



**PA 02767/16**

**REDEVELOPMENT OF AN EXISTING DERELICT HOTEL AT TA' KALANKA,  
DELIMARA**

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## **ENVIRONMENTAL PLANNING STATEMENT**



**Version 1: January 2017**



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## Quality Assurance

### Redevelopment of Existing Derelict Hotel Environmental Planning Statement January 2017

Report for: **Delimara Bay Hotel Ltd**

### Revision Schedule

Rev	Date	Details	Written by:	Checked by:	Approved by:
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## CONSULTANTS' DECLARATION

---

Adi Associates Environmental Consultants Ltd, Malta, prepared this Environmental Planning Statement (EPS).

The *Environmental Impact Assessment Regulations, 2007*, Sections 28(3) and 29(1) require each of the Consultants to declare that they carried out the study or part thereof, that they take responsibility for statements and conclusions contained in their reports or part thereof, and that they have no personal or financial interest in the proposed development.

We declare that Adi Associates Environmental Consultants Ltd has no personal or financial interest in the proposed development.

Adi Associates Environmental Consultants Ltd has coordinated this EPS and has provided technical input to specific parts of the Statement as identified in the previous page.

Adi Associates Environmental Consultants Ltd takes responsibility for statements and conclusions contained in the parts of the report prepared directly by its staff. However, statements made and conclusions drawn by the independent sub-consultants who prepared the baseline studies reproduced in the Technical Appendices and which informed the Environmental Statement remain the responsibility of the individual sub-consultants.



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## APPENDIX

### Appendix I: A3 Photographs



## **I. INTRODUCTION**

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- I.1. This Environmental Planning Statement (EPS) was commissioned by Delimara Bay Hotel Ltd, hereinafter referred to as ‘the Applicant’.
- I.2. The Applicant proposes to redevelop the former Delimara Bay Hotel into a boutique hotel comprising 13 luxury suites, three superior deluxe suites and one presidential suite; amenities will include a lounge, bar and restaurant, gymnasium, spa, and an outdoor pool. It is also proposed to provide beach facilities (for public use) at Kalanka Bay, including public toilets and showers, a first aid room, storage room and waste separation facilities. Hereafter in this EPS, the proposed development is referred to as ‘the Scheme’. **Chapter 3** provides a detailed description of the Scheme.
- I.3. A Full Development Permit (FDP) application was submitted to the former Malta Environment and Planning Authority (MEPA)<sup>1</sup> in September 2015 (TN 163702). Following the submission of a Project Description Statement (PDS) for the Scheme in February 2016, the Environment and Resources Authority (ERA) determined that the development required an EPS in accordance with Schedule IA, Category II, Section 3.3.2.2 (ii) of the *Environmental Impact Assessment Regulations, 2007* (Legal Notice 114 of 2007) (S.L. 549.46).

### **BACKGROUND TO THE SCHEME**

- I.4. The existing, derelict Delimara Bay Hotel was built in the 1950s. Later, due to demand, another wing and an additional storey were built. Eventually, the Hotel was converted into a bar and restaurant, which remained open until 1985. The building has since been in a state of disuse and is currently in disrepair.
- I.5. As part of the planning process, MEPA issued a screening letter on 28<sup>th</sup> October 2015. The letter requested submission of a Simplified Traffic Statement (STS) and a Visual Impact Assessment (VIA), as well as the Project Description Statement (PDS). The VIA was submitted to MEPA in December 2015 and the STS was submitted in January 2016. As mentioned, the PDS was submitted in February 2016.

### **PURPOSE OF THE EPS**

- I.6. The purpose of this EPS is to present the findings of the Environmental Impact Assessment (EIA). EIA is the process of systematically assessing the likely significant environmental impacts of development proposals. EIA also ensures that the significance of these impacts, and the scope for reducing them, is clearly understood by both the public and by ERA and the Planning Authority (PA) before a decision is made on whether or not the development should be approved.

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<sup>1</sup> MEPA has since been split into the Planning Authority (PA) and the Environment and Resources Authority (ERA).

## **STRUCTURE OF THE EPS**

- I.7. Following this introduction, the EPS is structured as follows:
- **Chapter 2:** EIA Methodology
  - **Chapter 3:** Description of Site and Scheme
  - **Chapter 4:** Legislation and Policy Context
  - **Chapter 5:** Geo-environment
  - **Chapter 6:** Terrestrial Ecology
  - **Chapter 7:** Cultural Heritage
  - **Chapter 8:** Landscape and Visual Amenity
  - **Chapter 9:** Noise
  - **Chapter 10:** Key Impacts, Cumulative Effects and Summary of Mitigation
  - **Appendix I:** A3 Photographs
- I.8. The EPS also contains the following Technical Appendices (compiled separately as Volume 2 of the EPS):
- **Technical Appendix 1:** Terms of Reference and Method Statements
  - **Technical Appendix 2:** Geo-environment Baseline Report
  - **Technical Appendix 3:** Ecology and Land Use Report
  - **Technical Appendix 4:** Cultural Heritage Baseline Report
  - **Technical Appendix 5:** Noise Baseline Report
- I.9. The EPS includes a Non-Technical Summary in Maltese and English.



**Figure I.1: Location of the Scheme**



INDICATIVE ONLY - Not to be used for direct interpretation



## 2. EIA METHODOLOGY

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### INTRODUCTION

- 2.1. This chapter sets out the broad methodology that was used for the Environmental Impact Assessment (EIA) of the Scheme. It outlines the key stages that were followed, in line with EIA best practice. The chapter also explains how the significance of impacts was assessed, and how this was a consistent process throughout the EIA.

### THE EIA PROCESS

- 2.2. The current guidance on the EIA process is contained in the *Environmental Impact Assessment (EIA) Regulations, 2007* (Legal Notice 114 of 2007 as amended) (S.L. 549.46). The Environment and Resources Authority (ERA) has directed that an EPS be prepared for the Scheme.

### Terms of Reference

- 2.3. The Terms of Reference (ToR) for the EIA were prepared by ERA in consultation with the relevant Government Departments. The final version of the ToR is included in **Technical Appendix 1: Terms of Reference and Method Statements**.
- 2.4. The ToR were formulated following a scoping exercise, undertaken by ERA, to identify the issues to be considered in the EIA. The ToR focused on those impacts of the Scheme considered by ERA to be significant and, therefore, requiring further assessment, and avoiding the examination of all environmental impacts. The ToR also outlined the various components of the EIA.

### Method Statements

- 2.5. As required by the EIA Regulations, the Consultants involved in this EPS were approved by ERA.
- 2.6. Method Statements were prepared in respect of the topic areas: *geo-environment; terrestrial ecology; cultural heritage; landscape and visual amenity; and noise and vibration*. The Method Statements addressed the following:
- Introduction, listing the objectives of the study and reference to the ToR;
  - Details of baseline survey methodology;
  - Description of the Area of Influence;
  - Field survey methodology;
  - Analytical methodology;
  - Evaluation of data;
  - Identification of impacts;

- Prediction of impacts;
- Impact significance; and
- Mitigation.

2.7. All Method Statements were accepted by ERA, and were subsequently used as the basis for carrying out the individual baseline surveys. The Method Statements are included in **Technical Appendix I: Terms of Reference and Method Statements**.

### **EIA Approach**

- 2.8. Good practice necessitates that EIA be treated as an iterative process, rather than a one-off, post-design environmental appraisal. In this way, the findings from the EIA can be fed into the design process, resulting in a more environmentally sensitive project. This approach was adopted for this EIA.
- 2.9. Baseline surveys for the specialist EIA topics were undertaken by the Consultants based on the Area of Influence (A of I) agreed with ERA for each topic. A detailed assessment of the Scheme's impact on the features present within the A of I was undertaken, and any potential environmental benefits of the Scheme were identified.

### **Significance of Impacts**

- 2.10. Assessment of the significance of impacts arising from a development is a key stage in the EIA process. This judgement is critical in informing the decision-making process. However, defining significance can be difficult. In general terms, environmental significance involves assessing the amount of change to the environment perceived to be acceptable to the community (Sippe, 1999)<sup>2</sup>.
- 2.11. The following criteria were used in this EIA to assess the significance of an impact:
- Type of impact (adverse / beneficial);
  - Extent and magnitude of impact;
  - Direct or indirect impact;
  - Duration of impact (short term / long term; permanent / temporary);
  - Comparison with legal requirements, policies and standards;
  - Sensitivity of receptor (residential dwellings, hotels, recreational areas, etc.);
  - Probability of impact occurring (certain, likely, uncertain, unlikely, remote);

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<sup>2</sup> Sippe R (1999) Criteria and Standards for Assessing Significant Impact. In Petts J (1999) (ed) *Handbook of Environmental Impact Assessment*. Volume I. Blackwell Science Ltd. Oxford, UK

- Reversibility of impact;
  - Scope for mitigation / enhancement (very good, good, none); and
  - Residual impacts.
- 2.12. Using these criteria, the significance of the impacts arising from the Scheme was categorised in the EPS, as follows:
- **Not significant;**
  - **Minor significance;** and
  - **Moderate significance** (*in the case of the landscape and visual amenity assessment and noise only*); and
  - **Major significance.**
- 2.13. Definitions of the meaning of the ‘significance categories’ above in relation to each topic area are included in the topic area chapters (see **Chapters 5 to 8**). However, in general terms, if an impact is ‘not significant’, it is considered to be environmentally acceptable; an impact of ‘minor significance’ refers to an impact that is considered to be manageable; an impact of ‘moderate significance’ refers to an that may be manageable in certain circumstances, although is likely to require implementation of suitable mitigation measures; and an impact of ‘major significance’ refers to an impact that is considered to be environmentally damaging such as to require that the Scheme be redesigned, or that mitigation measures be put in place to minimise the impact.
- 2.13. The EPS includes an assessment of the significance of predicted impacts and, following the implementation of any proposed mitigation measures, the significance of any residual impacts. A summary of the identified significant impacts is included in **Chapter 10**. The recommended mitigation measures, and the residual impacts, are described in respect of each topic area, at the end of the relevant chapter (see **Chapters 5 to 9**).

## UNCERTAINTY

- 2.14. The EIA process is designed to enable good decision-making based on the best possible information about the environmental implications of a development. There will always be some uncertainty in predicting potential impacts as to the exact nature and scale of the impacts. This arises through shortcomings in information, doubts, or lack of certainty on the likelihood that an incidence would occur, and / or due to the limitations of the prediction process itself. Where uncertainties have arisen, and where they remain, this is clearly stated in the EPS.

## CONSULTATION

- 2.15. There has been consultation with ERA throughout the EIA process. Additionally, there was consultation with the Malta Tourism Authority (MTA), Blue Flag Malta, the non-governmental organisation Nature Trust Malta, and the Marsaxlokk Local

Council. The purpose of this consultation was to identify the issues these entities considered important in respect of the potential environmental impacts of the Scheme, and to inform the EIA. The feedback from this consultation is described in **Chapter 3** of the EPS.

## **PRESENTATION OF THE EPS**

- 2.16. The EPS is divided into three main parts following this chapter. Part 1 comprises **Chapters 3** and **4**:
- **Chapter 3** explains the purpose of and justification for the Scheme, and includes a description of the site and its surroundings; and
  - **Chapter 4** summarises the relevant legislation and policy context, including planning policies.
- 2.17. Part 2 comprises **Chapters 5** to **9**, which describe the potential environmental impacts of the Scheme in relation to each of the topic areas. Each of these chapters is structured as follows:
- Introduction: identifying the key issues and how the chapter relates to the ToR;
  - Assessment methodology: summarising the methods used in undertaking the baseline survey;
  - Existing conditions: a summary of the existing baseline situation and trends irrespective of the Scheme; and
  - Assessment of impacts arising from the Scheme, identifying:
    - Potential impacts: a summary of the potential impacts of the Scheme;
    - Prediction and significance of impacts: a prediction of the likely impacts of the Scheme against the baseline situation and an assessment of the significance of the impacts;
    - Mitigation measures: a summary of potential mitigation / enhancement measures, to offset any identified adverse impacts;
    - Residual impacts: a clear statement of those impacts that still have an impact following mitigation, indicating the significance of the residual impact; and
    - Summary: a summary table of the impacts.
- 2.18. Part 3 comprises **Chapter 10**, which addresses the cumulative effects of the Scheme, and summarises the impacts and proposed mitigation measures.



### 3. DESCRIPTION OF SCHEME AND SITE

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#### INTRODUCTION

- 3.1. This chapter describes the Scheme. It explains the purpose of and justification for the Scheme, and includes a description of the Scheme Site and its surroundings.

#### OBJECTIVES OF THE SCHEME

- 3.2. As described by the Applicant, the Scheme aims to provide an ‘eco-boutique hotel’ that will operate using innovative and sustainable technologies, as far as is feasible.

#### DEMAND FOR THE SCHEME

- 3.3. The Applicant explains the demand for the Scheme as being the growing eco-tourism niche market in Malta, where the Scheme will provide for high-end accommodation targeting selective travellers. The Applicant further justifies the Scheme as bringing back into use tourism accommodation (the Delimara Bay Hotel) and facilitating the tourism sector in the Marsaxlokk area.

#### POLICY CONTEXT FOR THE SCHEME

- 3.4. The relevant sections of the relevant policy documents are explained in detail in **Chapter 4** of the EPS; these policy documents include: the *Strategic Plan for the Environment and Development (SPED), 2015*, the *Marsaxlokk Bay Local Plan, 1995*, the *Rural Policy and Design Guidance, 2014*, and the *Development Control Design Policy, Guidance and Standards, 2015*. The planning policy context for the Scheme in respect of the SPED and the Local Plan is summarised below.

#### Strategic Plan for the Environment and Development 2015

- 3.5. The SPED identifies a National Spatial Framework with policy objectives for distinct spatial areas, including the Coastal Zone, and specifically the ‘Predominantly Urban Coast’ and ‘Predominantly Rural Coast’; the Scheme Site is located within the Predominantly Rural Coast Zone.
- 3.6. The General Principles of the National Spatial Framework advocate a sequential approach to the use of land, with the aim of ensuring the sustainable use of land resources and the efficient use of available space. This approach aims to safeguard land take-up outside urban areas, where land take-up should only be considered “as a last resort and where it is essential for the achievement of sustainable development”. In relation to the Coastal Zone, the National Spatial Framework outlines a planning framework “to integrate socio-economic growth and environmental management”. In relation to the terrestrial coast, the National Spatial Framework advocates “To prioritise uses that necessitate a location in the coastal zone...in a manner which minimises user conflicts, does not accelerate coastal erosion, protects biodiversity, cultural heritage, landscapes and visual access to them, public access and use, and increases resilience to climate change impacts (**Coastal Objective 1**).

- 3.7. In relation to guiding socio-economic development, the National Spatial Framework advocates “*To manage the available potential space and environmental resources on land and sea sustainably to ensure that socio-economic development needs are met whilst protecting the environment*” (**Thematic Objective I**).

### **Marsaxlokk Bay Local Plan 1995**

- 3.8. The Marsaxlokk Bay Local Plan identifies the Scheme Site as being within the Delimara National Park (**POLICY MD01**), where “*priority will be given to conservation, protection and improvement of the natural heritage*”, and where “*positive provision will also be made for recreational uses consistent with this objective*” and “*Limited commercial development related to the needs of park users will be considered*”.
- 3.9. The Scheme Site is also identified as being within an Area of Ecological Importance (AEI) and an Area of High Landscape Value (AHLV) - **POLICY ME01**.

## **CONSULTATION**

- 3.10. As mentioned, there was consultation with a number of entities during the preparation of the EPS, specifically the Malta Tourism Authority (MTA), Blue Flag Malta, the non-governmental organisation Nature Trust Malta, and with the Marsaxlokk Local Council. The purpose of this consultation was to gather relevant site-specific information as well as to identify the issues these entities consider important in respect of the potential environmental impacts of the Scheme. All points mentioned are summarised below. As relevant, these are addressed in subsequent chapters of the EIA.
- 3.11. The issues identified by the MTA can be summarised as follows:
- Rehabilitation / improvement of the site as a hotel represents a good ‘touristic opportunity’ but there is a need for sensitivity to the impact on the environment and the surrounding landscape.
  - Any redevelopment should take account of the fact that the site lies within a Level 2 Area of Ecological Importance (AEI).
  - The new building appears to be sited on the existing disturbed footprint but there is a concern over the height and massing of the building and its visual impact.
  - Improved access to the rocky beach, and from the provision of beach facilities, would be beneficial, but accessibility could alternatively be achieved by means of a platform or chair lift installed alongside the existing steps, and the facilities could be provided elsewhere (within the existing car park, for example, or within the hotel complex itself) rather than excavated in the cliff face.
  - Any development permit for the redevelopment of the existing hotel should be conditional to the upgrading of the existing stepped access to the rocky beach.

3.12. The issues identified by Blue Flag Malta can be summarised as follows:

- To obtain Blue Flag status, it is normally required that a beach be accessible to all and that sanitary facilities are provided on or near the beach. However, an important criterion for Blue Flag status is that environmental impact is minimised. The need to avoid environmental impact, particularly in sensitive areas will normally outweigh the need to provide such features.
- There are concerns over the potential environmental impact of tunnelling an access to the rocky beach, especially where there are alternative options available that would be less environmentally intrusive; for example, access for all could be achieved by means of installing a platform or chair lift alongside the existing steps to the beach, and sanitary facilities could be provided within the hotel complex itself, or within the existing car park.

3.13. The issues identified by Nature Trust Malta can be summarised as follows:

- The site is within an Area of High Landscape Value and an Area of Ecological Importance. The site is also within the designated Delimara National Park.
- The increase in the building area, and the realignment of the building, does not comply with **POLICY 6.2C** of the *Rural Policy and Design Guidance, 2014*, which does not allow the replacement building to exceed the total floor area of the previous building.
- The design of the hotel shows no attempt to blend with its surroundings (rural and coastal characteristics of the area), in compliance with **POLICY 6.2C** of the *Rural Policy and Design Guidance, 2014*.
- The inclusion of an outdoor pool questions the ‘eco-sustainability’ of the hotel. In addition to the need for excavation, there is the issue of water use; it is unsustainable to have a pool so close to the sea, especially for such a small hotel.
- The tunnel and beach facilities should be omitted; the coastal area is legally protected and such excavation is unacceptable.
- Public access to the coast must be maintained.
- There has been no winter vegetation survey carried out. The survey of summer vegetation conducted in July 2015 could have omitted consideration of the important flora of the area, especially geophytes.
- The geological impact assessment needs to assess the risks during and after excavation works (especially in relation to excavation for the swimming pool and the tunnel and beach facilities) and during construction. Globigerina limestone, which is characteristic of the area, is rather weak and prone to erosion and fracturing.

3.14. The issues identified by the Marsaxlokk Local Council can be summarised as follows:

- The Scheme is an improvement on the current situation, by replacing a dilapidated building, and by discouraging unsuitable behaviour in the area, especially at night.
- The presence of the hotel will encourage the authorities to ensure that Kalanka Bay is kept clean. Keeping the bay clean is an important priority and the development should not jeopardise the cleanliness of the water or of the rocky beach.
- The energy and surface water management proposals are seen favourably by the Council, as is the intention to sell locally made products at the hotel.
- It is critical that public access to Kalanka Bay, and to all other public land in the vicinity, is maintained. The Council would like assurances that the existing steps which lead down to the rocky beach and the parking area at the top of the steps will remain public, and will be upgraded.
- The Council is not totally in favour of having a larger building; the footprint will be smaller than the current one but the building will be higher than it currently is.
- The area is ecologically sensitive and care should be taken to ensure that compatible species are planted in the grounds of the Scheme. It is important that all marine and land-based flora and fauna, and their habitats, are safeguarded during the construction and operation of the hotel.
- There is a need to protect the marine environment during excavation works.
- The cliff face at the site is prone to erosion and rock fall is regularly noted; all the necessary studies should be carried out to ensure that the cliff face / rocks are not endangered by the proposed excavation works in particular.

## **ALTERNATIVES CONSIDERED**

- 3.15. The Scheme involves the redevelopment of the existing Delimara Bay Hotel, which is owned by the Applicant. As such therefore, no alternative sites were considered by the Applicant.
- 3.16. In terms of design, a number of design options for redevelopment of the existing hotel were explored, taking account of the feasibility of the project and the sensitivity of the site prior to the concluded design as proposed in this EIA and the application for planning permission.
- 3.17. **Figure 3.1a to Figure 3.1c** includes some previous design considerations. As explained by the Applicant, earlier design options included a denser development, with a larger footprint, and a higher development form. The Applicant further explains that the design that has evolved strikes a better balance between the solid and void, better reflects the configuration and topography of the site, and takes

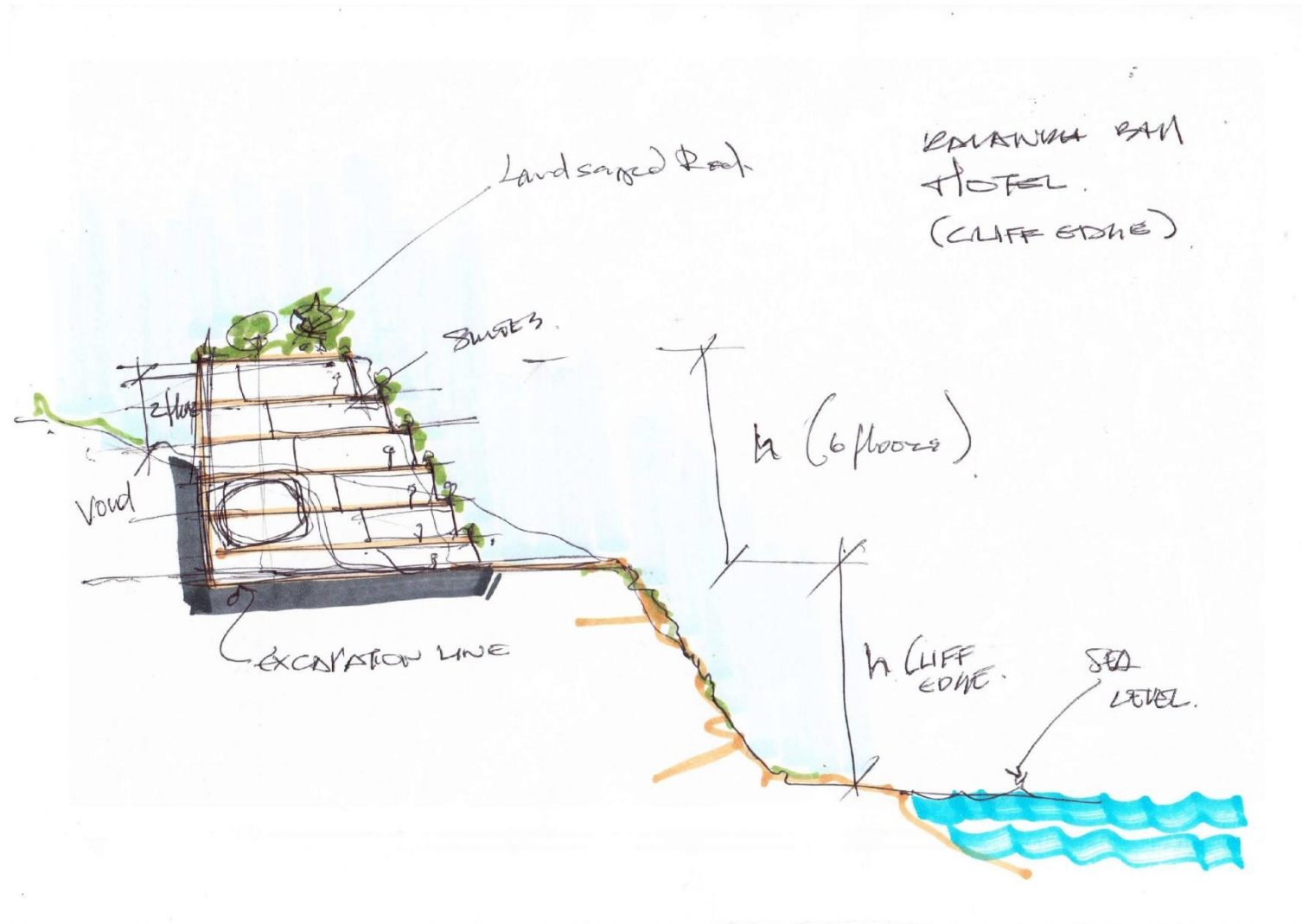
better account of visual and aesthetic values compared to the previous options considered.

- 3.18. Alternatively, the Applicant will consider redeveloping the site for use as a dwelling.

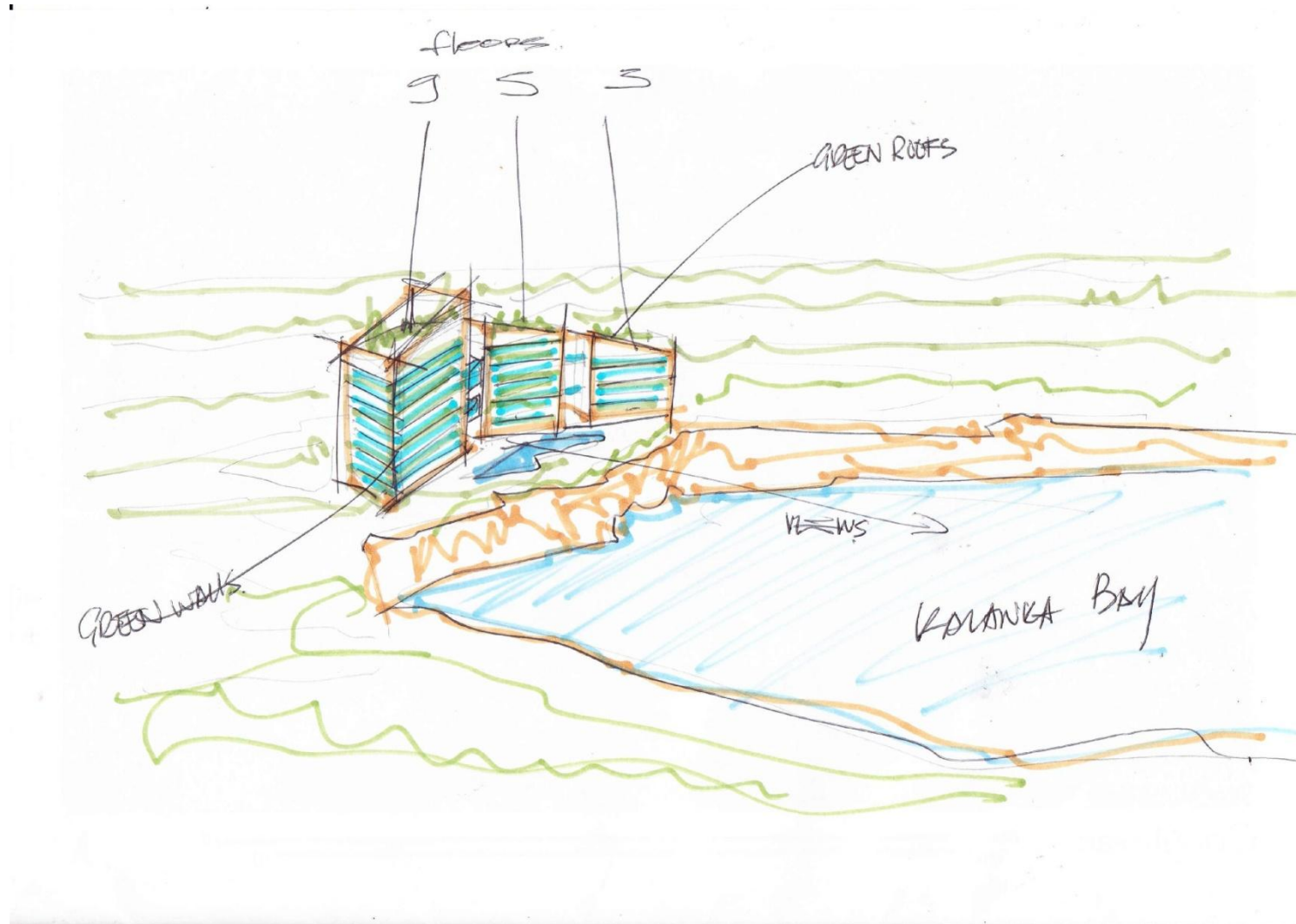
**Zero Option (Do-nothing Scenario)**

- 3.19. The Terms of Reference issued by ERA require that the alternative assessment considers the zero option, or do-nothing scenario, which envisages there being no intervention on the site in connection with the Scheme. This alternative option considers the way the site would develop in the absence of the Scheme.
- 3.20. As described, the Scheme site currently includes a dilapidated structure that was previously operated as both (at separate times) a hotel and a restaurant before operations ceased. In the absence of the Scheme the dilapidated structure would likely remain and slowly continue to deteriorate. The structure itself is an eyesore in this landscape and the consideration to remove it whilst continuing to make use of the site in relation to rural activities could be considered as an additional alternative over and above the zero option that would enhance environmental outcomes.

**Figure 3.1a Alternative design considerations**

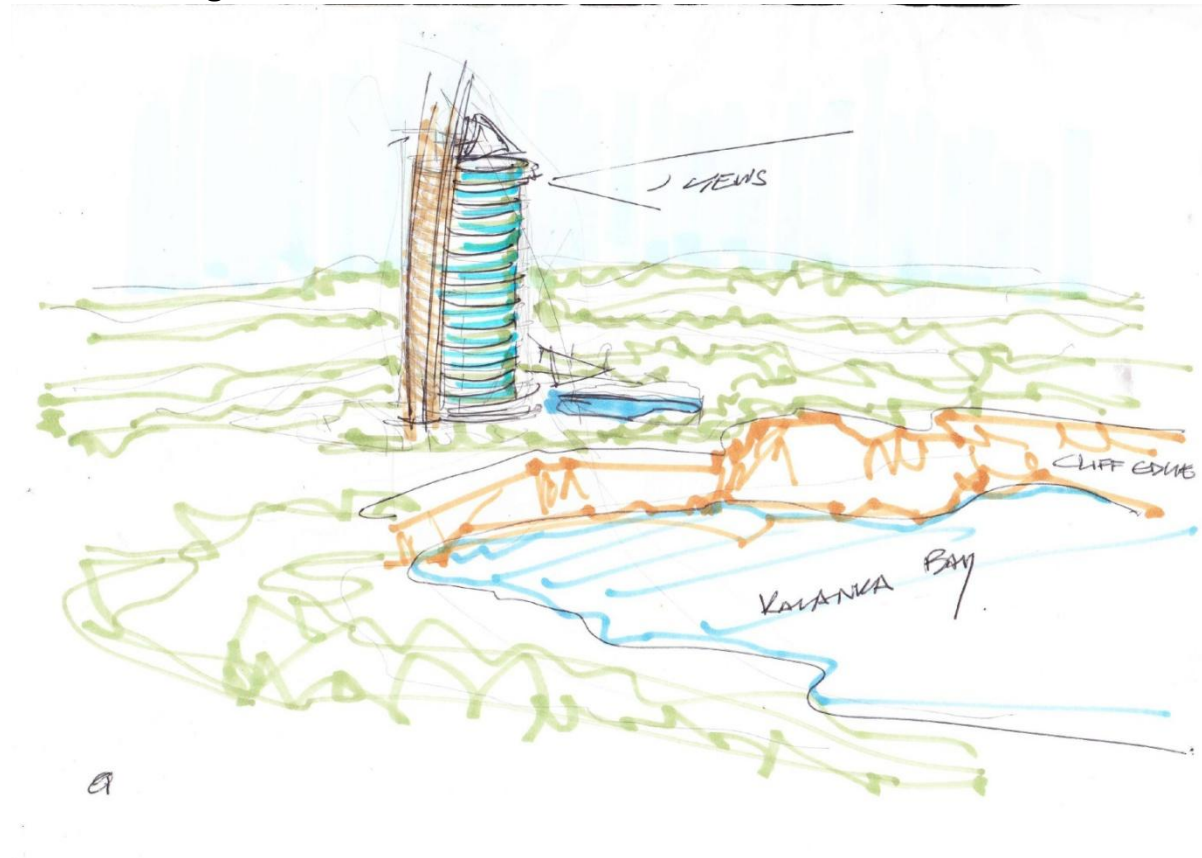


**Figure 3.1b Alternative design considerations**





**Figure 3.1 c Alternative design considerations**



## DESCRIPTION OF THE SITE AND ITS SURROUNDINGS

### Scheme Site

- 3.21. The Scheme Site is located on the Delimara peninsula, on the site of the former Delimara Bay Hotel and overlooking Kalanka Bay (see **Figure 1.1** in **Chapter 1** of the EPS); the site is located within the Marsaxlokk Local Council administrative area.
- 3.22. The Scheme Site covers an area of approximately 3,646 m<sup>2</sup>. As mentioned, the previous Delimara Bay Hotel is still standing; the current building footprint covers an area of approximately 343 m<sup>2</sup>. The building is surrounded by landscaped areas and concrete terraces (occupying an area of approximately 707 m<sup>2</sup>). As mentioned, the existing hotel is no longer in use (operations ceased in 1985) and is currently in a dilapidated state. **Figure 3.2** to **Figure 3.5** illustrate the existing building and its layout, including photographs. It is noted that the concrete terrace is one storey high, and includes some additional abandoned rooms (as can be seen in **Figure 3.2** and **Figure 3.3**); **Figure 3.6** shows some photographs of the concrete terrace area.
- 3.23. The area in the immediate vicinity of the existing building was previously landscaped to the west, and some ornamental plants and trees remain. The area to the east consists of largely disturbed vegetation and a small building marks the edge of the site at this location; concrete paving lies to the east of the existing hotel.

### Land Cover and Land Use

- 3.24. Land cover and land use were recorded during the ecology survey, carried out in August 2016 (see **Technical Appendix 3: Ecology and Land Use Report**). **Table 3.1** lists the main land uses that were encountered within the Area of Influence (A of I) for the survey and the approximate area and relative proportion covered by each use. **Figure 3.6** shows the land uses on plan; **Figure 3.7** shows images of the various land uses.

**Table 3.1: Land Uses in the Area of Influence**

Land Use	Area Covered (ha)	Proportion of the A of I
Agricultural land	104,250	39.5%
Unmanaged woodland	62,720	23.8%
Unused land (natural habitats)	61,880	23.4%
Recreation and leisure (private garden)	8,990	3.4%
Derelict (trapping sites)	5,240	2.0%
Transport	25,650	9.7%

- 3.25. The most prominent land use in the area is agriculture. Most of the agricultural land is located between the Tumbrell region and is-Serċ. One plot is located on the Delimara Peninsula. **Table 3.2** describes the type of agricultural land found within the A of I. **Figure 3.9** shows the types of agricultural land on plan.

**Table 3.2: Agricultural land within the Area of Influence**

Land Use	Area Covered (ha)	Proportion of the A of I
Cereals	77,450	74.2%
Fallow	5,520	5.3%
Other arable crops	4,900	4.7%
Recently converted	14,130	13.6%
Vineyard	2,260	2.2%

- 3.26. Other uses noted included unmanaged woodland (refer also to **Chapter 6** of the EPS), private gardens, and trapping sites. Three trapping sites were found within the A of I. One is located in the is-Serċ fallow fields, while the other two are located amongst cleared habitat 1240 (Vegetated sea cliffs of the Mediterranean coasts) in the vicinity of il-Ponta tat-Taqqalija.

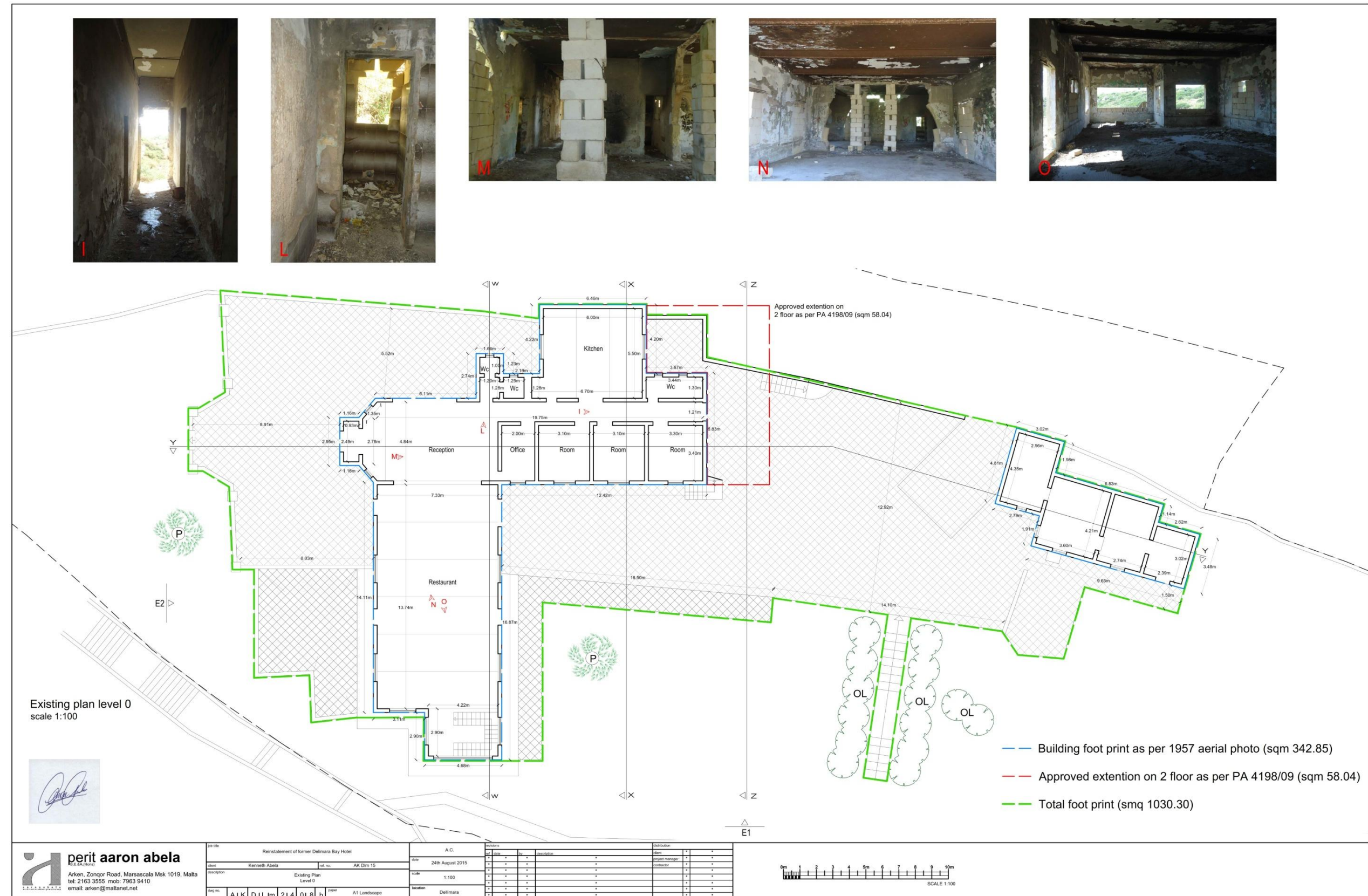
### **Natural Heritage**

- 3.27. The Scheme Site lies within the following natural heritage designations (see **Figure 3.10**):
- Area of Ecological Importance (AEI) Level 2 – Il-Bajja ta' San Tumas to Delimara (GN 400/96); and
  - Area of High Landscape Value (AHLV) – Coastal Cliffs (GN 400/96).
- 3.28. The small islet off the coast of Delimara Point is a Site of Scientific Importance (SSI) – It-Taqtiegħa ta' Delimara. The Scheme Site is located approximately 600 m from this SSI (plan distance) – also see **Figure 3.10**.



