

Environment Impact Assessment (EIA) Report

PA 03368/05 (GF 00054/06)- Upgrading of quays and vessel manoeuvring area at Malta Freeport, Kalafrana

1 INTRODUCTION

The Malta Environment and Planning Authority (MEPA) requested an Environmental Planning Statement (EPS) for the proposed development as per Schedule I, Category 10 of the EIA Regulations, 2001. The application is for outline development permission.

The Terms of Reference (TOR) were drawn up by MEPA and are summarised as follows:

- A justification of the proposed development;
- A description of the proposed development;
- A description of the proposed site and its surroundings;
- A discussion of relevant legislation, planning policy and international policies;
- Assessment of environmental impacts and risks of the proposed development; and
- Design of mitigation measures, identification of residual impacts and monitoring programme

The EPS was coordinated by Adrian Mallia of Adi Associates Environmental Consultants.

2. EIA CONSULTATION

As part of the EIA process, consultation with various consultees was carried out during the scoping and the reviewing stages.

2.1 Consultation during scoping

During the scoping stage for the preparation of the TOR, the PDS was circulated to the following consultees on 10th October, 2006:

- Marsaxlokk Local Council;
- Birzebbuga Local Council;
- Malta Resources Authority (MRA);
- Malta Maritime Authority (MMA);
- Nature Group;
- Kummissjoni Ambjent;
- Din l-Art Helwa;
- Superintendence of Cultural Heritage; and
- Department of Public Health.

Comments were received from the MMA and the Department of Public Health. The following was requested:

- MMA: Requested a risk assessment together with navigational, manoeuvring and wave studies. Details of dredging limits, turning circles, and alternative berthing arrangements were requested; and
- Department of Public Health: Requested that the TOR address air and noise pollution to neighbouring areas, impacts on the bathing water quality and the supply of potable water to ships.

2.2 Consultation during review

The first draft of the EPS was submitted to MEPA on 7th February, 2007 and circulated for review to the following consultees:

- Marsaxlokk Local Council;
- Birzebbuga Local Council;

- MRA;
- MMA;
- Nature Group;
- Kummissjoni Ambjent;
- Din l-Art Helwa;
- Superintendence of Cultural Heritage; and
- Department of Public Health.

The EPS was also circulated for internal review within MEPA.

The deadline for submissions was 8th March, 2007. Within the stipulated consultation period, comments were received from Birzebbuga Local Council, MMA and the Department of Public Health. The following was requested:

- Birzebbuga Local Council: Requested sediment monitoring during dredging, avoidance of dredging during the official bathing season and close liaison between the Freeport Corporation and the Local Council. The Local Council also requested that construction vehicles avoid Birzebbuga.
- MMA: Further information on the risk assessment and wave study, the proposed dredging limit and turning circles was requested. Comments on the wave impact due to the proposal were made and alternative moorings for small crafts; and
- Department of Public Health: Requested to review of the water quality monitoring results, commented against the dredging period during the bathing season and commented on dust and noise impacts.

The comments made by MEPA and its consultees during the review stage were forwarded to the EIA coordinator, the applicants and the architect on 16th March, 2007. These comments were addressed by the EIA Coordinator and responses were submitted to MEPA on the 2nd April, 2007.

3. THE PROPOSED DEVELOPMENT

According to the EPS, Malta Freeport is currently operating close to maximum capacity and as a result of increasing demand is seeking to expand its facilities. The proposal is for upgrading of existing quays and reclamation to square off both Terminal One and Terminal Two, thus increasing quay space (Figure 1.1. of the EPS). Dredging is proposed to widen the fairway and vessel turning circles whilst deepening the seabed at Terminal One. Stabilization of the fairway has also been proposed. This is sought to increase efficiency and improve turnaround times for vessels. In doing so, it will enable handling of larger vessels of up to 363m Length Overall (LOA) from the current 345m LOA.

The proposed areas for reclamation are located to the west side of Terminal One, on the corner with Terminal One North Quay (Figure 4.1 of the EPS) and along the west side of Terminal Two is proposed for reclamation.

The proposal also includes a soft stone crusher within the Freeport (potential site is indicated in Figure 11.2 of the EPS) which may be used to crush any material for reclamation.

