conformity with Sections 1 - 4 and their contents as outlined below. This report should describe the project in its totality; and
- ii. A **Separate Appendix** containing all original survey reports as prepared by individual consultants for specific topics.
- iii. A separate **Non-Technical Summary** of all sections of the technical report (to be also provided in digital format and in both the Maltese and English languages). This summary should include any assumptions made in the report; key features of the site (including surroundings) and proposed development; key impacts and any proposed mitigation measures to minimise costs (externalities) and maximise benefits arising from the proposed development. Technical terms, lists of data and detailed explanations of scientific reasoning should, where possible, be avoided.
- iv. Two **hard copies** and two **printable digital copies of the first draft of** all elements of the EIS, which includes all the above, including any plans, maps, photographs, graphs, and any other contents of graphical/visual nature contained within the EIS. Once the EIS has been certified two **digital copies of the certified document** are to be submitted to MEPA.
- v. Conformity with sub-Regulations 28 and 29 of the EIA Regulations (refer to Appendix 1 to these Terms of Reference).

1.0 Description of the Proposed Development

The description of the proposed development is to include consideration of the aspects outlined below. This description must take into account the entire proposal and any ancillary facilities connected with, or arising due to, the project, including infrastructure required. Where relevant, this section should include maps, plans and diagrams.

1.1 Justification for the Proposal

1.1.1 Objectives

A description of the environmental, social and economic objectives which the development will seek to address, and whether such objectives stem from current international obligations and national, regional or local policy, plans and guidance.

The justification for the proposed development shall be based on environmental factors and on the hydrodynamics study (including stability of the beach development) to be carried out in relation to such development.

1.1.2 Demand

A description of the current and expected demand, and the carrying capacity, for the proposed beach replenishment project including any landside/ancillary facilities; explaining how the proposals (their size and nature) will address this demand.

1.1.3 Future developments

Future developments/needs, if any, of the proposed beach development shall also be addressed.

1.2 A Description of the Physical Characteristics and Features of the Whole Project and the Land Use Requirements during the Construction and Operational Phases.

1.2.1 Description of the physical characteristics of the proposed development during both construction and operation:

(a) A description of the project including location and structure of all the proposed beach replenishment proposal, showing the design (size, area, height, volume [scale 1:2500] layout [to include hard and soft landscaping (scale 1:2500)], method/s of construction, location of all landside facilities (if any are required) and proposed access arrangements, as well as any works involved in the removal or displacement of existing structures or land or sea uses.

(b) Details of the methods used in the construction of the proposed beach replenishment. Detailed layout plans and sections are to be submitted including dimensions. This description should include a discussion of alternative methods considered for the proposal.

(c) A detailed description of the proposed phases of construction;

(d) Technical studies, including modelling, adopted for the determination of the best design for the proposed project.

(e) An indication vis-à-vis the volume of beach fill required and its grain size, if available (e.g. geo-chemical composition, physical properties, pollutants/radioactivity, may also be provided).

1.2.2 Land use requirements for the construction and operation, and site details, including land and sea take required for the proposed beach replenishment project, site preparation works, excavations (if any) and disposal of surplus material. Proposed facilities (including infrastructure, storage, servicing facilities, security etc.) in terms of size, area, height and volume, proposed elevations, layout, method of construction, etc. are to be provided.

- 1.2.3 Proposed project management arrangements during all phases of the development. These should include a description of:
- (a) Expected duration of all phases;
 - (b) Types and quantities of raw materials and primary resources including water, energy, stone and other resources to be consumed;
 - (c) Measures to reduce consumption of primary resources; and,
 - (d) Season, frequency and duration of interventions on the land.
- 1.2.4 The depth and levels of excavation, if any, volume and type of excavated material required for the proposal and any ancillary/landside facilities, are to be quantified, clearly identifying the types of material envisaged to be excavated.
- 1.2.5 Identification of the routes that construction vehicles will use to and from the site, the number and size of construction vehicles and their respective frequency of use, and the time of day when construction traffic is likely to be heaviest.
- 1.2.6 Facilities for the on site servicing of equipment, vehicles and other machinery, if relevant.
- 1.2.7 Water storage, runoff and water management including reservoirs. Proposals for the collection/treatment/re-use of rain water runoff.
- 1.2.8 Construction-phase related noise and vibrations shall also be taken into consideration, particularly due to disturbances to the nearby Is-Simar Natura 2000 site.

1.3 Main Characteristics of the Operational Phase, including the Nature and Quantity of the Materials Used

- 1.3.1 Provide an estimate, by source, type, quantity, composition and concentration of expected residues and emissions including water, air, soil pollution, noise, vibration, light, heat, radiation etc. resulting from the operations of the proposed project, as relevant.

Location maps of any type of activity discharging effluent, directly or indirectly into the aquatic environment is to be presented, noting also possibilities and occurrence of sewage overflows.

