



PA 01820/18 (EA 00002/18)

Sand Replenishment of Ghadira Bay, including the construction of a wave deflection and related Marine works. Site at Il-Bajja tal-Mellieha, Triq il-Qammieh and, Triq l-Marfa, Ghadira, Mellieha, Malta.

TERMS OF REFERENCE

FOR THE PREPARATION OF AN

ENVIRONMENTAL IMPACT ASSESSMENT

August 2018

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FOR THE PROPOSED

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- Note 1:** The Environment and Resources Authority (ERA) reserves the right to modify these Terms of Reference according to any relevant environmental and planning considerations that may emerge at any relevant stage of the EIA or the permit application process, as well as in the event of any changes or updates to the proposed development. ERA also reserves the right to request additional or amended studies should the findings of the EIA be insufficient to adequately inform the decision-making process or if the EIA identifies matters which should be subject to further investigation.
- Note 2:** Unless otherwise agreed with ERA, all requirements set out in these Terms of Reference are to be complied with. If there are any aspects that the consultants deem irrelevant to this study, or if at any stage the consultants discover any environmentally-relevant aspect (not included in these TORs) that needs to be studied, the consultants shall inform ERA immediately, justifying their reasoning.
- Note 3:** 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 in a manner that enables tracing of the information source and verification. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the consultation period and thereafter, and for record-keeping and unhindered perusal by ERA. Any material which is based on unavailable proprietary data shall not be incorporated by reference.
- Note 4:** Any requirement for confidentiality of any section or detail of the EIA must be strongly justified and a formal request in this regard must be submitted to ERA. Should ERA grant confidentiality, alternative material that is still adequate for proper assessment, public consultation and decision-making must be provided.
- Note 5:** Agreement on method statements, and ancillary liaison with ERA, is not mandatory but is recommended. Nevertheless, ERA reserves the right to disagree with the methodology proposed, including proposed areas of influence, and with the EIA submissions in general, and to factor such disagreement in its critique of the EIA.
- Note 6:** During review of the EIA, ERA will submit comments for the consultants' consideration, as relevant. Following the consultants' response to ERA satisfaction, a revised version of the EIA, addressing the comments, will normally be required. This may take the form of a complete resubmission or of an Addendum detailing the revisions to the previous submissions, as deemed most expedient by ERA, taking into account continuity and traceability of the information, and overall user-friendliness vis-à-vis subsequent review, presentation, public consultation, record-keeping and decision-making. A complete resubmission will generally be required if changes are numerous or complex, whereas an Addendum may be preferred if changes are more limited.
- Note 7:** The consultants are not exonerated from obtaining any formal authorisation from ERA, and from other relevant entities, vis-à-vis any activity ancillary to the EIA (e.g. collection, sampling, capture, or waiver of access restrictions) wherever such authorisation is legally required.

Note 8: These Terms of Reference, and all ancillary correspondence, are issued without prejudice to ERA's position on the project. Accordingly, their issuing (even when customised to address specific project details) should not be construed as evidence in favour or against the project or any component thereof, unless the contrary is clearly stated.

Note 9: Wherever relevant, references to land also include the sea, and ancillary terms such as land-take, ground cover, landscape, vehicles, access roads, etc. should be interpreted accordingly.

Note 10: Wherever any baseline studies required by these Terms of Reference is covered by already-existing data, such data should be used in preference to unnecessary duplication of baseline studies, unless the consultants or ERA or both are of the opinion that the existing data is unavailable, incorrect, outdated, unreliable, insufficient, or otherwise inadequate for the purpose of the EIA.

An Environmental Impact Assessment (EIA) Report is to be prepared as required by the Schedule I, Category II, Section 1.0.2.1, 6.2.2.1, 6.2.2.2, 6.2.2.3 and 6.2.2.4 of the Environmental Impact Assessment Regulations, 2017 (S.L. 549.46). The required components of the EIA are:

- i. A **Coordinated Assessment Report**, in conformity with the following Sections of these Terms of Reference. This report should assess the project in its totality;
[Note: The coordinated assessment should seek to analyse and integrate the main considerations emerging from the technical reports, rather than just reproducing excerpts from the reports.]
- ii. A separate **Appendix (or Appendices)** containing all technical studies and original survey reports as prepared by the individual specialist consultants for specific topics;
[Note: Experts contributing to the EIA should be specifically asked to consider impact interactions and cross-cutting issues, and to communicate information between each other accordingly].
- iii. A separate **Non-Technical Summary** of the EIA, in both the Maltese and English languages. This should have enough details for the public to understand the project and the related environmental considerations, and should be written in reader-friendly language (e.g. avoiding unnecessary technical jargon);
- iv. A **declaration of conformity** with regards to the identification of consultants and contributors, and conflict of interest, in accordance with sub-regulations 17(3) of the EIA Regulations (refer to Appendix 1 to these Terms of Reference); and
- v. An addendum detailing the **feedback received from stakeholders, from the public, and from ERA** during the relevant consultation stages of the EIA, and how they were addressed.

Wherever relevant and appropriate, all components of the EIA should include tables and figures (e.g. maps, plans, photographs, photomontages, charts, graphs, diagrams, cross-sections) and quantifications.

The complete EIA Report (including all the above components) should be submitted as a printable digital copy (in .pdf format, with copying fully enabled throughout) and as a printed copy. Likewise, in case further revisions are to be made to the EIA Report, both a printable digital copy (in .pdf format, with copying enabled throughout) and a printed copy of the revised EIA Report, or an Addendum, is to be submitted to ERA.

Wherever any other study not forming part of the EIA (e.g. Appropriate Assessment or Feasibility Study) is also envisaged, this is to be submitted separately from the EIA. Cross-referencing between the EIA and any such study should be clear and reasonably limited, such that both of the following considerations are duly satisfied:

1. Alerting the reader to the fact that the aspect in question is also being addressed in another parallel study; and
2. Enabling the reader to easily follow both the EIA and the other studies as stand-alone documents.

More detailed specifications are identified in the following pages.