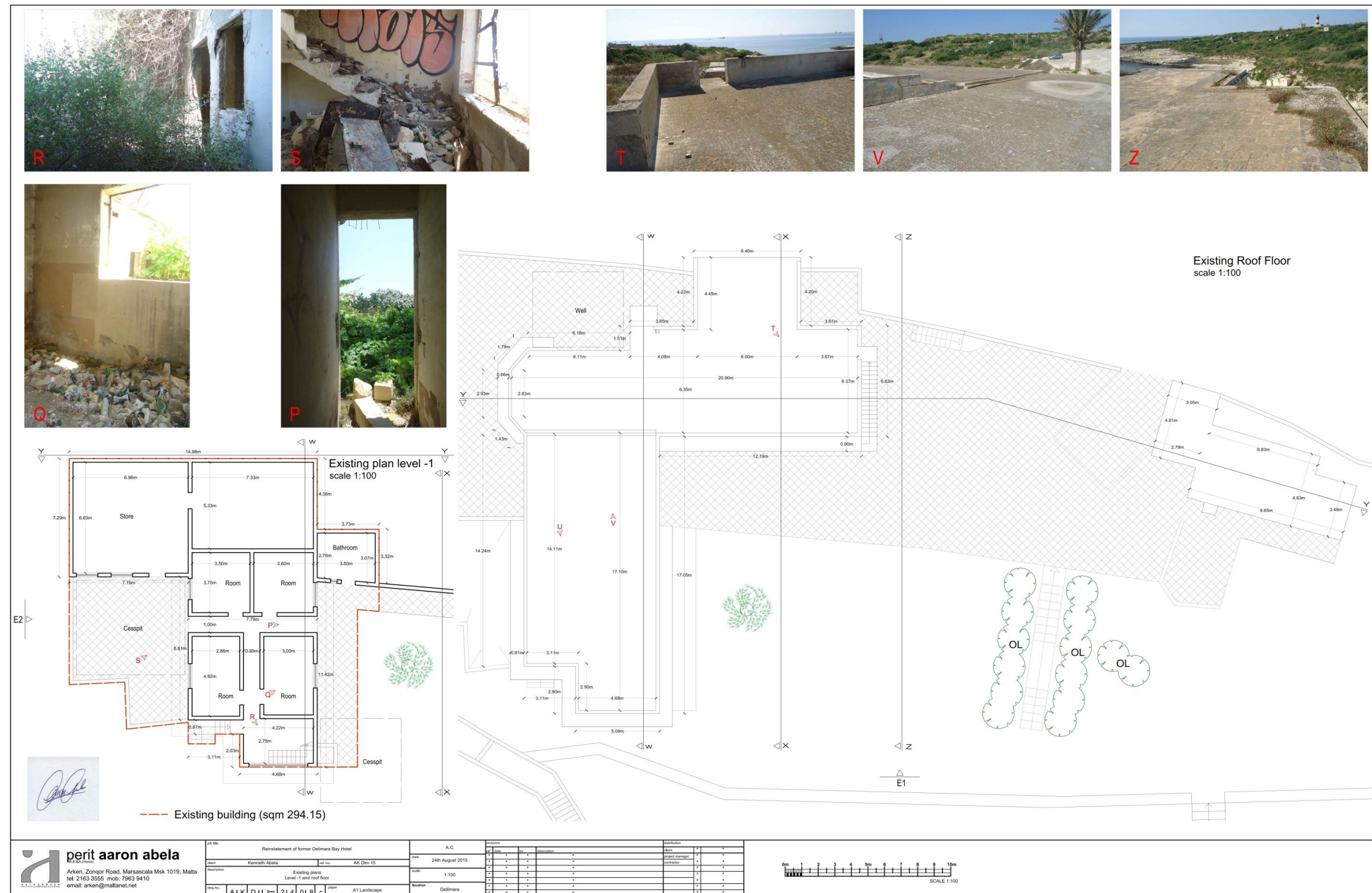


**Figure 3.3: Existing Delimara Hotel – Plan Level 0**



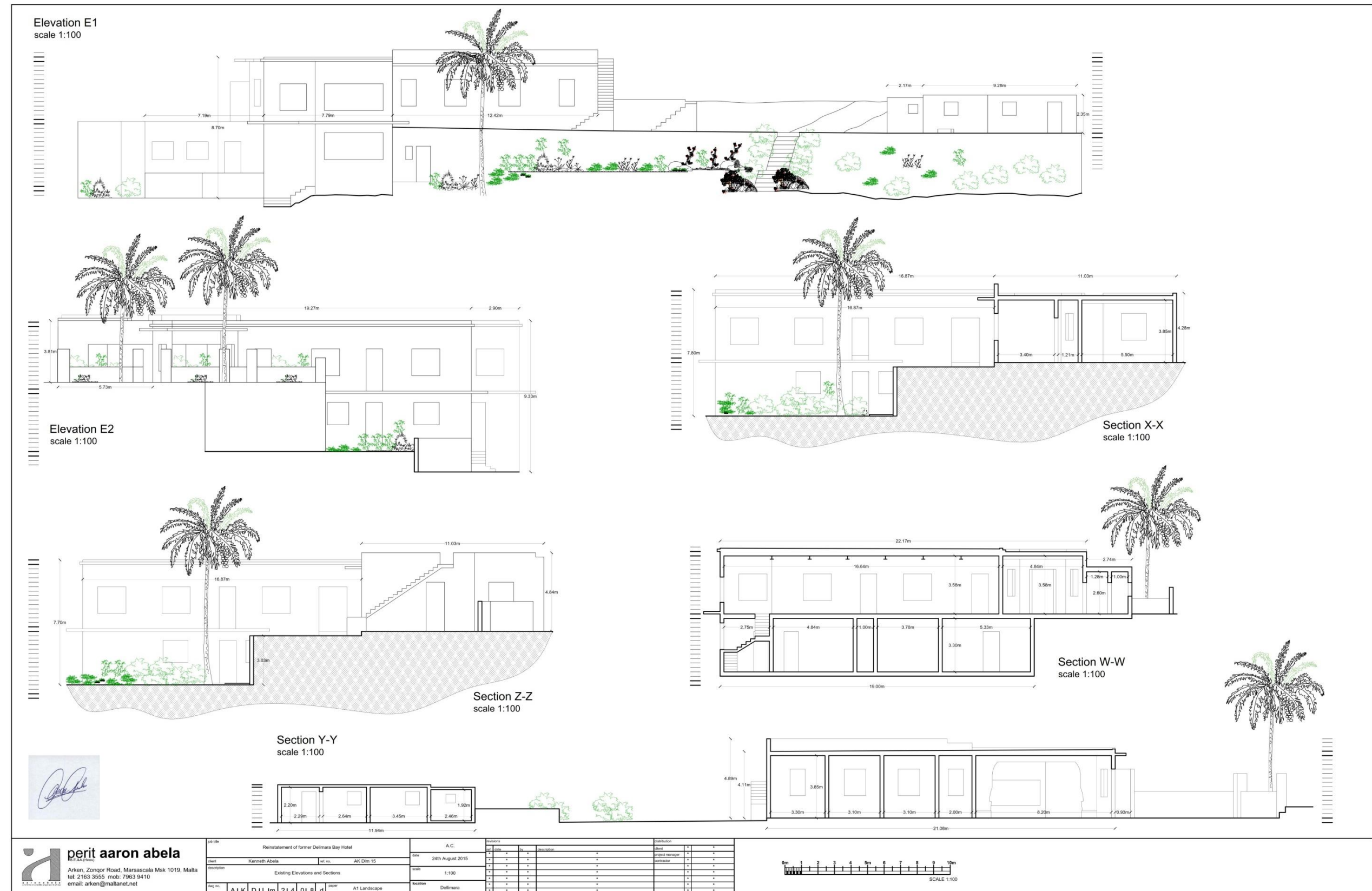


**Figure 3.4: Existing Delimara Hotel – Plan Level -I**





**Figure 3.5: Existing Delimara Hotel – Elevations and Sections**

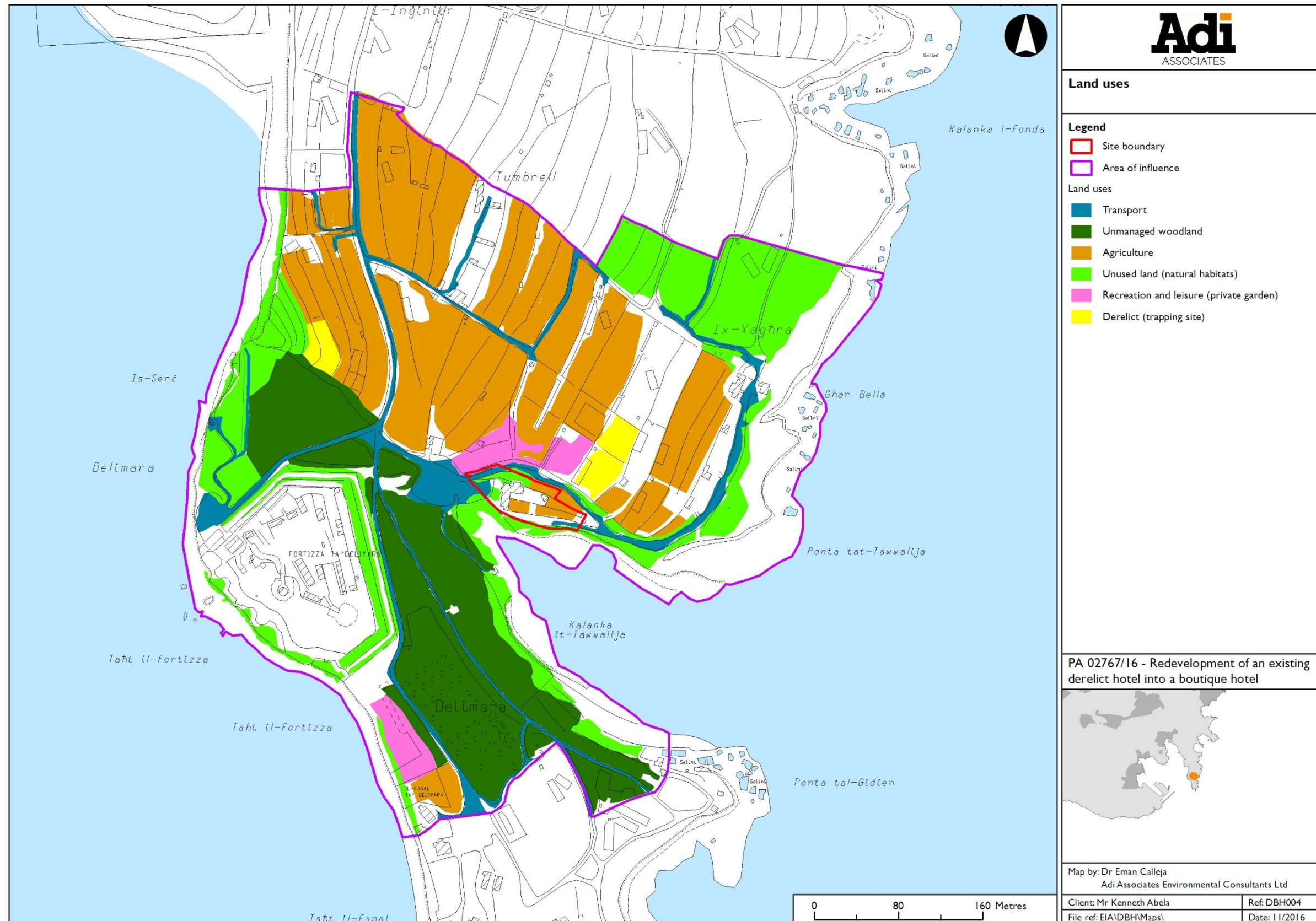


**Figure 3.6: Existing Delimara Hotel – Concrete Platform**





**Figure 3.7: Land Uses**



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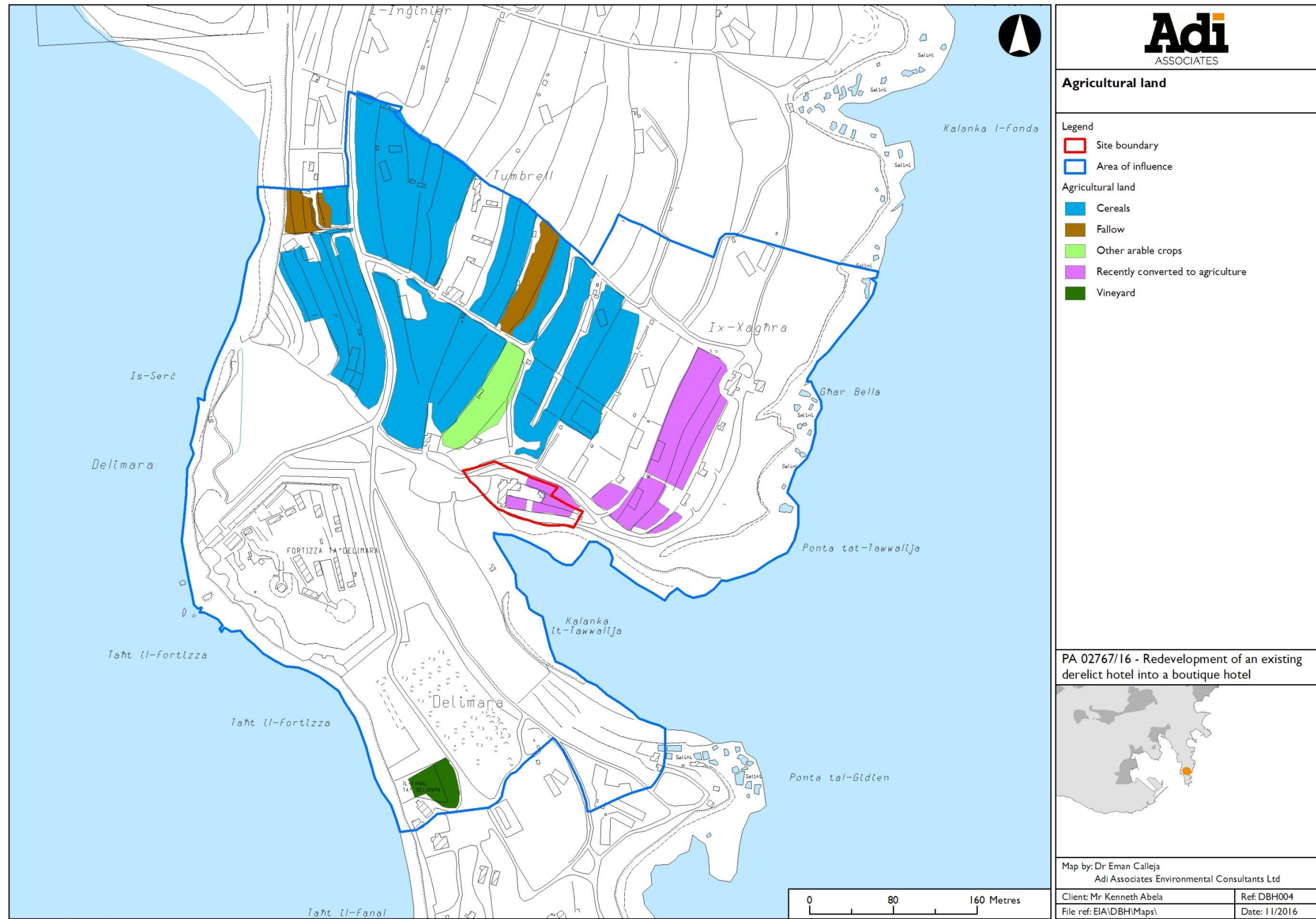


**Figure 3.8: Images of the Land Uses**

		
<p>Area currently used for parking by beach users</p>	<p>Natural slope – small structures are noticeable and the landmark lighthouse is visible in the background.</p>	<p><i>Salsola melitensis</i></p>
		
<p>Terraced fields (Delimara Power Station is visible in the background)</p>	<p>Main entrance of Delimara Fort</p>	<p>Coastal community and summer residences in the background</p>



**Figure 3.9: Types of Agricultural Land**



INDICATIVE ONLY - Not to be used for direct interpretation



**Figure 3.10: Natural Heritage Designations**





## SCHEME DESCRIPTION

- 3.29. The Scheme involves the redevelopment of the Delimara Bay Hotel to provide for a new boutique hotel comprising 13 luxury suites, three superior deluxe suites and one presidential suite. Proposed amenities include a lounge area, bar and restaurant, gymnasium, a spa, and an outdoor pool. The built up area will increase from 343 m<sup>2</sup> to 561 m<sup>2</sup>. The existing concrete terracing to the west of the building will be replaced with landscaping. **Figure 3.11** to **Figure 3.18** illustrate the detailed plans of the Scheme. **Figure 3.19** shows a photomontage of the Scheme.
- 3.30. The Scheme proposes the creation of a link to the Bay through the hotel, which will involve the excavation of a lift shaft and a pedestrian tunnel through the rock, which would open through the cliff face at shore level. Public facilities to service the Bay, including a beach equipment store, first aid room, and ablution facilities are also proposed to be constructed within the excavated cliff. Access to the Bay from the hotel via the lift and tunnel will allow for wheel-chair access to the rocky beach. **Figure 3.18** illustrates the proposed tunnel to the bay and the beach facilities.

### Access and Parking

- 3.31. The Scheme Site is currently accessed via Triq Delimara, a local access road that runs the length of the Delimara Peninsula. Triq Delimara takes access off Triq il-Patrijiet Terežjani, to the northeast of Marsaxlokk village, at Tas-Silg. Triq il-Patrijiet Terežjani is also a local access road; the nearest Distributor Road is located approximately 2.5 km from the Scheme Site (travel distance), at the junction of Triq il-Patrijiet Terežjani and Triq Bir Rikka.
- 3.32. The Scheme Site is accessible by car, by bicycle, or on foot. The site is not served by public transport (nor is the entire Delimara Peninsula); the nearest public bus routes are in the village of Marsaxlokk.
- 3.33. Existing car parking provision at the Scheme Site, currently used by bathers visiting Kalanka Bay, takes the form of a roughly surfaced area to the west of the site; the surfacing is in a very poor condition due to lack of maintenance. The area covers approximately 1,900 m<sup>2</sup> and can accommodate approximately 85 cars.
- 3.34. The Scheme includes a garage for parking at Level -1; this will accommodate four cars and is intended to accommodate staff parking. It is envisaged to operate a shuttle mini-bus service for staff and hotel guests to / from Marsaxlokk and the Malta International Airport.

### Services

- 3.35. All the electricity and mains water utility services required to accommodate the Scheme are readily available on the Scheme Site. There is currently no sewerage infrastructure available on site, nor are there adequate arrangements for storm / surface water currently in place. The description of the proposed servicing arrangements is described below.

### **Landscaping and Lighting**

- 3.36. Landscaping will involve a mix of indigenous trees and good quality hard landscaping. The landscaping proposal is shown in **Figure 3.20**. Certain of the existing trees / shrubs are to be retained on site, both *in situ* and through replanting. All new landscaping will be carried out in accordance with MEPA's *Guidelines on Trees, Shrubs and Plants for Planting & Landscaping in the Maltese Islands, 2002*; there will be no use of alien species. With the exception of wooden decking around the pool area and paving on the outdoor terrace, the hard surfacing (to be used at the entrance to the hotel) will take the form of grass blocks.
- 3.37. The exterior lighting to be used within the grounds of the hotel is also shown in **Figure 3.21**. This will be restricted to the eastern portion of the site; it is not intended to provide any lighting in the landscaped area in the western half of the site. The lighting within the grounds will take the form of surface-level uplighters located along the western facade of the hotel (to illuminate the entrance to the hotel) and low bollards (approximately 0.75 m high) with I V luminaries on the access ways to the swimming pool and on the outdoor terrace. The luminaries to be used for uplighting will be selected so as to avoid glare, light trespass and sky glow, as well as to minimise energy consumption. On the building itself, there will be limited illumination of the north, south and east-facing facades. The balconies on the south-facing facade will be discretely lit.
- 3.38. All the exterior lighting (on the building and within the grounds) will be managed through a Building Management System (BMS) that will be programmed to dim lights and to switch lights on / off with sunset and sunrise respectively.

Figure 3.11: Proposed Site Layout









**Figure 3.13: Proposed Plan Level I**

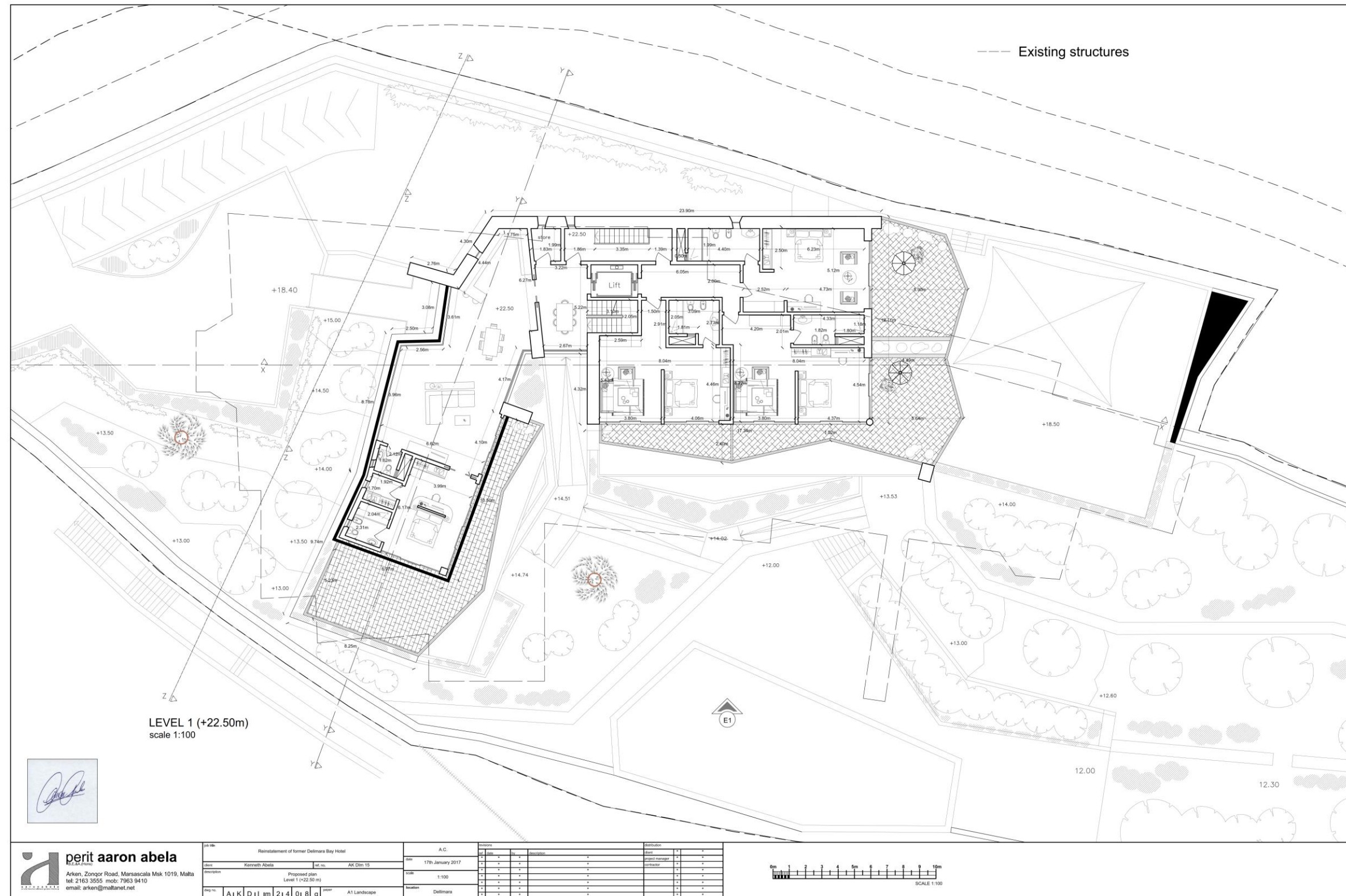
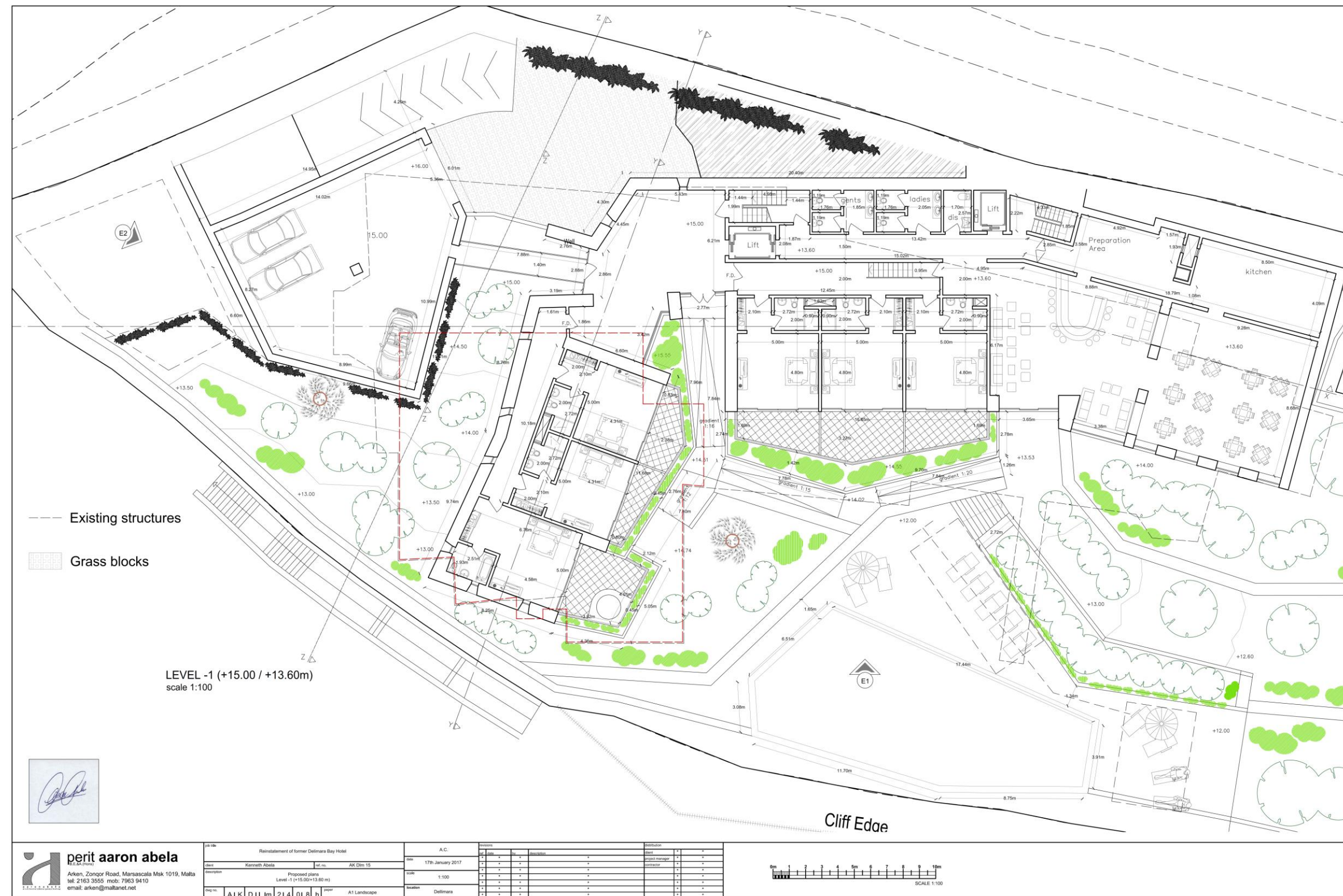


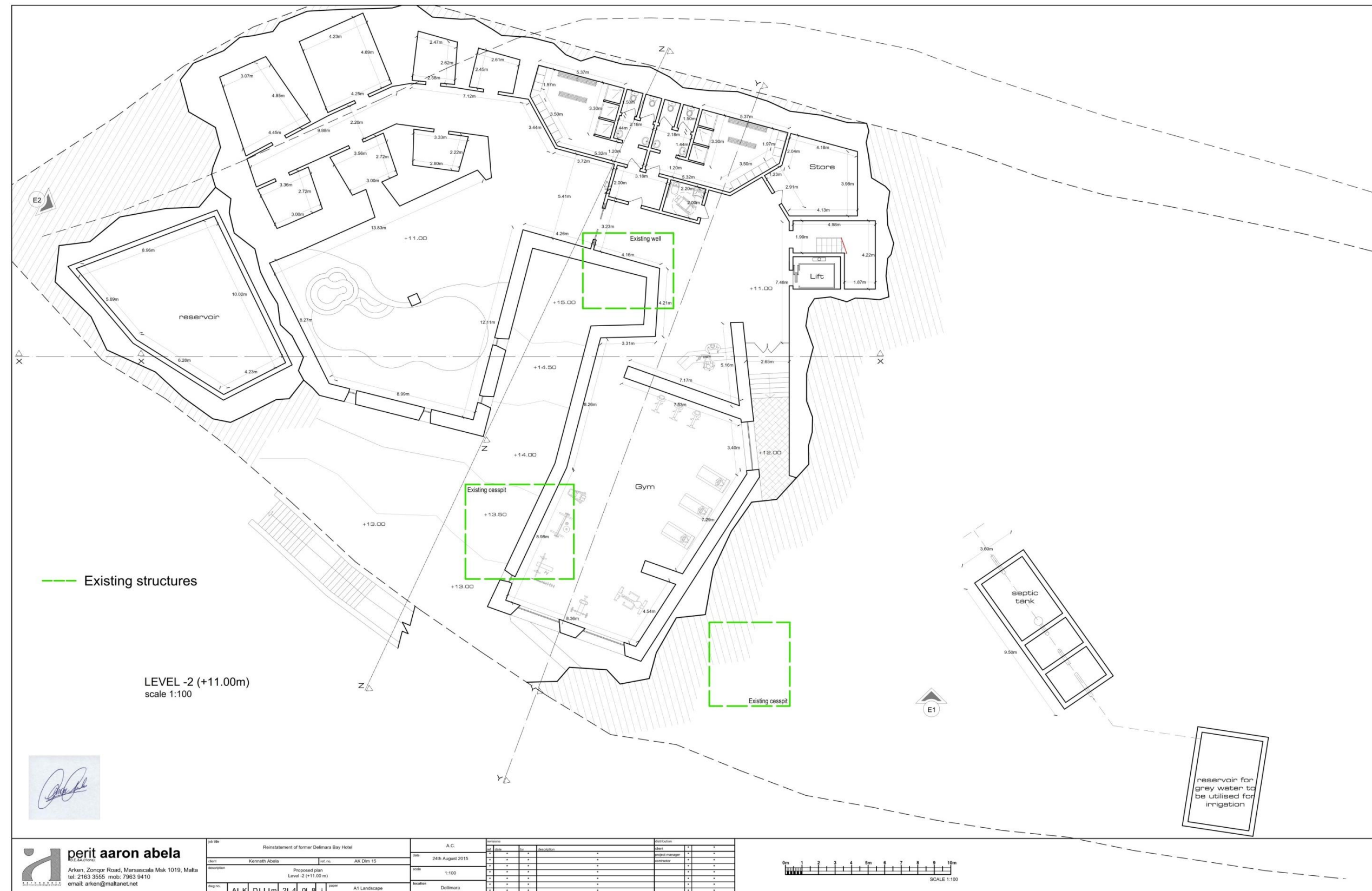


Figure 3.14: Proposed Plan Level -I





**Figure 3.15: Proposed Plan Level -2**

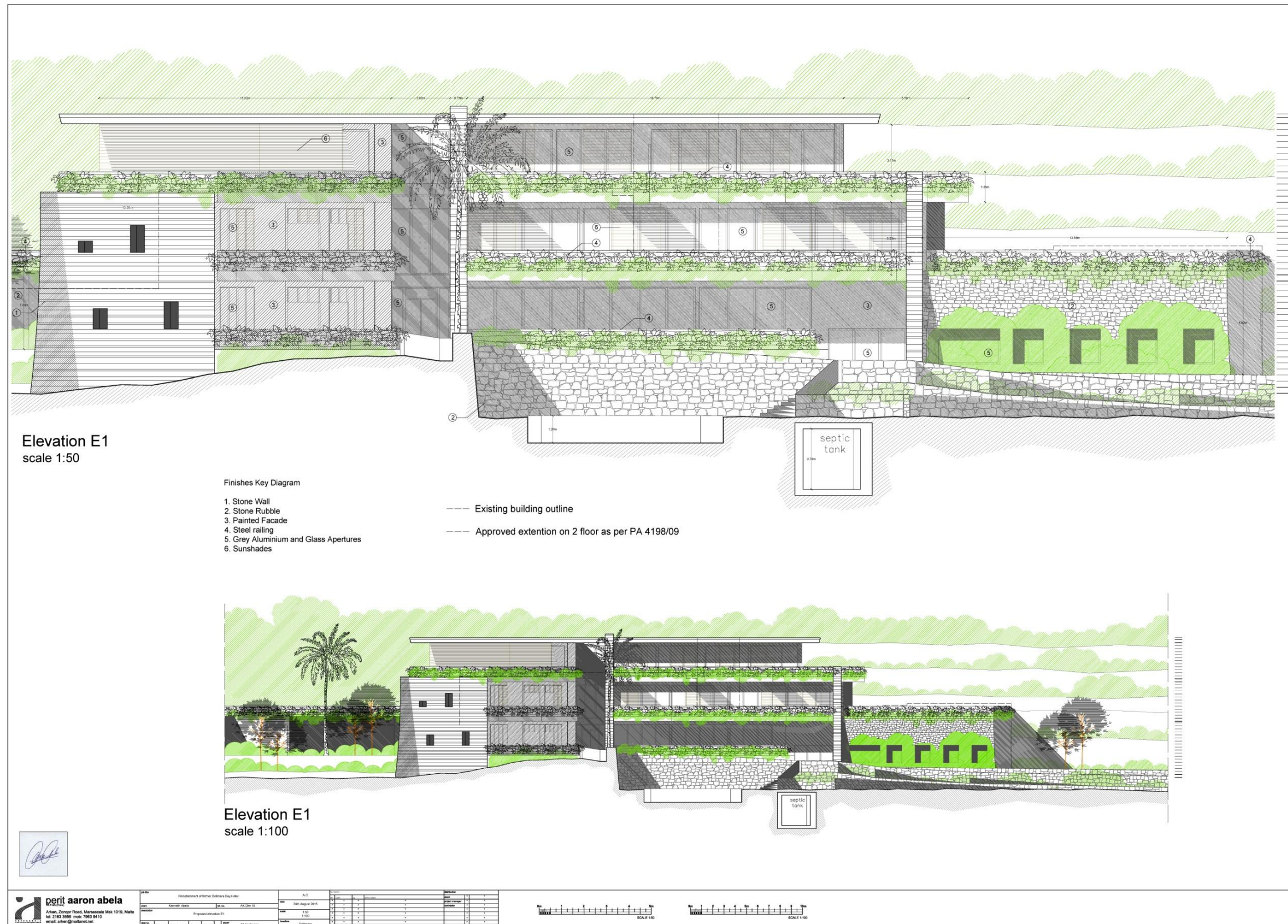


**Figure 3.16: Proposed Section**





**Figure 3.17: Proposed Elevation**





**Figure 3.18: Proposed Plan for Beach Facilities**





**Figure 3.19: Visual Impression of the Scheme**





Figure 3.20: Landscaping Plan





### Figure 3.2I: Lighting Plan



## RESOURCES

- 3.39. In addition to the design measures to maximise passive heat / ventilation and natural lighting, the Scheme is envisaged to use specific energy-saving measures as follows:
- Air conditioning chiller that uses a low global warming potential (GWP) refrigerant. This type of chiller ensures a high level energy efficiency ratio (EER); together with control optimisation of the condenser fans, energy savings of up to 50% can be achieved. In addition, the compressor has a starting current of only 5 Amps (as compared to a conventional compressor, which can typically have a peak starting current of 600 Amps or more);
  - Pool and hotel floor area temperature management through the use of a geo-thermal system. An open loop geo-thermal system will be used, where seawater will be drawn through a borehole located beneath the plant room (extending to a depth of approximately 30 m since the water at this depth is stable at 18 to 19 °C, allowing for a higher coefficient of performance). The water will be pumped up and passed through the heat exchanger (both the pump and the heat exchanger will be located within the plant room). The heat exchanger will use the same chiller as described above. The water will be returned to the sea by means of a second borehole (also located beneath the plant room); it is envisaged that the temperature of the water on discharge to the sea will be not more than 2 – 3 degrees higher than ambient;
  - Use of Combined Heat and Power (CHP) for domestic hot water. The plant envisaged to be used includes a variable speed multi-inverter operating mode that keeps its overall efficiency rate between 15% and 100% of its rated power, with a prompt response to any variation in energy consumption by the user. Use of this CHP results in a number of benefits, including high efficiency cogeneration, an uninterruptible power supply, heavy duty power generator, and power factor correction;
  - Building insulation cladding (it is envisaged that polyurethane (PU) insulation will be used);
  - Photo Voltaics (PV), to be installed on the flat roof of the hotel. Assuming the full use of the roof (325 m<sup>2</sup>) and the installation of high efficiency solar PV panels of 19% of the total PV, the peak system will reach 60 kW;
  - Battery bank, where a battery pack will be used to balance the extra power generated from the PV systems and the CHP that the grid line cannot support. This charging unit should be at least 300 kWh. This energy can be used for electric cards and electrical supply during the night. The battery pack will also help to balance the use of the CHP;
  - Centralised building management system, including intelligent light control. A Building Automation System (BAS) or Building Management System (BMS) will monitor all energy consumption per floor, and control lighting levels and the

temperature of the guestrooms. A BAS system is expected to provide an energy saving of up to 12%;

- Independent air quality control in each guestroom, allowing for greater flexibility in the AC installation;
- LED lamps with specifications of 100 Lm/W; and
- Inverter controlled equipment;

3.40. In addition, it is envisaged to provide an electric car charging point, as well as a shuttle service for guests to and from the airport and other visitor attractions using an electric vehicle with an average consumption of 240 kWh daily.

3.41. **Table 3.3** illustrates the estimated annual electrical consumption for the Scheme, by system. **Table 3.4** outlines the estimated renewable energy source generation. The tables illustrate that the Scheme will generate an annual surplus energy of 21,951 kWh.

**Table 3.3: Estimated Annual Electrical Consumption**

Area	Energy (kWh)
AC system	14,456
Cesspit system	14,308
Water treatment	219
Lighting system	71,175
ICT system	474.5
Kitchen	15,330
Logistic Electric Van	29,200
<b>Total Annual Consumption</b>	<b>145,162.5</b>

**Table 3.4: Renewable Energy Source (RES) Generation**

System	Energy (kWh)
PV systems	151,305
CHP for DHW	15,808
<b>Total Power RES Generated</b>	<b>167,113</b>

## Water

3.42. The Scheme has also been designed to take account of water conservation and sustainable consumption. As mentioned, the Applicant will be required to apply for eco-accreditation under the MTA's Eco-certification Scheme, and will therefore need

to implement a long-term operational sustainability management system that will address water efficiency (as well as energy efficiency and waste management).

3.43. It is envisaged that the Scheme will include the following specific water-saving measures:

- Reverse Osmosis (RO) plant, which will be used to supply the Scheme with potable water;
- Engineered cesspit, which will recycle water from all drainage (including toilets) to be reused for irrigation. It is envisaged that the optimal size for the cesspit will be 26 m<sup>3</sup> and it will incorporate an automatic chlorine dosing system and UV filters;
- Rainwater collection system, which will store all the water collected from within the site, as well as the water run-off from the adjoining road and car parking area (estimated annual run-off of approximately 1,200 m<sup>3</sup>). It is envisaged that the reservoir for roof rainwater will have a capacity of 200 m<sup>3</sup>, the reservoir from surface water elsewhere within the site will have a capacity of 632 m<sup>3</sup>, and the reservoir for the water collected from off-site will have a capacity of 292 m<sup>3</sup>. The water pumped from the reservoirs for reuse will pass through a UV filter, and be treated by means of an automatic chlorine doser;
- Flushing systems fitted with aerators / flow restrictors; it is envisaged that the flushing system will use a flash valve, which will be set to 6 L per flush; and
- Pool management system using a silver and salt chlorinator.

3.44. The estimated daily water consumption for the Scheme is shown in **Table 3.5**.

**Table 3.5: Estimated Daily Water Consumption**

System	Water Volume (m <sup>3</sup> )
Toilets	1.25
Hot and cold water	4.0
Irrigation	0.74
Pool	0.54
<b>Total Daily Water Consumption</b>	<b>6.53</b>

## SCHEME CONSTRUCTION

### Construction Timing

3.45. The estimated duration of the construction phase of the Scheme is envisaged to be approximately eight months. The construction will be carried out concurrently across the site. The timing of the construction is described in **Table 3.6**.

**Table 3.6: Construction Timing**

Phase	Duration
Demolition / site clearance	3 days
Excavation	15 days
Construction	95 days
Landscaping	40 days
Finishings	90 days

### Raw Materials

- 3.46. The main raw materials (and estimated volumes) to be used in construction are shown in **Table 3.7**.

**Table 3.7: Estimated Raw Materials for Construction**

Materials	Volume
Concrete	1,069 m <sup>3</sup>
Walls (masonry stone or blockwork)	1,633 m <sup>3</sup>
Steel	125 tons
Screed	107 m <sup>3</sup>

### Plant and Machinery

- 3.47. The plant and machinery envisaged to be used during construction of the Scheme is shown in **Table 3.8**.

**Table 3.8: Construction Plant and Machinery**

Plant / Machinery	Numbers
<b>Demolition / Site Clearance</b>	
Excavator	1
Dump trucks	2
<b>Excavation</b>	
Excavator	1
Drum cutter	1
Dump trucks	2
<b>Construction / Finishing</b>	
Tower crane	1



Plant / Machinery	Numbers
65kVA generator	1
Digger (Bobcat)	1
Mini excavator	1
Truck loaders (with hi-up cranes)	2
Concrete pump	1
Concrete mixer trucks	2

### Construction Waste

- 3.48. The main waste streams likely to be generated during the construction of the Scheme are outlined in **Table 3.9**. Waste generated during construction of the Scheme will primarily consist of demolition and excavation waste (estimated at 4,019 m<sup>3</sup>).
- 3.49. The sub-surface geotechnical site investigations revealed material belonging to the Upper Globigerina Limestone Member, a particularly friable rock, composed primarily of clayey and marly limestone. Owing to its clay content, there is limited potential for the excavated rock to be reused, either on or off-site. However, there is potential for the material to be used as fill (in quarry restoration, for example).
- 3.50. The geotechnical investigations revealed that there is very little soil on the Scheme Site, the site having already been disturbed by the previous construction activities.
- 3.51. The existing buildings on the Scheme Site will be stripped of any remaining fittings, in preparation for demolition. Fittings, including doors, windows, electrical equipment, rainwater pipes, etc., will be carefully removed and properly segregated according to their constituent materials (wood, aluminium, metal, plastic, glass, etc). Any hazardous wastes will be placed in appropriate containers and managed in line with the hazardous waste consignment permit regulations. All hazardous wastes will be treated or disposed of in accordance with the hazardous waste consignment permit.
- 3.52. There may be steel off-cuts, residue inert building material (broken concrete, for example), residue timber used during construction, and domestic waste generated by the workers. When the mechanical, electrical and finishing works begin, other wastes will likely include plastic conduit, copper wires covered in plastic, off-cuts of steel supporting rods and cable trays, ceramic tiles, marble off-cuts, paper and plastic bags for materials, aluminium off-cuts, broken glass items, and gypsum soffit ceiling parts.
- 3.53. A waste management area will be identified on the construction site, with colour coded skips for segregating waste types; there will be smaller bins for separated domestic waste types positioned all across the site.
- 3.54. Water run-off during excavation will drain to one area of the excavation for settlement (silt traps) before collection by vacuum pumps for disposal as directed by

the Malta Resources Authority. The silt traps will also be water proofed, to ensure that the highly turbid run-off does not leave the site.

### **Construction Personnel**

53. The Scheme is expected to employ up to 55 personnel during the construction stages - 10 during the demolition / excavation phase; six during the construction phase; and 39 during the finishes phase (but not all on site at the same time).

### **Construction Management**

- 3.55. A detailed Construction Management Plan (CMP) will be prepared by the contractor awarded responsibility for the construction works. This will detail the layout of the site during the construction phase, the measures to be put in place to mitigate impacts from construction, as well as safety measures. The placement of the temporary site office(s), details on hoarding, access and signage will also be described in the CMP, as will the arrangements to be made for construction traffic. **Figure 3.22** illustrates what is envisaged at this stage in terms of the layout of the construction site; **Figure 3.23** illustrates the construction traffic route, which will be via Triq Delimara (in and out). The CMP may also include a monitoring programme, to be overseen by a competent monitor approved by the Planning Authority, if considered relevant.
- 3.56. If any utilities need to be relocated during excavation this will be at the expense of the Applicant and in cooperation with the relevant utility suppliers / operators prior to the commencement of the excavations.



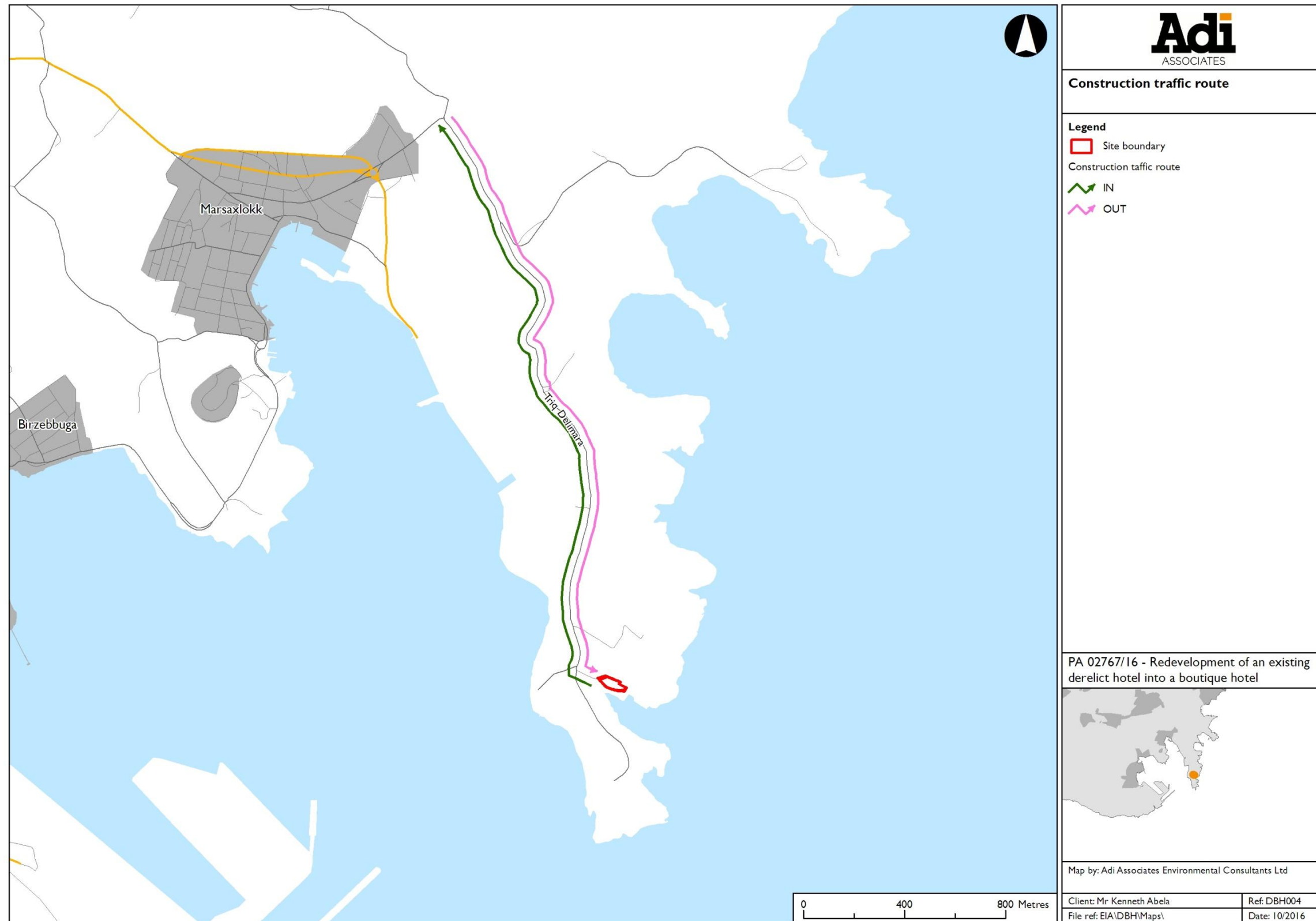
**Table 3.9: Construction Waste**

Phase	Waste Type	EWCode	H-Code	Activity	Estimated Quantity	Final Disposal Location
Demolition / Excavation /	Inert wastes	17 01 01 17 05 04 01 01 02	-	Demolition & excavation	4,019 m <sup>3</sup>	Licensed inert landfill
Construction	Concrete brick cut-offs	17 01 02	-	Construction	minimal	Licensed inert landfill
	Damaged timber cut-offs	03 01 05	-			Ghalls non-hazardous landfill
	Rebar cut-offs	17 04 05	-			Sold as scrap metal

**Figure 3.22: Construction Site Layout Plan**



**Figure 3.23: Construction Traffic Route**



## SCHEME OPERATION

### Employment and Occupancy

- 3.57. It is envisaged that the Scheme will employ up to approximately 17 employees in its operational phase - 11 full-time employees and 6 part-time employees, as outlined in Table 3.10.

**Table 3.10: Estimated Employment with Scheme in Operation**

	Full-time	Part-time
<b>Hotel</b>		
General Manager	1	-
Host Manager	1	-
Receptionists (shifts)	3	-
Chamber maid	1	1
Maintenance & Gardener	1	1
<b>Restaurant</b>		
Chef	1	1
Kitchen assistant	1	1
Waiters	2	2

### Operational Waste

- 3.58. Operational waste to be generated by the Scheme will comprise primarily municipal waste. In addition to sewage and foul water, this will include packaging waste (for example, plastic, glass, metal, cartons, and paper) and kitchen waste, including waste oil. These wastes will be separated and disposed of by licensed waste contractors engaged by the operator, in accordance with the relevant regulations.
- 3.59. As mentioned, the Applicant will be required to apply for eco-accreditation under the MTA's Eco-certification Scheme, and will therefore need to implement a long-term operational sustainability management system that will address operational waste management.

## EMISSIONS

### Emissions to Air

- 3.60. The construction processes are expected to generate minor dust emissions (both total suspended particulates and PM<sub>10</sub>), which will be temporary.
- 3.61. Emissions to air during operation will be from vehicle exhausts (PM<sub>10</sub> and NO<sub>2</sub>).

### **Greenhouse Gases**

- 3.62. As mentioned, it is envisaged that the Scheme will generate an annual surplus energy of 21,951 kWh through the use of PVs (see **Tables 3.3** and **3.4** above). Hence, if the proposed systems are all in place the Scheme is unlikely to generate greenhouse gases as a result of energy consumption.

### **Surface Water and Wastewater**

- 3.63. As mentioned, the Scheme has been designed to take account of water conservation and sustainable consumption, which includes the collection and reuse of both surface and waste water. Rainwater / surface water will be collected from roofs, elsewhere within the site, and also from the road and parking area adjacent to the Scheme Site, in separate reservoirs. Again, this water will be treated (filtering, including UV filters, and chlorine treatment) and reused as second class water. **Figure 3.24** illustrates the proposed surface water layout.
- 3.64. There is currently no drainage system available on or near the Scheme Site and it is not proposed to connect the Scheme to the sewerage network. It is instead envisaged to install an engineered cesspit, as mentioned. Incorporating an automatic chlorine dosing system and UV filters, this will facilitate the recycling of all drainage (including from toilets) for its reuse for irrigation. It is anticipated that this system would need to be certified by the relevant competent authorities to ensure that water can be reused for irrigation without detriment to the groundwater / marine environment.
- 3.65. As mentioned, sea water extracted for the geo-thermal system will be returned to the sea by means of a borehole (located beneath the plant room), where the temperature of the water on discharge to the sea is not envisaged to be more than 2 – 3 degrees higher than ambient. It is envisaged that the RO reject water will also be discharged through this borehole.



