



**PA 05396/09: PROPOSED INTERCONNECTOR TERMINAL STATION AT
MAGHTAB.**

&

**PA 05584/09: EXCAVATION AND CONSTRUCTION OF TUNNEL FROM
PROPOSED TUNNEL LEADING ST. ANDREWS DC TO PROPOSED
MAGHTAB TERMINAL.**

TERMS OF REFERENCE

FOR THE PREPARATION OF AN

ENVIRONMENTAL PLANNING STATEMENT

FINAL VERSION
28th October, 2010

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

**PA 05396/09: INTERCONNECTOR TERMINAL STATION AT MAGHTAB, INTERCONNECTOR
TERMINAL STATION, WIED TA' KIELI, NAXXAR.**

&

**PA 05584/09: EXCAVATION AND CONSTRUCTION OF TUNNEL FROM PROPOSED TUNNEL
LEADING ST. ANDREWS DC TO PROPOSED MAGHTAB TERMINAL, SITE FROM TRIQ TAL-
FRANĊIŽI, SWIEQI PASSING U/G TO, TRIQ IL-MAGHTAB, L/O NAXXAR.**

-
- 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 EPS is to document clearly and impartially the impacts of the proposal, the proposed mitigation measures and impact significance. In accordance with best practice, this shall be carried with 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.
- All requirements set out in these terms of reference must be complied with. If there are any sections 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 3:** Difficulties, including technical difficulties and lack of information, encountered by the consultants in compiling the required information shall be made clear. 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 4:** A list of all permits, licenses and other forms of authorization (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 EPS. If consultants are uncertain whether an authorisation is necessary, they shall so indicate in the EPS.
- Note 5:** Experts contributing to the EIA should be specifically asked to consider impact interactions and to communicate information between each other.
- Note 6:** The relevance of Maltese Legislation and Maltese Planning Policy (notably the Structure Plan for the Maltese Islands and Local Plans for the surrounding areas), 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, marine protection,

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.

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.

Note 7: Following the review of the EPS, the MEPA usually submits comments to the EIA consultants for further clarifications. Once the consultants respond to these comments to the satisfaction of the MEPA, a second draft of the EPS, that includes these clarifications, may be prepared. The MEPA will only accept an Addendum containing these clarifications if the clarifications are few or where the EPS is still easy to follow with the Addendum.

Note 8: Any requirement for confidentiality of any section of the EPS must be justified and a formal request in this regard must be submitted to the MEPA. Should the MEPA grant confidentiality for specified sections, alternate material that excludes confidential details must be provided for public consultation

Note 9: The content of the EPS should be supported by clear and faithfully representative maps, plans, diagrams, photographs and photomontages,

An Environmental Planning Statement (EPS) is to be prepared for the proposed developments as required by the Environmental Impact Assessment Regulations, 2007 (L.N. 114 of 2007, Schedule IA, Category 2.6.2.3).

The proposal which these Terms of Reference address is divided into the following distinct projects:

1. Cable tunnel between the Kappara DC and the Magħtab Interconnector Station (PA 5584/09); and
2. The Magħtab Interconnector Station and the cable to the landing point (PA 5396/09)

The EPS must be divided appropriately in order to address the impacts of each project separately and the project as a whole. To this effect, the EPS shall be divided as follows:

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;

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 EPS in .pdf format, which includes all the above, including any plans, maps, photographs, graphs, and any other contents of graphical/visual nature contained within the EPS. Once the EPS has been certified a **digital copy of the certified document** is to be submitted to MEPA.

v. Conformity with sub-Regulations 28 and 29 of the EIA Regulations (refer to Appendix 4 of these Terms of Reference).