1. DESCRIPTION OF THE PROPOSED DEVELOPMENT AND ITS CONTEXT

The description of the proposal is to include the aspects outlined below, and should take into account the entire proposal and any ancillary facilities and infrastructure connected with, or arising due to, the project.

1.1. Justification for the Proposal

1.1.1. Objectives

The purpose and objectives of the development and whether these are related to current legal obligations, policies or plans.

1.1.2. Demand

The current and expected requirement or demand for the proposed land uses, also explaining how the proposal will address the requirement/demand.

1.2. Description of the Physical Characteristics of the Whole Project and the Land Use Requirements during the Construction, Post-construction and Decommissioning Phases

The following aspects should be addressed for all phases of the project, clearly distinguishing between aspects relating to construction phase, post-construction phase, decommissioning phase, or more than one phase. References to the construction phase and decommissioning phase also include ancillary site preparation, clearing, excavation, demolition/dismantling, and site reinstatement works, as relevant.

1.2.1. General characteristics

A full description of the proposed development including, but not limited to, elements such as:

- Size, area, height/depths, volumes, configuration/layout, general design and location of all proposed structures and installations, both temporary and permanent; and
- Areas, depths, volumes and location of proposed dredging and replenishment works.

Furthermore the description should include access arrangements, land use requirements, and land take of ancillary facilities (including infrastructure, storage, servicing, security etc.). The description is to be consistent with the details submitted in the relevant permit applications, throughout both the EIA process and the development permission application process.

1.2.2. Construction and Post-construction processes

The relevant construction and post-construction processes and their main characteristics, including:

- The nature and quantity of materials used or generated;
- The source, type, quantity, composition and concentration of residues and emissions including water, air (e.g. emissions from heavy vehicles, machinery, construction works), sediment pollution, noise (including underwater noise), vibration, light, heat, radiation etc. resulting from the proposed project; the parameters to be reported should be in line with relevant EU policy;
- Types and quantities of all raw materials and primary resources to be consumed, including water, energy, stone and other resources;
- In view of the proposed dredging activities, a dredging plan is required, detailing the following:
 - Location and size of the area to be dredged;
 - Details on the methodologies to be applied (including rate of dredging), the depths and volumes of dredging and foreseen duration of the process;
 - Type of material to be dredged, and intended final destination and transportation method;
 - Sampling and methods to be used to test the quality of the dredged material;
 - Information on whether any maintenance dredging will be required, and if so, further information on the methodologies and mitigation measures to be applied;
 - Alternative methods of dredging, if any, together with the environmental impacts of each of the methods outlined.
- In view of the proposed replenishment, the following details are required:
 - Location and size of area to be replenished;
 - Details on the methodologies to be applied (including rates and structuring of deposition), the volumes of deposition and foreseen duration of the process;
 - Type of material to be deposited and transportation methods;

- Information on whether any maintenance replenishment will be required, and if so, further information on the methodologies and mitigation measures to be applied;
- Alternative methods of replenishment/deposition of sediment, if any, together with the environmental impacts of each of the methods outlined.

1.2.3. Project management

An indicative framework outlining the key parameters and site management arrangements during construction, post-construction and decommissioning phases, including:

- Works methodology;
- Expected duration of all phases, as well as season, frequency and duration of interventions; and
- Measures to reduce consumption of primary resources.

1.2.4. Access, transportation and related infrastructure

1. A forecast of the type, quantity and size of vehicles (and/or vessels) envisaged during each phase and their respective frequency of use, as well as an identification of the routes that vehicles/vessels will use to/from and within the site. The required arrangements should also be compared with the relevant existing situation (in terms of structural considerations, stability and state of roads, road width and gradient, turning circles and junctions, type of surfacing, and other physical or environmental constraints, etc). Interventions that would need to be carried out to accommodate the required vehicles/vessels (e.g. new or altered access roads, anchoring points), and are likely to affect sites/buildings/structures/features and/or beach or seabed surface as a result, should be identified accordingly.
2. Facilities for the storage, parking, on-site servicing, loading/unloading of equipment, vehicles and other machinery.

1.2.5. Waste management

1. A sufficiently detailed indication of the waste management implications likely to arise from the project, including wastes generated by ancillary facilities and wastes which may arise from accidental spillages and leakages and from repair works. Wastes should be subdivided according to the relevant project phases.
2. The following information is to be provided for each waste stream, as relevant to each phase:
 - Identification of processes or activities that would result in waste generation;
 - European Waste Catalogue Codes for each waste stream, as per relevant legislation;
 - The projected quantities (and rate of generation) for each type of waste;
 - Information on waste handling and storage, on site as well as off site;
 - The method of transportation and frequency, and final disposal location; and
 - The method of characterizing the chemical composition of dredged waste; where applicable.

This information should be presented in table format as follows, and should also include cross-references to the relevant regulations, particularly The Waste Regulations (S.L. 549.63):

Phase	Type of waste	EWC Code	H-Code	Activity (e.g. sanding, scraping, power washing etc.)	Estimated quantities	Final permitted disposal location

3. The envisaged waste management arrangements using the Best Practicable Environmental Options (BPEO) available, and the envisaged efforts to minimise waste generation and to divert waste to reuse or recycling rather than disposal.
4. Layout plans (to scale) clearly showing all relevant waste management infrastructure and related facilities (e.g. bunded areas for storage of waste fuels, wheel-wash facilities, etc.), clearly identifying the duration of such structures for each phase.

1.2.6. Longer-term developments

Additional future developments, land uses and other commitments that are ancillary or consequent to the project or are likely to arise in relation to the same project or its expansion, as well as longer-term needs of the proposal, including: ancillary infrastructure not accounted for in the previous sections; any consequent interventions/arrangements; any foreseeable extensions or updates to the proposal; and decommissioning.

2. ASSESSMENT OF ALTERNATIVES

An outline of the main alternatives studied and an indication of the main reasons for this choice, taking into account the relevant environmental effects and their prevention (or optimisation) at source. The following alternatives need to be duly considered, as relevant to the development itself (or to one or more phases thereof) and its requirements and constraints:

2.1 Alternative sites

2.2 Alternative technologies

2.3 Alternative layouts (including design and physical extent of structures, where relevant)

2.4 Downscaling of the project, or elimination of project components

2.5 Zero option (do-nothing scenario) - *i.e.* an assessment of the way the site would develop in the absence of the proposed project.