4. THE SITE AND SURROUNDINGS

4.1 Location of Site and Uses

The quay at Terminal One is presently used by feeder vessels waiting for their allocation on the main quays. The Quay at Terminal Two is currently used for high volume ship-to-shore operations.

Land and sea uses within the vicinity of the site (Figure 4.4 of the EPS) are various and include:

- Freeport Container Terminals;

- Oil Tanking Storage and LPG storage facilities;
- Residential areas: Birzebbugia and Marsaxlokk and hotels;
- Agriculture;
- Boating facilities: Boat parking, slipways, mooring areas;
- Leisure activities: bocci club, water polo pitch, yachting club, public open areas, beaches and areas for swimming;
- Amenities: Bus terminus, parking areas, school, commercial outlets, parking areas; and
- Other: Fish farming cages, Fort San Lucjan and Ferretti Battery.

4.2 Benthic Ecology

The ecological characteristics of the site were determined through a desk study and field surveys within the area. The supralittoral, mediolittoral and infralittoral areas were surveyed.

Four biocoenosis were recorded (Figure 8.7 of the EPS) from the infralittoral zone, namely:

- Biocoenosis of infralittoral algae: Present on bedrock platforms, large boulders and artificial hard substrata. Numerous associations were noted including species such as *Cladophora prolifera*, *Corallina elongate*, *Halopteris* sp. Facies with the stony coral *Cladocora caespitosa* were recorded;
- Biocoenosis of infralittoral stones and pebbles: This was located in numerous locations, mainly as patches in shallow waters interspersed with other biocoenosis;
- Biocoenosis of superficially muddy sands in sheltered waters: These occupied a large part of the seabed under study. Large accumulations of detached *Posidonia oceanica* occurred and the fauna recorded appeared to be impoverished. Small patches of *P. oceanica* occurred and *Cymodocea nodosa*;
- Biocoenosis of *P. oceanica* meadows: This was present in a large part of the surveyed area. Meadows below il-Ponta I-Kbira appeared in a relatively good state but meadows in the vicinity of the fish farm and Freeport showed signs of stress. Different bed types were noted.

Figure 8.7 of the EPS indicates that the latter biocoenosis abuts the area dredged in 1990. The consultant was requested to survey the area further to the South; however he was disinclined due to the risk of Freeport vessels.

The following protected species, or species of importance were noted:

- *Posidonia oceanica* meadows in the area, which are listed in the EU Habitats Directive and is listed in Schedule III of LN 311/06. It is also listed in Appendix 1 of the Bern Convention and Annex II of the Protocol concerning Specially protected areas and Biological Diversity in the Mediterranean (SPABIM) of the Barcelona Convention;
- *Cymodocea nodosa* which qualifies for protection under LN 311/06 and the EU Habitats Directive. It is also listed in Appendix 1 of the Bern Convention and Annex II of the SPABIM; and
- The stony coral *Cladocora caespitosa* and the green algae *Caulerpa prolifera* are listed in Schedule VI of LN311/06. *C. caespitosa* is listed as rare in the Red Data Book (RDB) for the Maltese Islands.

4.3 Faunal Ecology

According to the EPS, the following fauna were recorded:

- Biocoenosis of infralittoral algae: sponges, the spider crab *Maja* sp., and crustaceans. Individuals of the common octopus *Octopus vulgaris* and the date mussel *Lithophaga lithophaga* were noted;
- Biocoenosis of infralittoral stones and pebbles: several infauna below pebbles;
- Biocoenosis of superficially muddy sands in sheltered waters: 58 species were recorded made up largely of polychaetes;
- Biota associated with *P. oceanica* included many algal epiphytes and macrofauna such as the noble fan-shell *Pinna nobilis* and occasional colonies of the stony coral *Cladocora caespitosa*;

- A rich fish fauna noted from the biocoenosis of infralittoral algae and *Posidonia oceanica* meadows. A relatively low abundance of fish was recorded from the biocoenosis of well-sorted sands; and
- Fish fauna recorded to the west were impoverished but the northern parts supported a high diversity.