Figure 3.24: Surface Water Layout Plan





## 4. LEGISLATION AND POLICY CONTEXT

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### INTRODUCTION

- 4.1. This chapter discusses the relevance of international and national legislation, and Maltese planning policy, and the compatibility of the Scheme with this legislation / policy. It highlights and assesses the policies of Government Ministries, where relevant, and outlines those European Union (EU) Directives and Regulations, and other international obligations, applicable to the Scheme.
- 4.2. As discussed, the legal basis for the Environment and Resources Authority's (ERA) request for the preparation of an Environmental Impact Assessment stems from the *Environmental Impact Assessment Regulations* published in 2007 (Legal Notice 114 of 2007) (S.L. 549.46).

### INTERNATIONAL LEGISLATION

- 4.3. International legislation relevant to the Scheme arises from International Treaties and Conventions to which Malta is a signatory, EU legislation, and local legislation transposing these.
- 4.4. The International Protocols and Conventions relevant to the Scheme include:
- *The European Cultural Convention (Paris, 19.XII.1954)*<sup>3</sup>; and
  - *The European Convention on the Protection of the Archaeological Heritage (Revised) (Valletta, 16.I.1992)*<sup>4</sup>.

#### The European Cultural Convention

- 4.5. This Convention was adopted in Paris on the 19<sup>th</sup> December 1954 and entered into force on 5<sup>th</sup> May 1955. The objective of the Convention is to develop mutual understanding among the peoples of Europe and reciprocal appreciation of their cultural diversity, to safeguard European culture, to promote national contributions to Europe's common cultural heritage respecting the same fundamental values and to encourage in particular the study of the languages, history, and civilisation of the Parties to the Convention.
- 4.6. The Convention requires the Contracting Parties to “regard the objects of European cultural value placed under its control as integral parts of the common cultural heritage of Europe”, and “shall take appropriate measures to safeguard them and shall ensure reasonable access thereto”.

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<sup>3</sup> <http://conventions.coe.int/Treaty/en/Treaties/Word/018.doc>

<sup>4</sup> <http://conventions.coe.int/Treaty/en/Treaties/Word/143.doc>

Implications for the Scheme:

- The impacts on cultural heritage features and landscape arising from the Scheme are assessed in **Chapter 7** and **Chapter 8** of the EPS.

**The European Convention on the Protection of the Archaeological Heritage (Revised)**

- 4.7. This Convention, which was agreed in Valletta on 16<sup>th</sup> January 1992, amends the original Convention (agreed in London in 1969) on the protection of archaeological heritage. The aim of this (revised) Convention is “*to protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study*”. This revision was brought about through the acknowledgement that European archaeological heritage is under serious threat from deterioration as a result of “*major planning schemes, natural risks, clandestine and unscientific excavations, and insufficient public awareness*”. In the context of the Convention, archaeological heritage includes “*structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water*”.
- 4.8. The Convention requires the Contracting Parties to institute a legal system for the protection of archaeological heritage, including:
- The creation and maintenance of a heritage inventory;
  - The creation of archaeological reserves; and
  - Mandatory reporting to competent authorities of the chance discovery of archaeological material.
- 4.9. The Convention also requires the Parties to apply procedures for the authorisation and supervision of excavations and other archaeological activities to ensure that they are undertaken by qualified persons and in a scientific manner.
- 4.10. Other provisions of the Convention include:
- The physical protection of archaeological heritage;
  - Integrated conservation of the archaeological heritage (including through reconciliation with development plans and other planning processes);
  - Resourcing rescue archaeology;
  - Collection and dissemination of scientific information;
  - Public awareness; and
  - Prevention of illicit circulation of elements of archaeological heritage.

- 4.11. Malta ratified this Convention on 24<sup>th</sup> November 1994 and it entered into force on 25<sup>th</sup> May 1995. The provisions of this Convention have been transposed into local legislation by the Cultural Heritage Act of 2002 (see below).

Implications for the Scheme:

- The impacts on recorded features of archaeological importance arising from the Scheme are assessed in **Chapter 7** of the EPS.

## **EUROPEAN POLICY AND LEGISLATION**

- 4.12. The Treaty establishing the European Community (Article 174) provides that members should pursue the preservation, protection and improvement of the quality of the environment, aim at a high level of environmental protection and apply policies “...based on the precautionary principle and on the principles that Preventive action should be taken, that environmental damage should as a priority be rectified at source”.<sup>5</sup>
- 4.13. The relevant EU Directives include the EIA Directive 2011/92/EU on *the assessment of the effects of certain public and private projects on the environment*, which has been transposed by the Maltese *Environmental Impact Assessment Regulations 2007*, and various Directives that relate to waste, water, air quality, and others. A revised Environmental Impact Assessment (EIA) Directive (2014/52/EU) also entered into force in 2014 and will start to be applied as from 16<sup>th</sup> May 2017.
- 4.14. Since the European Union’s environment acquis has been transposed into national legislation, the Directives *per se* have not been assessed and instead the national legislation transposing these Directives is assessed below.

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<sup>5</sup> Article 191 (ex Article 174 of the Treaty establishing the European Community):

1. Union policy on the environment shall contribute to pursuit of the following objectives:
  - Preserving, protecting and improving the quality of the environment;
  - Protecting human health;
  - Prudent and rational utilisation of natural resources;
  - Promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.
2. Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.  
In this context, harmonisation measures answering environmental protection requirements shall include, where appropriate, a safeguard clause allowing Member States to take provisional measures, for non-economic environmental reasons, subject to a procedure of inspection by the Union.

## **NATIONAL LEGISLATION**

### **The Constitution of Malta**

#### ***Declaration of Principles***

- 4.15. The Constitution of Malta (Section 9) declares that the State shall safeguard the landscape and the historical and artistic patrimony of the Nation. These are the only aspects of the environment referred to in the Constitution, underlining the importance of the landscape and historical heritage.
- 4.16. Local legislation relevant to the Scheme is described in the following sections.

#### **Environment Protection Act 2016 (Act I of 2016)**

- 4.17. The former Environment and Development Planning Act, 2010 which consolidated the provisions of the Development Planning Act 1992 (as amended) and the Environment Protection Act 2001, has recently been replaced by the Environment Protection Act and the Development Planning Act.
- 4.18. The Act stipulates that *“It shall be the duty of every person and entity, whether public or private, to protect the environment and to assist in the taking of preventive and remedial measures to protect the environment and manage natural resources in a sustainable manner”*.
- 4.19. Various duties fall to the Government. Those relevant to the Scheme are:
- “4(a) to manage the environment in a sustainable manner by integrating and giving due consideration to environmental concerns in decisions and policies on land use, socioeconomic, educational and other matters;*
  - 4(b) to take such preventive and remedial measures as may be necessary to address and abate the problem of pollution and any other form of environmental degradation in Malta and beyond, in accordance with the polluter pays principle and the precautionary principle;*
  - 4(e) to apply scientific and technical knowledge and resources in determining matters that affect the environment;*
  - 4(f) to ensure the sustainable management of wastes, to promote the reduction of waste and the proper use, reuse and recovery of matter;*
  - 4(g) to safeguard biological diversity;*
  - 4(h) to combat all forms of pollution and environmental degradation;*
  - 4(i) to consider the environment as the common heritage and common concern of mankind; and*
  - 4(j) to provide incentives leading to a higher level of environmental*

*protection”.*

4.20. The Act makes provision for the establishment of an authority to implement the duties of Government under the Act – the Environment and Resources Authority (ERA). ERA’s principal duties include:

- to perform and succeed in the functions, assets, rights, liabilities and obligations of the competent authority established under the provisions of article 6 of the Environment and Development Planning Act and under the provisions of article 3 of the Malta Resources Authority Act in so far as such functions, assets, rights, liabilities and obligations refer to the role of the competent authority established under the said Act in relation to the protection and management of the environment and sustainable management of natural resources, and the prevention, mitigation, offsetting or remediation of adverse effects on the environment;
- to formulate and implement policies relating to the protection and management of the environment and the sustainable management of natural resources;
- to carry out and or commission surveys, studies, assessments, investigations, audits, monitoring and promote research on any matter relating to the environment and the natural resources;
- to provide information and issue guidelines to the public and to commercial and other entities on matters relating to the environment and natural resources;
- to establish measures for the protection of the environment and to promote the efficient use of natural resources;
- to ensure that national and international obligations relative to the matters regulated by or under the Act are entered into force and complied with;
- to permit, assess, investigate, audit, monitor, and take action on, any activity, intervention, project, operation or land use that may have an effect on the environment;
- to advise the Minister on international legislation and on the formulation of national policy; and
- to carry out, review or request others to carry out environmental assessments, environmental audits and environmental monitoring of activities and works having an impact on the environment.

#### **Development Planning Act, 2016 (Act VII of 2016)**

4.21. The Development Planning Act (DPA) establishes the Planning Authority. According to the Act the role of the Planning Authority is to:



*(a) to perform and succeed in the functions which were previously assigned to the Malta Environment and Planning Authority under the provisions of the Environment and Development Planning Act and are now contained in this Act and to perform and succeed in the assets, rights, liabilities and obligations of the Malta Environment and Planning Authority established under the provisions of the Environment and Development Planning Act to the extent that the Minister may prescribe by regulations under this Act;*

*(b) the functions of the Executive Council and the Planning Board listed under articles 38 and 64;*

*(c) to facilitate and coordinate the permit granting process for projects of common interest; Cap. 513*

*(d) to perform and succeed in the functions which were previously assigned to the Building Regulation Board and the Building Regulation Office under the provisions of the Building Regulation Act and which are now contained in this Act and to perform and succeed in the assets, rights, liabilities and obligations of the Building Regulation Board and the Building Regulation Office established under the provisions of the Building Regulation Act to the extent that the Minister may prescribe by regulations under this Act; and*

*(e) the performance of any other functions as may from time to time be assigned to it by the Minister, including the functions required to give effect to any international obligation entered into by Malta relative to matters regulated by this Act.*

4.22. The Act details the various activities to be carried out by the Planning Authority. With respect to development permits applications Regulation 71 of the Act requires that:

*(1) Any person, including a department of government or body corporate established by law, wishing to carry out any development referred to in article 70, shall apply to the Planning Board for such permission, in such manner, on such form and giving such information as the Planning Board may prescribe.*

*(2) The Planning Board may grant three types of development permissions:*

*(a) an outline development permission which gives approval in principle to the proposed development, but specifies reserved matters which need to be included in a full development permit application or applications. A period of time shall be stated within which the full development permit application or applications shall be submitted, failure of which would render the outline development permit null. Such period shall in no case exceed five years. No development may commence without a full development permit;*

*(b) a full development permission is required before any development can commence, whether or not preceded by an outline development permission. The full development permission will be given subject to conditions included in the permission;*

*(c) a non-executable full development permission which approves the development but imposes conditions to be adhered to before a full development permission is issued.*

*(3) Any person may also apply to the Planning Board for a determination as to whether a proposal requires a development permission and the Planning Board is bound to inform that person whether a development permission or any other form of notification is required in terms of this Act or not.*

### **Environmental Management Construction Site Regulations, 2007**

- 4.23. The aim of the Environmental Management Construction Site Regulations (S.L. 552.09) is to limit environmental degradation through construction management practices that cause least nuisance to neighbours, minimise risk to workers, and safeguard private and public property. The Regulations came into force on 1<sup>st</sup> November 2007.
- 4.24. The Regulations apply to “...any construction, water mining, or any other disturbances to the soil, including land clearing, scraping, ground excavation, land levelling, grading, cut and fill operations, and ancillary activities that include travel to the construction site, travel on access roads to and from the construction site and demolition activities”.
- 4.25. The Schedules within the Regulations provide requirements for reducing nuisance to neighbours through:
- Erection of a site notice containing details of the owner, site manager, architect and contractor;
  - Conditions for cutting of stone and bricks on site;
  - Transportation of loose material;
  - Obstruction of pavements;
  - Hazards to vehicular traffic;
  - Cleaning of the site and its immediate vicinity;
  - Rodent control;
  - Hoardings around development sites;
  - Covered ways and barricades;
  - Safe passage past the site;
  - Nuisance abatement, including construction times; and
  - Control of dust emissions.
- 4.26. Technical guidelines and specifications are also provided for minimisation of noise and vibration levels; health and hygiene, including waste management; hazardous materials handling; and point source pollution from storm water.

- 4.27. The Regulations apply to any construction site, except where the Minister has exempted such development under the provisions of Schedule VI 'Exemptions'.

Implications for the Scheme:

- Regard has been given to the requirements of the Regulations in addressing the construction impacts of the Scheme. An explanation of construction management is included in **Chapter 3** of the EPS. Relevant mitigation measures have been included in specific chapters of the EPS.

### **Legal Notices**

- 4.28. The Regulations in force under the Environment Protection Act and the Development Planning Act include the following Legal Notices that are relevant to the Scheme:

### **Waste Management**

- **Legal Notice 106 of 2007:** *Waste Management (Activity Registration) Regulations* (S.L.549.45) and Legal Notice 184 of 2011: *The Waste Regulations* (as amended, S.L.549.63). These Regulations regulate the production and disposal of hazardous and non-hazardous wastes. The Regulations aim to control all operations relating to the production and management of waste and promote sound waste management practices so as to safeguard human health and the environment.
- **Legal Notice 277 of 2006:** *Waste Management (Packaging and Packaging Waste) Regulations* (S.L.549.43). These Regulations aim to reduce the amounts of packaging waste disposed, including through recycling.

Implications for the Scheme:

- Waste management related to the construction and operation of the scheme is discussed in **Chapter 3** of the EPS. The Construction Management Plan (CMP) that will be prepared for the Scheme will also address waste management issues. A waste management plan for the operation may also be required as part of the environmental permit for the operation of the Scheme, if ERA requests one.

### **Water**

- **Legal Notice 194 of 2004:** *Water Policy Framework Regulations* (as amended, S.L.423.20). These Regulations are issued under both the Environment Protection Act and the Malta Resources Authority Act. They establish a framework for the protection of coastal waters as well as inland surface waters, transitional waters and groundwater. The framework is intended to prevent further deterioration, and to protect, enhance, and restore the status of aquatic systems.

Implications for the Scheme:

- The impact of the Scheme in respect of groundwater is described in **Chapter 5** of the EPS. Due to the nature of the Scheme no significant impacts on groundwater are foreseen.

**Air Quality**

- **Legal Notice 478 of 2010:** *Ambient Air Quality Regulations* (as amended, S.L. 549.59). These Regulations lay down measures aimed at defining and establishing objectives for ambient air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole; and assessing the ambient air quality in Malta on the basis of specified methods and criteria. The Regulations set limit values for various pollutants, including PM<sub>10</sub>, NO<sub>2</sub> and benzene.
- **Legal Notice 291 of 2002:** *National Emission Ceilings for Certain Atmospheric Pollutants Regulations* (as amended, S.L. 549.32). The Regulations stipulate that Malta must limit emissions of nitrogen oxides and volatile organic compounds. It is the responsibility of ERA to ensure that the thresholds laid down in the Regulations are not exceeded.

Implications for the Scheme:

- The Scheme will not result in a significant growth in vehicular traffic, either during the consultation phase or when it comes into operation; hence, there will be no significant impact on air quality (particularly PM<sub>10</sub> and NO<sub>2</sub>).

**Noise**

- **Legal Notice 193 of 2004:** *Assessment of Environment Noise Regulations* (S.L. 549.37) sets the scene for a survey and report on noise; it does not set levels or detail measurement / assessment methodologies. Legal Notice 64 of 2002: *Protection of workers from the risks related to exposure to noise at work Regulations* establishes noise limits for outdoor machinery.

Implications for the Scheme:

- These Legal Notices are not directly relevant to the Scheme, as they do not provide guidance on the noise thresholds for residential areas and guidance on how to measure noise. For the assessment of noise impacts, UK guidance and standards are used, as described in **Chapter 9** of the EPS, and as instructed by ERA.



### **Biodiversity**

- **Legal Notice 49 of 1993: Flora and Fauna Protection Regulations.** These Regulations declare certain species to be protected, and authorise the Director of the Environment Protection Department (EPD)<sup>6</sup> to prohibit the importation of any species that could lead to the endangering of the biological identity of the islands or for other reasons in the national interest.
- **Legal Notice I of 1994: Environment Protection (Preventative and Remedial Measures) Regulations.** These Regulations empower the Director of the Environment Protection Department (EPD)<sup>7</sup> to inspect the development area or any vehicles on the site for suspected violations of the Act.
- **Legal Notice 311 of 2006: Flora, Fauna and Natural Habitats Protection Regulations.** These Regulations set up a national ecological network of Special Areas of Conservation (SACs). The Regulations introduce the precautionary principle in relation to SACs. The Regulations also deal with other issues, including the re-introduction of species into the wild, the control of alien species affecting Maltese biodiversity, surveillance and monitoring of biodiversity and environmental education.

#### Implications for the Scheme:

- The impact of the Scheme on the flora and fauna is discussed in **Chapter 6** of the EPS. During construction, impacts on flora and fauna are considered not significant to minor since the site was identified as being of low ecological value and mostly composed of ruderals and alien species and construction impacts are temporary. **Chapter 6** assessed that the impact of trampling on surrounding habitats could be major.

### **Other**

- **Legal Notice 116 of 2005: Freedom of Access to Information on the Environment Regulations** (as amended, S.L.549.39). These Regulations ensure freedom of access to and the dissemination of information held by public authorities on the environment.

#### Implications for the Scheme:

- The EPS and its supporting documents fall under this Legal Notice and are to be made public.

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<sup>6</sup> Now the Director of Environment at the Environment and Resources Authority.

<sup>7</sup> Now the Director of Environment at the Environment and Resources Authority.

### **Fertile Soil (Preservation) Act**

- 4.29. This Act (Act XXIX of 1973) requires that, before undertaking excavations, the Director of Agriculture must be informed to ensure that the soil is removed and is deposited in a manner approved by the Director. Further details governing the transport and reuse of soil are included in the *Preservation of Fertile Soils Regulations (Legal Notice 104 of 1973, S.L. 236.02)* issued under this Act.

#### Implications for the Scheme:

- The transport of soil from the Site for reuse will require a permit from the Director of Agriculture.

### **Protection of Antiquities Regulations, 1932**

- 4.30. Originally issued under the Antiquities (Protection) Act<sup>8</sup> of 1925, the Protection of Antiquities Regulations (as amended, S.L. 445.01) apply to monuments and other objects, whether movable or immovable, having a geological, palaeontological, archaeological, antiquarian or artistic importance that have been in Malta for at least 50 years. The Regulations afford protection to buildings or sites of such importance, ensuring that they are not demolished or altered without the permission of the Minister responsible for Culture. The Regulations include a list of properties, sites and features that qualify for protection under the Act.

#### Implications for the Scheme:

- The impact of the Scheme on antiquities is discussed in **Chapter 7** of the EPS. With the exception of rubble walls on the eastern part of the site there are no known features of cultural heritage importance within the Scheme Site.

### **Cultural Heritage Act, 2002**

- 4.31. The Cultural Heritage Act provides overall protection to “...all movable or immovable objects of artistic, architectural, historical, archaeological, ethnographic, palaeontological, and geological importance...” and includes information and data relative to cultural heritage in Malta. It also includes “...archaeological, palaeontological or geological sites and deposits, landscapes, groups of buildings...which have an historical value”.
- 4.32. The Act also controls interventions that may be made on cultural property, all of which require a permit from the Superintendent of Cultural Heritage and are subject to tests, examinations or investigations. Furthermore, *archaeological or palaeontological excavations, or explorations on land, as well as in the territorial waters, or in the contiguous zone of Malta, can only be made by the Superintendent, or with written permission of the Superintendent (Section 43(1))*. Chance discoveries of archaeological remains are also regulated by the Act: “Any person who, even accidentally, discovers any

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<sup>8</sup> The Antiquities (Protection) Act was repealed by the Cultural Heritage Act of 2002.

*object, site or building to which this Act applies in accordance with article 3, shall immediately inform the Superintendent, keep the object found in situ, and shall not for a period of six working days after informing the Superintendent proceed with any work on the site where the object of cultural property is discovered". The details about rights and obligations by all parties in the eventuality of an archaeological discovery are described in Sections 43(3), 43(4), 43(5), 43(6), and 43(7) of the Act.*

Implications for the Scheme:

- The impact of the Scheme on cultural heritage is discussed in **Chapter 7** of the EPS. With the exception of rubble walls on the eastern part of the site there are no known features of cultural heritage importance within the site.
- 4.33. The Act specifies that *"No person shall make any interventions on such cultural property or classes thereof without first having obtained a permit thereof from the Superintendence (of Cultural Heritage)". Applications are determined subject to the results of prior investigation. There are restrictions on archaeological excavations as stated in Section 43(1) whereby excavations or explorations can only be made by the Superintendence of Cultural Heritage, or with written permission of the Superintendence. Chance discoveries of archaeological remains are also regulated and must be reported to the Superintendence.*
- 4.34. **Legal Notice 160 of 1997: Rubble Walls and Rural Structures (Conservation and Maintenance) Regulations** (as amended, S.L.552.01). These Regulations protect all rubble walls and non-habitable rural structures in view of their historical and architectural importance, their exceptional beauty, their affording a habitat for flora and fauna, and their vital importance in the conservation of soil and water. Walls may be sensitively repaired without prior authorisation. Certain sensitive areas may however be declared to be Rubble Wall Conservation Areas in which no alterations to the location or construction of rubble walls and the traditional methods of their repair and maintenance will be permitted without the written approval of the Planning Authority. In such areas, the Minister for the Environment may order the owner / occupier to repair and re-erect all the rubble walls within the area, and to continue to maintain them. The dismantling of such walls requires a permit from the Planning Authority.

Implications for the Scheme:

- The impact of the Scheme on rubble walls and rural structures is discussed in **Chapter 7** of the EPS. In summary, with the exception of some rubble walls located on the eastern portion of the site, there are no walls that will be lost as a result of the Scheme.

**Malta Resources Authority Act 2001**

- 4.35. The Malta Resources Authority Act established the Malta Resources Authority (MRA) and assigns it a number of functions in relation to the regulation of the water, minerals, and energy sectors. The Minister responsible for resources may, among



others, also make regulations for the granting, renewal, transfer, suspensions, and cancellation of licences, permits, or other authorisations.

4.36. The regulations currently in force under the Malta Resources Authority Act that are relevant to the Scheme include the Legal Notices listed hereunder:

- **Legal Notice 108 of 2009:** *The Protection of Groundwater against Pollution and Deterioration Regulations* (S.L.423.36). These Regulations aim to protect groundwater against pollution and deterioration.

Implications for the Scheme:

- The impact of the Scheme in respect of groundwater is described in **Chapter 5** of the EPS. Due to the nature of the Scheme no significant impacts on groundwater are foreseen.
- **Legal Notice 538 of 2010:** *Promotion of Energy from Renewable Sources Regulations* (S.L.545.II). The Regulations seek to increase the share of energy from renewable sources.

Implications for the Scheme:

- The Scheme envisages the use of renewable energy technologies, with projections being that the development will have a surplus of energy generated from such sources, as described in **Chapter 3** of the EPS.

**Waste Management Plan for the Maltese Islands: A Resource Management Approach 2014 - 2020**

4.37. The new *Waste Management Plan for the Maltese Islands: A Resource Management Approach, 2014 – 2020* discusses legislation relevant to waste management in the Maltese Islands, presents a detailed picture of the waste arisings, and includes a strategy in relation to all waste streams, with the objective of moving waste management in Malta up the waste hierarchy through increased prevention of waste, re-use, recycling and recovery. The Plan provides the framework through which the various requirements and targets contained in the European Waste Directives will be implemented, in particular the *Waste Framework Directive (2008/98/EC)*; *Landfill Directive (1999/31/EC)*; *Packaging and Packaging Waste Directive (1994/62/EC)*; *Waste Electrical and Electronic Equipment Directive (WEEE) (2002/96/EC)*; *Batteries and Accumulators Directive (2006/66/EC)*; and *End of Life Vehicles (2000/53/EC)*.

4.38. The Waste Management Plan defines waste management policy based on four principles:

- To reduce waste and to prevent waste occurring, with a view to achieving a zero-waste society by 2050.
- To manage waste in accordance with the waste hierarchy, whereby it is recognised that waste should be prevented or reduced, and that what is generated should be recovered through re-use, recycling, or other recovery

options, in order to reduce waste going to landfill, and to use the collection system to help achieve these goals.

- To cause the least possible environmental impacts in the management of waste.
- To ensure that the polluter-pays principle is incorporated in all waste management procedures.

Implications for the Scheme:

- Waste management related to the construction and operation of the scheme is discussed in **Chapter 3** of the EPS. The Construction Management Plan (CMP) that will be prepared for the Scheme will also address waste management issues.

## PLANNING POLICY

- 4.39. The planning policy relevant to the Scheme is set out in the *Strategic Plan for the Environment and Development (SPED), 2015*, the *Marsaxlokk Bay Local Plan, 1995*, the *Rural Policy and Design Guidance, 2014*, and the *Development Control Design Policy, Guidance and Standards, 2015*.

### Strategic Plan for the Environment and Development 2015

- 4.40. The Strategic Plan for the Environment and Development (SPED) outlines “*proposals for the future spatial distribution of development and the protection of the environment on land and sea in a manner that is consistent with national policies and integrates Government's social, economic and environmental objectives*”. The SPED identifies distinct spatial areas, including the Coastal Zone (terrestrial and marine), with defined areas of Predominantly Urban Coast and Predominantly Rural Coast landside and extending seaward to 12 nautical miles; the Scheme Site is located in the Predominantly Rural Coast Zone (see **Figure 4.1**).
- 4.41. The vision for the Coastal Zone (and the Marine Area) is described as follows:
- “The Coastal Zone and Marine Area shall maximise the potential for sustainable socio-economic growth and renewable energy infrastructure, shall accommodate legitimate compatible uses, sustain the livelihood of the fishing community, remain rich in biodiversity and visually striking and become pollution free and accessible for public enjoyment. It shall play a significant enabling role for the Maltese Islands to reduce their impact on climate change and strengthen their capacity to adapt to climate change”.*
- 4.42. The SPED outlines a National Spatial Framework (NSF) for the Maltese Islands. The General Principles of this NSF advocate a sequential approach to the use of land, with the aim of ensuring the sustainable use of land resources and the efficient use of available space. This approach aims to safeguard land take-up outside the Urban Area, where land take-up should only be considered “*as a last resort and where it is*

essential for the achievement of sustainable development”. In relation to the Coastal Zone, the NSF outlines a planning framework “to integrate socio-economic growth and environmental management”.

- 4.43. In relation to the terrestrial coast, and with relevance to the Scheme, **Coastal Objective 1** of the NSF advocates:

*“To prioritise uses that necessitate a location on the coastal zone and marine area in a manner which minimises user conflicts, does not accelerate coastal erosion, protects biodiversity, cultural heritage, landscapes and visual access to them, public access and use and increases resilience to climate change impacts by:*

1. *Designating...(b) a predominantly terrestrial rural coast to encourage the continuation of traditional agricultural use where predominant and public access for informal recreation, to restrain mineral extraction from extending towards the coastline, and improve small scale beach facilities The rural coast may also accommodate legitimate coastal uses of strategic importance which may be incompatible with urban coastal uses and where no alternative locations on the designated urban coast exist”*

- 4.44. Additionally, and with relevance to the Scheme, **Coastal Objective 3** advocates:

*“To ensure that existing coastal recreational resources are protected, enhanced and accessible and to facilitate the provision of new recreational facilities which do not restrict or interfere with physical and visual public access of the coast and in a manner which does not have an unacceptable adverse impact on protected areas, species and areas of high landscape sensitivity by:...*

3. *Protecting and encouraging informal recreational facilities on the terrestrial rural coast*
4. *Protecting designated beaches and swimming zones”.*

Implications for the Scheme:

- The Scheme Site lies within the Predominantly Rural Coastal Zone. The impacts of the Scheme in respect of coastal erosion, biodiversity, cultural heritage, landscapes and visual access to them, and public access and use are described in **Chapters 5, 6, 7, and 8**, respectively, of the EPS. Greenhouse gas emissions are addressed in **Chapter 3** of the EPS.

- 4.45. In relation to guiding socio-economic development, and with relevance to the Scheme, **Thematic Objective 1** of the NSF advocates:

*“To manage the available potential space and environmental resources on land and sea sustainably to ensure that socio-economic development needs are met whilst protecting the environment by:*



- 1. Guiding the location of the bulk of new jobs and homes within the Urban Area*
- 2. Safeguarding prime tourism sites*
- 5. Achieving a wider mix of compatible uses on land and sea”.*

4.46. Additionally in relation to guiding socio-economic development, and with relevance to the Scheme, **Thematic Objective 5** of the NSF advocates:

*“To ensure that existing recreational resources are protected, enhanced and accessible, and to facilitate the provision of new recreational facilities to improve social cohesion, human health, air quality and biodiversity by:*

- 1. Directing the bulk of new formal recreation facilities to the Urban Area and the Urban Coast and designating new areas within the Rural Area as National Parks*
- 5. Ensuring that the scale and design of supporting infrastructure improves the intrinsic quality of the experience of informal recreation”.*

Implications for the Scheme:

- The Scheme envisages the provision of new recreational facilities to support existing recreational uses, but as ancillary to the Hotel. The nature and scale of the new recreational facilities is described in **Chapter 3** of the EPS.

4.47. The SPED objectives in relation to the Rural Area are also relevant to the Scheme. In relation to protecting the rural environment, and with relevance to the Scheme, **Thematic Objective 8** of the NSF advocates:

*“To safeguard and enhance biodiversity, cultural heritage, geology and geomorphology by:*

- 2. Safeguarding protected areas, including SACs, SPAs and MPAs whilst enabling activities aimed at enhancing their management objectives”.*
- 7. Controlling activities which might have an impact on areas, buildings, structures, sites, spaces and species*
- 9. Controlling sources of light pollution which negatively affect the Rural Area”.*

Implications for the Scheme:

- The Scheme Site lies within a designated Area of Ecological Importance (AEI) - Rdum mid-Daħla ta’ San Tumas sa Is-Sarç. The proposed

development must therefore be sensitive to the protected nature of the site and its surroundings. The impact of the Scheme on terrestrial ecology is discussed in **Chapter 6** of the EPS.

- 4.48. Additionally, in respect of protecting the rural environment, and with relevance to the Scheme, **Rural Objective 3** of the NSF advocates:

*“To guide development which is either justified to be located in the Rural Area in approved Government policies, plans or programmes, or is incompatible with urban uses and where alternatives are not possible, to the Rural Area away from protected areas and areas of high landscape sensitivity, preferably on Areas of Containment, previously developed land or existing buildings while ensuring the improvement of the quality of the rural environment by:*

*4. Requiring compensation measures to enhance the rural environment”.*

Implications for the Scheme:

- The Scheme Site lies within a designated Area of High Landscape Value (AHLV) but is also a site which is considered to be ‘previously development land’. The impact of the Scheme in respect of landscape and visual amenity is described in **Chapter 8** of the EPS.





## Marsaxlokk Bay Local Plan 1995

- 4.49. The Scheme Site is identified in the Marsaxlokk Bay Local Plan as lying within an Area of Ecological Importance (AEI) and within the Delimara National Park. The following Local Plan policies are specifically relevant to the Scheme:
- 4.50. **POLICY ME01 (Areas of Ecological Importance and Sites of Scientific Importance):** *Areas of Ecological Importance and Sites of Scientific Importance are defined as indicated on the Policy Map. The major areas are in the vicinities of Wied il-Qoton, Wied Zembaq, Ghar il-Friefet, Wied Znuber, Ghar Hasan, north of Marsaxlokk, Xrobb il-Ghagin and Delimara Point.*

### Implications for the Scheme:

- The impact of the Scheme in respect of terrestrial ecology is described in **Chapter 6** of the EPS.
- 4.51. **POLICY MD01 (Delimara National Park):** *In accordance with Structure Plan Policy RCO14, the greater part of the Delimara Peninsula, will be designated as a National Park, where priority will be given to conservation, protection and improvement of the natural heritage. In this location, positive provision will also be made for recreational uses consistent with this objective. Limited commercial development related to the needs of park users will be considered. Other uses likely to have a harmful or conflicting impact will be refused.*

### Implications for the Scheme:

- The Scheme detail is provided in **Chapter 3**. The Scheme consists of commercial development, providing accommodation as a hotel. As mentioned, the Scheme envisages the provision of new recreational facilities as ancillary to the Hotel including signage, toilets, etc. The nature and scale of the new recreational facilities are described in **Chapter 3** of the EPS.

## Rural Policy and Design Guidance, 2014

- 4.52. When defining the scope, the spirit of the Rural Policy and Design Guidance is defined as follows: ‘... to allow whoever genuinely needs to upgrade or redevelop an existing building or to construct a new one outside the development zone, in conjunction with its use.’
- 4.53. **POLICY 1.2G (Protected Areas, Special Areas of Conservation and Special Protected Areas)** addresses the conservation of protected areas, including Areas of Ecological Importance (AEI) and Areas of High Landscape Value (AHLV). Specifically, *proposed developments which would have an unacceptable adverse environment, landscape, cultural or archaeological impact will not be permitted.*
- 4.54. **POLICY 1.2H (Protection of Landscape Features)** advocates that *The Authority will seek to conserve, maintain and enhance important landscape features that contribute to:*
- *the connectivity, appearance and/or integrity of protected areas, sites and/or features,*

- the character, scenic or ecological value of the rural area.

*Proposals which would have an adverse impact on important landscape features, including their integrity or character, will not be permitted, unless the adverse impact is avoided or mitigated to the satisfaction of the Authority. The Authority will seek to establish a legal management agreement with the applicant to ensure adequate protection and continuous management of important landscape features.*

**4.55. POLICY 6.2C (Redevelopment and Change of Use of Existing Buildings ODZ)** advocates that Permission may be granted for the total redevelopment of an existing building, or the consolidation of buildings, located outside development zone, provided that all the following criteria are satisfied:

- (1) *The applicant can sufficiently prove that the building/s is covered by development permission (other than those specifically permitted for agricultural use after the coming into force of this policy document), or that it is/are/was a pre-1978 building/s;*
- (2) *The building/s does not merit inclusion in the list of scheduled property and/or is not historical, architectural, vernacular or other significance;*
- (3) *The replacement building does not exceed the total floor area of the previous buildings/s;*
- (4) *The replacement building is of high quality rural design and shall fully respect the wider context in which it is located;*
- (5) *The replacement building shall be limited to:*
  - a. *A use already legally established and/or covered by a development permission; or*
  - b. *New uses permitted by this policy document subject to the respective criteria. Except for dwellings referred to in Policy 2.2B, this policy excludes dwellings which dwellings can only be permitted in terms of policies 6.2A and 6.2B;*
  - c. *Disused livestock farms which have ceased operation for at least 10 years (prior to the coming into force of this policy document) and which are creating a negative environmental impact on the site and its surroundings. These may be redeveloped into 1 single dwelling unit which is not to exceed 200 m<sup>2</sup> floor space;*
  - d. *Any other use that would result in a wider environmental benefit, provided the site is already serviced by a road network that would adequately cater for the proposed new use;*

- (6) *The use of the building shall be subject to prior consultation with the Departments/Authorities responsible for regulating such use; and*
- (7) *Any existing trees and shrubs within and around the site shall be fully cared for and retained, and if no such vegetation exists, soft landscaping around the redeveloped building shall contain a number of trees and shrubs of at least three different indigenous species, planted in clusters.*

*A full basement may be permitted and is limited to the footprint of the existing building (the basement will not count as part of the total floor area).*

*Where no legally-established peripheral boundary walls exist around the building to be redeveloped, the Authority may allow the construction of walls built in random-sized irregularly shaped rough dressed stones (recycled from demolition) using the same traditional construction methodology of rubble walling to define the curtilage of the building. Provided this does not lead to visual or environmental impacts (including the demolition of existing rubble walls).*

- 4.56. **POLICY 6.4 (Swimming Pools ODZ)** allows for the construction of a swimming pool ODZ where the pool will be “located within the curtilage of a legally-established accommodation” and “the proposed pool and any ancillary facilities are of a compatible design and must respect the rural context”. “Scheduled locations (Class A or Class B Area / Site of Archaeological Importance, and / or Level 1 or 2 AEI / Site of Scientific Importance) are in principle considered inappropriate locations for swimming pools, unless it can be duly demonstrated through the necessary assessment, that the development does not compromise the site scheduling characteristics”.

Implications for the Scheme:

- The Scheme involves the redevelopment of an existing building, albeit on a larger footprint than the existing building, as well as construction of a swimming pool as part of the redevelopment. The impacts of the Scheme on archaeology, ecology, and rural landscape and visual amenity are described in detail in the various chapters of the EPS. The acceptability of such impacts will be decided by the Planning Authority. Other planning considerations relevant to this Guidance will also be assessed by the Planning Authority.

**Development Control Design Policy, Guidance and Standards, 2015**

- 4.57. This policy document is relevant to the Scheme in terms of building design, building height, access, parking requirements, and residential amenity. The Simplified Traffic Statement prepared for the Scheme considered the site access arrangements, as well as the parking requirements. The plans included in this EPS are the latest optimised plans for the Scheme.



## **CONCLUSION**

- 4.58. This chapter reviewed the legislation and planning policies relevant to the Scheme. It has considered the relevant laws of Malta, Government Policies, and the policies of the Strategic Plan for the Environment and Development, the relevant Local Plan, and subsidiary planning documents, as well as EU legislation.

## 5. GEO-ENVIRONMENT

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### INTRODUCTION

- 5.1. This chapter describes the geology, geomorphology and hydrogeology within the Scheme Site and its surroundings. It also includes an assessment of the impacts and risks posed by the Scheme on the geo-environment.
- 5.2. The key geo-environment issues arising from the Scheme are outlined below:

#### Key Issues:

- **Extraction of mineral resources**
- **Change in geomorphology and hydrogeology features**
- **Stability of the Scheme Site**
- **Stability of the cliff face adjacent to the Scheme Site**
- **Impact on ground water**
- **Impact on surface water run-off**

### ASSESSMENT METHODOLOGY

- 5.3. The assessment methodology for the geo-environment study is described below. The guidance on the protection of geology, geomorphology and hydrogeology is outlined at the outset.

#### Standards and Policy Guidance

- 5.4. The principal sources of guidance for the impact assessment were the *Strategic Plan for the Environment and Development 2015*, the *Structure Plan for the Maltese Islands 1992*<sup>9</sup>, the *Marsaxlokk Bay Local Plan 1995*, the *Minerals Subject Plan 2002*, and *The Earth Conservation Strategy 1991* (The British Nature Conservancy Council).
- 5.5. The European Union does not have any directive that protects the geo-environment *per se*; however Directive 92/43/EEC (the Habitats Directive) seeks to preserve and protect certain geological / geomorphologic features where these features constitute

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<sup>9</sup> The *Structure Plan for the Maltese Islands 1992* has been superseded by the *Strategic Plan for the Environment and Development 2015* (SPED); however, the SPED does not outline policy guidance relating to the geo-environment in the level of detail that it was outlined in the Structure Plan. In the absence of specific policy guidance, reference is still made to the relevant policies of the Structure Plan.

important habitats. Important habitats include rocky coastlines and submerged caves. This Directive has been transposed into national legislation (LN 311 of 2006 / S.L. 549.44).

- 5.6. Conservation profiles are intended to prevent future potential damage to sites. Since no earth conservation model exists for the Maltese Islands, it has been suggested in past studies (for example, Debono & Scerri, 1996<sup>10</sup> and Mallia *et al.*, 1999<sup>11</sup>) that until such a model is formulated, models used in other countries can be adopted for local use. The conservation model that has been used is that adopted by The Earth Conservation Strategy of the Nature Conservancy Council (UK).

### **Area of Influence**

- 5.7. The Area of Influence (A of I) for the geology study is shown in **Figure 5.1**; it was defined having regard to the nature of the Scheme and the extent of the excavation works in particular. The A of I for the geomorphology / hydrology study is shown in **Figure 5.2**.

### **Geo-environment Methodology**

- 5.8. The geo-environment study involved:
- Identification and description of the geology, geomorphology and hydrogeology of the Scheme Site and the respective A of Is;
  - Identification, mapping and description of the structural features present, outcrop formations, members, or bed sub-divisions, including their palaeontologic content;
  - Identification and description of aquifers, water courses, drainage patterns, surface run-off, and springs and wells (as identified); and
  - Identification of features protected by legislation, or which warrant such protection, and their appropriate level of protection, as necessary.
- 5.9. Two investigative boreholes were drilled as part of the baseline survey. The location of these boreholes is shown in **Figure 5.3**<sup>12</sup>.

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<sup>10</sup> Debono, G. and Scerri, S., 1996. North Harbours Local Plan Geology Survey Report. Prepared by Malta University Services for the Planning Authority, Floriana, Malta; 72 pp. + 210 data cards + 15 figures + 20 plates.

<sup>11</sup> Mallia, A., Briguglio, M., Ellul, A.E., and Formosa, S., 1999. Population, Tourism, Land-Use and Non-Renewable Resources in the State of the Environment Report for Malta 1998, commissioned by the Environment Protection Department, Government of Malta, Malta Council for Science and Technology, Malta.

<sup>12</sup> The position of the borehole in the eastern portion of the site was relocated from the general position agreed with ERA in the methodology for the geo-technical survey. The decision to relocate the borehole was made by the geologist following a more detailed inspection during the site survey and in order to gain a better understanding of the geology in respect of the stability of the cliff.

5.10. The study resulted in the preparation of the following:

- Geological Map;
- Hydrology Map;
- Report on the quality of the stone material to be excavated and its potential for re-use (determined by visual inspection during the field survey and by laboratory testing for water absorption, unconfined compressive strength, and wet and dry density);
- Report on the stability of the cliff face (determined by the field survey and by the sub-surface geological investigation); and
- Report on the stability of the walls of the excavation (also determined by the field survey and by the sub-surface geological investigation).