1.3.2 Water, Sewerage and Energy Management

- 1.3.2.1 Estimates of water management requirements of the development and the identification of the sources of water to be used, including the following, as relevant to the proposal:
- Sources of water such as second class water, WSC mains, RO on site etc. to meet demand and the extent to which the project shall be self-sustaining;
 - Facilities for storage and eventual use of storm water runoff;
 - Collection of surface water runoff and rainwater, including estimates of the sizing of the proposed reservoirs for runoff collection;
 - Reuse of collected surface water/ rainwater for secondary systems (such as irrigation, in flushing water etc); and,
 - Estimates of water consumption of the project (during operation).
- 1.3.2.2 Estimates of the energy consumption requirements, as relevant to the proposal, including:
- Power including the connected load in MW or MVA and the overall power factor;
 - The annual MWh split in terms of end-use which reflects the expected use of the facilities;
 - Energy sources that will be used to meet the projected demand and the extent to which the project shall be self-sustaining; and,

- Energy efficiency measures in the finishing of the proposed development.

The design of the project's activities should seek to achieve energy efficiency, hence reducing energy consumption.

1.3.3 Waste Management

An assessment of the waste management implications likely to arise from the proposed project. Proposals on how waste shall be managed using the Best Practicable Environmental Options (BPEO) available are to be included. Effort shall be made to minimise the waste generated and to divert waste to reuse or recycling rather than disposal. The following shall be addressed:

1.3.3.1 All wastes generated, including wastes from ancillary facilities required on site and wastes. Such wastes shall be subdivided into the following project phases:

- Construction: provide a brief description of the construction requirements of the project, and,
- *Operation*: waste management infrastructure required during the operational stage.

1.3.3.2 The following information to be provided for each waste stream and shall be presented separately for the different phases listed above:

- Identification of processes or activities, resulting from the proposal that would result in waste generation;
- The European Waste Catalogue Code for each waste stream, as per relevant legislation;
- The projected quantities for each type of waste;
- Information on waste handling and storage on site as well as offsite management; and,
- The frequency and method of transportation offsite.

This information shall be presented in table format as follows:

PHASE							
Activity	Waste Description	EWC Code	H code	Quantity Projected	Internal handling and storage	Frequency and Method of Transport to the disposal site	Offsite waste disposal site/waste management company

1.3.3.3 Layout plans (to scale) clearly showing all relevant waste management infrastructure required (e.g. bunded areas for storage of waste fuels, wheel-wash facilities, etc.), clearly distinguishing between temporary and permanent structures for each phase.

2.0 Assessment of Alternatives

An outline of the main alternatives studied and an indication of the main reasons for this choice, taking into account the environmental effects. The findings of the assessment of alternatives shall be summarised in a table format for ease of comparison. The following alternatives shall be considered, as relevant:

2.1 *Alternative Sites*: Briefly discussing the suitability of the site for the proposed project.

2.2 *Alternative Technologies*

This section should contain a detailed explanation of the proposed technology to be used (including that for reducing emissions) and an assessment of alternative technologies which can be used to achieve the objectives of the proposed development.

2.3 *Alternative Layouts, Proposals*

An identification of **all** possible layouts and proposals of the proposed beach replenishment based upon the possibilities and constraints posed by physical characteristics and features of the project, its operational features, and land-use requirements.

2.4 *Zero Option*

This section should also include the zero option, that is, an assessment of the way the site would develop if it were left in its natural state.

3.0 A description of Aspects of the Environment Likely to be significantly affected by the Proposed Project

A description of the existing environmental conditions in and around the proposed development site is to be identified by the area of influence for each relevant parameter. The area of influence for each parameter shall be determined by the consultants who shall also justify the extent of the chosen area of influence. This needs to be **approved** by the Malta Environment and Planning Authority prior to commencement of the EIA.

The following section shall comprise the baseline studies for aspects of the environment likely to be significantly affected by the proposed development.

3.1 Land and Sea Uses

A description of the present uses of the proposed site together with a description of settlements, workplaces, places of worship, commercial, recreational, coastal infrastructure, protected areas such as Is-Simar and other uses located within an area of influence from the site. Details including nature, magnitude, proximity to site etc. should be included. This shall also include a description of any protected/scheduled areas.

Present land and sea uses, including estimates, if possible, of the number of bathers, the number of boats etc. shall also be included.

3.2 Hydrodynamic Modelling

A detailed wave and hydrodynamic model that includes mathematical modelling adopted for the determination of the best design for the proposed beach replenishment project shall be undertaken. This should include an analysis of the hydrology of the area (including sediment drawdown), in order to assess the fate of the sand to be added under the various sea conditions.

The connection between the Is-Simar Reserve (Natura 2000 site) and the sea shall also be given due importance.

3.3 Description of Marine Environment

This shall include the following:

- (a) Onshore topographic maps;
- (b) Offshore bathymetric maps;
- (c) Description of the coastal configuration of the area;
- (d) Description of the sea-bed morphology and of the sediment characteristics of the site;
- (e) Aerial imagery of the area;
- (f) Wave statistical characteristics (including probability tables for extreme conditions);
- (g) Details of any coastal infrastructure; and,
- (h) Other relevant environmental features.