[Note: The zero option should be considered in sufficient detail as a plausible scenario in the EIA, wherever relevant, and not discarded upfront without proper discussion of its implications.]

2.6 Hybrids/combinations of the above

The findings of the assessment of alternatives should be summarised in a table format for ease of comparison.

3. A DESCRIPTION OF THE SITE AND ITS SURROUNDINGS (*I.E.* ENVIRONMENTAL BASELINE)

The existing environmental features, characteristics and conditions, in and around the proposed development site as well as in all locations likely to be affected by the development or by ancillary interventions and operations, are to be identified and described in sufficient detail, with particular attention to the aspects elaborated further in the next sections.

The consultants should also identify (and justify on the basis of relevant data/information) wherever relevant:

1. The geographic area (*e.g.* viewshed or other area of influence) that needs to be covered by each study;
2. The relevant sensitive receptors vis-à-vis the environmental parameter under consideration (*e.g.* residential communities, other users, natural ecosystems, specific populations of particular species, or individual physical features);
3. The location of the reference points or stations (*e.g.* viewpoints, monitoring stations, or sampling points (including depth of multiple sampling points at a single sampling point in the case of water media and sediment, where applicable) to be used in the study; and
4. Other methodological parameters of relevance, also noting that the assessment will normally require both desk-top studies and on-site investigations (including visual observations and sampling, as relevant).

Note: *It is recommended that these details are discussed in advance with the Environment Protection Directorate prior to commencement of the relevant parts of the studies, in order to pre-empt (as much as possible) later-stage issues.*

Wherever relevant to the environmental aspects under discussion, reference to legislation, policies, plans (including programmes and strategies) standards and targets, should also be made, such that the compatibility (or otherwise) of the proposal therewith is also factored into the assessment required by **Section 4** below. The discussion should cover the following aspects, in the appropriate level of detail:

- Supra-national (*e.g.* European Union; United Nations; or other international or regional) legislation, directives, policies, conventions, protocols, treaties, charters, plans and obligations;
- National legislation, policies and plans (*e.g.* Structure Plan; National Environment Policy); and

- Sub-national legislation, policies and plans (e.g. local plans, site-specific regulations, action plans, management plans, and protective designations such as scheduling or Natura 2000).

Note: In addition to already in-force legislation, policies and plans, the discussion should also cover any foreseeable future updates (or new legislation, policies and plans) likely to be fulfilled, affected or compromised by the proposed project. Furthermore, it should be noted that some cross-cutting legal/policy instruments (e.g. Water Framework Directive and Marine Strategy Framework Directive) may need to be factored into more than one aspect of the discussion.

3.1 General description of the Coastal and Marine Environment

The description should include the following:

1. Onshore topographic maps, near-shore and offshore bathymetric maps;
2. Aerial imagery of the area;
3. Description of the coastal configuration of the area;
4. Details of any coastal infrastructure;
5. Details on the beach type, morphology and structure, including, but not limited to beach slope profiles, sand grain size distribution profiles, etc.;
6. Details on the seabed morphology and structure, including, but not limited to sediment characteristics, sediment grain size distribution profiles, present structures and features, etc.;

3.2 Water bodies (including Terrestrial, Underground and Marine water bodies, as relevant)

The study should identify the hydrological, hydromorphological and physicochemical characteristics of the water bodies, water resources and aquatic environments in the area under investigation, including (as relevant):

1. The hydrology of the site and its surroundings, including all relevant features and dynamics, including a description of any potential linkages between different water bodies (e.g. coastal water linkages to inland waters), also cross-referring to hydrogeological factors as relevant;
2. The type, size and physical characteristics of the present water bodies within the area of influence of the site, including, but not limited to, the nature of the water body, other characteristics such as depth/bathymetry, type of bottom and topography, prevailing currents and wave exposure, etc.;
3. Natural and anthropogenic dynamics including groundwater recharge patterns (if any); pumping and abstraction patterns; on-site and off-site drainage patterns; run-off patterns; and
4. Details on the current water quality and ecological status within Għadira Bay, in terms of the requirements of Article 4(7) of the Water Framework Directive (WFD) (2000/60/EC), given that the proposed beach replenishment project lies within the Il-Mellieħa – Tas-Sliema coastal water body (MTC 104) and adjacent to L-Għadira transitional protected water body (MT 402), as included in the 2nd Water Catchment Management Plan for the Maltese Islands (2016). Such assessment should be based on the following quality elements as given in Annex V of the said Water Framework Directive (WFD) - (2000/60/EC):
 - a. Biological Quality elements, as applied by Malta's 2nd Water Catchment Management Plan for Coastal Waters (2016);
 - 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, pH, salinity and nutrient conditions);
 - d. Specific pollutants (baseline quality of the superficial marine sediments: heavy metals, aromatic petroleum hydrocarbons, and organotins).
5. Water quality (salinity, pollutant load, sediment load and characteristics, microbiological load, BOD & COD, transparency, temperature, etc.), with particular reference to any established quality parameters (e.g. legally-established bathing water quality parameters; effluent discharge parameters; objectives and requirements of the Water Framework Directive, Marine Strategy Framework Directive and related instruments).
6. A detailed wave and currents hydrodynamic model that includes mathematical modelling adopted for the determination of:
 - a. The best design for all the components of the proposal shall be undertaken;
 - b. The effects of the proposal on: wave action, currents, water circulation; sediment transport and deposition processes; and the overall coastal dynamics of the bay; and
 - c. Wave statistical characteristics (including probability tables for extreme conditions).

The wave and currents hydrodynamic model shall assess the fate of the sediment to be replenished, the dredged areas, and all other areas affected by the proposal, both by the proposed works, introduction of permanent structures, and by any eventual consequential changes in coastal dynamics, under the various

sea conditions, including worst-case scenarios. The model shall include physico-chemical parameters, such as, but not limited to, prevailing and local currents and their velocity; wave exposure; water depth/bathymetry and seabed type.