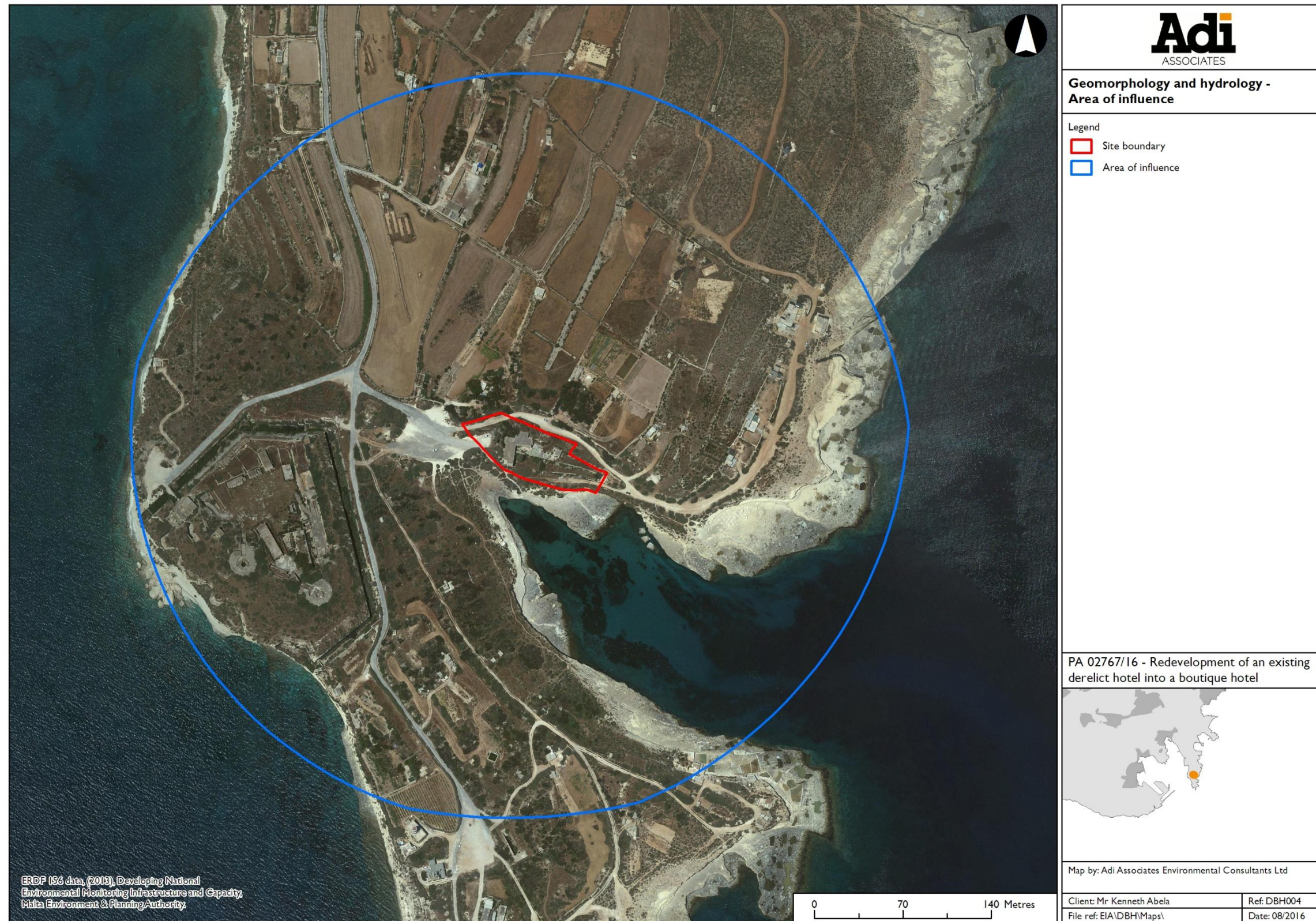
**Figure 5.1: Geology Area of Influence**



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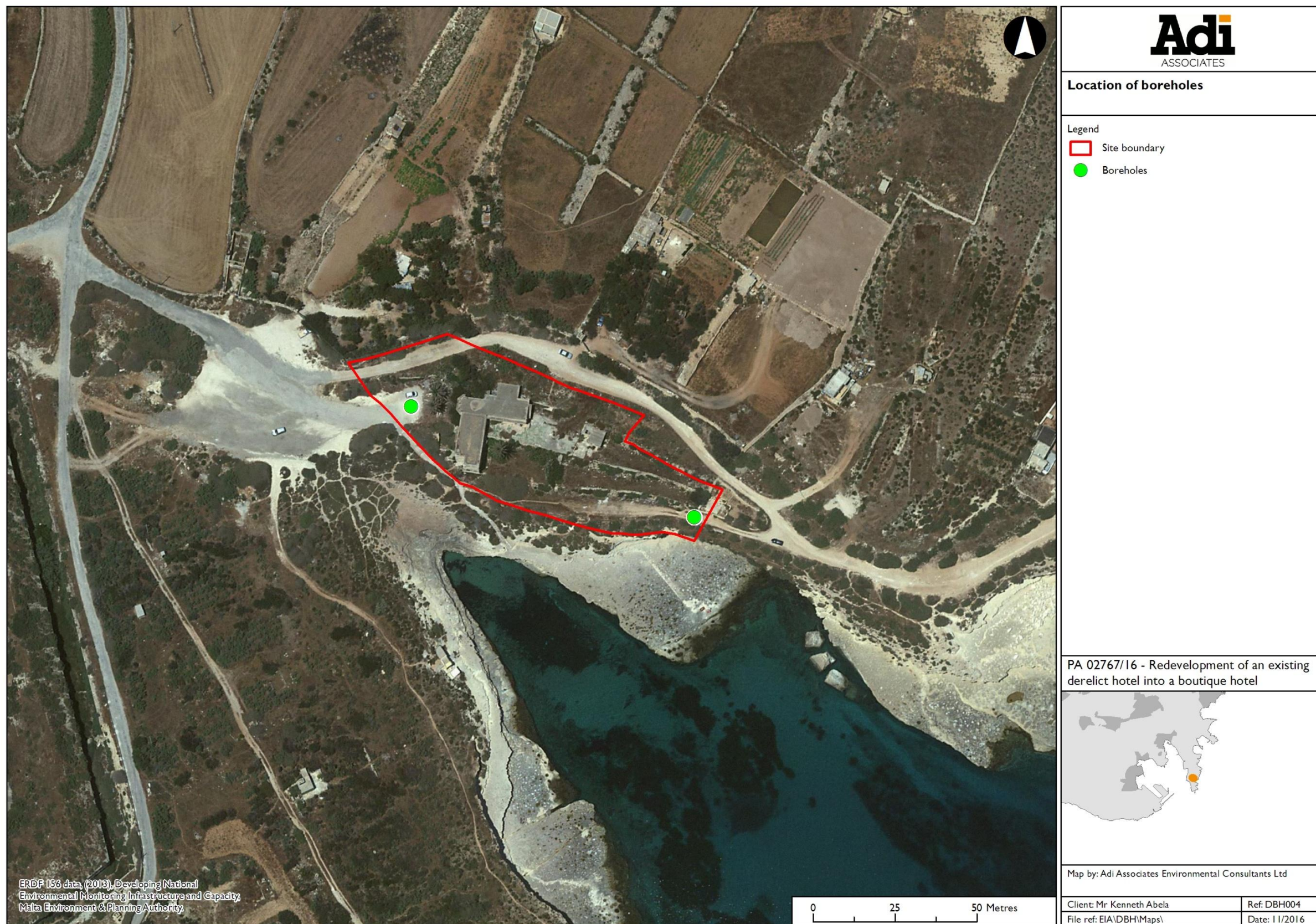
**Figure 5.2: Geomorphology / Hydrology Area of Influence**



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**Figure 5.3: Geo-technical Investigation: Location of Boreholes**



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## **BASELINE: GEOLOGY**

### **Stratigraphy**

- 5.11. The five late-tertiary formations exposed on the Maltese Islands are:
- Upper Coralline Limestone (youngest);
  - Greensand;
  - Blue Clay;
  - Globigerina Limestone; and
  - Lower Coralline Limestone (oldest).
- 5.12. In addition to these formations, Quaternary continental deposits are also known to occur sporadically on the Maltese Islands. An unconformity and an erosional surface separate this unit from the underlying marine sedimentary succession.
- 5.13. The exposed rock formations on the Delimara Peninsula are of the Upper and Middle Globigerina Limestone Members of the Globigerina Limestone Formation (see **Figure 5.4**). The Upper Globigerina Limestone Member is extensively developed on the Peninsula, and it is this rock unit that is exposed at the Scheme Site, and within the A of I. The Middle Globigerina Limestone Member is exposed along the cliff line west of the Scheme Site and in the bays further north.
- 5.14. The Quaternary Deposit within the A of I takes the form of a lens-shaped body in the range of 6 m long by 3 m wide, composed of pebble to cobble-sized Upper Globigerina lithoclasts cemented by a fine red soil matrix (see **Figure 5.5**).

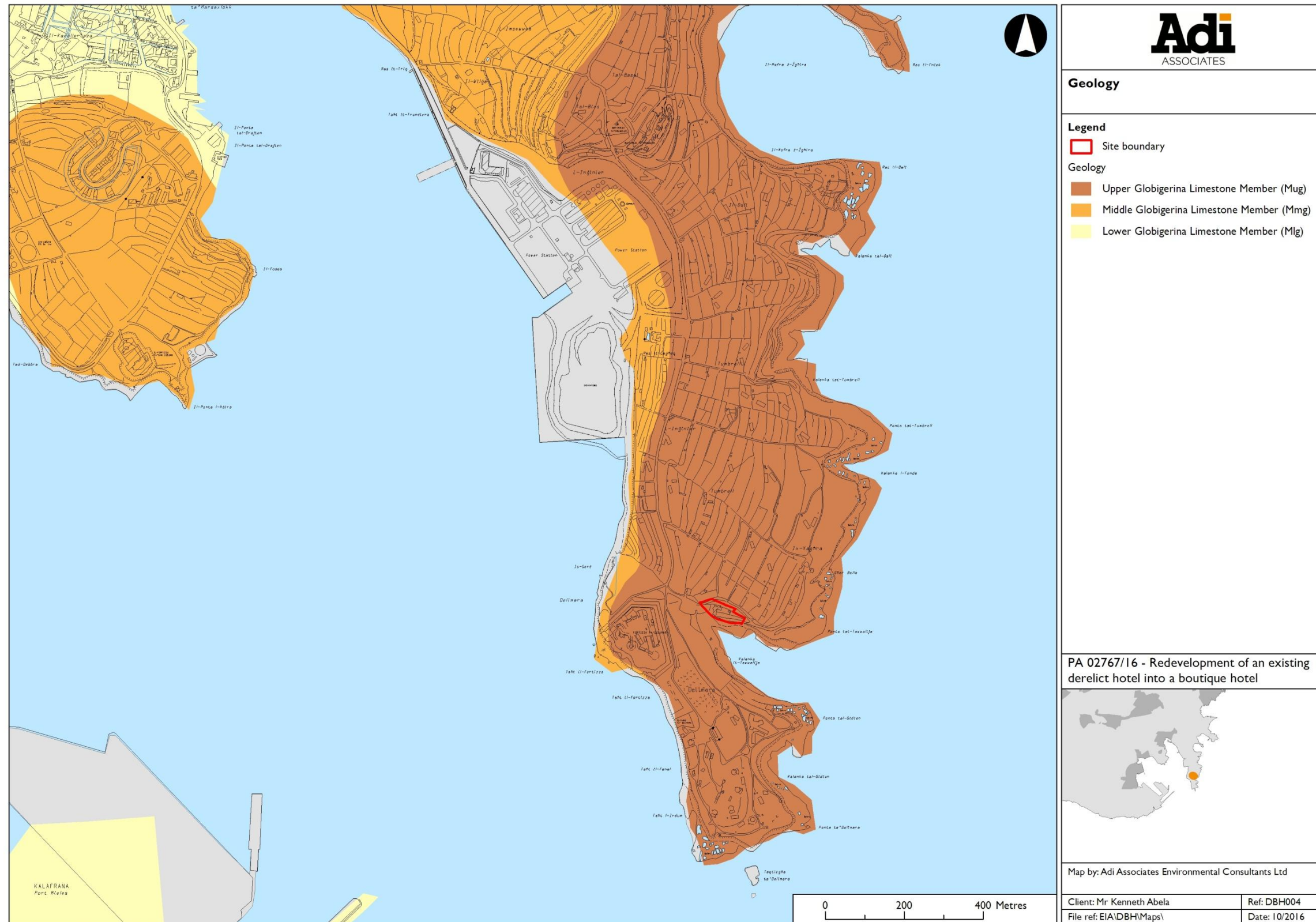
### **Structural Geology**

#### ***Faulting and Joints***

- 5.15. The geological map of the Maltese Islands shows that the Scheme Site is located some 40 m from a minor fault; the geology sub-consultant considers that this fault is of no consequence. A small deposit of Quaternary material occurs on the fault scarp. In addition to faulting and jointing, strata dip some 4 to 6 degrees to the northeast of the Scheme Site. The Delimara Peninsula can be regarded as a tilted block exposing Upper Globigerina Limestone on the east and Middle Globigerina Limestone on the west.



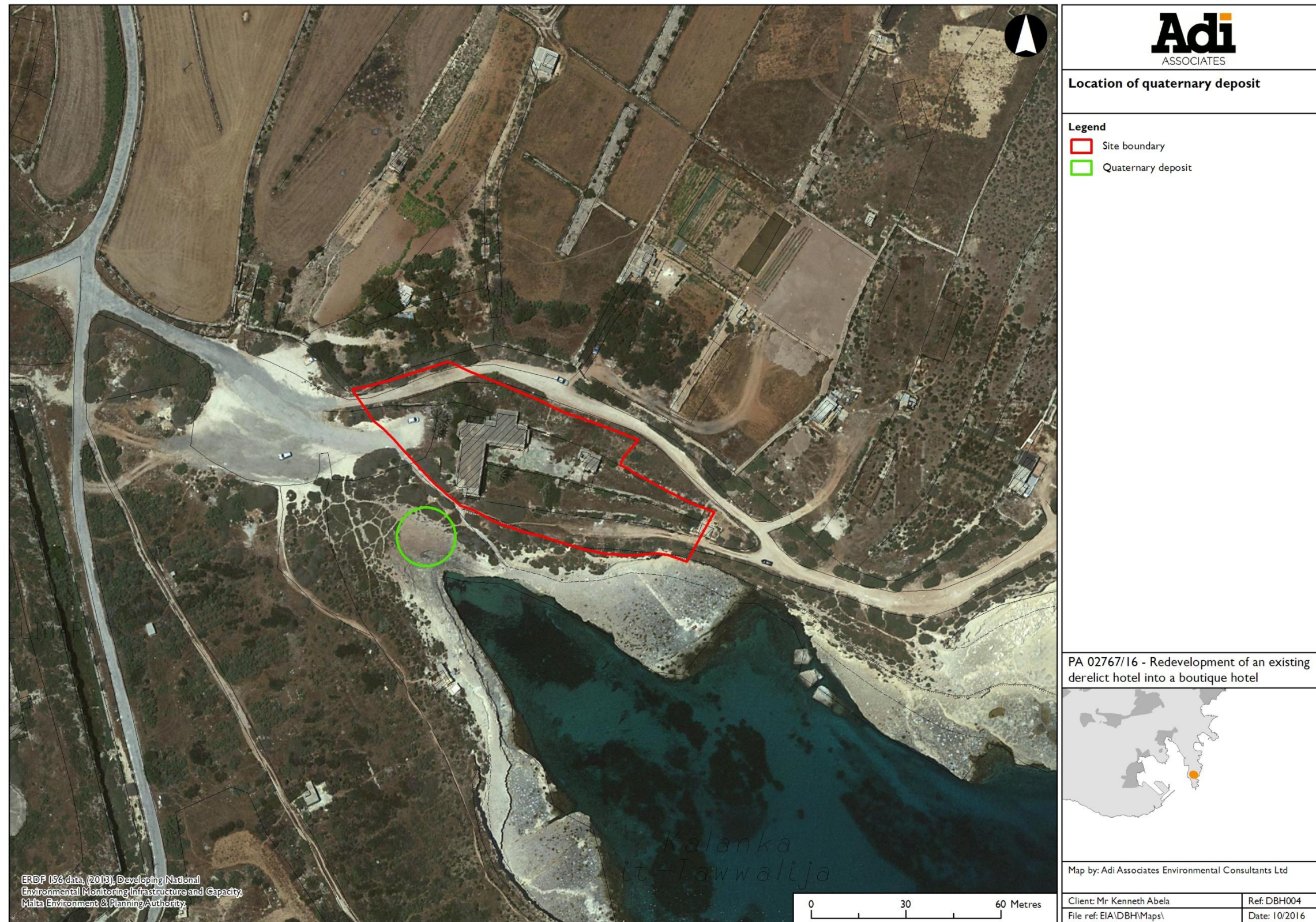
**Figure 5.4: Geological Map of the Area of Influence (OED, 1993)**



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**Figure 5.5: Location of Quaternary Deposit within the Area of Influence**



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## **BASELINE: GEOMORPHOLOGY**

### **Geomorphic Features**

- 5.16. The Scheme Site is located on a block dipping to the northeast at about 5 degrees, forming the Delimara Peninsula, characterised by a deep inlet and two promontories known as Il-Ponta t-Tawwalija and Il-Ponta tal-Gidien.
- 5.17. The Delimara Peninsula is characterised by:
- A high coastline on the west (25 m high); this particular morphology is the result of relatively fast wave erosion on Middle Globigerina Limestone strata dipping to the northeast, combined with overlying Upper Globigerina Limestone, which acts as a protective competent cap;
  - A low, stepped coastline on the east, indented with a number of inlets, the closest of which is Il-Kalanka (or il-Qala) t-Tawwalija; the steps mark the differential erosion of the thick beds that make up the Upper Globigerina Limestone Member; and
  - Quaternary Deposits; these have been generated by a fault that traverses the Il-Kalanka t-Tawwalija inlet.
- 5.18. There are no watercourses in the area.

### **Soils**

- 5.19. As mentioned, the Scheme Site lies on the Upper Globigerina Limestone Member. The area is primarily characterised by dry agricultural land. The Scheme Site itself has already been disturbed by the previous construction activities. The soils found in the environs of the Scheme Site are Xagħra Soil Series, represented by bare rock outcrops of the Upper Globigerina Limestone Member, Inglin Complex, and Tal-Barrani Soil Series.

### **Stone Material to be Excavated**

- 5.20. As mentioned, the geo-technical investigation involved the drilling of two investigative boreholes (see **Figure 5.3** above); the boreholes were each 10 m deep. Both holes recovered the same sequence of rock strata, characterised by pale yellow limestone at the top grading into dark grey marly limestone. The rock core samples recovered consist of clayey and marly limestone beds of the Upper Globigerina Limestone Member. Owing to the clay content present, this rock shrinks and cracks on drying; marly beds crumble after long exposure.
- 5.21. Given its marly nature, the excavated material is not considered suitable for use in building.

### **Cliff Stability**

- 5.22. **Figure 5.7** shows the relationship of the existing buildings / structures on the Scheme Site relative to the existing cliff line. The cliff adjacent to the Scheme Site is



approximately 12 m high exposing Upper Globigerina Limestone (see **Figure 5.6**), a pale yellow clayey limestone which is always exposed as a vertical low cliff wherever it occurs. The clayey beds show some flaking; the geology sub-consultant considers that this does not decrease the cliff stability.

**Figure 5.6: Cliff on the Northern Coast of Kalanka Bay showing differential erosion and minor block detachment**



- 5.23. The rock core samples that were recovered are very good to excellent and have a very low fracture frequency (generally less than 1 per metre). The rock is not fractured and forms stable low cliffs. Generally, it is a weak limestone with an Unconfined Compressive Strength (UCS) of the order of 2 MPa – 5 MPa. As mentioned, due to its clay content, the rock may shrink on exposure, producing irregular joints, but with unlikely serious consequences. Minor block detachment may take place owing to undermining by wave erosion acting on bedding planes or thin marly beds; this is a slow process and block detachment is considered to be a rare occasion.
- 5.24. The cliff section shows that excavations in Upper Globigerina Limestone are stable. Whilst rock shrinkage cracks might develop on exposure, the stability of the cliff will not be jeopardised.



Figure 5.7: Cliff Line Relative to the Scheme Site as Existing





## **BASELINE: HYDROGEOLOGY**

- 5.25. The Delimara Peninsula is only approximately 600 m wide in the area of the Scheme Site and there are no watercourses, as mentioned. The only hydrological feature close to the Scheme Site is the catchment of il-Kalanka t-Tawwalija, which has a relatively small area of approximately 900 m<sup>2</sup>. The Scheme Site falls within this catchment (see **Figure 5.8**).

### **Mean Sea Level Aquifer**

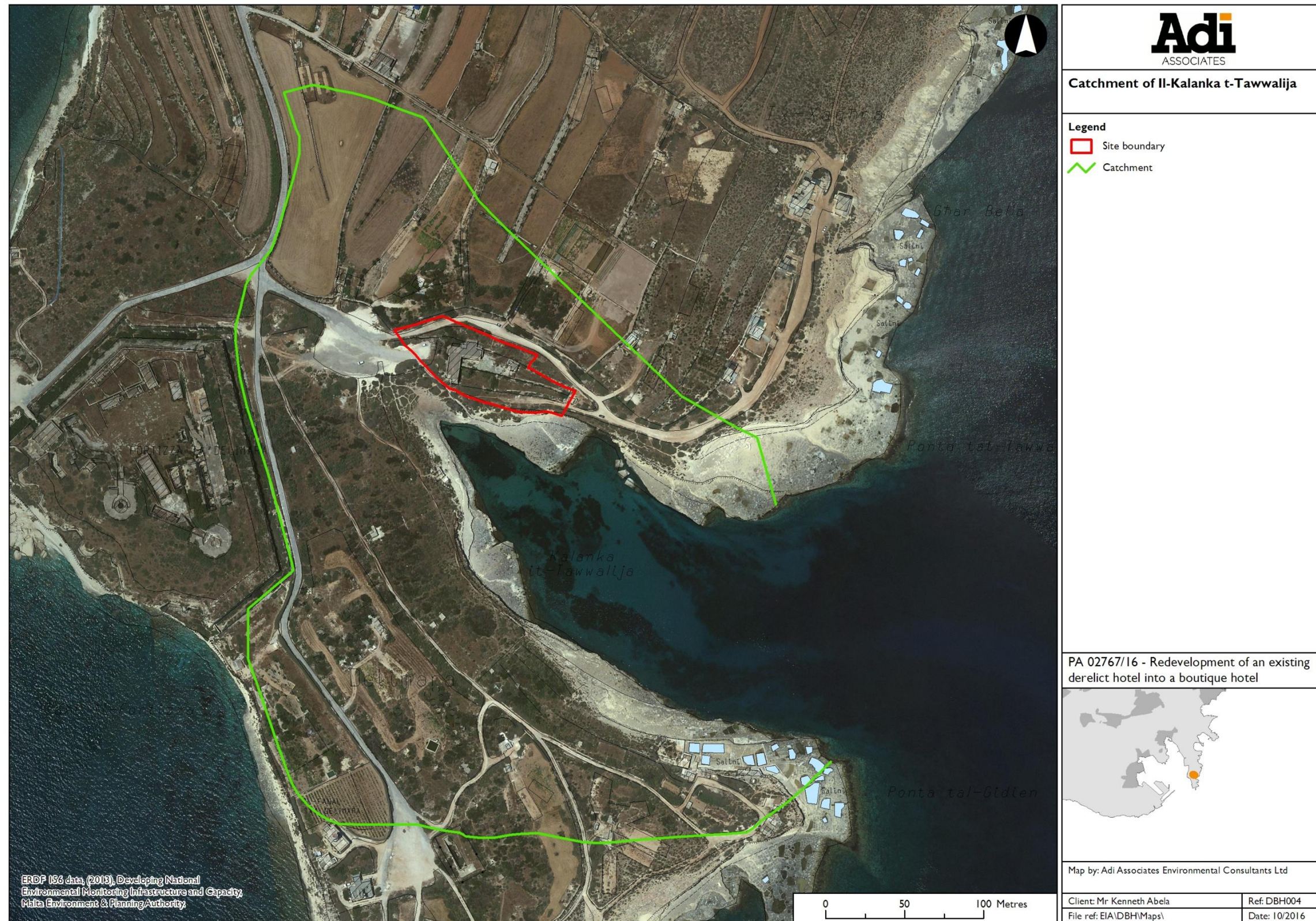
- 5.26. There are no aquifers within the A of I. The rock is mostly impermeable and the Delimara Peninsula is too narrow to accommodate an aquifer.

### **Catchment of the Scheme Site**

- 5.27. The Scheme Site is surrounded by terraced fields; any water coming from the roads upstream is diverted downstream towards Kalanka Bay.
- 5.28. During construction, the Scheme Site will be a deep excavation having a catchment restricted to its boundary.



Figure 5.8: Catchment of Il-Kalanka t-Tawwalija



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## **ASSESSMENT OF IMPACTS**

### **Impact Significance**

5.29. The following criteria were used to assess the significance of the negative impacts of the Scheme on the geo-environment:

- **Not significant:**
  - Little or no change to the geological, geomorphological and hydrogeological regime.
- **Minor significance:**
  - Changes to the geological, geomorphological and hydrogeological regime that may affect neighbouring properties but which may be offset by mitigation measures.
- **Major significance:**
  - Changes to the geological, geomorphological and hydrogeological regime that may affect neighbouring properties and which may not be offset by mitigation measures (if negative) or may be enhanced by mitigation measures (if positive).

### **Prediction and Significance of Impacts**

#### ***Extraction of Mineral Resources***

5.30. The predicted impact of the Scheme on the underlying geology of the A of I is considered to be of major negative significance, since it involves the extraction of non-renewable mineral resources. It is envisaged that approximately 2,708 m<sup>3</sup> of material will be excavated from the Scheme Site (for both the hotel and the tunnel access to the rocky beach).

#### ***Change in Geomorphology and Hydrogeology Features***

5.31. The Scheme will have no impact on hydrogeology features. The predicted impact of the Scheme on the geomorphology of the A of I is considered to be of major negative significance, since it involves the modification of the cliff adjacent to the site. The proposed tunnel will breach the cliff face, with an envisaged opening of approximately 1.8 m width and an approximate height of 2 m (see **Figure 5.9**). The area behind the opening (within the cliff), and intended to accommodate beach facilities, will be approximately 10.5 m wide and approximately 12 m deep (see **Figure 5.10**). The tunnel itself will be approximately 50 m long and approximately 1.8 m wide along its length (see **Figure 5.10**).

#### ***Stability of the Scheme Site***

5.32. As mentioned, and owing to the clayey nature of the rock to be excavated, shrinkage cracks may develop on the walls of the excavation as the rock is exposed. However, this is not expected to significantly jeopardise the stability of the excavation. Hence,

the predicted impact of the Scheme on the stability of the Scheme Site is considered to be of minor negative significance.

#### ***Stability of the Cliff Face***

- 5.33. Given its nature, the rock will be easily excavated; however, there is the potential for significant impacts on the stability of the cliff face depending of the location of the excavation and the excavation methods employed. The geo-environment baseline report (see **Technical Appendix 2: Geo-environment Baseline Report**) suggests that to ensure the stability of the cliff face the excavation should not encroach within 2 m - 3 m of the cliff line, and that excavations close to the cliff edge are undertaken using a drum excavator, or a quarry chainsaw, so as to disturb the rock as little as possible.
- 5.34. **Figure 5.11** shows the Scheme relative to the cliff line (as surveyed by the Consultant Geologist – also see **Figure 5.7** above). In respect of the aboveground building / structures, the proposed swimming pool will come closest to the cliff line, located a distance of 3.29 m from the cliff line at its closest point, and the excavation at this point will be relatively shallow (approximately 2 m – 2.5 m) and will not involve the excavation of rock (the material to be excavated here comprises fill material). Given the distance from the cliff face, and noting the recommendations in the baseline report, the predicted impact of the aboveground building / structures on the stability of the cliff face is considered to be of minor negative significance.
- 5.35. As mentioned, the excavation for the tunnel and beach facilities will breach the cliff face and will involve excavation through the rock. Sensitive excavation will be required to ensure that the stability of the cliff face isn't jeopardised. Nevertheless, and because of the proximity of the excavation to the cliff face and the breaching of the cliff face, the predicted impact of the tunnel and beach facilities on the stability of the cliff is considered to be of major negative significance.

#### ***Impact on Ground Water***

- 5.36. The Scheme will have no impact on groundwater. As mentioned, there are no aquifers within the A of I.

#### ***Impact on Surface Water Run-off***

- 5.37. The predicted impact of the Scheme on surface water run-off is considered to be of no significance to potentially of minor positive significance. As mentioned, water currently coming from upstream of the Scheme Site, and from within the site, flows directly into Kalanka Bay. The Scheme will include measures to collect rain and surface water from within the site, as well as from the road adjacent to the site, to be stored in a system of reservoirs and reused on site as described in **Chapter 3**. Water run-off during excavation will drain to one area of the excavation for settlement (silt traps) before collection by vacuum pumps, for disposal as directed by the Malta Resources Authority (MRA). The silt traps will also be water proofed, to ensure that the highly turbid run-off does not leave the site.



## MITIGATION

- 5.38. Owing to its clay content, there is limited potential for the excavated rock to be reused as building stone, either on or off-site. The excavated material can however be used as fill (in quarry restoration, for example). In terms of mitigation of the excavation of mineral resource therefore, the potential to use the excavated material for this purpose should be explored and addressed in the Construction Management Plan (CMP).
- 5.39. In view of the negative impacts involved in the excavation works at this site and the concerns raised by stakeholders, the re-design of the Scheme to omit the lift shaft, beach access tunnel and related beach facilities would serve to considerably mitigate the impact of the Scheme in respect of the geomorphology of the area and the stability of the cliff adjacent to the site. Omitting these elements would also mitigate, to some extent, the impact on the mineral resource since the excavation would be somewhat reduced.
- 5.40. If the tunnel and related beach facilities are to be retained as part of the Scheme, the impacts on the geo-environment will remain of major significance and there should therefore be careful attention to the excavation methods to be employed and to the monitoring of the excavation, in the interests of the stability of the cliff and of reducing the magnitude of change to this geomorphological feature. The CMP should address a detailed excavation methodology, tailored to each part of the excavation as necessary, as well as outline a monitoring programme for the excavation period.
- 5.41. The CMP should also address issues of surface water pollution arising from construction of the Scheme, particularly given the proximity of the site to the marine environment and the existing surface water run-off patterns.

## RESIDUAL IMPACTS

- 5.42. In the case of the tunnel and related beach facilities being retained as part of the Scheme, residual impacts will remain as being of major negative significance in the case of the change to geomorphological features and to the stability of the cliff face adjacent to the Scheme Site.
- 5.43. Residual impacts in the case of the extraction of mineral resources will remain as being of major negative significance.
- 5.44. **Table 5.1** summarises the geo-environment impact assessment.

**Figure 5.9: Cliff Face Showing the Emergence of the Tunnel**





**Figure 5.10: Beach Facilities Behind the Cliff Face**





Figure 5.11: Cliff Line Relative to the Scheme



**Table 5.1: Summary of Impacts on the Geo-environment**

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (Likely/ Unlikely/ Remote/ Uncertain)	Significance of Impact (Major/ Minor/ Not significant)	Proposed Mitigation Measures	Significance of Residual Impact (Major/ Minor/ Not significant)
		Constr'n /Oper'n	Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Mineral resources	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Major significance	Use of excavated material as fill material Omission of lift shaft, tunnel and beach facilities	Major significance
Change in geomorphology features	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Major significance	Omission of tunnel/beach facilities <i>If tunnel/ beach facilities are retained, CMP should address the stability of the excavation (excavation methods and monitoring)</i>	Minor significance  <i>Major significance in the case of the tunnel / beach facilities being retained</i>
Change in hydrogeology features	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Not significant	None	Not significant

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (Likely/ Unlikely/ Remote/ Uncertain)	Significance of Impact (Major/ Minor/ Not significant)	Proposed Mitigation Measures	Significance of Residual Impact (Major/ Minor/ Not significant)
		Constr'n /Oper'n	Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Stability of the Scheme Site	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Minor significance	CMP addressing stability of the excavation (excavation methods and monitoring)	Minor significance
Stability of the cliff face	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Major significance	Omission of tunnel/beach facilities <i>If tunnel/ beach facilities are retained, CMP should address the stability of the excavation (excavation methods and monitoring)</i>	Minor significance  <i>Major significance in the case of the tunnel / beach facilities being retained</i>
Change in the quality of ground water	Adverse	Constr'n / Oper'n	Local	Indirect	Short-term / long-term	Perm	Irrevers	Likely	Not significant	None	Not significant



Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (Likely/ Unlikely/ Remote/ Uncertain)	Significance of Impact (Major/ Minor/ Not significant)	Proposed Mitigation Measures	Significance of Residual Impact (Major/ Minor/ Not significant)
		Constr'n /Oper'n	Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Change in surface water run-off patterns	Adverse	Constr'n	Local	Indirect	Short-term	Temp	Irrevers	Likely	Not significant	CMP addressing pollution arising during construction	Not significant
	Beneficial	Oper'n	Local	Indirect	Long-term	Perm	Irrevers	Likely	Not significant to minor significance	Run-off collection	Not significant to minor significance

## 6. TERRESTRIAL ECOLOGY

- 6.1. This chapter considers the likely environmental impacts on the habitats, fauna and flora as a result of the Scheme. The potential key ecological issues are outlined below:

### Key Issues

- **Loss of habitat**
- **Disturbance to habitats and species as a result of the Scheme**

- 6.2. The Terms of Reference provided by the Environment and Resources Authority (ERA) are provided in **Technical Appendix I: Terms of Reference and Method Statements**.

### METHODOLOGY

#### Area of Influence

- 6.3. The Area of Influence (A of I) for potential impacts on the land and land uses likely to be affected by the Scheme has been defined to ensure that ecologically sensitive areas that may be impacted are included in the study. The A of I is shown in **Figure 6.1**.

#### Objectives of the Assessment

- 6.4. The objectives of the terrestrial ecology assessment were to:
- Describe the biotic assemblages and communities present within the A of I, and to evaluate their importance;
  - Carry out a baseline ecological survey of the A of I;
  - Carry out a tree survey within the A of I;
  - Identify, describe and analyse the relevant international / Maltese legislation and protocols, agreements, etc., as well as Government / ERA / Planning Authority (PA) policies;
  - Identify the threats and opportunities posed by the Scheme in respect of the findings;
  - Predict the impacts of the Scheme on the ecological value of the A of I;
  - Assess the significance of the impacts on the ecology of the A of I; and
  - Describe the mitigation measures designed to minimise adverse impacts on ecology and enhance any beneficial impacts on the ecological features of the A of I.

## Legislation, Policies and Guidance

### International legislation

- 6.5. International legislation relevant to the ecology of the A of I is mainly that designed to protect specific habitat types / biotopes or individual species. Of particular relevance are:
- *Convention on the Conservation of European Wildlife and Natural Habitats* (the Bern Convention);
  - *Convention on the Conservation of Migratory Species of Wild Animals* (the Bonn Convention);
  - The European Union's Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (the 'Wild Birds Directive'); and
  - The European Union's Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive').

### Local legislation

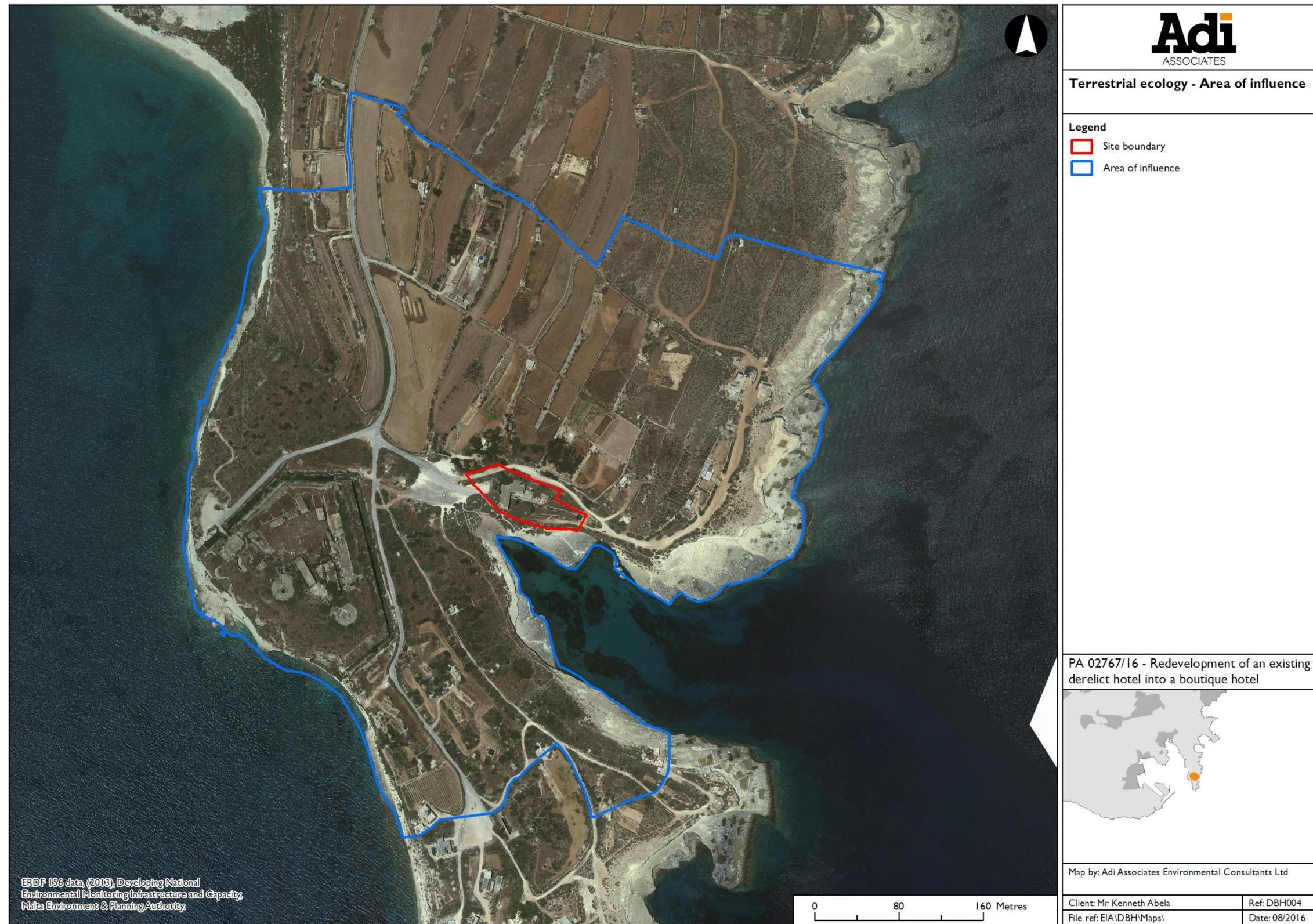
- 6.6. Local legislation relevant to the ecology of the A of I is mainly that designed to protect individual features, habitats, or species. Of particular relevance are:
- Act XXIX of 1973 (Fertile Soil (Preservation) Act, Cap 236) and the *Preservation of Fertile Soils Regulations* Legal Notice 104 of 1973, S.L. 236.02;
  - Legal Notice 200 of 2011 (*Trees and Woodland (Protection) Regulations, 2011*) (S.L. 549.64);
  - Legal Notice 79 of 2006 as amended (*Conservation of Wild Birds Regulations, 2006*) (S.L. 549.42); and
  - Legal Notice 311 of 2006 (*Flora, Fauna and Natural Habitats Protection Regulations, 2006*), as amended (S.L. 549.44) and its subsidiary Government Notice 112 of 2007.

### Marsaxlokk Bay Local Plan 1995

- 6.7. The Marsaxlokk Bay Local Plan identifies the Scheme Site as being within the Delimara National Park (**POLICY MD01**), where “priority will be given to conservation, protection and improvement of the natural heritage”, and where “positive provision will also be made for recreational uses consistent with this objective” and “Limited commercial development related to the needs of park users will be considered”.
- 6.8. The Scheme Site is also identified as being within an Area of Ecological Importance (AEI) - **POLICY ME01** (see **Figure 6.2**).



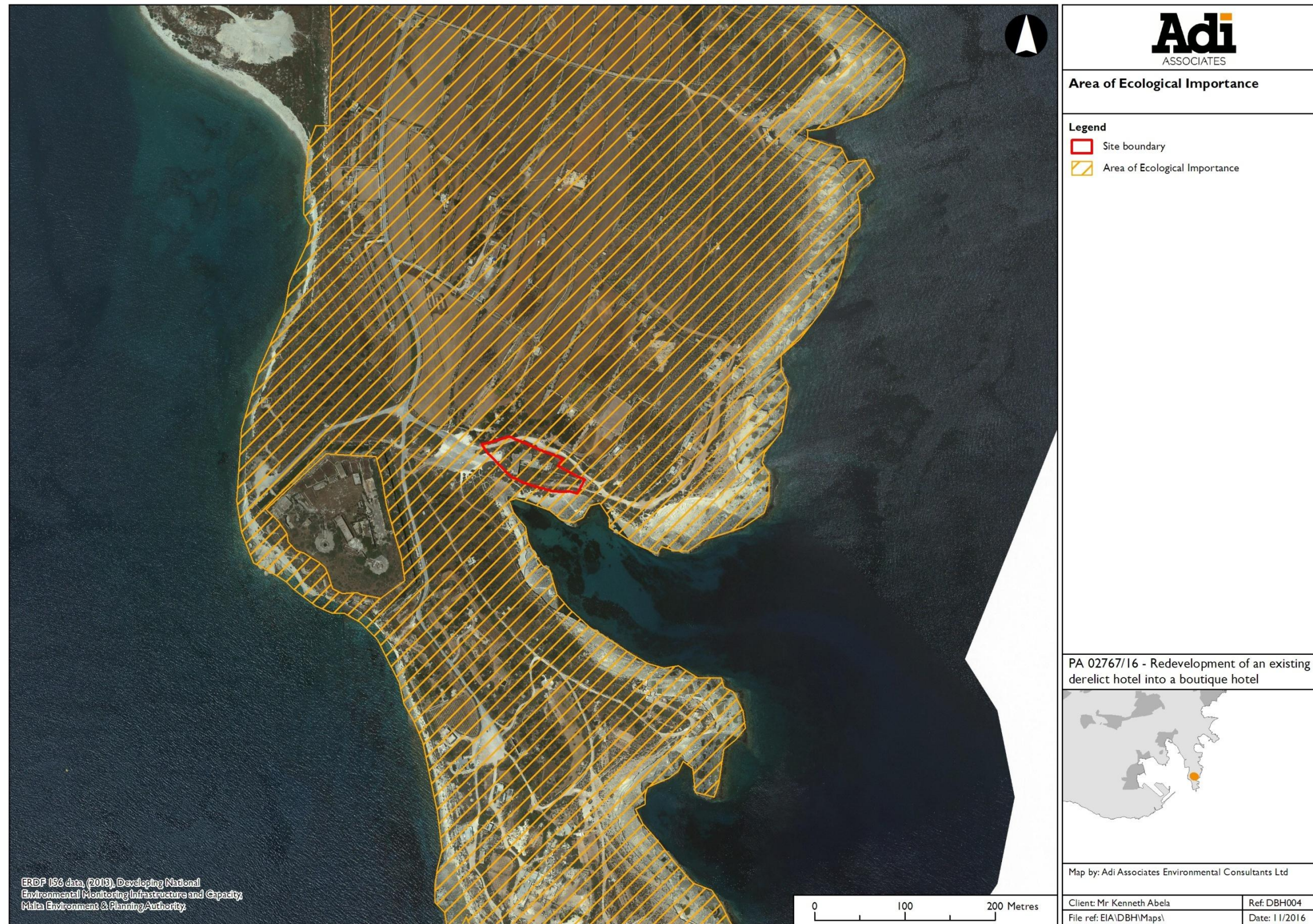
**Figure 6.1: Area of Influence**



INDICATIVE ONLY - Not to be used for direct interpretation



**Figure 6.2: Area of Ecological Importance**



INDICATIVE ONLY - Not to be used for direct interpretation



## Guidelines

- 6.9. The most relevant policy guidance is the former MEPA's *Guidelines on Trees, Shrubs and Plants for Planting and Landscaping in the Maltese Islands, 2012*. This document provides detailed guidance on the types of plants that can be used for landscaping purposes in rural, urban, or agricultural situations. The guidance includes methods of planting and lists of species suitable for the different areas.

## Baseline Survey Methodology

- 6.10. The Ecology Method Statement was accepted by ERA on 5<sup>th</sup> September 2016. The ecology survey was undertaken by Dr Eman Calleja. The survey was carried out in August 2016. In addition, Dr Eman Calleja carried out a land cover and land use survey in the A of I in accordance with Section 3.1 of the ToR. The land use survey is described in **Chapter 3** of this EPS.
- 6.11. The Ecology Study comprised:
- A habitats survey of the A of I indicated in **Figure 6.2**. The survey included a description of the biotic assemblages and communities, which were characterised based on indicator species, mainly vegetation. Classification of terrestrial community types followed the scheme outlined in Schembri, 1991 and modified by Schembri *et al.*, 1999. Nomenclature of plant communities followed the Palaearctic Habitat Classification system (Devillers & Devillers-Terschuren, 1996) and also cross-referred with Annex I of the Habitats Directive (transposed to Schedule I of LN 311 of 2006). Species lists of fauna and flora recorded from the area were produced. A desk study of previous ecological surveys and other baseline data known from the area was also included;
  - The identification, description, and analysis of the relevant international / Maltese legislation and protocols, agreements, etc., and Government / ERA / PA policies, and a summary of the threats and opportunities posed by the schemes in respect of the findings; and
  - A description of the ecological importance of the habitats and species / biotic assemblages and communities.

## Assessment of the State of Health of Habitats

- 6.12. The assessment of habitat quality was carried out using qualitative tools that mainly consider the structure and functions of the habitat. The structure of a habitat considers the species diversity and ranks higher those habitats that are rich in habitat specialists, whilst habitats that have a high diversity of generalists and even some invasive species, are ranked poorly. The functions look at the temporal prospects of the habitat, and the anthropogenic and natural factors influencing the site. The assessment was entirely based on the ecologists' expert opinion. The overall status was divided into three categories; excellent, good, and poor. The criteria used were assessed as follows:



- **Excellent:** The habitat's structure is well preserved, with a good representation and dominance of habitat specialists that are typical of that phytosociological association. The ground cover and average vegetation is high relative to other reference ecosystems of the same habitat type found in Natura 2000 sites (*a 'reference ecosystem' is taken to mean an ecosystem belonging to the same phytosociological association which has been classified as having an excellent conservation status in a Natura 2000 site in Malta*).
- **Good:** The structure of the ecosystem is well preserved, with some of the habitat specialists typical of the habitat being dominant. Some generalist species may be present but they do not dominate the habitat. The ground cover and height is good but there is potential for growth. Anthropogenic disturbance may be having a negative effect on the habitat; however, the overall status is neither improving nor deteriorating.
- **Poor:** The structure of the ecosystem is poorly preserved with the habitat being over-represented by generalist species. Some alien and invasive species may be present although not dominant. Alternatively, the habitat may be dominated by habitat specialists; however, the ground cover is sparse or the average vegetation height is considerably lower than that typically found in a similar reference ecosystem.

## ECOLOGY BASELINE SURVEY

6.13. The following habitats were recorded within the A of I:

- An unmanaged woodland dominated by a mixture of native and alien tree species;
- Hyblaeo-Maltese sea-cliff communities (Palaeartic habitat classification code 18.22174) / Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp. (Habitat 1240 in the EUNIS classification system);
- Maltese *rdum* communities (Palaeartic habitat classification code 62.1155) / Calcareous rocky slopes with chasmophytic vegetation (Habitat 8210 in the EUNIS classification system);
- Sea-cliff and rocky shore aerohaline communities (Palaeartic habitat classification code 18.2) / a combination of Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp. and Mediterranean and thermo-Atlantic halophilous scrubs (Habitats 1240 / 1420 in the EUNIS classification system); and
- Ermes community (steppe).

### Unmanaged Woodland

6.14. The unmanaged woodland covers an area of approximately 62,700 m<sup>2</sup> and is located on the Delimara peninsula and on the slope north of the Delimara fortress. It consists of an afforestation site established in the 1970s to occupy land that was abandoned by the British military, post-independence. The resulting habitat consists

of a 2 m high scrub dominated by a mixture of alien and native species.

- 6.15. The main species used along the border of the afforestation site consist of *Atriplex halimus* (Shrubby Orache), which acts as an inaccessible barrier throughout most of the scrub. The bulk of the tree cover is made up of *Acacia saligna* (Blue-leaved Acacia) and *Tamarix africana* (African Tamarisk). *Opuntia ficus-indica* (Prickly Pear) is also common in certain areas. Other subdominant species include *Salsola melitensis* (Maltese Salt-tree), *Asparagus aphyllus* (Mediterranean asparagus), *Capparis orientalis* (Caper bush), *Hyparrhenia hirta* (Hispid Beard-grass), *Limbarda crithmoides* (Golden Samphire) and *Agave americana* (American Agave).
- 6.16. The habitat structure was found to be poor in view of the abundance of alien species, and lack of a dominant phytosociological association that is typical of coastal areas. Moreover, there is strong evidence of littering and in some cases even dumping. In certain areas, the vegetation is sparse, particularly in the slope north of Fort Delimara, where the vegetation cover is less than 50%.
- 6.17. In view of the above, this habitat is considered to have limited ecological value and is recorded throughout its extent as having a poor habitat quality.
- 6.18. **Figure 6.3** illustrates its distribution and quality throughout the A of I. **Figure 6.4** includes some photographs of this habitat.