An assessment of the current water quality and ecological status within Xemxija Bay, given that the proposed beach replenishment project lies within the *Il-Mellieħa – Tas-Sliema* coastal water body (MTC 104) and adjacent to *Is-Simar* inland protected water body, as included in the Water Catchment Management Plan for the Maltese Islands (2011) and should be based

on the following quality elements as given in Annex V of the Water Framework Directive (WFD) - (2000/60/EC):

- (a) Biological elements (*chlorophyll a*, benthic invertebrate fauna and the seagrass *P. oceanica*);
- (b) Hydromorphological elements supporting the biological elements (depth variation, structure and substrate of the coastal zone);
- (c) Chemical and physico-chemicals supporting the biological elements (transparency, thermal conditions, oxygenation conditions, salinity and nutrient conditions); and,
- (d) Specific pollutants (baseline quality of the superficial marine sediments: heavy metals, aromatic petroleum hydrocarbons, and organotins)

The description of status should be based on recent scientific data collected from the site as well as data published in the scientific or other literature. All sources of information quoted must be acknowledged.

3.4 Landscape Character and Visual Amenity

Landscape Character

A description of the landscape area of influence or landscape setting of the proposed site (to be approved by MEPA), identifying the component Character Areas/ Local Landscape Tracts and the landscape elements and characteristics thereof. In defining these, reference shall be made to MEPA's 'Draft Landscape Assessment Study'.

The degree of sensitivity of each Character Area and Local Landscape Tract shall be indicated and justified.

Visual Amenity

The Zone of Visual Influence (ZVI) of the proposed site without and including the proposed development shall be identified and the methodology used to ascertain same shall be described. Viewpoints within the ZVI shall be identified that are representative of short, medium and long distance views towards the Application Site. The ZVI and viewpoints shall be subject to the approval of MEPA. To assist in this approval process MEPA will require a base photo from each of the proposed viewpoints. Such photos shall be in compliance with the criteria set out in Section 3 below.

The visual amenity of each view shall be described and the numbers and sensitivity of the receptors likely to partake of the view from each viewpoint shall be identified and the degree of sensitivity of each shall be indicated and justified.

Reference should be made to the *Guidelines for Landscape and Visual Impact Assessment*, 2nd Edition (*The Landscape Institute* and *IEMA*, 2002).

3.5 Geology, Geomorphology, Hydrogeology and Hydrology

A baseline covering the geology, geomorphology, hydrogeology and hydrology of the bay and its relevant surroundings including a description of any important features found on site and in the surrounding area.

Details, baseline surveys and characterisation of sites' hydrological conditions including catchment areas, drainage patterns, runoff including volume and route taken by run-off. Environmental characteristics of the bay, including discharges of storm water, shall also be taken into consideration.

Furthermore, in view of the fact that the proposal incorporates beach nourishment; any details (*even if indicative*) related to the preferred beach fill material are required. Parameters would include geo-chemical composition; physical properties – a comparison of indigenous and proposed grain is suggested with respect to grain size, geology (Mohs hardness scale) and texture. Impacts from erosion and abrasion on the material would also need to be assessed; and pollutants, including radioactivity.

3.6 Marine Ecology

A full benthic survey shall be undertaken for areas that will potentially be affected. The study shall include:

- (a) A survey of the existing benthic environment on and around the area to be affected. This is to consist of a survey along a transect system to characterise the benthic communities in the area. The communities are to be characterised according to the system given in Borg & Schembri (2002)², and mapped.
- (b) Identification and description of indicator species relevant to characterisation of the ecological quality and conservation status of the marine area.
- (c) Identification and description of existing species and habitat types, found in the area under study, including nektonic species; with particular reference to those species or biotopes/habitat types listed in relevant nature protection³ legislation, international nature protection treaties and the EU Nature Protection Acquis. Identification and presence of particular habitats listed in Annex I of Directive 92/43 and species listed under Annex II of the same Directive.

Particular reference should be made to the *Posidonia oceanica* beds also listed as an Annex I priority habitat of the Habitats Directive.

3.7 Avifauna

A study of the avifauna occurring in the area shall assess the effect of beach replenishment on birds, with the use of published studies and knowledge of the area and carried out in discussion with BirdLife Malta and MEPA. The study shall analyse the following, insofar as relevant to the potential impacts of the proposed project:

- (a) All species occurring/potentially occurring on site, including their population size, distribution, range, productive strategy, lifespan, etc. This shall include resident and migratory species. Migratory species and their routes including those for raptors shall be identified;
- (b) Important areas for bird species in local and international context. All areas which support rafting, roosting, foraging nesting as well as migratory and roosting areas shall be identified for each species described. This shall also include details of height of migration and flights, population size and shall cover both terrestrial and offshore species (both encountered and species which may potentially inhabit the area). Spatial, temporal and diurnal patterns shall be described in detail for the lifecycle of each species identified.

The availability of forage and prey of the above-mentioned avifauna shall also be investigated in the area of influence, as agreed with MEPA. The study shall cover a suitable timespan such that the findings can be considered as reasonably representative.

3.8 Archaeological Features

A survey to determine the presence of any underwater archaeological and cultural heritage features in the area shall be carried out (Refer to Appendix 2 for more detailed Terms of Reference).