The connection between the L-Għadira Reserve Natura 2000 site (MT0000015 (L-Għadira Area): Special Protection Area (SPA) and Special Area of Conservation (SAC)) and the coastal water body shall be given due importance.

The study should provide a sufficiently detailed baseline to enable assessment of the effects of the proposal on the quality and ecological status of the present water bodies (terrestrial, underground and marine), the extent of area affected by hydrographical, hydrological and hydrodynamical changes, the nature of the changes (whether temporary or permanent) and the determination of the effects of such changes on the ecological features, in particular WFD Biological Quality Elements and supporting elements, including the physico-chemical quality elements, also addressing issues relevant to Section 3.3 and 3.4. Such assessment should be undertaken in line with indicators used/established by relevant EU policy and should enable determination of the possibility of deterioration in the status of water body, or whether the proposal may compromise the achievement of good status/potential in line with the requirements of WFD Article 4.7. 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.

3.3 Marine Ecology

The study should identify all marine ecological features in the area under investigation, including:

1. An investigation of the marine ecology of the site and its surroundings (including affected flora, fauna, fish and other aquatic organisms (including marine mammals and turtles), benthic, burrowing and pelagic organisms, their habitats and ecosystems), duly covering seasonality, as relevant, to ensure adequate coverage of all relevant species and ecosystem components;
2. 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 all benthic communities in the area. The communities are to be characterised according to the relevant classification systems, taking into consideration the alignment as provided in Borg & Schembri (2002)¹, and mapped;
3. Identification and description of indicator species relevant to characterisation of the ecological quality and conservation status of the marine area;
4. A reporting of the conservation status and ecological condition of the area and the state of health of its habitats, species and ecological features; and
5. A reporting of all protected, endangered, rare, unique, endemic, high-quality, keystone, invasive/deleterious, or otherwise important species, habitats, ecological assemblages (e.g. protected species or habitats, key species relevant to habitat characterisation, and monitoring indicators), found in the area of study, and assess their abundance and distribution patterns as well as the species' ecological niches. The findings should be supported by adequate maps and photographs. Classification of habitat types and species should be conducted in accordance with recognised classification systems (e.g. EUNIS and Palaearctic), to ERA satisfaction.

The assessment should provide a detailed prediction of the potential impacts of the proposed project on the ecology of the site and its surroundings, including loss, damage or alteration of habitats and species populations (including potential increases in ambient noise levels in the marine environment, during all phases) including alteration in the habitats and species' condition/state of health as measured through indicators used/specified for assessment of status in relevant EU policy. 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.

Particular reference should be made to the Annex I Habitats 1110 (Sandbanks), 1170 (reefs) and 1120* (*Posidonia oceanica* beds), of which the latter is a priority habitat, as listed in Schedule I of the Flora, Fauna and Natural Habitats Protection Regulations (SL 549.44).

Note 1: Given that the proposal falls within a Natura 2000 Site, Special Area of Conservation (SAC) and Special Protection Area (SPA), a stand-alone Appropriate Assessment in terms of the Flora, Fauna and Natural Habitats Protection Regulations is required. In this instance, separate Terms of Reference are issued for the Appropriate Assessment.

¹ Borg, J.A. & Schembri, P.J. (2002) *Alignment of marine habitat data of the Maltese Islands to conform to the requirements of the EU habitats directive (Council Directive 92/43/EEC)*. [Report commissioned by the Malta Environment & Planning Authority]. Malta: Independent Consultants; 136pp + Figs 1-23.

3.4 Terrestrial Ecology

The study should identify the following ecological features in the area under investigation:

1. An investigation of the coastal habitats (including sand dune remnants, rocky coast, etc.) of the site and its surroundings, including the affected flora, fauna and other organisms, duly covering seasonality, as relevant, to ensure adequate coverage of all relevant species and ecosystem components;
2. Identification and description of indicator species relevant to characterisation of the ecological quality and conservation status of the coastal habitats;
3. A reporting of the conservation status and ecological condition of the coastal habitat and the state of health of its habitats, species and ecological features; and
4. A reporting of all protected, endangered, rare, unique, endemic, high-quality, keystone, invasive/deleterious, or otherwise important species, habitats, ecological assemblages (e.g. protected species or habitats, key species relevant to habitat characterisation, and monitoring indicators), found in the area of study, and assess their abundance and distribution patterns as well as the species' ecological niches. The findings should be supported by adequate maps and photographs. Classification of habitat types and species should be conducted in accordance with recognised classification systems (e.g. EUNIS and Palaearctic), to ERA satisfaction.

The assessment should provide a detailed prediction of the potential impacts of the proposed project on the coastal habitats of the site and its surroundings, including loss, damage or alteration of habitats and species populations, including alteration in the habitats and species' condition/state of health as measured through indicators used/specified for assessment of status in relevant EU policy. 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.

3.5 Avifauna

1. All species occurring/potentially occurring on or around the site, including their population size, distribution, range, productive strategy, lifespan, etc., duly covering seasonality, as relevant, to ensure adequate coverage of all relevant species and ecosystem components. This shall include resident and migratory species. Migratory species and their routes shall be identified; and
2. 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 assessment should provide a detailed prediction of the potential impacts of the proposed project on the avifauna present within the area of influence, including immediate disturbance to species populations, and damage or alteration of habitats (including potential increases in ambient noise levels and lighting, during all phases) including alteration in species' condition/state of health as measured through indicators used/specified for assessment of status in relevant EU policy.

3.6 Archaeological, Historical & Cultural Heritage and related Material Assets

This study should identify marine and terrestrial archaeological, historical, cultural heritage and other related material assets within the area under investigation. For detailed requirements, references is made to Appendix 2.