### **Hyblaean-Maltese Sea-cliff Communities**

- 6.19. This habitat, also known as vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp or Habitat 1240 in the EUNIS classification system, was found to be widespread in the A of I along the coastal zone. The habitat was found along the coastal stretches of il-Kalanka t-Tawwalija, is-Serċ, il-Ponta tat-Tawwalija and Għar Bella. It also extended further inland at ix-Xagħra, northwest of Għar Bella.
- 6.20. The habitat covered a total of around 35,600 m<sup>2</sup> throughout the A of I. The largest extent of habitat was found at ix-Xagħra, totalling around 19,200 m<sup>2</sup> or 54% of the total surface area of this habitat within the A of I. The smallest section was that at is-Serċ which only extended a few metres along the coastline. In some coastal areas this habitat was replaced by Maltese *rdum* communities (EUNIS habitat code 8210).
- 6.21. The habitat was characterised by the dominance of *Limbarda crithmoides* (Golden Samphire) which contributed to more than 50% of the vegetation cover. Other frequent species were *Crucianella rupestris* (Rock Crosswort), *Crithmum maritimum* (Rock Samphire), *Cuscuta epithymum* (Dodder), *Asparagus aphyllus* (Mediterranean Asparagus), *Euphorbia pinea* (Pine Spurge), *Daucus ginegoides* (Sea Carrot), *Carthamus lanatus* (Woolly Safflower), *Urginea panceration* (Sea Squill), *Asphodelus aestivus* (Summer Asphodel), *Salsola melitensis* (Maltese Salt-tree), *Limonium melitense* (Maltese Sea Lavender), *Cichorium spinosum* (Spiny Chicory), *Lygeum spartum* (Esparto Grass), *Hyparrhenia hirta* (Hispid beard-grass), *Plantago lagopus* (Mediterranean Plantain) and *Mesembryanthemum nodiflorum* (Lesser Crystal Ice Plant).

6.22. The quality of the habitat ranged from poor, along the Delimara peninsula to excellent at ix-Xagħra. The best conserved habitat was located in the ix-Xagħra area, partly due to the fact that it was the least disturbed and experiences the least footfall. The relatively little disturbance in this area is likely to also be as a result of the fact that it is furthest away from the popular bay of il-Kalanka t-Tawwalija. The habitat here consisted almost entirely of species typical of habitat I240, whilst the ground cover was relatively high for this habitat type at over 60% and an average vegetation height of 40 cm. The causes of disturbance in the poorly conserved stretches of this habitat found elsewhere in the A of I, were partly due to the high footfall that the Delimara area is subjected to, but also due to past dumping practices here and at is-Serċ, which have affected the abiotic conditions of the substrate. Littering is also a prominent problem in this area, particularly close to the boundary with the afforested areas at Delimara.

6.23. **Table 6.1** summarises the extent, location and quality of habitat I240 in the A of I

**Table 6.1: Extent, Location and Habitat Quality for I240 in the A of I**

Quality of Habitat	Area / m <sup>2</sup>	Location	Proportion within A of I
Poor	7,888	All of Delimara peninsula and is-Serċ; a small part of ix-Xagħra	22%
Good	12,318	All of il-Ponta ta-Tawwalija, and part of ix-Xagħra	35%
Excellent	15,358	Just over half of ix-Xagħra	43%
<b>Total</b>	<b>35,564</b>		<b>100%</b>

### **Maltese *rdum* Communities**

6.24. This habitat, also known as calcareous rocky slopes with chasmophytic vegetation or Habitat 8210 in the EUNIS classification system, is found around the Delimara fortress, and on the East side of the il-Kalanka t-Tawwalija Bay, covering an area of around 12,900 m<sup>2</sup>. The largest extent of this habitat was found around and on Fort Delimara. In this area, the habitat developed into a scrub with many of the shrubs growing over two metres in height. The size of the vegetation was due to the inaccessibility of the habitat, having developed undisturbed inside the fortress for over thirty years. The site was also inaccessible during the survey, thus the proper extent of this habitat within the fortress could not be mapped.

6.25. The habitat was characterised by the dominance of *Salsola melitensis* (Maltese Salt-tree), which contributed to over 75% of the vegetation cover. The habitat formed an open scrub averaging around 0.5 m in height with a ground cover of over 50%. Other species growing intermittently between the Maltese Salt-trees were *Asparagus aphyllus* (Mediterranean Asparagus), *Glebionis coronaria* (Crown Daisy) and occasionally *Lygeum spartum* (Esparto Grass). The habitat was prominent along the fortress ditch and along the cliffs overlooking Marsaxlokk Bay. Within the ditch itself,



the habitat was replaced by a scrub dominated by large shrubs and trees that included *Salsola melitensis* (Maltese Salt-tree), *Punica granatum* (Pomegranate), *Atriplex halimus* (Shrubby Orache), *Arundo donax* (Giant Reed) and *Olea europaea* (Olive). Elsewhere, on the eastern side of il-Kalanka t-Tawwalija, the habitat occupied the coastal stretch of land between the beach and the dirt road going towards ix-Xagħra. It also grew along the field margins and in some cases took over a number of abandoned fields.

- 6.26. The quality of this habitat ranged from poor to excellent. Almost a third of the habitat has a poor quality. This is characterised by the habitat consisting almost entirely of Maltese Salt-tree shrubs, with a ground cover of less than 50%. Other species typically associated with this habitat were mostly absent. The best conserved sections of this habitat were located along the cliffs on the seaward side of Fort Delimara, where they were allowed to develop undisturbed. The majority of the habitat, however, had a good habitat quality, that is driven by the successful recruitment of Maltese Salt-tree seedlings that was evident throughout the A of I.
- 6.27. **Table 6.2** summarises the extent, location and quality of habitat 8210 in the A of I

**Table 6.2: Extent, Location and Habitat Quality for 8210 in the A of I**

Quality of Habitat	Area / m <sup>2</sup>	Location	Proportion within A of I
<b>Poor</b>	3,642	Around ditch of Fort Delimara; along field boundaries east of il-Kalanka t-Tawwalija	28%
<b>Good</b>	7,198	Along eastern cliff of il-Kalanka t-Tawwalija, and along walls of Fort Delimara	56%
<b>Excellent</b>	2,021	Cliffs on seaward side of Fort Delimara	16%
<b>Total</b>	<b>12,861</b>		<b>100%</b>

### Sea-cliff and Rocky Shore aerohaline Communities

- 6.28. This habitat, being a combination of vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp and Mediterranean and thermo-Atlantic halophilous scrubs or Habitats 1240/1420 in the EUNIS classification system, was the least widespread habitat, occupying only 1,580 m<sup>2</sup>. It was found along the headland of il-Kalanka t-Tawwalija, where it grows over a substrate that has a high content of infill material. As a result, the substrate is highly friable and has a poor soil profile.
- 6.29. The habitat was characterised by the dominance of *Salsola melitensis* (Maltese Salt-tree) with *Atriplex halimus* (Shrubby Orache) being sub-dominant. Other species include *Limbarda crithmoides* (Golden Samphire). The ground cover was up to 80%, whilst the average vegetation height was of 30 cm.

- 6.30. The quality of the habitat was good, in spite of a number of footpaths traversing the area. Nevertheless, the habitat is highly vulnerable due to the nature of the substrate, the steep slope, and the high footfall. Access to and within the habitat should be restricted.

### **Ermes Community**

- 6.31. This habitat is located along the slope north of Fort Delimara, occupying a total surface area of 11,870 m<sup>2</sup>. It consists of an open scrub/steppe dominated by *Salsola melitensis* (Maltese Salt-tree) and *Asphodelus aestivus* (Summer Asphodel). Approximately 40% of the ground cover is made up of *Salsola melitensis*, which grows to 0.5 m throughout this section. Other species include *Glebionis coronaria* (Crown Daisy), *Acacia saligna* (Blue-leaved Acacia), *Carthamus lanatus* (Woolly Safflower), *Hyparrhenia hirta* (Hispid Beard-grass), *Daucus carota* (Wild Carrot) and *Tamarix africana* (African Tamarisk). The dominance of Summer Asphodel is a result of past grazing pressure. This most likely happened when the fortress was used to rear cattle in the 1980s and 1990s. The cessation of grazing activity has led to the recruitment of the Maltese Salt-tree throughout the ermes community as is evidenced by the large quantity of young seedlings belonging to this species observed in this area.
- 6.32. The quality of this habitat is considered to be poor, in view of the presence of alien species throughout and the co-dominance of Summer Asphodel. Nevertheless, the extensive recruitment of the Maltese Salt-tree throughout this section is strong evidence that the habitat is recovering since grazing has stopped. Littering and dumping, however, remain a significant problem along this segment.

### **Vegetation on the Scheme Site**

- 6.33. The proposed Scheme site coincides with the premises previously occupied by a hotel. It includes parcels of land bounded by masonry walls. The vegetation is characterised by a number of alien species and others typical of disturbed habitats, including *Agave americana* (American Agave), *Acacia cyclops* (Western Coastal Wattle), *Acacia saligna* (Blue-leaved Acacia), *Glebionis coronaria* (Crown Daisy), *Asparagus aphyllus* (Mediterranean Asparagus) and *Diplotaxis* spp (Wall Rocket). Other species included *Capparis orientalis* (Caper bush) and *Salsola melitensis* (Maltese Salt-tree). Six trees belonging to two protected species were also present. These consisted of four specimens of *Tamarix africana* (African Tamarisk) and two *Phoenix dactylifera* (Date Palms). Both species are listed in Schedule II of the Trees and Woodlands Protection Regulations of 2011 (L.N. 200 of 2011), and are protected in view of their existence Outside the Development Zone (ODZ). **Table 6.3** describes the species of conservation interest and includes those species identified in the relevant legislation as alien and invasive species (refer to **Technical Appendix 3: Ecology and Land Use Survey**).

**Table 6.3: Species of Conservation Significance**

Species	Vernacular name	LN 311 of 2006 (Flora, Fauna and Natural Habitats Protection Regulations)	LN 200 of 2011 (Trees and Woodlands Protection Regulations)	RDB status
<i>Acacia cyclops</i>	Western Coastal Wattle		Schedule III	
<i>Acacia saligna</i>	Blue-leaved Acacia		Schedule III	
<i>Agave americana</i>	American Agave			
<i>Arundo donax</i>	Giant Reed			
<i>Asparagus aphyllus</i>	Mediterranean Asparagus			
<i>Asphodelus aestivus</i>	Summer Asphodel			
<i>Atriplex halimus</i>	Shrubby Orache			
<i>Capparis orientalis</i>	Caper Bush	Schedule VIIIb		
<i>Carthamus lanatus</i>	Woolly Safflower			
<i>Cichorium spinosum</i>	Spiny Chicory			
<i>Crithmum maritimum</i>	Rock Samphire			
<i>Crucianella rupestris</i>	Rock Crosswort			
<i>Cuscuta epithymum</i>	Dodder			
<i>Daucus carota</i>	Wild Carrot			
<i>Daucus gingidium</i>	Sea Carrot			
<i>Diplotaxis spp</i>	Wall Rocket			
<i>Euphorbia pinea</i>	Pine Spurge			
<i>Glebionis coronaria</i>	Crown Daisy			
<i>Hyparrhenia hirta</i>	Hispid Beard grass			
<i>Limbarda crithmoides</i>	Golden Samphire			
<i>Limonium melitense</i>	Maltese Sea Lavender	Schedule III		Endemic
<i>Lygeum spartum</i>	Esparto Grass			
<i>Mesembryanthemum nodiflorum</i>	Lesser Crystal Ice Plant			
<i>Olea europaea</i>	Olive		Schedule II	Rest (MI) (?)



Species	Vernacular name	LN 311 of 2006 (Flora, Fauna and Natural Habitats Protection Regulations)	LN 200 of 2011 (Trees and Woodlands Protection Regulations)	RDB status
<i>Opuntia ficus-indica</i>	Prickly Pear			
<i>Phoenix dactylifera</i>	Date Palm		Schedule II	
<i>Plantago lagopus</i>	Mediterranean Plantain			
<i>Punica granatum</i>	Pomegranate			
<i>Salsola melitensis</i>	Maltese Salt-tree			Endemic
<i>Tamarix africana</i>	African Tamarisk		Schedule II	R, Rest (MED + MI)
<i>Urginea pancration</i>	Sea Squill	Schedule VIII		

- 6.34. The list of species recorded included all the species encountered in the A of I. It does not consist of an exhaustive list from a detailed survey. It is noted that the survey was carried out in August, following a relatively extensive dry season. Most evidence was noted either from the presence of living trees or shrubs, or from the remnants of dried up plants.

### Fauna

- 6.35. Although this study focused on flora, the possibility that faunal species that are listed in the schedules attached to the relevant regulations LN 311 of 2006 occur within the A of I is not excluded. It is likely that many of the species in **Table 6.4** make use of the site. A specimen of *Chamaeleo chamaeleon* (European Chameleon) and various specimens of *Podarcis filfolensis* (Maltese Wall Lizard) were observed within the A of I during the field survey. No other species listed in **Table 6.4** were observed by the author during the surveys.
- 6.36. Bats may also roost and forage in the area.

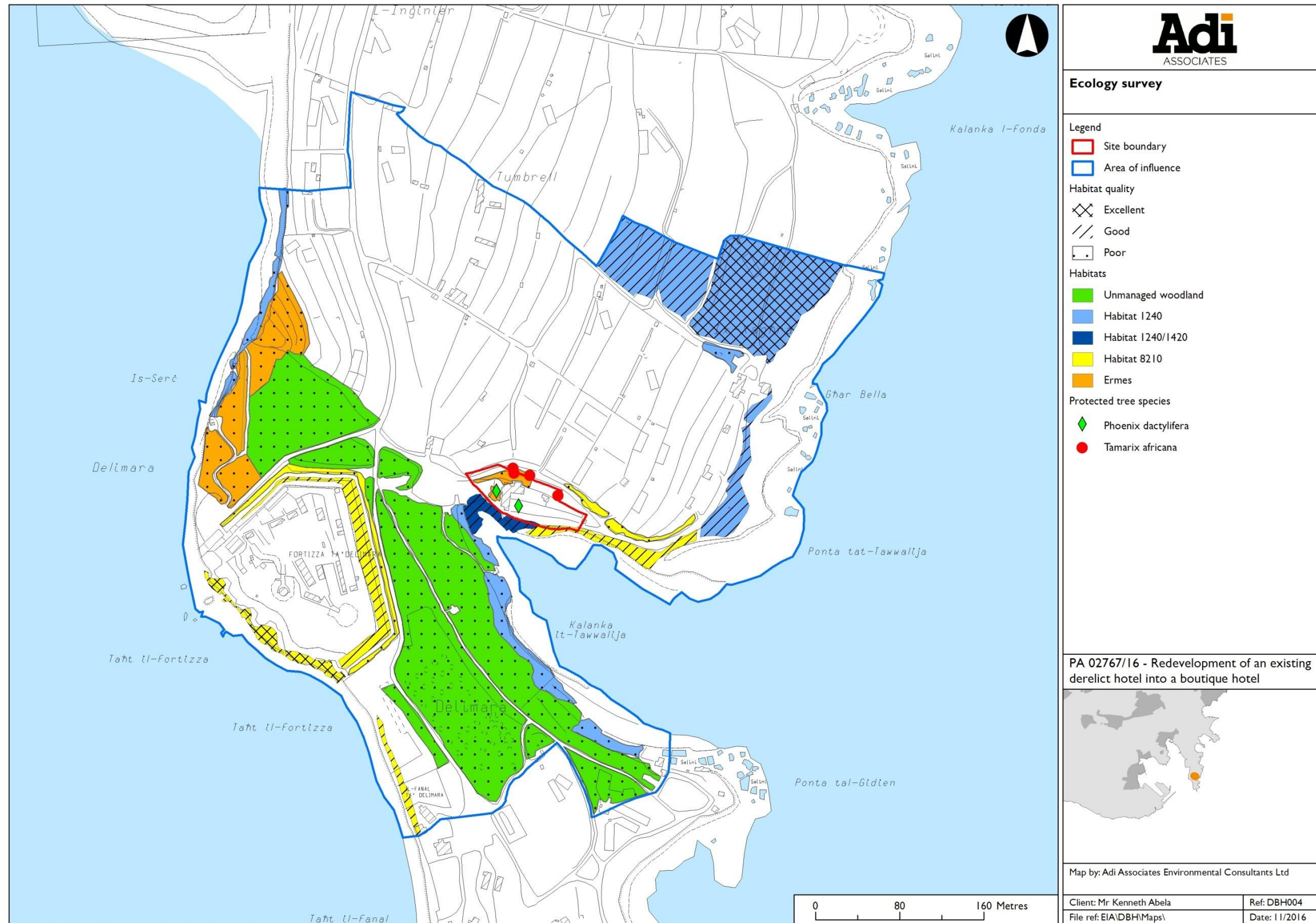
**Table 6.4: Faunal species listed in different schedules of LN 322/2013 that are or may be present within the A of I**

<b>Schedule II</b> Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation	<b>Schedule III</b> Animal and plant species of national interest whose conservation requires the designation of Special Areas of Conservation	<b>Schedule V</b> Animal and plant species of community interest in need of strict protection	<b>Schedule VI</b> Animal and plant species of national interest in need of strict protection
<i>Elaphe situla</i> (Leopard Snake – Infrequent)	<i>Myotis punicus</i> (Mouse-Eared Bat)	<i>Erinaceus algirus</i> (North African Hedgehog – Common)	<i>Mustula nivalis</i> (Weasel – Rare, however, widely distributed)
<i>Rhinolophus hipposideros</i> (Lesser Horseshoe Bat)		<i>Podarcis filfolensis</i> (Maltese Wall Lizard – Widespread)	<i>Hemidactylus turcicus</i> (Turkish gecko – Widespread)
<i>Myotis blythii</i> (Mouse-Eared Bat)		<i>Chalcides ocellatus</i> (Ocellated Skink – Common)	<i>Taremrora maurianica</i> (Wall Gecko – Widespread)
		<i>Chamaeleo chamaeleon</i> (European chameleon – Observed on site)	
		<i>Coluber viridiflavus</i> (Black Whip Snake)	
		<i>Elaphe situla</i> (Leopard Snake – Infrequent)	
		All microchiroptera	





**Figure 6.3: Ecology Survey**





**Figure 6.4: Habitats Within the Area of Influence**

		
<p>Habitat 1240 at ix-Xaghra</p>	<p>Maltese irdum communities forming along the fortress ditch</p>	<p>Sea-cliff and rocky shore aerohaline communities</p>
		
<p>Ermes community dominated by <i>Asphodelus aestivus</i> and <i>Salsola melitensis</i></p>	<p>Photo of the south end of the proposed site at time of survey</p>	<p>Photo of the northern end of the proposed site at time of survey showing the <i>American agave</i> and <i>Acacias</i></p>



## **DETERMINING IMPACT SIGNIFICANCE**

- 6.37. In assessing the significance of the potential negative impacts arising from the Scheme, the following criteria have been used:
- **Not significant** (for example, no material change in habitat quality and / or extent);
  - **Minor significance** (for example, small-scale loss / disturbance of habitat that is unlikely to affect the ecological integrity of the A of I); and
  - **Major significance** (for example, large-scale loss / disturbance of habitat that is likely to affect the ecological integrity of the A of I).
- 6.38. The concept of ‘material change’ needs to be viewed in the context of the Scheme, as described in **Chapter 3**. For a change to be material, it must affect the ecological integrity of the habitats and the interactions of the species they support more than they would be affected by the continuation of the uses already extant in the area and to which the ecology may be accommodated.
- 6.39. Changes that would qualify as a ‘material change’ would be a reduction in habitat size or other alteration that modifies the habitat to such an extent that the integrity of the habitat and / or ecological feature would be affected. Such changes would include fragmentation of habitats, isolation of populations, and chronic effects that may lead to long-term or permanent changes in the physico-chemical characteristics of the habitats and hence of the species they support.

## **ASSESSMENT OF IMPACTS**

### **Potential impacts**

- 6.40. The potential impacts associated with the Scheme may be divided into those related to (i) demolition and site clearance and excavation, (ii) construction, and (iii) operation of the Scheme.
- 6.41. The categories of impacts that may be experienced as a result of the activities undertaken on the Scheme Site during construction (as described in **Chapter 3**) include:
- Habitat Loss:
    - Direct habitat and associated wildlife loss as a result of site clearance and excavation;
    - Removal of alien species from the Scheme site;
  - Disturbance and/or damage to habitats and/or wildlife within and near the Application Site:
    - During construction including effects of dust deposition, effects from trampling (including soil compaction and damage to vegetation) by heavy



machinery; and accidental damage to communities outside the Scheme Site by moving machinery and trampling by workmen;

- During operation, risk to the habitats in the Area of Influence.
- Disturbance of nocturnal fauna from the resultant noise and light pollution during operation.
- Escape of alien species from the site into natural habitats during construction and operation; and
- Impact on shoreline communities as a result of increased footfall from hotel guests.

- 6.42. The impacts that will affect the A of I as a result of the operation of the Scheme will depend on the treatment of hard and soft surfaces, run-off management, landscaping and maintenance, and the effectiveness of the mitigation measures put in place, and the sensitivity of the habitats and species in the A of I.
- 6.43. The following sections provide a more detailed assessment of these impacts as they relate to the various Scheme phases.

## **Prediction and Significance of Impacts**

### ***Construction Phase***

#### Direct Habitat Loss

- 1.72. The construction phase of the project will lead to the loss of all the habitats found on the Scheme site. The site was identified as being of low ecological value and mostly composed of ruderals and alien species. The impact is therefore considered to be not significant.

#### Disturbance and/or Damage to Habitats and Wildlife

- 6.44. Habitats in the vicinity of the site may be impacted during the construction phase by vehicles being used on site and as a result of overspill during site clearance, excavation and construction. Habitats at risk include good quality 1240/1420 and 8210 habitats as well as poor quality steppe adjacent to the site. Impacts on the good quality Annex I habitats could potentially result in significant effects due to the fact that the area covered by these habitats is already relatively small and additional pressure could significantly affect the integrity of the habitats. Impacts on habitat 1240/1420 that may result in damage are considered major given that this is the only extent of the habitat within the A of I (extending over an area of just 1580 m<sup>2</sup>) over the entire A of I and therefore even smaller scale effects can result in significant changes to the habitat relative to its overall size and distribution. Disturbance effects from construction are, however, temporary and not (relatively) long-lasting such that impacts from effects such as dust are considered to be of minor significance. Habitat 1240 located adjacent to the afforestation area and identified as being of poor quality is also at risk of being impacted as a result of dust entrainment. The impact is likely

to be minor given the temporary nature of the construction phase.

#### Removal of Alien Species

- 6.45. The excavation and demolition phase will entail the destruction of a number of alien and invasive species, two of which are listed in schedule III of the Tree Protection Regulations. Their removal will be beneficial; however, the plants that will be removed represent only a small portion of the many specimens of these species found throughout the A of I and the impact is hence considered to be not significant.

#### ***Operational Phase***

#### Disturbance to Habitats and Species Populations of Conservation Significance

- 6.46. Introduction of a hotel in this area is expected to increase footfall in the area. With the possible exception of the habitats directly within and beneath the site that will no longer be accessible with the development in place, increased footfall is likely to result in increased trampling of the habitats in the area. Such disturbance could potentially result in negative impacts on habitats of conservation significance in the area. Of particular concern are impacts on habitat 1240, habitat 1240 / 1420 and habitat 8210. All of these habitats are in the vicinity of the Scheme and are not extensive in terms of distribution, although habitat 1240 exhibits the widest distribution over the entire A of I. The quality of these habitats in the vicinity of the Scheme ranges from poor to good. The baseline survey identified that the source of disturbance to these habitats within the A of I studied in the baseline scenario are largely a result of trampling and are seen in areas with relatively high footfall. The Scheme is likely to increase this footfall to some extent, not solely from hotel guests but also from visitors to the restaurant. The site may also experience an increase in visitors to the Bay given the presence of the hotel. Therefore, it is considered likely that the habitats in the vicinity of the Scheme will experience increased pressure from increased footfall in the area resulting in an inability for these habitats to achieve favourable conservation status particularly because the pressure on the habitats would be expected to be continuous, i.e. occurring throughout the year. Thus, if habitat integrity is thereby affected as described, the impact would be considered to be major.

#### Disturbance of Fauna

- 6.47. In view that the area does not have significant light sources, the habitats and species in the vicinity of the development could be affected by light trespass. Research provides evidence that noise and light pollution can have significant impacts on a number of animal taxa including, in particular, invertebrates<sup>13</sup>. Impacts include

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<sup>13</sup> Research including: Davies, T.W., Bennie, J., Gaston, K.J. 2012. Street lighting changes the composition of invertebrate communities. *Biology Letters*; Morley, E.L., Jones, G., Radford, A. N. 2014. The importance of invertebrates when considering the impacts of anthropogenic noise. 281(1776). *Proceedings of the Royal Society Biological Sciences*; Bruce-White, C. & Shardlow, M. 2011. A Review of the Impact of Artificial Light

changes in foraging and reproductive behaviours, reduction in fitness, increased risk of predation and reduced reproductive success (Newport et al, 2014).<sup>14</sup> In the case of artificial light, such effects generally are a result of changes in orientation, disorientation, or misorientation, and attraction or repulsion from the altered light environment (Longcore & Rich, 2004).<sup>15</sup> Most animals are sensitive to light and almost all have some form of identifiable photo receptors. In addition, a number of mammals are nocturnal, in particular, hedgehogs and bat species.

- 6.48. The area is not known to host any breeding colonies of seabirds, the closest being found between Bengħajsa and Għar Dalam.

Escape of Species used in Landscaping

- 6.49. Any landscaping that might be associated with the Scheme could result in a potentially major significant impact on the surrounding Annex I habitats if species used are not appropriate to the area; including alien species, invasive species and species that are not ecologically compliant with the surrounding natural habitats.
- 6.50. Certain species have already been planted on site that are not compatible with the surrounding ecology, including *Opuntia ficus-indica* and *Aloe vera*.

## MITIGATION

- 1.84. The following mitigation measures are proposed in order to attempt to reduce the significance of impacts identified above:
- During construction, the important habitats identified should be cordoned off in order to protect them from trampling;
  - Good site working methods should be employed during the entire construction phase in order to minimise dust emissions and noise pollution and minimise risk of trampling onto Annex II habitats; ;
  - Waste materials generated during the construction phase will not be allowed to accumulate on site but will be collected in appropriate containers and removed on a regular basis (not more than 3 days);
  - Any construction waste materials that cannot be avoided or minimised will be handled in line with accepted waste management procedures and will either be recycled off-site, used as secondary materials in other projects, or otherwise disposed of at licensed facilities in line with waste permits issued by ERA. Any

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on Invertebrates – Putting the Backbone into Invertebrate Conservation. Buglife – The Invertebrate Conservation Trust.

<sup>14</sup> Newport, J., Shorthouse, D.J., Manning, A.D. The effects of light and noise from urban development on biodiversity: Implications for protected areas in Australia. Volume 3, Issue 3. Ecological Management & Restoration.

<sup>15</sup> Longcore, T., Rich, C. 2004. Ecological light pollution. 2(4). Front Ecol Environ.



waste materials leaving the site will be carted away by licensed waste contractors (copies of licences of the Contractor and waste carrier details of all vehicles will be provided); all waste carrying vehicles used on site (whether by the Contractor or sub-contractors) will be appropriately registered with ERA, as required by legislation;

- Run-off from the site during construction must not be allowed to reach the Annex I habitats. Culverts, silt traps, or similar containment measures are to be deployed to ensure that the water is intercepted and managed appropriately. A method statement in this regard will also need to be submitted for ERA approval;
- In the case where exterior lighting is allowed, it is important that it is kept to a minimum, points downwards, and be of the full-cut-off type. A building management system should also be installed to limit light spill. In particular, no lights should be shone onto the surrounding natural areas;
- Any proposed landscaping should be ecologically compatible with the adjacent natural habitats and in line with MEPA's 2012 *Guidelines on Trees, Shrubs and Plants for Planting and Landscaping the Maltese Islands*;
- Operational waste management should be carried out diligently and in line with eco-certification criteria, with no risk of escape of litter to the surrounding natural areas;
- Educate guests to avoid trampling on sensitive habitats and general disturbance to the area;
- Cordon off sensitive habitats during operation;
- Lighting plan that includes design measures to minimise light pollution; and
- Environmental monitoring to ensure potential impacts are minimised.

## **RESIDUAL IMPACTS**

- 6.51. Assuming mitigation measures are appropriately implemented as listed above, the significance of residual impacts on ecology within the A of I are considered to be minor to not significant.
- 6.52. **Table 6.5** summarises the terrestrial ecology impact assessment.

**Table 6.5: Summary of Ecological Impacts**

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact					Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Construction										
Loss of habitat	Adverse	Local	Direct	L term	Perm	Irrevers.	Likely	Not significant	None	Not significant
Disturbance / damage to habitats and wildlife	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Major on Annex I habitats of good quality in the vicinity  Minor on habitat I 240 downwind of prevailing winds	Construction Management Plan; Adherence to good construction practices (as outlined); Monitoring of works	Minor  Not significant
Removal of alien species	Beneficial	Local	Direct	L term	Perm	Irrevers	Likely	Not significant	None	Not significant

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact					Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Operation										
Disturbance / damage to habitats and wildlife	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Potentially major for habitats of conservation significance, of limited distribution and already experiencing pressures	Educate guests to avoid sensitive habitats  Clearly mark specific pathways and introduce signage as appropriate	Minor
Disturbance of fauna	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Minor	Construction Management Plan; Adherence to good construction practices (as outlined); Monitoring of works	Minor



Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact					Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Escape of species used in landscaping	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Major	Any proposed landscaping should be ecologically compatible with the adjacent natural habitats and in line with MEPA's <i>Guidelines on Trees, Shrubs and Plants for Planting and Landscaping the Maltese Islands 2012</i>	Minor

## 7. CULTURAL HERITAGE

### INTRODUCTION

- 7.1. This chapter describes the cultural heritage within the Scheme Site and wider Area of Influence (A of I). The potential key issues with regards to cultural heritage are:

#### Key Issues:

- Loss or damage to features of cultural heritage significance
- Alteration or degradation of the quality of the setting of the features of cultural heritage significance as a result of the Scheme

### Terms of Reference

- 7.2. The Terms of Reference provided by ERA are provided in **Technical Appendix I: Terms of Reference and Method Statements**.

### ASSESSMENT METHODOLOGY

#### Objectives of the Assessment

- 7.3. The objectives of the cultural heritage desktop study were to:
- Identify, document, and present information on the known archaeological and cultural heritage features within the A of I;
  - Identify the potential for additional archaeological remains within the A of I, from desk study research;
  - Assess the cultural heritage significance of the A of I;
  - Describe and assess the impact of the Scheme on the archaeological and cultural heritage features within the A of I;
  - Describe any mitigation measures designed to minimise any adverse impacts on the archaeological and cultural heritage features within the A of I; and
  - Describe appropriate monitoring measures to safeguard archaeological and cultural heritage features during the construction and operation of the Scheme.

### Standards and Policy Guidance

#### International Legislation

- 7.4. From an international perspective there are two main conventions that are relevant to this study:

- Convention on the Protection of the Underwater Cultural Heritage, 2001; and
- European Convention on the Protection of the Archaeological Heritage (Revised) Valletta, 1992.

#### Convention on the Protection of the Underwater Cultural Heritage, 2001

- 7.5. Although this convention has been ratified by UNESCO, Malta is not yet a signatory. Despite this, the elements contained within this convention are to be taken as guidelines for the management and protection of underwater cultural heritage. This is done in numerous European states.
- 7.6. Article 2.5 of this convention states: “*The preservation in situ of underwater cultural heritage shall be considered as the first option before allowing or engaging in any activities directed at this heritage*”.
- 7.7. Also relevant is Article 2.6, which that states: “*6. Recovered underwater cultural heritage shall be deposited, conserved and managed in a manner that ensures its long-term preservation*”.

#### European Convention on the Protection of the Archaeological Heritage (Revised) Valletta, 1992

- 7.8. Malta signed this Convention in 1992 and ratified it in 1994. Most of this Convention is not directly related to the context of this study and would prove too lengthy to reproduce here. It can be downloaded using this link:  
<http://conventions.coe.int/treaty/en/treaties/html/I43.htm>.

#### **National Policy and Legislation**

- 7.9. Guidance on the protection of cultural heritage in the context of planning was taken from the *Cultural Heritage Act 2002*, and the urban conservation and archaeology policies of the former *Structure Plan for the Maltese Islands 1992*<sup>16</sup>.

#### Cultural Heritage Act, 2002

- 7.10. This Act provides overall protection to all “*movable or immovable objects of artistic, architectural, historical, archaeological, ethnographic, palaeontological and geological importance and includes information or data relative to cultural heritage pertaining to Malta or to any other country (section 2)*”. It also includes “*archaeological, palaeontological or geological sites and deposits, landscapes, groups of buildings...which have an historical value*”. In Section 3, it also specifies that “*For the purposes of this Act, an object shall not be deemed to form part of the cultural heritage unless it has existed in Malta, including the*

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<sup>16</sup> The *Structure Plan for the Maltese Islands 1992* has been superseded by the *Strategic Plan for the Environment and Development 2015* (SPED); however, the SPED does not outline policy guidance for cultural heritage in the level of detail that it was outlined in the Structure Plan. In the absence of specific policy guidance, and specifically in respect of the classification of cultural heritage features, reference is still made to the relevant policies of the Structure Plan.



*territorial waters thereof, or in any other country, for fifty years, or unless it is an object of cultural, artistic, historical, ethnographic, scientific or industrial value, even if contemporary, that is worth preserving”.*

- 7.11. Furthermore, “No person shall make any interventions on such cultural property or classes thereof without first having obtained a permit therefore from the Superintendent” (Section 44.3). Applications are determined subject to the results of prior investigation: “Before determining an application under sub-article (3) hereof the Superintendent may require such information including the results of such tests, examinations or inspection by such persons accredited under this Act for the purpose as may be required by the Superintendent” (Section 44.4).
- 7.12. The restrictions on archaeological excavations are stated in Section 43(1), whereby “Archaeological or palaeontological excavations or explorations on land as well as in the territorial waters or in the contiguous zone of Malta can only be made by the Superintendent, or with written permission of the Superintendent”. Chance discoveries of archaeological remains are also regulated by Section 43(2): “Any person who, even accidentally, discovers any object, site or building to which this Act applies in accordance with article 3, shall immediately inform the Superintendent, keep the object found in situ, and shall not for a period of six working days after informing the Superintendent proceed with any work on the site where the object of cultural property is discovered”. The details regarding rights and obligations by all parties in the eventuality of an archaeological discovery are described in Sections 43(3), 43(4), 43(5), 43(6), and 43(7).

#### Structure Plan Policies<sup>17</sup>

- 7.13. The *Structure Plan for the Maltese Islands, 1992* contains policies relating to the classification of archaeological features. The classification system is outlined in **POLICY ARC 2** and **POLICY ARC 3**; **POLICY ARC 6** and **POLICY ARC 7** provide further guidance on the classification system.
- 7.14. **POLICY ARC 2** provides for a four-tier classification system, with Class A representing the most important sites / features, where development that is considered would adversely affect the natural setting of the site / feature will not be allowed. The policy prescribes a development-free buffer zone of at least 100 m around the periphery of a Class A site / feature. Class B sites / features are regarded as very important, to be preserved at all costs, where adequate measures must be taken to preclude any damage from immediate development. In the case of Class C sites / features, every effort must be made for preservation, but these features may be covered up after proper investigation, documentation and cataloguing, with provision for subsequent access being provided. Class D features are those of which there are numerous examples; these features may be covered up or destroyed after

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<sup>17</sup> Although the Structure Plan has been superseded by the Strategic Plan for Development and the Environment (SPED), the latter does not provide guidance on the classification of archaeological features. For this reason, reference will be made to the Structure Plan.

recording.

- 7.15. Permissible effects of development on archaeological remains are addressed in **POLICY ARC 3**: “... development affecting ancient monuments and important archaeological areas and sites, including areas and sites having such potential, will normally be refused if there is an overriding case for preservation. Where there is no overriding case for preservation, development of such sites will not normally be permitted until adequate opportunities have been provided for the recording and, where desirable, the excavation of such sites”.
- 7.16. As provided by **POLICY ARC 7**, any catalogued archaeological feature may be included in the National Protective Inventory (NPI), for which protection is provided by means of **POLICY ARC 6**.
- 7.17. The Structure Plan is weak on the protection of individual archaeological artefacts; the principal thrust of the Structure Plan is to protect sites, buildings and monuments. Artefacts are afforded better protection under the *Cultural Heritage Act*.

### Policy Importance of Archaeological Features

- 7.18. The classification of archaeological features according to their policy importance is guided by legislation, including the *Cultural Heritage Act 2002*, the *Environment Protection Act 2016*, the Structure Plan policies, and Government and / or Legal Notices regarding specific archaeological and cultural heritage features. Each of these assigns its own degree of importance and remedies. In applying these to the EIA process three categories are used:
- Features of International Importance (major importance);
  - Features of National Importance (major importance); and
  - Features of Local Importance (minor importance).
- 7.19. **Table 7.1** summarises the cultural significance of different features.

**Table 7.1: Protection Ratings and Cultural Significance**

Cultural Significance	Class	Grade	Protection
Major <i>National Importance</i>	A	1	Conserve, plus 100 m buffer zone
Medium <i>Local Importance</i>	B	2	Conserve
Minor	C	3	Record / may be covered
None	D	-	May be covered, destroyed, or recycled
Uncertain	E	-	Further investigation is required

- 7.20. The laws, policies, classification systems, etc., pertaining to the conservation of buildings or other structures have been assigned to these categories of policy importance as follows:

***Features of International Importance***

- 7.21. Cultural features of international importance are those:

- Protected specifically by legislation;
- Qualifying as Class A features under Structure Plan **POLICY ARC 2**; or
- Similarly identified by the Minister responsible for cultural heritage or the Superintendence of Cultural Heritage.

***Features of National Importance***

- 7.22. Features of international importance would also be of national importance. Additionally, cultural features of national importance are those:

- Qualifying as Class B features under Structure Plan **POLICY ARC 2**; or
- Similarly identified by the Minister responsible for cultural heritage or the Superintendence of Cultural Heritage.

***Features of Local Importance***

- 7.23. Cultural features of local importance are those:

- Qualifying as Class C or Class D features under Structure Plan **POLICY ARC 2**; or
- Similarly identified by the Minister responsible for cultural heritage or the Superintendence of Cultural Heritage.

***Remaining Features***

- 7.24. All catalogued cultural heritage features may be included in the NPI, and those not already protected are afforded protection under Structure Plan **POLICY ARC 6**, which provides that all sites / features listed in the NPI will be protected in accordance with the Environment and Development Planning Act (now the Environment Protection Act and the Development Act) powers and by reference to the classification ratings outlined in Structure Plan **POLICY ARC 2**.

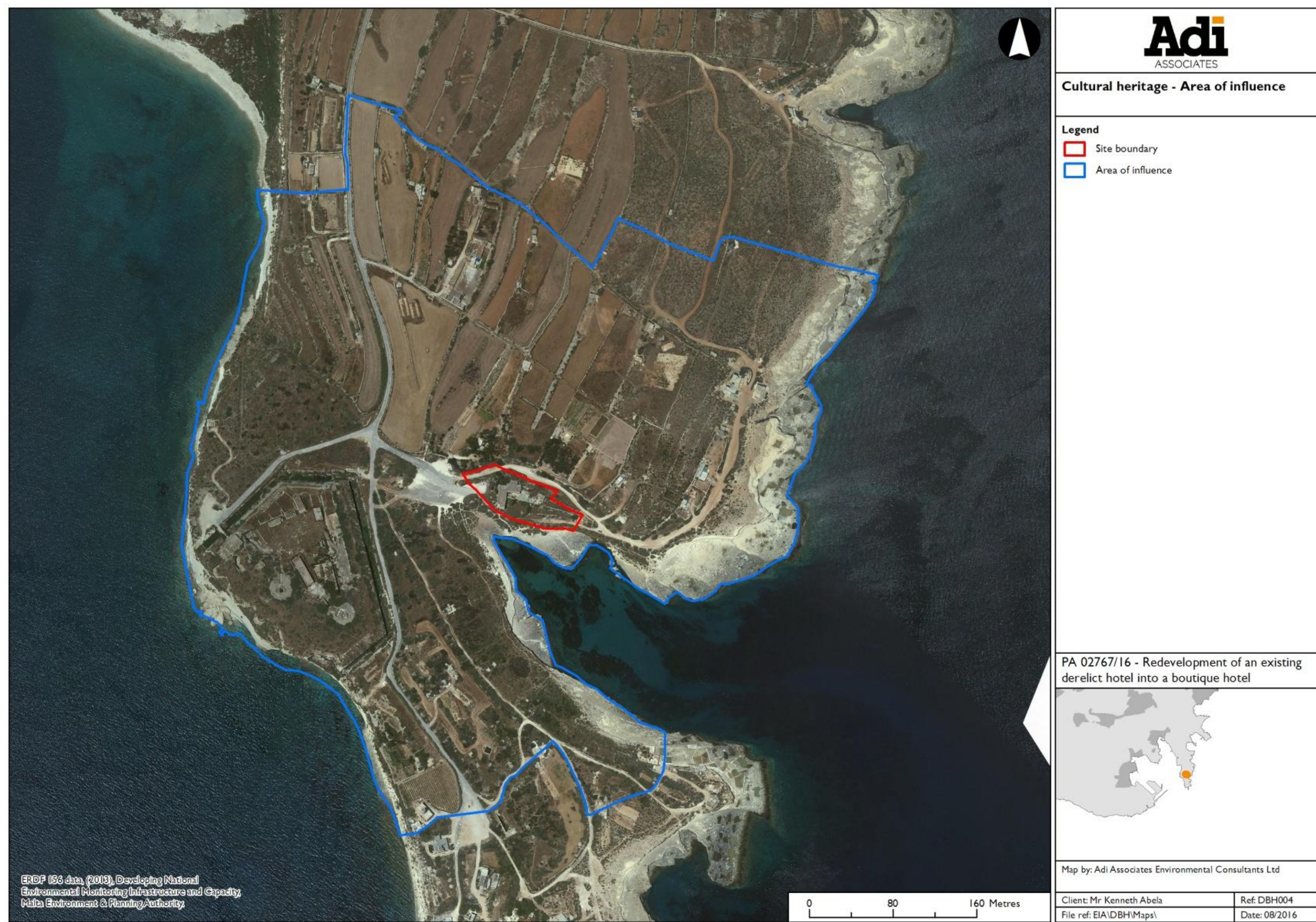
***Area of Influence***

- 7.25. The Area of Influence (A of I) for the cultural heritage study is illustrated in **Figure 7.1**.





**Figure 7.1: Area of Influence for Cultural Heritage Study**





### **Methodology**

- 7.26. The methodology for the cultural heritage desktop study consisted of a baseline research-based survey of the cultural heritage assets (artistic, architectural, historical, archaeological, ethnographic, palaeontological and geological assets) and an evaluation of their importance.

### **Literature Search**

- 7.27. The literature search included primary and secondary sources: analysis of cartographic and photographic material; analysis of secondary written sources; and analysis of conservation legislation.

### **Mapping**

- 7.28. The archaeological, rural, vernacular, historical, and cultural heritage features within the A of I were mapped primarily through consultation of documentary sources.

### **Cataloguing**

- 7.29. The relevant information for each feature was recorded on cards and using digital media, in the format currently used by PA. Each feature was individually identified using a consecutive numbered reference; the information for each feature includes:
- A short written description of the feature;
  - Co-ordinates recorded up to 5 digits for each Eastings and Northings, based on the local UTM grid reference;
  - Locality and address;
  - Site map (Scale 1:2500);
  - Colour photograph(s);
  - Sketch of the feature showing the most significant details (wherever possible);
  - Conservation importance of the site / feature (proposed grading in accordance with Structure Plan policies);
  - Existing and / or proposed legislative and physical protection;
  - Current and proposed use / enhancement;
  - References; and
  - Name of cataloguer and date of compilation.

### **Evaluation**

- 7.30. An archaeological assessment and significance of the archaeological, rural, vernacular, historical, and cultural heritage features was undertaken from the desktop study. The



conservation importance of the identified sites / features has been identified with reference to relevant legislation standards, guidance and practices as described above.

## **DESKTOP SURVEY RESULTS**

- 7.31. The Scheme Site together with the A of I lies within the Marsaxlokk Local Council administrative area.

### **Historical Background**

#### **Early Period**

- 7.32. There is relatively little information available on the early historic context of the A of I, and of Delimara as a whole, with the exception of the area around Tas-Silġ, at the northern end of the peninsula. There is evidence of continuous human activity dating from the Neolithic period at Tas-Silġ, through the Bronze Age, the Phoenician and Classical periods, and up to the medieval period. Generally, however, up until the Knights period, the majority of the Delimara Peninsula was vulnerable to attack and would therefore have been sparsely populated (Abela 1647: 21)<sup>18</sup>.
- 7.33. The Phoenicians arrived at Tas-Silġ around 7000 BC, where they established a temple dedicated to Astarte (Bonanno 2005: 2884 - 285)<sup>19</sup>.
- 7.34. By the 2<sup>nd</sup> Century, Tas-Silġ was being cited by Ptolemy as one of the five most important locations on the Maltese Islands (Bonanno 2005: 220)<sup>20</sup>, and Cicero wrote that the now Roman temple at Tas-Silġ possessed a number of riches and was universally respected (Verrines: II, 4,103-1104)<sup>21</sup>.

