

# Environmental Impact Assessment

Screening according to Schedule III of S.L. 549.46

## Appropriate Assessment

Screening according to S.L. 549.44

## Water Policy Framework

Screening according to S.L. 549.100

**ERA Reference no.:** EA 00057/20

**PA Reference no.:** [Pre-Submission]

**Project Title:** Beach Nourishment Pilot Study.

**Location:** I-Bajja tal-Mellieħa, Triq il-Qammieh, cont., Triq I-Marfa, Għadira, Mellieħa, Malta

**Screening date:** February 2021

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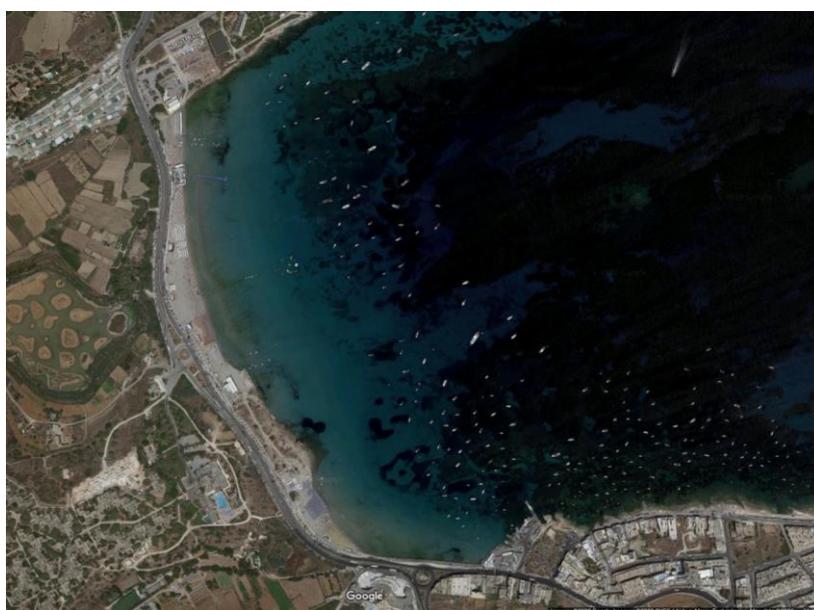
## I. BACKGROUND

### 1. Outline of Proposal

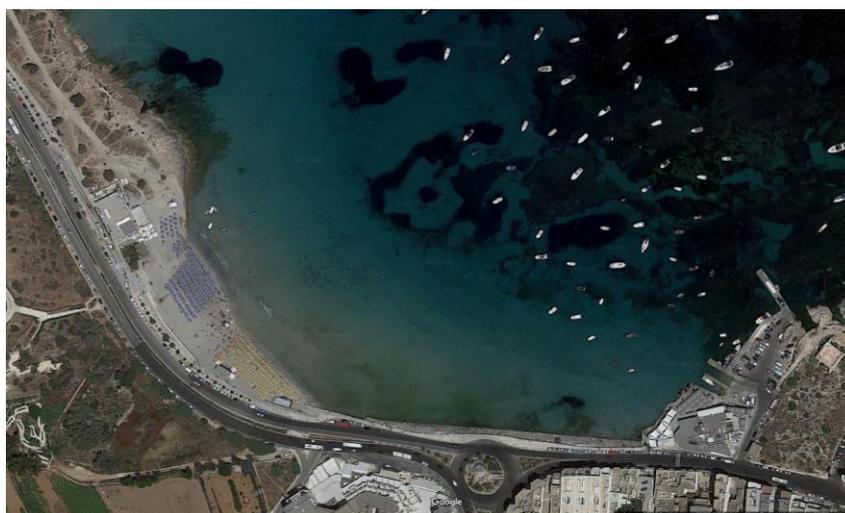
- 1.1 The proposed pilot project involves the construction of a groyne and the extension of the northern part of the southern beach at Għadira abutting the rocky shore, as shown in **Figures 1-3**, by means of sand nourishment.
- 1.2 The existing dry beach is proposed to be extended 10 m seawards on one side (adjacent to the proposed groyne) and tapering to the existing beach towards the middle of the southern beach. In order to retain the original seabed profile, the proposed sand nourishment interventions would also extend below sea water level up to a depth of 4 m below mean sea level (MSL).
- 1.3 To control along-shore sediment transport, the construction of a groyne is proposed. The groyne would consist of a geotextile layer, precast concrete blocks as the core layer and rock boulders as the outer armour layer. In terms of dimensions, the groyne would extend 20m beyond the current shoreling to a level of 1 m above MSL and slope downwards following the seabed slope down to a level of -3 m below MSL.
- 1.4 The total proposed area of beach would extend by an area of circa. 1,200 m<sup>2</sup> and this would require a total volume of sand circa 3,000 m<sup>3</sup>.
- 1.5 The borrow area from where sediment for the beach nourishment is to be sourced, is situated within the bay itself beyond the 5m below MSL contour. The proposed borrow area measures 3,000 m<sup>2</sup> and dredging will occur up to a depth of maximum 1 m. The exact location was determined based on the bathymetry