CONTENTS

Section 1: General Coordinated Report	4
1.0 Description of the Proposed Development.....	4
1.1 Justification for the Proposal	4
1.2 A Description of the Physical Characteristics and Features of the Project including its Constructional Features and Production Processes	4
1.3 A Description of the Operational Features of the Project	5
1.4 Waste Management.....	5
2.0 Consideration of Alternatives.....	6
Section 2: Project Component 1 - Cable tunnel between the Kappara DC and the Maghtab Interconnector Station (PA 5584/09)	7
1.0 A description of the Proposed Site and its Surroundings.....	7
2.0 Assessment of Environmental Impacts and Risks of the Proposed Development	7
3.0 Design of Mitigation Measures, Identification of Residual Impacts and Monitoring	7
Section 3: Project Component 2 - The Maghtab Interconnector Station and the cable to the landing point (PA 5396/09).....	8
1.0 A description of the Proposed Site and its Surroundings.....	8
2.0 Assessment of Environmental Impacts and Risks of the Proposed Development	8
3.0 Design of Mitigation Measures, Identification of Residual Impacts and Monitoring	8
Appendix 1: General Terms of Reference	9
1.0 A description of the Proposed Site and its Surroundings.....	9
1.1 Land Use and Sea Use.....	9
1.2 Geology, Geomorphology, Hydrogeology and Hydrology	9
1.3 Terrestrial Ecology.....	9
1.4 Landscape Character and Visual Amenity	10
1.5 Noise and Vibration	10
1.6 Archaeological Sites and Historical/Cultural features.....	10
1.7 Air Quality	10
1.8 Infrastructure and Utilities	10
1.9 Any other relevant environmental features.....	11
2.0 Assessment of environmental impacts and risks of the proposed development	11
2.1 Effects on Land and Sea Uses	11
2.2 Effects on Terrestrial Ecology.....	11
2.3 Effects on Geology, Geomorphology, Palaeontology, Hydrogeology and Hydrology	12
2.4 Effects on Visual and Landscape Character	12
2.5 Effects of Noise and Vibrations	13
2.6 Effects on Air Quality	13
2.7 Effects on Architectural, Archaeological and Other Human Artefacts of Historical and/or Cultural Value, and/or Scheduled Property	13
2.8 Effects on Utilities and Infrastructure	13
2.9 Effects on Public Health.....	13
2.10 Cumulative Effects.....	13
2.11 Secondary impacts	14
2.12 Interaction between any of the foregoing	14
2.13 Other environmental effects	14
3.0 Design of Mitigation Measures, Identification of Residual Impacts and Monitoring	14
3.1 Mitigation measures.....	14
3.2 Residual impacts	14
3.3 Monitoring Framework	14
Appendix 2: Terms of Reference for the Cultural Heritage Assessment.....	15
Appendix 3: Sub-Regulations 28 and 29 and the EIA Regulations.....	19

Section 1: General Coordinated Report

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 proposed development and all ancillary facilities connected with the project. Where relevant this section should include maps, plans and diagrams.

1.1 Justification for the Proposal

1.1.1 Objectives

A description shall be provided 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.

1.1.2 Demand

This shall be accompanied by a description of the **current and expected demand** for the proposal. The study shall explain how the proposal (in terms of size/ volume and nature) will address this demand.

1.1.3 Future developments

Future developments/needs, if any, of the development shall also be addressed and assessed.

1.2 A Description of the Physical Characteristics and Features of the Project including its Constructional Features and Production Processes

1.2.1 Description of the proposed development including details of the proposed site layout showing the design (size, area, height, volume [*scale 1:2500*] layout [to include hard and soft landscaping (*scale 1:2500*)], method of construction, location of all buildings and proposed access arrangements.

1.2.2 Land use requirements for construction and operation, and site details should be identified, including land take required for facilities ancillary to the proposed development, site preparation works, excavations 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.

1.2.3 Proposed project management arrangements during excavation, construction and operation phases. These should include a description of:

- expected duration of all phases;
- depth of excavation and volumes, including type of material to be excavated;
- types and quantities of raw materials and primary resources including water, energy, stone and other resources to be consumed;
- measures to reduce consumption of primary resources; and,
- season, frequency and duration of interventions on the land.