#### **Medieval Period**

- 7.35. From excavations carried out at Tas-Silġ in the 1960s it is known that by the 5<sup>th</sup> Century there was a Paleo-Christian Basilica built on the site of the previous temple, and a medieval burial site was excavated nearby. The excavations revealed that the presbytery of the Basilica had been rebuilt several times, most probably due to repeated sacking by the Arabs between 825 and 870 AD when the area was under Arab occupation.

#### **Knights Period**

- 7.36. Coastal fortifications in the area around Marsaxlokk Bay were a priority for the Knights of St John. The first set of large defence towers on Malta commissioned by

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<sup>18</sup> Abela, G.F. 1647. *Della Descrittione Di Malta Isola Nel Mare Siciliano Con Le Sue Antichità, Ed Altre Notizie*. Libr Quattro. 1984 Facsimile Edition. Midsea Books, Malta.

<sup>19</sup> Bonanno, A., 2005 *Malta: Phoenician, Punic and Roman*, Midsea Books, Malta.

<sup>20</sup> Ibid.

<sup>21</sup> As quoted in ERSI Consultant Ltd. 2013. *Environmental Impact Statement – Environmental Survey Reports Appendix Two Volume One for the Delimara Gas and Power Combined Cycle Gas Turbine and Liquefied Natural Gas receiving, storage, and re-gasification facilities, Marsaxlokk*. Enemalta Corporation.

the Knights included St Lucian Tower, constructed in 1610, on the opposite side of Marsaxlokk Bay to Delimara (Spiteri 2008: 344). Later coastal watch posts were constructed to support the defence towers, including at Xrobb l-Għagin and Tumbrell on the Delimara Peninsula (Gian Franngisk Abela 1647: 660)<sup>22</sup>, both located outside of the A of I for the cultural heritage study.

- 7.37. In 1658, Grand Master de Redin commissioned thirteen smaller defence towers, two of which were built at the extreme end of the Delimara Peninsula (Delimara Tower) and at Xrobb l-Għagin in 1659 (Spiteri 1994: 499)<sup>23</sup>, again both located outside of the A of I. The fortifications were further strengthened throughout the 18<sup>th</sup> Century, with a number of batteries being constructed on the Peninsula - the Wilga Battery and the Tumbrell Battery, again both outside of the A of I. A small mortar battery was erected in the vicinity of the Delimara Tower in 1793 (Spiteri 1994: 499)<sup>24</sup>.

### **British Period**

- 7.38. In the early 19<sup>th</sup> Century, Marsaxlokk Bay was still considered to be a strategic port and the British, on their arrival in Malta, retained most of the then existing Knights' defences. In 1872, a number of new forts / batteries were planned for all along the southeastern coast of Malta. These included three on the Delimara Peninsula - Fort Delimara, located within the A of I to the west of the Scheme Site, as well as Fort Tas-Silg and Wolseley Battery, located to the north of the A of I.
- 7.39. Works on Fort Delimara commenced in January 1876 and were completed by 1878. The Fort was constructed as the strategic defence for Marsaxlokk Bay (Spiteri 1996: 340<sup>25</sup>, Hughes 1993: 115)<sup>26</sup>. By the end of the 19<sup>th</sup> Century, Fort Delimara was the only fort still capable of defending Marsaxlokk Bay. The Fort was abandoned by the British in the 1950s and in the mid-1970s, the Fort was given by the Government to a private operator and was used as a pig farm until relatively recently. It is now in a very dilapidated state.
- 7.40. In addition to the fortifications, the British also constructed the Delimara Lighthouse, located within the A of I to the southwest of the Scheme Site. Built in 1850 / 1851, the 24 m lighthouse had a Fresnel lantern with a reach of 15 miles (Vella 2011: 24)<sup>27</sup>. After being long-term abandoned, the lighthouse (including its lantern) was recently restored by the non-governmental organisation Din l-Art Helwa, which manages the property as tourist accommodation.

<sup>22</sup> Abela, G.F. 1647. *Della Descrittione Di Malta Isola Nel Mare Siciliano Con Le Sue Antichità, Ed Altre Notizie*. Libr Quattro. 1984 Facsimile Edition. Midsea Books, Malta.

<sup>23</sup> Spiteri, S.C. 1994. *Fortress of the Cross: Hospitaller Military Architecture (1136-1798): A Heritage Interpretation* Services Publication Malta-1994.

<sup>24</sup> Ibid.

<sup>25</sup> Spiteri, S.C. 1994. *British Military Architecture in Malta*, Stephen C. Spiteri, Valletta.

<sup>26</sup> Hughes, Q. J. 1993. *Malta: A guide to the fortifications*, Said International, Malta.

<sup>27</sup> Vella, M. 2011. 'Coastal Sentinels and their 'Clocks'', in *Vigilo*, 40, October 2011: 24-25.

- 7.41. More recent British military infrastructure on the Delimara Peninsula include pill boxes, beach posts and anti-aircraft batteries, constructed up to the period of the Second World War. These include a Second World War pill-box within the A of I, located to the northwest of the Scheme Site.

### **Cultural Features**

- 7.42. **Figure 7.4** shows the location of all the cultural features within the A of I. These are described in detail in the Catalogue Sheets in **Technical Appendix 4: Cultural Heritage Baseline Study**.
- 7.43. The majority of the A of I was accessible to the assessors during the site survey, with the exception of the area immediately north of the Scheme Site, which was not accessible and also not visible from the surroundings. An area on the coast, along the western perimeter of the A of I was covered by overgrowth which made inspection of the underlying terrain difficult. **Figure 7.4** also shows those areas of the A of I that were inaccessible / not visible or covered by overgrowth.
- 7.44. There are currently no scheduled cultural heritage sites / features located in the vicinity of the Scheme Site, nor within the A of I. There are however a number of buildings / structures considered important because of their military and industrial historical and architectural significance. These features include the 19<sup>th</sup> Century Fort Delimara (see **Figure 7.2**) located approximately 96 m to the west of the Scheme Site and the 19<sup>th</sup> Century lighthouse (see **Figure 7.3**), located approximately 275 m to the southwest of the Scheme Site.
- 7.45. Recent communication with the Planning Authority<sup>28</sup> reveals that Fort Delimara is proposed for scheduling as a Grade I building of historical, architectural and contextual value; it is one of the only two British-period forts in Malta that still has its original armament. Additionally, the Planning Authority considers that the Delimara Lighthouse also merits protection as a Grade I scheduled building.

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<sup>28</sup> Emails from the Planning Authority's Heritage Planning Unit, dated 15<sup>th</sup> and 16<sup>th</sup> November 2016.



**Figure 7.2: Fort Delimara**



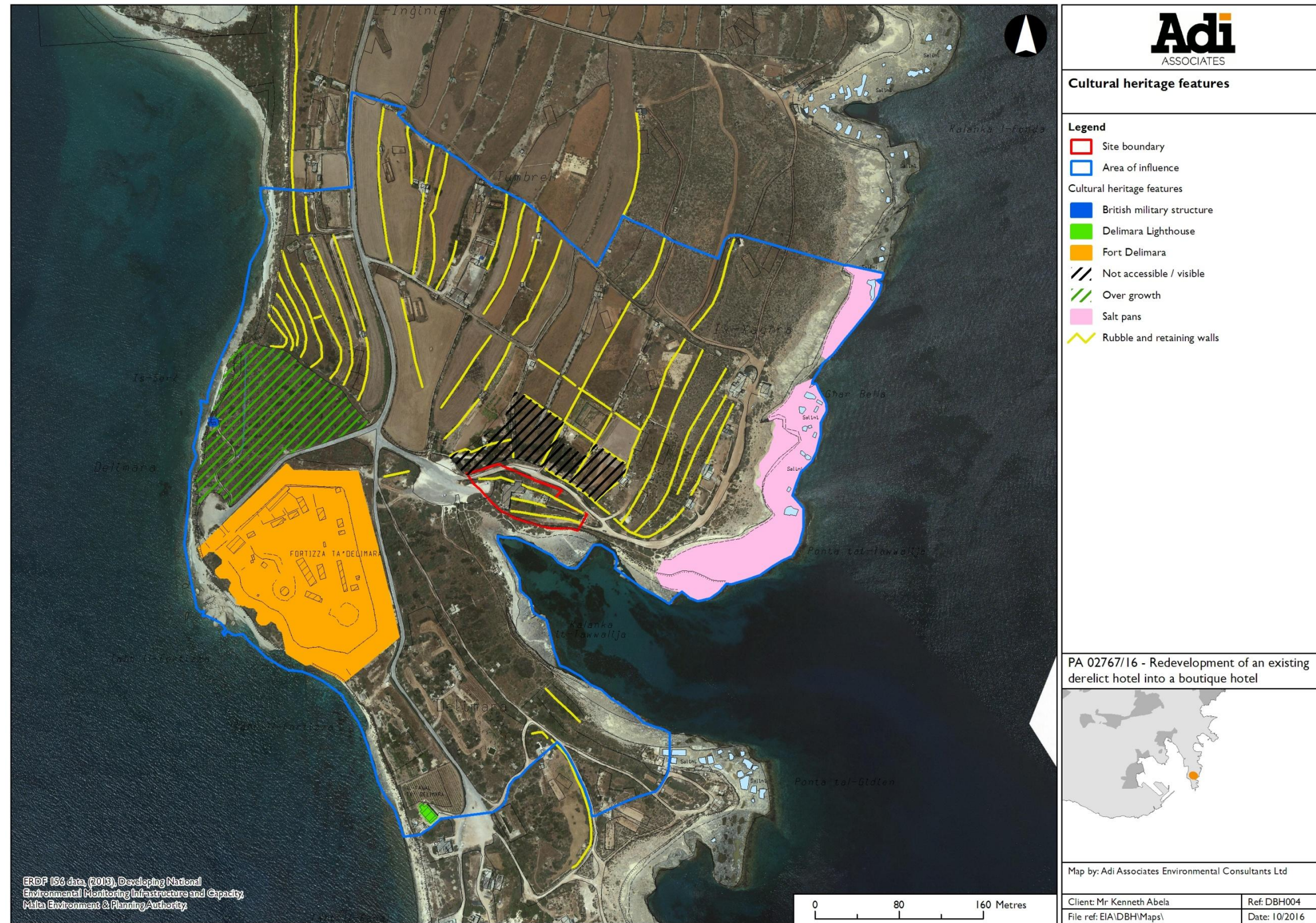
**Figure 7.3: Delimara Lighthouse**



- 7.46. There is a Second World War searchlight emplacement, located on the coast, approximately 238 m northwest of the Scheme Site. This area wasn't accessible during the survey, and it wasn't possible from the survey or from research to ascertain the state or importance of this feature.



**Figure 7.4: Cultural Heritage Features within the Area of Influence**



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- 7.47. The area of the coast east of the Scheme Site, between Il-Ponta tat-Tawwalija and il-Kalanka l-Fonda, features a complex of salt pans (see **Figure 7.5**). The complex is located approximately 100 m (plan distance) from the Scheme Site at its closest point. There is very little literature available about these salt pans; however, it is suggested that these may date from the Knight's period, and the Planning Authority considers Emails from the Heritage Unit, dated 15<sup>th</sup> November and 16<sup>th</sup> November 2016, that they merit protection as Grade 2 scheduled features<sup>29</sup>.

**Figure 7.5: Salt Pans**



- 7.48. Rubble walls were noted within the Scheme Site and elsewhere within the A of I (see **Figure 7.3** above). Some of the walls, including those within the Scheme Site, are built with traditionally-sized rubble stones (see **Figure 7.6**), whilst others show frequent interventions with the introduction of larger sized and hewn ashlar blocks (see **Figure 7.7**). The walls within the Scheme Site are not of any particular historical importance.

**Figure 7.6: Rubble Walls within the Scheme Site**



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<sup>29</sup> Emails from the Heritage Planning Unit, dated 15<sup>th</sup> November and 16<sup>th</sup> November 2016.



**Figure 7.7: Rubble Walls within the Area of Influence**



## ASSESSMENT OF IMPACTS

### Determining Impact Significance

- 7.49. The significance of the impacts of the Scheme on cultural heritage is dependent upon the importance assigned to each of the cultural heritage features, either through legislation, or by the Consultants, and the degree of disturbance or damage likely to arise from the construction and / or the operation of the Scheme.
- 7.50. A summary of the significance of the impact was judged in terms of whether the impact is considered to be **not significant**, of **minor significance**, or of **major significance**. The assessment criteria applicable in relation to determining the significance levels are described in **Table 7.2**.

**Table 7.2: Impact Significance Criteria**

Potential Damage or Destruction to Features	Class or Grade of Cultural Heritage Feature			
	Major Class / Grade A / 1	Medium Class / Grade B / 2	Minor Class / Grade C / 3	None / Not graded
No material change to the cultural heritage feature	Not significant	Not significant	Not significant	Not significant
Small scale changes to the cultural heritage feature (i.e. alterations), which are unlikely to affect the integrity of the feature	Major	Minor	Minor	Not significant
Loss of, or disturbance to, the cultural heritage feature which is likely to affect the integrity of the feature	Major	Major	Minor	Not significant

### **Prediction and Significance of Impacts**

- 7.51. With the exception of rubble walls located within the eastern portion of the site, there are no identified cultural heritage features within the Scheme Site. These vernacular features are of no particular historical importance; however, it is envisaged to more or less retain the rubble walls (together with the terracing) as part of the landscaping for the Scheme.
- 7.52. The new buildings / structures are generally to be restricted to the already developed western portion of the Scheme Site. However, there is the potential for impacts on cultural heritage arising from possible loss of, or damage to, unrecorded archaeological artefacts during excavation for the new build. Excavation of the tunnel and beach facilities also has the potential to cause the loss of, or damage to, unrecorded archaeological artefacts. The extent of this impact is uncertain, as it will depend on whether artefacts are present, their importance, and the extent of any loss or damage. However, any potential impact would be described by the presence of an archaeology monitor during excavation works.
- 7.53. Given the nature and scale of the development, and the relative distance to Fort Delimara and the Delimara Lighthouse, there is unlikely to be any significant impact from the construction of the Scheme on these candidate Grade I scheduled buildings. Additionally, there is unlikely to be any significant impact on their setting or their landmark status, again given the distance and the sightlines.
- 7.54. There is also unlikely to be any significant impact from construction or operation on the candidate Grade 2 scheduled salt pans complex, and the route to be used for heavy vehicles during the construction of the Scheme (along Triq Delimara) is not expected to have an impact on any rubble walls within the A of I.

### **MITIGATION MEASURES**

- 7.55. In the event that the Scheme proceeds, and in view of the potential for impacts on cultural heritage arising from possible loss of, or damage to, unrecorded archaeological artefacts, it is recommended that the excavation works in particular be supervised by qualified archaeologists, who would report to the Superintendence of Cultural Heritage in the eventuality that uncharted artefacts are encountered (also see below). Any cultural heritage features removed from the Scheme site should be appropriately recorded and, wherever possible, significant features should be salvaged. This should be carried out in accordance with the directions issued by ERA and the Superintendence of Cultural Heritage.
- 7.56. It is also recommended that the Construction Management Plan takes account of the existing rubble walls (and terracing) in the eastern portion of the site, and the intention to retain these vernacular features as part of the landscaping, and ensures that damage to these features from heavy vehicles / machinery to be used during construction is avoided.

## **RESIDUAL IMPACTS**

- 7.57. The residual impacts are uncertain, as this will depend on whether artefacts are present within the Scheme Site, the importance of these artefacts, and the extent of any loss or damage to the artefacts. However, adopting the mitigation measures, as appropriate, may reduce the scale of the residual impacts.
- 7.58. **Table 7.3** summarises the cultural heritage impact assessment.

## **MONITORING REQUIREMENTS**

- 7.59. It is recommended that prior to the excavation and construction of the Scheme, the Superintendence of Cultural Heritage is consulted and relevant conditions for archaeology monitoring are included in an eventual planning permit.



**Table 7.3: Summary of Impacts on Cultural Heritage**

Predicted Impact	Beneficial/ Adverse/ Neutral	Nature, Scale and Type of Impact						Probability of Impact Occurring (Likely, Unlikely, Remote, Uncertain)	Significance of Impact (Major/Minor/ Not Significant)	Proposed Mitigation Measures	Significance of Residual Impact (Major/Minor /Not Significant)
		Constr'n / Oper'n	Extent of impact (Nat / Local / Site)	Direct/ Indirect	S-term / L-term	Perm / Temp	Revers / Irrevers				
Loss or damage to vernacular features on site (rubble walls)	Adverse	Constr'n	Site	Direct	L-term	Perm	Irrevers	Likely	Not significant to minor	CMP that ensures damage to the features during construction is avoided	Not significant
Loss or damage to unrecorded archaeological or cultural heritage artefacts on site	Adverse	Constr'n	Site	Direct	L-term	Perm	Irrevers	Uncertain	Uncertain, depending on whether artefacts are present, their level of importance, and the extent of any loss or damage	Archaeological monitoring during excavation / recording of features / salvaging of significant features	Uncertain (depending on whether artefacts are present, their importance and the extent of any loss or damage)
Alteration or degradation of the structural integrity and quality of the setting of Fort Delimara, Delimara Lighthouse and salt pan complex	Neutral	Constr'n / Oper'n	Local	Direct	L-term	Perm	Irrevers	Unlikely	Not significant	None	Not significant

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## 8. LANDSCAPE AND VISUAL AMENITY

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### INTRODUCTION

- 8.1. This chapter addresses the potential impacts of the Scheme on landscape and visual amenity. It describes the existing landscape and visual amenity of the Scheme site and its surroundings, and assesses how this might change through the development of the Scheme.
- 8.2. Assessment of landscape and visual amenity involves examination of the wide range of factors that contribute to the qualities and attributes of the existing landscape and that may contribute to the landscape of the Scheme. This involves consideration of the evolution of the landscape and the factors that have led to its current condition, from the underlying geology through to anthropogenic activities.
- 8.3. Landscape and visual impacts are distinct, albeit strongly related. Landscape impacts result from the interaction between a development and the existing landscape resources, experienced through changes to any element or combination of landscape elements. Visual impacts relate to the effect that a development would have on the amenity of sensitive receptors (those experiencing views of the site), relating to the actual or perceived visible changes to the character and quality of the landscape.
- 8.4. The key issues for the assessment are:

**Key Issues:**

- **Effects on the landscape setting of the Scheme**
- **Changes in views of key receptors**

### OBJECTIVES OF THE ASSESSMENT

- 8.5. The objectives of the landscape and visual amenity study were to:
- Undertake a baseline survey and characterisation of the landscape and visual amenity at and around the Scheme site, using desk top and field survey techniques;
  - Evaluate the landscape character of the Scheme site and its setting;
  - Establish the Zone of Theoretical Visibility (ZTV)<sup>30</sup> for the Scheme and identify the key viewpoints and receptors;

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<sup>30</sup> In accordance with the *Guidelines for Landscape and Visual Impact Assessment (Third Edition) (2013)*, the term Zone of Theoretical Visibility (ZTV) is being used in place of the term Zone of Visual Influence (ZVI) since it makes clear that the area thus defined shows land from which the proposal may theoretically be visible and does not take account of potential screening by vegetation and buildings.

- Input the potentially beneficial design measures to the Scheme;
- Predict the impacts of the Scheme on the visual amenity in the ZTV;
- Assess the significance of the impacts on the landscape and visual amenity of the ZTV; and
- Describe the mitigation measures designed into the Scheme to minimise adverse impacts and enhance any beneficial impacts on the landscape and visual amenity.

## LEGISLATION AND POLICY GUIDANCE

- 8.6. The Constitution of Malta (Section 9) declares that the State shall safeguard the landscape and the historical and artistic patrimony of the Nation. These are the only aspects of the environment referred to in the Constitution, underlining the importance of the landscape and historical heritage.

### **Marsaxlokk Bay Area Local Plan 1995**

- 8.7. The Marsaxlokk Bay Local Plan (MBLP) is relevant to the Scheme. As described in **Chapters 3 and 4**, the Scheme Site lies within the designated Delimara National Park, as well as within an Area of Ecological Importance (AEI) and an Area of Landscape Value (AHLV) (see **Figure 8.1**).

### **Landscape Assessment Study of the Maltese Islands 2004**

- 8.8. MEPA's Landscape Assessment Study of the Maltese Islands was undertaken as part of the former Structure Plan's Review. The Study does not provide an assessment methodology to use in order to consider the effects of a specific development; it does, however, provide a useful baseline assessment of the prevailing landscape character of the Maltese Islands. The primary purpose of the Study appears to have been as a topic paper to identify Areas of High Landscape Sensitivity and inform the Structure Plan Review.
- 8.9. The Delimara Peninsula is mainly rural and there are no major settlements in the area. The rural character is described as *one of the most pleasant in the eastern part of Malta* in the Landscape Assessment Study. The area is also defined by low upper globigerina cliffs. The ridge elevation allows for long-distance vistas. Other features of interest include Delimara Fort, which is a low-lying military structure situated at the entrance to Marsaxlokk Bay. The nearby lighthouse is also a dominant feature which is relatively rare in the Maltese Islands. A number of small inlets define the coastal and marine environment enhancing the amenity of the area.
- 8.10. The Delimara Power Station is a dominant feature on the peninsula and introduces an industrial element detracting from the otherwise rural location. The chimney is particularly dominant. The Landscape Assessment Study also notes that the fields on the eastern side of the peninsula are mainly used for hunting and trapping and associated features detract from the amenity, including bird-cage supports, shabby bird hides and general lack of maintenance of field-walls in the area. A number of coastal structures found near the foreshore of the peninsula are also singled out for



their detracting qualities and the Study describes them as 'tasteless'.

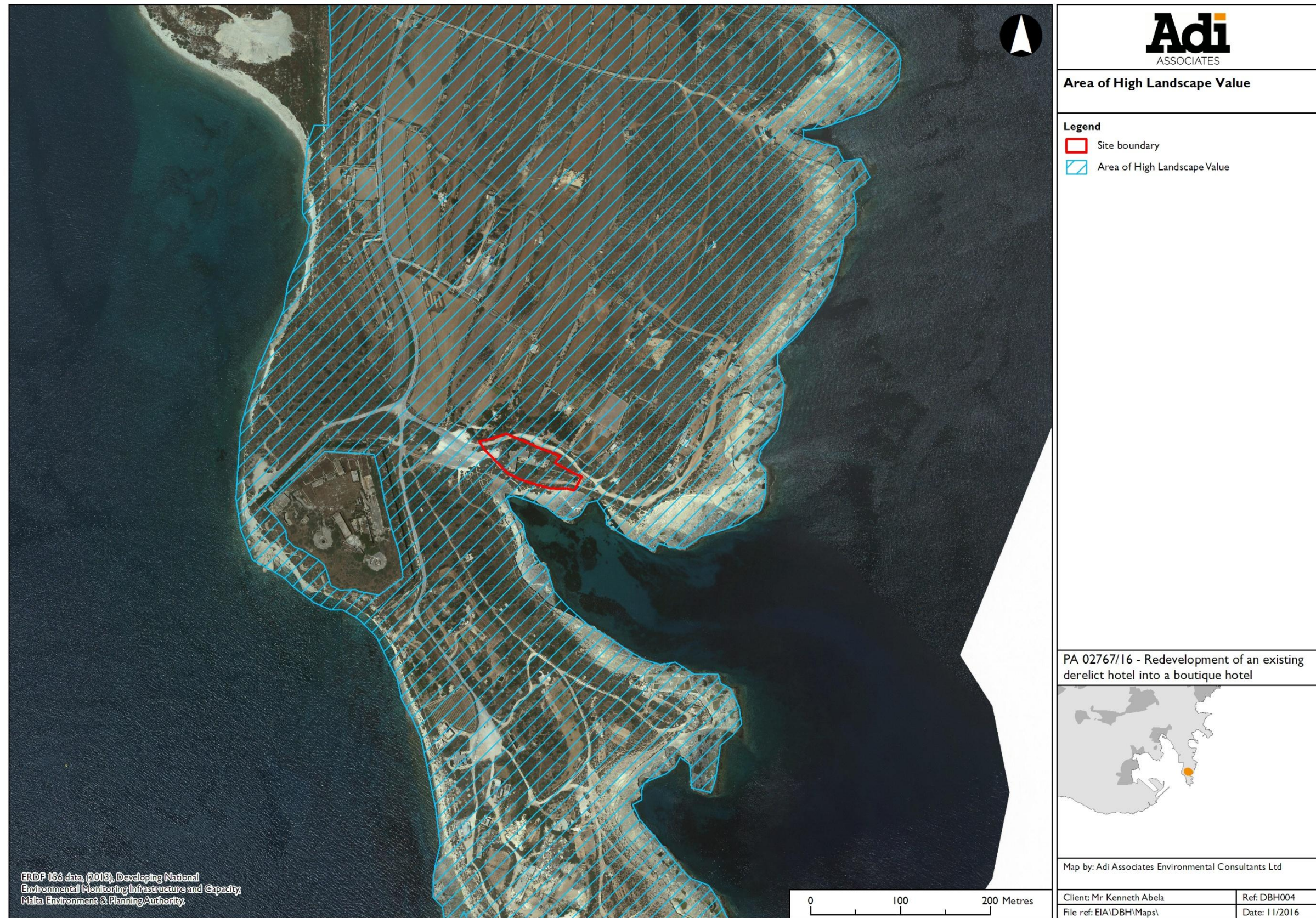
## **STANDARDS AND GUIDELINES**

8.11. The landscape and visual assessment was carried out with reference to:

- The Malta Environment and Planning Authority's 2015 Best Practice Guide Visual Simulations; and
- The UK's *Guidelines for Landscape and Visual Impact Assessment (GLVIA) 2013* (Institute of Environmental Management & Assessment (IEMA) and the Landscape Institute).



**Figure 8.1: Area of High Landscape Value**



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## **ASSESSMENT METHODOLOGY**

### **Desk Study Methodology**

#### ***Landscape Assessment***

- 8.12. The landscape baseline conditions were determined through desk study and field surveys. The desk study included:
- A review of the information shown on the base map of the area and reference to the maps prepared for the geo-environment and land use aspects of the EPS;
  - An analysis of aerial photographs to determine land use trends; and
  - A review of existing baseline information from:
    - Literature searches;
    - Previous environmental and planning studies undertaken in the area;
    - Historic maps; and
    - Legislation and policy documents.

#### Landscape Character, Value and Sensitivity

- 8.13. As mentioned, MEPA's Landscape Assessment Study of the Maltese Islands was carried out as part of the Structure Plan review. This study characterised the landscape at a national level into a series of units known as landscape character areas (LCAs). It describes landscape characteristics, qualities, and influences on the landscape. The landscape character area of the site and its surroundings consider MEPA's landscape assessment study as well as the results of the desk and field studies when characterising the landscape in the area.
- 8.14. The value of the landscape receptor should also be considered. The value of a landscape character receptor is a reflection of its importance in terms of any designations that may apply, or its importance in itself as a landscape or townscape resource, which may be due to its ecological, cultural or recreational value. The higher the value of the receptor, the greater is its sensitivity to the development. Value is described as being high, moderate, or low in line with the following criteria:
- High landscape value – high importance and rarity, no or limited potential for substitution. Importance may be on an international, national, regional or local scale e.g. Areas of High Landscape Value.
  - Moderate landscape value – moderate importance and rarity, limited potential for substitution. Importance on a regional or local scale e.g. undesignated but value perhaps expressed through non-official publications or demonstrable use.
  - Low landscape value – low importance and rarity with considerable potential for substitution on a local scale, e.g. areas identified as having some redeeming feature or features and possible identified for improvement or recovery.



- 8.15. The condition of the landscape was assessed using the following criteria:
- Good landscape condition: where the landscape and its features are in good repair / quality and have a high contribution to landscape character
  - Moderate landscape condition: where the landscape and its features are in average repair / quality and make a medium contribution to the landscape character
  - Low landscape condition: where the landscape and its features are in poor repair / quality and make a low contribution to landscape character.
- 8.16. Landscape sensitivity is a complex issue. The GLVIA refer to consideration of a landscape's susceptibility to change, meaning '*...the ability of the landscape receptor...to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.*'
- 8.17. Landscape character sensitivity was then defined taking into consideration the landscape value and the landscape condition in accordance with the criteria set out in **Table 8.1.**

**Table 8.1: Landscape Character Sensitivity**

		Landscape Condition		
		Good	Moderate	Low
Landscape value	High	High	High	Moderate
	Moderate	High	Moderate	Low
	Low	Moderate	Low	Low

#### Magnitude of Change to Landscape Resource

- 8.18. The GLVIA describe that the identification of the magnitude of change depends on (i) the size or scale of change in the landscape that is likely to be experienced as a result of each effect; (ii) geographical extent over which the landscape effects will be felt; and (iii) the duration and reversibility of the landscape effects. The magnitude of change in a landscape depends on the loss, change, or addition of any feature, or any change in the backdrop to, or outlook from, a landscape that affects its character. **Table 8.2** presents criteria for magnitude of change to a landscape resource.

**Table 8.2: Magnitude of Change to Landscape Resource**

High	Medium	Low	Imperceptible change
An obvious change in landscape characteristics and character	Discernible changes to landscape characteristics and character	Small changes to landscape characteristics and character	A largely imperceptible change to landscape characteristics and character

### **Visual Amenity Assessment**

- 8.19. The Zone of Theoretical Visibility (ZTV) was defined using a combination of desk and field-based techniques. The extent of the viewshed (ZTV) was verified in the field along with the three representative viewpoints that were agreed with the ERA for the visual amenity assessment as described in **Technical Appendix I: Terms of Reference and Method Statements** (see below). The existing views from these locations were photographed, photomontages created, and the visual amenity and changes thereto as a result of the Scheme appraised.
- 8.20. The ERA's agreement to the location of the viewpoints was sought before the visual amenity study was undertaken (**Technical Appendix I: Terms of Reference and Method Statements**). The viewpoints include short and medium distance views from publicly accessible locations and were identified within the ZTV as shown in **Figure 8.2**. These were agreed with the ERA as a basis for assessing changes to visual amenity that may result from the Scheme.

### Sensitivity of Visual Receptors

- 8.21. The sensitivity of visual receptors is dependent on the location from where the receptors experience the view, their expectations, occupation or activity at the viewpoint, and the importance of the view. UK Guidelines note that the most sensitive receptors may include:
- Users of outdoor recreation facilities whose attention or interest may be focused on the landscape;
  - Communities where the development results in changes to the landscape setting or valued views enjoyed by the community;
  - Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience; and
  - Occupiers of residential properties with views affected by the development.
- 8.22. The Guidelines also note that other receptors could include people engaged in outdoor sport or recreation other than those involving an appreciation of the landscape, people travelling through the area, and people at their place of work. The latter are regarded as the least susceptible to changes in view.

8.23. The following definitions are used to categorise the sensitivity of receptors:

- High sensitivity receptors: those who repeatedly re-visit the viewpoint to partake of the view. Such views are generally highly valued by the community;
- Moderate sensitivity receptors: itinerant visitors (mostly tourists) to the viewpoint; and
- Low sensitivity receptors: road users, workers, etc.

8.24. Residents are not included above because views from private property are not protected under planning law or other public policy, except in so far as the zoning of the land implies certainty as to the type of development that may be permitted. The rights of nearby residents are, however, somewhat protected through the planning system, since they can object to any change of land use (or airspace). The EIA process does not assess the impacts of a development on the rights or values of individuals, but rather on the public collectively, and those rights and values are as expressed in legislation and planning policy. It is for this reason that this EPS does not address the effects of loss of view from private properties, land ownership, etc.

#### Magnitude of Visual Change

8.25. Identification of the magnitude of change depends on the size or scale in change in view (relating to the extent of visibility, degree of screening, angle of view and distance from the development) and the degree of contrast or integration of any new features with existing features as well as the duration and reversibility of visual effects. **Table 8.3** defines magnitude of visual change.

**Table 8.3: Magnitude of Visual Change**

High	Medium	Low	Imperceptible Change
A substantial change in view	A moderate change in view	A smaller change in view	A small, barely perceptible or no change in view.

#### **Field Survey Methodology: Landscape**

8.26. A comprehensive field survey was undertaken, in accordance with the *Guidelines for Landscape and Visual Impact Assessment* (IEMA and the Landscape Institute 2013). The field survey served to record objective and subjective impressions of the landscape, and details of landscape condition, land use, and management. It contributed to the delineation of local landscape tracts and the identification of potentially sensitive landscape receptors in accordance with the Guidelines.

8.27. **Table 8.4** describes the identified landscape receptors. **Figure 8.3** includes photographs showing landscape elements and characteristics that contribute to the landscape character of the area.



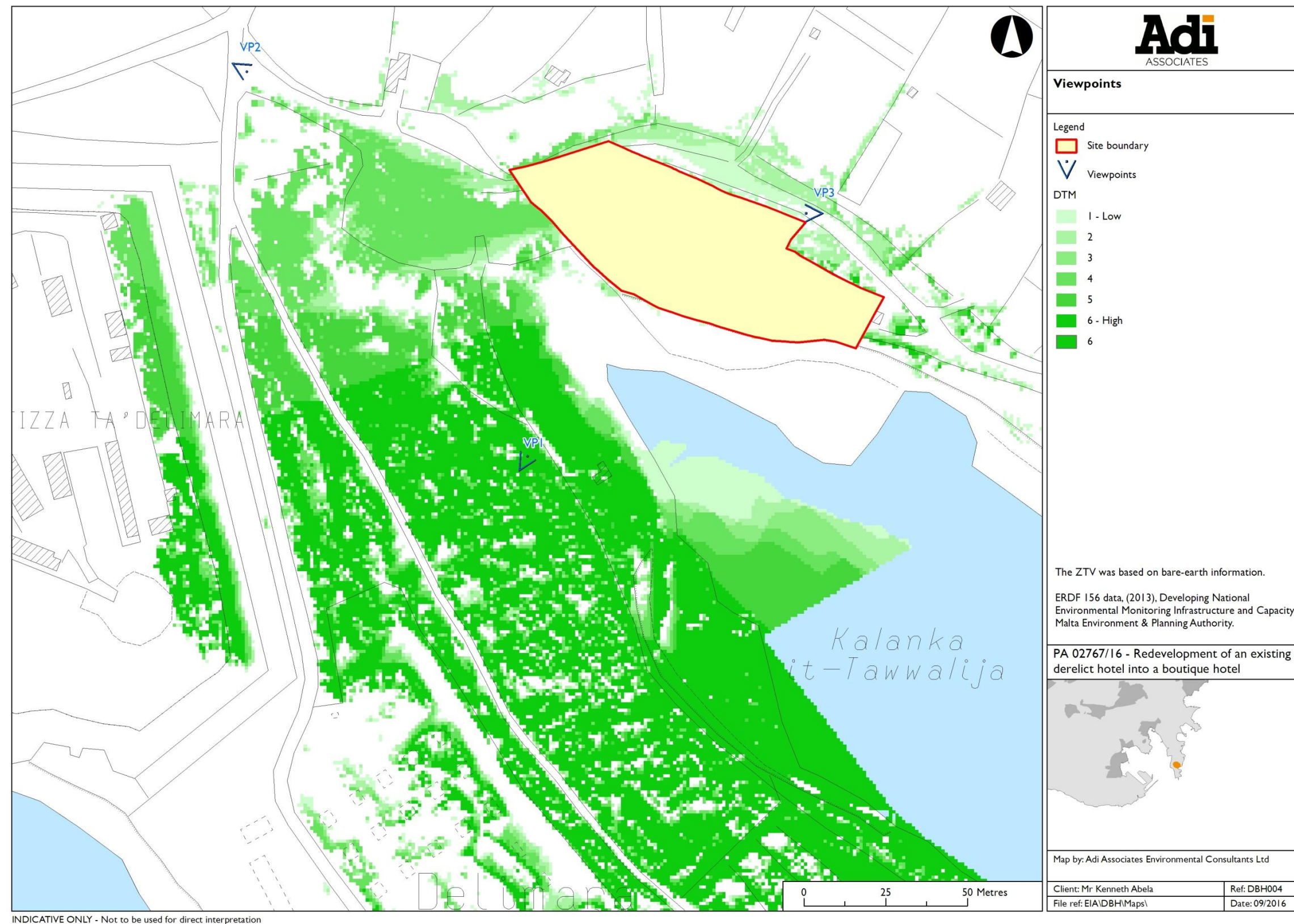
**Table 8.4 Landscape Receptors**

Landscape elements	Power Station: Characterised by facilities associated with operations including large tanks and a dominant chimney. Issues with noise, visual amenity and landscape. Impacts also on the marine environment particularly with the introduction of the new LNG vessel and associated mooring structures.
	Rural area: Extensive expanse of rural area with terraced fields. Detracting features dot the landscape including hunting hides, as well as areas that have been planted with large trees such as Eucalyptus that are conflicting in this otherwise coastal/rural landscape. Natural areas along the peninsula.
	Coastal area: Lower Globigerina Limestone cliffs. Wave-cut platforms. Salt pans. Coastal vegetation. Detracting structures such as dilapidated hides, small buildings, etc.
	Marsaxlokk Bay: Bay dotted with fishing vessels and associated structures on the foreshore including a hard standing facility. Fish markets and restaurants are located along the coast of the Bay.
	Marsaxlokk settlement: Small fishing village with low lying buildings and a Parish church and square dominating the settlement area.
Landscape characteristics	The Delimara Power Station includes a dominant chimney and associated structures that dominate the landscape at the bay. Structures in the marine environment are also associated with the Power Station including a pontoon to connect to the LNG tanker. This tanker affects views out across the Bay from the peninsula. The Power Station also contributes to a continuous hum that affects the background noise of the area.
Landscape characteristics	The rural environment is overall generally pleasant; however, it includes detracting features in places including shabby hides, structures associated with trapping and trees that are out of place with the landscape, planted with the intention of attracting birds. Natural land along the peninsula adds to the attractiveness and quietness of the area. The Marsaxlokk Bay settlement is framed by terraced fields.
	Natural vegetation along the coast and the lower globigerina cliffs provide a certain wilderness feel. However, structures such as hides and small built structures in the area close to the coast unfortunately disrupt this feeling somewhat.
	Marsaxlokk Bay is a traditional fishing village that has maintained much of its character. The view to the Bay from the peninsula is, however, interrupted by the new marine structures of the power station. Looking west across the peninsula, the Freeport is a dominant industrial installation. The seascape east of the peninsula includes open expanse of sea beyond the various inlets, with tankers sometimes visible on the horizon. The seascape to the west of the peninsula is cluttered with various uses including the Freeport and the marine structures associated with the Power Station.
Landscape character	The distinct and recognisable pattern of elements that occurs consistently in the landscape, and how this is perceived. Landscape character areas have been defined and are illustrated in <b>Figure 8.4</b> .

***Field Survey Methodology: Visual Amenity***

- 8.28. The extent of the visibility of the Scheme site was verified during the field survey, and the ZTV and publicly accessible viewpoints confirmed. The field survey also confirmed the areas from where the site is not visible.
- 8.29. Potential sensitive receptors identified in the course of the field survey (in order of descending sensitivity) were:
- Recreational users of areas in the vicinity of the Site, walkers, and joggers;
  - Tourists / visitors viewing the area from long to medium distance viewpoints;
  - Road users (vehicle occupants and pedestrians); and
  - Workers.

**Figure 8.2: Zone of Theoretical Visibility and Selected Viewpoints**







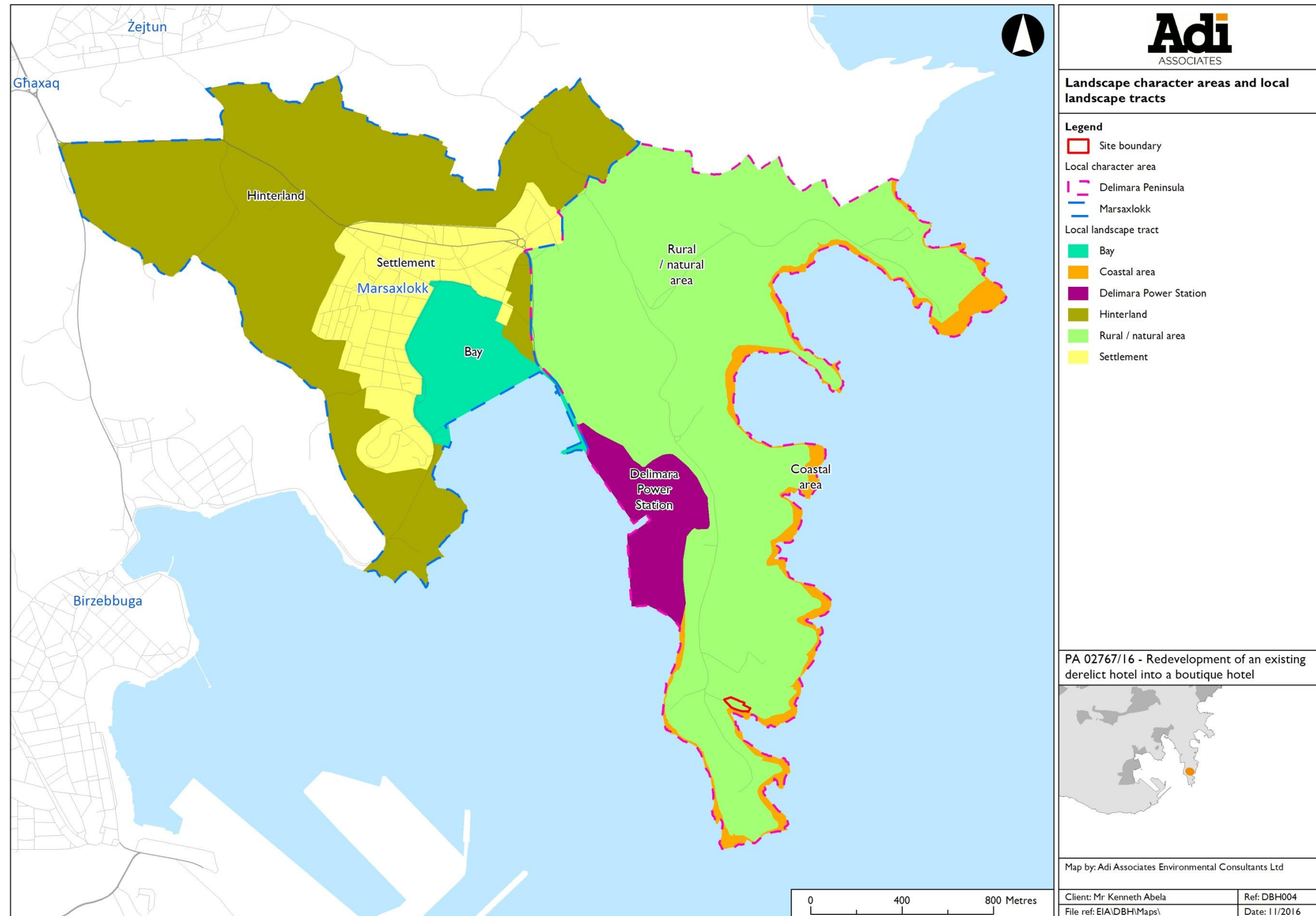


**Figure 8.3: Landscape elements and characteristics on the Delimara peninsula in the Kalanka general area**

		
<p>Lower Globigerina Cliffs at Kalanka Bay</p>	<p>Natural slope – small structures are noticeable and the landmark lighthouse is noticeable</p>	<p>Salt pans</p>
		
<p>Delimara Power Station chimneys and other structures emerge dominantly from an otherwise rural location where terraced fields are noted in the forefront</p>	<p>Fort Delimara</p>	<p>Buildings used as summer residences on the east coast</p>



**Figure 8.4: Landscape Character Areas and Local Landscape Tracts**



INDICATIVE ONLY - Not to be used for direct interpretation



## DETERMINING IMPACT SIGNIFICANCE

- 8.30. The significance of impacts on the landscape and visual amenity is dependent upon judgements about the value of the existing visual amenity compared to the new visual amenity that would be created, the number of people affected, the receptors' sensitivity to change, the magnitude, duration and permanency of the changes, and subjective judgements about the degree to which these changes would matter to those concerned.

### Landscape Assessment

- 8.31. The significance of landscape impacts has been defined based on the sensitivity and magnitude criteria as described in **Table 8.3** and **Table 8.4**, as follows:
- **Major significance:** *Large negative changes in the landscape that are out of character with the landscape.* Where the extent of the negative impact on the landscape setting is large in scale or magnitude and the landscape sensitive receptor is of high sensitivity to change and/or of a high intrinsic value and, as a consequence, the integrity of the setting would be significantly altered. The impact would be of international or national importance. The impact would be of a long-term nature (or very severe short-term in the case of construction impacts), irreversible, and certain or likely to occur;
  - **Moderate significance:** *Discernible changes in the landscape that are out of character with the landscape.* Where the extent of the negative impact on the landscape character is medium in scale and the landscape sensitive receptor is of medium sensitivity to change and/or of medium intrinsic value. The impact would be of a long-term nature, irreversible and likely to occur;
  - **Minor significance:** *Small changes in the landscape that are out of character with the landscape.* Where the extent of the negative impact on the landscape setting is small in scale or magnitude and the landscape sensitive receptor is of a low sensitivity to change or of a low intrinsic value. The impact would be of local importance, of a long or short-term nature, and likely to occur;
  - **Not significant:** *No perceptible changes to the landscape setting.* Where the extent of the negative impact on the landscape setting is of limited importance in scale or magnitude and the landscape sensitive receptor is of a low sensitivity to change and/or a low intrinsic value. The impact would be of local importance. The impact would be of a long to short-term nature, and / or unlikely to occur.

### Visual Amenity

- 8.32. The significance of visual impacts has been assessed in relation to:
- The number and sensitivity of receptors affected;
  - The duration of the changes;
  - The extent of visibility and distance from the Scheme;

- The type of view – proportion of development visible, focus on Scheme due to proximity and whether it is fixed, transient, or sequential;
- The changes to the view from the identified view points as shown by the photomontages; and
- The scope for mitigation / enhancement measures to screen the development.