3.9 Characteristics of Human Populations

A description of the resident and visiting populations/ communities on site and within the area of influence (including residents, foreign and domestic tourists and people visiting the area for its environmental/ cultural heritage features, amongst others) a description of their lifestyles and social activities with respect to the area.

² Borg, J.A. & Schembri, P.J. (2003) Alignment of marine habitat data of the Maltese Islands to conform to the requirements of the EU habitats directive. In: Sant, M. (Editor) *Marine habitats data of the Maltese Islands*. Interactive CD. Floriana, Malta: Malta Environment and Planning Authority.

³ Nature Protection regulations include, amongst others, the Environment Protection Act [Act XX of 2001], the Development Planning Act [Act I of 1992 as amended], the Sand Preservation Act [Act XVI of 1949 as amended]; various Legal Notices, including LN 19/92 as amended, 22/92, 76/92, 25/93, 49/93 as amended, 146/93 as amended, 66/97, 160/97, 196/97, 161/99, 12/01, 335/01, 160/02, 167/02, 169/02, 170/02, 194/02, 290/02, 203/03, 257/03, 194/04 and 311/06, as well as various Government Notices, including GN 85/32, 269/33, 328/49, 877/03 and the GNs declaring scheduled property of ecological and scientific importance.

3.10 Existing infrastructure and utilities

Description of the current infrastructure and utilities existing or foreseeable on site (including water supply, energy supply, sewerage, access routes, etc.)

3.11 Any other relevant environmental features

4.0 Policy and Legislation

The relevance of Maltese Legislation and Maltese Planning Policy (notably the Structure Plan for the Maltese Islands, Local Plans for the surrounding areas, any approved management plans for protected areas), the National Environment Policy, other policies and international policies and conventions shall be discussed and the compatibility (or otherwise) of the proposal with these laws and policies should be described and analysed in the relevant chapters. Policies on the following should also be discussed: conservation areas and zones, protected buildings and sites, areas of natural beauty (including localized scenic spots/coves), areas of scientific, ecological, archaeological, agricultural, architectural, historical, antiquarian or artistic value, aquifer protection and run-off.

5.0 Assessment of environmental impacts and risks of the proposed development

All likely significant effects of and risks posed by the proposed project on the environment during construction and during operation, should be assessed, given the environmental characteristics of the site outlined in Sections 1, 2 and 3. The description of the likely significant effects of the proposed project on the environment resulting from the existence of the project, the use of natural resources, the emission of pollutants, the creation of nuisances and the elimination of waste. This shall include a description of the forecasting methods used to assess the effects on the environment.

A descriptive and quantitative analysis (including magnitudes and timing) of the impacts of the proposed development should be made. These shall be presented in summary and in an appropriate and logical chart format. The various techniques, methods and assumptions used in the analysis and predictions should be outlined.

The impact assessment should include:

- i. Description of the impact;
- ii. Magnitude and significance;
- iii. Duration (temporary or permanent);
- iv. Extent (in relation to site coverage and surroundings and associated features);
- v. Direct or indirect impact;
- vi. Adverse or beneficial;
- vii. Secondary impact;
- viii. Cumulative;
- ix. Short, medium and long term impacts;
- x. Reversible or irreversible effects of the impact and extent or irreversibility as well as description of any associated conditions/assumptions for irreversibility;
- xi. Sensitivity of resources to impacts;
- xii. Probability of impact occurring;
- xiii. Confidence level/limits to impact prediction;
- xiv. Scope of mitigation/enhancement; and
- xv. Residual impacts.

Worst case scenarios should be assumed wherever relevant.

The impacts addressed are to include, as relevant:

5.1 Impacts on Land and Sea Uses

The impact on land and sea uses including impacts on local topography.

This assessment shall first consider the proposed development in isolation and assess the impacts arising from the proposed development. These include impacts of the proposal on the adjacent land and sea uses including residential communities and other sensitive receptors/uses (e.g. places of worship, marine environment etc.) during construction and operation.

This assessment shall then consider the proposed development in a wider context and assess the effects of the proposed development upon the surrounding land uses and the effects of the surrounding land uses upon the proposed development. Specific reference to sensitive receptors should be made.

5.2 Effects on Coastal Configuration and Sea Bed

Effects of the changes in the local bathymetry and as a result of the proposal. This shall include an assessment of the effects of the proposal on water circulation inside the bay (if any) the expected impact on water quality and sediments in the bay, among others.

5.3 Effects of/on Water Quality/Hydrology

This shall include impacts of the drainage patterns, including surface hydrology and run-off on the proposed development. Water currents, circulation and water quality resulting from suspension of sediments, into the marine environment and its effect on habitats shall also be taken into consideration.

Furthermore, on completion of the hydrodynamic model and establishment of the optimal grain size, further assessment is required with respect to the following:

- The type of grain material to be imported (sand/clay/silt content) and the related potential contribution to sedimentation and turbidity in the water body. Any details available vis-à-vis the chemical composition of the material should be provided; and,
- Due to the fact that the beach would be located at the mouth of the extensive Wied il-Pwales water catchment, the upgrading of the storm water infrastructure to manage flows is expected. Further information is required on what interventions would be required to manage the flows and how this may affect the coastal and marine environment and their immediate hinterland.