The following protected species, or species of importance were recorded:

- The noble fan-shell, listed as *Rare* in the RDB, listed in Schedule V of LN 311/2006, in Annex IV of the Habitats Directive and listed in Annexe 1 of the SPABIM;
- The date mussel, listed in Schedule V of LN 311/2006, in Annex IV of the Habitats Directive and in Annexe 1 of the SPABIM. It is also listed in Appendix II of the Bern Convention;
- The spider crab *Maja squinado* (not specifically recorded from the study area, however, an undetermined species of *Maja* did occur) is listed in Schedule VIII of LN311/06 and Annex II of the SPABIM.

4.4 Other Benthic and Marine Characteristics

Physical characteristics of the shore and sea bed were recorded through visual inspection of shores and direct observation by SCUBA diving.

The seabed in the area is characterised by a very diverse geomorphology, including vast areas with soft muddy sediments and rocky bottom, such as a wide globigerina bedrock platform at il-Ponta l-Kbira headland. Accumulations of boulders, cobbles and pebbles and small drop-offs in the area of Wied il-Buni occurred.

The seabed was littered with anthropogenic items such as concrete mooring, ropes and plastic bottles. Detached seagrass leaves and rhizomes littered the soft sediment bottom in several areas.

Underwater visibility was found to be poor as a result of recent maintenance dredging and regular seabed disturbance from vessel movements.

4.5 Water and Sediment Quality

Assessment of water quality was made according to the EU and National guidelines for bathing water quality (including mineral oils, nitrates, phosphates, turbidity and coliform counts). In situ measurements were carried out and laboratory testing of 4 samples (Figure 8.4 of the EPS). Three replicate samples of sediment were also collected and analysed in terms of granulometry and chemical analysis (including heavy metals, butyl tins and polyaromatic hydrocarbons).

Water quality observations during the fieldwork indicated turbidity which, at times, resulted in very low underwater visibility. The results of the water quality indicated attributes expected of local bays that receive some nutrient input. Values of phosphates and nitrates recorded were 0.429µg-atN/L and 0.091µg-atP/L respectively, which are well below threshold limits that indicate pollution, that is 5µg-atN/L and 0.3µg-atP/L. The results of bacteriological studies did not indicate any pollution by sewage whereas the surface was free from mineral oils, surface-active surfactants, phenols, tarry residues and floating material. Therefore the results indicate the water is good for bathing.

The sediment samples from the study area varied from sandy mud to gravelly-mud-sand. Chemical analysis (Table 8.7 of the EPS) indicated that the contaminant levels conformed to reference values for clean marine sediments established by the Swedish Environment Protection Agency and the OSPAR Commission. However levels of copper and zinc did not conform to background levels proposed by Axiak (1999, 2000).

4.6 Currents, Wave Exposure and Oceanography

A desk top study was carried out to estimate the wind and wave climate in the Bay (Figure 7.1 of the EPS). The study was carried out using the HARES wave model which determines wave penetration in Harbour basins and calculates wind driven currents for different wind periods. The gathered data for wind and wave climate presented below was used as input for the model:

Wind climate:

- a wind speed of 17.5ms^{-1} is rarely exceeded;
- wind speeds are greater than 8.8ms^{-1} for 11.58% of the time; and
- the dominant wind direction is WNW to NW. This wind affects berthing manoeuvres. Winds from the SW to NNW affect vessel manoeuvrability outside the breakwater.

Wave climate:

- for 49.65% of the time the wave height is higher than 1m;
- the wave height exceeds 2.75 for only 5.07% of the time; and
- the dominant wave direction is WNW to NNE, in particular NW to NNW.

The output of wave penetration for the present situation for 9 different regions of the Bay is indicated in figure 7.2 of the EPS. The results show that highest wave penetration occurs by offshore wave directions between 140°N to 180°N .

4.7 Marine Archaeology

A desk-top review of existing data on marine archaeology of Marsaxlokk Bay was carried out together with a review of existing sub-bottom and side scan sonar data from previous surveys. In addition, the study included a description of archaeological deposits known to have been discovered in the Bay..

Marsaxlokk was described as a harbour providing adequate shelter and services therefore witnessing various degrees of intense marine activity for over thousands of years. It is surrounded by terrestrial archaeology such as Borg in-Nadur, Tas-Silg, the Villa Marittima and numerous other finds. Yet, despite various projects searching for remains, these largely turned out fruitless. Roman, Byzantine and later pottery was found, one bronze cannon and two anchors belonging to British World War II warships. The archaeological potential of the seabed remains high in view that not all sediment deposits in the area have been dredged.