8.33. Based on the above criteria an assessment of the significance of the visual impact on each of the agreed viewpoints was made in terms of whether it is considered to be of:

- **Major significance** - *substantial changes in the view*. Where the extent of the impact on the view would be large in magnitude and affect a large number of receptors or is of particular importance to the viewers affected. May be an advertised viewpoint and/or a view with high amenity and scenic qualities and few intrusive elements in the view;
- **Moderate significance** – *moderate change to the view*. Where the extent of the impact on the view would be moderate in magnitude or extent and affect a moderate number of receptors or is of some importance to the viewers affected. May be a viewpoint from which there is a view with some visual amenity / intrinsic value (this may include views across, or within, a regionally or locally designated landscape) and potentially some intrusive elements to the view;
- **Minor significance** – *smaller changes to the view*. Where the extent of the impact on the view would be small in magnitude or extent, and affect relatively few receptors, or a larger number of receptors with passing interest in their visual environment. The view would have a low visual amenity / intrinsic value or with intrusive man-made elements within the view; or be
- **Not significant** - *little or no obvious changes to the view*. Where the extent of the impact on the visual amenity would be of limited importance in scale or magnitude, or affect persons of low sensitivity to change, and/or be a view of low intrinsic value. Alternatively, the impact would affect very few people, be transient and only affect a small part of the Scheme or panorama.

8.34. **Table 8.5** identifies impact significance in a tabular format. It should be noted that there is a gradual transition between categories and magnitude and sensitivity are not necessarily evenly weighted such that the final decision on significance comes down to a professional judgement. Impact significance is recorded as one of the four categories (not significant, minor, moderate, or major).

**Table 8.5 Identification of Impact Significance**

Magnitude of change					
		Imperceptible	Low	Medium	High
Sensitivity of Receptor	Low	Not significant	Not significant or Minor	Minor	Minor or moderate
	Medium	Not significant	Minor	Moderate	Moderate or major
	High	Not significant	Minor or moderate	Moderate or major	Major

## EXISTING CONDITIONS

### Landscape

- 8.35. The Scheme is located on the Delimara Peninsula within an AHLV as illustrated in **Figure 8.1**. The site lies within a natural / rural setting. It is situated close to the coast at Kalanka Bay on Lower Globigerina Limestone cliffs, for which the site was designated. Natural vegetation representative of coastal and cliff communities characterise the area although there is evidence that natural land, within this Area of Ecological Importance (AEI) has recently been converted to agricultural land. Throughout the peninsula terraced fields characterise the landscape. **Chapter 3** describes the extent of agricultural land cover in the area.
- 8.36. As identified also in the Landscape Assessment Study issued by the then Malta Environment and Planning Authority, some agricultural land located on the eastern coast of the peninsula is being used for hunting and trapping that detracts from the rural quality of the area and introduces incongruous elements into the landscape that includes shabby hides, alien tall trees, structures associated with trapping and general dilapidation of the area through lack of maintenance including, for example, of rubble walls. Use of agricultural land in this way also detracts from the peaceful quality and sense of wellbeing for the general public that is otherwise afforded in such an environment.
- 8.37. Onwards towards the eastern coast from the Scheme site the coastal environment itself supports a typical and generally healthy vegetation community; however, just on the edge of the rocky coast there are a number of structures (that appear to be dwellings) that detract from the sense of remoteness of the area.
- 8.38. The site itself includes a derelict disused building that was formerly the Kalanka Bay Hotel. The rest of the Scheme site appears to have been used for cultivation at some point. Access to the Bay is from a set of stairs that run adjacent to the Scheme site. The area is generally quiet although the Bay is frequented by bathers during the summer months. The road network in the area is poorly maintained.
- 8.39. Further south down the peninsula, past the Scheme site, a slope supporting natural as well as planted vegetation provides a sense of open space and wilderness. A number



of developments have become established at the head of the peninsula that detracts from the sense of wilderness and beauty.

- 8.40. There are a number of features of cultural heritage interest that contribute to the culture of the area the more dominant of which include the lighthouse and Fort Delimara located on the west coast of the peninsula. The salt pans along the coast are also noteworthy. **Chapter 7** of the EPS provides details of the cultural heritage importance of the area and the features found therein.
- 8.41. The seascape off the eastern coast of the peninsula is largely uncluttered save for some tankers on the horizon as well as other boats, especially during the summer months. The view off the eastern coast thus provides a sense of openness and relative isolation. On the other side of the peninsula, the seascape is dominated by a number of uses that result in relatively busy traffic and clutter – uses in this area include the Freeport, the marine infrastructure of the Delimara Power Station and the fishing village of Marsaxlokk Bay.

### ***Landscape Characterisation***

- 8.42. The landscape types and character areas that provide the landscape context to the Scheme site are described below. The distinction between the types and areas is defined in the assessment as:
- *Landscape Character Types* - describe distinct and homogeneous generic landscape units that share common combinations of elements (listed and described in **Table 8.6**); and
  - *Landscape Character Areas* - single unique areas that represent the discrete geographical areas of a particular type. Each Landscape Character Area may be divided into Local Landscape Tracts (LLT) that describe potential problems and pressures affecting the landscape character (illustrated in **Figure 8.3** and described in **Table 8.6**).

**Table 8.6: Landscape Character Types and Landscape Character Areas**

Defined Area / Attribute	Summary Description
<b><i>Character Areas</i></b>	
<b>Delimara peninsula</b>	<p>Located within an Area of High Landscape Value, this Landscape Character Area is largely a rural / natural and coastal landscape. The peninsula has one dominant feature that is not in line with the overall landscape, which is the Delimara Power Station the impact of which has more recently also extended to the sea. For the purposes of this study, the following Local Landscape Tracts (LLTs) are described:</p> <ul style="list-style-type: none"> <li>○ Delimara Power Station;</li> <li>○ Rural / natural area; and</li> <li>○ Coastal area.</li> </ul>

Defined Area / Attribute	Summary Description
<b>Character Areas</b>	
LLT: Delimara Power Station	<ul style="list-style-type: none"> <li>Large industrial plant.</li> </ul> <p><i>Problems</i></p> <ul style="list-style-type: none"> <li>Large structure, in particular the chimney, associated also with air emissions.</li> <li>Marine infrastructure including jetty and tanker.</li> <li>Few landscape features of interest, except Parish churches.</li> </ul> <p><i>Landscape sensitivity</i></p> <ul style="list-style-type: none"> <li>Low (low value, low condition)</li> </ul>
LLT: Rural / natural area	<ul style="list-style-type: none"> <li>Terraced fields</li> <li>Natural areas of ecological importance</li> </ul> <p><i>Problems</i></p> <ul style="list-style-type: none"> <li>Unightly structures also associated with hunting and trapping in the area</li> <li>Planting of alien species</li> </ul> <p><i>Landscape Sensitivity</i></p> <ul style="list-style-type: none"> <li>High (high value, moderate condition)</li> </ul>
LLT: Coastal area	<ul style="list-style-type: none"> <li>Coastal zone including lower Globigerina cliffs, coastal ecology of interest and cultural heritage features such as salt pans.</li> </ul> <p><i>Problems</i></p> <ul style="list-style-type: none"> <li>Encroachment from development</li> </ul> <p><i>Landscape Sensitivity</i></p> <ul style="list-style-type: none"> <li>High (high value, moderate condition)</li> </ul>
<b>Marsaxlokk</b>	<p>The fishing village of Marsaxlokk has been divided into the following two LLTs:</p> <ul style="list-style-type: none"> <li>Marsaxlokk Bay</li> <li>Marsaxlokk Settlement</li> </ul>
LLT: Marsaxlokk Bay	<ul style="list-style-type: none"> <li>Fishing boats many of which are traditional 'luzzu' style</li> <li>Hardstanding and other structures for boats throughout the bay</li> <li>Fish market</li> <li>Other markets</li> <li>Food and beverage outlets</li> <li>Parish church and San Luċjan Fort are dominant features of interest</li> <li>Promenade</li> <li>A number of fluvial valleys drain into the Bay</li> </ul> <p><i>Problems</i></p> <ul style="list-style-type: none"> <li>Industrial activity in the vicinity of the Bay including Power Station and Freeport</li> </ul> <p><i>Landscape Sensitivity</i></p> <ul style="list-style-type: none"> <li>Moderate (moderate value, moderate condition)</li> </ul>

Defined Area / Attribute	Summary Description
<b>Character Areas</b>	
LLT: Marsaxlokk settlement	<ul style="list-style-type: none"> <li>Low lying urban conurbation</li> <li>Bordered by rural setting</li> <li>Traditional nature of this settlement has largely been maintained</li> <li>Tourism related residential area</li> </ul> <p><i>Problems</i></p> <ul style="list-style-type: none"> <li>Industrial activity in the vicinity of the Bay including Power Station</li> </ul> <p><i>Landscape Sensitivity</i></p> <ul style="list-style-type: none"> <li>Moderate (moderate value, moderate condition)</li> </ul>
LLT: Marsaxlokk hinterland	<ul style="list-style-type: none"> <li>Terraced fields</li> <li>Natural areas of ecological importance</li> </ul> <p><i>Problems</i></p> <ul style="list-style-type: none"> <li>Unsightly structures also associated with hunting and trapping in the area</li> <li>Planting of alien species</li> </ul> <p><i>Landscape Sensitivity</i></p> <ul style="list-style-type: none"> <li>High (high value, moderate condition)</li> </ul>

### Visual Amenity: Zone of Theoretical Visibility

8.43. **Figure 8.2** illustrates the computer generated ZTV. Whilst the ZTV appears extensive, in the field it was ascertained that, as a result of buildings, vegetation, and distance, the Scheme site was not visible from all areas within the ZTV. The field survey was carried out to select the best viewpoints and to identify the long, medium, and short distance views from public places. The selected viewpoints were agreed with the ERA and are shown in **Figure 8.2**.

### Scheme Site Visibility

8.44. In assessing views, there is often likely to be a continuum in the degree of visibility of the development from full view to no view. **Table 8.7** summarises the situation in respect of the Scheme and with regard to the following:

- Extent of site visibility – full view, partial view, glimpse, or no view into the site at all demonstrates the exposure of the site and the processes thereon to public view.
  - The Scheme site is fully visible from viewpoint 1, and partially visible from viewpoints 2 and 3.
- Proportion of development visible – expresses the proportion of the development (the Scheme) that would be visible from the viewpoints: full, most, some, small amount, or none.
  - The Scheme is fully visible from viewpoint 1; partly visible from viewpoint 2, and only a relatively small amount of it is visible from viewpoint 3.



- Focus on Scheme due to proximity – is an indicator of the distance from the Scheme site and whether the viewpoint would focus on the development due to its proximity (i.e., it is the only thing to look at), or whether the Scheme is part of a panorama.
  - The viewpoints are proximity views.
- Transient or sequential view – the principal receptors will have sequential views of the Scheme site. Transient views are those that pass quickly (like looking through a doorway as one walks past), and sequential views expose the receptor to different yet sequential views of the site. The latter allows the site to be viewed for a longer period of time and from different and changing perspectives.
  - Viewpoints 1 and 2 are sequential; viewpoint 3 is transient.

**Table 8.7: Summary of Scheme Site Visibility from Viewpoints**

	Viewpoints		
	VP1	VP2	VP3
Distance of viewpoint from Scheme (m)	62	88	4
Extent of Scheme visibility	Full	Partial	Partial
Proportion of Scheme visible	100%	80%	10%
Focus on Scheme due to proximity	Proximity	Proximity	Proximity
Transient or sequential view	Sequential	Sequential	Transient

## CHANGES IN THE LANDSCAPE AND VISUAL AMENITY

- 8.45. Changes to the landscape and visual amenity of the ZTV are anticipated as a result of the Scheme. This section focuses on the likely impacts of the Scheme on landscape and visual amenity, and points to possible mitigation measures, where relevant.

### Changes in the Landscape and their Significance

- 8.46. The changes to the landscape during the construction and operation of the Scheme are considered together. In terms of landscape character, the impacts likely to occur as a result of the operation of the Scheme were assessed.
- 8.47. **Table 8.8** details the landscape assessment.

**Table 8.8 Changes in Landscape Character and the Significance of the Impacts**

Location	Changes	Effects & Significance
Delimara Peninsula Character Area LLT: Delimara Power Station	No changes	No changes. <b>Impact: Not significant</b>
Delimara Peninsula Character Area LLT: Rural / natural area	There is an existing structure present on the cliff, which is in a dilapidated state at the site footprint. In the local landscape, the structure and associated concrete blocks cordoning off the site generate a scar. In a wider context, the abandoned building largely blends in with the rural character of the area despite being in a poor state of repair. However, the proposed development is expected to result in a large change both in terms of scale with the introduction of a larger and taller building. Moreover, the development results in the introduction of a modern structure associated with new activity in the area. The perceptual aspect of this local landscape tract will thus be affected in that a previously relatively remote area that is not considered to be highly frequented by people and is especially not considered a popular tourist location, will introduce a commercial enterprise to this area.	Large change to a local landscape tract of high sensitivity. <b>Impact: Major</b>
Delimara Peninsula Character Area LLT: Coastal area	The Scheme will encroach within approximately 2.68 m of the cliff edge (with the exception of the tunnel, which will actually puncture the cliff face). The Scheme includes tunnelling through the cliff rock to reach the lower bay area resulting in a breach to the cliff face. The Scheme also includes the introduction of facilities for bathers on the coast. Interventions at the cliff and lower coastal area are thus extensive.	Large change to a local landscape tract of high sensitivity. <b>Impact: Major</b>
Marsaxlokk Character Area LLT: Marsaxlokk Bay	The Scheme is located on the peninsula, and tucked away from Marsaxlokk Bay.	No changes. <b>Impact: Not significant</b>
Marsaxlokk Character Area LLT: Marsaxlokk Settlement	No changes.	No changes. <b>Impact: Not significant</b>

Location	Changes	Effects & Significance
Marsaxlokk Character Area LLT: Marsaxlokk Hinterland	No changes.	No changes. <b>Impact: Not significant</b>

### Changes in Visual Amenity and their Significance

8.48. The assessment of the impact of the Scheme on the visual amenity of the ZTV takes account of the:



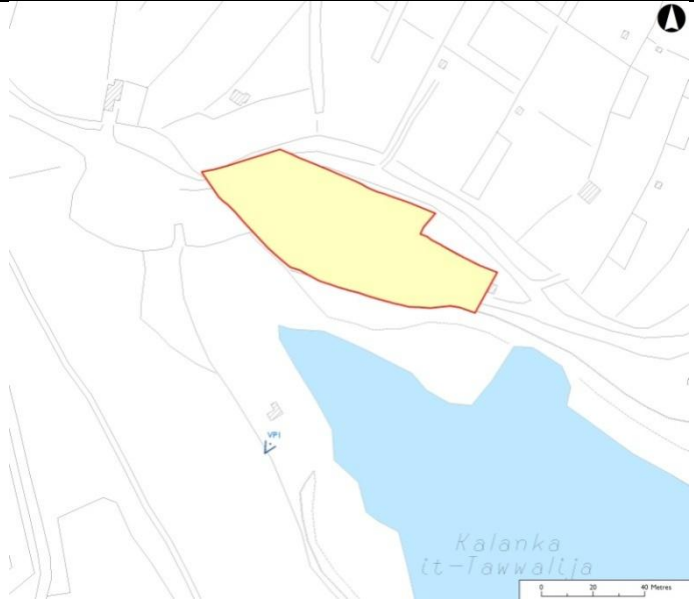
- Scale of change resulting from the Scheme;
- Degree of contrast or integration resulting from the change;
- Duration and nature of the effect;
- Angle of view in relation to the main activity of the receptor;
- Distance of the viewpoint from the Scheme Site;
- Extent of the area over which the changes would be visible; and
- Number and level of sensitivity of sensitive receptors who may experience the views.

8.49. The changes to the visual amenity and their significance are described below.



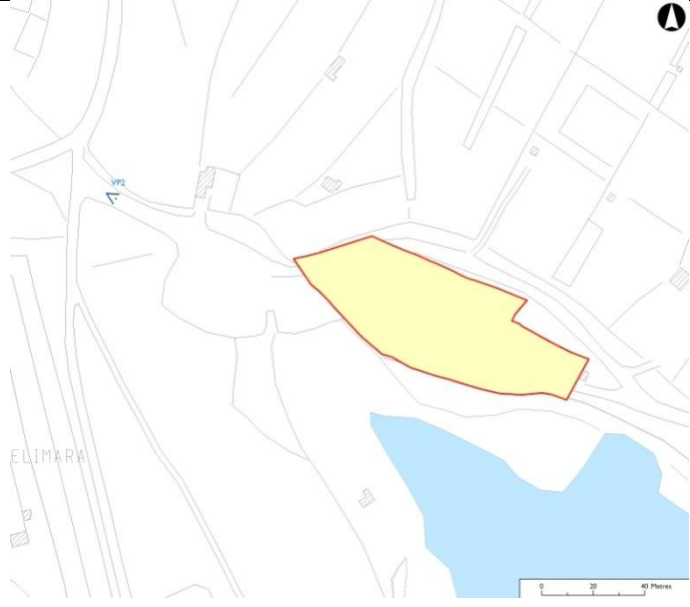


**Viewpoint 1: Delimara Point (looking north-eastwards)**

<b>Viewpoint I</b>	Date: 26 <sup>th</sup> September 2016	 <p>VIEWPOINT REFERENCE 01 EXISTING VIEW</p> <p>Year 0 Distance to proposed development: 170m Camera height: 1.5m Date / time of photograph: 26-Sep-16; 1148 Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg Sheet number: 01</p>
Location	Delimara Point	
Key features	<p>A largely natural coastal cliff environment provides a backdrop to the cove. The disused building (and associated tall palm) is a prominent feature set back from the cliff edge. Large Eucalyptus trees (planted) are set behind and border the Scheme site.</p> <p>Low to moderate visual amenity, moderate intrinsic value.</p>	
Sensitive receptors	<p>Visitors to the site, recreational users, hikers.</p> <p>Low to moderate numbers of high sensitive receptors.</p>	
Change to Visual Amenity	The Scheme introduces a relatively large modern building that dominates the view. The new building rises higher than the previous building and associated structures, including relatively high walls and a swimming pool, extend further along the cliff side than the current structure.	
Impact	<p>A medium to large change to the overall view of low to moderate intrinsic value affecting a low to moderate number of moderate to high sensitive receptors.</p> <p>Impact: Major significance.</p>	 <p>VIEWPOINT REFERENCE 01</p> <p>Year 0 Distance to proposed development: 170m Camera height: 1.5m Date / time of photograph: 26-Sep-16; 1148 Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg Sheet number: 02</p> <p>PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.</p>
		



**Viewpoint 2: Delimara Point (looking south-eastwards)**

<b>Viewpoint</b> 1	Date: 26 <sup>th</sup> September 2016
<b>Location</b>	Delimara Point
<b>Key features</b>	A poorly surfaced approach road flanked by arable land to one side and coastal vegetation (dominated by <i>Atriplex halimus</i> ) to the other, with a view to the sea and the existing Scheme building. The associated palms are prominent. Eucalyptus (planted) trees located behind the arable land, block views to the sea.  Low visual amenity, low intrinsic value.
<b>Sensitive receptors</b>	Visitors to the site, recreational users, hikers.  Low to moderate numbers of high sensitive receptors.
<b>Change to Visual Amenity</b>	The Scheme notably provides an extension to the existing building and increases its height.
<b>Impact</b>	A small change to the overall view of low intrinsic value affecting a low / moderate number of high sensitive receptors.  Impact: Minor significance.
	



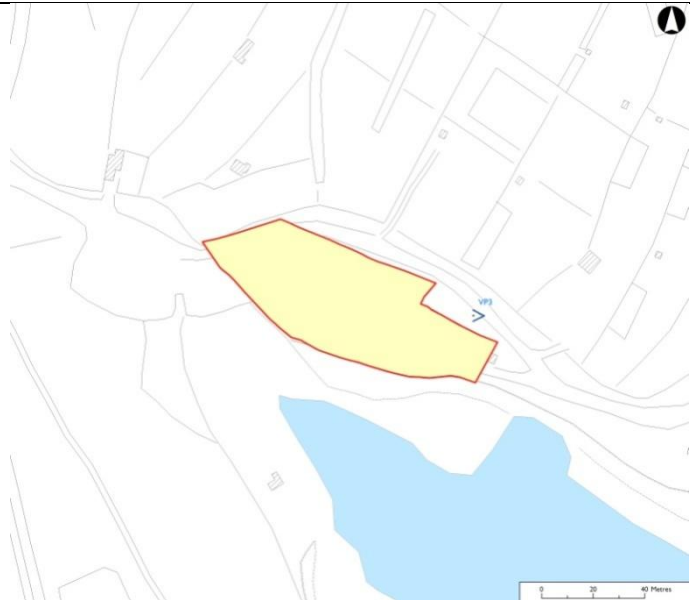
VIEWPOINT REFERENCE 02 Year 0 Distance to proposed development: 116m Camera height: 1.5m Date / time of photograph: 26-Sep-16; 1128 Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg Sheet number: 04  
EXISTING VIEW



VIEWPOINT REFERENCE 02 Year 0 Distance to proposed development: 116m Camera height: 1.5m Date / time of photograph: 26-Sep-16; 1128 Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg Sheet number: 05  
PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Viewpoint 3: Delimara Point (looking westwards)**

Viewpoint I	Date: 26 <sup>th</sup> September 2016
Location	Delimara Point
Key features	View onto the Scheme site. A green hillside provides a back drop to the disused building and dominant palms that formed part of the previous landscaping.  Low visual amenity, low intrinsic value.
Sensitive receptors	Visitors to the site, recreational users, hikers.  Low to moderate numbers of high sensitive receptors.
Change to Visual Amenity	Introduction of a modern, larger building to the landscape that breaks the skyline from this view.
Impact	A large change to the overall view of low intrinsic value affecting a low number of high sensitive receptors.  Impact: Major significance.
	



- 8.50. The impact of the Scheme on the visual amenity of the area portrayed in the above photographs and photomontages varies depending on the viewpoint. Minor to major effects have been noted from a number of viewpoints. Significance is dependent on the scale of change to the landscape and the visual amenity of the area, the intrinsic value of the view, and the sensitivity of receptors that will view the Scheme.

## **MITIGATION**

- 8.51. The Scheme includes a landscaping scheme that aims to provide some screening to the development. **Figure 8.5** to **Figure 8.7** provide photomontages of each of the viewpoints following 10 years from planting the landscaping scheme.

## **RESIDUAL IMPACTS**

- 8.52. From Viewpoint 1, the landscaping serves to mitigate the extent of the development to a degree by partially screening the walls that extend beyond the main building. The increase in vegetation also helps to better integrate this aspect of the development into the landscape. However, the main building mass, height and modernity remain unchanged such that the residual impact remains.
- 8.53. The landscaping scheme does not screen Viewpoint 2.
- 8.54. The Scheme building is partly screened in Viewpoint 3, and so is the hill in the background, which provides a partial long view away from the Scheme. The landscaping partially screens the Scheme building from this viewpoint, reducing the perceived size of the structure although the height of the modern building remains noticeable. However, noting that this is a coastal location, it is uncertain whether the landscaping would reach the size as shown in the proposed photomontage, so the residual impact remains major.
- 8.55. **Table 8.9** summarises the landscape and visual amenity impact assessment.



**Figure 8.5: Viewpoint I photomontage 10 years following landscaping planting**



**VIEWPOINT REFERENCE 01**      Year 10      Distance to proposed development: 170m      Camera height: 1.5m      Date / time of photograph: 26-Sep-16; 1148      Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg      Sheet number: 03

**PROPOSED VIEW:** The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Figure 8.6: Viewpoint 2 photomontage 10 years following landscaping planting**



**VIEWPOINT REFERENCE 02**      Year 10    Distance to proposed development: 116m    Camera height: 1.5m    Date / time of photograph: 26-Sep-16; 1128    Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg    Sheet number: 06  
PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Figure 8.7: Viewpoint 3 photomontage 10 years following landscaping planting**



**VIEWPOINT REFERENCE 03**      Year 10    Distance to proposed development: 50m    Camera height: 1.5m    Date / time of photograph: 26-Sep-16; 1204    Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg    Sheet number: 09

**PROPOSED VIEW:** The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.

**Table 8.9: Summary of Impacts on Landscape and Visual Amenity**

Asset Impacted	Beneficial/ Adverse/ Neutral	Nature, Scale and Type of Impact						Probability of impact occurring (Likely / Unlikely / Remote / Uncertain)	Significance of impact (Major/ Minor/Not significant)	Proposed mitigation measures	Significance of residual impact (Major/ Minor/Not significant)
		Const'n/ Oper'n	Extent of impact (Nat./ Local/ Site)	Direct/ Indirect	S-term/ L-term	Perm/ Temp	Revers/ Irrevers				
Landscape											
Delimara Peninsula Character Area: LLT: Delimara Power Station	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant
Delimara Peninsula Character Area: LLT: Rural / natural area	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Major	None	Major
Delimara Peninsula Character Area: LLT: Coastal Area	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Major	None	Major
Marsaxlokk Character Area: LLT: Marsaxlokk Bay	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant
Marsaxlokk Character Area: LLT: Marsaxlokk Settlement	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant
Marsaxlokk Character Area: LLT: Marsaxlokk Settlement	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant



Asset Impacted	Beneficial/ Adverse/ Neutral	Nature, Scale and Type of Impact						Probability of impact occurring (Likely / Unlikely / Remote / Uncertain)	Significance of impact (Major/ Minor/Not significant)	Proposed mitigation measures	Significance of residual impact (Major/ Minor/Not significant)
		Const'n/ Oper'n	Extent of impact (Nat./ Local/ Site)	Direct/ Indirect	S-term/ L-term	Perm/ Temp	Revers/ Irrevers				
Visual Amenity											
Viewpoint 1: Delimara Point (looking north- eastwards)	Adverse	All	Local	Direct	L-term	Perm	Revers	Likely	Major	None	Major
Viewpoint 2: : Delimara Point (looking south- eastwards)	Adverse	All	Local	Direct	L-term	Perm	Revers	Likely	Minor	None	Minor
Viewpoint 3: Delimara Point (looking westwards)	Adverse	All	Local	Direct	L-term	Perm	Revers	Likely	Major	Landscaping (after 10 years of growth)	Major

## 9. NOISE

### INTRODUCTION

- 9.1. This chapter considers the potential noise impacts arising from the construction of the Scheme and from the operation of the Scheme in relation to activity outdoors in the evening time. The scoping for the assessment also considered the potential noise impacts arising from operational plant equipment, as well as from the traffic likely to be generated by the Scheme when it comes into operation. In both cases, and as agreed by the Environment and Resources Authority (ERA), the noise impacts resulting from these elements were scoped out of the detailed assessment. The reasons for this are explained below.
- 9.2. Accordingly, the key noise issues in relation to the detailed noise assessment are:

#### **Key Issues:**

- **Effects of noise arising from the construction of the Scheme on residential and recreational sensitive receptors**
- **Effects of noise arising from the operation of the Scheme during the evening time on residential sensitive receptors**

### STANDARDS AND GUIDANCE

- 9.3. There is to date no specific guidance in Malta on noise in the context of land use planning<sup>31</sup>. In situations where standards are not available, ERA and the Planning Authority (PA) generally make reference to equivalent guidance from the United Kingdom (UK) and International Organisation for Standardisation (ISO) standards.
- 9.4. Accordingly, the baseline noise survey was undertaken with reference to British Standard (BS) 4142: 2014<sup>32</sup>. In predicting the noise levels arising from the construction of the Scheme, reference was made to BS 5228: 2009<sup>33</sup> and to the UK Government's Planning Policy Guidance Notes, which clarify the applicability of these Standards to land use planning issues (PPG 24: Planning and Noise<sup>34</sup>). Reference was also made to ISO 1996<sup>35</sup>, in accordance with Annex II of the *Environmental Noise*

<sup>31</sup> Malta transposed the Environmental Noise Directive (Directive 2002/49/EC) into national legislation through Legal Notice 426 of 2007. The Regulations designate MEPA as the competent authority for the generation of strategic noise maps, the publication of information on environmental noise, and the drawing up of action plans.

<sup>32</sup> BS 4142:2014, *Methods for rating and assessing industrial and commercial sound*, British Standards Institution

<sup>33</sup> BS 5228: 2009, *Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part I Noise*, British Standards Institution.

<sup>34</sup> Department of Communities and Local Government (UK), Planning Policy Guidance PPG 24, *Planning and Noise*, September 1994.

<sup>35</sup> ISO 1996, *Acoustics - Description, measurement and assessment of environmental noise*, International Organisation for Standardization.

*Directive (2002/49/EC). In respect of the operational noise assessment, reference was made to the rating levels outlined in BS 4142 and to The Institute of Environmental Assessment UK (now IEMA) Guidance Notes No 1 Guidelines for the Environmental Assessment of Road Traffic.*

## **SCOPING ASSESSMENT**

### **Operational Plant Equipment**

- 9.5. As mentioned, the noise impacts resulting from operational plant equipment were scoped out of the detailed assessment.
- 9.6. It is envisaged that the Scheme will incorporate air conditioning units, extractors and water pumps, all of which will generate some noise. However, it is in the interests of the Scheme operators to mitigate any noise arising from this plant equipment, which could impact on the guests staying at the hotel, both by installing the latest models available and by locating the plant where noise emissions can be controlled and mitigated. Furthermore, as is now the requirement for all new hotels, the operators will be required to apply for eco-accreditation under the Malta Tourism Authority's (MTA) Eco-certification Scheme, and will therefore need to implement a long-term operational sustainability management system. The Eco-certification criteria specifically address noise emissions from a hotel's operations, in the interests of hotel guests and those living / working in the area around the hotel.
- 9.7. As described below, the nearest residential property to the Scheme Site is located approximately 95 m to the east at its closest point (plan distance). Given this distance, and for the reasons explained above, it is considered unlikely that there will be any significant noise impact from operational plant equipment on the residential sensitive receptors.

### **Operational Traffic**

- 9.8. Noise impacts resulting from the traffic generated by the Scheme when it comes into operation were also scoped out of the detailed assessment, since it is considered unlikely that there will be a significant increase in traffic noise as a result of the Scheme. A scoping survey was undertaken to ascertain the potential for the additional traffic to influence the noise climate at the sensitive receptors likely to be most affected by the increase in traffic.
- 9.9. The Scheme will generate additional vehicular traffic in the area, both during the day and in the evening. The Simplified Traffic Survey (STS) that has been undertaken for the Scheme identifies a maximum of 20 vehicle trips likely to be generated during the weekday peak hour, between 16:00 – 17:00 (taking account of staff changing shifts), and a maximum of 16 vehicle trips likely to be generated during the weekend peak hour, between 20:00 and 21:00 (taking account of patrons arriving at the restaurant).
- 9.10. All of the traffic likely to be generated by the Scheme will access (approach and leave) the site via Triq Delimara. There are very few residential sensitive receptors located on Triq Delimara. The property most likely to be affected by the increase in traffic



as a result of the Scheme is located approximately 900 m driving distance from the Scheme site (see **Figure 9.1**). This property is currently unoccupied, being under construction; however, it is a legally permitted residence which is nearing completion and it has the potential to be occupied by the time the Scheme comes into operation. The property directly overlooks Triq Delimara, with the nearest facade (and apertures) being approximately 3 m from the carriageway.

- 9.11. The scoping survey involved undertaking day and evening time traffic counts at this residential property (sensitive receptor) in order to ascertain the current traffic flows. To enable comparison with the predicted trip generation figures in the STS, the traffic counts were specifically conducted as follows:
- Day time (Thursday 8<sup>th</sup> October 2016), between 16:00 and 17:00; and
  - Evening time (Saturday 10<sup>th</sup> October 2016), between 20:00 and 21:00.
- 9.12. The noise measurements were carried out in accordance with the noise measurement methodology outlined in British Standard BS 4142: 2014. **Figure 9.1** also shows the noise measurement location for both the day and evening time noise measurements.
- 9.13. **Table 9.1** shows the recorded traffic counts and the measured noise levels at the sensitive receptor.

**Table 9.1: Traffic Counts and Measured Noise Levels**

Day Time (Week Day 16:00 – 17:00)		Evening Time (Weekend 20:00 – 21:00)	
Number of Motorised Vehicles	Ambient Noise Level – dB ( $L_{Aeq}$ )	Number of Motorised Vehicles	Ambient Noise Level – dB ( $L_{Aeq}$ )
41	58	12	54

- 9.14. The traffic counts revealed that the current traffic flows along Triq Delimara during the day and in the evening time are relatively high given the remoteness of the area and the fact that it is relatively sparsely populated. However, and despite it being October, it was observed that the day time traffic included a significant proportion of traffic to / from St Peter's Pool and Kalanka Bay, and even the night time traffic included traffic travelling to / from Kalanka Bay (even though it was dark). The assessors observed parked cars at Kalanka Bay and at the entrance to St Peter's Pool (on Triq Delimara) during the day time survey and a number of cars parked at Kalanka Bay during the night time survey.
- 9.15. The measured noise levels reveal that the ambient noise levels at the sensitive receptor are also relatively high. As observed, the reason for this is the proximity of the sensitive receptor to the Delimara Power Station (located immediately opposite the property). Noise from the Power Station (continuous whirring / hissing and underlying and continuous hum) was observed to be the most predominant noise source during both surveys; the assessors observed the ambient noise level in the

absence of all noise except the Power Station to be in the range of 50 dB to 53 dB, both during the day time survey and during the evening survey. In both cases, the measured ambient noise levels ( $L_{Aeq}$ ) taking account of all noise sources, including traffic, were only marginally higher.

- 9.16. The Institute of Environmental Assessment UK (now IEMA) Guidance Notes No 1<sup>36</sup> advocates as a general rule that a doubling of traffic flow will increase traffic-related noise by 3 dB(A); the dB(A) increase of more substantial changes to traffic flows are calculated with the formula: *Change in noise in dBA = 10\*log(peak traffic forecast / peak traffic actual)*. This is accepted practice for gauging changes in noise climate associated with changes in traffic flows where the traffic is free flowing at speeds of at least 50 kph and more than 1,000 vehicles per hour (vph). This is not the case with the Scheme, where the current and predicted traffic flows during the day time and night time peak hours are substantially less than 1,000 vph and vehicles are generally moving slower than 50 kph along the poorly surfaced and narrow Triq Delimara. However, the Guidelines provide a useful gauge of what could be the likely change in traffic noise levels as a result of the Scheme.
- 9.17. Furthermore, in terms of human perception of changes in sound pressure levels, it is generally accepted that a 3 dB change in sound level is just perceptible as an increase (or decrease) in perceived loudness, that a 5 dB change is perceived as a noticeable difference, and that a 10 dB change is perceived to be twice or half as loud.
- 9.18. In the case of the day time, where the current traffic flow at peak hour is in the range of 41 vehicles and the predicted maximum trip generation from the Scheme in this peak hour is 20 vehicles, the potential is that there will be an approximate 50% increase in the traffic flow along Triq Delimara at the location of the sensitive receptor likely to be most affected (61 vehicles). Hence, there is likely to be a change of less than 3 dB to the ambient noise level at the sensitive receptor, and the receptor is unlikely to perceive a noticeable difference in the noise level.
- 9.19. In the case of the evening time, where the current traffic flow at peak hour is in the range of 12 vehicles and the predicted maximum trip generation from the Scheme in this peak hour is 16 vehicles, the potential is that there will be an approximate 130% increase in the traffic flow along Triq Delimara at the location of the sensitive receptor likely to be most affected (28 vehicles). Using the above mentioned formula, there is likely to be a change of approximately 4 dB (rounded from 3.68 dB) to the ambient noise level at the sensitive receptor, and the sensitive receptor is likely to perceive a difference in the noise level. Having regard to the magnitude of the change, however, it is considered unlikely that this change will be perceived as being significant, or that traffic noise will be perceived to have become a noise nuisance.

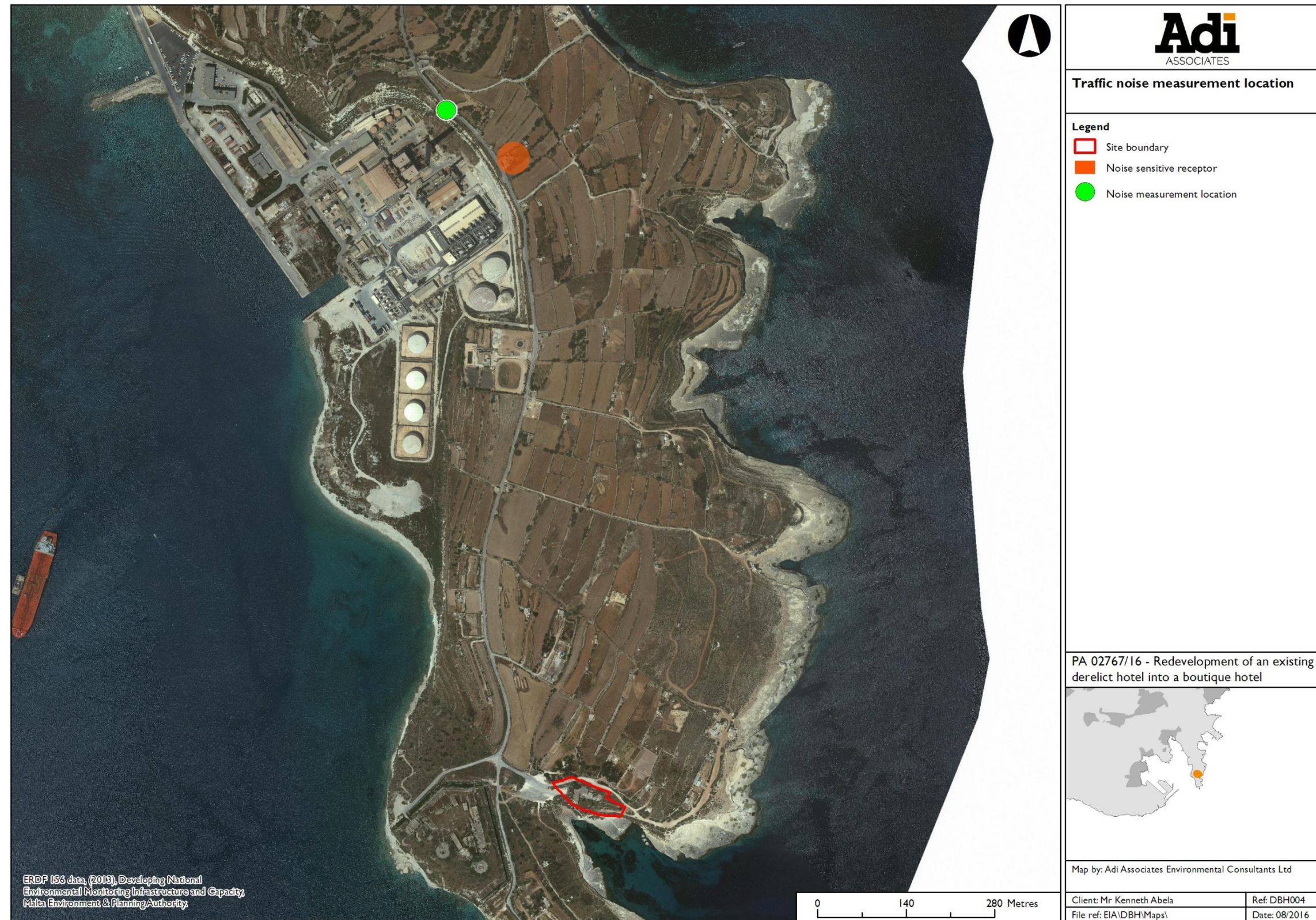
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<sup>36</sup> Institute of Environmental Assessment UK (now IEMA) Guidance Notes No 1 *Guidelines for the Environmental Assessment of Road Traffic* 1993

- 9.20. The scoping survey pointed to it being unlikely that traffic generated by the Scheme when it comes into operation will have a significant impact on the sensitive receptors. There is the likelihood that current traffic flows during the peak summer months (June to August) are higher than were recorded during the October scoping survey, and therefore that changes to noise levels are likely to be less perceptible to the sensitive receptors than identified through the survey. The October traffic counts are likely to be representative of the months of May and September.
- 9.21. Current traffic flows in November through to April are likely to be lower than were recorded in October, and therefore the change in the noise levels during the day and in the evening during these months could potentially be higher than identified through the scoping survey. However, it is important to bear in mind that the overall number of vehicles passing in front of the sensitive receptors during these months is unlikely to be higher than the overall number of vehicles passing during the months of May through to September (and may even be lower). Therefore, the ambient noise levels during the day and in the evening time at the sensitive receptors could potentially be lower in the months of November through to April.



**Figure 9.1: Traffic Noise Sensitive Receptor and Noise Measurement Location**



INDICATIVE ONLY - Not to be used for direct interpretation





## DETAILED NOISE ASSESSMENT

- 9.22. The detailed noise assessment considered the potential noise impacts arising from the construction of the Scheme and from the operation of the Scheme in the evening time, specifically in relation to activity outdoors. The following describes the detailed noise assessment.

### Noise Sensitive Receptors

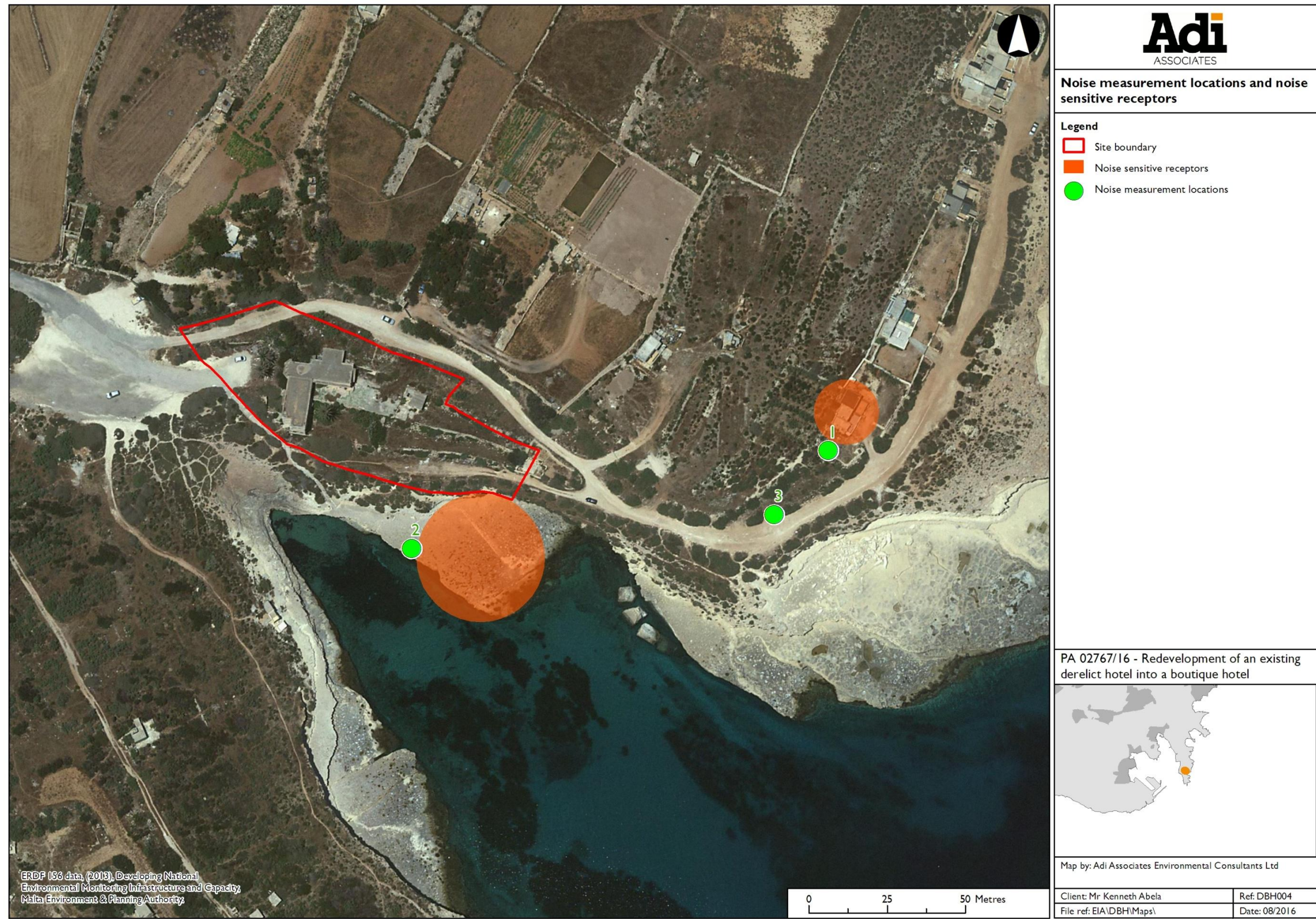
- 9.23. The noise sensitive receptors with the potential to be affected by noise arising from the construction of the Scheme and from operational activity outdoors are the residents of the properties nearest to the Scheme site and the recreational users of Kalanka Bay; these sensitive receptors are shown on **Figure 9.2**.
- 9.24. The closest residential properties to the Scheme site are located to the east / northeast of the site; these are summer residences. The nearest of these properties is located approximately 95 m (plan distance) to the Scheme site at the closest point.
- 9.25. Kalanka Bay is a designated swimming zone and is popular with bathers during the summer months in particular; the area is also used in the evening time (for barbecues), although to a lesser extent than during the day time. Access to the Bay is from the steps running alongside the southwestern perimeter of the Scheme Site, but bathers (and other users) tend to congregate further southeast on the point where there is ladder access to the sea, and where the configuration and terrain of the Bay are more conducive to sitting / lying; this includes the area directly beneath the cliff on the southeastern edge of the Scheme site.