of the seabed, the initial results from the hydrodynamic modelling exercise carried out, and the location of the protected habitats. A 20 m buffer zone is included, to avoid adverse effects on the said protected habitats. (Refer to **Figure 4-5**).

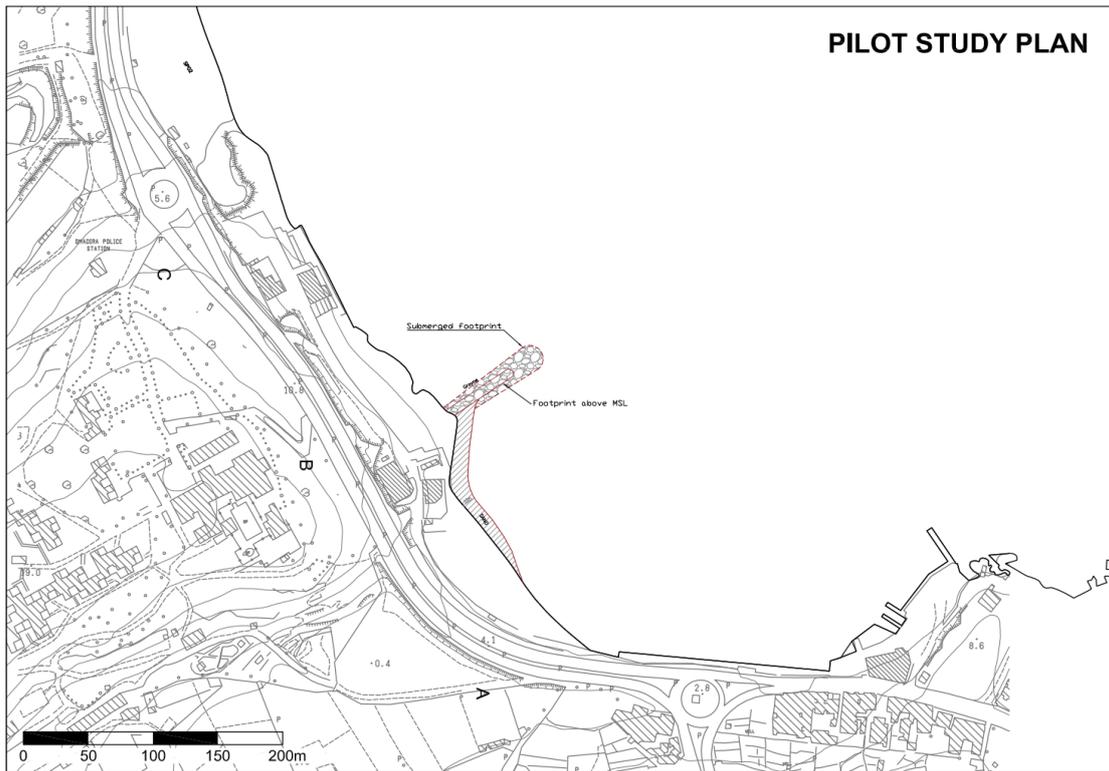
- 1.6 The sand replenishment methodology that will be adopted is by means of a suction dredger. Sand will then be pumped out on the beach and shifted accordingly using the appropriate machinery.
- 1.7 Once the project is implemented, monitoring shall take its course over a minimum of 3 seasons in order to gather sufficient data to compare with the behaviour of the numerical modelling analysis.
- 1.8 The aim of the pilot project is to gather valuable in-situ data which would serve the environmental studies required for the wider proposal for beach extension (20 m seawards) of the entire beach at Għadira Bay.