5 PLANNING, POLICIES AND LEGISLATION

5.1 International Policy Framework

The proposed development will have implications on the following Conventions:

- United Nations Convention on the Law of the Sea, 1982 (UNCLOS);
- London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1975 (London Dumping Convention);
- The 1996 Protocol to the London Dumping Convention;
- Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, 1976 (Barcelona Convention); and
- The OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic.

The proposed development will have implication on the following European Union Directives:

- The Habitats Directive 92/43/EEC;
- Directive 75/442/EEC - Waste Management (Permit and Control) Regulations, 2002; and
- Directive 2000/60/EC - Water Framework Directive;

5.2 Maltese Legislative and Regulatory Framework

- Development Planning Act, 1992;
- Environment Protection Act, 2001;

- Legal Notice 1 of 1994: Environment Protection (Preventive and Remedial Measures) Regulations;
- Legal Notice 337 of 2001: Waste Management (Permit and Control) Regulations; and
- Legal Notice 257 of 2003: Flora, Fauna and Natural Habitats Protection Regulations.
- Cultural Heritage Act, 2001;
- Territorial Waters and Contiguous Zone Act, 1971; and
- Malta Maritime Authority Act, 1991.

5.3 Local Planning Policy

- Structure Plan Policies applicable to this project fall within the following policy areas:
 - Waste: PUT 13;
 - Coastal Zone Management: CZM 2;
 - Tourism and Recreation: TOU 15;
 - Industry: IND 5;
- Waste Management Subject Plan;
- Coastal Strategy Topic Paper
- Leisure and Recreation Topic Paper; and
- Marsaxlokk Bay Local Plan (Policy MB12)

6 ASSESSMENT OF IMPACTS AND MITIGATION MEASURES

The following assessment of impacts and mitigation measures were identified in the EPS.

6.1 Impacts on Land and Sea Uses

Impact on surrounding sea uses are envisaged due to conflicting spatial demand and are described in section 6.8.1.

6.2 Impacts on Marine Ecology

The EPS predicted potential impacts during dredging, during reclamation works and during operation, described below.

6.2.1 Habitat loss

The EPS predicted the following potential impacts:

- Loss of habitats through dredging activity: Dredging will remove habitats within the dredging footprint. This will include an area containing sparse *Posidonia oceanica* beds and other protected species such as *Cymodocea nodosa* and *Pinna nobilis*. The impact is therefore deemed to be of major significance (see box below for explanation of applicability of Habitats Directive);
- Loss of habitats through reclamation works: The areas to be reclaimed at both Terminal One and Two consist of an already impacted seabed, which has already been dredged a number of times. The impact is therefore considered to be not significant; and
- Loss of infauna through dredging activity: The infauna recorded were typical of muddy bottoms. No protected species were noted. Hence, though impacts on the infauna that will be dredged with the sediment will be significant, impacts from dredging on the infauna communities in general will not be significant.

Article 6 of the Habitats Directive and its application in the proposal

P. oceanica meadows constitute a priority habitat under the Habitats Directive. The application of Article 6 of the Habitats Directive is allowed for sites which have already been submitted to the Commission, as stated in Article 4(5). Therefore, Article 6 does not strictly apply in this case. Yet Article 10 of the Treaty establishing the European Community states that *Member States shall take all appropriate measures, whether general or particular, to ensure fulfilment of the obligations arising out of this Treaty* and furthermore, *Member States shall abstain from any measure which could jeopardize the attainment of the objectives of this Treaty*.

In this respect the European Court of Justice has, on several occasions, stated that even in the absence of transposing measures or the implementation of specific obligations arising from the Directive, the national authorities, should take all possible measures in order to achieve the results aimed at by the Directive. Two cases in point are the Dragaggi case and Santona Marshes case.

The European Commission guidelines on managing Natura 2000 sites advise that Member states should ensure that sites that should, on the basis of the scientific criteria of the Directive, be on the National list should not be allowed to deteriorate. Therefore, although the national list of proposed marine SAC's has not been adopted, Malta is obliged to take all necessary protective measures. This fact is attenuated in view that in the South of Malta very few good representatives of *P. oceanica* occur and the site may merit protection. All efforts should be made at this stage to protect such meadows throughout the Maltese coastal waters.