3.7 Landscape Character and Visual Amenity

1. The study on Landscape Character should describe the landscape-related area of influence and landscape setting of the proposed site, identifying the component character areas and local landscape tracts, and the landscape elements, characteristics and degree of sensitivity thereof, so as to enable the prediction and assessment of:
 - a) The changes to the landscape attributable (in full or in part) to the proposed development;
 - b) The implications of such changes on the quality and perception of the landscape and its elements, in each of the identified landscape character areas and local landscape tracts; and

- c) The effects of such changes on relevant receptors (the receptors should also be duly identified and their degree of sensitivity should be indicated and justified).
2. With regards to the study on Visual Amenity, the following need to be identified and submitted for prior ERA approval:
- a) The Zone of Theoretical Visibility (ZTV; also known as Zone of Visual Influence) of the site and the development under consideration; and
 - b) Assessment viewpoints representative of short-, medium- and long-distance views towards the site. A baseline photograph taken from each proposed viewpoint is also required. The submission should cover all the important views of the site, whilst avoiding the inclusion of superfluous or inappropriate viewpoints (e.g. positions from which the site is not visible, or where the view is obstructed or dominated by physical obstacles in the foreground).

Thereafter, for each approved viewpoint, the projected situation and appearance of the site (*i.e.* as it would look with the proposed development in place) should be compared to the current baseline situation (*i.e.* without the proposed development). The following should be predicted and assessed accordingly:

- a) The expected changes to visual amenity as a result of the proposed development;
- b) The effects of such changes on the quality of the visual amenity of the site; and
- c) The effects of such changes on relevant receptors. (The receptors should also be duly identified and their degree of sensitivity should be indicated and justified).

Note: The baseline photographs and the photomontages should, unless otherwise directed by ERA, satisfy the following:

- (a) The location of each viewpoint should be shown on a map that also depicts the viewshed for the proposed site as described above. The visual angle of the photograph should also be indicated and should not be greater than 50°. Stitched photos that illustrate the field of vision towards the site from each viewpoint are acceptable as long as they are additional to the 50-degree photograph.
- (b) The photographs and photomontages submitted should:
 - Be at least A3 in size. Strips which are A3 in width but not in length are not appropriate except as supplementary illustrative material;
 - Include the date and time at which the photo was taken;
 - Be of good quality, with faithful reproduction approximating as much as reasonably possible what would normally be visible to the naked eye. The photos should be taken in good weather, and should be taken at least 2 hours after sunrise and 2 hours before sunset. Colours should not be digitally or otherwise manipulated. As a guideline, 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 may be required 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 should be duly documented; and
 - Ensure that all additional/replacement structures and features depicted in the photomontages have a scale which proportionately tallies with the existing nearby features.
- (c) Wherever relevant, the photomontage(s) should cover the following scenarios:
 - The development without the proposed landscaping scheme, representing the worst-case scenario;
 - The development complete with the proposed landscaping scheme as it is expected to look when the trees reach maturity, also providing an indicative timeframe as to when such maturity is expected to be attained; and
 - (Where relevant in relation to impact of nocturnal lighting) the development and its ancillary lighting as it would appear during nighttime.

Reference should also be made to the *Guidelines for Landscape and Visual Impact Assessment (The Landscape Institute & IEMA)*, as relevant.

3.8 Other relevant environmental aspects and features

Other relevant environmental features or considerations not identified in the preceding sections should also be identified and described, as relevant.

4. ASSESSMENT OF ENVIRONMENTAL IMPACTS AND ENVIRONMENTAL RISKS

All likely significant effects and risks posed by the proposed project on the environment during all relevant phases (including construction, post-construction and decommissioning) should be assessed in detail, taking into account

the information emerging from Sections 1, 2 and 3 above. Apart from considering the project on its own merits (*i.e.* if taken in isolation), the assessment should also take into account the wider surrounding context and should consider the limitations and effects that the surrounding environmental constraints, features and dynamics may exert on the proposed development, thereby identifying any incompatibilities, conflicts, interferences or other relevant implications that may arise if the project is implemented.

In this regard, the assessment should address the following aspects, as applicable for any category of effects or for the overall evaluation of environmental impact, addressing the worst-case scenario wherever relevant:

1. An exhaustive identification and description of the envisaged impacts;
2. The magnitude, severity and significance of the impacts;
3. The geographical extent/range and physical distribution of the impacts, in relation to: site coverage; the features located in the site surroundings; whether the impacts are short-, medium- or long-range; and any transboundary impacts (*i.e.* impacts affecting other countries);
4. The timing and duration of the impacts (whether the impact is temporary or permanent; short-, medium- or long-term; and reasonable quantification of timeframes);
5. Whether the impacts are reversible or irreversible (including the degree of reversibility in practice and a clear identification of any conditions, assumptions and pre-requisites for reversibility);
6. A comprehensive coverage of direct, indirect, secondary and cumulative impacts, including:
 - interactions (*e.g.* summative, synergistic, antagonistic, and vicious-cycle effects) between impacts;
 - interactions or interference with natural or anthropogenic processes and dynamics;
 - cumulation of the project and its effects with other past, present or reasonably foreseeable developments, activities and land uses and with other relevant baseline situations; and
 - wider impacts and environmental implications arising from consequent demands, implications and commitments associated with the project (including: displacement of existing uses; new or increased pressures on the environment in the surroundings of the project, including pressures which may be exacerbated by the proposal but of which effects may go beyond the area of influence; and impacts of any additional interventions likely to be triggered or necessitated by situations created, induced or exacerbated by the project);
7. Whether the impacts are adverse, neutral or beneficial;
8. The sensitivity and resilience of resources, environmental features and receptors vis-à-vis the impacts;
9. Implications and conflicts vis-à-vis environmentally-relevant plans, policies and regulations;
10. The probability of the impacts occurring; and
11. The techniques, methods, calculations and assumptions used in the analyses and predictions, and the confidence level/limits and uncertainties vis-à-vis impact prediction.

The impacts that need to be addressed are detailed further in the sub-sections below.

4.1 Effects on the environmental aspects identified in Section 3

The assessment should thoroughly identify and evaluate the impacts and implications of the project on all the relevant environmental aspects identified in Section 3 above, also taking into account the various considerations outlined in the respective sections.