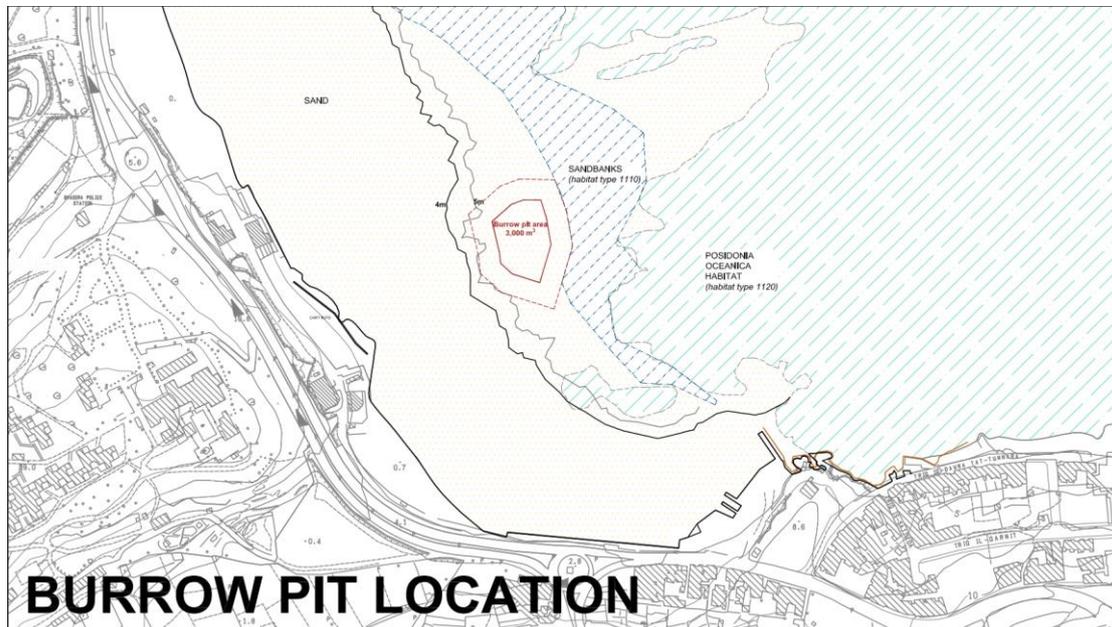
**Figure 1:** Aerial photo of Għadira bay (Source: Google Maps 2020).



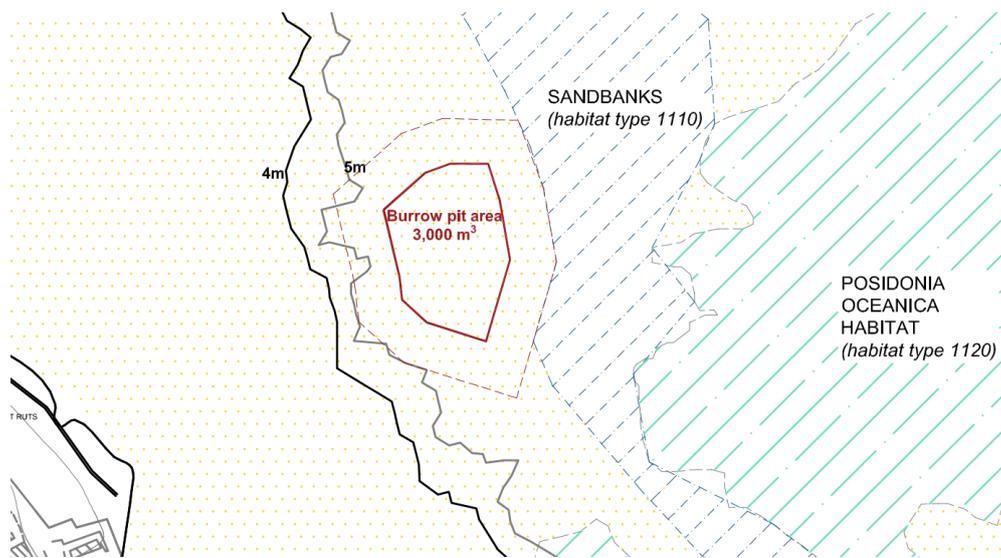
**Figure 2:** Aerial photo of the of the southern beach at Għadira bay at which the pilot project is proposed (Source: Google Maps 2020).



**Figure 3:** Extent of pilot project at the northern part of the southern beach at Ghadira (Source: PDS).



**Figure 4:** The proposed borrow pit for the pilot project marked in red, together with a 20m buffer zone (Source: PDS).

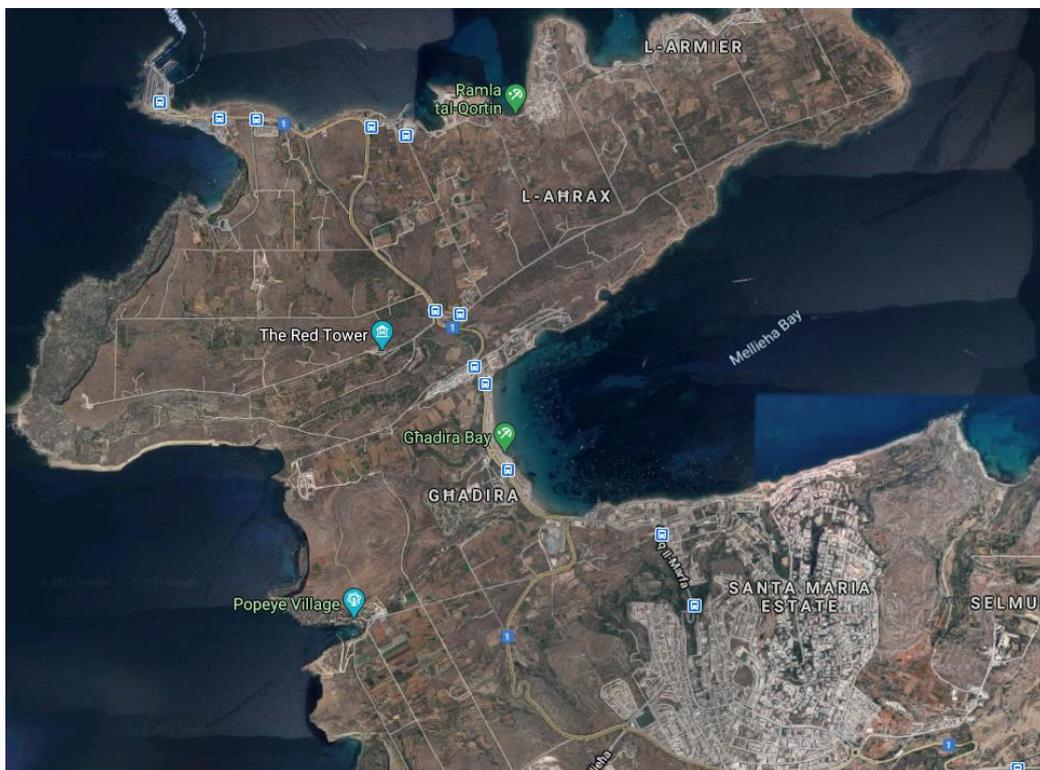


**Figure 5:** Detail of the proposed borrow pit and buffer zone (Source: PDS).

## 2. Site context

- 2.1** The site of the proposed development is Għadira Bay, the largest sandy beach in Malta, located along the northern-western coast in Malta. Triq il-Qammieh, which links Mellieha to the northernmost part of Malta, including Cirkewwa and Marfa, runs adjacent to the beach, and is situated just a few meters above sea level (Refer to **Figure 6**).
- 2.2** The site falls within the following Natura 2000 sites, as declared through the Flora, Fauna and Natural Habitats Protection Regulations (SL 549.44):
- MT0000105 (Zona fil-Baħar fil-Grigal ta' Malta): SAC – International Importance (Marine);
  - MT0000112 (Il-Baħar ta' Madwar Ghawdex): SPA; and
  - MT0000015 (L-Għadira Area): SPA and SAC.
- 2.3** The marine area is specifically important as it constitutes Annex 1 Habitats 1110 (Sandbanks), Habitat 1170 (reefs) and Habitat 1120\* (*Posidonia* beds), of which the latter is a priority habitat for Malta. In addition, in terms of protected species, *Caretta caretta* (Loggerhead sea turtle) and *Steromphala nivosa* (Maltese top shell) are of importance, where in case of *Caretta caretta* this protected area has had 2 known nests and at least 1 unknown nest in 2020 alone.
- 2.4** Furthermore, the site, notably the sandy beach, is subject to a level 4 Area of Ecological Importance (AEI) and Site of Scientific Importance (SSI) (forming part of the L-Inħawi ta' I-Għadira mill-Bajja tal-Mellieħa saċ-Ċumnija fil-Mellieħa area including the hinterland and marshland), as designated through Govt. Notice 491 of 2006. Behind the beach, opposite the road, another AIE (level 1) is present, namely Bur salmastru fil-Ħofra (l/tal-Mellieħa), a saline marshland. The area to the north of the beach, is scheduled as an Area of High Landscape Value (AHLV) under Govt. Notice 400 of 1996.

- 2.5** With respect to cultural heritage, within the rocky area adjacent to the beach subject to this proposal, a Class B protected pair of cart-ruts and two branches are present, as designated through Govt. notice 1260 of 2010.
- 2.6** In terms of the Water Framework Directive (WFD) (2000/60/EC), Għadira Bay lies within the Il-Mellieħa – Tas-Sliema coastal water body (MTC 104) and adjacent to L-Għadira transitional protected water body (MT 402), as included in the 2nd Water Catchment Management Plan for the Maltese Islands (2016).
- 2.7** Across the road from Għadira Bay lies the Għadira Nature Reserve, which is made up of seven hectares of brackish lake and salt-marsh habitat. In addition, as mentioned in Section 2.4 above, the Il- Ħofra saline marshland is also present across the road. Other surrounding land uses include kiosks, lidos and tourist lodging complexes.



**Figure 6:** Aerial overview photo, showing Għadira bay (Source: Google Maps 2020).

### 3. Site history

- 3.1** This site has been previously subject to the following relevant Planning Application and Development Notice:
- PA/01737/01 – To cast a concrete base on seabed for a permanent reef marker (Approved); and
  - DN/01060/18 - To carry out investigative coring through the seabed up to 10m underneath the rock level at Għadira Bay (Approved).

## 4. Screening Criteria

### 4.1 EIA Screening *(citations refer to S.L. 549.46, except where otherwise specified):*

The proposed development falls within the scope of Schedule I Category II of the EIA Regulations (S.L. 549.46):

- Section 6.2.2.2: *Dredging or other changes to the seabed, excluding maintenance dredging within an already existing harbour or its official fairway;*
- Section 6.2.2.3: *Coastal works to combat erosion, and works capable of altering the coast (through the construction of, for example, breakwaters, dykes, moles, jetties, groynes, sea-walls, wave-breakers, underwater berms, and other sea defence works) not covered by Category I, excluding the maintenance and repair of such works; and*
- Section 6.2.2.4: *Enlargement, modification or replenishment of an existing shore or beach.*

Therefore, the proposal was screened in terms of the EIA Regulations.

### 4.2 AA Screening *(citations refer to S.L. 549.44, except where otherwise specified):*

In view of the location of the proposal within the area of influence of the following Natura 2000 sites, as declared through the Flora, Fauna and Natural Habitats Protection Regulations (SL 549.44):

- MT0000105 (Zona fil-Baħar fil-Grigal ta' Malta): SAC – International Importance (Marine);
- MT0000112 (Il-Baħar ta' Madwar Ghawdex): SPA; and
- MT0000015 (L-Għadira Area): SPA and SAC,

this proposal has also been screened in terms of Regulation 19 of the Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549.44).

### 4.3 Water Policy Framework Screening *(citations refer to S.L. 549.100, except where otherwise specified):*

The proposed development falls within the scope of the Water Policy Framework Regulations (S.L. 549.100) in view that the proposal is located within the Il-Mellieħa – Tas-Sliema coastal water body (MTC 104) and adjacent to L-Għadira transitional protected water body (MT 402) (as included in the 2nd Water Catchment Management Plan for the Maltese Islands 2016), and in view of the nature of the proposal.

## 5. Documents used for screening

- i. Project Description Statement (PDS), which was referred to ERA on 8<sup>th</sup> February 2021;
- ii. The annexed drawings/surveys/analysis submitted with the PDS, namely:
  - a. Plan drawing;
  - b. Benthic map and location of borrow pit;
  - c. Sand pricking survey;
  - d. Sand aggregate testing; and
  - e. Sand erosion analysis.

## II. ASSESSMENT OF PROPOSAL

### 6. Assessment of Impacts and Ancillary Considerations

(Screening in terms of Schedule III of the EIA Regulations, S.L. 549.46, the Flora, Fauna and Natural Habitats Protection Regulations, S.L. 549.44, and the Water Policy Framework Regulations, S.L. 549.100)

#### Sea and Resource Use

- 6.1 The proposed pilot project will extend the beach to a maximum of 10 m seawards, increasing the total area by circa 1,200 m<sup>2</sup>. Besides the reclamation of sea area for the beach extension, the proposal will also involve physical morphological changes to the seabed, by the proposed suction dredging. Given the small scale of the pilot project, this project is perceived as the best method to investigate such changes which are to be documented and duly reported in monitoring reports for ERA's assessment of the wider project.
- 6.2 The impacts on resource use are deemed as insignificant in view that the sand used for beach replenishment will be sourced from within the selected borrow pit within the bay itself. Due to this, no import of sediment, alien to this specific bay, is required. The only resources to be imported to the site, are those required for the construction of the groyne, including mainly concrete and large boulders.

#### Ecology

- 6.3 The *Posidonia* meadows within the Ghadira Bay area provide numerous ecosystem services such as habitat for fisheries, natural carbon sink and lessening coastal erosion processes. Loss or degradation of this service could speed up natural coastal erosion processes. In view of this, the selected borrow pit, including its 20 m buffer zone, excludes benthic habitats such as *Posidonia oceanica* (Habitat type 1120) and sandbanks (with *Cymodocea nodosa*) (Habitat type 1110). The 20 m distance from the protected habitats will be used as a buffer to mitigate potential direct impacts from suction dredging and changes to seabed topography. Based on the initial hydrodynamic modelling exercise, changes in bathymetry and changes to the currents and wave heights are considered to be minor at a depth of -5 m below MSL and therefore no significant indirect impacts on the protected features are expected either. These considerations are subject to the carrying out of environmental monitoring during all phases of the project, in line with a monitoring framework approved by ERA.
- 6.4 Alterations to sediment regimes/mechanics between marine and terrestrial environments and sediment reservoirs, can invariably impact each other. Specifically, there may also be potential consequences to terrestrial dune habitats and the ecosystem services these habitats provide. Although MT0000015 SAC/SPA does not fall within the project footprint, in view of connectivity of habitats within the bay, such habitats should also be duly noted in the monitoring exercise, especially Habitat 2220 (dunes with *Euphorbia terracina*) which is found directly adjacent to Triq il-Marfa and is directly nourished by sand deposition.

### Hydrodynamics

- 6.5 The scope of the pilot project is to confirm in-situ the predictions obtained from the initial hydrodynamic modelling exercise carried out by the project proponents for the wider bay. The initial predictions obtained for the scenario with two groynes, which according to the PDS is considered representative of the pilot project, are summarised as follows:
- The wave reflection coefficients of the nearby shoreline remain the same;
  - Whilst the wave heights are roughly uniform over the width of the bay and are comparable to those of the current beach, a minor increase in wave height is expected at the tip of the groyne whilst a reduction is expected at the back end of the groyne due to wave breaking;
  - The wave patterns at the areas of the marine protected habitats will only change marginally since there shall be a marginally higher wave height slightly further offshore than the present situation due to the outward shift of the shoreline;
  - The natural current pattern shall be altered slightly due to the construction of the groyne, with particular regard to current velocities;
  - Bed level changes are dependent on the extent of the storm behaviour. At worst storm conditions, erosion around the coastline will be noted, together with sedimentation in the deeper part of the bay, being restricted next to the groyne. The bed level changes are expected to be negligible at the tip of the groyne and the orientation of the coastline is not expected to change significantly.
- 6.6 In this regard, during the process of environmental monitoring over the different seasons, any significant hydrodynamic changes are to be duly recorded and reported, in order to evaluate the durability and effectiveness of the proposed beach replenishment.

### Water Quality

- 6.7 During the construction phase, it is envisaged that the water column will be temporarily affected by turbidity, mainly through the suction and pumping process of the suction dredger. The PDS states that water turbidity tests will be carried out before and after construction phases through a certified lab. Such testing should form part of the environmental monitoring of the pilot project, and the project shall be adapted accordingly should any significant adverse effects be observed.
- 6.8 Other measures being proposed in the PDS include a settling period, during which the loosened sediment is allowed to resettle and water turbidity is naturally restored to the original level. Silt curtains and protection booms are to be utilised through the implementation of the proposed works in order to trap or contain the resulting debris and limit the adverse impact on the natural environment. Thus, no significant impacts in terms of water quality are envisaged, subject to the proper installation of these silt curtains and continuous monitoring during the works, and the immediate halting of works in the event that significant turbidity would form outside of the silt curtain. In such event, works shall only recommence once the turbidity settles, the curtain is repaired and/or mitigation measures increased, and the go-ahead is provided by ERA confirming the effectiveness of the mitigation in hand.

### Visual Impact and Landscape Character

- 6.9 The proposed groyne and the extension of the beach are envisaged to slightly alter the beach landscape and its visual amenity. However, noting the localised scale of this pilot project, and that the beach will be nourished with sediment from within the bay itself, the visual impacts from the pilot project will be restricted to the groyne only. Given that such structure is essential for the stability of the proposed beach, no mitigation other than using boulders of which the appearance is not alien to the landscape, is possible.

### Other construction-phase impacts

- 6.10 With respect to noise generation and lighting, no significant impacts are envisaged, as long as works are carried out during daytime hours only, to avoid impacts on the protected species in the nearby protected areas (notably the Għadira Nature Reserve and the coastal cliffs area), and subject that noise attenuators are installed on all dredging and pumping equipment, in order to not exceed 45 dBA as indicated in the PDS.
- 6.11 In terms of waste, no significant impacts are envisaged as long as sediment subject to shifting is clean and non-hazardous, marine litter/course contaminants are removed from the entire volume of material subject to shifting, not only the topmost sediment layer, and any possible resultant debris is collected and disposed off at authorised sites.

### Cumulative Impact

- 6.12 The proposed redevelopment of the Mellieħa Bay Hotel, the carpark upgrading, the proposed interventions to the promenade at Għadira Bay, the already existing partly urbanised baseline, and the potential reorganisation of mooring facilities have the potential to cumulate with impacts arising from the proposed beach nourishment project and should therefore be taken into consideration when assessing cumulative impacts during monitoring. Nonetheless, cumulation with the afore-mentioned projects is considered to be of more relevance to the wider project for sand replenishment of Għadira bay, and unlikely to be significant for this pilot project *per se*.



### **Screening Outcome**

The above detailed EIA screening concludes that this pilot project does not require an EIA in accordance with Regulation 15 of the EIA Regulations (S.L. 549.46), as long as:

- Environmental monitoring is carried out during all the phases of the development, in line with an environmental monitoring framework approved by ERA;
- In case of failure to fulfil its purpose or in case of severe adverse effects, notably on the protected features in the bay, all interventions of the pilot project are reversed and the site returned to its original state, as deemed necessary, in line with a Decommission Plan approved by ERA; and
- The boulders required for the construction of the groyne are selected as such as to have the least environmental and visual/landscape impact.

The above is subject that the various mitigation measures, outlined in the PDS, are duly incorporated into the mainstream development consent mechanism and mitigated by means of conditions and specifications (e.g. approved documents) in the development permit.

### **7. AA Screening (In terms of the Flora, Fauna and Natural Habitats Protection Regulations, S.L. 549.44)**

The following Natura 2000 sites are relevant to the proposal:

- MT0000105 (Zona fil-Baħar fil-Grigal ta' Malta): SAC – International Importance (Marine);
- MT0000112 (Il-Baħar ta' Madwar Ghawdex): SPA; and
- MT0000015 (L-Għadira Area): SPA and SAC.

The marine area is specifically important as it constitutes Annex 1 Habitats 1110 (Sandbanks), Habitat 1170 (reefs) and Habitat 1120\* (*Posidonia* beds), of which the latter is a priority habitat for Malta. In addition, in terms of protected species, *Caretta caretta* (Loggerhead sea turtle) and *Steromphala nivosa* (Maltese top shell) are of importance, where in case of *Caretta caretta* this protected area has had 2 known nests and at least 1 unknown nest in 2020 alone.

In view that the site falls within the area of influence of the aforementioned Natura 2000 sites, the proposal has been screened in terms of the Flora, Fauna and Natural Habitats Protection Regulations, (S.L. 549.44). The proposed pilot project, notably the proposed dredging within the selected borrow pit, will occur in close proximity to protected habitats, notably habitat type 1110 (Sandbanks which are slightly covered by sea water all the time) and type 1120 (*Posidonia* beds - *Posidonia oceanica*).

In view of the proposed use of silt curtains, the inclusion of a 20 m buffer zone between the borrow pit and the protected habitats, and the initial results from the hydrodynamic modelling exercise indicating that no significant changes in bathymetry, currents and wave heights at a depth of -5 m below MSL are envisaged (as described in paragraphs 4.3 - 4.6 above), no significant adverse impacts on the protected habitats are

envisaged. Furthermore, environmental monitoring shall occur during all phases of the development, in line with an environmental monitoring framework approved by ERA.

In this regard, the AA screening concludes that the pilot project is not expected to have any significant impacts on the integrity of the habitats, species, and the Natura 2000 sites as a whole, as long as all works are carried out properly such that environmental damage/impact is pre-empted at source through basic good practice, and various preventive and/or mitigation measures are duly incorporated into the mainstream development consent mechanism and addressed by means of conditions and specifications (e.g. approved documents). Subject to the above, no further assessment in terms of Regulation 19 of S.L. 549.44 is necessary.

## **8. Screening in terms of the Water Policy Framework Regulations (S.L. 549.100)**

As outlined in Section 6 above, no direct or indirect impacts on the protected habitats are envisaged and changes to the hydrodynamic conditions within the bay due to the pilot project *per se* are expected to be localised, limited to a depth of -5 m below MSL. In this regard, it is unlikely that the proposed pilot project will significantly modify the hydrodynamics and morphological characteristics of the wider bay, forming part of the wider Il-Mellieħa – Tas-Sliema coastal water body (MTC 104). Similarly, no impacts on the L-Għadira transitional water body (MT 402) are envisaged and thus no further assessment in terms of the Water Policy Framework Regulations (S.L. 549.100) is required subject to the environmental monitoring, taking into account the relevant environmental parameters.

## **9. Further requirements (reserved matters, included in ERA Conditions in Annex II)**

- Further details on the proposed silt curtains are to be provided, including information such as the type of curtain, detail of floats and weights, duration of stay of the curtain, effectiveness of the curtain in the presence of vessels close by, etc.
- A material characterisation report is to be submitted, in view that sediment shifting requires a consignment permit as per ERA's Terms of Reference for the Management and Disposal of Dredged Material. Testing of the dredged material is to be carried out to determine whether a CP or TFS permit is required. The Architect/Applicant should contact the Environmental Permitting Unit directly on [industrial.applications@era.org.mt](mailto:industrial.applications@era.org.mt), to discuss these requirements further.



### III. ERA CONCLUSION AND RECOMMENDED WAY FORWARD

ERA has no objection to the proposed pilot project and agrees with the rationale adopted, with the said pilot project allowing for in-situ evaluation of the proposed interventions on a localised scale, prior to carrying out the planned wider interventions for beach replenishment within Għadira Bay, also noting the reversibility of the pilot interventions. Monitoring data gathered pursuant to the pilot project shall then serve to inform the further assessment and decision-making for any wider interventions proposed.

Following the screening above, ERA has concluded that no further assessment is required, in terms of EIA, AA and the Water Policy Framework, subject to the above-mentioned ERA requirements, the carrying out of Environmental Monitoring (in line with a Monitoring Framework approved by ERA) and the submission of a Decommissioning Plan for ERA's approval, and other conditions and specifications in **Annex II**.

In terms of environmental monitoring, monitoring reports shall be made available to ERA in a timely manner, to be defined in the required environmental monitoring framework.

ERA's no-objection to this pilot project shall not be construed as a clearance to the wider replenishment interventions proposed in the bay, which would still need to be assessed and decided upon in their own merits.

In view of the works affecting the seabed, ERA is recommending consultation with the Superintendence of Cultural Heritage in view of potential presence of undiscovered archaeological features.

#### **Screening Disclaimer**

*The above screening results, the ensuing conclusions and recommendations are without prejudice to any required changes or updates should the development proposal be eventually modified or should the information/assumptions provided turn out to be incorrect. Any deviations of the proposal from this submission would need to be re-assessed and the merits of this screening would need to be re-opened.*