Overriding Public Interest?

In the case of priority habitats, Article 6 (4) indicates that the realization of plans or projects likely to adversely affect such sites could be only be justified if the evoked imperative reasons of overriding public interest concern **human health** and **public safety** or **overriding beneficial consequences for the environment**, or if before granting approval to the plan or project, the Commission expresses an opinion on the initiative envisaged.

According to the EPS, the fact that the *P. oceanica* beds are sparse, and in some areas stressed, removing them will not affect any conservation objectives of the Bay. In addition, the EPS indicates that there is there is an imperative reason for overriding public interest. This is since, according to the EPS, the Freeport has a strategic importance to Malta's economy (economic importance may qualify as *other reasons which in the opinion of the EC are imperative reasons of over-riding public interest*). The EPS also argues that there are increased risks associated with navigation of larger vessels and therefore considerations should also be given to the needs of the Freeport operations and the safety to navigation and to third party users of the Bay. These relate to safety to navigation (and hence public safety).

Compensatory measures

Article 6(4) allows for compensatory measures when a project, despite its negative assessment, has to be carried out for imperative reasons of overriding public interest. Noting the need to ensure the non-deterioration of the *P. oceanica* meadows in the Bay, it is recommended that compensatory measures should be identified.

Derogations for protected species

The EPS indicates other protected species on site namely *Pinna nobilis* and *Lithophaga lithophaga*, protected under Annex IV of the Habitats Directive and Schedule V of LN 311/06. Therefore a derogation needs to be issued accordingly to the Commission should the project be accepted.

Derogation should be given when there are no satisfactory alternatives and when the favourable conservation status of the species is not adversely affected.

The EPS indicates that minimization of dredging in areas that contain *P. oceanica* should occur.

6.2.2 Damage or disturbance to habitats and species

The EPS predicted the following potential impacts:

- Disturbance to adjacent habitats as a result of settlement of sediment: During dredging of the inner regions, resuspension of sediment is not expected to impact the present habitats significantly. However, a slightly different situation pertains to the Eastern section of the

proposed dredging areas due to presence of *P. oceanica*. The impact is considered to be of minor to major significance;

- Disturbance to habitats and species through the presence of the dredging vessels: Dredging operations will increase maritime traffic giving rise to risks of marine contamination by petroleum products. These risks are considered insignificant;
- Changes in currents and sediment movement: Heavy traffic in the area and use of bow-thrusters during berthing and turning regularly disturbs the sediment. Impact from the proposed structures is masked by these activities and therefore is predicted to be insignificant;
- Availability of new habitat, food, shelter, etc: The new quay structure will provide a new habitat. However, the impact on the marine environment will not be significant;
- Attraction of new species and changes in ecological relationships: Changes due to the extension of quays and physical disturbance of sediment will not result in a significant impact; and
- Damage or disturbance to habitats and species from increased maritime traffic: the proposal will increase the quay space therefore allowing an increase turnaround time and handling of more and larger vessels. The impact is predicted to be not significant compared to the current situation.

The EPS indicates the following mitigation measures:

- Strict control over dredging and barge filling;
- Using of adequately sealed barges;
- Good operational practice and proper project management should be adhered to in order to minimize release of diesels/ lubricants; and
- Monitoring of dredging impacts.

6.2.3 Reduction in water quality and transparency from dredging

The EPS predicted deterioration in water quality and transparency due to increased suspended sediments from dredging. The impact varies according to the location in the Bay. In the area of Wied il-Buni, the impact will not be significant since the area is already regularly subject to increased turbidity. However, the impact on fish cages and in the area of il-Ponta il-Kbira is predicted of major impact.

The EPS indicates the following mitigation measures:

- Strict control over dredging and barge filling;
- Using of adequately sealed barges; and
- Relocation of fish farm cages.

6.2.4 Increased nutrient levels and pollutants in the water column

The EPS predicted an impact due to increased nutrient levels in the water column. This is due to resuspension of entrapped pollutants from sediments. However in view that the fate of heavy metals in sediments once these are remobilised is unclear, the impact is considered uncertain.