5.4 Effects on Landscape and Visual Amenity Impact Assessment

The assessments shall have regard to the entire proposed development including all landside/ancillary development associated with it. The basis for the assessment of the significance of the impact of the proposed development shall be described.

The Landscape and Visual Amenity Impact Assessments must also have regard to committed development, if any, within the Area of Influence or Viewshed that is likely to affect the quality of the landscape or the visual amenity of the Application Site (without and with the proposed development).

1. Assessment of the Impact on the Landscape

This shall comprise the identification and description of the predicted changes in the landscape attributable to the proposed development. The effects of the changes on the quality of the landscape / elements in each of the identified landscape character areas / local landscape tracts, and an assessment of the effects of such changes on the previously identified sensitive receptors of the landscape shall be submitted. The predicted magnitude of the effects on the sensitive receptors shall be justified.

2. Assessment of the Impact on the Visual Amenity

This shall comprise the identification and description of the predicted changes to the visual amenity of the proposed site attributable to the proposed development. The effects of the changes on the quality of the visual amenity of the proposed site as viewed from each of the approved viewpoints and an assessment of the effects of such changes on the previously

identified sensitive receptors of the visual amenity shall be submitted. The predicted magnitude of the effects on the sensitive receptors shall be justified.

The base photos / photomontages to be submitted shall comply with the following:

a) The location of each viewpoint shall be shown on a map that also depicts the Viewshed for the proposed site as described above. The visual angle of the photograph shall also be depicted. In this regard, it is recommended that the visual angle should not be greater than 50 degrees. However, the use of stitched photos that illustrate the field of vision towards the Application Site from each viewpoint is acceptable on the proviso that such photos are additional to the 50 degree photo

b) Each photo / photomontage submitted shall:

- Be at least A3 in size. Strips which are A3 in width but not in length will not be accepted except for additional illustrative material;
- identify the date and time at which it was taken;
- Be of good quality, with faithful colour reproduction. The photos shall be taken in good weather and, unless otherwise directed by MEPA, shall be taken at least 2 hours after sunrise and 2 hours before sunset. Colours should not be digitally or otherwise manipulated. The image should have a printing density of 200 dots per inch or better. In some instances, digital images having a resolution of 1024 x 728 or better should be requested for multimedia presentation purposes;
- Be taken in such a manner that near field objects do not overpower or dominate features near the image plane passing through the project area;
- Be taken from a height above ground level that is representative of the eye level of the viewer and such height shall be documented;
- Shall ensure that any additional/replacement structures or features depicted in the photomontages shall have a scale which proportionately tallies with the existing nearby features; and
- Show in the photomontage(s), if applicable, the landscaping scheme proposed for the development. The maturity of the landscaping scheme as shown (which shall not be less than 5 years after planting) shall be indicated. The photomontages should also be submitted that do not include landscaping scheme.

5.5 Effects on Geology, Hydrogeology and Hydrology

This study shall assess the impacts arising from the proposed development with respect to the geology, hydrogeology and hydrology of the site. It shall assess the significance of impacts on soil, aquifers and water resources, permanent and/or temporary changes to the hydrologic regime of watercourses which may traverse the site, permanent and/or temporary changes to the hydrogeologic regime of site including changes to the mean sea level aquifer and its recharge.

The impact on the surface water drainage pattern shall also be mapped and illustrated if the proposed development is constructed. The impacts on the surrounding area due to the resulting change in surface water drainage pattern shall be clearly described.

Impacts on groundwater and surface water in terms of water quality shall also be assessed, if relevant. Furthermore, the impact on the hydrological needs of the area of influence, in particular the link between Is-Simar (and its surrounding lands) and the sea shall be considered and assessed. It should be noted that protected habitats and species depending on the Is-Simar reserve are largely water-dependent and hence any changes to the hydrology may affect the ecology of the Is-Simar Natura 2000 site.

5.6 Effects on Marine Ecology

Impacts of the proposed development on benthic habitats during construction and operation. Emphasis on protected species and habitats under any legislation or Convention should be made, if any. Impacts due to loss of, damage to and alteration of habitats shall be assessed.

Impacts of the proposal on the conservation status of *Posidonia oceanica* habitat, the percentage removal/degradation of *Posidonia* needs to be quantified.

5.7 Effects on Avifauna

The impacts on avifauna shall include (but not restricted to) disturbance, noise, vibrations, emission of particulates and chemicals in air or water runoff, during construction and operation.

5.8 Effects on Archaeological Features

Impacts of the proposal on the archaeology and cultural heritage features of the area including preservation within the proper landscape context. Refer to Appendix 2 for detailed Terms of Reference.

5.9 Impacts on Human Populations and Public Health

This shall assess the impacts of the development on the surrounding and visiting population and their social activities including impacts due to potential improvement or impairment of amenity, impacts on the swimmers at Xemxija Bay and its surrounding coasts, public access, etc.