With regards to Section 3.2 and 3.3 above, the ecological status of the area in question is to be evaluated, taking into consideration the definition of status by relevant EU Policy, and assessing the extent to which the project may potentially cause deterioration in status or compromise the achievement of good status in line with Article 4(7) of the EU Water Framework Directive.

4.2 Impacts related to Climate Change and Climate Change Adaptation

The assessment should address the following aspects, as relevant:

1. The contribution of the project to greenhouse gas (GHG) emissions and climate change, including the impacts of the proposal on carbon sinks;
2. The implications of climate change on the proposal, including:
 - (i) The aspects/elements of the project that are likely to be affected by changes or variability in climate-related parameters (*e.g.* temperature, humidity, weather patterns, sea level, etc.);

- (ii) The potential impacts that such changes may have on the proposal, including any possible impacts resulting from changes to multiple parameters; and
- (iii) The adaptability of the project and its components vis-à-vis the relevant climate change parameters and trends.

4.3 Environmental risk

The assessment should also address, in sufficient detail, any relevant environmental risk (including scenarios such as flooding, severe weather conditions, major spillages, contamination, etc.) likely to result in environmental damage or deterioration. The range of accident scenarios considered should exhaustively cover, as relevant:

1. one-time risks (e.g. during construction or decommissioning works);
2. recurrent risks during post-construction phase; and
3. risks associated with extreme events (e.g. effect of earthquakes, extreme weather, or natural disasters on the project).

The assessment should include, as relevant: a quantification of the risk magnitude and probability; and risk analysis vis-à-vis any hazardous materials stored, handled, or generated on site or transported to/from the site.

4.4 Effects on Human Populations resulting from impacts on the environment

This assessment should take into consideration the ecosystem services of the present natural environment and its ecosystem functions that contribute directly or indirectly to human well-being, and identify any impacts of the development on such services.

The assessment should also identify any impacts of the development on the surrounding and visiting population (e.g. effects on public health or on socio-economic considerations), that may result from impacts on the environment. In the case of health-related effects, reference should be made to published epidemiological and other studies, as relevant, and the views of the Environmental Health Directorate should be sought.

4.5 Other Environmental Effects

Any other environmental effects deemed relevant to the project but not fitting within any of the above sections should also be identified and assessed.

5. REQUIRED MEASURES, IDENTIFICATION OF RESIDUAL IMPACTS, AND MONITORING PROGRAMME

5.1 Mitigation Measures

This should include a clear identification and explanation of the measures envisaged to prevent, eliminate, reduce or offset (as relevant) the identified significant adverse effects of the project during all relevant phases including construction, post-construction and decommissioning [see **Section 1.2.3** above].

As a general rule, mitigation measures for construction-phase impacts should be packaged as a holistic Construction Management Plan (CMP). Whilst the detailed workings of the CMP may need to be devised at a later stage (e.g. after the final design of the project has been approved and/or after a contractor has been appointed), the key parameters that the CMP must adhere to for proper mitigation need to be identified in the EIA. Broadly similar considerations also apply vis-à-vis post-construction-phase impacts and decommissioning-phase impacts [see **Section 5.4** below], where relevant.

Mitigation measures for accident/risk scenarios should be packaged as a holistic plan that includes the integration of failsafe systems into the project design as well as well-defined contingency measures.

The recommended measures should be feasible, realistically implementable to the required standards and in a timely manner, effective and reliable, and reasonably exhaustive. They should not be dependent on factors that are beyond the developer's and ERA's control or which would be difficult to monitor, implement or enforce. The actual scope for, and feasibility of, effective prevention or mitigation should also be clearly indicated, also identifying all potentially important pre-requisites, conditionalities and side-effects.

5.2 Residual Impacts

Any residual impacts [*i.e.* impacts that cannot be effectively mitigated, or can only be partly mitigated, or which are expected to remain or recur again following exhaustive implementation of mitigation measures] should also be clearly identified, quantified and presented in a tabular format.

5.3 Additional Measures

Compensatory measures (*i.e.* measures intended to offset, in whole or in part, the residual impacts) should also be identified, as reasonably relevant. Such measures should be not considered as an acceptable substitute to impact avoidance or mitigation.

If the assessment also identifies beneficial impacts on the environment, measures to maximise the environmental benefit should also be identified.

In both instances, the same practical considerations as indicated vis-à-vis mitigation measures should also apply.

5.4 Decommissioning Plan

A decommissioning plan (DP) should also be proposed to address the following circumstances, as relevant:

1. Removal of any temporary or defined-lifetime development (or of any structures, infrastructure or land use required temporarily in connection with it) upon the expiry of their permitted duration; and
2. Removal of the proposed structures of the development (or of any secondary developments, infrastructure or land use ancillary to it) in the event of redundancy, serious default from critical mitigation measures, or other overriding situations that may emerge in future.

The DP should also include, as relevant, a phasing-out plan, proposals for site remediation or decontamination, and methodological guidance on site reinstatement or appropriate after-use.

5.5 Monitoring Programme

A realistic and enforceable programme for effective monitoring of those works envisaged to have an adverse or uncertain impact. The monitoring programme should include:

1. Details regarding type and frequency of monitoring and reporting, including spot checks;
2. The parameters that will be monitored, their units of measurement, the monitoring indicators to be used; and standard analytical methods in line with relevant EU policy;
3. An effective indication of the required action to address any exceedances, risks, mitigation failures or non-compliances for each monitoring parameter;
4. An evaluation of forecasts, predictions and measures identified in the EIA; and
5. An indication of the nature and extent of any additional investigations (including EIAs or ad hoc detailed investigations, if relevant) that may be required in the event of any contingencies, unanticipated impacts, or impacts of larger magnitude or extent than predicted.

The programme should address all relevant stages, as follows:

- (a) Where relevant, monitoring of preliminary on-site investigations that may entail significant disturbance or damage to site features (*e.g.* excavations, sampling, or any works that require prior site clearance or any significant destructive sampling);

[Note: Official written consent from the competent authorities (e.g. Superintendence of Cultural Heritage) may also be required for such interventions.]