The EPS indicates that dredging should be avoided during the official bathing season. A water quality monitoring has been advised in the vicinity of bathing areas during and after dredging activity.

The Environment Protection Directorate (EPD) expressed concern on resuspension of phytoplankton cysts due to dredging and increased incidence of eutrophication. The EPS stated that the probability of this impact occurring depends on many factors. If it were to happen, this would increase phytoplankton levels causing blooms. The effect cannot be quantified in view of lack of data.

6.3 Impacts on Waves and Currents

6.3.1 Wave penetration

The scenario following implementation of the Scheme indicates that the highest wave penetration is reached by offshore wave directions between 140°N to 180°N. Little difference with the quay wall extension was shown by the model, explained by the fact that the vertical wall of the new north-eastern quay will be designed to absorb wave energy. Areas 2, 5 and 6 will be the most affected whereas the impact on area 9 is mostly zero.

A sensitivity analysis was carried out whereby the reflection coefficient for the new quay was remodelled from 0.6 to 0.9. Very little difference is observed in areas 1, 3, 7 and 9, whereas areas 2, 5 and 6 showed wave reductions. Conversely, areas 4 and 8 show an increase in wave height due the higher reflection coefficient. The impact of changing the reflection coefficient was predicted to be insignificant.

6.3.2 Downtime assessment

An assessment was carried out to determine the number of days during which the Freeport will not be operation (downtime) as a result of changes to the wave systems in the area of Terminal Two (Figure 7.7 of the EPS). The downtime for area 4 is 7.7 days with reflection coefficient of 0.6. However, if the vertical wall coefficient is increased to 0.9, the downtime for area 4 increases even further.

Wave overtopping was found to affect downtime and therefore, increasing the height of the existing spur was proposed as a mitigation measure. However, the new structures must incorporate wave absorbing features to minimise impacts on the entrance to the Oil Tanking facilities. The EPS recommended to construct the spur wall with wave absorbing properties and a wave reflection coefficient of 0.6.

6.3.3 Currents

The study indicated that the proposed quay wall extension will have no influence on the wind driven currents. The minimal current surface area North of Terminal 2 will decrease from 11,075m² to 8,975m² yet the remaining cross section area is considered sufficing to guarantee exchange of water between the inner and outer part of the Bay during all climatic conditions. In addition, as a result of dredging, the reduction in the minimal current surface area will less. The impact is considered to be insignificant.

6.4 Shipping, Navigation and Risk Studies

The study examined the safe distances and minimum turning circles of a 382m container vessel for the current Freeport layout through fast-time simulations. The report indicated that the available tug power is insufficient to handle a 382m container vessel. In addition, tugs were unable to connect in time and rudder angles were large.

Therefore, studies were carried out for 363m container vessels, so as to minimise the turning circles (indicated in Figure 1 of the Technical Appendix 5 to the EPS). Following dredging, sufficient space is available to manoeuvre a 363m container to all terminals, resulting in safe distances and minimum turning circles, as indicated in Table 12 of Technical Appendix 5 to the EPS. The report indicates that these manoeuvres should be carried out by experienced pilots and using three tugs with a bollard pull of 164tonnes. The study recommends simulations and training for tug boat pilots.

6.5 Impacts on Marine Archaeology

The EPS indicated that should archaeological features still be present in the undredged sediment, the proposed dredging could result either in retrieval of artefacts or destruction. On the other hand the reclamation works involve piling and backfilling in areas already extensively dredged and the

likelihood that archaeological artefacts or deposits are found in these areas is considered minimal. The following impacts were therefore predicted:

- Loss of undiscovered artefacts or deposits: Impact is uncertain and can range from insignificant to major depending on the type of artefact and its importance. The probability of occurrence is uncertain to remote; and
- Damage or disturbance to artefacts or deposits: Impact is uncertain and can range from insignificant (if no artefacts are found) to major, depending on the type of artefact found.

The EPS proposed that a sub bottom survey be carried out to determine the likelihood of deposits. Monitoring of works in potentially sensitive areas was also proposed.

