

Enemalta Corporation



Marsa Power Station, Church Wharf, Marsa

Decommissioning and Demolition Study



Enemalta



1. **Introduction**

Marsa Power Station (MPS) is a power station in Malta that will be due for cessation of generation over the next few years (dependent on securing alternative power supplies). To assist Enemalta Corporation (Enemalta) in their planning and decision making, they have identified a requirement for a decommissioning and demolition study (Study) for MPS.

As part of a contract to provide a Full Decommissioning Plan for MPS and an Outline Decommissioning Study for Delimara Power Station (DPS), Enemalta has appointed RVA to perform the Study and to produce this Report.

Both Enemalta and RVA place EHS excellence as prime business drivers and this philosophy has been taken as the base criteria for the compilation of this document.

2. **Scope of work**

The defined areas for consideration for the Study (as specified by Enemalta) are:

- Detailed specifications for the safety management programme during decommissioning, in accordance with industry practice safety standards and Maltese legislation.
- Evaluation of de-planting options, ranging from dismantling of equipment for scrap to transferring units to new plant locations where turbines, switchgear and transformers are still operationally functional.
- Details on an assessment of the availability necessary for any special services, engineering and contracting out works required for decontamination and dismantling operations.
- Assessment and description of human resource requirements for the decommissioning programme, including qualifications, experience requirements, responsibilities, management structure of staff responsible for the decommissioning, training requirements of staff as necessary.
- Preparation of plant site dismantling programme which should include but not limited to:
 - *Removal and transfer as necessary of fuel stock and other materials in stores*
 - *Waste oils removal from oil slug tank farm and turbine lubricating oils*



- *Neutralisation and safe removal of acid plant*
- *Removal and safe disposal of any remaining asbestos in the plants at MPS*
- *Dismantling of all mechanical plant and equipment*
- *Dismantling of all electrical plant and equipment*
- *Dismantling and removal of all structural steelwork*
- *Deviations of 33kV cables, with special attention on the remaining oil filled cables*
- Preparation of site demolition works requirements programme including the chimneys. This programme shall indicate the best practice techniques to be followed during implementation.
- Preparation and description of procedures for implementation of civil works associated with reinstatement of site, including culvert filling and removal of buried structures, foundations, rain water and oily water drains, seawater supply pipework and other works, as necessary to reinstate the site ready for subsequent use.
- Preparation and description of procedures for reporting during and at the end of the decommissioning works.
- A description of the quality assurance programme which has to be followed.
- Details on other applicable important technical and administrative considerations, such as safeguards, physical security arrangements and details on procedures for emergency preparedness.
- Timeframes for the reinstatement of the site, ready for subsequent use.
- Details about estimated cost of decommissioning, including waste management.

3. Terms of reference

Marsa Power Station (MPS) is located at the inner end of the Grand Harbour, on the eastern coast of Malta. The site is located on two levels, the lower level has an elevation of approximately 2m above sea level and the upper level has an elevation of between 26m and 37m.



The original MPS ('A' Station) was constructed underground. A report by General Sir Charles Bonham Carter, Governor of Malta (1936-1940), dated 27th October 1936, recommended the construction of a power station at Church Wharf, Marsa, which was then the site of the Admiralty Coal Stores. The station was installed underground to offer *"a high degree of protection from hostile attack"*.

At the time of writing of the 1936 report, a level space had already been formed by removing rock (to the south of the Jesuit Hill, Marsa) to a distance of approximately 60m inland. The report also recommended that this level space in front of the rock would be utilised for offices, workshops, coal yard, etc. The power station, which was installed in the galleries excavated in the base of Jesuits Hill, was inaugurated on 5th December 1953. This power station, which is better known as 'Underground Station' had an overall capacity of 15 MW. Due to the increase in electricity demand, this station was expanded further to a final total capacity of 30 MW. The plant was made up of 5 steam units and associated generators rated at 5 MW each and a gas turbine of a similar rating. The station was finally de-commissioned in 1993.

Due to lack of space in the underground tunnel, which housed this first station at Marsa, it was decided that a new power station would be erected next to it. The new power station ('B' Station), which is the subject of this Report, was inaugurated in 1966 with the first two units being commissioned. There was further expansion of the station (between the 1960s and 1990s) to meet the electrical demand and currently MPS is made up of the following units.

Units	Commissioned
2 x 90 ton/hr steam raising boilers*	1966
2 x 10MW steam turbines and generators	1966
2 x 120 ton/hr steam raising boilers	1970
2 x 30MW steam turbines and generators	1970
1 x 130 ton/hr steam raising boiler	1982
1 x 30MW steam turbine and generator**	1982
1 x 130 ton/hr steam raising boiler	1984
1 x 30MW steam turbines and generator**()	1984



Units	Commissioned
1 x 300 ton/hr steam raising boiler	1985
1 x 30MW steam turbine and generator**()	1985
1 x 60MW steam turbine and generator***()	1987
1 x 300 ton/hr steam raising boiler	1987
1 x 37MW open cycle gas turbine and generator	1990

* The steam generators were decommissioned in 1994 and 1999 respectively.

** The steam turbines are refurbished plants, which were first commissioned in 1952 at Palermo in Sicily.

*** The steam turbine is a refurbished plant, which was first commissioned in 1954 at Little Barford in the UK. In 1996, this unit was refurbished again to extend its lifetime for a further 15 years.

() These units were run on coal between their respective commissioning date and 1995 when coal firing was stopped.

The site comprises operational plant in the centre of the site and a workshop, administration buildings and a medical centre in the west of site. Bulk storage tanks are located on a higher level on top of Jesuits Hill on the northern part of the site. The tunnels of the underground station remain under Jesuits Hill, the majority of which are now empty.

Total generation capacity of this station stands now at 267 MW. All the steam units presently burn 1% and 0.7% sulphur heavy fuel oil and the gas turbine burns distillate fuel oil (diesel). The plant consists of six steam plants, comprising heavy fuel oil fired boilers and conventional steam turbines and one open cycle diesel fired gas turbine

The surrounding land uses to the MPS site are listed in the table below:

Direction	Description	Company Name	Distance
To the north	Roads	N/A	Immediately north
	Mill	Marsa Flour Mills	Immediately north
	Haulage	White Bros Ltd	40m north west
To the south	Grand Harbour	N/A	Immediately south
To the east	Grand Harbour	N/A	Immediately east
	Mixed use small workshops	Various	Immediately south east



Direction	Description	Company Name	Distance
To the west	Mixed use of small business units, offices, storage and residential.	N/A	Immediately west.
	Petrol filling station	Enemalta Corporation	Immediately west.

For the purpose of this report the following definitions are valid:

Decommissioning

This is the stage of the works which encompasses the preparation of MPS for demolition. The boundary limits of decommissioning are from the date the site ceases power generation, to the date that the site is ready to be handed to the dismantling contractor. Decommissioning is a generic term which means the preparation of plant, equipment and structures by taking them from an 'unknown state' in terms of risk and hazards, to a 'known state' ready for dismantling. As part of this work there will be a need for decontamination and isolations.

Decontamination

This is a sub stage of decommissioning and can be defined as 'the removal of bulk hazards (i.e. process material) and cleaning of process plant, equipment and structures'.

Isolations

Although performed under the decommissioning stage, isolations are a standalone activity and cover the removal, isolation, or re-routing of services. This can include electrical, telecommunications, site services (water, drainage, air, etc). Isolations of process services are covered under decommissioning.

Demolition and Dismantling

This is the stage of the actual removal of the plant, equipment and structures and describes the general work performed by the contractor, as all the assets at MPS are removed. For the purpose of this report the two words are inter-changeable.



4. **Decommissioning**

The aim of a decommissioning (and an isolation strategy) is to render plant and equipment into a 'known condition' ready for dismantling. The work performed to achieve this needs to be fully documented, utilising appropriate site documentation procedures and summarised in a series of handover documents, which detail the work carried out and any remaining risks and hazards. Plant, equipment and pipework will need to be marked on site for ease of identification and readily traced back to the decommissioning paperwork through the handover documentation.

Decommissioning strategy

The aim of decommissioning is to take all the plant from an operational state to a 'known condition', where all related hazards and risks have been identified and, as far as reasonably practicable, reduced with respect to process materials (including process pipework).

The assets/systems/plant covered in this Report are either still operational or out of service, however, the same outline principles should be applied across them all.

Decommissioning should be viewed as being in three stages. The first stage is to minimise and/or the removal of bulk materials. This will be achieved by implementing existing routine shutdown, rundown and decontamination procedures, working to existing safe systems of work and hardware.

The second stage is to clean all the systems, again utilising existing routine shutdown, rundown and decontamination procedures, working to existing safe systems of work and hardware. Such procedures include the in situ decontamination of pipework and equipment, by techniques including flushing, purging and blowing down where practicable.

At the end of stage two, an assessment of each plant item and system should be done to identify if further decommissioning is required. Internal inspections should be done (if possible). At this time, it may be decided that, for reasons of safety and economy, it would be better to leave some equipment which requires further work in situ, for the dismantling contractor to decontaminate, as this would increase possible options, therefore, reducing the need for hazardous entry into vessels during the decommissioning.



This phase may require minor modifications to equipment, e.g. new dip legs, flange breaks, etc, and additional removal equipment or neutralisation techniques.

All other plant and systems will be dealt with in stage three. This stage includes work on the identified plant items and systems that require further decommissioning – utilising non-routine procedures.

This can include draining down of pipeline dead legs and low points, pumping out into drums, IBCs or tankers and removal by specialist contractors (e.g. refrigerant) as well as non-routine cleaning of plant, equipment and pipework, by application of solvents, neutralising solutions, heat, steam, high pressure water, nitrogen purging, etc.

This phase may also require minor modifications to equipment, e.g. new dip legs, flange breaks etc, and additional removal equipment or neutralisation techniques.

This stage will also allow for intrusive inspections, to determine the internal condition of process equipment after all cleaning has been carried out (appropriate testing and permitry will be used where required) to complete the handover documentation. Dependent on residual product properties, all equipment should be left open and venting.

After the decommissioning work, the plant and equipment should be generally free of bulk residual products, with only traces remaining (see below for exceptions).

In practice, all the plant and equipment should be decommissioned through all three stages and left until dismantling is due. However, it can be possible to leave some of the stage 3 works to be included during demolition, as long as the extent of the remaining hazard is fully documented.

At MPS it is envisaged that the majority of all decommissioning work can be achieved in stages 1 and 2, utilising existing Enemalta procedures and personnel. The main areas that would require specialist work, or to be left for the dismantling contractor, are the acid tanks and fuel oil tanks. These would have heels of product left in them, which would require non standard procedures and high risk operations to remove and hence would be better left for a specialist contractor, or the dismantling contractor who can apply safer procedures.



Isolation strategy

The aim of isolations is to take the demolition areas from an operational state to a condition where all related hazards and risks have been identified and, as far as reasonably practicable, reduced with respect to electrical, piped services and potential stored energy systems.

The principle of boundary site isolations should be adopted if practical and the site left in a 'cold and dark' state. This principle would alleviate the requirement to perform isolations of each individual item (which is currently done for maintenance). 'Red Ringing' of an area allows the isolations of all services at the ring boundary, effectively isolating the whole area without the need for multiple disconnections as described above.

Due to its location within the Maltese electrical distribution network, the demolition of MPS will need to be done around live, high voltage cabling, which will remain on the site. These will need to be protected during the works and it is important that a dismantling contractor is aware of them (and their locations). The dismantling contract will need to be carefully structured, to ensure the dismantling contractor is aware of their obligations regarding protection of these services and any restrictions that maybe imposed on methodologies.

The isolation strategy should be formulated with the decommissioning and demolition in mind, especially when it comes to the Maltese electrical distribution network, as any re-routing or new cables/connections should be done so as not to impede dismantling (if possible).

Documentation

There is a requirement to provide the dismantling contractor or end user with handover documentation for individual areas of the site, which detail the plant and equipment in a 'known and verified condition', so that they can perform their works safely. The documentation should be suitable for a dismantling contractor to perform their works safe and in an environmentally friendly manner.

The make-up of the documentation can be in any form, either bespoke forms and templates, current Enemalta forms, or an adapted current system. Either way, the following is a description of a typical bespoke system and the principles need to be incorporated into the final system.



The documentation hierarchy to record and monitor the works should form a top down traceable line. At the bottom of the hierarchy should be individual plant and equipment record sheets, which should detail in statement fashion the work that has been carried out and when. This would be the base document to detail the exact work performed during decommissioning and it would be supported by marked up Pipeline & Instrumentation Drawings. Above this documentation should be an Equipment Condition Certificate that summaries the work and the condition of the equipment, which would be validated and signed by the Operations Manager (on completion of site colour code marking). Sections of systems/plant should also be given a signed Infrastructure Certificate, which then summaries the condition of an area of plant. Above all of these documents and certificates an Area of plant (see Area drawing in Appendix A) would have a handover report which summaries would include the following:

- Description of the plant and equipment
- Process flow summary
- Process material information
- Services (live and isolated)
- Decontamination and decommissioning strategy/steps
- Site colour coding guide
- Remaining hazards (construction and substances)
- Summary of Asbestos information
- Isolations overview
- Photographs
- MSDS

The basic requirement for the handover documentation is that any competent person interrogating them can locate and understand all relevant information about sections of plant or individual items, so as to develop safe systems to manage any further work.



5. Demolition

When looking at demolition or even de-planting, the objective is to identify if any equipment/plant can be re-used, whether in its current location or elsewhere. The benefits to this are potentially increased revenue over just the scrap value and a reduction in waste. However, this is only applicable if the plant and equipment are desirable to a third party.

In the case of MPS, all the plant and equipment are of a vintage that means it is not desirable for re-use elsewhere or, if there is interest, the financial gain would be less than the value for scrap. The only items of equipment that could be of interest for re-use or for sale, are the new switchgear in Area 4 and the gas turbine in Area 7.

Therefore, all plant and equipment should be consigned as scrap, except for the switchgear and gas turbine, where investigations should be implemented to see if they could be re-used or sold.

5.1 Methodologies

Due to the varied construction of plant and structures, generally to be found on sites where decommissioning, dismantling operations are to be undertaken, a wide range of dismantling techniques have evolved that can be utilised when performing such works.

These techniques have been developed over many years, to ensure all operations can be performed safely and efficiently within all environments. This has resulted in the dismantling contractor having a wide range of options, when considering the best methods for his work.

At MPS, the plant and structures to be dismantled range in construction, from free standing process vessels/tanks/etc, to open and closed steel framed process plant/buildings, cement asbestos and galbestos clad industrial buildings, traditional concrete/brick built modular buildings and specialist structures. This mix of structures will result in a wide range of dismantling techniques being used throughout the course of the project.



Typical examples of such techniques are:

- Remote hydraulic machine shearing/pulverising
- Secondary machine processing
- Workface hot cutting
- Secondary hot cutting processing
- Workface cold cutting
- Controlled collapse
- Lifting/removal
- Manual removal of asbestos

Dismantling is a high hazard, high risk operation and, to ensure that all works are carried out safely, full and comprehensive risk assessments are required. This has, wherever possible, led to the development of techniques which remove/minimise the dismantling operatives' exposure to risk at the workface; where possible, dismantling activities are performed remotely. Dismantling works are, therefore, principally carried out by large hydraulic attachments (shears, pulverisers) mounted on 360° excavators.

There are instances where the total removal of dismantling operatives from the workface is not achievable, due to the limitations of the standard dismantling methods, contractor's plant, access or other constraints. In situations such as these, the method of hot working (bottled gas, plasma arc) is used. Any hot working on a dismantling site is subject to stringent and rigorous controls, due to the level of hazards and risk associated with this type of operation.

Generally, any vessel or structure which will be processed by hot working, will be prepared utilising cold techniques and then additional hot work permitry/management systems introduced, to ensure there are no resultant adverse safety implications.

At MPS, there will be areas where hot cutting will not be used, due to process residue or proximity to live services. In these cases, cold cutting techniques will be utilised.



All dismantling operations are strictly controlled, to ensure a predictable, safe outcome. Each operation will be covered by detailed risk assessments and method statements, lifting studies (where appropriate), calculations, drawings and sequencing, etc.

Asbestos and galbestos sheeting will be removed by hand, in a controlled fashion, while asbestos insulation will be removed in enclosures with negative air pressure. All relevant asbestos regulations and working practices will be implemented.

It is anticipated that, due to the proximity of the live main electrical distribution network, the use of controlled collapse (whether by the use of explosives or not) will be kept to a minimum. As such, the cost provided in section 11 assumes that all four chimneys/stacks and all the boilers are dismantled insitu.

5.2 Phasing

All the power generating equipment at MPS is currently used, or is held as secondary supplies. However, there are two capital projects in progress, which could reduce the requirement for power output at MPS. The first of these is a new power plant at DPS, which is due for commissioning in 2012 and will have a capacity of 144MW. The second is an interconnecting power line to the European main land (via Sicily). This will have a capacity of 200MW. With the commissioning of each of these projects, there is the possibility of a reduced requirement from MPS.

An analysis of what the reduced capacity would be after the commissioning of each project has currently not been performed, hence an option study as to which items of plant can be decommissioned cannot proceed. However, this report assumes that there will be options to decommissioning sections of plants, after each commissioning of the capital projects.

As such, from the Study investigations, MPS has been divided into 10 geographical areas which are based around process/generating systems (see Appendix A). This report has presented the costings and programme based around these areas, in an attempt to provide information for possible phased decommissioning and demolition.



It must be noted, as it is unknown at present what phased decommissioning and demolition will be done, if any, the costings and programme are based on the whole station being decommissioned and demolished in one contract. However, the individual information per area can be used as a base indication. In reality the cost and programme per individual area would be higher, as the decommissioning, isolations and demolition would be performed in the middle of a live site.

Further investigations around options would be required, once an assessment on the reduced capacity required from MPS is established.

6. Slabs and foundations

Standard industry practice is to leave all slabs and foundations in place after demolition, unless a defined future use requires them to be removed. This means that expensive removal of below ground structures can be avoided when it may be completely unnecessary for future requirements. When a future use is identified and if it requires the remove of some or all of the foundations or slabs, it is standard practice that the cost for removal is covered in the new construction/remediation.

There are exceptions to this and the one which is most relevant at MPS is the conditions of the IPPC license – this covers the requirements for dealing with contaminated land. The report by ENVIRON which is contained in the Full Decommissioning Plan states that:

“The investigation findings have indicated that there is no significant contamination of the land resulting from present activities. However, due to the nature of the natural geology any potential contamination is likely to be confined to its source (sumps pits and culvert channels). Oil staining and minor spills have been noted on the hardstanding and around plant. Therefore, there is potential for contamination to exist immediately adjacent to the source.

It is recommended that soil monitoring/validation is undertaken during the removal of any structures at or below ground level. The investigation should be used to determine whether soil contamination has taken place during the operation of the permitted activity in the intervening period.”

It is therefore recommended that the below ground structures associated with pollution containment be removed along with sumps, pits, culverts, etc, to expose any possible contamination. All other slabs and foundations should remain.



The costings and programme included in this Report assume that the ground slabs are removed, as well as the top 0.5m of the foundations. This is to identify to Enemalta the extent of the costs for the removal of foundations and slabs, however, RVA recommend that the extent of below ground structure removal is limited to that defined in the previous paragraph.

7. Civil works

As part of the demolition of MPS, there are some civil works that will be required. The cooling water network extracts water from the Grand Harbour to the east of the site (via an inlet structure) and deposits it back into the harbour to the south (via three separate outfalls). The cooling water tunnels/culverts are constructed in the rock strata under the station and as such are inherently stable. Due to the depth of the tunnels, their stability and unknown future use of the site, it is not recommended that the tunnels be filled. As long as the tunnels are documented, any future developments can be designed/constructed around them. In addition, the introduction of concrete to fill the tunnels is not considered environmentally good practice.

To prevent scour and erosion of the tunnel walls, it is recommended that the tunnels be sealed. The intake structure and outfalls have the capability to be sealed temporarily by the installation of gates. These will be installed and the whole of the system pumped dry of water. Access can be gained to the rear of the gates by local access shafts. Personnel will enter the tunnel and install shuttering 2m inward from the gates and also install 600mm long dowels into the side of the tunnels. The cavity formed will be filled with concrete and allowed to set, which will effectively seal the cooling water system from the harbour.

The intake structure is attached to the dockside and protrudes out into the harbour. If required, this can be demolished after the sealing of the cooling water system. NOTE: the costings and programme in this Report assume that it is demolished. The structure will be demolished by using a long reach excavator located on the dock edge. Pieces of the structure will be allowed to fall into the harbour and they will be recovered using the long reach excavator. There will need to be a dive support team for emergency rescues and to support the debris recovery from the harbour floor.



8. Project management

To enable a successful decommissioning/demolition project, it is essential that it is managed correctly. The achievement of Environmental Health and Safety (EHS) excellence is paramount.

8.1 Environmental health and safety

During any project, in order that the focus may be on EHS control, all financial and technical aspects should be well defined and specified before mobilisation. This can only be achieved by compiling a detailed and competently constructed specification and other contract documents.

It is also important that the tendering and bid clarification stages of the contract award have the appropriate resources and expertise assigned to them.

Health and safety planning starts with the production of the tender documents. All relevant information has to be collated and made available. This EHS information is presented in a separate document (which is a requirement under the UK CDM Regulations, but is good practice to produce regardless), called the Pre-Construction Information (PCI). This document not only identifies all the EHS issues associated with the project, but also details the requirements on how EHS will be controlled and defines the systems and procedure requirements that the contractor must implement. This document is developed into the Construction Phase Health and Safety Plan and then updated throughout the project by the successful contractor.

During the bid clarification stage, proposed methodologies, sequencing, legislation compliance and experience should be fully investigated, to ensure that the works are planned correctly.

Prior to the tendering stage, a detailed assessment as to the suitability of the contractors who will be asked to tender is required. This is to ensure they meet minimum EHS requirements, in terms of their performance, their systems and procedures for controlling EHS.

Additionally, arrangements for compliance with all applicable Maltese Regulations, particularly the equivalent to UK CDM Regulations, shall be developed and implemented, including the provision of all duty holder roles.



During the execution of the works, the Safe Systems of Work and EHS documentation will need to be assessed and approved, by competent personnel, and continual safety auditing will be essential to achieve a successful outcome. All work will be planned and implemented utilising detailed risk assessments and method statements – all of which will be approved by Enemalta or their representatives. The materials brought to site will be COSHH (UK Control of Substances Hazards to Health Regulations) assessed, or similarly assessed using Maltese Regulations.

The main items through the different stages of the project, which ensure that EHS standards are defined, controlled and monitored are:

Planning Stage

- Regular planning meetings
- Specification
- Tender documents
- Pre-qualification of contractors
- Pre-demolition surveys and reports
- Bid analysis and comparison
- Bid clarification meetings

Decommissioning Stage

- Regular Steering Group meetings
- Defined decommissioning and isolation strategies
- Continual technical and safety auditing
- Handover documentation

Demolition Stage

- Regular progress meetings
- Safety reporting
- Assessment and approval of safety documents (risk assessments, method statements, etc.)
- Continual technical and safety auditing



8.2 Quality

For all the stages of the project there are two choices for the quality assurance system. The existing Enemalta systems and procedures can be adopted, with alterations if required, or the systems and procedures of a specialist project management resource can be utilised, as these will normally have been designed for this type of work.

The actual system to be used will be developed and implemented during the initial planning stage, in conjunction with a specialist engineering resource, to ensure that it is applicable for the intended works. Regardless, the system should be designed around the principles of meetings (planning, reporting, and recording), reviewing (design, safety documents, and progress), and auditing (site works and progress) as these three activities are the ones which will mostly define and control EHS.

The Contractor will utilise their own systems and these need to be suitable for the work that is to be performed. To ensure this, all tenders will need to have had their systems assessed and this will form part of the pre-qualification process (see section 10).

8.3 Reporting

The main tool for reporting throughout the works will be via the minutes of the various meetings. Typical meeting agendas for the different types of meetings are:

Steering Group/Planning Meeting

- Environmental, health, safety and security/regulatory authorities
- Project/business drivers review
- Project team personnel
- Isolation/decommissioning update/handover documentation
- Site specific drawings/documentation
- Survey requirements/asbestos survey update
- Pre-qualification/procurement of demolition contractor
- Compilation of tender documents/scope definition
- Project programme review
- Press release and Q&A update



- Equipment/asset recovery update
- Site exit infrastructure: drains, water, electrical distribution
- Environmental consultant's update

Progress Meeting

- Health, safety and environmental
 - Inductions (to date and anticipated in next two weeks)
 - Accidents/injuries
 - Man hours
 - Learning events
 - Environmental issues
 - Asbestos notification
 - MEPA/council/regulatory visits/contacts
 - Audits
 - Toolbox talks
 - Security
 - Community relations
 - Boreholes and extraction well
 - Scrap laydown and storage areas
 - Asbestos monitoring results
- Site establishment
 - Current and anticipated within next two weeks
 - Labour
 - Accommodation/welfare
 - Plant/equipment
 - Optimum resources
 - Key personnel holidays
 - Training
- Progress against programme
 - Progress
 - Four week look ahead
 - Method statements/under review/four week look ahead
 - Key dates e.g. asbestos license expiry
 - Notifications
 - Area handovers



- Area hand back
 - Site finishes
 - Critical resource
- Commercial
 - Contract
 - Valuations
 - Variations/instructions
 - Emergent work
 - Gainshare
 - Payment of invoices
 - Insurance policy expiry
 - Expiry date of bank guarantee
 - Nomination of sub-contractors
- Information required by contractor
- Information required by Enemalta

The contractor will be required to provide a written report for each progress meeting and a final report at completion of the works, which would encompass the information required for the Health and Safety file/close out file.

8.4 Resources

There are several options to ensure the project management team contains the correct staffing levels and experience; this is usually driven by the resources within the client's organisation. The emphasis during all decommissioning and demolition works, in regard to project management, is on suitably experienced and competent personnel. It is essential such personnel are sourced either from Enemalta or from a third party specialist. In addition, the retention of existing Enemalta personnel with site knowledge is a valuable asset and should be encouraged, where possible.

For MPS there should be an initial planning team of:

- Project Manager
- Specialist project management support
- EHS representative
- Operations representative
- Engineering/maintenance representative
- Commercial representative



Each should be supported by their departments, when and if required.

This team would be the core team, right through to the start of the demolition stage. Additional personnel would join the team when and if required. There will also be Enemalta operatives and possibly contractors, which will need to work directly with the team to implement the decontamination, isolations and decommissioning. The skills that will be required for the duration of the decommissioning are: fitters, scaffolders, electricians and permitry/operations, all of which should be sourced (if possible) from within the existing MPS staff, due to their knowledge of the site. Other specialist skills – usually associated with decontamination – can be sourced from the supply chain if required. For MPS, a team of around 15 to 20 skilled Enemalta workers would be required for the decommissioning.

The demolition team would include as a minimum:

- Project Manager
- Specialist project management support
- EHS representative
- Operations/engineering representatives
- Commercial representative

There will not be any requirement for additional training for the Enemalta personnel, depending if there is sufficient specialist project management resource input. This resource would act in the 'competent person' role, directing and guiding the Enemalta personnel.

9. Programme

A programme for the decommissioning and demolition of MPS is included in Appendix B. This programme covers decommissioning, isolations (excluding any work required for the main Maltese electrical distribution network), specifying, tendering, surveys, demolition, remediation, etc.

As stated earlier, this programme assumes the whole of MPS is decommissioned and demolished in one contract. However, the various programme items would be similar for each phase (if MPS is dismantled in stages).

The programme does not detail any further optioneering stages that would be required at MPS.



10. Specialist project management/consultants and contractors

As the majority of the decommissioning and isolation work will be performed by Enemalta, utilising their existing systems and procedures, there will most likely be only a small requirement for specialist contractors to assist. Even if contractors are required, it will be for works (or similar work) already performed on the site, therefore, a supply chain will already exist. In the unlikely event that specialist contractors are required from abroad, then these are readily available. However, they will come with a large premium due to the location of Malta, based against the generally small size of contracts during decommissioning work.

Any specialist contractors required for decontamination during the demolition stage will be supplied by the dismantling contractor, as part of their contract. It will be for the contractor to source these specialists, either from Malta or abroad.

The dismantling contractor will be from abroad, as there is no suitable resource for the type and size of work on Malta. There are several known, large, suitably experienced and professional international dismantling contractors capable of performing these works and would be willing to travel to Malta for the works. The general rule is if awarded the job the contractor will bring to Malta the specialist machinery required and a management team, from the site manager down to the working foremen/supervisors. The contractor would look to source the remainder of the equipment and personnel from Malta.

For all contractors, it is important the correct ones are selected and they are suitable, experienced and competent. Therefore, they will all need to be assessed prior to being allowed to tender for any works – this is pre-qualification. Some of the local contractors for decommissioning and isolations will already be approved Enemalta contractors, but even these will need to be assessed for suitability, as the type and extent of work will be greater and more varied than any before. The extent of the pre-qualification depends on the size, nature and complexity of the work to be tendered, but a typical pre-qualification needs to analyse the following categories:

- Company details (size, CV's, structure, resources, etc.)
- Use of sub-contractors
- Experience of similar works – case studies
- Copies of EHS policies/statements
- Safety department and structure



- Procedures for identifying and reviewing risks
- EHS training
- Safety monitoring
- Prosecutions, enforcements, improvement and prohibition notices
- Company health and safety figures (near misses, injuries, frequency rates, etc.)
- Company financial health check

The key to the successful demolition of MPS is the competency of the Enemalta project management team. Enemalta does not retain this level of knowledge, experience or competency within its organisation. Therefore, there is a requirement to provide this specialist project management resource. There are several companies that can offer this service, however, some are more experienced than others. Many of the large, multi-national construction founded facility management consultants, will offer services within this area, but it is not a specialty of their services. An assessment of the available consultants would need to be performed, based on experience of the dismantling industry and the overall services that can be provided, then a suitable specialist project management resource should be appointed. This resource should be in place for the initial planning of the works. The extent of their input for all stages should be discussed and agreed upon, prior to their appointment.



Appendix A – MPS area plan