1.2.4 Identification of the routes that construction vehicles and vessels will use to and from the site (including the stability and state of the roads, width and gradient, turning circles, etc, if such roads shall be utilized for transport of components). The expected width of road required, type of surfacing, turning circles and any changes expected to be carried out to accommodate the required vehicles. The number and size of construction vehicles and vessels and their respective frequency of use.

1.2.5 Facilities for the on site servicing of equipment, vehicles and other machinery.

1.2.6 Services and utilities including power.

1.2.7 Water storage, runoff and water management including reservoirs.

1.2.8 Given that the proposal may, directly or indirectly contribute to Greenhouse Gas (GHG) emissions², the following should be submitted:

- an estimate of the expected annual and total GHG emissions during the construction, operation and decommissioning phases of the proposal;

² Note: Given the absence of local guidelines on climate change it is recommended to use 'Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners' prepared by the Canadian Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment (available on http://www.ceaa-acee.gc.ca/012/014/climatechange_e.pdf)

- the proposal's contribution to total national GHG emission on an annual basis; and,
- the intensity of GHG emissions.

1.3 A Description of the Operational Features of the Project

- 1.3.1 Residues and emissions by source, type, quantity, composition and concentration. These should include estimated noise levels within the development and at the site boundary clearly indicating the time during which noise sources will be active; distribution of dust, if any and construction of the development, on site disposals and from waste transport, discharges to water (such as air conditioning units) and emissions to air, if any, vibration and light sources.
- 1.3.2 Services including water for the irrigation of landscaping and other services such as potable water supplies to the facility (including source of freshwater).
- 1.3.3 Water storage, runoff water management (including facilities for storage and eventual use of storm water runoff) should also be described.
- 1.3.4 Power (including the connected load in kW or kVA and the overall power factor).

1.4 Waste Management

This section is aimed at assessing the waste management implications that are likely to arise from the proposed project, as well as proposing solutions how such waste shall be managed using the Best Practicable Environmental Options available. Every possible effort shall be made to minimise the waste generated and to divert waste to reuse or recycling rather than disposal. This section shall address the following requirements:

- 1.4.1 The assessment is to cover all wastes generated, including wastes generated from ancillary facilities required on site and wastes which may arise from accidental spillages and leakages, and shall be subdivided into the following project phases:
- Construction: this phase shall also address the repair and resurfacing of the access road and the cleanup of the costal area (including details regards the provision of sanitary facilities for on-site personnel, and its subsequent implications on waste streams);
 - Operation: waste management infrastructure required during the operational stage (including details regards the provision of sanitary facilities for on-site personnel, and its subsequent implications on waste streams).

Further details required as to whether the high voltage switchgear will utilise Sulphur Hexafluoride (SF6) as a cooling agent, and should this be the case volumes of SF6 are to be provided for every piece of equipment, also detailing the total volume expected to be used on site.

- 1.4.2 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 Schedule 1 and the corresponding H code (if applicable) as per Schedule 2 of the Waste Management (Permit and Control) Regulations, L.N. 337 of 2001;
 - The projected quantities for each type of waste (details of assumptions made and the methodologies adopted for achieving such estimates should also be included);
 - 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:

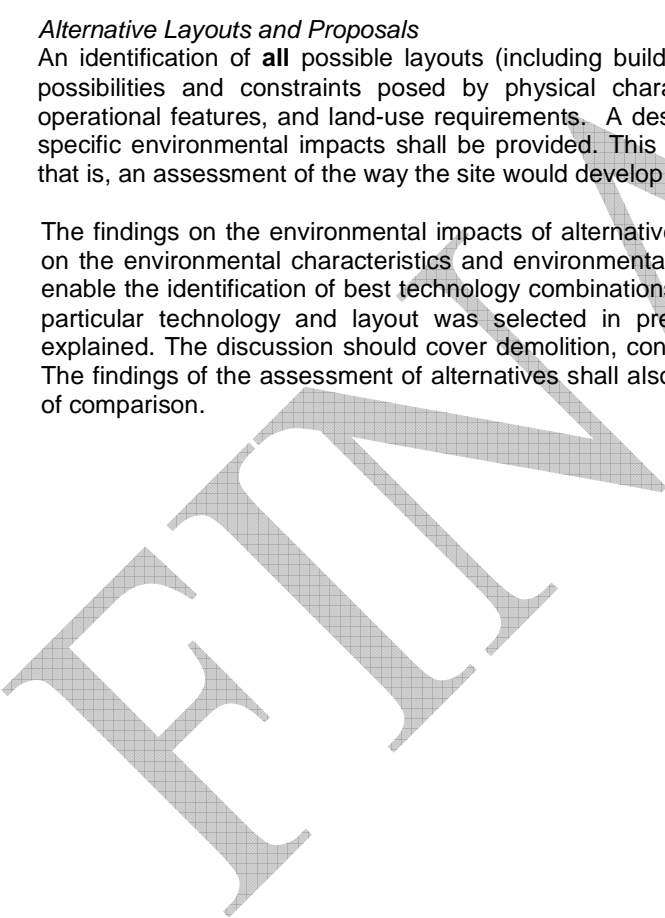
Phase	Activity	Type of Waste	Relevant Codes	Estimated Waste Quantities	Waste Infrastructure on site	Waste Management Offsite
Site clearance & demolition						
Excavation						
Construction						

Operation						
Ancillary facilities						

- 1.4.3 Inclusion of 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 CONSIDERATION OF ALTERNATIVES

- 2.1 *Alternative Technologies*
An assessment of the alternative technologies (including during construction and operation) should be considered. 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. The information shall be presented in tabular format indicating technologies and associated environmental impacts, in sufficient detail.
- 2.2 *Alternative Layouts and Proposals*
An identification of **all** possible layouts (including building heights) and proposals based upon the possibilities and constraints posed by physical characteristics and features of the project, its operational features, and land-use requirements. A description of these layouts/proposals and site-specific environmental impacts shall be provided. 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.
- 2.3 The findings on the environmental impacts of alternative technologies shall be combined with those on the environmental characteristics and environmental impacts in the alternative layouts. This will enable the identification of best technology combinations. The technical and planning reasons why a particular technology and layout was selected in preference to all the others must be clearly explained. The discussion should cover demolition, construction, operation and distribution aspects. The findings of the assessment of alternatives shall also be summarised in a tabular matrix for ease of comparison.



Section 2: Project Component 1 - Cable tunnel between the Kappara DC and the Maghtab Interconnector Station (PA 5584/09)

The following sections must be included in the EPS. Refer to Appendix 1 for more details.

1.0 A DESCRIPTION OF THE PROPOSED SITE AND ITS SURROUNDINGS

The following section shall comprise the baseline studies for a number of issues with respect to the proposed development. The studies shall consider the proposed tunnel between Kappara DC and the Maghtab Interconnector, any proposed works therein, and land uses located at ground level. The studies shall be carried out on the following:

- i. Land and sea uses (including archaeological sites and cultural heritage features);
- ii. Geology, geomorphology, hydrogeology and hydrology;
- iii. Terrestrial ecology;
- iv. Noise and vibration;
- v. Infrastructure and utilities;
- vi. Landscape, topography and visual assessment; and,
- vii. Any other relevant environmental features.

2.0 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND RISKS OF THE PROPOSED DEVELOPMENT

The impacts may include:

- i. Effects on land and sea uses (including archaeological sites and cultural heritage features);
- ii. Effects on geology, geomorphology, hydrogeology and hydrology;
- iii. Effects on terrestrial ecology;
- iv. Effects on visual and landscape character;
- v. Effects of noise and vibrations;
- vi. Effects on architectural, archaeological and other human artefacts of historical and/or cultural value, and/or scheduled property
- vii. Effects on utilities and infrastructure;
- viii. Effects on air quality;
- ix. Effects on public health;
- x. Secondary impacts;
- xi. Other environmental effects, including cumulative effects; and,
- xii. Interaction between any of the foregoing.

3.0 DESIGN OF MITIGATION MEASURES, IDENTIFICATION OF RESIDUAL IMPACTS AND MONITORING

Section 3: Project Component 2 - The Maghtab Interconnector Station and the cable to the landing point (PA 5396/09)

The following sections must be included in the EPS. Refer to Appendix 1 for more details.

1.0 A DESCRIPTION OF THE PROPOSED SITE AND ITS SURROUNDINGS

The following section shall comprise the baseline studies for a number of issues with respect to the proposed development. The studies shall be carried out on the following:

- i. Land and sea uses;
- ii. Geology, geomorphology, hydrogeology and hydrology;
- iii. Terrestrial ecology;
- iv. Noise and vibration;
- v. Air quality;
- vi. Quality of the marine environment and currents;
- vii. Archaeology and cultural heritage features;
- viii. Infrastructure and utilities;
- ix. Landscape character and visual amenity; and
- x. Any other relevant environmental features.

2.0 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND RISKS OF THE PROPOSED DEVELOPMENT

The impacts may include:

- i. Effects on land uses;
- ii. Effects on geology, geomorphology, hydrogeology and hydrology;
- iii. Effects on terrestrial ecology;
- iv. Effects on visual and landscape character;
- v. Effects of noise and vibrations;
- vi. Effects on archaeology and cultural heritage features;
- vii. Effects on air quality;
- viii. Effects on public health;
- ix. Effects on the marine environment, including water quality;
- x. Secondary impacts;
- xi. Other environmental effects, including cumulative effects; and,
- xii. Interaction between any of the foregoing.

3.0 DESIGN OF MITIGATION MEASURES, IDENTIFICATION OF RESIDUAL IMPACTS AND MONITORING

Appendix 1: General Terms of Reference

1.0 A DESCRIPTION OF THE PROPOSED SITE AND ITS SURROUNDINGS

Note 10: This description is 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 must be approved by the Malta Environment and Planning Authority prior to commencement of the EIA.

The following section shall comprise the baseline studies for a number of issues with respect to the proposed development. The studies shall be carried out on the following:

1.1 Land Use and Sea Use

This should include settlements, workplaces, schools, places of worship, production, commercial, recreational, and other uses. Details including nature and magnitude, proximity to site etc. should be included. Details of cultural heritage features should also be included.

1.2 Geology, Geomorphology, Hydrogeology and Hydrology

A baseline study for these features shall be carried out. Details, baseline surveys and characterisation of sites' hydrological conditions should be provided. Baseline surveys on characteristics of aquifers including aquifer properties, sources of recharge of groundwater, pumping and abstraction, characteristics of watercourses including discharges and withdrawals, catchment areas and drainage patterns, run-off including volume and route taken by run-off.

Geo-Technical Survey

A geo-technical survey of the material to be excavated and rock mass forming the foundation of the proposed structure shall be submitted. A number of core samples shall be carried, the number and location of which shall be as approved by MEPA prior to carrying out of any *in situ* tests. Rock sampling and testing shall comply with the relevant BS Standards, including BS 5930:1999. This description shall extend to at least 3m below the deepest level of the proposed development (taking into consideration any facilities proposed underground). This section shall provide the information required for establishing the economic feasibility for the reuse of the excavated material (including any necessary studies to determine such feasibility).

1.3 Terrestrial Ecology

The ecological study should include:

- i. a full environmental description of the area, to include edaphic constraints, current land use and potential for development
- ii. a detailed survey with adequate maps, plans, diagrams, photographs of the:
 - a. biotopes/habitats types of the area on the basis of the Annex 1 and subtypes of the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive),
 - b. protected species, and any endangered, rare, unique, endemic or otherwise important species known or reported from the area in question;
- iii. details of all biotopes/habitat types, flora and fauna, wooded areas, valleys and other landscape and habitat features to be removed, retained, enhanced, supplemented or potentially affected, and measures for their protection must be described, with an emphasis on any protected areas, protected species, and any endangered, rare, unique, endemic¹ or otherwise important species and biotopes/habitat types known to be found in the locality.
- iv. the potential or expected impact of the proposed project on the features of ecological importance.

The study must also ensure adequate representation and assessment of the different habitat types/species present on site.

This section should particularly take into consideration the ecological impacts associated with the construction and maintenance works related to the proposed escape shaft, which is currently proposed along the upper limits of Wied id-Dis. A site selection exercise is required identifying a more accessible and less environmentally sensitive location.

1.4 Landscape Character and Visual Amenity

Landscape characterisation of the area and visual amenity of the area. 'Non-visual' aspects of the development should also be considered and include those impacts which reduce the possibility for the public to enjoy the landscape including emissions, noise, etc. Emphasis on any special features and protected areas should also be made.

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 further 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)*.

1.5 Noise and Vibration

Information on the prevailing background noise levels both in terms of frequency and intensity should be given. This baseline survey should follow parameters given in BS4142:1997. Locations for monitoring background noise should be chosen at ground level, bearing in mind the following:

- i. Other existing noise sources in the area, including traffic;
- ii. Other potential noise sources in the area, including new developments;
- iii. Sensitive receptors, residential areas, schools, hospitals, etc.;
- iv. Sensitive recreational areas in the vicinity; and
- v. Features that might shield noise, topographical, vegetation, etc.

These locations must be approved by the MEPA prior to commencement of the EIA.

1.6 Archaeological Sites and Historical/Cultural features

Architectural and historical heritage, and other cultural assets, such as elements of vernacular or rural architecture (e.g. rubble walls, huts, wells, irrigation channels, farmhouses etc.) making reference also to scheduled property. Refer to Appendix 3 for more detailed Terms of Reference.

1.7 Air Quality

This section shall clearly establish the current background levels of pollution, including dust (including PM10), and comparison to the limit values as specified in EU legislation. Details on prevailing wind and climate conditions shall also be included, amongst other relevant parameters.

A method statement shall be submitted to MEPA for approval, indicating the sampling points for the air-quality monitoring programme, one of which should be at the most sensitive receptor in the prevailing wind direction.

A traffic model (preferably DMRB or any other equivalent) shall also be used in order to estimate the effect on air quality of the increase in the traffic flow due to the project.

1.8 Infrastructure and Utilities

A comparative description of the current and proposed infrastructure and utilities available on site (including water supply, energy supply, sewerage, access routes, etc.) shall be included.

Special consideration in this instance should be made to the coordination of proposed works with the Coast Road upgrading project.

1.9 Any other relevant environmental features.

Should during the process of the EIA, any environmental feature not included above which needs to be studied be encountered, the consultant shall inform MEPA, justifying his/her reasoning.

2.0 ASSESSMENT OF ENVIRONMENTAL IMPACTS AND RISKS OF THE PROPOSED DEVELOPMENT

Note 11: All significant impacts of and risks posed by the proposed project **during construction and during operation**, should be assessed, given the environmental characteristics of the site outlined in Section 1 and 2 and the policies outlined in Section 3. A descriptive and quantitative analysis (including magnitudes and timing) of the impacts of the proposed development should be made, and presented in summary 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. Reversible or irreversible effects of the impact and extent or irreversibility as well as description of any associated conditions/assumptions for irreversibility;
- viii. Sensitivity of resources to impacts;
- ix. Probability of impact occurring;
- x. Confidence level/limits to impact prediction;
- xi. Scope of mitigation/enhancement; and
- xii. Residual impacts.

Worst case scenarios should be assessed wherever relevant.

The impacts may include:

2.1 Effects on Land and Sea Uses

Including the physical effect of the development on the local topography e.g. via earth-moving, soil stability and erosion; chemical emissions, deposits and waste.

This assessment shall first consider the proposed development in isolation and assess the impacts arising from the proposed development during both the construction stage and operational stage. 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.

2.2 Effects on Terrestrial Ecology

The assessment should consider the impact of the development on the status of the site with respect to ecological features and the ecological condition of species.

The assessment should thus include all the potential impacts of the entire project at all phases:

- loss of, damage to and alteration of habitats (including structures such as rubble walls) and species;
- the impact of noise, vibrations and dust generation on the ecologically important areas in question, as well as sensitive fauna such as birds, reptiles and small mammals (especially for PA5584/09); and
- the impact of contaminated run-off containing dust, cement or other materials on the water quality (groundwater quality and marine water quality).

2.3 Effects on Geology, Geomorphology, Palaeontology, Hydrogeology and Hydrology

This should address the palaeontological, geomorphological, and physiographic aspects. The assessment of significance of impacts (positive and negative) should also include:

- i. soil and coastal erosion;
- ii. geological stability / instability;
- iii. impacts on aquifers and water resources;
- iv. permanent and/or temporary changes to the hydrologic regime of watercourses which may traverse the site;
- v. permanent and/or temporary changes to the hydrogeological regime of site including changes to the mean sea level aquifer and its recharge;
- vi. pollution of run-off and watercourses;
- vii. permanent and/or temporary alterations to site's morphology and surroundings;
- viii. impacts on localised features such as caverns, dolines, infilled fissures, fault escarpments, localised erosional features and other features of geomorphological or palaeontological interest; and,
- ix. details of essential precautions that need to be taken.

If the impact assessment predicts potential hazards like slope instability or subsidence, a risk assessment should be carried out as relevant.

2.4 Effects on Visual and Landscape Character

The assessments shall have regard to the entire proposed development including all 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 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;
 - Include the date and time at which the photo 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.

2.5 Effects of Noise and Vibrations

This shall include an assessment of maximum noise levels expected to be generated, variations during the day and night and noise attenuation (the reduction in noise levels as a result of 'environmental' factors, e.g. mufflers at source, insulation of a building). The effects of noise and vibrations on the surrounding community and on on-site personnel, arising during the demolition, construction and the operation of the proposed development shall be assessed. The assessment should also consider road traffic associated with operations on the site. Noise-sensitive receptors should be identified and agreed with MEPA. It is recommended that BS4142:97 is used for the noise assessment and BS6472 (relating to human exposure to vibration) and BS7385 (covering the effects on buildings) is used when studying vibration.

2.6 Effects on Air Quality

Including emissions to air, both during construction and operation by source, type, quantity, composition and concentration and the distribution of each. This shall include dust, odours as well as chemical emissions due to machinery and/or associated activities during both construction and operation of the proposed development.

2.7 Effects on Architectural, Archaeological and Other Human Artefacts of Historical and/or Cultural Value, and/or Scheduled Property

Impacts of the proposal on the cultural heritage features of the area including preservation within the proper landscape context. Refer to Appendix 3 for detailed Terms of Reference.

2.8 Effects on Utilities and Infrastructure

Assessment of whether the current utilities (described in Section 2.6) are adequate to meet the demand of the proposed development or whether new provisions need to be supplied. If provision of new infrastructure (or upgrade of existing) is deemed necessary, associated construction works shall also be taken into consideration in the EIA.

The extent to which the project can be self-sufficient with regard to its energy and water needs is also to be assessed. This assessment shall identify the processes or features of the proposed development and ancillary facilities which consume energy/water and identify possible measures to minimise the energy / water use necessary for their operation. This should include the efficient use of energy and water, collection of rain and storm water for reuse, reuse of treated wastewater/sewage, technologies that reduce energy consumption and the integration of alternative energy sources. Alternatives in terms of design, fabric and orientation of the buildings should also be explored and assessed.

2.9 Effects on Public Health

This shall assess the effects on the health of both on-site personnel and of the population within the relevant area of influence, and this with special reference to electromagnetic radiation effects resulting from the proposed high voltage installation, and the disturbance and proliferation of varmints. Reference should be made to published epidemiological and other studies, where relevant.

2.10 Cumulative Effects

This section shall refer to all the potential impacts likely to arise from all the aspects of the development (referred to in the following sections) and shall assess:

- the effects resulting from the **interaction of separate effects** listed as well as any other relevant impacts; and
- the impacts of the project viewed in terms of the other projects (i.e., not in isolation) within this proposal and other national projects, including existing and proposed³.

³ European Commission, May 1999. Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions, <http://ec.europa.eu/environment/eia/eia-studies-and-reports/guidel.pdf>.

The effects of climate change on the proposal shall be assessed and whether the proposal caters for any changes envisaged to occur through climate change.

2.11 Secondary impacts

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

2.12 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.

2.13 Other environmental effects

Other environmental effects other than those identified in Sections 2.1 – 2.12 shall be described and their impacts assessed.

3.0 DESIGN OF MITIGATION MEASURES, IDENTIFICATION OF RESIDUAL IMPACTS AND MONITORING

3.1 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.

3.2 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.

3.3 Monitoring Framework

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 program must be proposed at different stages: before, during and after construction. Details regarding type of and frequency of monitoring must also be given. This program shall include an audit and evaluation of forecasts, predictions and mitigation measures made in the EIA.

Appendix 2: Terms of Reference for the Cultural Heritage Assessment

1. Objectives

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

Identify, document and present all relevant information about:

- i. Cultural heritage assets within the area of study;
- ii. To describe and analyse the cultural landscape;
- iii. Assess the cultural heritage significance of each feature and of the area of study;
- iv. Propose statutory and physical protection of the individual features and of the site; and
- v. 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 include:

- a) the footprint of the proposed underground tunnel; and
- b) (i) 50 metre radius around the entry and exit of the tunnel
(ii) 25 metre radius around trenching shafts and other surface works.

3. Contents

3.1. Studies and Surveys

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.

Site Survey

A surface visual survey within the area of study shall:

- a. Identify and record surface features, also noting their condition. An attempt shall be made to describe typologies of cultural features, including rubble walls. 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 Superintendence of Cultural Heritage.

Recording Specifications

Relevant information for each feature shall be presented data cards as supplied by the MEPA (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. The impacts may include:

- a. Visual impact on the cultural landscape; and
- b. Impact on the heritage assets and archaeological remains (whether on the surface or buried).

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 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.

MALTA ENVIRONMENT & PLANNING AUTHORITY PTOTECTIVE 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						
Neg. 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: Checked by: Date:	Revised by: Checked by: Date:

Appendix 3: Sub-Regulations 28 and 29 and the EIA Regulations.

Environmental Impact Assessment 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 EPS for PA 05396/09 and PA 05584/09 for the proposed Interconnector Terminal Station At Magħtab, and the Excavation and Construction of a Tunnel from Proposed Tunnel leading St. Andrews DC to Proposed Magħtab Terminal, hereby declare that such study was solely carried out by me and take responsibility for any statement and conclusion contained therein.

Date

Signature

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

Regulation 29
Conflict of Interest (extract from the EIA Regulations)

29. (1) In the interests 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, 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 for PA 05396/09 and PA 05584/09 for the proposed Interconnector Terminal Station At Magħtab, and the Excavation and Construction of a Tunnel from Proposed Tunnel leading St. Andrews DC to Proposed Magħtab Terminal.
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.