6.6 Visual Impacts

As a result of the proposal, it is being anticipated that there will be changes in the visual amenity which were determined for four viewpoints (Figure 10.1 of the EPS) as outlined below:

- *Triq iz-Zejtun, Ghar Dalam*: Impact not significant since it affects a moderate/ large number of receptors of low/moderate sensitivity. The change is also not readily apparent;
- *Triq il-Qajjenza*: Impact not significant since it affects a modest number of low sensitive receptors. The change is not readily apparent;
- *Ix-Xatt ta' Bajja s-Sabiha*: Impact not significant since it affects a modest number of low /moderate sensitive receptors. The change in crane location is apparent;
- *Pretty Bay*: Impact of minor significance since it affects a number of low /moderate sensitive receptors. Scene is of moderate intrinsic value and change in crane location is apparent; and
- *Triq San Patrizju*: Impact of minor significance since it affects a modest number of low /moderate sensitive receptors. Scene is of moderate intrinsic value and change in crane location is apparent.

The overall impact is thus deemed minor and no mitigation measures were proposed.

6.7 Social Impacts

The impacts of the proposal on the sensitive receptors in the area were determined. Interviews and meetings were held with Birzebbugia Local Council, the Birzebbugia Sailing Club, fish farm operators and fishermen. Beach users, bathers and residents were also identified as sensitive receptors.

6.7.1 Conflicting Spatial Demand

The Freeport is surrounded by numerous land and sea uses. According to the EPS, the activities at Wied il-Buni are most likely to experience an impact. The potential impacts of the proposal include:

- Reduction in availability of water area at Wied il-Buni: The area is frequented by fishermen, sailors, pleasure craft owners, beach users and bathers and therefore their activities will be disrupted. The impact on fishermen is predicted to be minor since the impact would only occur during dredging. Similarly, few swimmers will be affected should dredging occur outside the official bathing season. Conversely, dredging activities may result in the Birzebbugia Sailing Club temporarily halting its activities and thus the impact is deemed minor to major;
- Removal/ relocation of mooring buoys used by pleasure craft owners near Terminal One: Some mooring buoys will likely be permanently removed as a result of the extension resulting in a minor adverse impact. Nonetheless, this can be considered a minor beneficial impact for boat users since this would reduce the need to approach Terminal One closely when tacking upwind;
- Increased turbidity due to dredging resulting in deterioration and even loss of fish at the fish farm: Fish farms can tolerate turbidity for few days before the health of fish deteriorates and therefore dredging would have an impact. However the duration of the impact cannot be determined. The impact is deemed major; and

- Risk of large vessels colliding with fish farm cages: This is not likely under normal operations and should it occur, it would likely negatively and irreversibly affect the farm. The impact would therefore be major yet the risk is minor.

The EPS indicated the following mitigation measures:

- Carrying out dredging in winter;
- Informing the public of proposed works and the expected duration;
- Relocation of mooring buoys; and
- Relocation of the fish farm either temporarily or permanently. Alternatively dredging would not be carried out for more than two days at a time.

6.7.2 Noise

The identified noise sensitive receptors (Figure 11.1 of the EPS) in the vicinity of the extension of the quay and the possible site for the soft stone crusher include residents to the west of the Terminal One quay, residents in the vicinity of the End of Cold War Memorial, a hamlet to the south east of the Freeport (*Ta' Giligejla*) and a farmhouse next to the private road that serves the Freeport.

The following impacts were identified in the EPS:

- Noise from the quays during operation: The extension of the Freeport as proposed would not materially affect the noise climate of the nearby residents. This is since the encroachment of Freeport activities is small and therefore insufficient to cause a measurable change; and
- Noise from the crusher: The impact was considered to be of minor significance at the nearby farmhouse and not significant at the rest of the noise sensitive receptors.

The EPS indicates that best practice method should be used to mitigate impacts.

6.7.3 Dust

According to the EPS, there are no sensitive receptors within 100m of the proposed crusher. Yet the previously mentioned farmhouse next to the private road that serves the Freeport lies just beyond the 100m line (Figure 11.2 of the EPS). The impact of dust on this receptor was deemed not significant since the majority of dust emissions typically settle within 100m of their source, whereas 10% remain in the air at 400m from source.

The EPS indicates that best practice method should be used to mitigate impacts such as dust screens.

6.7.4 Water Quality

The following impacts were identified in the EPS:

- Increased bacteriological contamination: The project is not expected to increase the bacteriological contamination of water and thus the impact on public health is not significant;
- Increased turbidity due to reclamation: The existing Freeport activities result in chronic turbidity in the area due to propeller wash when vessels enter or leave the port. Therefore, berthing at Terminal One (a worst case situation) is not likely to impact the area significantly.
- Increased turbidity during dredging: Dredging of the fairway and turning circles using cutter suction equipment will result in prolonged localised turbidity. Dredging is however scheduled outside the bathing season and the impact is not significant; and
- Suspension of heavy metals: The situation is unclear due to uncertainty regarding the fate of heavy metals once sediments are remobilised. The impact is therefore predicted to be uncertain. A water quality monitoring has been advised in the vicinity of bathing areas during and after dredging activity.

6.7.5 Changes in Sand Distribution

The key issue is whether dredging activity at Terminal One and the environs will change the underwater profile in such a way as to result in significant loss of sand from Pretty Bay. Dredging will result in removal of material and will likely result in changes in sand distribution of Wied il-Buni but given the distance from Pretty Bay, there is sufficient distance for the sediment to rest at an angle of repose similar to that present. Although the impact on sand deposits at Pretty Bay is not likely to be significant, the impact is judged uncertain due to lack of data. Monitoring of the sea bed is thus required during and after dredging.

7 WASTE MANAGEMENT

The EPS identified waste arising from the dredged material, rejected backfill material from third parties and processing/ construction waste. Sediment analysis was carried out in order to identify whether the sediment in the area to be dredged is contaminated (Section 4.5).

Dredged material is included in Annex I of the London Dumping Convention and may thus be considered for dumping. The EPS states that the material is expected to be uncontaminated or at worst have only minor levels of contaminants. In fact, contaminant levels recorded conformed to reference values for clean marine sediments established by the Swedish Environment Protection Agency and to the values established by the OSPAR Commission. However levels of Copper and Zinc did not conform to background levels proposed by Axiak (1999, 2000). The following disposal routes for the dredged material were therefore proposed in the EPS:

Waste Description	Quantity	Disposal
Dredging spoil- contaminated	Unknown	Transferred to land and transferred to Hazardous Waste Landfill Cell.
Dredging spoil- rock and sand for reclamation	Unknown	Reused as backfill for reclamation works (depends on amount of fine particulates)
Dredging spoil- sand silt or mud not suitable for reclamation	Unknown	Transferred to a barge for disposal at a licensed offshore disposal site

The following additional waste streams have also been identified:

Waste Description	Quantity	Disposal
Rejected backfill material from third parties	Unknown	Stockpiled and disposed of.
Concrete and construction debris	Unknown	If suitable material will be retained, otherwise carted off for disposal
Construction waste not suitable for reclamation	Unknown	Stockpiled and transported to appropriate disposal facility
Hazardous wastes (oils)	< 100L	Collected in drums in bunded area and carried off by licensed contractor
Others (wood, plastic, metals)	Small quantities	Stockpiled and disposed of.

It is recommended by the EPD that inert geological material only is accepted on site for use in reclamation and not demolition waste.

8 MONITORING PLANS

The EPS proposed the following monitoring:

- Sediment movement/ accumulation, scour during and after dredging; and
- Water quality at bathing sites during dredging activities and for a period following the completion of dredging.

9 RESIDUAL IMPACTS

It is anticipated that the following residual impacts will result from the proposal:

- Disruption of activities at Wied il-Buni;
- Change in wave climate;
- Loss of habitats through dredging;
- Resuspension of pollutants from sea bed;
- Removal of mooring buoys;
- Disturbance to adjacent habitats from sediment resettlement;
- Increased turbidity affecting fish farm operations (unless relocated);
- Risk of collision of large vessels with fish farm cages;
- Increased heavy metals; and
- Loss of sand at Pretty Bay.

10 COMMENTS MADE BY THE PUBLIC

The public was invited to submit comments on the EPS in the period after the certification, between 14th May and 1st June, 2007 during which period the EPS was available for consultation at the Birzebbugia and Marsaxlokk Local Council and MEPA. No comments were received from the public.

11 CONCLUSIONS

The EPS has predicted a number of potential impacts on the environment as a result of the proposed development. The mitigation measures proposed in the EPS are aimed at minimizing the predicted impacts of the proposal.