The EIS shall also include a detailed description of the measures envisaged to prevent, minimize and where possible, offset any significant adverse health effects, including cumulative impacts of the development on the general public and on the areas affected by the proposed development. This should include details of the monitoring programmes that may be proposed. The EIS shall also identify, describe and discuss in detail the possible health effects of any residual impacts that cannot be mitigated. This shall be presented as a separate Section/Chapter in the EIS.

5.10 Climate Change

The phases or elements of the proposal that are sensitive to variations in or changes to specific climate parameters (e.g. precipitation, wind, sea water levels, temperature, humidity, etc.) should be identified. The potential impacts that these changes may have on elements of the proposal shall be identified including the possible impacts resulting from changes to multiple parameters. Particular importance shall be given on the impact of sea-level rise on the proposal.

The adaptability of the project in the event the region's climate changes shall be discussed.

5.11 Secondary Impacts

Mainly arising from the extraction and consumption of resources necessary to implement the project, as well as from developments, infrastructure and facilities supporting the project (e.g. new/altered/diverted sewers, power lines, pipelines, telecommunications, access, parking, transportation), such as water, energy, construction materials, and the resultant need (if any) of development of new supplies.

5.12 Other Environmental Effects

Other environmental effects other than those identified in Sections 5.1 – 5.10, if relevant, shall also be described and their impacts assessed.

5.13 Cumulative Effects, including consequential development pressures

This section shall refer to all the impacts of all the aspects of the development and shall assess:

- The effects resulting from the **interaction of separate effects** listed above as well as any other relevant impacts; and,
- The impacts of the project viewed in terms of other projects (i.e., not in isolation), including existing and proposed, including all the existing and proposed developments in the area.

Earlier discussions on the project have also raised issues about whether the proposal would necessitate, or introduce longer-term pressures for:

- the realignment or diversion of the existing major road that currently skirts the innermost part of the bay;

- parking facilities; and,
- displacement/relocation of the existing slipway.

In this regard, and noting the potentially significant and long-range implications of such additional interventions, the EIA needs to assess the actual feasibility of the project in the absence of such additional development, as well as the implications of such additional interventions.

5.14 Interaction between any of the foregoing

Experts contributing to the EIA should be specifically asked to consider impact interactions and to communicate information between each other. In addition, any environmental components not listed in the Directive or Regulations that are likely to be affected should not be discounted.

Predictions of impact interaction will nearly always involve a greater degree of uncertainty than prediction of impacts on individual components. This should be referred to in the EIA rather than ignored.

6.0 Design of Mitigation Measures, Identification of Residual Impacts and Monitoring Framework

6.1 Mitigation Measures

This should include a description of the measures envisaged to prevent, minimise and where possible, offset any significant adverse effects on the environment of the project. Such measures could include technological features; operational management techniques; enhanced site-planning and management; aesthetic measures; conservation measures; reduction of magnitude of project; and health and safety measures.

6.2 Residual Impacts

Any residual impacts, that is those impacts that cannot be mitigated or those remaining impacts following implementation of mitigation measures, should also be described, quantified and presented in a tabular format.

6.3 Monitoring

The consultants must propose a monitoring framework which should take into account monitoring of those features that are considered to be impacted negatively or the impact on which is uncertain. The framework must be proposed at different stages: before, during and after construction. Details regarding type of and frequency of monitoring must also be given.

**Environmental Impact Assessment Regulations, 2007
Regulation 28 and Regulation 29 of the EIA Regulations, 2007**

Regulation 28

List of Consultants (Extract from the EIA Regulations)

28. (1) The environmental impact statement shall list the registration number and the names of the consultants and contributors responsible for the preparation of the environmental impact statement, environmental survey reports, appendices, non-technical summary and other components of the statement.

(2) The consultants who are responsible for a particular analysis, including analysis in the environmental survey reports, shall be identified.

(3) All consultants and contributors employed in the environmental impact assessment shall sign a declaration stating that the particular study (or part thereof) was solely carried out by them and that they take responsibility for any statement and conclusion contained therein. This signed declaration shall be included with each environmental survey report included with the environmental impact statement.

Signed declaration in accordance with Regulation 28 (3)

Director of Environment Protection
MEPA

I _____, who carried out the study (or part thereof) on _____ for the EIS of (TRK. 145703) the *proposed beach replenishment project with ancillary facilities, at, Ir-Ramla tal-Pwales, Xatt il-Pwales, San Pawl il-Baħar, Malta*, hereby declare that such study was solely carried out by me.

Date

Signature

This declaration is to be included with each environmental survey report included with the EIS.

Regulation 29

Conflict of Interest (extract from the EIA Regulations)

29. (1) In the interest of fairness, objectivity and the avoidance of bias, all consultants shall be required to sign and abide by a declaration that they have no personal or financial interest in the proposed development.

(2) The Director of Environment Protection shall not approve consultants, groups of consultants or consultancy firms that are in any way associated with any company, association or grouping that has any direct or indirect personal, association or grouping that has any direct or indirect personal, professional or financial interest in the proposed development.

(3) The Director of Environment Protection shall not approve any environmental impact statement or environmental planning statement produced by a consultant or group of consultants, one or more of whom does not comply with the provisions of sub-regulations (1) or (2) of this regulation.

Signed Declaration in accordance with Regulation 29 (1)

Director of Environment Protection
MEPA

I _____, hereby declare that I have no personal or financial interest in the proposed development, namely (TRK. 145703) the *proposed beach replenishment project with ancillary facilities, at, Ir-Ramla tal-Pwales, Xatt il-Pwales, San Pawl il-Baħar, Malta*. Moreover, I declare that I am not in any way associated with any individual, company, association or grouping that has any direct or indirect, personal, professional or financial interest in the abovementioned proposed development.

Date

Signature

Such declaration is to be sent to MEPA when proposing the list of EIA Consultants prior to their approval or otherwise.

Appendix 2: Terms of Reference for the preparation of Archaeology/Cultural Heritage Assessment

Note: All requirements set out in these Terms of Reference must be complied with. If there are any sections, which are not relevant to this study, the reasons for not including the relative information in the study must be stated and justified. Moreover, if there are any aspects that the consultants deem to be important but which have not been requested, these are to be included together with a justification for their inclusion.

For the purposes of this document, cultural heritage is defined by Article 2 of the Cultural Heritage Act 2002 (CAP 445). This includes movable or immovable objects of artistic, architectural, historical, archaeological, ethnographic, paleontological and geological importance.

The EIS must consider all other forms of cultural heritage, both known and unknown, particularly those underwater.

1. Objectives

The purpose of the Report of Survey⁴ is to provide a comprehensive study on the cultural heritage assets, consisting of archaeological, historical, architectural, rural and vernacular features. The report shall:

- a. Identify, describe, document and present all relevant information about cultural heritage assets within the area of study;
- b. Analyse the cultural heritage features within the context of the cultural landscape;
- c. Assess the physical, spatial and visual impacts of the proposed development on the cultural heritage assets;
- d. Assess the cultural heritage significance of each feature and of the area of study;
- e. Propose statutory and physical protection of the individual features and of the site;
- f. Identify potential impacts on the cultural heritage features arising during both the development phase and the operative phase of the development;
- g. Propose mitigation of impacts arising from proposed development and a monitoring programme during construction and operation of the development.

The survey and report should be specific to the identification, assessment and valorisation of the cultural heritage value of the features within the area of study, irrespective of land ownership and any proposed development.

2. Area of Study

The area of study for the purpose of this report shall be proposed by the consultant and must be indicated on a site plan, subject to prior approval by MEPA in consultation with relevant agencies.

The study area shall at least cover the following:

- a. The total footprint of the proposed project; and,
- b. A 100m radius around the footprint for the underwater assessment.

3. Contents

3.1. Studies and Surveys

3.1.1. Desk-top Study

The desktop study shall seek to collate information about the cultural assets present, events that have taken place, the cultural relevance of the site throughout history, and the archaeological potential within the area of study. This study shall include:

- a. Reference to existing literature, old manuscripts, reports of previous discoveries;
- b. Study of toponyms;
- c. Analysis of cartographic, photographic, and other graphic material; and,
- d. A bibliography of sources consulted.

3.1.2. Site Survey

⁴ Consultations with any relevant bodies, including the Superintendence of Cultural Heritage, Heritage Malta, NGOs and Local Councils are recommended.

Fieldwork⁵, visual survey and research including field walking, topographic survey and remote sensing technique are to be used for these studies. Furthermore, given the location of the proposed works, data capture must include visual inspection of the seabed and sub-bottom profiling, as may be necessary. This shall also include:

- a. Identify and record surface features, also noting their condition. An attempt shall be made to describe typologies of cultural features. Typologies should be based on form, materials, technology, use intention, possible dating/phasing, and other architectural details that enable the distinction of one type from the other;
- b. Identify and record pottery scatters. However, the collection of pottery shards is not allowed;
- c. Recording of the features on a map (scale 1:2500); and
- d. The investigation of potential archaeology (buried or surface) should be considered as a reserved matter and as directed by the Superintendent of Cultural Heritage.

Any identified features are to be documented using the standard inventory cards as specified in section 3.1.3 below. Furthermore, a site plan of the area of study as detailed in Section 2 above, is to be submitted clearly indicating the location of the identified features (both underwater and coastal).

3.1.3. Recording Specifications

Relevant information for each feature shall be presented data cards as supplied by the MEPA (Data Capture Sheet specimen attached at the end of this document). Each feature should be individually identified with a consecutive reference number. The individual specific reference number shall be used throughout the report when cross referencing with maps, photos data cards and text. The information on each card for each feature shall include:

- a. Short description;
- b. Co-ordinates recorded up to 5 digits for each northings and eastings; based in the local/UTM grid reference;
- c. Locality and address;
- d. Site indicated on a map to a scale of 1:2500;
- e. Photographs;
- f. Scaled diagram/sketch;
- g. The significance of each feature, with a proposed grading following Structure Plan UCO and ARC policies;
- h. Existing and/or proposed legislative and physical protection;
- i. Current and proposed use/enhancement;
- j. Bibliographical references;
- k. Name of surveyors and date of compilation.

3.2. Statutory Protection

Reference shall be made to local heritage conservation legislation, international conventions and charters, Structure Plan policies, Local Plans, Scheduling and other relevant documents related to the protection of cultural heritage.

3.3. Description and Assessment of Impacts

All significant impacts and risks posed by the proposed project, both during construction and during operation, shall be assessed. Impact may include:

- a. Impact on the heritage assets and archaeological remains (whether on the surface or buried), including potential underwater archaeological remains; and,
- b. Impacts on the coastal heritage.

A cultural heritage risk assessment map shall be produced to assess the various impacts.

3.4. Mitigation Measures

This should include a description of the measures envisaged to prevent, minimise and where possible offset any significant adverse effects on the cultural heritage assets and their setting by the project, (including reference to consideration of alternatives). Such measures could include technological

⁵ All fieldwork has to be authorised by the Superintendent of Cultural Heritage.

features; operational management techniques; enhanced site planning and management; aesthetic measures; conservation measures; reduction of magnitude of project; and health and safety measures.

3.5. Monitoring

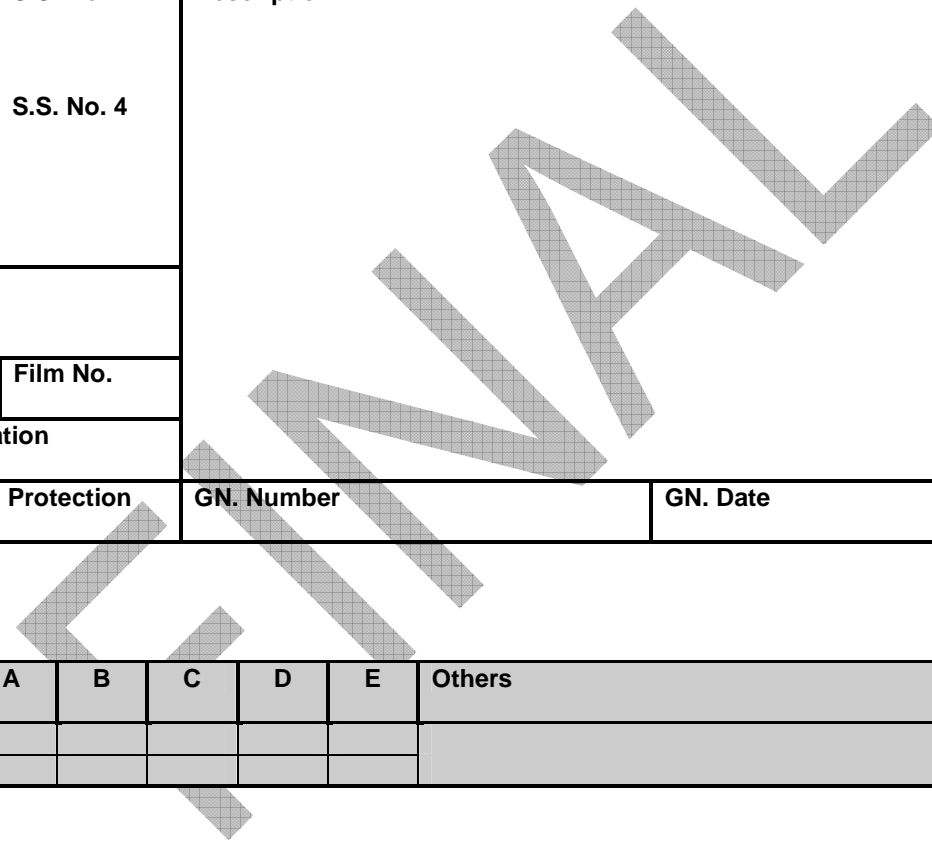
A long-term monitoring programme of the impacts of the development on the cultural heritage assets and their setting shall be proposed. This shall include data gathering on the quality and progress of critical heritage features identified in the previous section, and spot checks. Therefore the following are required:

- a) A monitoring programme during any necessary scientific archaeological investigations, provided official written consent is obtained from the Superintendence of Cultural Heritage;
- b) A monitoring programme during construction; and
- c) A monitoring programme during operation.

3.6. Academic Competence

The survey and report shall be undertaken by suitably qualified person/s holding a degree in archaeology. The proposed consultant/s shall be approved by MEPA in advance of the commencement of the study.

FINAL

MEPA				Ref. No.		
PTOTECTIVE INVENTORY OF THE MALTESE CULTURAL HERITAGE HERITAGE DATA CAPTURE SHEET						
Location	Category	Type	Site Location (Address)			
Eastings	Northings	Feature	Period - Year			
S.S. No. 1	S.S. No. 2	Description				
S.S. No. 3	S.S. No. 4					
Date						
Neg. No.	Film No.					
Present Utilization						
Existing Legal Protection						GN. Number
Comments						
Buffer Zone	A	B	C	D	E	Others
Eastings						
Northings						
Site Map						
Scale 1 : 2500						

Archaeological Characteristics – Sketch/Scaled drawings:

Condition: **Degree of Protection (Structure Plan policies UCO7 or ARC 2):**

State of Security: **Proposed Utilization:**

Basic Bibliography:

Compiled by:
Checked by:
Date:

Revised by:
Checked by:
Date: