PDS for a Proposed Ferry Landing Site in Valletta, Marsamxett Harbour

as per ERA requirements for the Planning Permit

Technical Report

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1.0 Introduction

Mr. Joseph Bugeja on behalf of Transport Malta is in the process of filing a full development application *for the construction of a ferry landing site terminal, pier and slipway in Valletta, Marsamxett Harbour.* AIS Environment Ltd (AIS) has been commissioned by Transport Malta (henceforth referred to as the 'Applicant') to prepare a Project Description Statement (PDS) to pre-validate the impacts expected from this proposed development (henceforth referred to as the 'scheme').

The PDS is a detailed report requested by ERA to provide the necessary information for screening in the Environmental Impact Assessment (EIA) process and is aimed to describe the scheme, the site of the development and its surroundings, and planned activities during the construction and operational phases of the development with an indication of the main environmental impacts expected.

Through the PDS, ERA will be able to establish whether the planning application requires an EIA or not. Should an EIA be required, the PDS will also enable ERA to determine whether an Environmental Impact Statement (EIS) or an Environmental Planning Statement (EPS) is needed.

This PDS has been prepared and structured in accordance with S.L. 549.46 (Environmental Impact Assessment Regulations, 2017).

2.0 Details of person/s wishing to carry out development

The scheme has been submitted by Joseph Bugeja (TM Executive Chairman) on behalf of Transport Malta.

3.0 Description of the Project and its General Objectives

3.1 Valletta

Valletta (Il-Belt) is the capital of Malta, located on the Sciberras Peninsula on the south east side of the island. Marsamxett Harbour lies to the west of the peninsula and Grand Harbour to the east. Despite Valletta's small size (55 ha), it is packed with cultural and historical heritage, so much so that it was designated as a UNESCO world heritage site in 1980.[2] UNESCO describes the capital as one of the most concentrated historic areas in the world.

The roots of the city date back to the times of the Knights of the Order of St John in the 16th century. The name Valletta originates from the founder of the city, Jean Parisot de la Vallette.[1] The knights planned the city to have a strict grid iron street pattern and built large bastion walls around the perimeter for protection.[2] These bastion walls remain an impressive feature of the city to the present day. Many of the streets in Valletta are stepped, this was to enable the Knights to be able to walk around the city in their heavy armour with as much ease as possible.[3]

The city was badly damaged during World War Two and in the following years was left in a state of disrepair and suffered from declining population numbers. The population reached as low as 9,000 inhabitants.[3] However, in recent years the city has undergone many regeneration projects which have brought the life and vibrancy back to the city. The regeneration of Valletta was further fuelled when it was designated the 2018 European Capital of Culture. This resulted in the restoration of the fortifications around the city, the demolition of the existing city gate and construction of a new one, the construction of a new parliament building and the restoration of the open-air theatre, Pjazza Teatru Rjal.

The Grand and Marsamxett Harbours contain a number of historical buildings. Grand Harbour is home to many buildings that date back to the times of the Knights of St John, including Fort St. Angelo, Fort St. Elmo, Fort Ricasoli and Bighi Hospital.[7] Prominent buildings within Marsamxett Harbour include Fort Manoel, Fort Tigne and Lazaretto hopsital.[7]

The modern Valletta is a commercial and tourist hot spot. It is home to a large number of commercial premises and offices, as well as the court house. The historical and cultural heritage of the city makes it very attractive to tourists. Popular attractions include the Upper and Lower Barrakka Gardens, Hastings Gardens, St John's co-cathedral, Grand Masters Palace, National Museum of Archaeology, Fort St Elmo and the Malta Experience. In the last few years Valletta has seen the development of a number of boutique hotels to help accommodate the growing number of tourists; these include Casa Ellul and Ursulino.

In terms of residential property within the city, it is predominately the traditional old Maltese terraced houses and apartments. Many of these properties are dilapidated and

[1] *www.visitmalta.com. Valletta. https://goo.gl/MjmyWK*

[2] *UNESCO World Heritage Centre (1992-2018) https://goo.gl/nQxg5u*

[3] *Valletta Local Council (2007) https://goo.gl/cxRyYb*

would benefit from restoration projects. Valletta has a relatively small population, of just 6,444 as of 2014.[4]

Despite the small residential population of Valletta, developing efficient transport modes into the capital city is crucial because of the large number of journeys made to the city on a daily basis for both work and leisure purposes.

3.2 Scheme Site and Immediate Surroundings

The proposed location for the ferry landing site is located in Marsamxett Harbour on the west side of the Valletta peninsula, adjacent to Triq Il-Lanċa. The area where the main structure (terminal) for the proposed ferry site will be is located on the concrete quay. On the day of the site visit, the area was closed off from the public as it was undergoing repair works. The marine area adjacent to the quay was being used by the existing ferry service during the site visit. As the area where the current ferry service usually operates from was closed for the repair work, the ferry was berthing further west along the quay, where there was a temporary structure to shelter the passengers from the rain and sun. A photo of the proposed location is shown in Figure 1.

The proposed ferry landing site falls under the GRAND HARBOUR LOCAL PLAN (GHLP). Policy directly relating to the proposed site will be discussed in further detail in Section 3.3.

Figure 1: Photo of the proposed scheme site, adjacent to Triq Il-Lanċa (taken on 13th March, 2018)

3.2.1 Proposed Development

The main structure of the proposed ferry landing site will be located on the existing quay, which has been recently repaired under permit PA/02592/17. The edge of the quay was reinforced by three concrete bored piles and a structural concrete beam. The terminal will

[4] *Government of Malta (2014). Estimated Population by Locality 31st March, 2014. https://goo.gl/BHPFGL*

cover a total area of 735m²; 581m² of the area will expand over the existing quay. The terminal will have a superstructure that will consist of a waiting area, a ticketing office, a buffer zone and a landing/boarding area.

The project includes the construction of a 110m^2 pier to the north of the main structure that will enable a second ferry to dock at the terminal. It will also act as a breakwater protect the site from waves generated by north-easterly winds. A 192m² revetment will be created on the northern side of the pier to provide additional protection. The proposal also entails the construction of a slipway positioned in between the terminal building and the pier.

For further details on the proposed development refer to Section 7.0.

3.3 Project justification

The proposed development is part of a series of projects by Transport Malta that will upgrade or develop a number of ferry landing sites across the Maltese islands. The project seeks to upgrade three existing ferry landing sites at Sliema, Marsamxett (Valletta) and Bormla, and develop three new ferry landing locations at Msida/Ta'Xbiex, Spinola and Buġibba.

The project seeks to address a number of objectives that improve Malta's sea public transport infrastructure and reduce air quality emissions. These include promoting the use of alternative means of public transportation, encouraging a modal shift to environmentally friendly modes of transport and providing connections between different modes of public transport.

This development is expected to help improve the marine aspect of the public transport by:

- increasing its comfort and safety;
- providing appropriate facilities for the ferries;
- improving the reliability and resilience of water-based transport;
- developing a brand image for waterborne transport;
- providing a link into a real time multi-modal transport information system and
- providing quick modes of transport to a number of locations.

The Marsamxett ferry landing site already exits and is heavily used by tourists and locals alike to traverse between the cities of Valletta and Sliema. Upgrading this particularly important transportation hub would significantly contribute towards achieving a homogenous look across the ferry landing sites as well as the aforementioned national public marine transportation aims.

Construction of a permanent ferry landing place at the proposed location is in line with the use of the area set out in the GHLP, which designates the area as "*recreational use of the waterfront*" in SECTION GC03 (refer to Figure 2). The location of the ferry landing also falls under SECTION GC04 of the GHLP (refer Figure 2), which focuses on the upgrading of the Marsamxett waterfront for public use and specifically highlights the need to upgrade the ferry landing places "*ferry landing points also need to be safeguarded and upgraded*". The necessity to improve the public transport to and from Valletta is also highlighted in the GHLP Valletta Area Policy document.

The development of a permanent ferry landing place in Valletta will also benefit the city as a whole. Due to the regeneration that has occurred in recent years it has now become a more popular destination, for both tourists and locals, particularly during the evenings. Therefore, improving the accessibility of Valletta is key to sustaining the regeneration of the city.

The use of ferries to connect different locations, rather than other modes of public transport (e.g. buses), is preferred in line with the aims of the Strategic Plan for Environment and Development (SPED) (2015). Specifically, the following thematic objectives:

- Environment: Thematic Objective 6

  To safeguard environmental health from air and noise pollution and risks associated with use and management of chemicals by….promoting alternative modes of travel such as walking, cycling and waterborne travel
- Climate Change: Thematic Objective 9

  To control Greenhouse gas emissions and enhance Malta's capacity to adapt to Climate Change by…..improving public/collective transport as a high priority adaptation measure for Climate Change
- Travel Patterns: Thematic Objective 11

  To facilitate the provision of an efficient public transport service and other green modes by…..seeking inclusion of public transport, walking and cycling prioritisation measures in road improvement, traffic management schemes and large scale development, as well as the use of inner harbour water-based transport
- Travel Patterns: Thematic Objective 12

  To ensure the continuing efficient operation of the Harbours and Airport whilst minimising adverse environmental impacts by…..promoting Integrated Harbour Management…..facilitating the implementation of the policy on regeneration of ports…..ensuring that the transport network servicing the Harbours and Airport can accommodate their anticipated growth

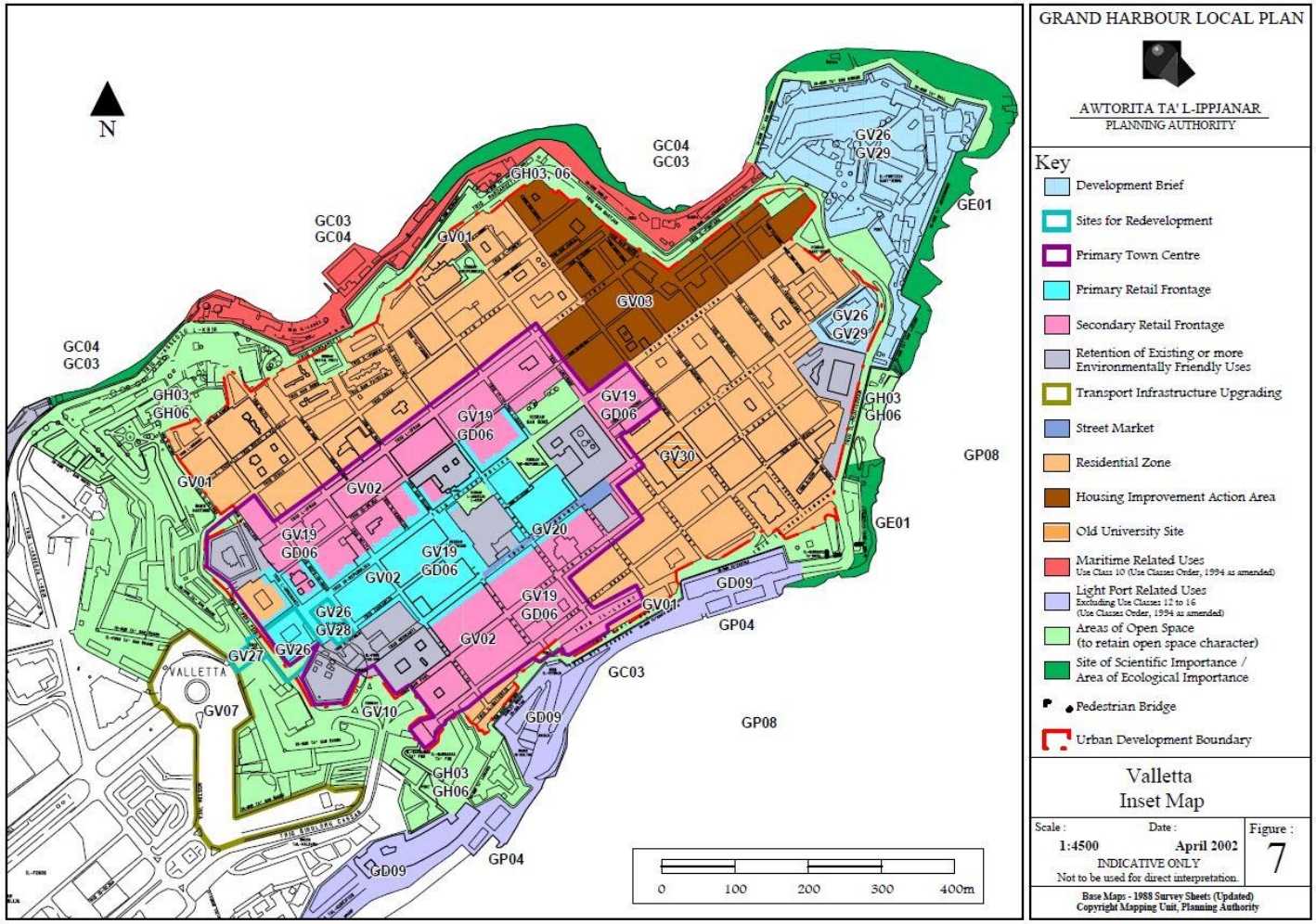

Figure 2: Area policy map for Valletta (Source: GHLP)

4.0 Indication of the Proposed Timing of the Project and Why its Timing is Preferred

The planning permit for the Marsamxett ferry landing place will be submitted to the Planning Authority in the third quarter of 2018. Should the planning permit be approved, the development would start in the fourth quarter of 2019 and be complete by the third quarter of 2020. It will consist of two main phases: infrastructural work (phase 1) and super structural work (phase 2). Phase 1 is expected to be carried out between the third quarter of 2019 and the first quarter of 2020. Phase 2 is expected to follow on from Phase 1, starting in the second quarter of 2020 and finishing in the third quarter of 2020.

- Phase 1: Infrastructural work (Q3 2019 – Q1 2020)
- Phase 2: Super structural work (Q2 2020 – Q3 2020)

The projected timing of the development takes into account the time required to carry out the necessary on-site environmental studies.

It is projected that the Transport Malta project as a whole, which includes the upgrade of three sites and the construction of three new sites, will be completed by in 2021. It is therefore in the best interest to enable the Marsamxett development to begin promptly to allow the entire ferry landing site project to be completed on time. The Government has already requested that Transport Malta begin the upgrading of the water transport infrastructure in 2018, rather than the initially proposed 2019.

The project is currently being considered for funding from the EU as part of the Operational Programme I – European Regional Development Fund 2014 – 2020, and therefore has strict deadlines to satisfy the EU funding mechanisms. If the project is not successful in its quest for EU funding, it will be funded by local sources.

5.0 The Location of the Scheme with Site Boundaries Shown

The geographical location of the scheme is in the east coast of Malta, as shown in Figure 3, Figure 4 and in greater detail in Figure 5. The GPS coordinates for the proposed development are 35°54'0"N, 14°30'35"E. The site is approximately 500m from the city gate at the entrance to Valletta (straight line distance).

Figure 3: Map showing the location of Valletta within the Maltese Islands (Source: Google Earth, 2017)

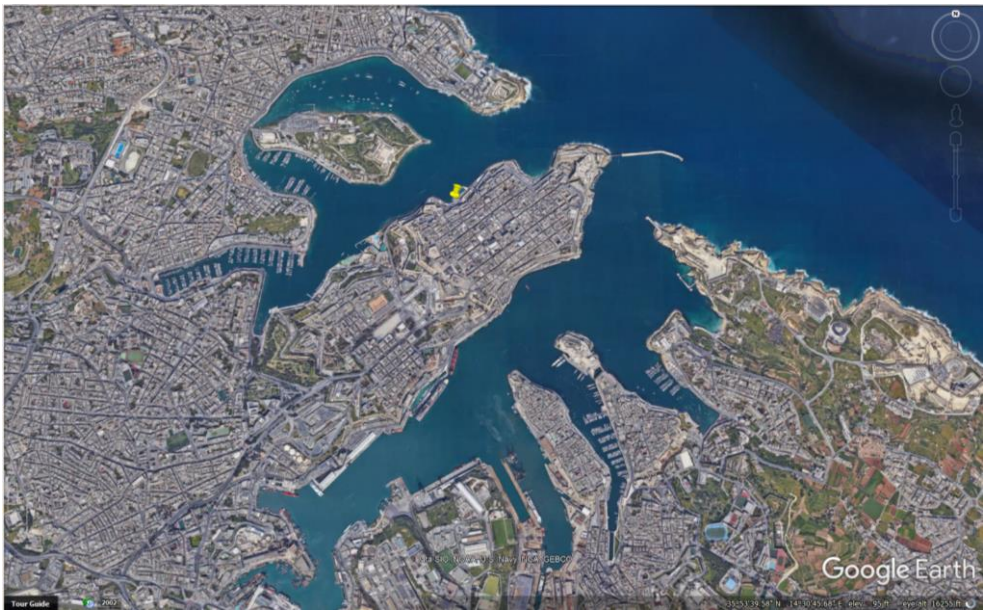

Figure 4: Map showing the location of the proposed site within Marsamxett Harbour (Source: Google Earth, 2017)

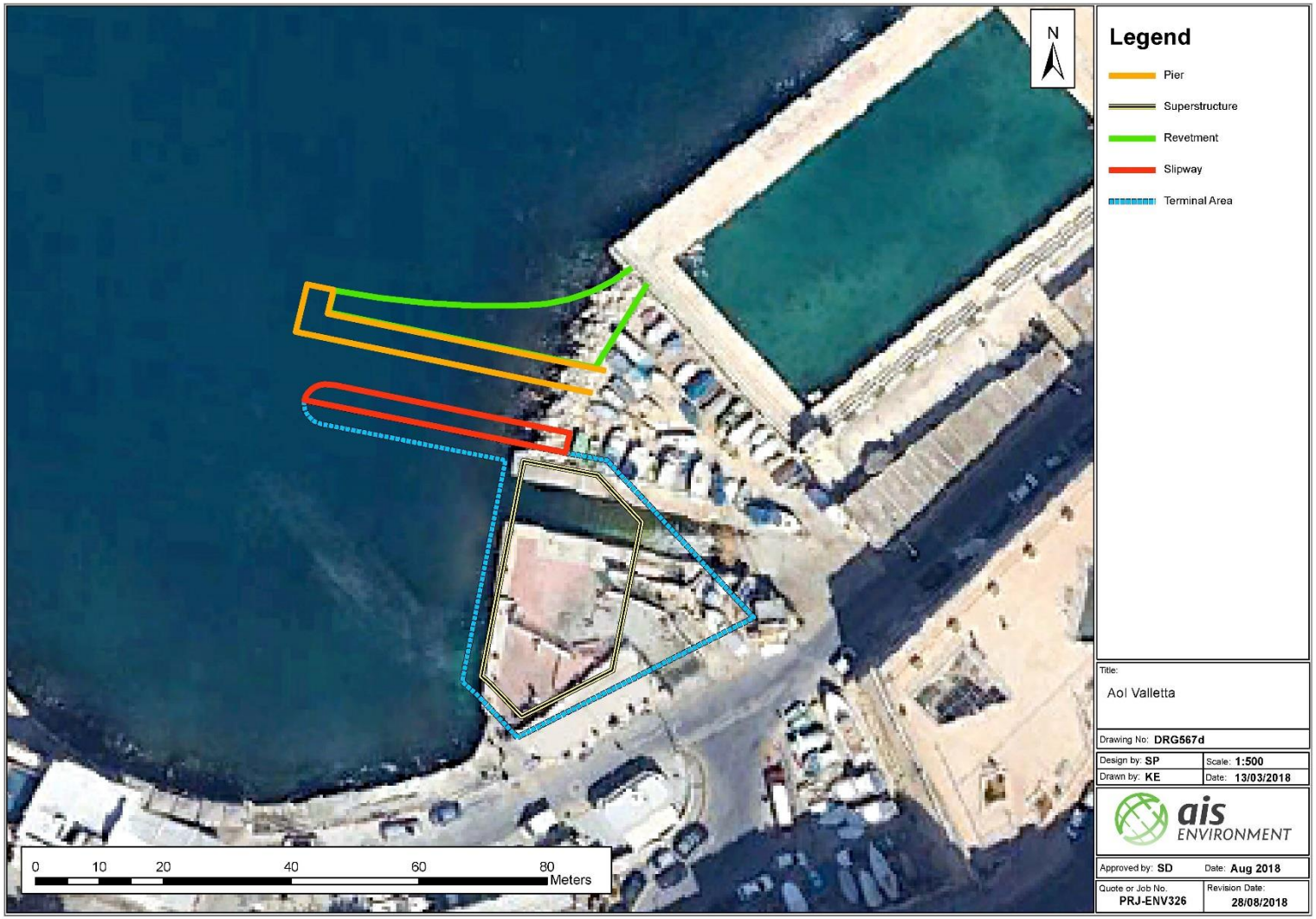

Figure 5: Site map for the proposed development

6.0 Alternative Uses, Technologies and Locations for the Scheme

6.1 Quay Configurations

A number of different quay configurations were evaluated before deciding upon the final arrangement. After consultation with a marine specialist the configuration being proposed was considered to be the best for the development when considering the wave climate of the area. The other options would result in a reduction in navigational and berthing safety during the operation of the ferry service.

The construction of the pier, which will act as a breakwater, is designed to help protect the site from the waves and improve the local wave climate based on the results from the Valletta Harbours Wave Study.[5] The wave climate at the site is very energetic with wave heights reaching 1m on a regular basis and even exceeding 2m at times. The results of the wave study at the proposed site are presented in Figure 6 and Figure 7.

6.2 Supporting Structures

Two main options were considered when designing the supporting structures; a fixed structure or a floating structure. A fixed structure is composed of reinforced concrete piles that support a reinforced concrete deck, in contrast to a floating structure which does not have contact with the seabed. A proposal of a floating structure was discarded due to the energetic wave environment of the site which would result in high construction, operation and maintenance costs. The fixed structure is also considered to be a safer option as it has a lower risk of failure.

6.3 Technologies

At this point in time no alternative means of energy have been included in the development. However, the inclusion of photovoltaic panels is something that can be investigated in the future.

[5] *Transport Malta (2017). Wave Disturbance in Valletta Harbours: Wave Hindcast and Disturbance Study.*

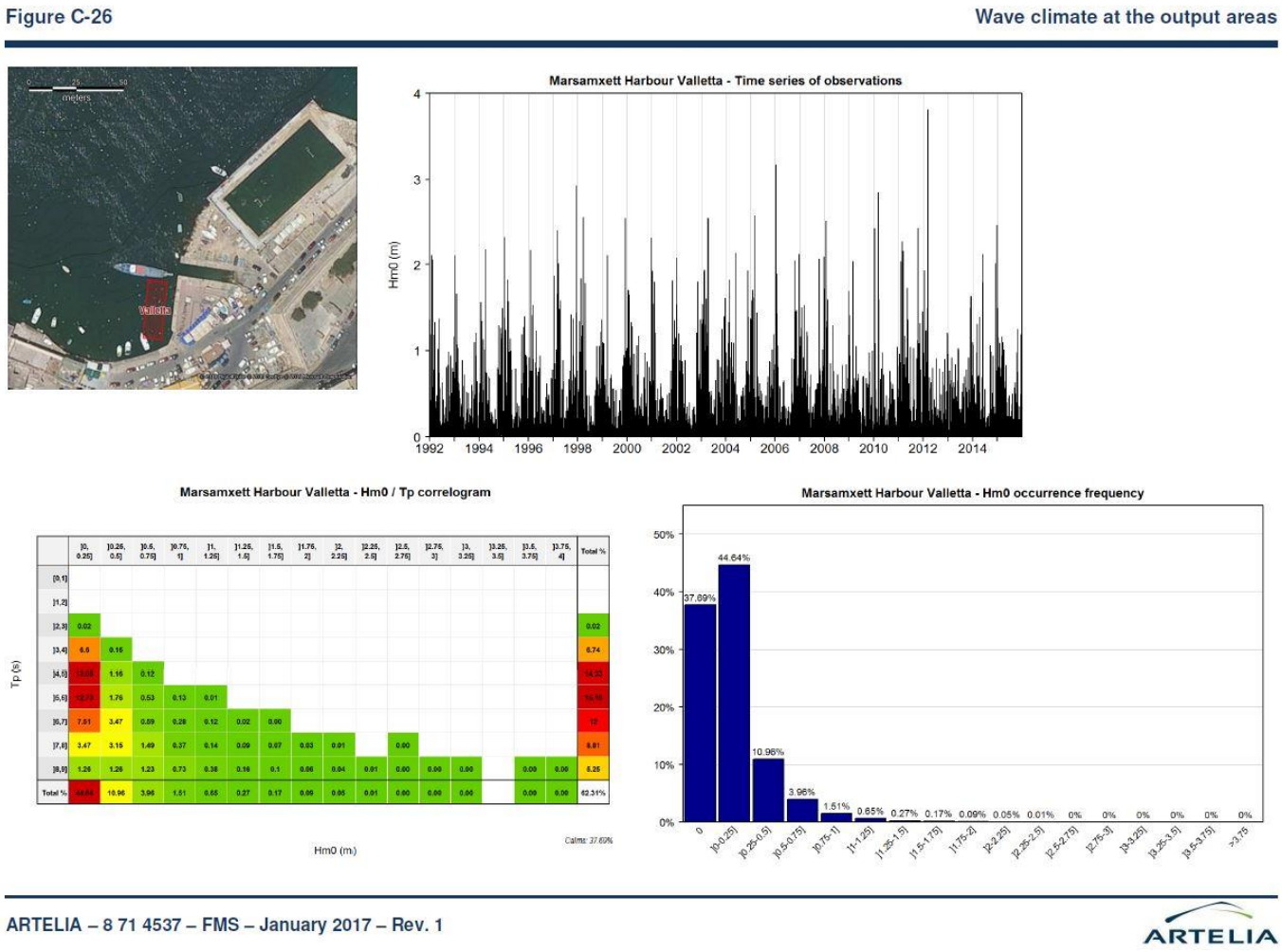

Figure 6: Results from the Valletta Harbours wave study (Source: Transport Malta, 2017)

Figure C-27 **Wave climate at the output areas**

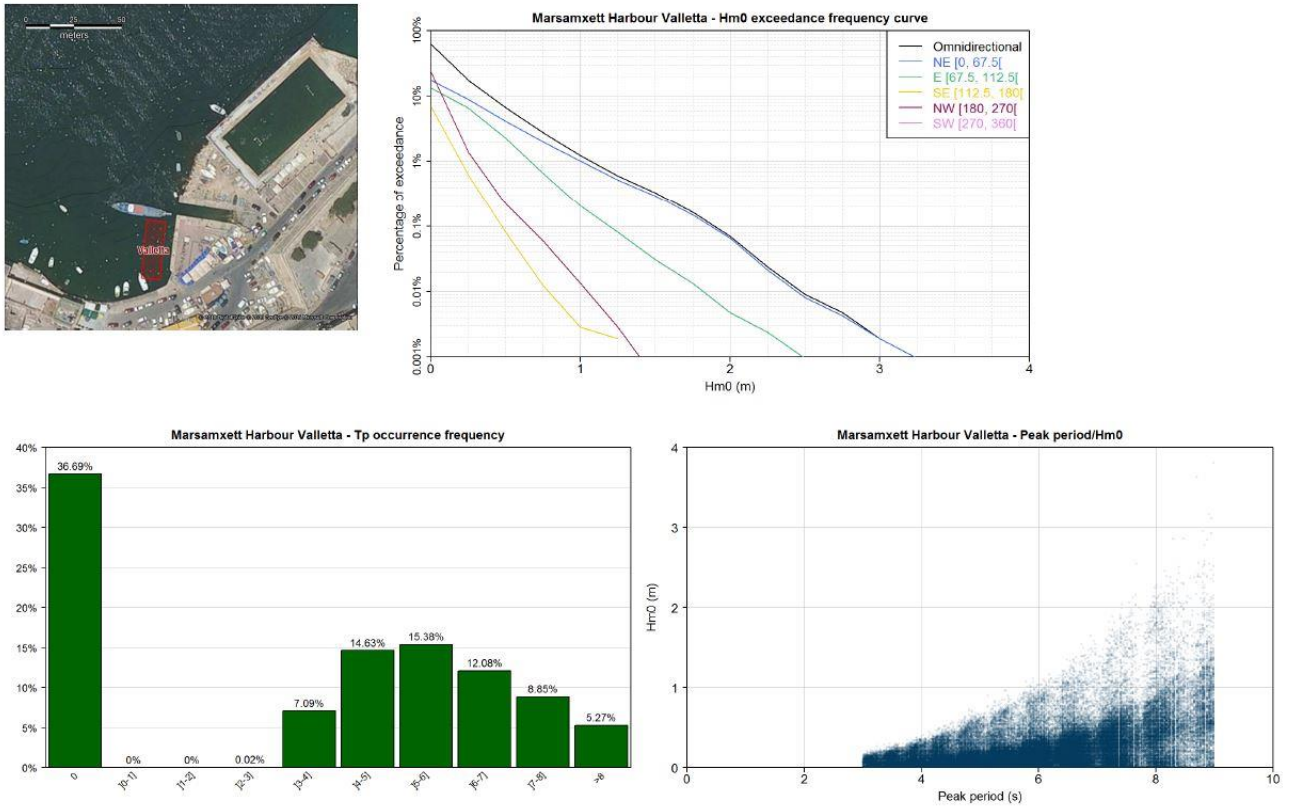

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Figure 7: Results from the Valletta Harbours wave study (Source: Transport Malta, 2017)

7.0 Physical Characteristics

7.1 Size, scale and design

The design of the proposed development and details on the size and scale are described in the following sections.

A site plans of the proposed development are shown in Figure 8 and Figure 5.

7.1.1 Work on the Existing Quay

The existing quay, where the ferry landing terminal will be located, has already undergone restoration work as approved in PA/02592/17. The works involved the installation of three reinforced concrete piles and a reinforced concrete structural beam on the eastern edge of the quay to reinforce the area where the ferries will berth. The ferries being proposed for the service are approximately 6 to 7m wide and 18 to 20m long.

In order to construct the superstructure and ferry terminal minimal excavation will be necessary. The existing slipway will be covered to allow the terminal to extend over the quay. Concrete will not be placed directly on the seabed. The infill section of the quay will be cast in-situ on a series of wooden slabs to create a platform. Elevating the structure from the seafloor will allow sea water to continue flow underneath.

7.1.2 Superstructure

The superstructure will cover a total area of 379m² encompassing a ticketing office (20.4m²), a landing and boarding area and a waiting area, which will contain seating for passenger comfort. A buffer zone will be located next to the landing and boarding area to ease the movement of people through the facility during peak times. The walkways for embarking and disembarking the ferry will be adjustable to make the ferries easily accessible to all. In order to ensure wheel chair access throughout the development, ramps with a gradient of 1:16 will be set up on uneven ground. To ensure the safety of passengers when using the service, the site will be fitted with railings, fences, signs and lifesaving rings.

Two A frames and three vertical fenders will be fitted on the western edge of the quay where the ferries will dock to prevent physical damage to both the quay and vessels.

The site plan for the superstructure and elevations can be seen in Figure 10 and Figure 10.

7.1.3 Pier and Revetment

The pier, which will act as a breakwater, will have an area of 110m² and will be composed of 16.5m reinforced concrete piles amounting to approximately 66.35m³ of concrete, concrete blocks and reinforced concrete beams. The piles will be placed in a linear arrangement. The south side of the pier will be fitted with vertical fenders and the marine area left clear to facilitate the docking of a second ferry vessel. Refer to Figure 11 for the dimensions of the proposed pier.

The northern side of the pier will have a revetment that will cover an area of 192m². It will be composed of approximately 1,920m³ of boulders to protect the pier from the energetic

wave regime. In order to allow for the construction of the toe of the revetment, a total of 238m³ of marine sediment will have to be removed.

7.1.4 Slipway

The proposed slipway, which will cover an area of 401m², will be constructed along the northern border of the ferry terminal site. It will allow boat users to navigate their boats on and off the land with relative ease. The construction of the toe of the slipway will necessitate the dredging of 14m³ of material. The presence of the pier and revetment will protect the slipway from the energetic waves present in the bay.

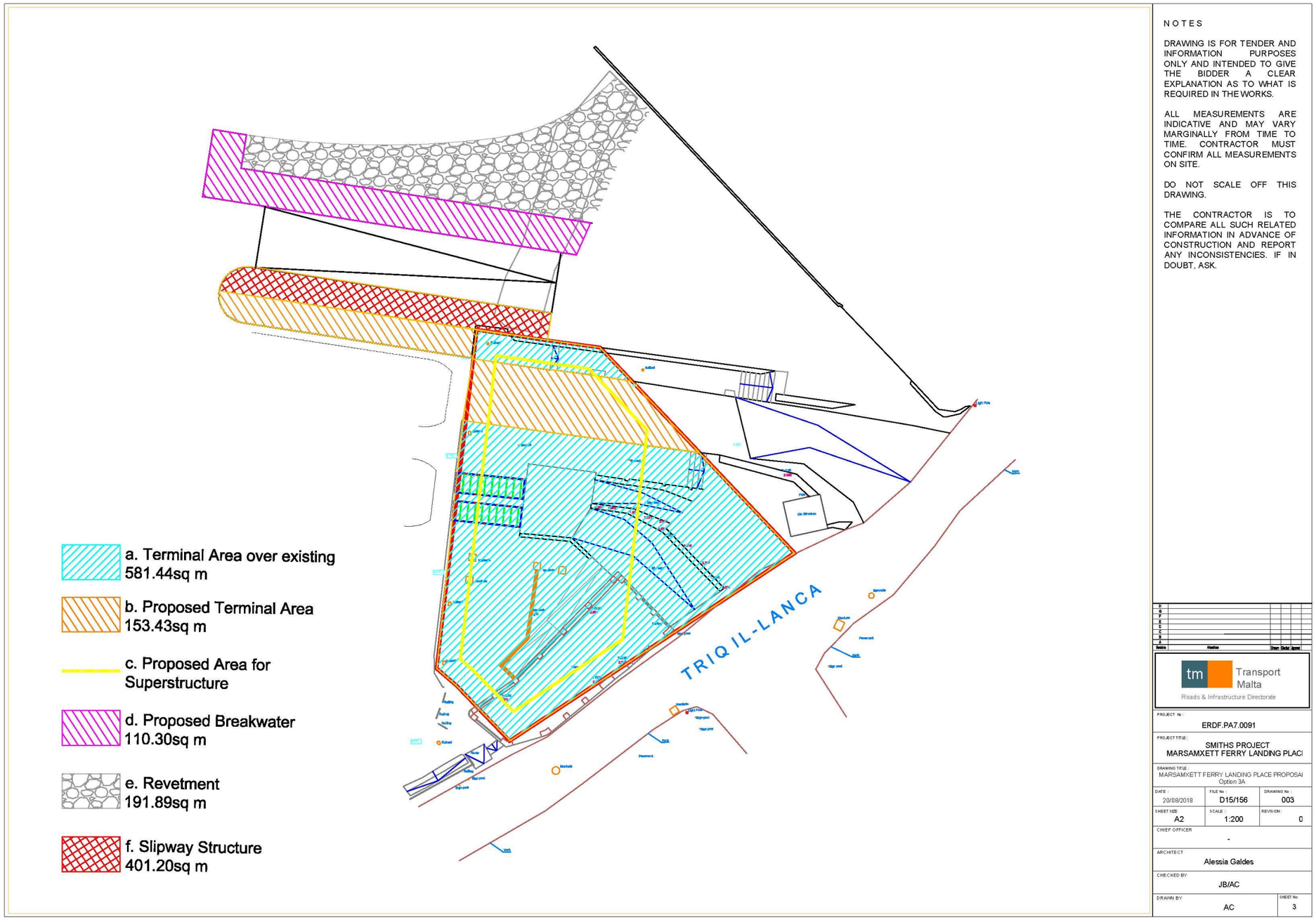

Figure 8: Site plan indicating the areas of the proposed development

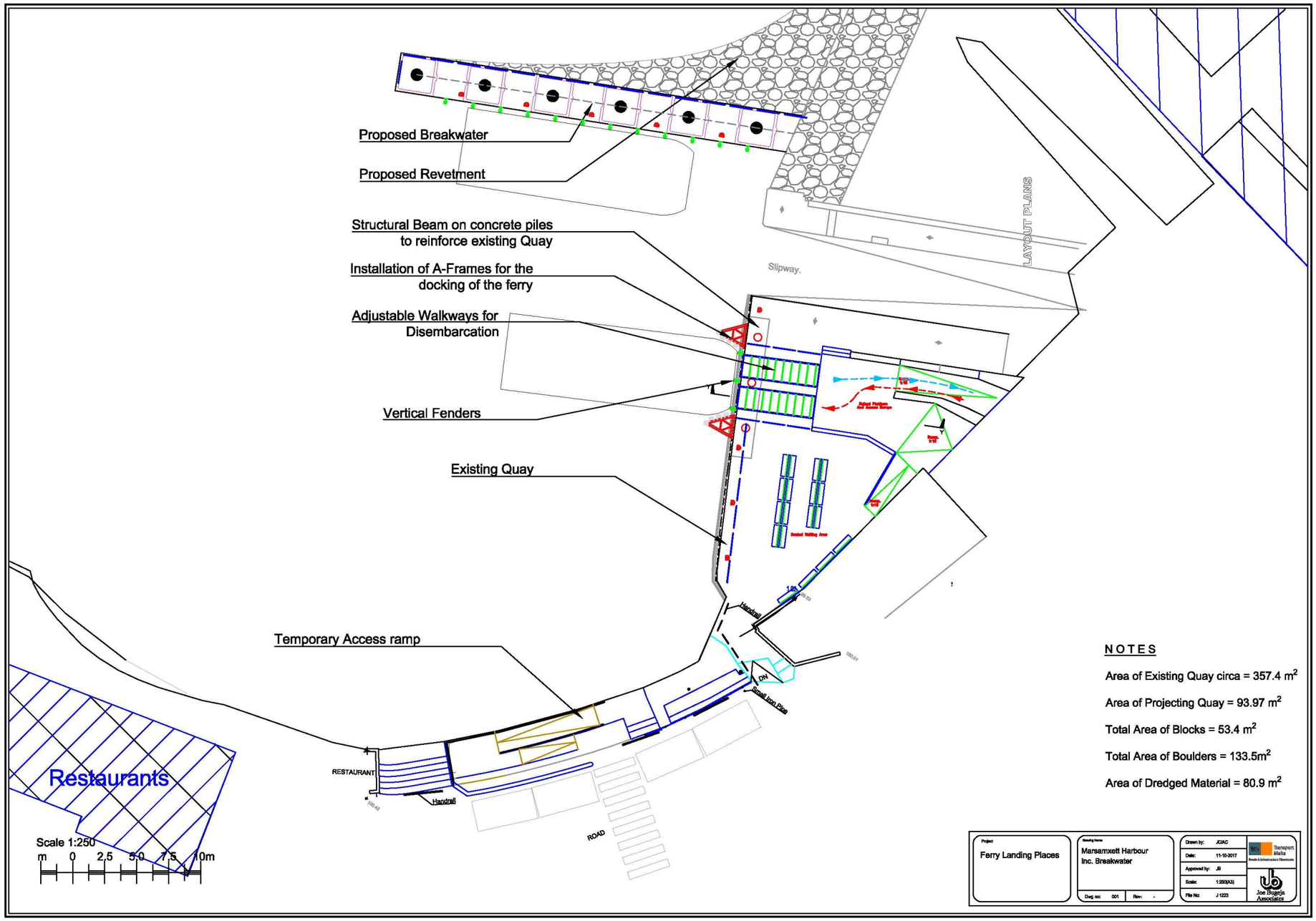

Figure 9: Site Plan for the proposed development

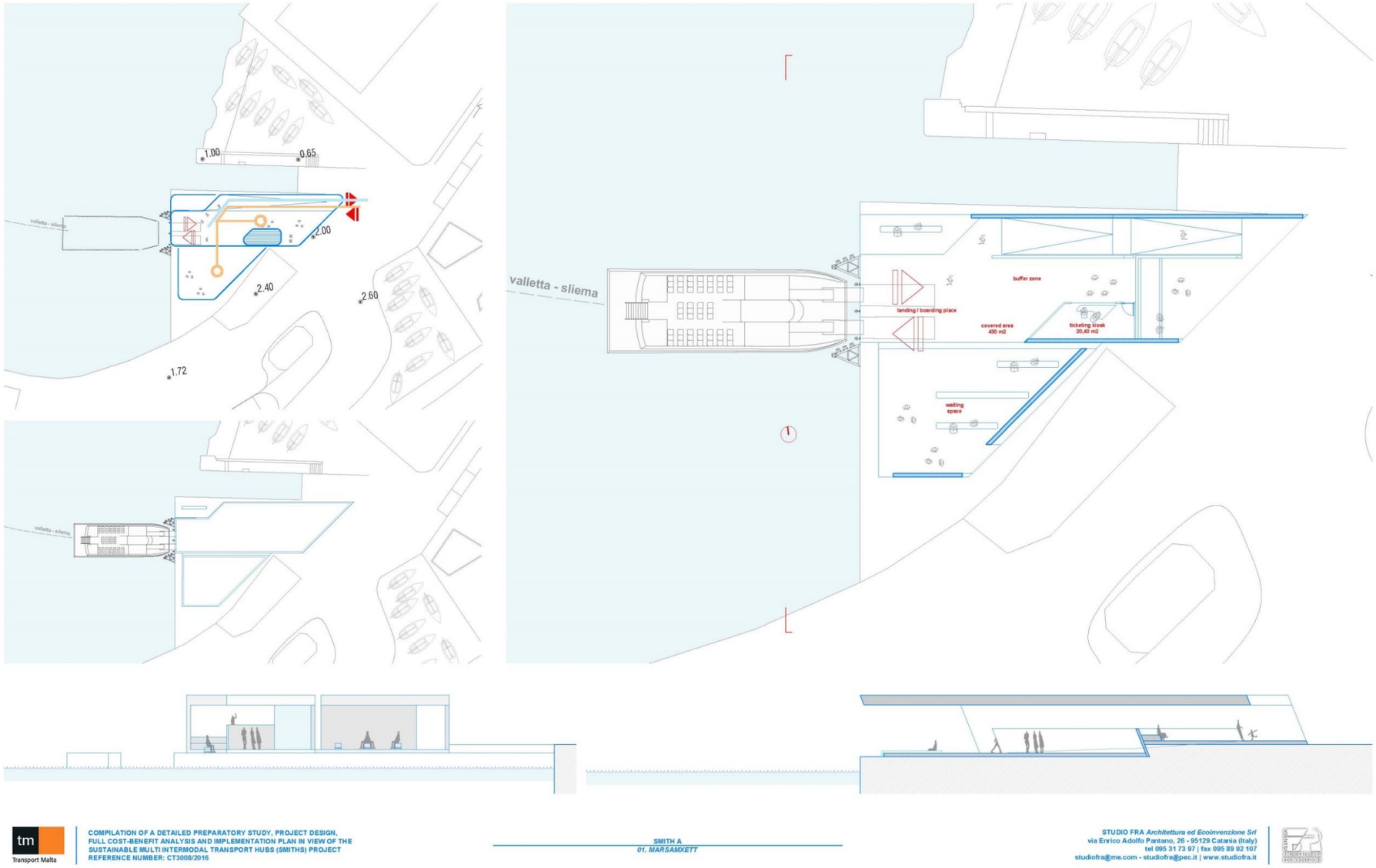

Figure 10: Site Plan and elevations for the main building of the proposed development

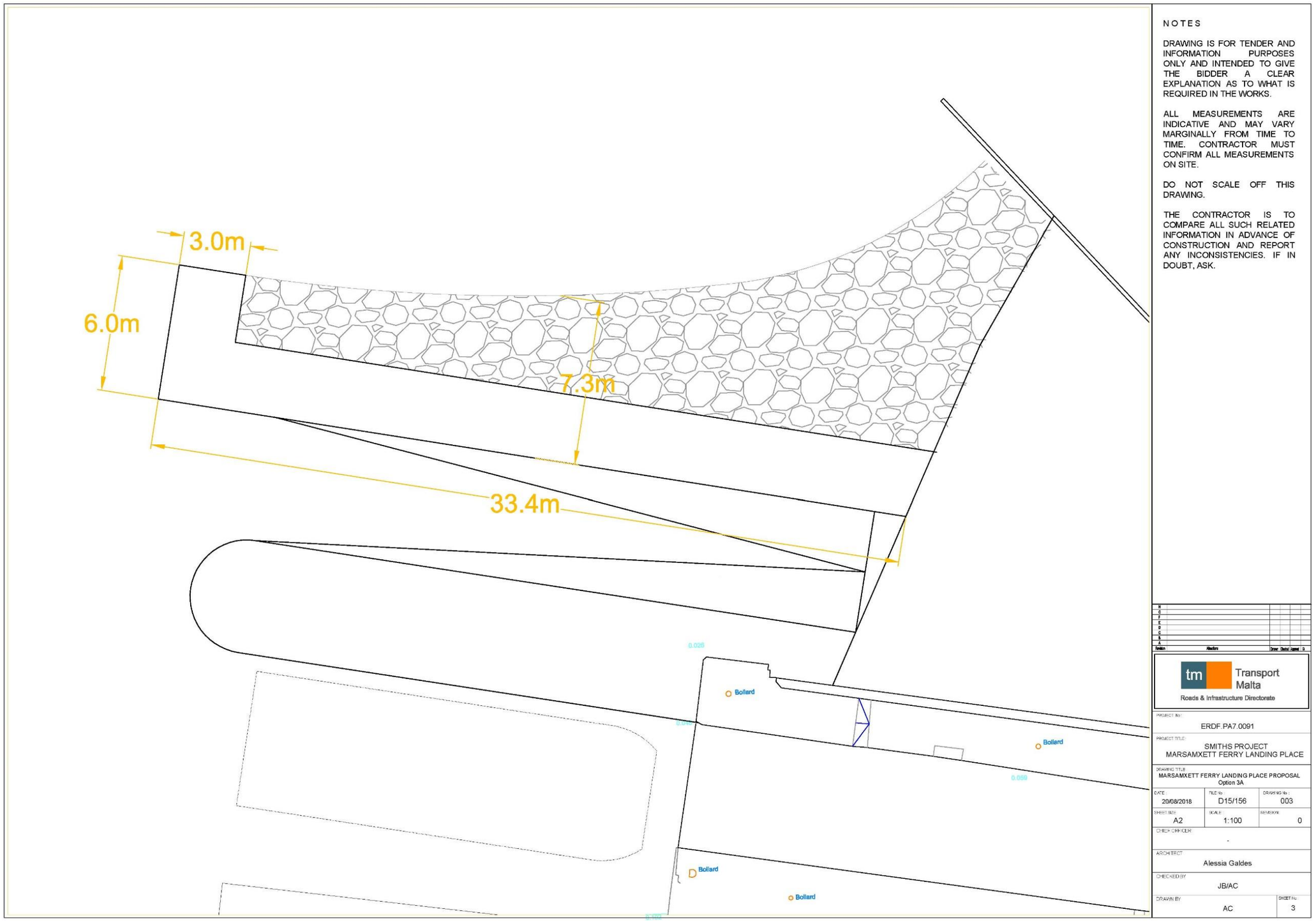

Figure 11: Site plan showing the dimensions of the proposed pier

7.2 Phasing

The project is to be divided into two main phases:

- Infrastructural Work: third quarter of 2019 to first quarter of 2020
- Suprastructural Work: second quarter to third quarter of 2020

7.2.1 Number of Employees

The approximate number of personnel to be employed during the different phases is as follows:

- Construction phase: 15 to 20 persons during the peak periods
- Operational phase: 3 to 4 employees working on the ferry. There will be no employees based at the terminal building itself.

8.0 Land Uses & Environmental Characteristics

8.1 Land Uses

Land uses within a 100m buffer zone surrounding the site of the proposed development have been mapped in Figure 26.

The proposed site lies on the edge of the waterfront at the Valletta side of Marsamxett Harbour adjacent to Triq Il-Lanċa. Within the AoI there are two main levels separated by historic bastions and connected by the uphill road of Triq Il-Lanċa. These two levels will be referred to as the lower and upper levels. The bastions located parallel to the Valletta United Water Polo club house a number of small private rooms carved out at the base (Figure 12). The improvement and reuse of the bastions is outlined in SECTION GH03 of the GHLP.

8.1.1 Lower Level

On the day of the site visit, 13th March 2018, the terrestrial aspect of the proposed development was sectioned off as a construction site (Figure 13). The marine area spans from the north west to the north east of the jetty. A number of private boats were stored on land in the surrounding area during the time of the survey (Figure 14). The surrounding water appeared to be clean and free from visible pollutants.

Further to the north east, a few metres away from the scheme site, lies the Valletta United Water Polo club stadium. It has not been used for a number of years and has fallen into a state of disrepair (Figure 15). However, the stadium is due to be redeveloped within the next two years. The proposed refurbishment of the pool will involve reducing the size of the current pool and building two new smaller pools, redesigning the club house to include a gym and changing facilities as well as modernising the existing catering facility.[6] The need for this water polo club site to be refurbished is highlighted in SECTION GC04 of the GHLP as part of the plan for Marsamxett Waterfront.

To the south west of the site on the 13th March 2013, there was a temporary tent structure that was being used for the ferry landing terminal (Figure 16). On the most western edge of the AoI on the lower level there are a number of private boat houses (Figure 17).

A number of restaurants that cater for both local and tourist clientele are located on the lower level. The largest of the restaurants, Cockney's, is located on the hill leading up to the upper level of the AoI and has both an indoor and outdoor eating area (Figure 18). The large restaurant to the west of the site is currently closed for refurbishment and will open again under new management (Figure 19).

8.1.2 Upper Level

To the south west of the proposed ferry site at the top of Great Siege Road there is a restaurant and the museum "The Fortress Builders", which opened in 2013 (Figure 20). In front of this restaurant and the museum once can find a planted area. Opposite the

[6] *Times of Malta (26/03/2018)*

museum, on the corner of Great Siege Road and Triq Marsamxett, lies a small public garden (Figure 21).

The dominant land use to the south / south east of the site is residential. The houses are a combination of the traditional Maltese houses, with the colourful wooden balconies, and old-fashioned style apartments (Figure 22 and Figure 23).

To the south of the site lies Pjazza Mattia Preti, which was opened in 2012 by the then Prime Minister, Lawernce Gonzi (Figure 24). It is an open area that has fountains in the middle, planters around the edges and has space for a number of chairs and tables for the restaurants and ice cream shop located adjacent to the square. The only other commercial outlet in the upper area is an iron monger.

To the east of the site there is a large public garden, which also houses a children's playground (Figure 25). The public gardens, the square and playground are all located within "*areas of open space*" in the CMLP (refer to Figure 2).

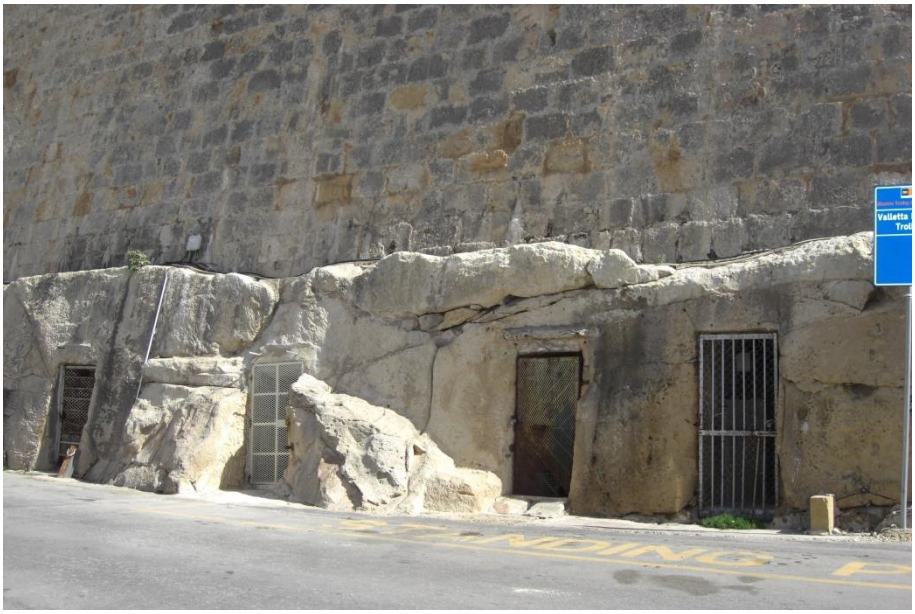

Figure 12: Rooms at the base of the bastion walls, Triq Il-Lanċa (taken on 13th March, 2018)

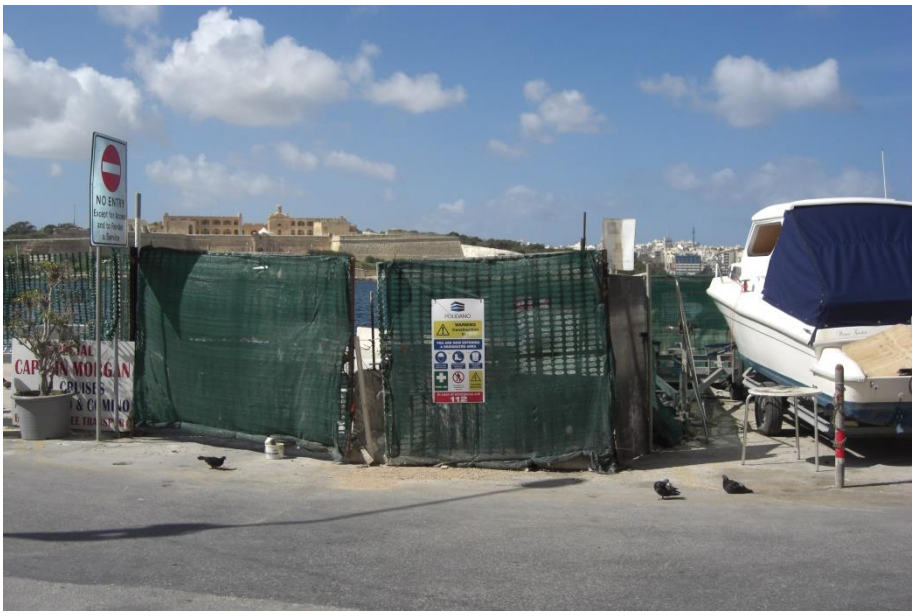

Figure 13: Construction site on the proposed scheme site (taken on 13th March, 2018)

Figure 14: Private boats hauled off at Triq Il-Lanċa (taken on 13th March, 2018)

Figure 15: Valletta United water polo pitch, Triq Il-Lanċa (taken on 28th March, 2018)

Figure 16: Temporary tent structure being used for the ferry service, Triq Il-Lanċa (taken on 13th March, 2018)

Figure 17: Private boat houses, Triq Il-Lanċa (taken on 13th March, 2018)

Figure 18: Cockney's restaurant, Triq Il-Lanċa (taken on 13th March, 2018)

Figure 19: Closed restaurant, Triq Il-Lanċa (taken on 13th March, 2018)

Figure 20: The Fortress Builders Museum, Great Siege Road (taken on 13th March, 2018)

Figure 21: Small public garden, Great Siege Road c/w Triq Marsamxett (taken on 13th March, 2018)

Figure 22: Traditional Maltese terraced houses, Triq Marsamxett (taken on 13th March, 2018)

Figure 23: Apartments, Triq Marsamxett (taken on 13th March, 2018)

Figure 24: Pjazza Mattia Preti, Triq Marsamxett (taken on 13th March, 2018)

Figure 25: Public garden and children's playground, Triq Marsamxett (taken on 13th March, 2018)

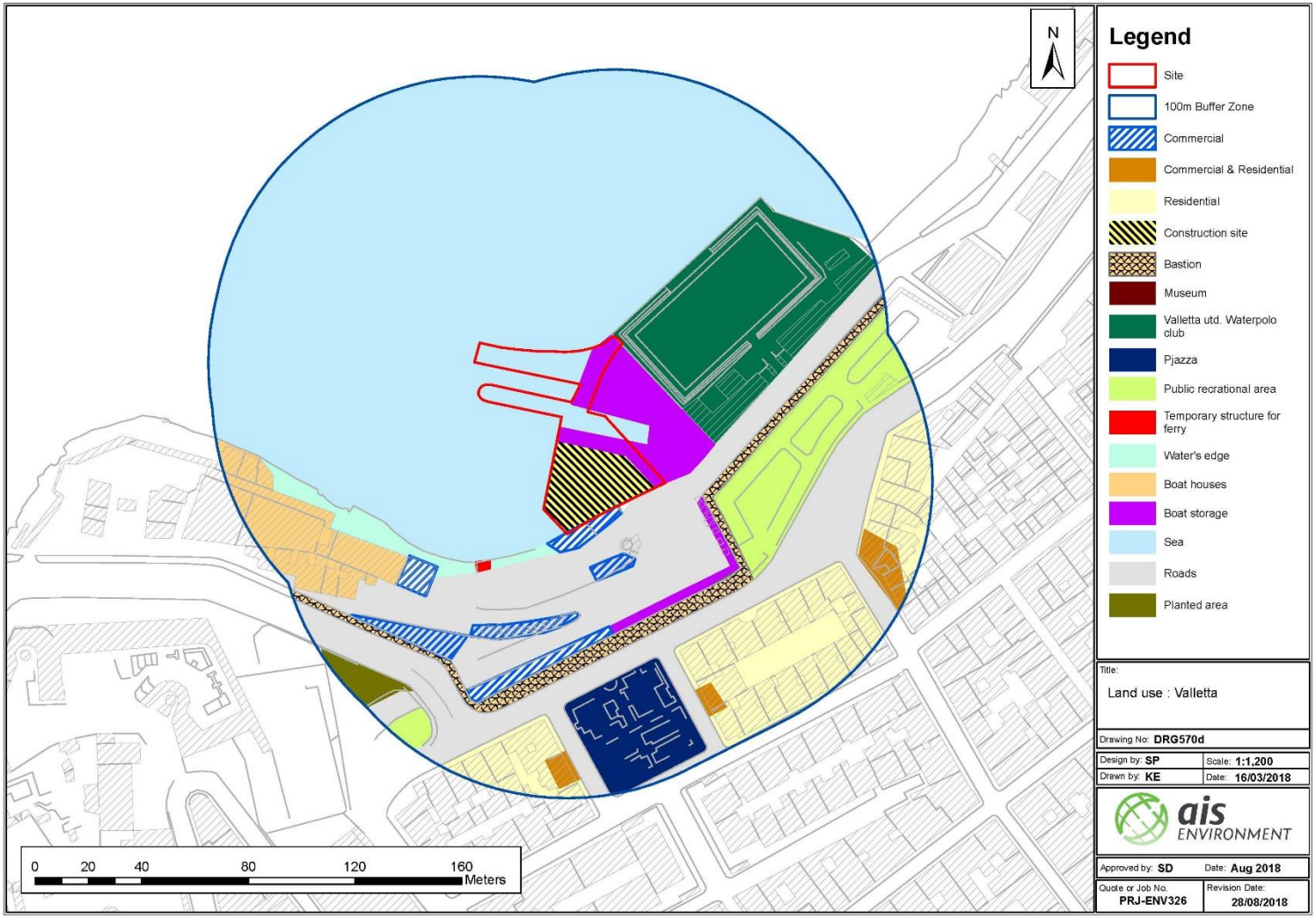

Figure 26: Land use map within a 100m buffer zone

8.2 Geology, Geomorphology and Hydrology

8.2.1 Geology & Geomorphology

The proposed site and AoI for the ferry landing site is located on Lower Globigerina Limestone (refer to Figure 27). Lower Globigerina Limestone is characterised by medium sized grains and is pale yellow brown to yellow in colour. It reaches a maximum thickness of up to 80m across the Maltese Islands. It is the oldest of the three Globigerina Limestone members. It was formed during the Aquitanian age of the Miocene epoch.

Due to the natural configuration of the creek that houses Marsamxett Harbour, the proposed site is relatively sheltered. The small numbers of inlets found within the harbour are characteristic of a ria coastline.

The AoI has no exposed soils, it is either seabed or man-made impermeable surfaces due to the surrounding developments, refer to Figure 28.

8.2.2 Hydrology

Figure 29 shows the aquifers located within the Maltese Islands. Valletta is located above the mean sea level aquifer. It is the largest aquifer of the Maltese Islands with an area of 216.6km².[7]

The coastal water of the Marsamxett Harbour is classed as being exposed and of intermediate depth in the 2nd Water Catchment Management Plan.[7] This is shown in Figure 30. The Marsamxett Harbour has been intensively used for a very long time, therefore its waters are classed as being heavily modified.[7] In the past it was also considered to be an "urban waste water sensitive area" however, in the 2nd Water Catchment Management Plan it was removed from the list as it no longer receives direct discharge of urban waste.[7]

The ecological status of the water within the harbour has been monitored since The Water Catchment Management Plan for the Maltese Islands.[8] Between the writing of the original and 2nd Water Catchment Management Plans the ecological quality of the water has improved, however, it is still not considered to be of good ecological staus.[7] It is also not considered to have a good chemical staus.[7]

[7] *ERA. (2015). The 2nd Water Catchment Management Plan for the Malta Water Catchment District 2015 - 2021. Valletta, Malta.*

[8] *MEPA (2011). The Water Catchment Management Plan for the Maltese Islands. Valletta, Malta.*

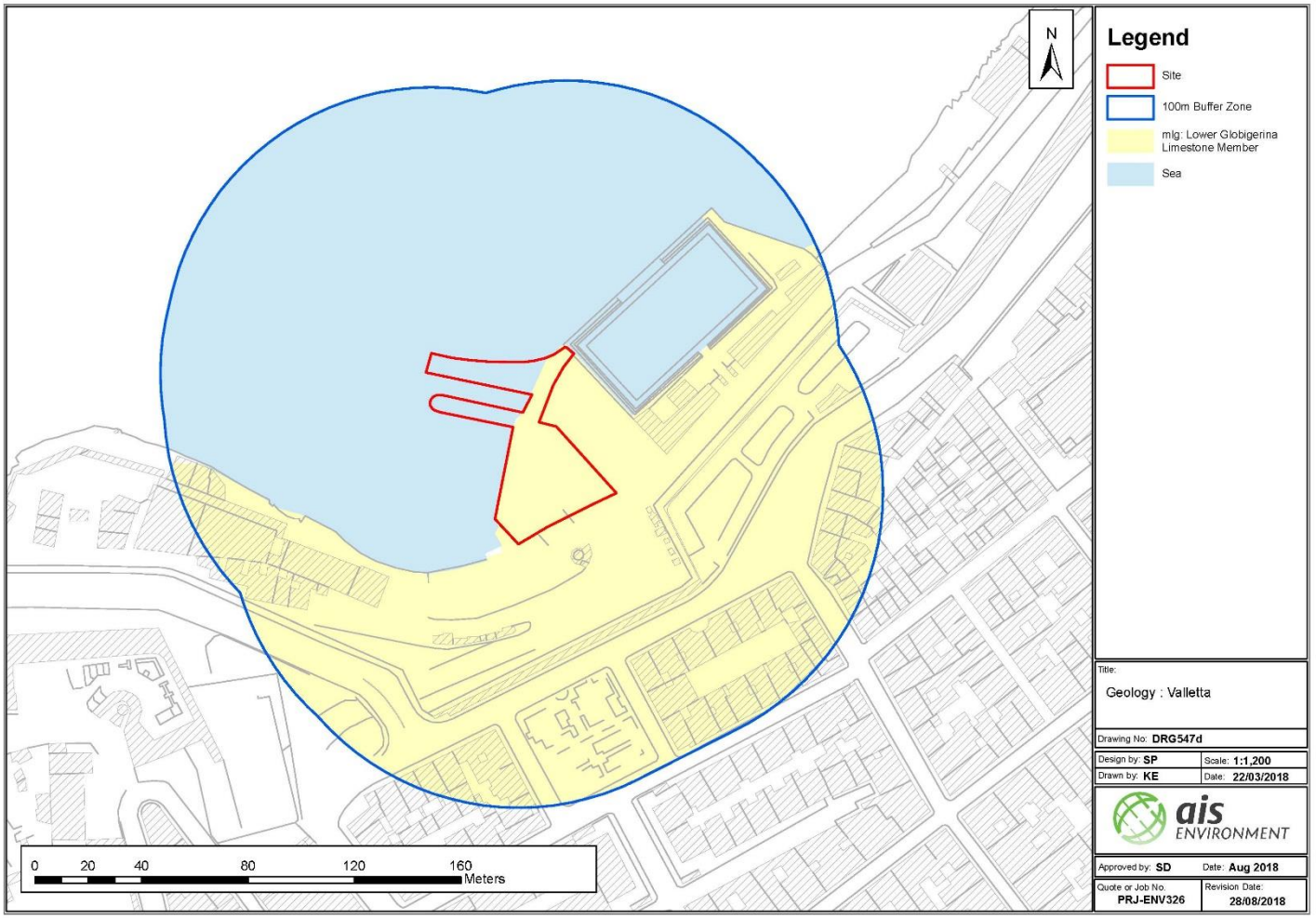

Figure 27: Geology map for the area surrounding the proposed development

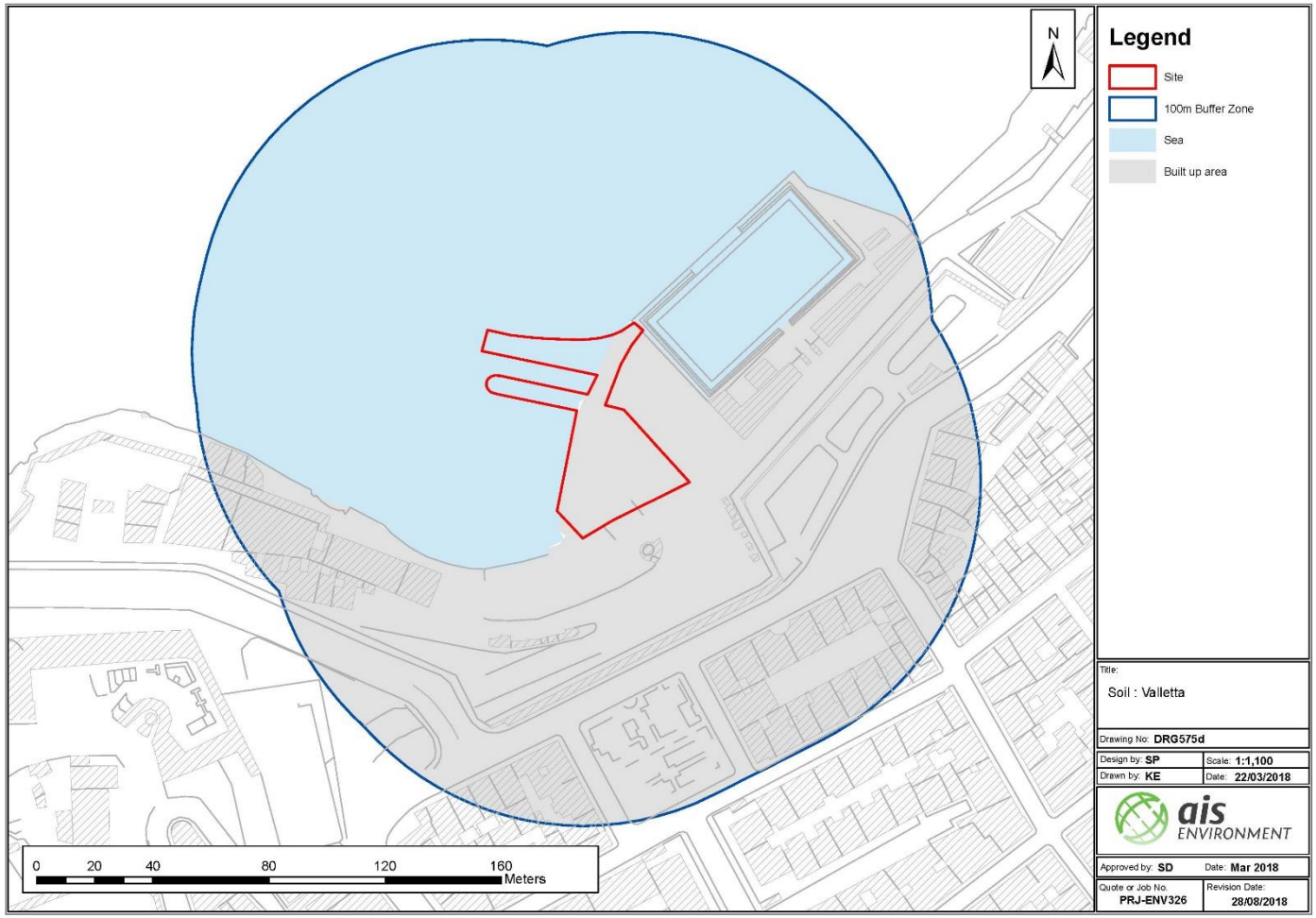

Figure 28: Map for the soil types of the area surrounding the proposed development

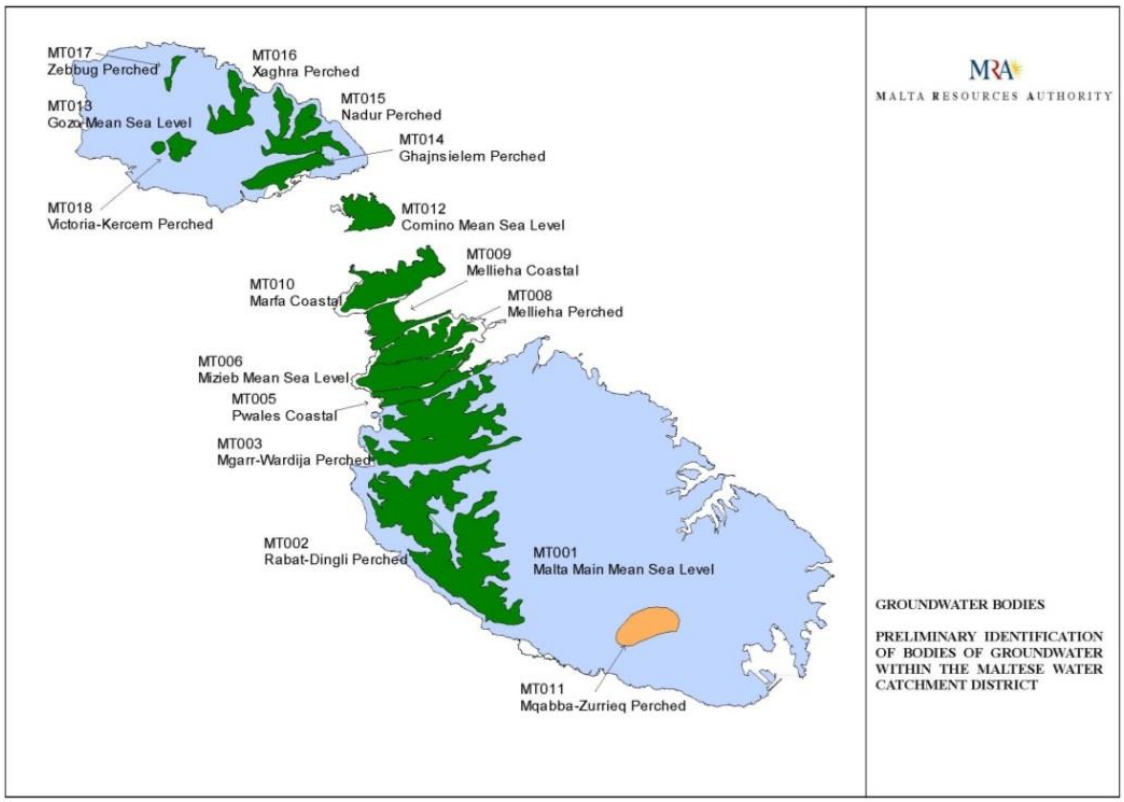

Figure 29: Preliminary identification of bodies of groundwater within the Maltese Water Catchment District (Source: Malta Resources Authority)

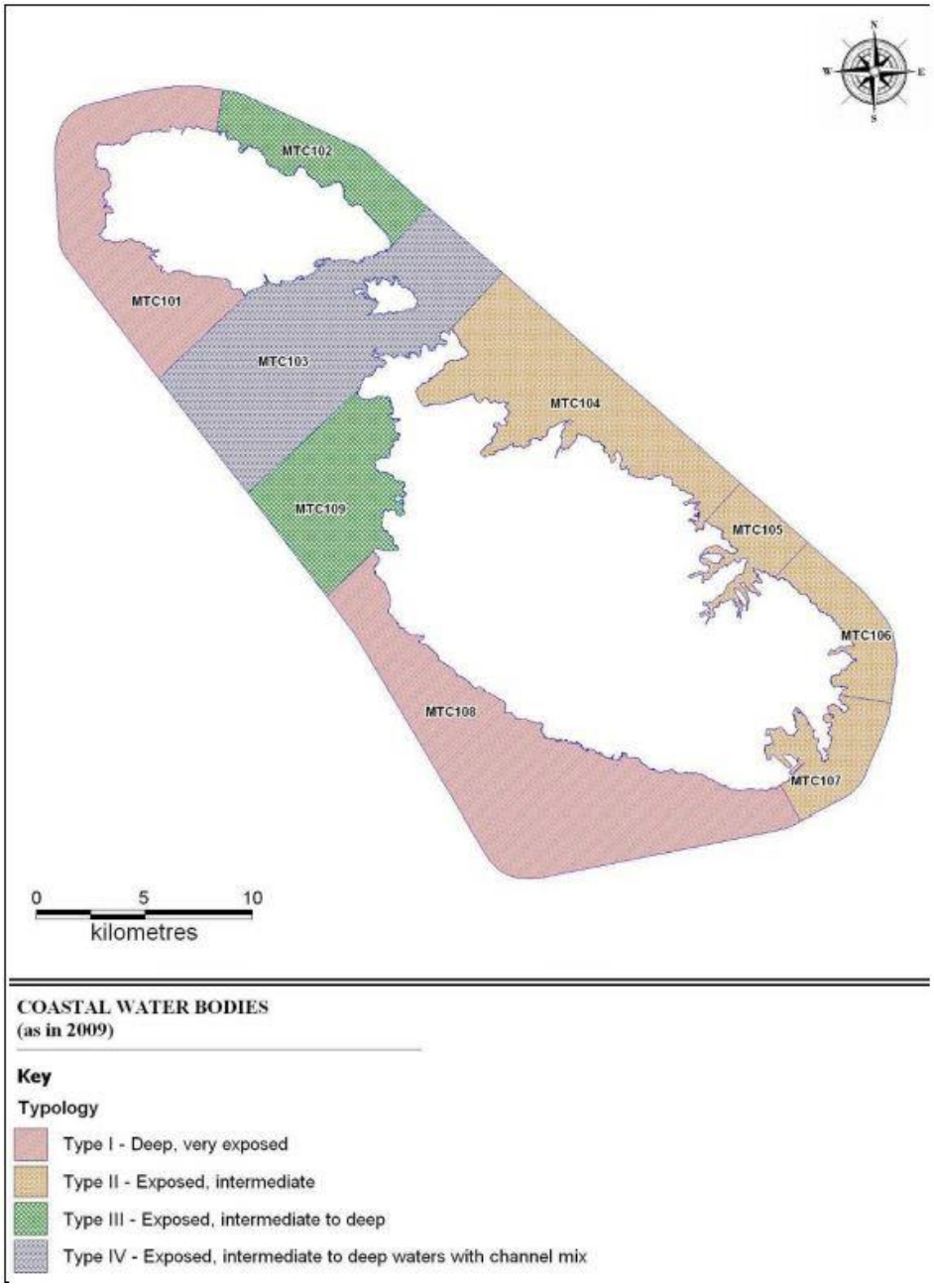

Figure 30: Level and depth of Maltese coastal water bodies (Source: 2nd Water Catchment Management Plan)

8.3 Cultural Heritage

The status of the cultural heritage of the buildings within the 100m buffer zone was researched on the PA geoportal website. The 100m zone of influence around the proposed site for the development contains the following scheduled buildings:

- Harbour Fortifications AHLV
- Military Bastions, Triq Marsamxett (grade 1 degree of protection)
- Military Bastions, Triq L-Assedju L-Kbir (grade 1 degree of protection)
- Mattia Preti's House, Triq Marsamxett (grade 2 degree of protection)

Although, not within the 100m AoI of the development, St Paul's Anglican Cathedral on Misraħ Indipendenza, is located just beyond the boundary of the AoI. It has a grade 1 degree of protection.

Due to the rich cultural and historical nature of the city of Valletta it contains a very large number of scheduled buildings which have varying degrees of protection.

8.4 Ecology

Since part of the proposed development is located in the sea, the marine ecology of the area will be affected. In order to assess the impact upon the marine environment baseline studies need to be carried out.

There are no naturally occurring areas of vegetation or agricultural areas within the AoI. The majority of the vegetation found within the buffer zone is that found in the two public gardens and the pjazza. There are a variety of trees and shrubs, planted within man-made beds within these areas. There is also a relatively small planted area located on Great Siege Road which contains a number of trees. The proposed development itself will not affect any of the terrestrial vegetation located within the 100m buffer zone.

9.0 Services Available on Site

9.1 Energy and Water

There are currently no existing energy or water services available at the proposed development site. The project will require a supply of electricity. An application form will be submitted to the competent authorities (Enemalta) to implement the necessary service arrangements.

9.2 Sewage

The development does not include lavatories as there are already some public facilities located in very close proximity. Therefore, there is no need for a sewage system to be installed.

9.3 Surface Water Run-Off and Storm Water Drainage

Due to the immediate proximity of the site to the sea, ground water will discharge directly into the bay by natural processes. Rain water from the roof will be directed into the sea by a network of gutters and drain pipes.

10.0 Nature and Quantities of Raw Material, Energy, Waste and Machinery Used

10.1 Raw Materials

10.1.1 Construction Phase

The raw materials required for the construction phase are listed in Table 1.

Table 1: Approximate quantities of raw materials required for the construction phase of the proposed development

Aspect of the Development	Raw material	Approximate Quantity
Work over existing quay	Infill	140 m³
	Concrete	238 m³
	Reinforcement	56,049 kg
Pier	Precast blocks	357 m³
	Infill and foundations of precast blocks	658 m³
	Reinforcement precast blocks	41,302 kg
	Cast in-situ rotary piles	66 m³
	Cast in-situ rotary pile reinforcement	20,834 kg
	Cast in-situ rotary pile permanent steel casings	15,626 kg
	Slabs/beams	32 m³
	Slabs/beams reinforcement	10,017 kg
Revetment	Boulders	1,920 m³
Slipway	Precast blocks	341 m³
	Infill and foundations of precast blocks	669 m³
	Reinforcement of precast blocks	40,186 kg
	Cast in-situ rotary piles	62 m³
	Cast in-situ pile reinforcement	19,572 kg
	Cast in-situ rotary pile permanent steel casings	14,679 kg
	Slabs/beams	48 m³
	Slabs/beams reinforcement	14, 947 kg

The majority of the material required for the construction phase will be stored offsite. In the case that a jack-up barge is used during the construction process then some material may be stored on board the vessel.

10.1.2 Operational Phase

The operational phase will require no raw materials.

10.2 Energy

10.2.1 Construction Phase

During the construction phase, the electrical power needed will be sourced from diesel-powered generators and machinery. The quantity of energy needed during the construction phase is currently unknown.

10.2.2 Operational Phase

No information is currently available, but the quantity of electricity to be used during operation is not expected to be significant.

10.3 Machinery

10.3.1 Construction Phase

The machinery to be used during the construction phase of the proposed development is listed in Table 2 below.

Table 2: Quantities of machinery required for the construction phase of the proposed development

Machinery	Estimated Quantity
Piler	1 to 2
Crane	1 to 2
Jack-up Barge*	1
Concrete Mixers	1 to 2
Excavator crane	1
Barge	1
Trucks	3
Trailers	1 to 2
* Use of jack-up barge is not yet certain	

10.3.2 Operational Phase

There will be no machinery in use during the operational phase.

10.4 Waste

10.4.1 Construction Phase

The waste generated during the construction phase will be predominately from the excavation and pilling and works. The expected type and quantity of waste generated from the development is listed in Table 3.

Table 3: Approximate quantities of waste expected during the construction phase

Aspect of the Development	Waste	Approximate Quantity
Work on existing quay	Excavated material	71 m^3
Pier and revetment	Silty material	23 m^3
	Rocky material	20 m^3
	Dredged material	238 m^3

Slipway	Silty material	23 m^3
	Rocky material	20 m^3
	Dredged material	14 m^3

10.4.2 Operational Phase

Waste generated during the operational phase of the ferry terminal is expected to be minimal, any waste that is produced will be of a domestic nature.

11.0 Access and Parking Requirements

11.1 Access

11.1.1 Construction Phase

During the construction phase the main access to the site will be off Triq Lanċa or through the sea in the case of a jack-up barge.

11.1.2 Operational Phase

To ensure that pedestrians can reach the ferry landing site safely, a number of new zebra crossings are being suggested (refer to Figure 31):

- 2 on Triq-Marsamxett
- 1 on Triq St. Lucia
- 1 on Triq Lanċa

The site can be accessed by car via Triq Lanċa. There are no bus routes that currently service the immediate vicinity of the ferry site. The closest bus stop, Mandraġġ, lies on the upper level of the AoI at Triq Marsamxett (Figure 31). Alternatively, a shuttle bus service that goes up to the centre of Valletta is located opposite the scheme site.

11.2 Parking

11.2.1 Construction Phase

During the construction phase, heavy vehicles will be parked in the construction site itself. Employees may make use of the space available in the construction site or park in the nearby parking spaces.

11.2.2 Operational Phase

No parking spaces will be provided at the ferry landing site itself. However, it is proposed that there will be four car sharing spaces located on Triq Marsamxett in front of Pjazza Mattia Preti. It is envisaged that two of the four spaces will have EV charging points. It is also proposed that an e-bike sharing station should be installed just a few metres away from the development. All of these proposed measures can be seen in Figure 31.

It is important to note that there are already a number of existing car parking spaces on Triq Marsamxett and Triq il-Lanċa.

Figure 31: Plan of the proposed access and parking arrangements for the proposed development

12.0 Major Environmental Impacts and Mitigation Measures

A preliminary indication of the environmental impacts that are likely to be associated with the scheme are described in this section, and may serve as an initial scoping assessment in the context of Article 6(2) of LN 114 of 2007: *Environmental Impact Assessment Regulations*.

The proposed development involves the construction of a ferry terminal building, pier, revetment and slipway in Marsamxett Harbour, Valletta. It is to have a covered area housing the boarding area, waiting room and ticketing office. The breakwater will be fitted with a revetment to protect it from the energetic wave conditions found within the vicinity.

The potential impacts are expected to relate to the marine ecology and the increased numbers of people coming to the area; however, measures are to be taken to eliminate or reduce the residual impact. The potential impacts and their respective mitigation measures are listed in Table 4.

Table 4: Potential impacts and their mitigation measures

Features Potentially Impacted	Description of Potential Impact	Mitigation Measures
Land and Sea Use	**Minor Adverse** During the excavation and construction of the development, other uses of the marine area may be disrupted.	The developers should issue a "notice to mariners" of the schedule of work to be carried out in order to allow other users of the sea to adapt their plans if required.
	Moderate Beneficial A ferry service with a temporary structure already exists at the Valletta waterfront. Therefore, the land and sea use of the area will not change. The replacement of the temporary tent with a permanent structure and the construction of the pier and revetment will improve the reliability and comfort of the existing ferry service.	N/A
Marine Ecology	**Moderate Adverse** The excavation required for the construction of the pier, revetment and slipway as well as the drilling required for the installation of the piles will have an adverse effect upon the marine environment as a whole, specifically the marine	During the excavation work and construction of the pier, revetment and slipway a silt curtain should be installed to reduce the dispersion of suspended sediment caused during the work. Given that the site is not designated for environmental protection,

	habitats and any organisms living within the seabed. During the construction of the project there is a risk of leakages and contamination from raw materials and machinery, which may result in harmful substances being released into the sea.	the impact is not expected to be major. However, a marine benthic survey should be carried out to ensure that there are no ecologically important features in the area and to allow for an effective monitoring plan to be drawn up if required. To avoid the occurrence of spillages and leakages raw materials should be stored away from the water edge in bunded areas. In case accidental spillages do occur, spill kits should be readily available on site. Any machinery being used on site should be regularly maintained and serviced to reduce the chance of any leakages.
Archaeology and Cultural Assets	**Unknown** Seabed surveys may need to be carried out to identify any potential artefacts.	Should any artefacts be discovered, monitoring should be carried out according to the guidance provided by the SCH.
	Minor Adverse During the construction phase the passage of large vehicles next to the historic bastions if not managed adequately may cause damage to them if the vehicles accidently hit the walls due to the narrow nature of Triq Lanċa and the overall limited spatial area.	Movement of large vehicles on and off the site should be planned in advance to ensure only one vehicle is using the roads at once. If necessary, construction workers should guide the drivers when carrying out maneuvers in tight spaces to ensure they do not collide with the bastions.
Geology, Geomorphology, Palaenthology, Hydrology, Hydrogeology	**Moderate Adverse** The excavation of the area that is required for the construction of the pier, revetment and slipway will cause the geology, geomorphology and palaenthology, of the area to be altered. The installation of the piling cores and the placement of boulders on the seafloor will also affect the geology and geomorphology.	N/A

	It is envisaged that there will be no changes in the hydrology and hydrogeology as a result of the development.	
Wave Hydrodynamics	**Unknown** The construction of the new pier, revetment and slipway will inevitably affect the wave hydrodynamics of the area. Although the impact of the development is not currently known, it should be noted that it does aim to improve the existing conditions.	Further detailed wave studies need to be carried out to establish the effect that the presence of the new structures will have upon the hydrodynamics within the harbour. The studies will serve to guide the applicant in selecting the most effective and environmentally sustainable design option.
Landscape and Visual Impact	**Minor Adverse** During the construction phase, the construction machinery will temporarily reduce the landscape and visual amenity of the area.	The machinery should be parked tidily in designated areas when not in use.
	Minor Adverse The proposed terrestrial development will add to the already developed waterfront. The pier will be an extension to the existing concrete quay.	The design of the building and pier will consider the appearance of existing buildings in the area to ensure it complements them. The structure should be painted in earth colours so that visually it blends well with the surroundings.
Air Quality	**Minor Adverse** During the construction phase, cutting and assembly works may generate dust emissions which will temporarily effect the air quality of the area.	Environmentally friendly construction practices (L.N. 295 of 2007) should be applied during construction to minimise the dispersion of dust into the surrounding environment.
	Moderate Beneficial The development will encourage the use of low emission, public transport modes which will result in a shift away from private car use.	N/A
Noise	**Moderate Adverse** During the construction phase of the project, the excavation, piling work and the construction of the building itself will generate noise which may disturb the local residents and businesses.	Good construction practices (L.N. 295 of 2007) should be implemented to minimise the disturbance to locals. Specific measures include restricting working hours to designated hours and

		switching off machinery when not in use.
	Minor Adverse During the operational phase of the project, the increased numbers of people using the ferry terminal may cause some additional noise. However, this is expected to be minimal as the existing ferry landing place is already heavily frequented.	N/A
Waste Management	**Minor Adverse** During the construction, the transport of material to and from the site will be a nuisance to local residents and businesses. Depending on what will be done with the excavated material this may also affect users of the marine area.	Good construction practices (L.N. 295 of 2007) should be implemented to ensure that waste is stored and managed on site in an appropriate manor before being transported to a registered waste disposal site. Where possible any waste material will be re-used on site to limit the volumes of waste that needs to be disposed of. The waste material generated from the dredging material will be tested for the presence of contaminants before its disposal. This will ensure that it is disposed of correctly.
	Minor Adverse The development will not produce large quantities of waste during the operational phase. Additionally, the waste produced during operation is of a domestic nature.	The 3 Rs (Reduce, Reuse and Recycle) will apply to all recyclable material. Unrecyclable waste will be disposed of accordingly in authorised landfills or waste disposal facilities.
Social Impacts	**Moderate Adverse** During the construction phase of the project the usual disturbances associated with construction sites will be a nuisance to local residents and businesses. Such inconveniences include: traffic bottlenecks, access restrictions, lack of parking spaces, noise and dust.	Environmentally friendly construction practices (L.N. 295 of 2007) should be applied to minimise the disturbance to local residents and businesses. A traffic plan for the area should be developed to minimize the traffic impacts on Triq Lanċa, Triq

		Marsaxmett and Great Seige Road. The applicant should also regularly consult local councils and residents to identify and rectify any causes of concern.
	Moderate Beneficial The provision of a substantial ferry service infrastructure will attract more people to use the service. In turn, this will bring more people to Valletta and hence support the numerous regeneration projects and new commercial ventures that have occurred in the recent past within the capital city. Most notably it will benefit the restaurants that are located in the immediate proximity of the site along the water front. It will also increase the accessibility of other areas of the island from Valletta. However, the project may also disappoint some local residents as it may result in more people coming to the already crowded area, especially during the summer months. The construction of the pier will benefit other marine users of the area. It will act as a breakwater and therefore, provide protection to vessels that make use of bay.	N/A