### Baseline Noise Climate

- 9.26. A detailed description of the baseline noise survey at the sensitive receptors is available in **Technical Appendix 5: Noise Baseline Report**. This includes a description of the existing noise context in the area around the Scheme Site, and at the location of the sensitive receptors, as well as the methodology for the survey.
- 9.27. Three baseline noise measurements were taken as follows:
- One day time measurement at the residential sensitive receptors, on 6<sup>th</sup> September 2016, between 15:00 and 15:15;
  - One day time measurement at the recreational sensitive receptors, on 6<sup>th</sup> September 2016, between 15:30 and 15:45; and
  - One evening time measurement at the residential sensitive receptors, on 8<sup>th</sup> September 2016, between 21:15 and 21:20.
- 9.28. The background sound level (baseline) measurements and the predominant noise sources recorded during the measurements are shown in **Table 9.2**. In accordance with BS 4142, the recorded sound levels are quoted to the nearest whole number of decibels. The climatic conditions experienced during the surveys are also identified.



**Figure 9.2: Noise Sensitive Receptors**



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**Table 9.2: Baseline Sound Level Measurements**

ML	$L_{Aeq}$	$L_{Amax}$	$L_{A90}$	$L_{A10}$	Predominant noise sources	Climatic Conditions
<b>Day time Measurements</b>						
<b>ML 1</b>	41	61	37	43	<ul style="list-style-type: none"> <li>Gentle waves (continuous throughout the measurement)</li> <li>Bird chirping (continuous throughout the measurement)</li> <li>Engine of small boats (in the far distance, from three boats and for the first 10 minutes of the measurement)</li> <li>Overhead aircraft (in the far distance, and only once)</li> </ul>	Wind direction: E Wind speed: av 4.6 km/hr (max gust 4.8 km/hr) Air temperature: 26 °C Rainfall: 0 mm Relative humidity: 58 %
<b>ML 2</b>	55	69	52	57	<ul style="list-style-type: none"> <li>Waves (in close proximity and continuous throughout the measurement)</li> <li>Chatter from bathers nearby (occasional but frequent)</li> <li>Splashing from bathers entering the water (occasional but frequent)</li> <li>Engine of small boat leaving the Bay (in close proximity, but only for the last 3 minutes of the measurement)</li> </ul>	Wind direction: E Wind speed: av 4.3 km/hr (max gust 6.4 km/hr) Air temperature: 25 °C Rainfall: 0 mm Relative humidity: 60 %
<b>Evening time Measurement</b>						
<b>ML 3</b>	43	55	46	51	<ul style="list-style-type: none"> <li>Gentle waves (continuous throughout the measurement)</li> </ul>	Wind direction: - Wind speed: 0 km/hr Air temperature: 22°C Rainfall: 0 mm Relative humidity: 69 %

## CONSTRUCTION NOISE

### Construction Timing

- 9.29. The construction period for the Scheme is expected to last approximately eight months, with the demolition and excavation phase being approximately 18 days. Construction will be carried out concurrently across the site.

### Methodology for Predicting Construction Noise Levels

- 9.30. The methodology for assessing the impact of construction noise involves predicting the noise level at the sensitive receptors at each phase of the construction stage. Noise from construction sites is produced by a range of different activities and types of plant and machinery, the noise from which varies by location and over time, as well as in intensity and character. BS 5228 (Part 1, Annex F) outlines a method for determining the noise level of construction noise sources allowing for a reasonably accurate prediction of the noise levels at the sensitive receptors. Annex C of BS 5228 provides sound level data in relation to typical construction site activities, plant and machinery; the data in Annex C is considered to be generally applicable for the purpose of predicting the sound levels of the activities, plant and machinery envisaged to be used in the construction of the Scheme.
- 9.31. The sound levels of the plant and machinery envisaged to be used in the construction of the Scheme, derived from the relevant tables in Annex C, are given in **Table 9.3**.
- 9.32. In accordance with the guidance set out in BS 5228: 2009 Part 1 Annex F, F.2.2.2, the method for activity  $L_{Aeq}$  was used to predict the noise levels at the sensitive receptors. The construction activity  $L_{Aeq}$  was established using the A-weighted sound pressure levels at 10 m (dB) obtained from Annex C, as mentioned. Where there is potential for plant / equipment to be operating simultaneously, the combined noise generated from the different noise sources was calculated using the logarithmic addition formula:  $L_{Total} = 10 \lg(10^{L1/10} + 10^{L2/10})$  dB.
- 9.33. For each stage of construction, the worst case scenario was assumed, where all plant / machinery was operating simultaneously and continuously.
- 9.34. Finally, a distance adjustment was made taking account of the distance to the residential sensitive receptors. This was done with reference to Figure F2 of BS 5228. Where the area between the noise source and the residential sensitive receptors is made up of predominantly soft ground, the distance adjustment for soft ground was used, and the distance to the residential sensitive receptors was determined from the Scheme Site boundary at its closest point (plan distance was used). No allowance was made for screening or for reflection.



**Table 9.3: Construction Plant / Equipment and Relevant Sound Levels**

Plant / Machinery	Number	A-weighted sound pressure level at 10m (dB)	Estimated Duration
<b>Demolition / Site Clearance</b>			18 days
Excavator (hydraulic hammer rig)	1	89	
Dump trucks	2	79 – 87 <sup>1</sup>	
<b>Excavation</b>			
Excavator (hydraulic hammer rig)	1	89	
Drum cutter (tracked excavator)	1	71 – 77 <sup>2</sup>	
Dump trucks	2	79 – 87 <sup>1</sup>	
<b>Construction (including finishings)</b>			7 and a half months
Tower crane	1	76 – 77 <sup>3</sup>	
Generator (65kW)	1	61	
Mini-excavator (breaker mounted on wheeled backhoe)	1	92	
Small Digger (Bob cat)	1	68	
Concrete pump	1	79 – 80 <sup>4</sup>	
Concrete mixer trucks	2	82	
Truck loaders (with hi-up cranes)	2	77	
Delivery trucks	2	77 – 88 <sup>5</sup>	

1. range taking account of dump truck (empty) to dump truck (with filling)

2. range taking account of a 22t – 30t tracked excavator

3. range taking account of 14t – 22t cranes

4. range taking account of 17t – 26t truck mounted concrete pump

5. range taking account of 18t to 44t lorry

### Predicted Noise Levels Arising from Construction of the Scheme

- 9.35. The predicted noise levels at the sensitive receptors at each stage of the construction works are presented in **Table 9.4**.
- 9.36. The ‘construction’ phase will potentially be the noisiest stage of the construction works. The assessment predicts that the residential sensitive receptors could potentially experience noise levels in the range of 75 dBA during this phase. During the excavation phase, noise levels at the residential receptors could potentially be in the range of 71 dBA, and during the demolition / site clearance phase, potentially in the range of 69 dBA.
- 9.37. Construction noise levels could potentially be considerably higher at the recreational sensitive receptors, given their immediate proximity to the Scheme Site. The assessment predicts that the recreational receptors could potentially experience noise levels in the range of 97 dBA during the ‘construction’ phase. During the excavation phase, noise levels at the recreational receptors could potentially be in the range of 93 dBA, and during the demolition / site clearance phase, potentially in the range of 91 dBA.

**Table 9.4: Predicted Noise Generated During Construction**

Noise source	A-weighted sound pressure level at 10 m (dB)	Number on site at any one time	Range of combined A-weighted sound pressure level at 10 m (dB)	Estimated L <sub>Aeq</sub> sound levels at closest noise sensitive receptors	
				Residential Receptors (95 m from source) dB(A)	Recreational Receptors (adjacent to source) dB(A)
<b>Demolition / Site Clearance</b>					
Excavator (hydraulic hammer rig)	89	1	86	65 – 69	87 – 91
Dump trucks	79 – 87	2	82 - 90		
All plant / machinery operating simultaneously at this stage = 87 – 91 dBA					
<b>Excavation</b>					
Excavator (hydraulic hammer rig)	89	1	89	68 – 71	90 – 93
Drum cutter (tracked excavator)	71 – 77	1	71 – 77		
Dump trucks	79 – 87	2	82 - 90		
All plant / machinery operating simultaneously at this stage = 90 – 93 dBA					
<b>Construction (including finishing)</b>					
Tower crane	76 – 77	1	76 – 77	72 – 75	94 – 97
Generator (65kW)	61	1	61		
Mini-excavator	92	1	92		
Small Digger (Bob cat)	68	1	68		
Concrete pump	79 – 80	1	79 – 80		
Concrete mixer trucks	82	2	85		
Truck loaders (with hi-up cranes)	77	2	80		
Delivery trucks	77 – 88	2	80 – 91		
All plant / machinery operating simultaneously at this stage = 94 – 97 dBA					

## OPERATIONAL NOISE

- 9.38. The scoping assessment identified the most critical potential noise impacts arising from the operation of the Scheme on the residential sensitive receptors to be the impacts in the evening time from the use of the outdoor terrace envisaged at ground level on the eastern facade of the hotel (see **Figure 9.3**). This terrace is envisaged to have seating, to accommodate a maximum of approximately 34 persons and a bar serving drinks and snacks. There will therefore be noise from persons chatting as well as general noise from the preparation, serving and consumption of food and drink. The Applicant explains that it is not the intention to have music playing out of doors on the terrace. Nevertheless, where there is the potential for amplified music to be played outdoors, the potential noise impacts from this noise source have also been assessed.

### Methodology for Predicting Operational Noise Levels

- 9.39. BS 4142:2014 provides a methodology for rating and assessing noise of a commercial nature. The significance of the noise depends upon both the margin by which the 'specific sound level' (operational noise arising from the Scheme) at the sensitive receptors exceeds the 'background sound level' (measured baseline noise level), and the context in which the noise occurs. Where the noise source is not yet in operation, BS 4142 allows for the determination of the specific sound level by using representative data (measured noise) from similar noise scenarios and by calculation alone if measurement is not possible.
- 9.40. The noise arising from persons chatting on the outdoor terrace, from the other general activity on the terrace, and from noise arising from amplified outdoor music playing on the terrace was determined by a combination of measurement and calculation. Specifically, noise from persons chatting and from general activity, both with and without background music playing, was measured for similar scenarios to the Scheme scenario (that is, noise arising from outdoor restaurants / cafes of similar scale, in similarly rural locations). The noise measurements were carried out in accordance with the noise measurement methodology outlined in BS 4142. The noise arising from amplified outdoor music playing on the terrace was also determined by calculation, using the noise source sound power level to determine the maximum noise likely to be generated from one sound system (speaker); given the size of the terrace, it is unlikely that there will be more than one sound system operated at any one time.
- 9.41. The methodology for predicting the specific noise level at the assessment location (the noise sensitive receptor) is based on the logarithmic relationship for the transmission of sound ( $L_p = L_w - 20 \log r - 8$ )<sup>37</sup>, which provides that with every doubling of distance the sound pressure level falls by 6 dB.

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<sup>37</sup> Where  $L_p$  is the sound pressure level,  $L_w$  is the sound power level, and  $r$  is the distance.



- 9.42. Certain acoustic features can increase the likelihood of a noise complaint over that expected from a simple comparison between the specific sound level and the background sound level. These include where one or more of the following features occurs in relation to the noise source:
- the noise contains a distinguishable, discrete, continuous note (whine, hiss, screech, hum, etc.);
  - the noise contains distinct impulses (bangs, clicks, clatters, or thumps); or
  - the noise is irregular enough to attract attention.
- 9.43. Where present, or expected to be present, such acoustic features are taken into account by adding 5 dB to the specific sound level to obtain the 'rating level'. In this case, a correction of 5 dB was added to the specific noise level of the amplified music system, taking account of the bass beat sound.
- 9.44. In calculating the specific noise level at the sensitive receptors, the distance to the receptors was taken from the nearest point of the terrace. This distance (approximately 118 m) assumes the worst case scenario in relation to potentially the closest position of the noise source. Plan distance was used and no screening was assumed. As mentioned, attenuation of noise levels over distance was calculated based on the logarithmic relationship for the transmission of sound.

#### **Predicted Noise Levels Arising from the Operation of the Scheme**

- 9.45. The predicted noise levels at the nearest sensitive receptors in the evening time from persons chatting and from the general activity on the terrace, with and without background music playing, and based on representative measurement data, is presented in **Table 9.5**.
- 9.46. The predicted noise level at the nearest sensitive receptors in the evening time from amplified music played at full volume on the outdoor terrace, and based on the sound power level of one music system (speaker), is presented in **Table 9.6**.

**Figure 9.3: Plan Layout showing Outdoor Terrace**



**Table 9.5: Predicted Noise Levels from Persons Chatting and General Activity (with and without Amplified Background Music)**

Noise Source	Measured Noise Level $L_{Aeq}$	Estimated $L_{Aeq}$ Sound Level (specific noise level) at Sensitive Receptor (118 m from noise source) dBA	Current $L_{A90}$ at Sensitive Receptor (recorded evening-time background noise level) dBA
Chatter and general activity	52 (at 3m)	9 - 11	46
	50 (at 3m)		
Chatter, general activity and background music	59 (at 2m)	18 - 20	
	61 (at 2m)		

**Table 9.6: Predicted Noise Level from Amplified Music System**

Noise Source	A-weighted Sound Pressure Level dBA	Number (operating at any one time)	Estimated $L_{Aeq}$ Sound Level (specific noise level) at Sensitive Receptor (118 m from noise source) dBA	Current $L_{A90}$ at Sensitive Receptor (recorded evening-time background noise levels) dBA
Amplified music system	94 (at 1m) <sup>i</sup>	1 <sup>ii</sup>	58 <sup>iii</sup>	46

*i* - This assumes the worst case scenario, whereby the amplified music system is positioned on the eastern edge of the terrace and the music system is generating a sound pressure level ( $L_{eq}$ ) of 105 dBA (100 dB + 5 dB correction for bass sound).

*ii* - This refers to 1 speaker.

*iii* - denotes a 5 dB correction, added to take account of bass beat sound from amplified music system



## ASSESSMENT OF CONSTRUCTION NOISE IMPACTS

### Significance Criteria

#### *Residential Sensitive Receptors*

- 9.47. BS 5228 (Part I, Annex E) outlines criteria for assessing the significance of construction noise impacts; these include threshold values for day time noise levels at residential sensitive receptors and triggers for eligibility for noise insulation in relation to day time noise levels at the residential receptors.
- 9.48. The guidance cites a week day (excluding evenings) threshold value of 65 dB  $L_{Aeq}$  in cases where the ambient noise level (the measured baseline noise level) is less than 65 dB  $L_{Aeq}$  (when rounded to the nearest 5dB), a threshold value of 70 dB  $L_{Aeq}$  in cases where the ambient noise level is 65 dB  $L_{Aeq}$  (when rounded to the nearest 5dB), and a maximum threshold value of 75 dB  $L_{Aeq}$  in cases where the ambient noise level is higher than 65 dB  $L_{Aeq}$ ; the guidance also cites a noise insulation trigger value of 75 dB  $L_{Aeq}$ . In the case of weekends, the guidance cites a threshold value of 55 dB  $L_{Aeq}$  in cases where the ambient noise level is less than 55 dB (when rounded to the nearest 5dB), a threshold value of 60 dB  $L_{Aeq}$  in cases where the ambient noise level is 55 dB  $L_{Aeq}$  (when rounded to the nearest 5dB), and a maximum threshold value of 65 dB  $L_{Aeq}$  in cases where the ambient noise level is higher than 55 dB  $L_{Aeq}$ .
- 9.49. The measured baseline noise level during the day time at the residential sensitive receptors was 41 dB  $L_{Aeq}$  (40 dB  $L_{Aeq}$  when rounded to the nearest dB). Hence, based on the BS 5228 guidance, the following criteria were used to assess the significance of impacts of the construction of the Scheme on the noise climate at the residential sensitive receptors:
- **Not significant** – if the noise level at the sensitive receptor does not exceed the threshold value of 55 dB  $L_{Aeq}$ ;
  - **Minor significance** – if the predicted noise level at the sensitive receptor is greater than 55 dB  $L_{Aeq}$  but does not exceed 65 dB  $L_{Aeq}$ ;
  - **Moderate significance** – if the predicted noise level at the sensitive receptor is greater than 65 dB  $L_{Aeq}$  but does not exceed the maximum threshold value and noise insulation trigger for day time of 75 dB  $L_{Aeq}$ ; and
  - **Major significance** – if the predicted noise level at the sensitive receptor exceeds the maximum threshold value and noise insulation trigger for daytime of 75 dB  $L_{Aeq}$ .

#### *Recreational Sensitive Receptors*

- 9.50. In the case of noise sensitive receptors in 'public open spaces', BS 5228 (Part I, Annex E) guides that the impact on sensitive receptors in public open spaces is deemed to be significant if the total noise at these receptors (pre-construction ambient noise plus construction noise) exceeds the pre-construction noise level (measured baseline noise level  $L_{Aeq}$ ) by 5dB or more, for a period of one month or

more, and having regard to the context, including the extent of the public open space.

- 9.51. The measured baseline noise level during the day time at the recreational sensitive receptors was 55 dB  $L_{Aeq}$ . Based on the BS 5228 guidance, and where it is generally accepted that a 3 dB change in sound level is just perceptible to humans in terms of an increase or decrease in perceived loudness, the following criteria was used to assess the significance of impacts of the construction of the Scheme on the noise climate at the recreational sensitive receptors:

- **Not significant** – if the predicted noise level at the sensitive receptor exceeds the measured baseline noise level  $L_{Aeq}$  by less than 3 dB;
- **Minor significance** – if the predicted noise level at the sensitive receptor exceeds the measured baseline noise level  $L_{Aeq}$  by between 3 – 5 dB; and
- **Major significance** – if the predicted noise level at the sensitive receptor exceeds the measured baseline noise level  $L_{Aeq}$  by more than 5 dB.

## **Prediction and Significance of Construction Impacts**

### ***Residential Sensitive Receptors***

- 9.52. The predicted highest noise levels at the residential sensitive receptors during the construction of the Scheme could potentially reach the maximum threshold value and the noise insulation trigger value (75 dB  $L_{Aeq}$ ) for residential properties, specifically in the 'construction' phase of the works (predicted noise level in the range of 75 dB  $L_{Aeq}$ ). Noise levels during demolition / site clearance and excavation (predicted to be in the range of 69 - 71 dB  $L_{Aeq}$ ) will likely be of more moderate significance.
- 9.53. It is highlighted, however, that the noise impact assessment assumed the worst case scenario for predicted noise levels, in assuming that all plant and machinery will be operating simultaneously and continuously in each phase of each stage of the works, and in assuming that the plant will be located on the site perimeter. In reality, it is unlikely that there will be continuous noise output at the levels predicted throughout each phase of the construction.
- 9.54. Additionally, there was no allowance made for screening in calculating the predicted noise levels at the sensitive receptors. In reality, in the case of the residential sensitive receptors, there will be some sound attenuation due to the intervening vegetation, and the topography to a degree. There is currently no line of site from the residential receptors to the Scheme Site, although there is a possibility that the upper level of the Scheme will be visible. There will also be enclosure of the construction site (solid masonry wall), which will help attenuate some of the noise arising from construction.
- 9.55. BS 5228: 2009 Part 1 Annex F gives guidance on approximate attenuation taking account of the height of the noise source relative to the height of a barrier. As a working approximation, if there is a barrier between the noise source and the

receptor, an approximate attenuation of 5 dB can be assumed when the top of the noise generating plant / machinery is visible to the receptor over the barrier, and of 10 dB when the barrier completely hides the noise sources from the receptor (BS 5228: 2009). In this case, as mentioned, there is no direct line of site from the residential receptors to the Scheme Site, and the majority of the construction will not be visible. There is a possibility that the upper level of the Scheme will be visible; however, the majority of the noise sources will remain at ground level. Assuming the lack of visibility of the noise sources, and the presence of a noise barrier, it is therefore reasonable to expect an approximate attenuation of -10 dB. Hence, the predicted maximum noise levels at the residential sensitive receptor could potentially be reduced to 65 dB (75 dB – 10 dB). This would reduce the predicted noise level during what is likely to be the noisiest phase of the construction works ('construction' phase) to below the maximum threshold value, thereby representing an impact of minor significance.

### ***Recreational Sensitive Receptors***

- 9.56. Construction noise levels could potentially be of major significance at the recreational sensitive receptors throughout the entire construction works (predicted noise levels in the range of 91 dB to 97 dB  $L_{Aeq}$ ).
- 9.57. Again, however, the noise impact assessment assumed the worst case scenario for predicted noise levels, in assuming that all plant and machinery will be operating simultaneously and continuously in each phase of each stage of the construction works, and in assuming that the plant will be located on the site perimeter. This is unlikely to be the case. Additionally, there was no allowance made for screening in calculating the predicted noise levels at the recreational sensitive receptors, and there may be some sound attenuation due to the construction hoarding (solid masonry wall), and potentially the topography, where the sensitive receptors will be on the Bay some 4 – 6 m below the construction site.
- 9.58. Having said this, the recreational sensitive receptors will be in the immediate proximity of the construction site, and it can be expected that noise levels will at times be such as to cause a nuisance to these sensitive receptors and therefore remains a major impact.

## **ASSESSMENT OF OPERATIONAL NOISE IMPACTS**

### **Significance Criteria**

- 9.59. The assessment methodology outlined on BS 4142:2014 is based on obtaining an initial estimate of the impact of the Scheme by subtracting the measured background sound level (baseline) from the rating level (the specific sound level which has been corrected for character) and using the difference to assess the magnitude of the impact. Typically, the greater the difference, the greater the magnitude of the impact, as shown in **Table 9.7**.



**Table 9.7: BS 4142:2014 Assessment criteria**

Difference	Assessment
Around +10 dB or higher	Likely to be an indication of a significant adverse impact, depending on the context
Around +5 dB	Likely to be an indication of an adverse impact, depending on the context
The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound, this is an indication that the specific sound source will have a low impact, depending on the context	

9.60. Based on the above, the following significance criteria were used in the assessment of the significance of impacts on the residential sensitive receptors from noise arising in the evening time from activity on the outdoor terrace:

- **Not significant:** no material change in noise climate (a change of less than +3 dB to the background noise level at the sensitive receptor);
- **Minor significance:** a change of between +3 dB and +5 dB to the background noise level at the sensitive receptor);
- **Moderate significance:** (a change of between +6 and +9 dB to the background noise level at the sensitive receptor; and
- **Major significance:** a change of +10 dB or higher to the background sound level at the sensitive receptor.

### Prediction and Significance of Operational Impacts

9.61. The predicted noise at the residential sensitive receptors from one speaker of an amplified music system played at full volume on the outdoor terrace could be in the range of 58 dB  $L_{Aeq}$ . Hence, in relation to the significance criteria described above, the noise level in the evening time at the residential receptors from amplified music could potentially be of major significance on a weekend evening, where the difference between predicted noise level  $L_{Aeq}$  on a weekend evening (58 dB) and the current noise level  $L_{A90}$  on a weekend evening (46 dB) is +12 dB.

9.62. The noise level on a weekend evening at the residential receptors arising from chatter and from general activity on the terrace, with or without the playing of amplified background music, could potentially be of no significance, where the predicted noise levels  $L_{Aeq}$  (20 dB and 11 dB, respectively) are between 26 and 35dB lower than the current noise level  $L_{A90}$  on a weekend evening (46 dB).

### MITIGATION

9.63. In relation to construction noise impacts, the timing of construction works is critical in respect of both the residential and the recreational sensitive receptors. The

residential receptors occupy properties which are summer residences, and the recreational receptors are primarily bathers visiting the area to swim at Kalanka Bay. While the entire construction period is envisaged to be relatively short (eight months), scheduling the construction works to exclude peak summer, and to restrict the noisier activities to outside of the months either side of July and August, would reduce the impact on the sensitive receptors.

- 9.64. Furthermore, the Construction Management Plan (CMP) to be prepared by the Contractor responsible for the construction of the Scheme should address the control of noise arising from all stages of the construction. In addition to adhering to the provisions of the *Environmental Management Construction Site Regulations 2007*, which will afford a measure of mitigation regarding noise at certain times of the day, the CMP should detail working hours and the types of plant / machinery to be used, as well as outline measures for the controlling of noise at source. There should also be periodic monitoring of the noise arising during construction, to assess the execution of noise control measures outlined in the CMP and the need for any additional control measures / action, as necessary.
- 9.65. The playing of amplified music on the outdoor terrace, and specifically the loudness of this music, is critical to controlling the scale of the operational noise impact on the residential sensitive receptors. Regulations require the cessation of the playing of amplified music outdoors after 23:00. Nevertheless, there should be attention to the noise levels on the outdoor terrace, including from any amplified music systems, at all times. There should also be periodic monitoring of the noise arising from activity on the outdoor terrace, and the implementation of noise control measures, as necessary.
- 9.66. Finally, it is recommended that attention is given to establishing and maintaining good relations with nearby residents, and with regular visitors to the Bay (where possible) to both provide information and to deal with complaints over construction and operational noise, if and when they arise. Complaints, when they arise, should be considered fairly and dealt with expeditiously.

## **RESIDUAL IMPACTS**

- 9.67. It is anticipated that noise arising from the construction activities will extend over the duration of the construction phase. Such residual impacts will range from being potentially of minor significance to being potentially of moderate significance, depending on the timing of the construction works, the timing of noisier activities, the phase of construction, and the implementation of noise control measures.
- 9.68. Residual impacts arising from activity on the outdoor terrace will range from being potentially of no significance to being potentially of minor or moderate significance, depending on the loudness of the amplified music system.
- 9.69. A summary of the noise impacts arising from the Scheme is given in **Table 9.8**.





**Table 9.8: Summary of Noise Impacts**

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Noise impact on residential receptors from construction activities	Adverse	Constr'n	Local	Direct	S'term	Temp	Revers	Likely	Moderate to major significance, depending on the phase of construction	Timing of works to exclude the summer season CMP with noise control measures Noise monitoring	Minor to moderate significance
Noise impact on recreational receptors from construction activities	Adverse	Constr'n	Local	Direct	S'term	Temp	Revers	Likely	Major significance throughout construction works	Timing of all works to exclude the summer season CMP with noise control measures Noise monitoring	Minor to moderate significance

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Noise impact on residential sensitive receptors from operational activities on outdoor terrace	Adverse	Oper'n	Local	Direct	L'term	Perm	Revers	Likely	Of no significance to major significance, depending on the volume of amplified music playing	Adherence to Regulations for amplified music outdoors Limiting the loudness of the amplified music system	No significance to minor or moderate significance, depending on effectiveness of mitigation

## 10. SUMMARY OF KEY IMPACTS, INTERACTION BETWEEN IMPACTS AND MITIGATION

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### INTRODUCTION

- 10.1. The purpose of this chapter is to provide a summary of the key environmental impacts, their interaction and cumulative effects, and their mitigation. The chapter addresses the requirements set out in the Terms of Reference (ToR) to describe mitigation measures to “*prevent, eliminate, reduce or offset (as relevant) the identified significant adverse effects of the project*” and to identify cumulative and residual impacts. The chapter concludes with a summary of the mitigation measures proposed in the Environmental Planning Statement (EPS) as well as a description of the required authorisations for the Scheme.

### SUMMARY OF KEY IMPACTS

- 10.2. **Chapters 5 to 9** of the EPS describe the predicted impacts of the Scheme in relation to geo-environment, terrestrial ecology, cultural heritage, landscape and visual amenity, and noise emissions, in accordance with the environmental topic areas identified in the ToR.
- 10.3. For each predicted impact, an assessment has been made as to whether the impact is likely to be of major or minor negative or positive significance, or of no significance; the criteria that were used to judge significance are described in each of the chapters. Predicted major and minor impacts have been identified, and, in the case of negative impacts, there is a description of how these could be mitigated. All the residual impacts identified are summarised in **Table 10.1** at the end of this Chapter.
- 10.4. The unmitigated major impacts identified during the assessment related to:
- Geology and geomorphology, arising from the excavation for the Scheme, in relation to both the extraction of the mineral resource and the stability of the cliff adjacent to the Scheme Site from the construction of the tunnel and related beach facilities;
  - Terrestrial ecology, arising from potential construction impacts on the Annex I habitats of good quality in the vicinity of the Scheme Site and potential impacts for habitats of conservation significance, of limited distribution, and which are already experiencing pressures, when the Scheme comes into operation;
  - Landscape and visual amenity, in relation to the Delimara Peninsula Character Area: Local Landscape Tracts (LLT) of the rural / natural area and the coastal area, and in relation to all viewpoints assessed the views looking north-eastwards and westwards from Delimara Point; and
  - Noise emissions, arising during the construction and operation of the Scheme and potentially affecting both residential and recreational sensitive receptors.



- 10.5. These impacts, relevant mitigation measures, and the residual impacts are discussed hereunder.

### **Geo-environment**

- 10.6. The impact on geological resources is considered to be of major negative significance since it involves the extraction of mineral resources (approximately 2,708 m<sup>3</sup>). The impact on the stability of the cliff adjacent to the Scheme Site, and on the integrity of this geomorphology feature, is also considered to be of major negative significance since the proposed tunnel will breach the cliff face and the area immediately behind the cliff face will be further excavated to provide for the beach facilities. Omission of the tunnel and beach facilities would considerably mitigate the impact of the Scheme in respect of the geomorphology of the area and the stability of the cliff, potentially reducing the impact from major to minor negative significance. Omitting these elements would also mitigate, to some extent, the impact on the mineral resource.
- 10.7. The impact of the Scheme on surface water run-off is considered to be of no significance to potentially of minor positive significance. Currently, water coming from upstream of the Scheme Site, and from within the site, flows directly into Kalanka Bay. The Scheme will include measures to collect rain and surface water from within the site, as well as from the road and parking area adjacent to the site.
- 10.8. The Scheme will have no impact on groundwater quality since there are no aquifers within the Delimara Peninsula.

### **Cultural Heritage**

- 10.9. The new buildings and structures will generally be restricted to the already developed western portion of the Scheme Site. However, there is the potential for impacts on cultural heritage arising from possible loss of, or damage to, unrecorded archaeological artefacts during excavation for the new build. Excavation of the tunnel and beach facilities also has the potential to cause the loss of, or damage to, unrecorded archaeological artefacts. The extent of this impact is uncertain, as it will depend on whether artefacts are present, their importance, and the extent of any loss or damage.
- 10.10. There is unlikely to be any significant impact on the candidate Grade I scheduled Fort Delimara and the Delimara Lighthouse, given nature and scale of the development, and the sightlines to these features. It is also unlikely that there will be any significant impact on the candidate Grade 2 designated salt pans complex.

### **Terrestrial Ecology**

- 10.11. With the possible exception of the habitats directly within and beneath the Scheme Site (that will no longer be accessible with the development in place), the expected footfall when the Scheme comes into operation is likely to result in increased trampling of the habitats in the area, including Annex I habitats which are not extensive. The impact could potentially be of major negative significance. Mitigation measures to cordon off important habitats, and to educate guests to avoid trampling

and other disturbance, would reduce the impact to minor significance.

- 10.12. The habitats in the vicinity of the Scheme Site could also be impacted during the construction of the Scheme where, again, the impact could potentially be of major negative significance. Again, mitigation measures to avoid overspill of the construction works onto these habitats would reduce the impact to minor significance.
- 10.13. The impact on habitats within the Scheme Site is considered to be of minor negative significance. The habitats identified have low ecological value.
- 10.14. The new landscaping on the Scheme Site could result in a potentially major significant negative impact on the surrounding habitats if the species used are not appropriate to the area; certain species have already been planted on the Scheme site that are not compatible with the surrounding ecology and should be removed. Limiting species in the landscaping scheme to ecologically compatible species in line with the *Guidelines on Trees, Shrubs and Plants for Planting and Landscaping the Maltese Islands 2002* would reduce the impact to minor significance.

### **Landscape and Visual Amenity**

- 10.15. The impact on landscape character is considered to be of major negative significance in relation to the 'Delimara Peninsula Character Area LLT: Rural / natural area' and the 'Delimara Peninsula Character Area LLT: Coastal area'. Notwithstanding that there are existing structures on the site, the Scheme will result in a large change in the rural / natural landscape with the introduction of a larger and taller hotel building with a modern form that is also more in keeping with an urban setting than a rural one. Moreover, there will be the introduction of commercial activity in the area, which is currently remote and not highly frequented by people. The physical interventions to the cliff, to provide the tunnel and beach facilities, and the increased activity on the rocky beach will result in a large change in the coastal landscape.
- 10.16. The impact on visual amenity is considered to be of major significance in relation to two views, looking north-eastwards (Viewpoint 1) from Delimara Point and looking westwards (Viewpoint 3). The Scheme introduces a relatively large modern building that will dominate the view of the site from the north-east, where the new building rises higher than the existing building / structures and will include relatively high walls and a swimming pool, extending the footprint of development further along the cliff side. The introduction of a modern, larger building will break the skyline when viewed from the west. In the longer term (10 years from planting), the landscaping scheme to be implemented on site could potentially reduce the visual impact of the building as viewed from the west (Viewpoint 3), from major to moderate significance but this will depend on the type of species used, and the size and form they attain in what is a harsh coastal environment.

### **Noise Emissions**

- 10.17. Construction noise impacts on the nearest residential properties could potentially be of moderate to major negative significance, depending on the stage of the

construction and the timing of the works (the nearest properties are summer residences). Construction noise impacts on the users of the rocky beach at Kalanka Bay could be potentially of major negative significance throughout the construction period, again depending on the timing of the works.

- 10.18. Operational noise impacts on the nearest residential properties could potentially be of major negative significance in the evening time, depending on the level of amplified music played on the outdoor terrace.

## **INTERACTION OF IMPACTS**

- 10.19. The interaction of impacts with the current baseline is described in **Chapters 5 to 9** of the EPS. The interactions are summarised in **Table 10.1** below. The interaction between impacts describes the potential cumulative or reactive nature of the various disturbances caused by the Scheme during construction and operation.
- 10.20. During construction, the threat to the stability of the cliff face adjoining the Scheme site, particularly from the construction of the tunnel and related beach facilities, could magnify the scale of loss, or damage, to the natural habitats and wildlife in the vicinity of the Scheme site. This same threat could magnify the landscape and visual amenity impacts identified.
- 10.21. There is no foreseeable interaction of any particular significance between the major impacts identified for the Scheme during operation.

## **CUMULATIVE IMPACTS**

- 10.22. Cumulative impacts are those that result from incremental changes caused by other past, present, or reasonably foreseeable actions together with the Scheme.
- 10.23. The various impacts identified in **Chapters 5 to 9** of the EPS were assessed in the context of the existing baseline (encompassing the past and present context). No major developments were noted to be underway in the immediate area of the Scheme site during the baseline surveys, and there are no known planned major developments in the area; this takes account of the rural nature and remote character of the area.
- 10.24. The Scheme involves development of the entire site and it is not planned as part of a phased development. However, there may be some consequential development off-site because of the Scheme. This development could potentially include works to improve access to and parking in the vicinity of the site, as well as works to improve the existing access to the rocky beach. Other consequential development that could arise from the increased activity in the area could include additional facilities for the additional visitors. The incremental changes from this potential consequential development could have cumulative impacts in respect of all of the potentially major impacts identified, in relation to geo-environment, terrestrial ecology, cultural heritage, landscape and visual amenity, and noise emissions.



## MITIGATION

- 10.25. The EPS, including its supporting Technical Appendices, reports the findings of the EIA, in accordance with the ToR. Where appropriate, mitigation measures have been recommended; these are described at the end of **Chapters 5 to 9** and summarised in **Table 10.1**. It would be appropriate for, and it is recommended that, these mitigation measures be taken account of in the conditions of any eventual development permit.

## REQUIRED AUTHORISATIONS

- 10.26. The required authorisations are referred to in the relevant topic area chapters (**Chapters 5 to 9**). The operator will be required to obtain the necessary authorisations from the Malta Tourism Authority (MTA), which would include an operational licence and Eco-certification. An environmental permit / registration would also be required from the Environment and Resources Authority (ERA), and potentially from the energy and water regulators. Archaeological investigations / monitoring during the construction (especially the soil removal / excavation) phase will require authorisation from the Superintendence of Cultural Heritage. Excavation of the boreholes for the geo-thermal system may also require a permit from the Malta Resources Authority.



**Table 10.1: Summary of Impacts and Mitigation**

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Geo-environment											
Mineral resources	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Major significance	Use of excavated material as fill material	Major significance
Change in geomorphology features	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Major significance	Omission of tunnel/beach facilities <i>If tunnel/ beach facilities are retained, CMP should address the stability of the excavation (excavation methods and monitoring)</i>	Minor significance  <i>Major significance in the case of the tunnel / beach facilities being retained</i>
Change in hydrogeology features	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Not significant	None	Not significant-



Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Stability of the Scheme Site	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Minor significance	CMP addressing stability of the excavation (excavation methods and monitoring)	Minor significance
Stability of the cliff face	Adverse	Constr'n	Local	Direct	Long-term	Perm	Irrevers	Likely	Major significance	Omission of tunnel/beach facilities <i>If tunnel/ beach facilities are retained, CMP should address the stability of the excavation (excavation methods and monitoring)</i>	Minor significance  Major significance in the case of the tunnel / beach facilities being retained
Change in the quality of ground water	Adverse	Constr'n / Oper'n	Local	Indirect	Short-term / long-term	Perm	Irrevers	Likely	Not significant	None	Not significant

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Change in surface water run-off patterns	Adverse	Constr'n	Local	Indirect	Short-term	Temp	Irrevers	Likely	Not significant	CMP addressing pollution arising during construction	Not significant
	Beneficial	Oper'n	Local	Indirect	Long-term	Perm	Irrevers	Likely	Not significant to minor significance	Run-off collection	Not significant to minor significance

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact					Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Terrestrial Ecology										
Construction										
Loss of habitat	Adverse	Local	Direct	L term	Perm	Irrevers.	Likely	Not significant	None	Not significant
Disturbance / damage to habitats and wildlife	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Major on Annex I habitats of good quality in the vicinity  Minor on habitat I 240 downwind of prevailing winds	Construction Management Plan; Adherence to good construction practices (as outlined); Monitoring of works	Minor  Not significant
Removal of alien species	Beneficial	Local	Direct	L term	Perm	Irrevers	Likely	Not significant	None	Not significant



Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact					Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Operation										
Disturbance / damage to habitats and wildlife	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Potentially major for habitats of conservation significance, of limited distribution and already experiencing pressures	Educate guests to avoid sensitive habitats  Clearly mark specific pathways and introduce signage as appropriate	Minor
Disturbance of fauna	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Minor	Construction Management Plan; Adherence to good construction practices (as outlined); Monitoring of works	Minor

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact					Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Extent of Impact (nat/ local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Escape of species used in landscaping	Adverse	Local	Direct & indirect	S term	Temp	Revers	Likely	Major	Any proposed landscaping should be ecologically compatible with the adjacent natural habitats and in line with MEPA's <i>Guidelines on Trees, Shrubs and Plants for Planting and Landscaping the Maltese Islands 2012</i>	Minor

Predicted Impact	Beneficial/ Adverse/ Neutral	Nature, Scale and Type of Impact						Probability of Impact Occurring (Likely, Unlikely, Remote, Uncertain)	Significance of Impact (Major/Minor/Not Significant)	Proposed Mitigation Measures	Significance of Residual Impact (Major/Minor/Not Significant)
		Constr'n / Oper'n	Extent of impact (Nat / Local / Site)	Direct/ Indirect	S-term / L-term	Perm / Temp	Revers / Irrevers				
Loss or damage to vernacular features on site (rubble walls)	Adverse	Constr'n	Site	Direct	L-term	Perm	Irrevers	Likely	Not significant to minor	CMP that ensures damage to the features during construction is avoided	Not significant
Loss or damage to unrecorded archaeological or cultural heritage artefacts on site	Adverse	Constr'n	Site	Direct	L-term	Perm	Irrevers	Uncertain	Uncertain, depending on whether artefacts are present, their level of importance, and the extent of any loss or damage	Archaeological monitoring during excavation / recording of features / salvaging of significant features	Uncertain (depending on whether artefacts are present, their importance and the extent of any loss or damage)
Alteration or degradation of the structural integrity and quality of the setting of Fort Delimara, Delimara Lighthouse and salt pan complex	Neutral	Constr'n / Oper'n	Local	Direct	L-term	Perm	Irrevers	Unlikely	Not significant	None	Not significant



Asset Impacted	Beneficial/ Adverse/ Neutral	Nature, Scale and Type of Impact						Probability of impact occurring (Likely / Unlikely / Remote / Uncertain)	Significance of impact (Major/ Minor/Not significant)	Proposed mitigation measures	Significance of residual impact (Major/ Minor/Not significant)
		Const'n/ Oper'n	Extent of impact (Nat./ Local/ Site)	Direct/ Indirect	S-term/ L-term	Perm/ Temp	Revers/ Irrevers				
Landscape											
Delimara Peninsula Character Area: LLT: Delimara Power Station	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant
Delimara Peninsula Character Area: LLT: Rural / natural area	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Major	None	Major
Delimara Peninsula Character Area: LLT: Coastal Area	Adverse	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Major	None	Major
Marsaxlokk Character Area: LLT: Marsaxlokk Bay	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant
Marsaxlokk Character Area: LLT: Marsaxlokk Settlement	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant
Marsaxlokk Character Area: LLT: Marsaxlokk Settlement	Neutral	Oper'n	Local	Direct	L-term	Perm	Revers	Likely	Not significant	None	Not significant

Asset Impacted	Beneficial/ Adverse/ Neutral	Nature, Scale and Type of Impact						Probability of impact occurring (Likely / Unlikely / Remote / Uncertain)	Significance of impact (Major/ Minor/Not significant)	Proposed mitigation measures	Significance of residual impact (Major/ Minor/Not significant)
		Const'n/ Oper'n	Extent of impact (Nat./ Local/ Site)	Direct/ Indirect	S-term/ L-term	Perm/ Temp	Revers/ Irrevers				
Visual Amenity											
Viewpoint 1: Delimara Point (looking north- eastwards)	Adverse	All	Local	Direct	L-term	Perm	Revers	Likely	Major	None	Major
Viewpoint 2: : Delimara Point (looking south- eastwards)	Adverse	All	Local	Direct	L-term	Perm	Revers	Likely	Minor	None	Minor
Viewpoint 3: Delimara Point (looking westwards)	Adverse	All	Local	Direct	L-term	Perm	Revers	Likely	Major	Landscaping (after 10 years of growth)	Major

Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Noise impact on residential receptors from construction activities	Adverse	Constr'n	Local	Direct	S'term	Temp	Revers	Likely	Moderate to major significance, depending on the phase of construction	Timing of works to exclude the summer season CMP with noise control measures Noise monitoring	Minor to moderate significance
Noise impact on recreational receptors from construction activities	Adverse	Constr'n	Local	Direct	S'term	Temp	Revers	Likely	Major significance throughout construction works	Timing of all works to exclude the summer season CMP with noise control measures Noise monitoring	Minor to moderate significance



Predicted impact	Beneficial /adverse	Nature, Scale and Type of Impact						Probability of Impact Occurring (likely/ unlikely/ remote/ uncertain)	Significance of Impact (major/ moderate/ minor/not significant)	Proposed Mitigation Measures	Significance of Residual Impact (major/ moderate minor/not significant)
		Constr'n /Oper'n	Extent of Impact (nat/local /site)	Direct/ indirect	S'term/ l'term	Perm/ temp	Revers/ irrevers				
Noise impact on residential sensitive receptors from operational activities on outdoor terrace	Adverse	Oper'n	Local	Direct	L'term	Perm	Revers	Likely	Of no significance to major significance, depending on the volume of amplified music playing	Adherence to Regulations for amplified music outdoors Limiting the loudness of the amplified music system	No significance to minor or moderate significance, depending on effectiveness of mitigation



**Appendix I:**  
**A3 Photographs**



**Viewpoint I: Existing view**



**VIEWPOINT REFERENCE 01**    Year 0    Distance to proposed development: 170m    Camera height: 1.5m    Date / time of photograph: 26-Sep-16; 1148    Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg    Sheet number: 01  
EXISTING VIEW



**Viewpoint I: Scheme on completion**



**VIEWPOINT REFERENCE 01**      Year 0      Distance to proposed development: 170m      Camera height: 1.5m      Date / time of photograph: 26-Sep-16; 1148      Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg      Sheet number: 02

PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Viewpoint I: Scheme 10 years following landscaping planting**



**VIEWPOINT REFERENCE 01**      Year 10    Distance to proposed development: 170m    Camera height: 1.5m    Date / time of photograph: 26-Sep-16; 1148    Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg    Sheet number: 03  
PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Viewpoint 2: Existing view**



**VIEWPOINT REFERENCE 02**  
EXISTING VIEW

Year 0 Distance to proposed development: 116m Camera height: 1.5m Date / time of photograph: 26-Sep-16; 1128 Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg Sheet number: 04



**Viewpoint 2: Scheme on completion**



**VIEWPOINT REFERENCE 02**      Year 0      Distance to proposed development: 116m      Camera height: 1.5m      Date / time of photograph: 26-Sep-16; 1128      Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg      Sheet number: 05  
PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Viewpoint 2: Scheme 10 years following landscaping planting**



**VIEWPOINT REFERENCE 02**      Year 10    Distance to proposed development: 116m    Camera height: 1.5m    Date / time of photograph: 26-Sep-16; 1128    Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg    Sheet number: 06  
PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Viewpoint 3: Existing view**



**VIEWPOINT REFERENCE 03**  
EXISTING VIEW

Year 0 Distance to proposed development: 50m Camera height: 1.5m Date / time of photograph: 26-Sep-16; 1204 Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg Sheet number: 07



**Viewpoint 3: Scheme on completion**



**VIEWPOINT REFERENCE 03**      Year 0      Distance to proposed development: 50m      Camera height: 1.5m      Date / time of photograph: 26-Sep-16; 1204      Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg      Sheet number: 08

PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



**Viewpoint 3: Scheme 10 years following landscaping planting**



**VIEWPOINT REFERENCE 03**      Year 10      Distance to proposed development: 50m      Camera height: 1.5m      Date / time of photograph: 26-Sep-16; 1204      Camera type: EOS 5DS; VFOV: 27deg HFOV: 39.6deg      Sheet number: 09

PROPOSED VIEW: The image contained on this page is not representative of scale and distance from the actual viewpoint and shows the proposed development in its context only.