- (b) Monitoring of the construction phase, including the situation before initiation of works, during appropriate stages of progress, and after completion of works;
- (c) Monitoring of the post-construction phase; and
- (d) Where relevant, monitoring of the decommissioning phase, including the situation before initiation of works, during appropriate stages of progress, and after completion of works.

5.6 Identification of required authorisations

The assessment should also identify all environmentally-relevant permits, licences, clearances and authorisations (other than the development permit to which this EIA is ancillary) which must be obtained by the applicant in order to effectively implement the project if development permission is granted. Any uncertainty, as to whether any of these pre-requisites is applicable to the project, should be clearly stated.

Note on Sections 5.1 to 5.6 above:

The expected effects, the proposed measures, the residual impacts, the proposed monitoring etc. should also be summarised in a user-friendly itemised table that enables the reader to easily relate the various aspects to each other. An indicative specimen table is attached in **Appendix 3**.

ENVIRONMENTAL

Signed Declaration: Identification of consultants and contributors

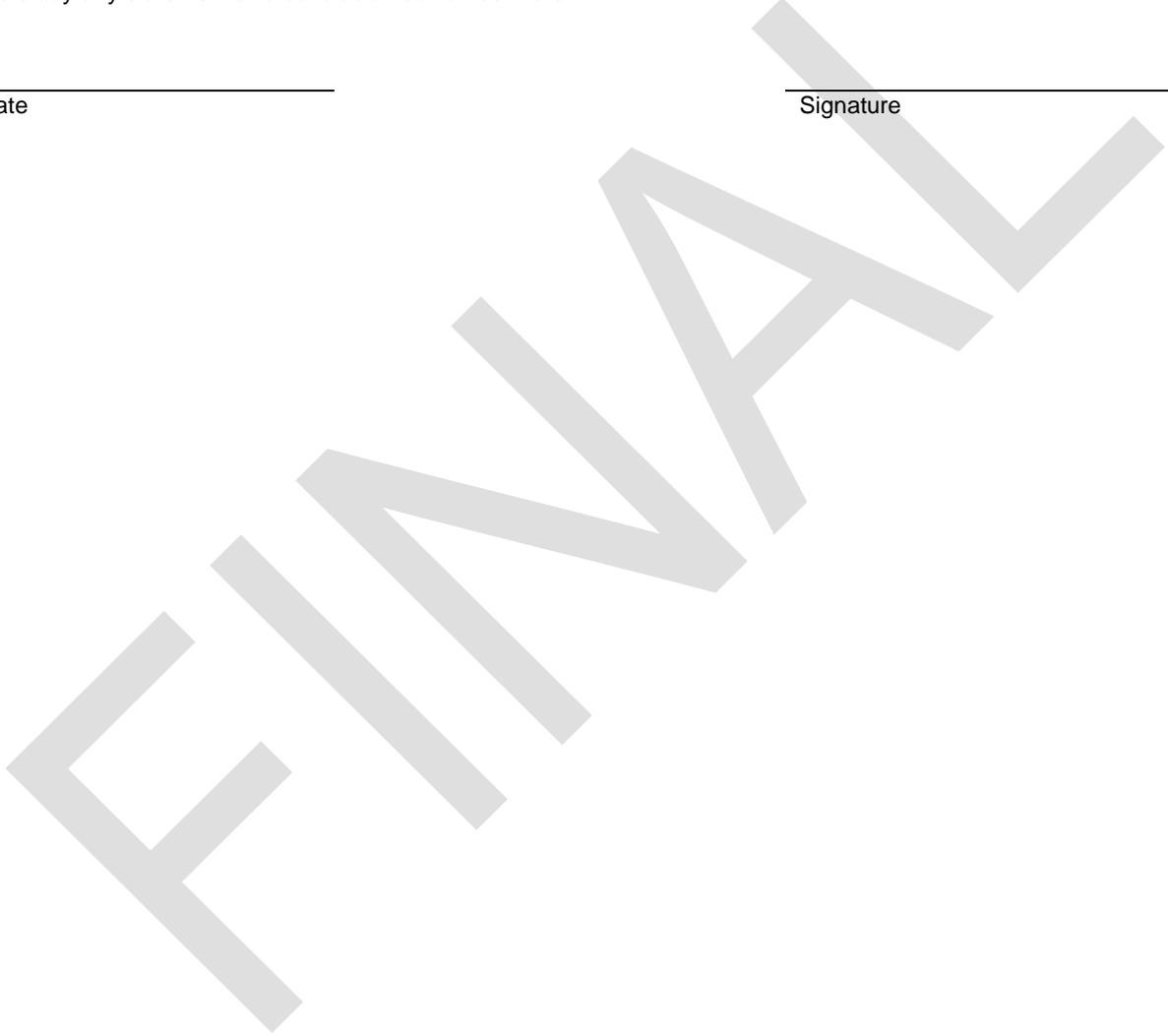
This declaration is to be submitted with each environmental survey report forming part of the EIA.

Attn: Director of Environment and Resources (ERA).

I _____, who carried out the study (or part thereof) on
_____ for the EIA for the proposed
_____, hereby declare that I take responsibility for
the study any statement and conclusion contained therein.

Date

Signature



Signed Declaration: Conflict of interest

Signed declaration in accordance with sub-regulation 17(3):

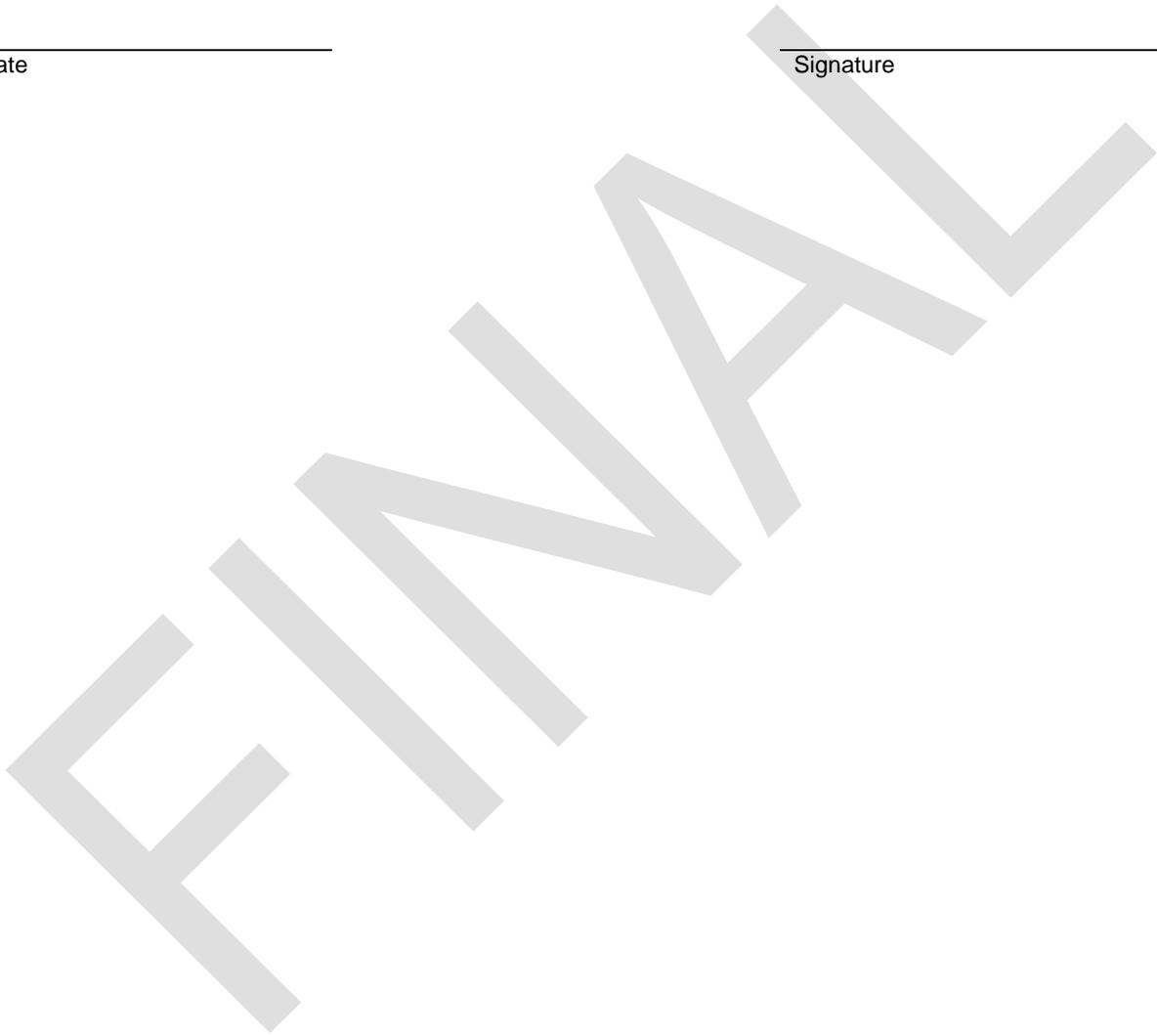
This declaration is to be submitted with each environmental survey report forming part of the EIA.

Attn: Director of Environment and Resources (ERA).

I, _____, hereby declare that, I have no personal or financial interest in the proposed development. 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 proposed development.

Date

Signature



1.0 Preamble

The proposed project would involve development over an extensive area and may lead to intensification of activity over a larger area. Potential impacts may occur within the footprint of the project, in the immediate environs, and along access routes to the site. Potential impacts may include direct and immediate material impacts, as well as subsequent impacts that might arise from the modification of the existing situation.

2.0 Scope and Definitions of the EIA

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

- 2.1 The study area shall include the total footprint of the proposed development.
- 2.2 In the context of this particular application, cultural heritage considerations may include:
- Features of archaeological value and potential;
 - Military or civil architecture from the Knights period to British period;
 - Vernacular structures; and
 - Field systems and agricultural features such as irrigation systems.

The above cultural heritage definitions and considerations are not to be considered as exhaustive. The EIA must consider all other forms of cultural heritage, both known and unknown.

- 2.3 The Environmental Impact assessment will:
- Describe the Cultural Heritage assets within the study area;
 - Analyse the cultural heritage features within the context of the cultural landscape;
 - Assess the physical, spatial and visual impacts of the proposed development on the cultural heritage assets; and
 - Propose corrective measures for the protection of the cultural resources.

3.0 Methodology

In quantifying the cultural heritage assets within the study area, and assessing the impacts of the proposed development, the EIA will undertake:

- Description and assessment of the property;
- Desktop and archival research limited to the study area;
- Fieldwork and research, including "field walking", topographic survey and remote sensing as may be necessary within the site. All fieldwork has to be authorised by the Superintendence of Cultural Heritage as defined below under point 4;
- Consultations with any relevant bodies, including the Superintendence of Cultural Heritage, Heritage Malta, the University of Malta, NGOs and Local Councils;
- Compilation of an inventory of the cultural heritage assets identified within the study area. The features of cultural heritage are to be described and plotted with grid references, on Data Capture Sheets, the design of which should be approved in advance by the Superintendence of Cultural Heritage. The Data Capture Sheets will be presented as an appendix to the EIA. The analysis of the features will be included in the main report; and
- A cultural heritage Risk Assessment Map examining the various impacts of the proposed project is to be included in the EIA.

4.0 Authorisation by the Superintendence of Cultural Heritage

As per Cultural Heritage Act 2002, any form of investigation or prospection required for the identification of cultural heritage (including excavation, field walking, topographic survey and remote sensing) may only be undertaken by the Superintendence of Cultural Heritage or with its written approval.

PROTECTIVE INVENTORY OF THE MALTESE CULTURAL HERITAGE HERITAGE DATA CAPTURE SHEET						Ref. No.
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						
Negative No.		Film No.				
Present Utilization						
Existing Legal Protection				GN. Number		GN. Date
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:	Revised by:
Checked by:	Checked by:
Date:	Date:

