----ENEMALTA DPS IPPC APPLICATION - FORM C----

Consolidated Application Form

0466 – Enemalta DPS IPPC Application

Enemalta plc.
Ing. Fredrick Azzopardi,
Central Administration Offices,
Church Wharf,
Marsa.

Date of Version Issue	*11/10/16*
Report Version number	*Rev 06*

REVISION HISTORY

Version	Revision	Date	Purpose/Status
01	01	11/10/16	Submission for consultation

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

DEFINITIONS

Abbreviation	Description
ATEX	Explosive Atmosphere
BAT	Best Available Technology
BREF	Best-Available Technologies Reference Document
CCGT	Combined Cycle Gas Turbine
CEMS	Continuous Emissions Monitoring System
CO	Carbon monoxide
COMAH	Control of Major Accident Hazards
CPD	Civil Protection Department
D1/DPS1	Phase 1 of Delimara Power Station
D2/DPS2	Phase 2 of Delimara Power Station
D3/DPS3	Phase 3 of Delimara Power Station
D3PG	Delimara 3 Power Generation
D4/DPS4	Phase 4 of Delimara Power Station
DM	DeMineralised water
DO	Diesel Oil
EGM	ElectroGas Malta
EIA	Environmental Impact Assessment
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ELV	Emission Limit Values
EMS	Environment Management System
ENE	Enemalta
FO	Fuel Oil
FOT	Fuel Oil Treatment
FSU	Floating Storage Unit
GRS	Gas Reducing Station
H&S	Health and Safety
HFO	Heavy Fuel Oil
IED	Industrial Emissions Directive
IPPC	Integrated Pollution Prevention and Control
LCP	Large Combustion Plants
LNG	Liquefied Natural Gas

NG	Natural Gas
NOX	Oxides of Nitrogen
O2	Oxygen
PM	Particulate Matter (dust)
PP	Power Plant
SBC	Sodium BiCarbonate
SF6	Sulphur hexafluoride
SOX	Oxides of Sulphur
VOC	Volatile Organic Compounds

Table 1: Table of definitions

Form IPPC Part C: Application for a Variation

For MEPA use only

Application reference:

Use this part of the form if you are applying to vary the conditions or any other provision contained in your permit.
Please read carefully Appendix I attached with this application.

C1 About the installation

Please fill in the installation table below with details of all the activities and operators at the whole installation, even if you are applying for a permit in respect of only part of the installation.

In **Column 1: Activities in "the stationary technical unit"**, please describe all activities listed in Annex I to the Industrial Emissions Directive that are proposed to be carried out.

For **Directly associated activities**, please identify any directly associated activities proposed to be carried out on the same site which:

- have a technical connection with the activities in the stationary technical unit; and
- could have an effect on pollution.

These could include, for example, boilers, generators, water purification systems, scrubbers and other air purification systems.

In **Column 2: Schedule 1 references**, write the category the installation falls under in Schedule 1 of the Industrial Emissions (IPPC) Regulations (LN 10/13), e.g. 1.1, 5.3(b)(i).

In **Column 3: Operator**, write the name of the operator for each activity (if you are the operator yourself, write "Applicant").

In **Column 4: Variations,** indicate how the proposed changes would affect the activities.

C1.1 Installation details

COLUMN 1 Permitted activities in the "stationary technical unit"	COLUMN 2 Schedule 1 references	COLUMN 3 Operator	COLUMN 4 Proposed variations
Generation of electrical energy through the combustion of heavy fuel oil and gasoil. Installation consists of two boilers making up DPS1 (phase 1A and phase 1B), two open cycle gas turbines (DPS2 and DPS3), two combined cycle gas turbines (DPS4 and DPS5) and eight medium-speed combined cycle diesel engines (DPS6).	Section 1.1: Combustion installations with a rated thermal input exceeding 50 MW	ENE	- Cold standby of DPS1 generating plant and auxiliary facilities, followed by decommissioning and dismantling. - DPS2 and DPS3 to remain unchanged. - DPS4 and DPS5 to remain unchanged. -DPS6 operations to be transferred to D3PG

Directly associated activities

Handling and storage of heavy fuel oil and gas oil.	Associated activity of fuel handling and storage	ENE	No proposed variations
Sea water pre-treatment plant.	Associated activity of utilities	ENE	Dosing of Marsaxlokk bay intake to be retained by ENE.
Handling, storage, treatment and disposal/recovery of wastes from installation.	Associated activity of storage, treatment and disposal/recycling of waste materials	ENE	Reduction in the types and quantities of waste resulting from reduced ENE operating plant. Relocation of waste site.
Maintenance carried out in any workshop in the installation.	Associated activity of maintenance	ENE	Reduction in the maintenance resulting from reduced ENE operating plant.
Provision evaporated-water and DM water to D3PG and EGM.	Associated activity of utilities	ENE	Inclusion of metered tie-in point for fire-fighting water.
Provision of fire-fighting water system to D3PG and EGM site.	Associated activity of utilities	ENE	Inclusion of metered tie-in point for demineralised and evaporated water.
Provision of potable water from mains connection to D3PG and EGM.	Associated activity of utilities	ENE	Inclusion of metered tie-in point for demineralised and evaporated water.

C1.2 Non-technical description
Please provide a non-technical description of the proposed changes.

Document reference number:

C1.2

C1 About the installation *continued*

C1.3 The proposed variations
Please provide a summary of the variations which you are applying for.

This should include:
- a description of the change in operation requiring the variation;
- an indication of the variations to the conditions of the permit that you wish to apply for.

Document reference number for the summary:

- C1.3
- APPENDIX A: DPS-XZ-173

C1.4 Site maps and reports

Are you proposing any change in operation that would result in additional land being included within the site of the installation?

Yes ✓ No ☐

If yes, please provide:

C.1.4.1
A site report, describing the condition of the site of that part of the installation in respect of which you are applying for a variation, and, in particular, identifying any substance in, on or under the land which may constitute a pollution risk. A baseline report assessing the state of the groundwater and land may also be required by the Authority.

Document reference number for the report:

C1.4

C1.4.2
A suitable map (or maps) showing the location of the site of the installation, and the area for which a variation of the IPPC permit is being applied for. The outline of the site and the area requiring the variation should be clearly marked in colour, and the surroundings of the site should be included in the map.

Document reference number for map(s):

APPENDIX A: 0466-IPPC-0030

C1.4.3
Suitable block plans, properly labelled, showing any changes to the location and nature of the various activities being proposed on that site.

Document reference number for plans:

APPENDIX A:
- 0466-IPPC-0060-
- DPS-XZ-179
- DPS-XZ-180
- 0466-IPPC-0030

C2 Your proposed techniques

C2.1 Environmental Management System

Provide details of any changes to environmental management techniques resulting from your proposals.

Document reference number:

- C2.1
- APPENDIX S

C2.2 Proposed activities

C2.2.1 Describe any proposed changes to the installation activities.

Document reference number:

C1.3

C2.2.2 Describe the proposed techniques and measures to prevent and reduce waste and emissions of substances and heat (including during periods of start-up or shut-down, momentary stoppage, leak or malfunction) as a result of your proposals.

Document reference number:

C2.2.2

C2.2.3 Submit a flow diagram summarising the proposed installation activities and indicating the changes.

Document reference number:

C2.2.3

C2.2.4 Include a comparison of the proposed changes to the activities with relevant BAT conclusions published by the European Commission, where these have been published.[1]

Document reference number:

APPENDIX B:
- Industrial Cooling Systems
- Large Combustion Plants
- Emissions From Storage
- DPS3 Plant as per IP00207E

C2.2.5 Include an outline of the main alternatives considered to the proposed changes to the technology, techniques and measures.

Document reference number:

C2.2.5

[1] Available from http://eippcb.jrc.es/reference/ and/or http://ec.europa.eu/environment/air/pollutants/stationary/ied/implementation.htm

C2 Your proposed techniques *continued*

C2.3 Raw materials
Identify any changes to the raw and auxiliary materials, and any other substances (including fuels) proposed to be used as a result of your proposals.

If any changes are proposed, give details of quantities proposed to be used annually and submit respective MSDS sheets.

In addition, identify the storage location of these materials on a site layout plan and give details on:

- Maximum storage capacity;
- Containment measures (including bunding capacity, where applicable);
- Protective measures (including security).

Document reference number:

- C2.3
- APPENDIX C

C2.4 Ozone depleting substances and fluorinated greenhouse gases
Identify any changes to the equipment using ozone depleting substances and fluorinated greenhouse gases, with a fluid charge of 3 kg or more.

For each such equipment, identify the type of equipment (hermetically-sealed systems, fixed systems or mobile systems), its use (firefighting, refrigeration/air-conditioning or high-voltage switchgear), charge (in kg) and the type of substance (e.g. R22, R407c, R134a).

Document reference number:

C2.4

C2.5 Maintenance
Describe any changes to the maintenance programme for the installation.

Document reference number:

-C2.5
- APPENDIX D

C2.6 Energy
C2.6.1: Describe any changes to the annual energy consumption, highlighting the main energy-consuming equipment, and generation by source and end-use (including information on energy generated on site, if applicable).

Document reference number:

C2.6

C2.6.2: Describe any changes to the proposed basic measures for improvement of energy efficiency.

Document reference number:

C2.6

C2.7 Water
Provide a breakdown of any changes to the proposed annual water consumption by source and end-use.

Document reference number:

C2.7

C2 Your proposed techniques *continued*

C2.8 Risk assessment
Describe any changes to the documented system used to identify, assess and minimise the environmental risks and hazards of accidents and their consequences.

Include any changes to emergency plans in case of fire, actions to be taken in case of failure of abatement equipment and other environmentally relevant incidents (e.g. spillages, gas leakage).

Document reference number:

- C2.8
-APPENDIX E

C2.9 Training
Please indicate whether any changes to the staff training programme will be required. Please submit the name of the technically competent person on site who will be responsible for such training.

Document reference number:

C2.9

C2.10 Cessation
Describe any changes to the outline decommissioning plan describing the draft proposed measures upon definitive cessation of activities, to avoid any pollution risk and return the site of the installation to a satisfactory state (including relevant measures for the design and construction of the installation).

This plan shall include a draft waste management strategy, and a qualitative assessment of the potential for contamination of land and groundwater pollution which might arise from the historical and current processes carried out at the installation.

Document reference number:

C2.10

C2.11 Multi-operator installations
Where you are not the only operator of the installation, describe any change to the techniques and measures (including those to be undertaken jointly by yourself and other operators) for ensuring satisfactory operation of the whole installation resulting from your proposals.

Document reference number:

C2.11

C3 Your proposed emissions

C3.1 Waste[2]
C3.1.1: Characterise (using the European Waste Catalogue code, in accordance with LN 184 of 2011 as amended[3]) and quantify any changes to each waste stream from the installation.

Document reference number:

C3.1

C3.1.2: Describe any changes to the proposed measures for waste management, storage and handling. If any are identified, also indicate the storage location of wastes on a site layout plan and give details on:

- Maximum storage capacity;
- Containment measures (including bunding capacity, where applicable);
- Protective measures (including security).

Document reference number:

-C3.1
-APPENDIX A: DPS-XZ-103 REV A

C3.1.3: Describe how each waste stream identified in C3.1.1 is prepared for re use, recycled, recovered or disposed of. If you propose any disposal, explain why recovery is technically and economically impossible and describe the measures planned to avoid or reduce any impact on the environment.

For these wastes, give details on authorised disposal/recovery facilities proposed to be used for each waste. If any on-site recovery of waste is proposed, provide details.

For each of these wastes, give details on off-site transportation, including registered waste carriers/brokers to be used.

Document reference number:

C3.1

---

[2] For installations carrying out waste management activities (activities listed in "Section 5: Waste management" of Annex I of the Industrial Emissions Directive), please use this section to document both incoming and outgoing waste.
[3] http://www.mepa.org.mt/file.aspx?f=6289.

C3.2 Emissions to Groundwater
Could there be changes to groundwater discharges from the installation?
Yes ☐ **No** ✓

If yes, explain how the requirements of the Protection of Groundwater against Pollution and Deterioration Regulations (LN 108 of 2009) have been addressed, and submit a map showing the proposed location of such emissions.

Document reference number:

Not Applicable

C3.3 Emissions to Sewer
C3.3.1: Is a new sewer connection envisaged as a result of your proposal?
Yes ☐ **No** ✓

If yes, please submit a block plan of the site, showing the proposed layout of sewer connections and any other drains (colour-coded), as well as the proposed discharge point(s).

Document reference number:

Not Applicable

C3.3.2: If a new sewer connection is envisaged, does the installation have a Sewer Discharge Permit?
Yes ☐ **No** ✓

Please submit a copy of the permit, or of the submitted application if the permit has not yet been issued.

Document reference number:

- C3.3
- APPENDIX K
-APPENDIX A:
- DB5-XZ-180
- DPS-XZ-179
- DPS-WG-0010

C3.3.3: Could the proposal involve the release of any Schedule A or Schedule B substance into the sewers, or changes to releases?
Yes ☐ **No** ✓

If yes, explain how the requirements of LN 139 of 2002 have been addressed.

Document reference number:

C3.3

C3.3.4: Are new or changes to cesspit/s being proposed?
Yes ✓ No ☐

If yes, please provide certification by an independent, warranted engineer showing that each cesspit is in line with the requirements of Schedule 1 Activity 43 of LN 106 of 2007 (as may be amended).

Document reference number:

C3.3

C3.4 Emissions to the Sea
Identify if the proposal may result in changes to direct discharges to coastal (up to 1 nautical mile from the coast line) or territorial waters.
Yes ✓ No ☐

If any changes are identified, explain how the requirements of the Discharge of Dangerous Substances Regulations (LN 213 of 2001) and the Water Policy Framework Regulations (LN 194 of 2004 as amended by LN 24 of 2011) have been addressed.

Include details of the source, any treatment proposed prior to discharge, composition and maximum volumes (in m^3/day) discharged.

Document reference number:

-C3.4
-APPENDIX A: DPS-XZ-173

In addition, please submit a block plan of the site, showing the proposed discharge point to the sea. Indicate the geo-referenced coordinates for discharge to sea.

Document reference number:

-APPENDIX A: DPS-XZ-0172

C3.5 Rainwater
Describe any changes to how rainwater is handled on site. If any changes are proposed, attach a site drainage map indicating rainwater capture and harvesting/discharge.

Document reference number:

-C3.5
-APPENDIX A: DPS-XZ-166

C3.6 Emissions to Air
Identify if there may be any changes in emissions of substances to air.
Yes ✓ No ☐

If any are identified, submit details of each emission point, the nature and the proposed quantities of substances emitted from each point and treatment/abatement measures. A block plan of the site showing each emission point should be submitted.

For each new boiler/generator, submit the following details: rated thermal input, energy output, date of manufacture, stack height, fuel type and annual fuel consumption.

Document reference number:

- C3.6
-APPENDIX A: DPS-XZ-106

C3.7 Odour emissions
Identify if there may be changes in emissions of odour.
Yes ✓ No ☐

If any are identified, submit details of the main sources of odour, and the proposed techniques and measures for control of odour.

Document reference number:

-C3.7
-APPENDIX L
-APPENDIX C: MSDS - Amerscent 72

C3.8 Emissions to Land
Identify if there may be any changes in emissions of substances to land.
Yes ☐ **No ✓**

If any are identified, submit details of the nature and the proposed quantities of substances emitted to land, as well as a map showing the proposed location of such emissions.

Document reference number:

-C3.8
- APPENDIX Q

C3.9 Noise
Describe:
C3.9.1: The main sources of noise and vibration (including infrequent sources) of the new proposal;
C3.9.2: The proposed techniques and measures for control of noise;
C3.9.3: The nearest noise sensitive locations and distance away from the site (a site map may be submitted for this purpose); and
C3.9.4: Relevant environmental noise measurement surveys which have been undertaken (monitoring shall be according to the latest revisions of ISO1996 and the rating of industrial noise affecting residential areas shall be according to BS 4142; monitoring shall be carried out exclusively using type 1 sound level meter).

Document reference number:

- C3.9
- APPENDIX M
- APPENDIX N

C3.10 Monitoring
Describe the proposed measures for monitoring emissions arising from the proposal, including any environmental monitoring. The following must be specified:
C3.10.1: The location of each proposed monitoring point (plotted on a suitably-labelled block plan of the site);
C3.10.2: The substances (in each environmental medium) which are proposed to be monitored;
C3.10.3: The frequency with which monitoring is proposed to take place;
C3.10.4: The proposed measurement methodology, which should be a standard methodology, such as EN or ISO standard, or equivalent;
C3.10.5: The proposed procedure for evaluation of the results.

Document reference number:

- C3.10
-APPENDIX A:
DPS-XZ-166
DPS-XZ-106
-APPENDIX O

C3.11 Emissions & waste summary
By means of a mass flow diagram, summarise the emissions and waste described in sections C3.1, C3.2, C3.3, C3.4, C3.6, and C3.8 of this application.

Document reference number:

C3.11

C4 Impact on the environment

C4.1 Environmental effects
Provide an assessment of the potential significant environmental effects (including transboundary effects) of the foreseeable emissions from the proposal.

Document reference number:

C4.0

C4.2 Effects on other sites
Provide an assessment of whether the proposal is likely to have a significant effect on another site in Malta and, if it is, provide an assessment of the implications of the installation for that site.

Document reference number:

C4.0

C5 Environmental statements

C5.1 Environmental statement
Has this proposal required an environmental statement (EIS or EPS) under LN 204 of 2001 on the assessment of the effects of certain public and private projects on the environment?

Yes ✓ No ☐

If yes, please supply a copy of the environmental statement submitted and details of any decision made.

Document reference number:

APPENDIX T - EIA Covering permits PA0021/14 & PA0022/14

C6 Statutory consultees

We will use the information in this section to identify who we must consult about your proposals.

C6.1 Local council
In which area is the installation located? If premises are on a boundary please give the names of all the relevant authorities.

Although Delimara Power Station is in the area of Marsaxlokk Local Council, Act No. XV of 1993 excludes the area from the responsibility of the local council.
Malta Maritime Authority

C6.2 Other sites
Are there any other sites which may be affected by emissions from the proposal? (Refer also to your answer to C4.2).

Yes ✓ No ☐

If yes, please give the names of the sites:

Birzebbugia
Marsaskala
Marsaxlokk
Zejtun

C6.3 Port Authority
Could the installation involve the release of any substance into a harbour managed by a port authority?

Yes ✓ No ☐

If yes, please name the port authority:

Malta Maritime Authority

C7 Planning status

C7.1 Planning status
Which of the following applies to the proposed installation activities?

We cannot issue a permit unless one of the following applies. Please tick the applicable answer and submit a copy of the relevant documents.

✓ **You have planning permission.**

Document reference number:

- IPPC Permit No. IP 0002/07/E (01/04/14)
- CCP-ETS-F02.02 - Greenhouse Gas Emission Permit MT-2
- MRA_WHL_PSF_007_09
- PA/05166/93 - Phase IIA Phase IIB Fuel Tanks
- PA/03052/03 - TINA for Malta-Environment & Feasability Studies. Maintenance dredging at Marsaxlokk.
- PA/03152/05 - Proposed local generating capacity at Delimara Power Station
- EA00166/05
- IP0002/07
- PA/03154/08 - Boiler conversion for emission reduction
- PA/02933/09 - Soil investigation at Delimara Power Station Block 4 (through removal of a layer of material).
- PA/04854/09 - To erect new electrical power generating station.
- PA/02053/10 - Boiler conversion for emission reduction at Delimara Power Station
- DN 01054/14 - Demolishing of chimney at Delimara Powerstation.
- PA/00021/14 - Combined cycle gas turbine and liquefied natural gas receiving storage, and re-gasification facilities.
- PA/02298/14 - Demolition and re-location of fire station and laboratory facilities.
- PA/00022/14 - Construction of jetty and ancillary facilities.
- DN 00146/14 - Relocation of cesspit.
- PA/00144/16 - Excavation of basement cable flat and construction of distribution centre at Delimara

☐ You have a certificate of lawful existing use or development.

Document reference number:

☐ Planning permission is not required - please say why and enclose written confirmation from the Planning Directorate at MEPA.

Document reference number:

☐ If you have submitted an application for planning permission which has not yet been determined, please provide a copy of the application.

Document reference number:

C8 Technically competent person

Technically competent person
We need to make sure that whoever holds the permit is a 'technically competent person'. This includes consideration of relevant offences, technical competence and financial provision.

C8.1 Technically competent management
Are any changes to the technically competent management of the activities proposed?
Yes ✓ No ☐

If yes, please give details for each person and provide the written evidence requested.

Responsible person 1:

Full Name: Ismail D'Amato
Position: Manager – Ge11
neration
Date of employment: 19/8/2002

Document reference number for copies of CV, relevant qualifications and recent police conduct certificate:

APPENDIX P

Responsible person 2:

Full Name:
Position:
Date of employment:
Mobile number:

Document reference number for copies of CV, relevant qualifications and recent police conduct certificate:

Responsible person 3:

Full Name:
Position:
Date of employment:
Mobile number:

Document reference number for copies of CV, relevant qualifications and recent police conduct certificate:

C8.2 Management of other installations

Is any of the technically competent management already providing the technically competent management at other IPPC installations or at sites licensed under the Environmental and Development Planning Act 2010?

Yes ☐ No ☐

C8 Technically competent person *cont.*

If yes, please use a separate sheet to give details of these people. For each person we need to know the:

- site/installation name and address;
- licence/permit reference number.

Document reference number for this information:

C9 Expenditure plan

C9.1 Expenditure plan

Please provide a plan of the estimated expenditure for each phase of the following specified activities arising from your proposal.

The plan should include the likely costs of:

- monitoring (emission/discharge and ambient monitoring);
- clearing the installation (including drainage systems) of all wastes;
- remedial action in the event of the failure of pollution control systems.

We recognise that this plan may need to be revised before the issue of the final permit.

Document reference number for expenditure plan:

APPENDIX R

C10 What to do next

Please read Appendix I, then prepare and sign a covering letter to attach to your application form.

Appendix I
Data Protection Clause

In terms of the Data Protection Act (Chapter 440 of the Laws of Malta), we will process any personal and/ or sensitive data supplied on/ in this submission or subsequently supplied by yourself, whether orally or in writing, for all or any of the following purposes: use

1. The proper processing of your submission;
2. internal management, research and statistics;
3. the protection and promotion of our legitimate interests and the proper conduct of our obligations arising under any law or statutory instrument; and
4. to make public the necessary information as specified in the relevant law and/or instrument.

Relevant data will be disclosed or shared as appropriate with all our employees and with other third parties if pertinent to any of the purposes listed above.

You have the right to require that we provide you with access to your **personal data** as well as the right to rectify, or, in appropriate circumstances, erase/edit any inaccurate, incomplete or immaterial personal data which is being processed. However, you are required to inform us immediately of any alterations relating to your personal data which we are processing.

By sending your submission, you confirm that you are giving your explicit consent, in terms of the Data Protection Act, on behalf of yourself and all the other persons specified in this submission for the Authority to process your respective personal information as outlined above and you confirm that you have brought this Data Protection notice to the attention of these other persons and obtained their respective consents.

We undertake to implement appropriate measures and safeguards for the purpose of protecting the confidentiality, integrity and availability of all personal data processed.

1 ABOUT THE INSTALLATION

1.1 INSTALLATION DETAILS

COLUMN 1 Permitted activities in the "stationary technical unit"	COLUMN 2 Schedule 1 references	COLUMN 3 Operator	COLUMN 4 Proposed Variations
Generation of electrical energy through the combustion of heavy fuel oil and gasoil. Installation consists of two boilers making up DPS1 (phase 1A and phase 1B), two open cycle gas turbines (DPS2 and DPS3), two combined cycle gas turbines (DPS4 and DPS5) and eight medium-speed combined cycle diesel engines (DPS6).	Section 1.1: Combustion installations with a rated thermal input exceeding 50 MW	ENE	- Cold standby of DPS1 generating plant and auxiliary facilities, followed by decommissioning and dismantling. - DPS2 and DPS3 to remain unchanged. - DPS4 and DPS5 to remain unchanged. - DPS6 operations to be transferred to D3PG

Table 2: Installation details

Directly associated activities:

COLUMN 1 Permitted activities in the "stationary technical unit"	COLUMN 2 Schedule 1 references	COLUMN 3 Operator	COLUMN 4 Proposed Variations
Handling and storage of heavy fuel oil and gas oil.	Associated activity of fuel handling and storage	ENE	No proposed variations
Sea water pre-treatment plant.	Associated activity of utilities	ENE	Dosing of Marsaxlokk bay intake to be retained by ENE.
Handling, storage, treatment and disposal/recovery of wastes from installation.	Associated activity of storage, treatment and disposal/recycling of waste materials	ENE	Reduction in the types and quantities of waste resulting from reduced ENE operating plant. Relocation of waste site.
Maintenance carried out in any workshop in the installation.	Associated activity of maintenance	ENE	Reduction in the maintenance resulting from reduced ENE operating plant.
Provision evaporated-water and DM water to D3PG and EGM.	Associated activity of utilities	ENE	Inclusion of metered tie-in point for fire-fighting water.
Provision of fire-fighting water system to D3PG and EGM site.	Associated activity of utilities	ENE	Inclusion of metered tie-in point for demineralised and evaporated water.
Provision of potable water from mains connection to D3PG and EGM.	Associated activity of utilities	ENE	Inclusion of metered tie-in point for demineralised and evaporated water.

Table 3: Directly associated activities

1.2 NON TECHNICAL SUMMARY

Through this application ENE is applying for the renewal of the current IP 0002/07/E together with a variation of the same permit. The proposed variations are being proposed to accommodate its own requirements together with requirements of operators who will be operating within the DPS Installation. Said operators include EGM and D3PG.

1.2.1 EXISTING DPS INSTALLATIONS

The Delimara Power station site is situated on the Delimara peninsula inside Marsaxlokk bay. The site currently accommodates generating plant, fuel storage and distribution facilities. The power existing generating facilities can be divided into the following plant:

Release Point	Plant ref PI0002/07/E	Plant Type	Fuel	Commission Year	Thermal Rating (MWth)	Plant Name
Chimney D1	DPS1 (Boilers phase 1A and phase 1B)	2 steam units	HFO	1992	332	DPS1
Chimney D2	DPS2 (OCGT1)	Gas Turbine 1	Gas Oil	1994	121	DPS2A
Chimney D3	DPS3 (OCGT2)	Gas Turbine 2	Gas Oil	1994	121	
Chimney D4A	DPS4 (CCGT3 Bypass stack)	CCGT 1	Gas Oil	1999	121	DPS2B cs
Chimney D4B	DPS4 (CCGT3 Main Stack)					
Chimney D5A	DPS5 (CCGT4 Bypass stack)	CCGT 2	Gas Oil	1999	121	
Chimney D5B	DPS5 (CCGT4 Main Stack)					
Chimney D6A	DPS6 (Diesel engines 1 & 2)	Diesel Engines 18V46	HFO/Gas oil	2012	77MW	DPS3
Chimney D6B	DPS6 (Diesel engines 3 & 4)	Diesel Engines 18V46	HFO/Gas oil	2012	77MW	
Chimney D6C	DPS6 (Diesel engines 5 & 6)	Diesel Engines 18V46	HFO/Gas oil	2012	77MW	
Chimney D6D	DPS6 (Diesel engines 7 & 8)	Diesel Engines 18V46	HFO/Gas oil	2012	77MW	

Table 4: Plant listing DPS

1.2.1.1 DPS1 (BOILERS PHASE 1A AND PHASE 1B – AS PER IP0002/07/E)

This consists of two steam units each consisting of a boiler, a steam turbine and a generator. The nominal rating of DPS1 is 60MW. The plant is cooled by a sea-water cooling system and operates on HFO.

1.2.1.2 DPS2A (DPS2 & DPS3– AS PER IP0002/07/E)

This consists of two open cycle gas turbine / generator units operating on gasoil, each rated at 37.5 MW ISO. This plant is air cooled and may also be used for synchronous compensation.

1.2.1.3 DPS2B (DPS4 & DPS5– AS PER IP0002/07/E)

This consists of a combined cycle gas turbine block consisting of two gas turbines, two heat recovery steam generators and a steam turbine and associated generators with a total capacity of 110 MW. The fuel is gasoil and the plant is used for mid range duties.

1.2.1.4 DPS3 (DPS6– AS PER IP0002/07/E)

This consists of eight Diesel engines coupled to eight boilers which produce steam to one common steam turbine. The engines have the capability of operating on both HFO and gasoil. Being composed of 8 diesel engines means that a degree of flexibility in generation values can be achieved by operating the required number of engines, while still maintaining efficiency.

Prior to the commencement of conversation ENE will remain responsible for operating all eight diesel engines, steam turbine and auxiliary systems. Following the complete transfer of operations of DPS3 to D3PG, ENE will no longer be responsible for operating the DPS3 eight diesel engines, steam turbine and auxiliary systems. The area to be operated by D3PG is indicated in drawing *0466-IPPC-0030*.

The transfer of DPS3's operations is to take place in two phases, each phase coinciding with the conversion phases of the plant to operate on NG. The first phase will see the conversion of the first four diesel engines to operate on both NG and gasoil. Up to completion of this first phase, ENE will continue to operate engines 1,2,3, and 4. Following completion of the first phase, D3PG will have the capability to operate the converted engines on NG and gasoil. Simultaneously ENE will stop operating engines 5,6,7 and 8, to allow said engines to be converted to run on NG. Therefore upon completion of the first phase ENE will no longer operate any of the eight DPS3 engines.

1.2.1.5 PROPOSED CHANGES

So as to meet the safety and operational requirements of future operators and installations within the DPS site, together with Enemalta's own requirements the following changes are to be made:

1. Cold standby of DPS1 generating plant and auxiliary facilities, followed by decommissioning and dismantling. Decommissioning of DPS1 does not form part of this variation/renewal.
2. Removal of DPS3's generating plant and auxiliary facilities from ENE's operational permit.
3. Alterations to pipe rack installation to accommodate EGM's NG pipeline and glycol-loop pipelines.
4. Alterations to the cooling water outflow to allow for the future connections.
5. Relocation of the ENE waste site.

6. Minor alterations to existing facilities to allow for the provision of the following facilities to other operators:
    a. Demineralised water
    b. Evaporated water
    c. Potable water
    d. Fire fighting water
    e. Connection to sewer system
    f. Dosing of seawater intake
    g. Removal of fire station and relocation of laboratories within Administration Building.

There are to be no changes to the plant and method of operating DPS2A and DPS2B .

1.3 THE PROPOSED VARIATIONS

1.3.1 VARIATIONS TO DPS1

The Government of Malta has committed itself to shut down the 2x60MW steam turbine generators referred to as DPS1, once sufficient replacement capacity is made available. It is expected that following the commissioning of DPS4, DPS1 will be put on cold standby, meaning that the plant will not operate unless extreme circumstances dictate its necessity. Following cold standby the plant will be decommissioned and dismantled. The expected timeframes are as follows:

Activity	Proposed Date
Commence DPS1 cold-standby process	Mid 2016
Commence decommissioning of DPS1	End 2016
Commence dismantling of DPS1	Beginning 2017

Table 5: DPS1 Decommissioning time-frames

Following DPS1 decommissioning, the seawater cooling pumps of DPS1 are to be removed and an additional pump for DPS4 will be installed instead of one of the existing pumps currently used for DPS1. Drawing *0466-IPPC-0030* shows the location of the DPS1 cooling water pumps that are to be removed and the location of the DPS4 pumps.

A separate application detailing the decommissioning of DPS1 is to be submitted to ERA prior to decommissioning.

1.3.2 VARIATIONS TO DPS3

Following the complete transfer of operations of DPS3 to D3PG, ENE will no longer be responsible for operating the DPS3 eight diesel engines, steam turbine and auxiliary systems. The area to be operated by D3PG is indicated in drawing *0466-IPPC-0030*. The plant to be removed from Enemalta's operations include:

- 8 Diesel engines
- 1 Steam turbine
- Exhaust abatement equipment
- Day tank area Adjacent to DPS3 consisting of:
    - 6 FO separators
    - 2 HFO buffer tanks & VOC units
    - 4 Steam trap units
    - Service sludge storage tanks and pumps
    - Urea spillage tank and pumps
    - 2 Urea storage tanks
    - 2 Urea dissolving tanks
    - Urea pressure control unit
    - Demineralised water tanks
    - 2 HFO service tanks & VOC units

  - DO service tank & VOC units
  - HFO & DO feeder pumps
  - Lube oil storage tanks and transfer pumps
  - Maintenance lube oil drain tank & pump unit
  - 3 Starting air compressor units
  - 4 Control and service air recover unit
  - 2 Service air compressors
  - Foam tank
  - Inert gas unit
- DPS3 seawater cooling pumps
- DPS 3 Diesel oil transfer pumps at DPS1 pump house

The transfer of DPS3's operations is to take place in two phases, each phase coinciding with the conversion phases of the plant to operate on NG. The first phase will see the conversion of the first four diesel engines to operate on both NG and gasoil. Up to completion of Phase 1, ENE will continue to operate engines 1,2,3, and 4. Following completion of the first phase, D3PG will have the capability to operate the converted engines on NG and gasoil. Simultaneously ENE will stop operating engines 5,6,7 and 8, and to allow said engines to be converted to run on NG. Therefore upon commencement of phase 2 ENE will no longer be operating any parts of the DPS3 plant.

The current HFO and DO storage tanks feeding fuel to DPS3 are to remain in the possession and operation of ENE.

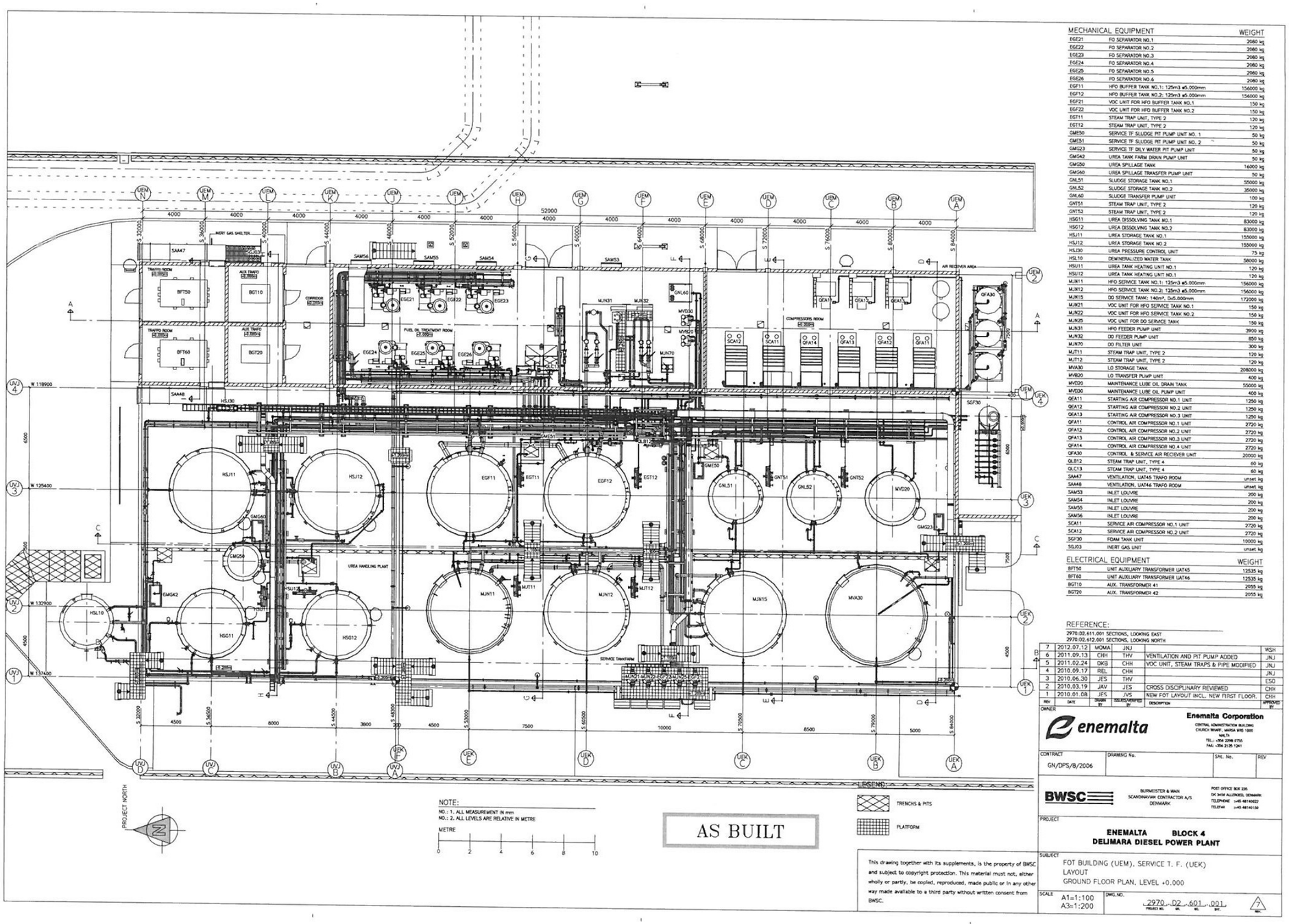


Figure 1: DPS 3 Tank area

1.3.3 Alterations to Pipe Rack

The existing pipe rack currently containing HFO/gasoil pipes is to be altered so as to accommodate the new EGM NG pipeline and closed glycol loop. The proposed route for the NG pipeline is indicated in 0466-IPPC-0060.

1.3.4 Provision of Demineralised Water

ENE is to provide DM (Demineralised) water to D3PG and EGM. No alterations will be made to the operations of the plant other than a metered connection point provided for each operator. Drawings *DPS-XZ-179* and *DPS-XZ-180* indicate the location for the tie-in point for this service. The following limitations on supply will be provided:

Limitation for the supply of DM water	
EGM	25m^3/h *
D3PG	6m^3/h +

Table 6: Limitations on supply of DM water

1.3.5 Variation to Evaporated Water

ENE is to provide Evaporated water to D3PG and EGM. No alterations will be made to the operations of the plant other than a metered connection point provided for each operator. Drawings *DPS-XZ-179* and *DPS-XZ-180* indicate the location for the tie-in point for this service. The following limitations on supply will be provided:

Limitation for the supply of Evaporated water	
EGM	25m^3/h *
D3PG	8m^3/h +

Table 7: Limitations on supply of EV water

* Total of DM and evaporated water cannot exceed 25m^3/h

+ D3PG are bound to supply ENE's evaporated water storage tanks an amount of evaporated water equivalent to the total DM and evaporated water consumed by D3 plant.

1.3.6 Variations to Potable Water

ENE is to provide potable water to D3PG and EGM. No alterations will be made to the operations of the plant other than the provision of a metered connection point provided for each operator. Drawings *DPS-XZ-179* and *DPS-XZ-180* indicate the location for the tie-in point for this service. The following limitations on supply will be provided:

Limitation for the supply of Potable water	
EGM	not defined but limited to sanitary use only
D3PG	not defined but limited to sanitary use only

Table 8: Limitations on potable water

1.3.7 VARIATIONS TO FIRE FIGHTING WATER

The current FF (Fire fighting) water system is divided into two systems, an internal and an external one. The internal system sources its water supply from a 330m^3 freshwater tank which is supplied from the existing evaporated water storage tanks, while the external system is sea water based. Both systems are operated by electric and diesel pumps in case of emergency. The approach taken for the provision of FF water to D3PG and EGM, is to effectively extend the FF water circuit to EGM and D3PG sites by providing the tie in points indicated in drawings *DPS-XZ-179* and *DPS-XZ-180*. Should operators require fire-fighting water capacities greater than that currently available on site a dedicated fire fighting system is to be installed by said operator.

1.3.8 VARIATIONS TO SEWERAGE SYSTEM CONNECTION

DPS3 is currently already connected to the existing sewerage system, and is to remain as such. Similarly, D3PG will be provided with a sewerage tie in point, so as to make use of the existing system.

1.3.9 DOSING OF COOLING WATER INTAKE

ENE will continue to operate and maintain the sea-water pumps supplying cooling water to ENE's generating plant. Other operators will be in charge or operating their own seawater cooling pumps. ENE will retain responsibility for dosing of the cooling water intake as per current IPPC permit.

Enemalta injects sodium chlorite and hydrochloric acid into the inlet to the sea water pumps. This produces a chemical reaction where chlorine dioxide is produced. The MSDS sheets for these chemicals have been provided in Section C2.3 of this application. This controls biological growth in the plant cooling systems. The rate of growth of sea water organisms is dependent on both the sea water temperature, as a higher temperature increases the growth rate, as well as on the sea water flow. Hence the injection rate must be fine tuned to both plant operations and to the seasonal variability of sea water temperature.

Fine tuning is achieved by measuring the sea water residual chlorine level upstream of each plant such that the dosing level can be maintained within acceptable levels. This ensures the most efficient operation of the plant. This procedure will remain unchanged with the introduction of new operators.

Drawing *DPS-XZ-173* indicates the sampling locations for measuring the residual chlorine levels upstream of each plant. The exact location for the sampling point of DPS4 is to be determined following further detailed design coordination.

1.3.10 Removal of Fire-Station and Relocation of Laboratories

Under permit PA/0298/14 ENE applied for the following proposal "Demolition and relocation of the fire station and laboratory facilities". These facilities required relocation to accommodate the proposed NG project covered by PA/0021/13.

Following an assessment of ENE's on-site fire fighting systems, coupled with the transfer of ENE's fire-unit to CPD, it was concluded that the fire-station was no longer necessary, and the laboratories could be relocated within the existing. Therefore the proposal cover by permit PA/0298/14 could be considered null and void.

1.3.11 D3PG Oily Water Tie-in

With dereference to TP14 in drawing *DPS-XZ-179*, D3PG's oily water interceptor has a PPM sensor equipment which is capable of monitoring the contamination levels of the filtered oily water up to a certain threshold. The D3's system will automatically re-circulate the oily water to purify more the oily water contents if oil content is sensed at a higher value than the ELV. Thus, only water below ELV from D3 enters the 1st stage of Enemalta's oily water polishing interceptor. To ensure conformity, Enemalta polisher interceptor is fitted with a sensor that will trigger an alarm should oily water reach the polishing interceptor.

1.4 SITE MAPS AND REPORT

1.4.1 SITE REPORT

The Delimara Power Station is situated on the Delimara peninsula inside Marsaxlokk bay as shown in the site plan forming part of PA0021/13 and PA0022/13. As part of the aforementioned development permit the DPS site was subject to an Environmental Impact Assessment which studied the properties not only of the site but also its surroundings. The EIA assessed in detail the following site related categories:

- Geology / geomorphology / hydrology / soils
- Marine water bodies
- Vertebrate fauna
- Marine ecology
- Noise
- Land use and land cover
- Landscape and visual assessment
- Marine archaeology
- Terrestrial ecology
- Agricultural land

The proposed variations in this application shall not alter the land use of the site itself. Although the DPS site indicated in the attached site plan encompasses an area greater than that in the IP 0002/07/E it is important to note that the land area operated by ENE is effectively reduced overall as a result of D3PG and EGM operating within the DPS site. The Areas to be operated by EGM and D3PG are delineated in drawing *0466-IPPC-0030*.

The proposed EGM development includes a new CCGT Power Plant located in the south west of the site, a regasification compound in the southernmost section of the site and an LNG facility comprising a new jetty to receive LNG via ship to ship transfer extending westward from the south of the site. In addition two small locations in the centre of the site will be developed for Cooling Water Sea Water Pump Building and Delimara Power Plant 3 Gas Reduction Station.

As per drawing *0466-IPPC-0030*, D3PG is to take control of the operations of DPS3 generating plant, tank area and two cooling water pumps.

1.4.1.1 EXISTING GROUNDWATER RISK ASSESSMENT

So as to fulfill condition 1.5.1 of IP0002/07/E permit requirements, ENE has submitted a soil monitoring investigation forming part of the Outline Decommissioning Plan. Independent to the soil monitoring investigation for the IPPC permit, ERA had also requested that the mound ('landfill') outside (and to the south) of the IPPC permit is investigated to characterise ground conditions and take samples for analysis of contamination.

ENVIRON UK Limited undertook and managed an intrusive site investigation on behalf of Enemalta Corporation in order to collect the site reference data. The main site investigation was undertaken between the 2nd June to the 28th June 2011. Twenty boreholes within the IPPC permit boundary to depths of 5m to 10m using a rotary solid stem auger to allow the sampling of the soil. Another three boreholes were drilled on an area of 'landfill' outside (and south of) the IP0002/07/E permit boundary to prove the base of the 'landfill'. The boreholes were drilled to depths of between 19.0m bgl and 42.0m bgl using solid stem auger to 6.0m bgl, continued to depth using rotary open hole drilling. Sample locations were positioned to provide general coverage across the site and to target potential sources of contamination. Sampling locations have been identified in Figure 2 below.

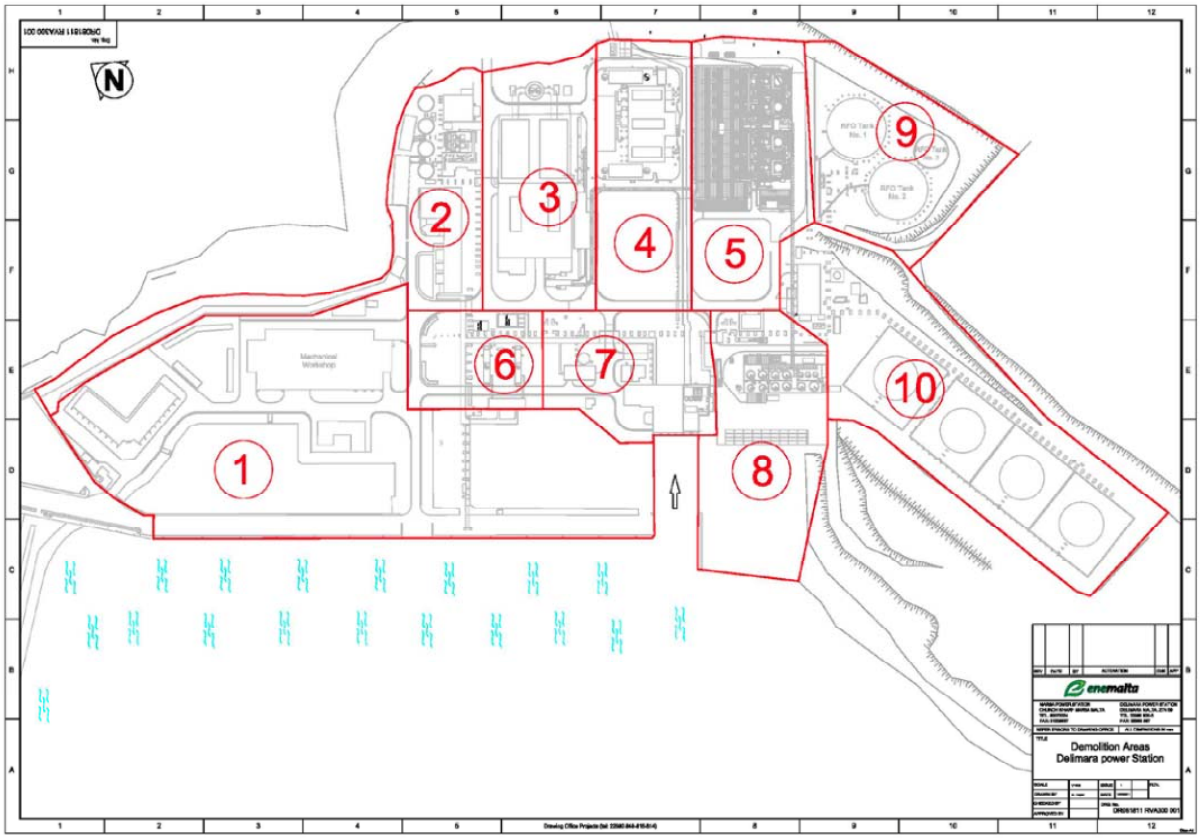


Figure 2: location of bore-holes

From the twenty three boreholes, a total of thirty two soil samples were tested for a range of determinands specified in Schedule 9 of the IPPC permit, including a suite of metals, total petroleum

hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), volatile and semi-volatile organic compounds, polychlorinated biphenyls (PCBs) and asbestos.

Low concentrations of metals were identified site wide. Low concentrations of PAHs, VOCs, SVOCs and EPH were identified in localised areas. EPH were identified above detection limits in two samples of natural material in BH08, located in close proximity to a sump associated with Boiler No2, approximately 2.0 – 2.5m bgl in depth. The borehole logs identify that water was encountered at 2.2m bgl at this location which is not consistent with the geological logs from boreholes located in natural mudstone on the Delimara Peninsula. The presence of water may indicate a local seepage, for example from the nearby sump, which is a potential source of hydrocarbon contamination. The presence of petroleum hydrocarbons suggests that the pollution prevention measures may be inadequate in this area.

1.4.1.2 PROPOSED GROUNDWATER RISK ASSESSMENT

With respect to the groundwater risk assessment, ENE has prepared a proposed methodology in line with "Communication from Commission - European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (2014/C 136/03)", which is being discussed with ERA for approval.

1.4.2 SITE MAPS

- 0466-IPPC-0030 - Area Designation

1.4.3 BLOCK PLANS

- DPS-XZ-179 - Tie in Points - D3PG
- DPS-XZ-180 - Tie in Points - EGM
- 0466-IPPC-0060 - Proposed EGM NG Pipeline Route

2 YOUR PROPOSED TECHNIQUES

2.1 ENVIRONMENTAL MANAGEMENT SYSTEM

Enemalta's EMS was initially set up under the guidance of Sogesca S.r.l. consultants in 2009. In August 2011, Enemalta's EMS was awarded the ISO 14001 certificate from Certiuality S.r.l for the activities of electrical power generation and distribution. In July 2014 certification for the existing DPS installation by Bureau Veritas Hellas.

Figure 3 below described the organizational hierarchy to be used in the EMS. This reflects the current set-up which is to remain unchanged.

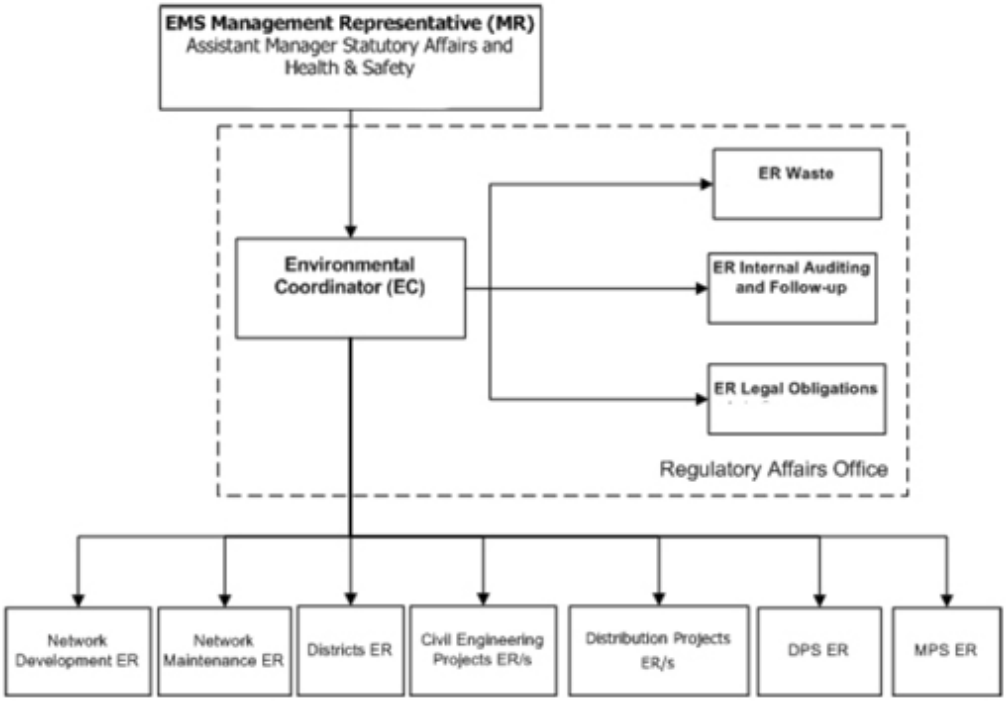


Figure 3: EMS Organisation diagram

Enemalta's responsibility is to generate and distribute electricity to its customers in a safe and efficient manner whilst safeguarding the environment. Enemalta acknowledges that its operations inevitably impact the environment and as such are committed to assess, prevent and reduce, wherever possible, these impact and continuously improve performance.

In order to do the ENE is committed to put in practice the following principles:

- Meet, monitor and conform to all applicable environmental legislation, regulations and permits, and where appropriate, exceed the requirements:
  - By continuing to control and reduce pollution
  - Establishing clear, measurable environmental targets.
- Continue to reduce the total energy consumed and reduce distribution losses

- Seek to reduce consumption of materials in all operations, reuse and promote recycling
- Minimise the likelihood of environmental accidents.
- Develop emergency response plans to minimise the impacts of accidents
- Educate and train all staff to act in an environmentally responsible way
- Promote the adoption of good environmental management practices by our contractors and suppliers through a sustainable procurement policy.
- Continue to support groups through Corporate Social Responsibility Charter to help protect the environment and strive to develop a positive and constructive relationship with local communities
- Conduct and communicate internal environmental reviews to measure performance and ensure policy goals are met as well as compliance requirements.

SOP 11 Maintenance of Equipment Containing

The following Standard Operating Procedures are to be included in the updated EMS:

- SOP 9 Interceptor Cleaning for DPS;
- SOP 10 Interceptor Inspection for DPS;
- SOP 11 Maintenance of Equipment Containing SF6 - Management and Leaks Control;
- SOP 16 Operations SF6 management and leaks control for DPS;
- SOP 17 Tank Area Bund Wall Inspection for DPS;
- SOP 18 Transformer Bund and Reservoir DPS Inspection, Maintenance and Cleaning;
- SOP 23 Chemical Procurement Storage and Handling for DPS;
- SOP 24 Discharge of Treated Waste Water from Boiler Wash Down Neutralising;
- SOP 27 Pits Inspection and Maintenance for DPS;
- SOP 28 Fuel Transfer Lines Management and Inspections for DPS;
- SOP 29 DPS Waste Management Procedure;
- SOP 30 Interceptor Maintenance for DPS;
- SOP 31 Maintenance of Air Conditioning Units;
- SOP 33 Fuel Discharge (transfer) from tanker/barge to Tank farm at DPS;
- SOP 34 Monitoring & Reporting Procedures for Greenhouse Gas Emissions;
- SOP 37 Continuous Emissions Monitoring System (CEMS) Installation, Operation & Maintenance;
- SOP 38 Failure of Diesel Engines Plant Emissions Abatement Equipment;
- SOP 40 Monitoring of Emissions to Marine Water Installation Discharge Water Sampling, Analysis and Reporting Requirements;

The following EMS Management Procedures are to be included in the updated EMS:

- MP 1 Internal Audit Planning, Conducting and Reporting
- MP 2 Suppliers and Contractors Management Procedure
- MP 3 Environmental Data Monitoring and Surveillance
- MP 4 Non Conformities, Corrective and Preventive Actions Management
- MP 5 Environmental Aspects Evaluation

- MP 6 Competence, Training and Awareness
- MP 7 Legal Requirements
- MP 8 Document Control

The following list of EMS documents are to be included in the updated EMS

- DOC 1 - Tender Clauses related to EMS;
- DOC 2 - Contractor's Briefing & Employee Training;
- DOC 3 - GHG Emissions Uncertainty Calculations;
- DOC 4 - Legislation Summary List;
- DOC 5 - Emergency Response Team DPS;
- DOC 12 - DPS Briefing Document for Contractors and Visitors;
- DOC 15 - Communication flow between Fire and RAO;
- DOC 16 - Communication flow between H & S and RAO;
- DOC 19 - EMS Briefing Document for Employees EP 1 - DPS Emergency Plan;

The following current IPPC permit requirements for Enemalta are to be retained:

- submit a description of their activities in their application for the permit;
- monitor for noise and vibrations, energy efficiency, and site protection against pollution;
- apply the general principle of energy conservation in their operations;
- return the site to a satisfactory site after operations cease;
- Process data (MWh generation & consumption, fuel consumption & quality properties, hours);
- Annual & quarterly air emissions for dust, SOx , NOx , CO, furans & dioxins, heavy metals, & PAHs;
- Annual & quarterly seawater discharge of various pollutants;
- Annual wind speed & direction;
- Annual noise levels surveys;
- Annual & quarterly transfer & transport of hazardous & non-hazardous waste;
- Testing/ inspection of bunds & pipework installations;
- NEC – Projections and Annual (Quarterly);

Enemalta is to update the existing ISO 14001 certified EMS to reflect the changes described within this IPPC application within 1 year from permit approval. All other operators within the DPS site are to achieve ISO 14001 certification.

2.2 PROPOSED ACTIVATES

2.2.2 PROPOSED TECHNIQUES TO REDUCE WASTE

This application does not include alterations to existing generating plant or proposed new plant. Therefore no new techniques for the reduction of waste shall be covered by this application. The quantities of waste generated by ENE is expected to be reduced as a result of DPS1 no longer being in operation and DPS3's operations falling under D3PG. The reduction in waste generation is described in further detail in section C3.1 of this application.

At an operational level ENE shall continue to strive to reduce waste by implementing the systems and procedures in the Environmental Management System described in Section C2.1.

2.2.3 FLOW DIAGRAM

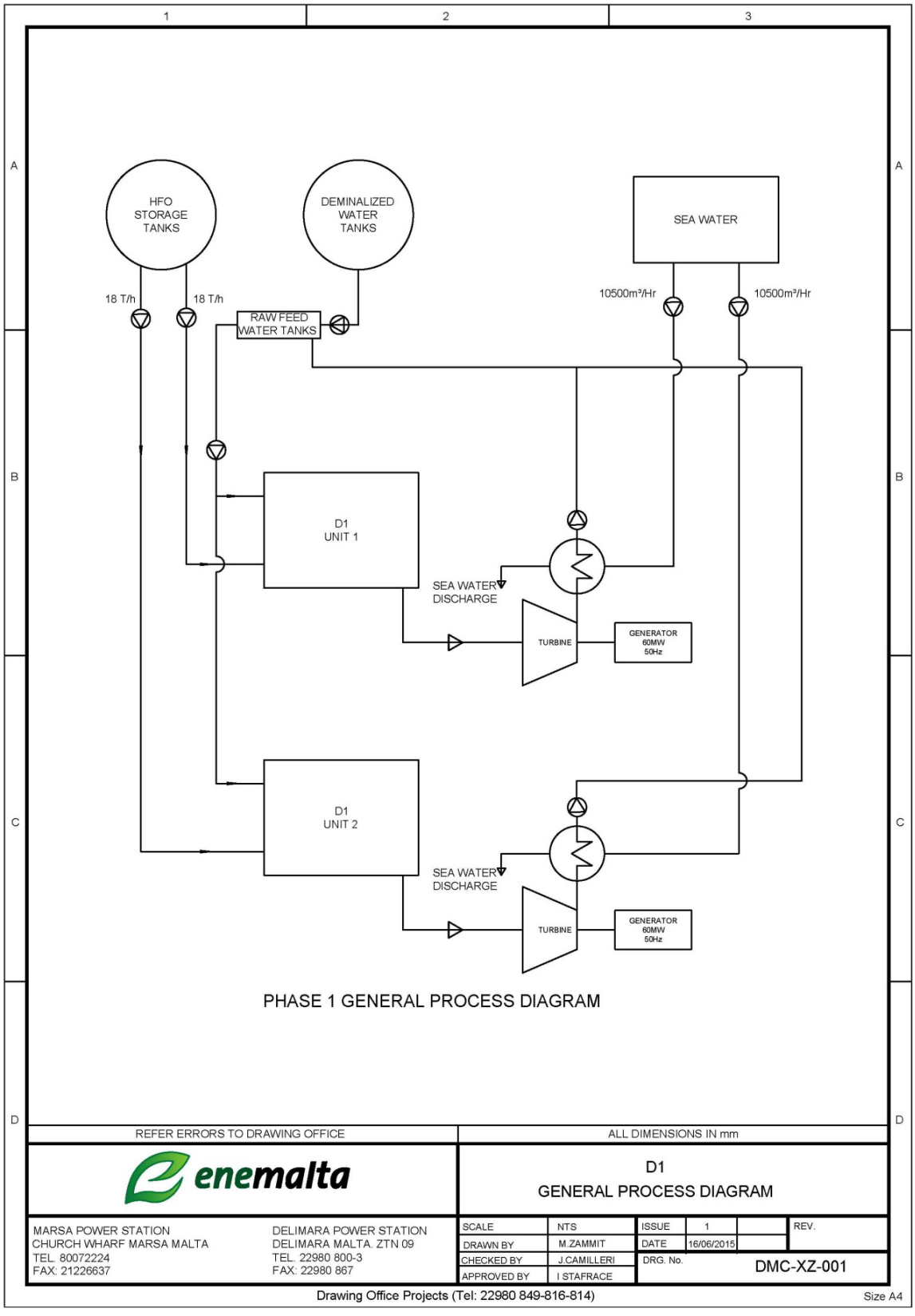


Figure 4: DPS1 General process diagram

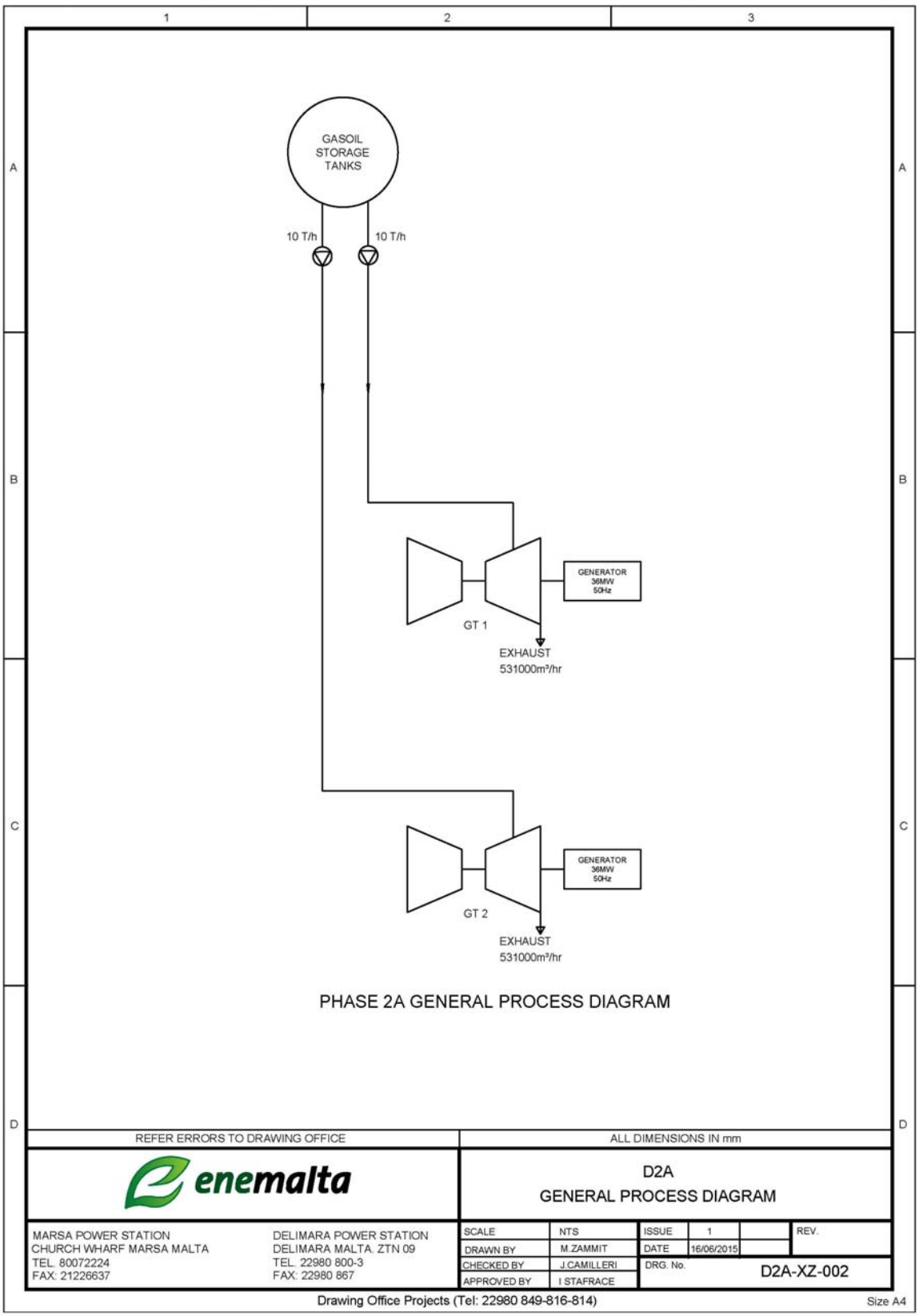


Figure 5: DPS2A General process diagram

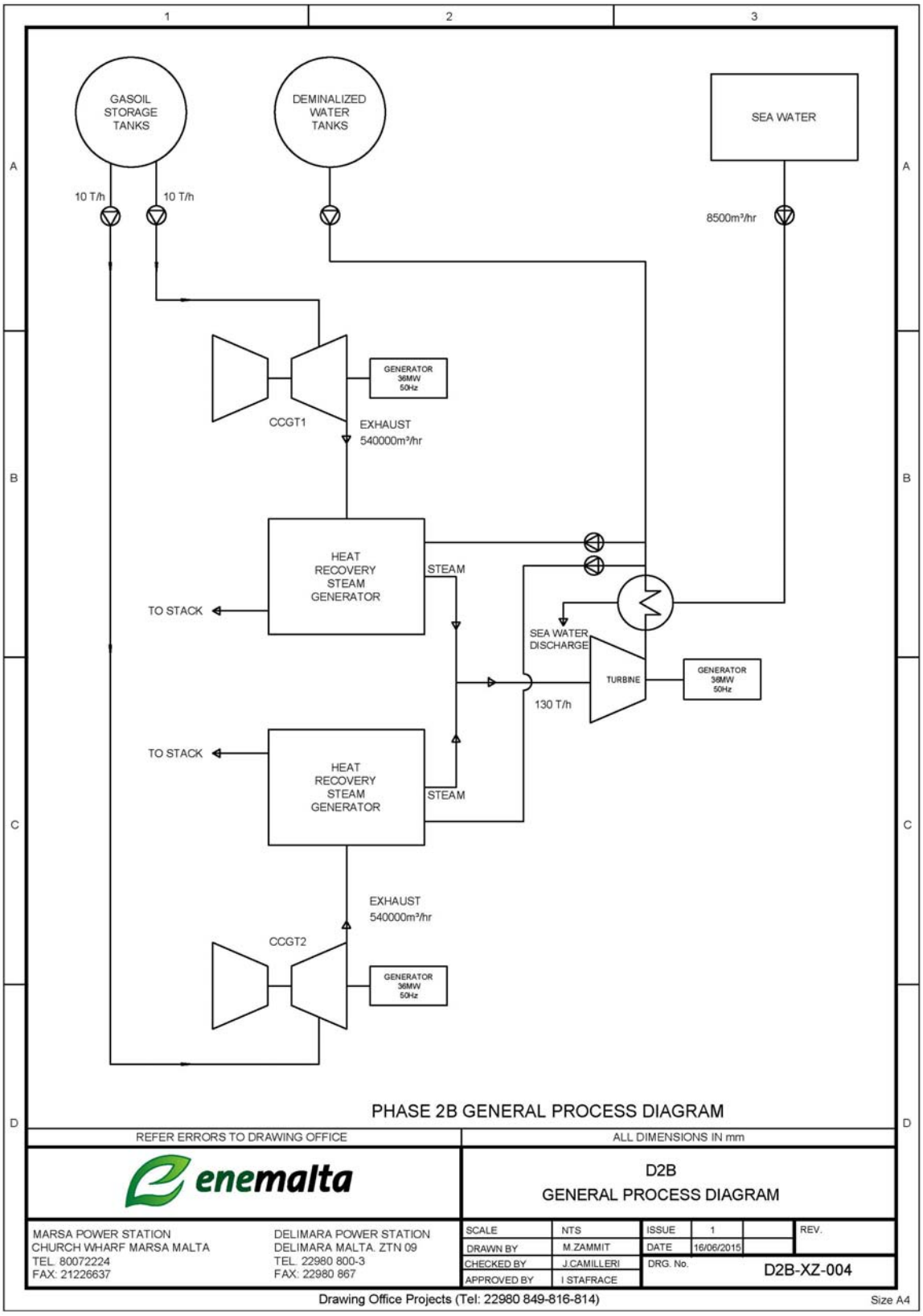


Figure 6: DPS2B General process diagram

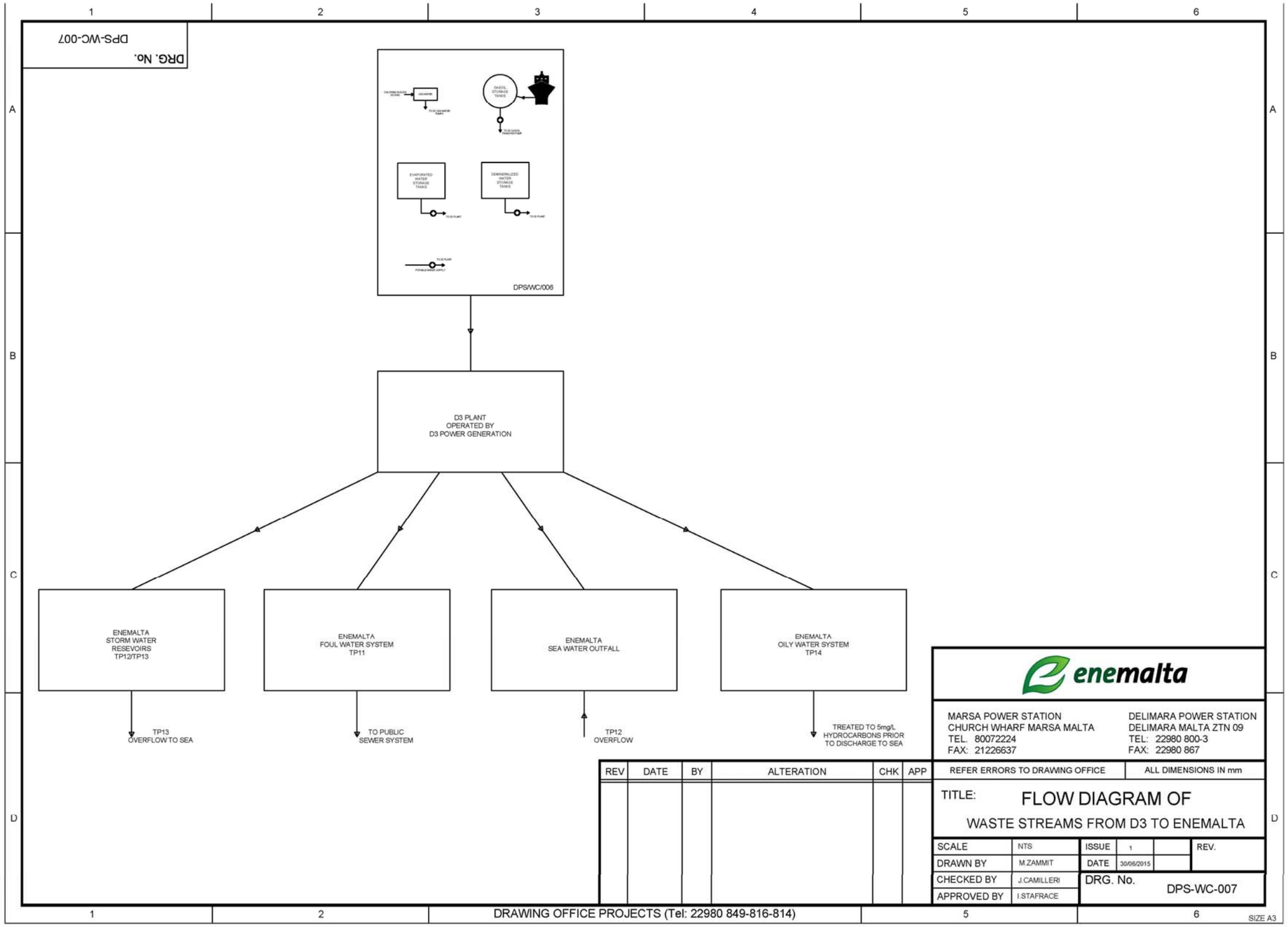


Figure 7: DPS3 Process flow diagram - ENE

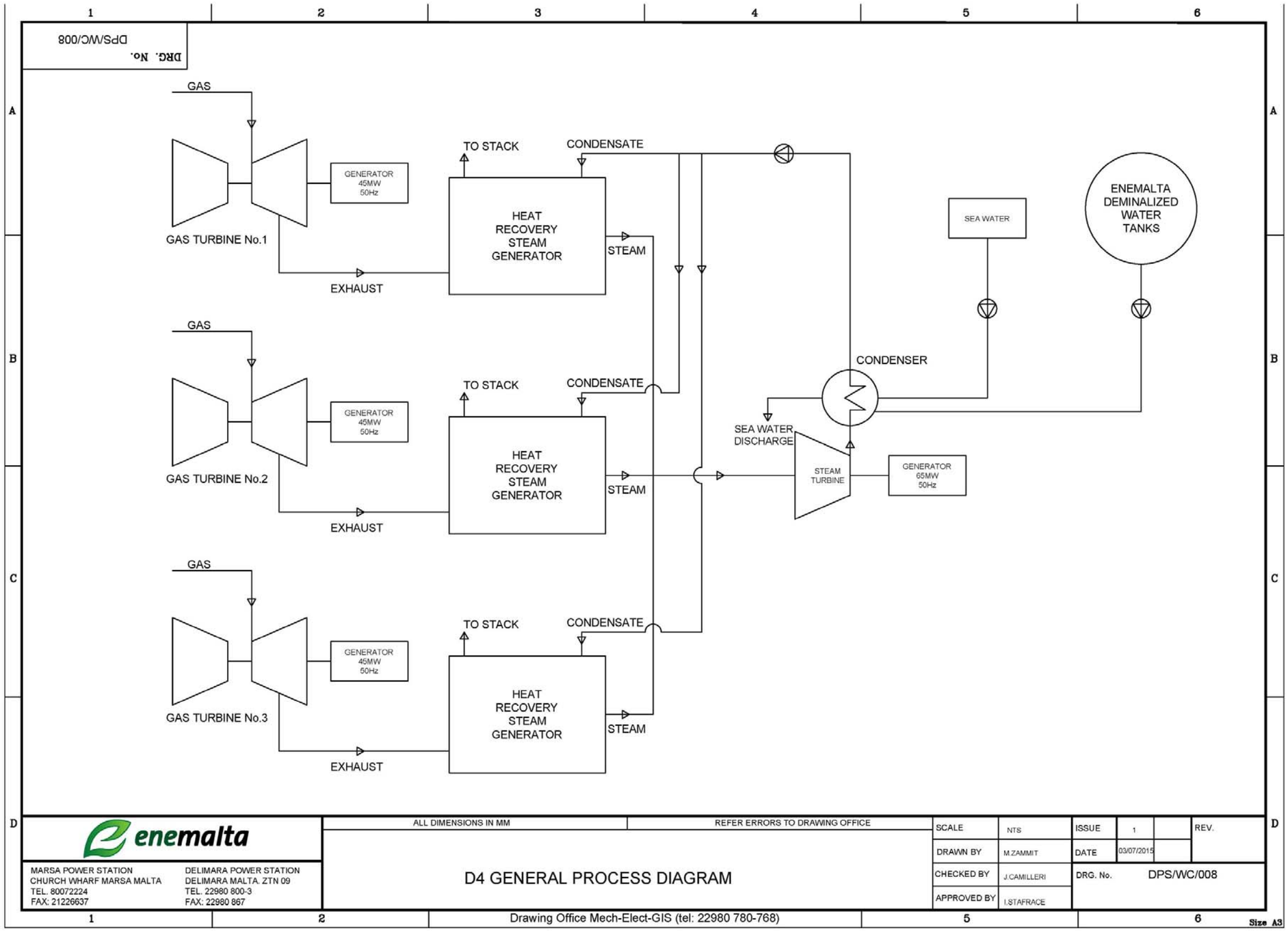


Figure 8: DPS4 Process flow diagram - ENE

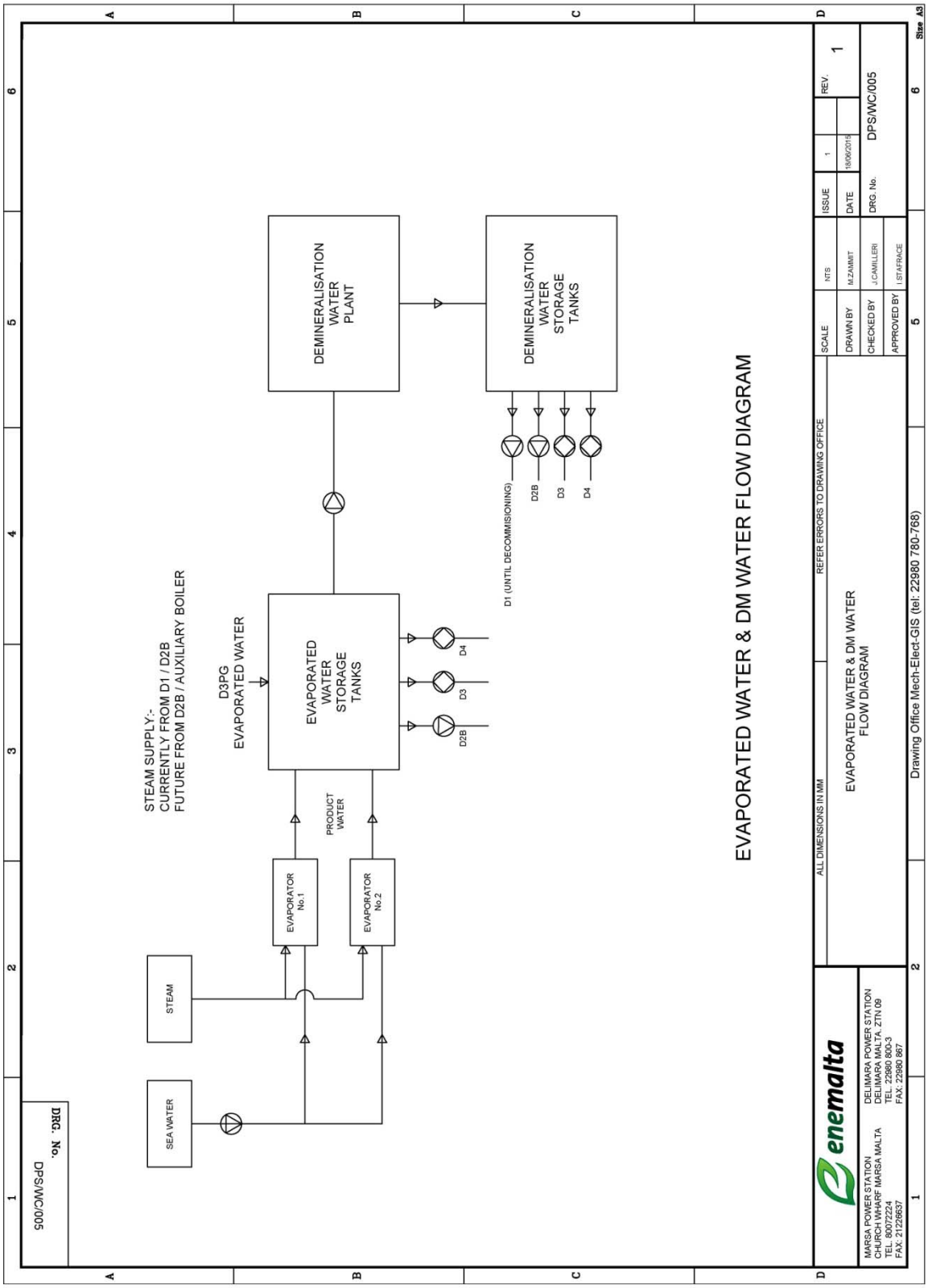


Figure 9: Evaporated & demineralised water process flow diagram

2.2.4 CONSIDERED ALTERNATIVES

This application does not propose the addition of ENE operated generating plant or storage facilities, hence no alternatives are required for consideration.

2.3 RAW MATERIALS

Table 9 below lists the raw materials currently consumed by ENE plant defined by their relative risk-phrases. Table 10 contains all the raw materials currently required for the operation of ENE plant, having an average annual consumption greater than one tonne. Table 11 describes the storage location and method of containment of each substance.

Scientific/Brand Name	R-Phrases	Purpose
BOND + SEAL GREY - 300ML	42, 10, 20/21, 36/37, 38, 40, 43, 48/20, 51/53, 65, 66, 67	Adhesive and Sealant
FUELSOLV PEP990	38, 40, 41, 51/53	Blend of dispersant and surfactants in light oil acting as a combustion catalyst for improving carbon burn-out in fireside applications.
Gas Oil	40, 65, 66, 51/53	Gas turbine fuel
Heavy Fuel Oil	45, 66, 52/53	Boiler fuel
LOW TOXICITY CLEANING FLUID	40, 51/53	Solvent, cleaning agent
PentoMag 2000	40, 43, 52/53, 65, 66	Combustion Optimisation
Satamin 3121	51/53, 40, 65, 67, 66	Additive for mineral oil products
SDI NEW: Product Code 504	40, 10, 65	Industrial Degreasing Solvent
EPOXYLITE 235 HARDNER	20/21/22, 35, 37, 43, 48/22, 51/53, 68	Plastering works
EPOXYLITE 235 SG RESIN	36/68, 43, 51/53	Plastering works
CELLULOSE THINNER EC DN 350	11, 63, 68/20/21/22, 65, 66	Thinner
FLOOR CLEANER	2, 7/8, 13, 22, 25, 26, 36/37, 39, 45	Floor cleaner
NALFLEET ENGINE WATER TREATMENT 9 108	22, 25, 34, 35, 50, 60, 61, 8	Engine cooling water treatment
ES COMPLEAT PG CONCENTRATE	25, 50, 60, 61, 8	Coolant product
Hylomar Universal Blue	40, 22	Sealant
Dizsolve Inhibitor	22, 40, 41, 43, 50/53	Acid inhibitor in freshwater generator cleaning

Table 9: List of chemicals with R-phases currently required for ENE plant operations

Scientific/Brand Name	Total consumption of Delimara Power Station		Percentage of total consumption used by each plant			
	Consumption In 2014 (kg)	Consumption In 2015 (kg)	DPS1 (%)	DPS2A & DPS2B (%)	DPS3 (%)	Demin plant (%)
Additive MGO Fuel "Pentomag 2000"	6,000	2,400	100	*	*	*
Sodium Hydroxide Pearls (Caustic Soda)	73,775	60,800	5	1	67	27
Aquamax LT19NP Antiscale	6,000	4,800	*	*	80	20
Sodium Metabisulfite / Sodium Bisulfite	965	1,195	*	*	100	*
Oil Heavy Fuel	341,488,359	255,055,482	56	*	44	*
GAS OIL	53,153,673	36,455,328	*	95	5	*
Acid Sulphuric For Generation	47,260	23,840	*	*	*	100
AQUABREAK PX Water Based Cleaner	3,420	3,780	9	1	90	*
NALFLEET 9-108 BLK4 ENG WATER TREATMENT	1,320	2,460	*	*	100	*
SAF-ACID Descaling Compound	0	1,350	*	*	100	*
Sodium Chlorite	22,100	52,000	40	20	40	*
Ammonia Solution 25% (209kg Drum)	1,681	840	60	20	20	*
Concentrated Hydrochloric Acid	48,756	33,000	40	20	40	*
UREA	7,200,000	*	*	*	100	*
SBC	4,413,000	*	*	*	100	*
Oil Teresso (Terestic T32-100)	1,165	0	*	100	*	*
OIL TURBINE TOTAL PRESLIA 46	1,830	666	100	*	*	*
Oil Turbinol X-EP32 BP	499	1,331	*	100	*	*
Oil ITE 360 for Transformers/Switchgear	843	3,360	80	20	*	*

* Not used

Table 10: List of raw materials with an estimated annual consumption greater than one tonne currently required for ENE plant operations

Scientific/Brand Name	Method of storage	Location	Containment	Greater than 1 Tonne stored on site
BOND + SEAL GREY - 300ML	Tube x 310ml	Consumables Store	Shelf	<1 Tonne
FUELSOLV PEP990	No Longer Stockable	No Longer Stockable	No Longer Stocked	<1 Tonne
Gas Oil	Storage Tanks	Tank Area	Bunded Area	>1 Tonne
Heavy Fuel Oil	Storage Tanks	Tank Area	Bunded Area	>1 Tonne
LOW TOXICITY CLEANING FLUID	No Longer Stockable	No Longer Stockable	No Longer Stocked	<1 Tonne
PentoMag 2000	1000 litres IBCs	Ex 1ton Chlorine Tank Hut	Bunded Area	>1 Tonne
Satamin 3121	No Longer Stockable	No Longer Stockable	No Longer Stocked	<1 Tonne
SDI NEW: Product Code 504	(1)	(1)	(1)	<1 Tonne
EPOXYLITE 235 HARDNER	(1)	(1)	(1)	<1 Tonne
EPOXYLITE 235 SG RESIN	(1)	(1)	(1)	<1 Tonne
CELLULOSE THINNER EC DN 350	5 Litres Can	Chemical Store 1	Bunded Area	<1 Tonne
FLOOR CLEANER	(1)	(1)	(1)	<1 Tonne
NALFLEET ENGINE WATER TREATMENT 9 108	25 Litres Drum	Chemical Store 1	Bunded Area	>1 Tonne
ES COMPLEAT PG CONCENTRATE	26 Litres Drum	Chemical Store 1	Bunded Area	>1 Tonne
Hylomar Universal Blue	80ml Tubes	Consumables Store	Shelf	<1 Tonne
Dissolve Inhibitor	5 Litres Can	Chemical Store 1	Bunded Area	<1 Tonne
Sodium Hydroxide Pearls (Caustic Soda)	25 Kgs Bags	D.M. Plant	Palleted	>1 Tonne
Aquamax LT19NP Antiscale	1000 litres IBCs	Ex 1ton Chlorine Tank Hut	Bunded Area	>1 Tonne
Sodium Metabisulfite / Sodium Bisulfite	25 Kgs Bags	Chemical Store 2	Palleted	>1 Tonne
Acid Sulphuric For Generation	1000 litres IBCs	Antifouling Plant	Not purchased in IBC form. Bowser delivers into bunded tank.	<1 Tonne
AQUABREAK PX Water Based Cleaner	25 Liters Drum	Chemical Store 1	Bunded Area	>1 Tonne
SAF-ACID Descaling Compound	25 Kgs Drum	Chemical Store 2	Palleted	>1 Tonne
Sodium Chlorite	1000 litres IBCs	Ex 1ton Chlorine Tank Hut	Bunded Area	>1 Tonne
Ammonia Solution 25% (209kg Drum)	209 Kgs Drum	Chemical Store 1	Bunded Area	>1 Tonne
Concentrated Hydrochloric Acid	1000 litres IBCs	Antifouling Plant	Kept on-site with appropriate bunding.	>1 Tonne
UREA	Storage Tanks	Block 4	Bunded Area	>1 Tonne
SBC	Storage Tanks	Block 4	Bunded Area	>1 Tonne
Oil Teresso (Terestic T32-100)	208 Liters Drum	Oil Store 1	Bunded Area	>1 Tonne
OIL TURBINE TOTAL PRESLIA 46	208 Liters Drum	Oil Store 1	Bunded Area	>1 Tonne
Oil Turbinol X-EP32 BP	208 Liters Drum	Oil Store 1	Bunded Area	>1 Tonne
Oil ITE 360 for Transformers/Switchgear	208 Liters Drum	Oil Store 1	Bunded Area	>1 Tonne

(1) Bought only when required, not stored

Table 11: Raw-materials storage location and method of containment

Following the decommissioning of DPS1 the following raw materials will no longer be required for ENE operations:

- Additive MGO Fuel "Pentomag 2000"
- OIL TURBINE TOTAL PRESLIA 46

Following conversation of DPS3's engine to operate on NG, D3PG are to take over related operations. As a result Enemalta will no longer be responsible for the delivery, storage, use and disposal of:

- Sodium Metabisulfite / Sodium Bisulfite
- NALFLEET 9-108 BLK4 ENG WATER TREATMENT
- SAF-ACID Descaling Compound
- UREA
- Sorbent (sodium bicarbonate - SBC)

It is to be noted that no additional areas required for chemical storage are to be operated by ENE. It is also not expected that the current chemicals or volumes will increase.

2.4 Ozone Depleting Substances and Fluorinated Greenhouse Gases

The two Ozone depleting substances currently in use at the Delimara site are R22 which is used as a refrigerant in some air-conditioning units and SF6 which is used as a dielectric and insulating material for switchgear units.

2.4.1 R22 – Difluoromonochloromethane

On site ENE has a store of virgin R22 as well as reclaimed R22 gas that has been extracted from existing air-condition units that is being stored for appropriate disposal.

R22 Gas currently within DPS site	
Virgin	58.10kg
Reclaimed	121.79kg

Table 12: R22 Gas – stock position

The amount of R22 contained within units in operation (charged) are as follows:

- Workshop building (assistant stores principal) – 1.2kg
- Drawing office above workshop – 6.25kg
- Electrical techlab – 4kg

The amount of R22 contained within units on standby (unused) are as follows:

- DPS2A Local Control Room – 3.3kg.
- DPS1 Engine Room Building at UCR – 3.95kg
- DPS2B Central Control Building – 27.65kg.
- DPS2B HMI Server Room – 4 Kgs

2.4.2 Maintenance of R22 Air-Conditioning Units

No virgin or recovered R22 can be used to service air-conditioning units. A stock control exercise has been undertaken to keep track of the volume of R22 gas, be it in the virgin or reclaimed form. If leaks are detected in any air-conditioning units using R22 gas which are still in service, all R22 gas is to be extracted and depending on the particular unit:

- Fill using an alternative refrigerant gas
- If the compressor does not run on an alternative gas, replace the unit's compressor or replace the conditioning unit in its entirety.

It is to be noted that unless R22 gas is extracted and disposed of, maintenance and servicing of R22 systems will continue to be carried out on unused equipment as per operational equipment.

2.4.3 SF6 – Sulphur Hexafluoride

ENE's current SF6 stock position is as follows:

- Tank 1 – 99kg
- Tank 2 – 1kg
- Tank 3 – 278kg
- Tank 4 – 172kg
- Tank 5 (in use on 132kv) – 310 kg
- Tank 6 – 602kg
- Tank 7 (nitrogen mix) – 89 kg
- Tank 8 (in use on 33kv) – 263 kg
- Tank 9 - Empty
- Tank 10 – 141kg
- TOTAL = 1955kg

DPS1 currently contains the following quantities of SF6:

- 3145 kg in 132kV three-phase metal enclosed SF6 insulated switchgear type Trisep.
- 187kg in Calor Emag 7.2 to 36kV SF6 insulated switchgear type ZV2/EAK.
- TOTAL = 3332kg

DPS2B currently contains the following quantities of SF6:

- 40.2kg in ABB, HEC3 type SF6 circuit breakers

DPS3 currently contains the following quantities of SF6:

- 855kg in 132kV SF6 insulated switchgear – Siemens 8DN8
- 11.25kg in Generator Neutral Earthing switchboards – Siemens 8DJH-RK.
- TOTAL = 866.25kg

Therefore following the transfer of operations for DPS3 from ENE to D3PG and the decommissioning of D1, the quantity of SF6 utilised by ENE's operations is to be reduced by 88.625kg. It is to be noted that unless SF6 gas is extracted and disposed of, maintenance and servicing of SF6 systems will continue to be carried out on unused equipment as per operational equipment.

2.5 MAINTENANCE

All required maintenance works shall continue to be carried out as per suppliers' / manufacturers' recommendations in line with good engineering practices. This is to ensure that plant shall be run according to its specified performance and control its emission levels within the acceptable levels, and to maintain the optimal energy efficiency performance for the whole plant. Maintenance records shall continue to be maintained in accordance with current good engineering practices and integrated with the maintenance management programmes currently practiced at the installation. Replacement parts for unserviceable components shall be ordered, stored and maintained to ensure timely maintenance work and reduce breakdown downtime to the minimum possible. Overall upkeep of the new plant site and equipment shall be carried out in accordance with good housekeeping practices for such plants.

Additional maintenance on the emissions monitoring equipment will be required in line with manufacturers' requirements and to satisfy standards and legal / permit obligations. Waste storage and disposal sites and equipment shall be maintained as appropriate in line with the certified Environment Management System which will be running throughout the whole existing and new plants, and in line with any legal or permits obligations.

The proposed alterations to ENE's operations will see an overall reduction in required maintenance. DPS1 is to be put on cold standby followed by decommissioning, reducing the amount of required maintenance.

2.5.1 BOILER WASHING:

The majority of the scheduled maintenance on DPS plants namely D1, D2 do not generate considerably large amounts of waste. Usually the amounts of waste generated are mainly from contaminated waste. Small amounts of plastic, wood and cardboard waste will be generated from packaging of new parts.

The only large amount of generated waste from D1, D2A and D2B is the boiler cleaning waste (16 07 09*) generated from D1 boilers washing which occurs twice yearly. The boiler wash will be discharged in what is called boiler wash down pit. This pit which measures approximately 4m x 4m x 3m will be filled 3 times per boiler wash. This will amount to around 120m^3 of waste water for each boiler wash which eventually will be left to settle, treated and disposed of when the pit has considerable amount of waste. Hence for the 2 D1 boilers it is estimated that 480m^3 of waste water will be generated from boiler wash per year.

Please note that D2B Heat Recovery Steam Generators are never washed since this plant operates with cleaner fuel that generates less dust. Therefore, after D1 decommissioning, such waste will no longer be generated.

2.5.2 TRANSFORMER MAINTENANCE:

Although D1 is going to be decommissioned, the electrical services in this phase will be kept especially some of the transformers. Namely the Interbus transformers and station transformers will not be decommissioned. Interbus transformers and the station transformers will be kept. Herby you can find the routine scheduled maintenance that is carried.

Transformer Reference	Quantity of Equipment Installed Presently	Prior of Scheduled Maintenance	Type of Waste Generated	Quantity of Waste Generated
Interbus transformer tap changer	2	every 3 years	transformer oil	6 drums x 210 L
Station transformer tap changer	2	every 5 years	transformer oil	3 drums x 210 L
Generator Transformer	2	every 3 years	transformer oil	6 drums x 210 L
Unit Transformer	2	rarely as these are almost out of service	transformer oil	n/a

Table 13: Equipment in line 1 & 2 will be kept in service after the decommissioning.

Following this data, oil samples will be taken and tested to determine if the transformer oil still contains the properties requested by the OEM. Negative results imply that the oil has to be changed but there are no specified interventions after how long the oil has to be changed. Any jobs that contain oil handling are done with special attention to avoid. The removed oil is disposed of as waste transformer oil. During such maintenance, oily rags are also generated.

Transformers at DPS are maintained according to the manufacturers; specifications, or to rectify an identified fault. Whenever a transformer is maintained, an oil sample is taken and tested. If the transformer oil has out of the OEM specifications, then this oil will have to be emptied from the transformer and replaced with new oil. The removed oil is disposed of as waste transformer oil . During such maintenance, waste from oily rags is also generated. Other equipment which only contains small amounts of liters of oil is changed as per OEM schedule and will not be subject for testing. Other generated waste oil is also generated from fuel line drains for maintenance purposes and operational purposes.

The most generated waste from Delimara 3 are mainly oily rags and waste oil. The oil rags are generated from the cleaning done on every engine after each scheduled maintenance at approximately 2000hrs and other maintenance interventions which crops from time to time. An oil change of around $12m^3$ will be done for every engine in D3 every 12,000hrs of operation. The majority of these oil changes happened in the year 2014.

2.5.3 ANNUAL CERTIFICATION OF BUND WALLS AT DPS

As per discussions with COMAH and ERA, this report is to include the annual certification by a warranted civil engineer of the strength, integrity and leak proof properties of the bund walls located at Delimara Power Station.

The certification shall involve a detailed visual inspection carried out by the civil engineer which is aimed to identify any defects in the bund structure. Any cracks or presence of damp patches shall be identified and inspected. The inspection will also confirm whether the bunds retain rainwater following rain. Drains or valves are also checked as these could be possible weak points within the structure. Further nondestructive testing may be necessary as advised by the civil engineer.

A preliminary report documenting bund wall inspections observations and recommendations for remedial works shall be prepared. The civil engineer will also be responsible to prepare all relative technical specification for these remedial works.

Once the remedial works have been carried out, the same warranted civil engineer shall certify the works carried out and update his report accordingly. This certification meets both IPPC permit and COMAH requirements.

2.6 ENERGY

2.6.1 CHANGES TO ENERGY CONSUMPTION

Table 14 below describes the energy consumption of ENE's current main operating plant. The proposed changes will see the removal of DPS1's generating capacity and auxiliary load, together with DPS3's generating capacity and auxiliary load.

Plant Name	Plant Type	Nominal Rating Gross(MWe)	Efficiency (%)	Nominal Rating Net (MWe)	Auxiliary Load (MWE)	Type of Auxiliary Loads
DPS1	Steam Unit	60	32	57	3 each unit	Sea water pumps, boiler feed pumps, fuel pumps and various other pumps and motors necessary for the operation of the plant.
DPS1	Steam Unit	60	32			
DPS2A	Gas Turbine 1	Winter 36 Summer 30	30	Winter 35.3 Summer 29.3	0.7	Cooling fans and various other pumps and motors.
DPS2A	Gas Turbine 2	Winter 36 Summer 30	30			
DPS2B	CCGT 1	36	46 at base load	106.5	1.5	Boiler feed and circulating pumps, sea water pump, fuel pumps and various other pumps and motors necessary for plant operation. Auxiliary load only applies for continuous operation.
DPS2B	CCGT 2	36				
DPS2B	HRSG units & steam turbine	36				
DPS3	8 X Diesel Engines 18V46	17 MW each	45	145	4	Sea water pumps, induced draft fans, SBC mills, separators, air compressors, fuel pumps and various other pumps and motors necessary for plant operations.
DPS3	DE plant in combined Cycle	149MW	49.5			
Note:- Auxiliary load readings are for normally operating plant at full load. Those for DPS1 do not include the power required by the water production facilities as this operation is not continuous. Approx 1.5 kW are required to produce 1 m^3/h of evaporated water. And approx 1.94kW are required to produce 1 m^3/h of demineralised water.						

Table 14: Current Energy generation and consumption

Table 15 below describes the quantity of potable energy consumed by the Delimara administration building during the months of 2014. It is expected that the quantity of electricity utilised by ENE will remain relatively unchanged.

Month	Electricity consumption (kWh)	Electricity consumption per capita (kWh)
Jan	16683	278
Feb	11698	195
Mar	13312	222
Apr	11671	195
May	12336	206
Jun	22796	380
Jul	37563	626
Aug	34376	573
Sep	41534	692
Oct	27807	463
Nov	21359	356
Dec	21130	352

Table 15: Electricity consumption of DPS administration block for 2014

2.6.2 CHANGES TO ENERGY EFFICIENCY IMPROVEMENT

Through this application ENE shall not be making any changes to their generating plant, or to the procedures used to operate said machinery. It is ENE's intension to reduce the operating hours of DPS1, DPS2A and DPS2B which will in turn allow the demand in electricity to be met by more efficient plant operated by other operators.

At an operational level ENE shall continue to strive for improvements in energy efficiency by implementing the systems and procedures in the Environmental Management System described in Section C2.1.

2.7 WATER

2.7.1 SEAWATER

The maximum permitted cooling water discharge covered by IP 0002/07/E at Hofra iz-Zghira is currently 43,000m^3/h. The maximum temperature of cooling water discharged at outflow is 8^{o}C above ambient water temperature. Following an analysis on the impact carried out as part of IP 0002/07/E, it was found that the cooling water discharged from DPS is highly unlikely to have an effect on known populations or habitats of sensitive or protected sea bed species.

As shown in Table 16 below, following the decommissioning of DPS1 and transfer of operations of DPS3, the maximum amount of cooling water discharged at Hofra iz-Zghira by ENE is expected to reduce from 43,000m^3/h to 8,5000m^3/h retaining a maximum water temperature of 8^{o}C above ambient water temperature.

Generating Plant	Current sea-water Consumption	Proposed sea-water Consumption
DPS1	21,00m^3/h	Decommissioned
DPS2A	Not sea-water cooled	Not sea-water cooled
DPS2B	8,500m^3/h	8,500m^3/h
DPS3	14,700m^3/h (16,000m^3/h in EIA)	Operated by D3PG

Table 16: Current and proposed ENE seawater discharge

As per IP 0007/13/A, the combined maximum amount of cooling water discharged at Hofra iz-Zghira by ENE, D3PG & EGM at any one time is expected to reduce from 43,000m^3/h to 29,600m^3/h retaining a maximum water temperature of 8^{o}C above ambient water temperature. This overall reduction in cooling water at outflow is the result of:

- The introduction of EGM's installation will result in additional power generating capacity on site. This will in turn allow for reduced use of less efficient plant on site while in operation.
- Cold-standby and decommissioning of DPS1 which utilises the largest amount of cooling water per Megawatt generated.
- DPS2B will be utilised as reserve capacity.

Therefore the overall impact that cooling water may have at Hofra iz-Zghira is expected to reduce.

2.7.2 EVAPORATED & DEMINERALISED WATER

DM water is process water that is for the most part recouped within the steam cycle itself. Hence actual consumption is to make up for system leaks, drains and evaporation. Evaporated water is used intermittently for maintenance and also for steam sampling cooling, but in minimal amounts that are not quantifiable.

After conversion to gas, D3 is contractually bound to supply Enemalta's evaporated water storage tanks the equivalent volume of DM and evaporated water supplied to it, by operating the fresh water generators. These FWG's are operated by means of the waste heat extracted from the diesel engines' cooling water system. Therefore the net quantity of evaporated water t be supplied to D3PG is effectively zero.

D4 will source its DM and evaporated water supply from Enemalta's storage tanks, but volumes are limited to a maximum continuous rate of 25m3/h of combined DM and evaporated water.

2.7.3 POTABLE WATER

Potable water is used mainly for sanitary facilities. Table 17 below describes the quantity of potable water consumed by the Delimara administration building during the months of 2014. It is expected that the quantity of potable water utilised by ENE will remain relatively unchanged.

Month	Water consumption (m^3)	Water consumption per capita (m^3)
Jan	20	0.3
Feb	18	0.3
Mar	21	0.4
Apr	20	0.3
May	26	0.4
Jun	17	0.3
Jul	17	0.3
Aug	14	0.2
Sep	21	0.4
Oct	22	0.4
Nov	24	0.4
Dec	29	0.5

Table 17: Water consumption of DPS administration block for 2014

2.8 RISK ASSESSMENT

The following risk-assessment related studies can be found in the appendices:

- APPENDIX E- Enemalta Safety Report
- APPENDIX G- Enemalta Safety Management System
- APPENDIX H - Enemalta Emergency Response Plan
- APPENDIX I - Coordinated Safety Report
- APPENDIX J - Coordinated Safety Management System
- APPENDIX K - Coordinated Emergency Response Plan

2.9 TRAINING

In view that the operation of the Delimara remaining plants will not be changing, no new training is expected to be undertaken by ENE employees for the operation of ENE plant. Only refresher courses for existing employees or courses to new employees will be undertaken. In terms of environmental awareness, health and safety and fire, refresher training is held when due. Training at the ENE premises will be organized by the Training Section of the Corporation.

2.9.1 IN-HOUSE TRAINING

Refresher courses are normally held every 3 years (in line with recertification process) and include:

1) What is EMS and ISO 14001 certificate

- The EMS is part of an organization's management system used to develop and implement its environmental policy and manage its environmental aspects.
- The ISO 14001:2004 specifies requirements for an environmental management system to enable an organization to develop and implement a policy and objectives which take into account legal requirements and information about significant environmental aspects.

2) Basic Waste Management

- The importance to observe the hierarchy of waste.
- Types of waste generated within Enemalta and how it should be handled.
- Waste separation and examples of bad practices. The reason why waste is separated even within our homes.
- Effects on the environments due to non engineered landfills or illegal dumping.

3) Basic Chemical Handling

- Employees are instructed and informed about the chemical substances they frequently use at their place of work. Why one should consult a safety data sheet (SDS) before using a hazardous material. Route of entry of a substance into one's body and the long term effects.

4) Chemical/Oil Spill Response

- How one should respond to any kind of spill in an efficient and effective way while avoiding injury, use of spill kits and how to dispose of waste material after reinstating the contaminated area.

5) Emergency Response Team training

- The ERT frequently perform drills within the power stations whilst checking that all emergency equipment is fully serviceable if the need arises. Further to this further in dept training is given to the team in the use of equipment by specialized external trainers in fire fighting.

6) SF6 Training

- What is SF6 and the environmental effects of SF6
- The use of SF6 within Enemalta installation and how to react once an SF6 leak is noticed.
- Reporting .

7) Emergency Plan training

- Explanation of specific emergency plans to different section.
- Awareness and need to keep abreast with contents of the EP.

8) Fire Fighting

- Basic fire fighting practice
- Types of fires and how to extinguish.
- Types of fire extinguishers.
- Fire hazard identifications and remedial measures

2.10 CESSATION

The Government of Malta has committed itself to shut down the 2x60MW steam turbine generators referred to as DPS1, once sufficient replacement capacity is made available. It is expected that following the commissioning of DPS4, DPS1 will be put on cold standby, meaning that the plant will not operate unless extreme circumstances dictate its necessity. Following DPS1 decommissioning, the seawater cooling pumps of DPS1 are to be removed and an additional pump for DPS4 will be installed instead of one of the existing pumps currently used for DPS1. Drawing *0466-IPPC-0030* shows the location of the DPS1 cooling water pumps that are to be removed and the location of the DPS4 pumps. Following cold standby the plant is expected to begin decommissioning by end 2016 followed by dismantling beginning 2017.

Whilst Attachment 14 Delimara Power Station Decommissioning report of existing installation IPPC application still holds, a full decommissioning plan detailing the decommissioning strategy, highlighting the proposed techniques and procedures for reducing the possibility of contamination is to be submitted prior to decommissioning works.

2.11 MULTI-OPERATOR INSTALLATION

2.11.1 ENE COORDINATION - EGM

- Coordinated tie in points with EGM have been indicated in drawing *DPS-XZ-180*.
- ENE shall provide EGM with 3.3kV, 33kV, 132kV and 415kV electrical connections.

2.11.2 ENE COORDINATION - D3PG

- Coordinated tie in points with D3PG have been indicated in drawing *DPS-XZ-179*.
- Prior to the commencement of conversation ENE will remain responsible for operating all eight diesel engines, steam turbine and auxiliary systems. Following the complete transfer of operations of DPS3 to D3PG, ENE will no longer be responsible for operating the DPS3 eight diesel engines, steam turbine and auxiliary systems. The area to be operated by D3PG is indicated in drawing *0466-IPPC-0030*. The transfer of DPS3's operations is to take place in two phases, each phase coinciding with the conversion phases of the plant to operate on NG. The first phase will see the conversion of the first four diesel engines to operate on both NG and gasoil. Up to completion of this first phase, ENE will continue to operate engines 1,2,3, and 4. Following completion of the first phase, D3PG will have the capability to operate the converted engines on NG and gasoil. Simultaneously ENE will stop operating engines 5,6,7 and 8, and to allow said engines to be converted to run on NG. Therefore upon completion of the first phase, ENE will no longer operate any of the eight DPS3 engines.
- D3PG shall make use of ENE's internal sewer connection. It is however to be noted that DPS3's waste water sump operated by D3PG receives only D3 discharges, therefore needed, an isolated sample can be taken from this sump tank. Further details have been provided in Section C3.3.
- ENE shall provide to and receive from D3PG, Evaporated Water. Further details can be found in Section C1.3.5 & C2.7.2.
- ENE shall provide D3PG with 3.3kV, 132kV and 415kV electrical connections.
- ENE shall provide D3PG with a tie in point to the interceptor located at TP14. Further details can be found in section C1.3.11
- ENE shall provide D3PG with tie in points for storm-water runoff as described in Section C1.3.

2.11.3 ENE COORDINATION - D3PG & EGM

- The areas to be operated by ENE, EGM & D3PG are delineated in drawing *0466-IPPC-0030-01*.
- Coordinated tie in points with D3PG and EGM have been indicated in drawing *DPS-XZ-179* and *DPS-XZ-180* respectively.
- ENE shall provide Demineralised water to D3PG and EGM. Further details can be found in Section C1.3.4 & C2.7.2.
- ENE shall provide metered potable water connection for each operator. Further details can be found in section C1.3.6.
- ENE shall effectively extend the Delimara Power Station Fire Fighting water circuit to EGM and D3PG sites. Should operators require fire-fighting water capacities greater than that currently available on site a dedicated fire fighting system is to be installed by said operator. Further details can be found in section C1.3.7.
- Each operator will be in charge or operating their own seawater cooling pumps. ENE will retain responsibility for dosing of the cooling water intake. Further details on dosing procedures can be found in Section C1.3.9.
- ENE shall retain responsibility of dispatch and as such shall retain responsibility of National Emission Ceilings (NECs). From the calculations made and results obtained, Enemalta plc is confident that in the perceivable worst case dispatch scenarios using unfavorable fuel composition, the national emission ceilings for NOx, SO2, Dust and Ammonia allocated for the energy sector in Malta will not be exceeded.
- ENE shall provide a connection to the seawater outflow at Hofra iz-Zghira. Further details can be found in section C2.7.1 As per discussions with ERA, ENE has submitted a proposal for coordinated monitoring should the requirement arise.
- Operators shall coordinate noise monitoring as per coordinated noise monitoring method statements discussed in section C3.9.

3 PROPOSED EMISSIONS

3.1 WASTE

3.1.1 WASTE CHARACTERISATION

Waste resulting from major maintenance processes has been described in Section 2.5. Table 18 below described the various operational waste streams currently generated within the DPS site. Following decommissioning of DPS1 and the handing over of DPS3's operations to D3PG, the quantities of waste generated by ENE are to decrease substantially.

Description of Waste	EWC	Waste Generated in 2014			
		DPS1 Estimated % of total waste	DPS2A/ DPS2B Estimated % of total waste	DPS3 Estimated % of total waste	Total Weight (Kg)
Paper and Cardboard	15.01.01	42.5%	42.5%	15.0%	15,410
Plastic	15.01 .02 15.02.03 17.02.03 20.01.39	20.0%	20.0%	60.0%	14,800
Wood	15.01.03	14.5%	14.5%	71.0%	9,420
Mixed Waste	20.03.01	35.0%	30.0%	35.0%	37,870
Scrap Metal	17.04.07	70.0%	15.0%	15.0%	3,510
Glass	20.01.02 15.01.07	45.0%	45.0%	10.0%	220
Waste from sea water filtration	10.01.26 20.03.01	40.0%	40.0%	20.0%	7,940
Waste oil	13.02.05*	20.0%	10.0%	70.0%	115,320
Waste transformer oil	13.03.07*	90.0%	10.0%	0.0%	2,160
Oily water	13.05.07*	0.0%	0.0%	100.0%	144,450
Oily rags	15.02.02*	47.5%	5.0%	47.5%	3,855
Boiler cleaning waste	06.07.09*	70.0%	0.0%	30.0%	41,920
Flyash (Residual waste)	10.01.18*	0.0%	0.0%	100.0%	3,666,300
Contaminated packaging	15.01.10*	40.0%	20.0%	40.0%	2,820
Spent tubes	20.01.21* 16.02.13*	33.3%	33.3%	33.3%	350
WEEE	16.02.13*	100.0%	100.0%	0.0%	1,565

Table 18: Waste characterisation by plant

3.1.2 WASTE MANAGEMENT, STORAGE AND HANDLING

Table 19 below describes the maximum storage capacity currently available on site, location and method of containment of each operational waste stream. Enemalta waste will remain stored in the designated waste site, which is self bunding, thus allowing for both hazardous and non-hazardous waste to be stored.

Description of Waste	Storage Location	Max Storage Capacity	Method of Containment	Current Waste Carrier
Paper and Cardboard	1, 3, 4, 6	5x1100	skip	Green Skips Services Limited
Plastic	1, 3, 4, 5, 6	5x1100	skip	Green Skips Services Limited
Wood	3, 4	3x6yards	skip	Green Skips Services Limited
Mixed Waste	1, 4, 6, 2, 8	6x1100	skip	Green Skips Services Limited
Scrap Metal	4	2x6yards	skip	JAC Steel Limited
Glass	1, 3, 4	2x1100	skip	Green Skips Services Limited
Waste from sea water filtration	5	2x6yards	skip	Green Skips Services Limited
Waste oil	4	40,000l	IBCs or Maintenance tank	Waste Oils Company Limited
Waste transformer oil	4	20x200L drums	Drums	Waste Oils Company Limited
Oily water	4	40,000L	IBCs or Maintenance tank or settling tank	Waste Oils Company Limited
Oily rags	4	3x1100	skip	Green Skips Services Limited
Boiler cleaning waste	4	40 IBCs	IBCs	PT Matic Environmental Services Ltd.
Flyash	4	40 x 22 Tonnes	Waste residual container	PT Matic Environmental Services Ltd.
Contaminated packaging	4	3x1100L	skip	Green Skips Services Limited
Spent tubes	4	2x1100	skip	Green Skips Services Limited
WEEE	4	2x1100	skip	Green Skips Services Limited

Notes:
Storage Location 1 – UTM Coordinates: N35° 50.094’ E014° 33.220’ - Administration Car Park
Storage Location 2 – UTM Coordinates: N35° 50.048’ E014° 33.247’ - Workshop Front
Storage Location 3 – UTM Coordinates: N35° 50.051’ E014° 33.279’ - Workshop Back
Storage Location 4 – UTM Coordinates: N35° 49.989’ E014° 33.251’ - Waste Management Site
Storage Location 5 – UTM Coordinates: N35° 49.942’ E014° 33.324’ - Screen House
Storage Location 6 – UTM Coordinates: N35° 50.022’ E014° 33.385’ - Evaporators
Storage Location 7 – UTM Coordinates: N35° 49.909’ E014° 33.355’ - Container Area
Storage Location 8 - UTM Coordinates: N35° 49.975’ E014° 33.413’ - Near Block 4

Table 19: Waste management & storage

Storage locations in Table 19 are to be cross referenced with drawing *DPS-XZ-103-RevA.*

So as to allow for EGM's proposed waste management site, ENE shall be relocating its current waste site to that proposed in drawing *DPS-XZ-103-RevB.* The aforementioned drawing can be found in APPENDIX A. The proposed waste site shall retain its previous size and operational function. As shown in drawing DPS-XZ-185, the proposed waste management site shall be connected to existing oily-water separators.

3.1.3 WASTE RE-USE, RECYCLE OR DISPOSAL

Waste is temporarily stored in the waste site before it is disposed of by one of the waste contractors using appropriate waste carriers and at registered and appropriate waste site.

3.3 EMISSIONS TO SEWER

3.3.1 PROPOSED CONNECTION TO SEWER

Enemalta is not proposing any changes to the current sewerage system within the site. With reference to drawing DPS-WG-0010 (DPS Foul Water System Sample Points) ENE will continue to generate sewerage from the following points:

- Water treatment building and a foul water sample can be taken from point B.
- Administration building (shared with SEP), and a foul water sample can be taken from point C.
- CCR building. The system connects to TP11, the foul water tie in point for D3. Please note that when operating on gas, SEP shall utilize the D3 local control room for operations.
- Workshop building, and a foul water sample can be taken from point D
- Guard room and adjoining building, and a foul water sample can be taken from point E

DPS3's waste water sump operated by D3PG is located at point A, to which only D3 discharges. If needed, an isolated sample can be taken from this sump tank.

As per DPS-WG-0010, the foul water streams described above connect to the new cesspit which pumps the effluent to M'Xlokk.

Should a foul water system contamination occur, a sample may be taken from the points identified above. Should contamination result at TP11 it is more probable that this has occurred within D3 plant itself rather than the CCR where there is no machinery, and a sample could be taken from Point A to confirm this. If needed, a sample may also be taken from the sewer junction box adjacent to the CCR building. In this context Enemalta sees no need to separate the discharge of the CCR foul water system from that of D3 at point TP11, and therefore opts to not affect any modifications to the existing system.

EGM shall not connect to ENE's sewerage system.

3.3.2 SEWER DISCHARGE PERMIT

A copy of ENE's Sewer Discharge Permit has been can be found in APPENDIX K.

3.3.3 RELEASE OF SCHEDULE A/B SUBSTANCES

The proposal does not involve the release of any Schedule A or Schedule B substance into the sewers.

3.3.4 CESSPIT CHANGES

As per permit DN00146/14, the cesspit previously located within the EGM site has been relocated by approximately 25 meters from its original position to lie within the ENE operated site. The exact location of the cesspit in question can be seen in drawing *DCS02J14.*

3.4 EMISSIONS TO THE SEA

The two sources of emissions to sea generated by ENE are a result of:

- Cooling water
- Boiler was-downs
- Rain water reservoirs that overflow to the sea, and downstream of oily water interceptors where oil and water settle and separate.

3.4.1 EMISSIONS TO SEA – COOLING WATER

ENE will continue to operate and maintain the sea-water pumps supplying cooling water to ENE's generating plant. Other operators will be in charge or operating their own seawater cooling pumps. ENE will retain responsibility for dosing of the cooling water intake. Further details on dosing procedures can be found in Section C1.3. Sources and composition of cooling water generated by remaining ENE operated plant are to remain unchanged.

The total amount of cooling water produced by ENE plant is expected to reduce considerably as a result of:

- DPS3 operations being handed over to D3PG
- DPS1 Being put on cold standby
- DPS2A and DPS2B serving as back-up generating plant

As in previous applications the cooling water discharge point is to remain at Hofra iz-Zghira as indicated in drawing DPS-XZ-0172. The outfall is to be shared by ENE, D3PG and EGM. The total volume of water discharged at Hofra iz-Zghira is to remain limited to a maximum flow of 43,000m^3/h with a limited outflow temperature of 8^oC above ambient water temperature. In view of the fact that ENE shall retain dispatch rights, ENE shall be aware of which plant, operated by all three operators, shall be discharging cooling water at Hofra iZ-Zghira. Subsequently ENE shall dispatch plant, based on the information provided, so as to ensure that the aforementioned limits for discharge at Hofra iz-Zghira are not exceeded.

It is to be noted that whilst ENE shall continue to monitor discharges at Hofra iz-Zghira as per current IPPC requirements, additional monitoring points identified in drawing DPS-XZ-173 shall be provided downstream of the outfall so as to allow for individual monitoring of EGM's D3PG's and ENE's plant.

3.4.1 EMISSIONS TO SEA – BOILER WASH-DOWN

The process for treatment and disposal of boiler wash-down of ENE plant is to remain unchanged. The effluent resulting from boiler washes collects in a pit. It is neutralized by adding sodium hydroxide followed by thorough re-circulation of the mixture. When the measured pH is in the range between 6 and 10, the neutralized effluent is left to settle for 24 hours. As the now clear, neutralized effluent is discharged to the sea, minute particles are filtered off. The solid matter that remains at the bottom of the pit is collected, dried and exported for disposal. For MSDS sheet of sodium-hydroxide neutralization agent kindly make APPENDIX C *'CAUSTIC SODA PEARLS'*.

The total amount of boiler wash-down water produced by ENE plant is expected to reduce considerably as a result of:

- DPS3 operations being handed over to D3PG
- DPS1 Being put on cold standby
- DPS2A and DPS2B serving as back-up generating plant

3.4.2 EMISSIONS TO SEA – RAIN WATER & OILY WATER

Oily water is generated as a result of:

- Rain water falling into fuel bunds that may contain spilled fuel
- Rain water falling onto areas of plant where there could be fuel spillage, like for example around D1 boiler burners area, fuel treatment areas, etc.
- Fuel leaks around plant that get drained to the oily water interceptor
- Transformer oil leaks that get drained to an oily water interceptor

A detailed description of how rainwater and oily-water is processed on site, together with discharge locations has been provided in section C3.5.

3.5 RAINWATER

Currently rainwater on site can be divided into two; rainwater falling onto uncontaminated surfaces and water falling onto surfaces which may contain traces of oil. The former is either stored in a rainwater reservoir or emitted directly into the sea. On the other hand, water which may contain oil particulates, "oily water", is directed into oil-interceptors prior to storage or disposed of at sea.

The oil water interceptors at DPS are based on gravity separation. The design of the separator exploits the specific gravity difference between the oil and the wastewater. Based on that design criterion, most of the suspended solids will settle to the bottom of the separator as a sediment layer, the oil will rise to top of the separator, and the wastewater will be the middle layer between the oil on top and the solids on the bottom. Only this middle layer of water flows to the sea. The oil layer is skimmed off regularly and subsequently re-processed or disposed of, and the bottom sediment layer is removed by a chain and flight scraper (or similar device) and a sludge pump.

Drawing *DPS-XZ-166* shows how the current rainwater management systems remaining within ENE's operational area are to remain unchanged.

3.6 EMISSIONS TO AIR

3.6.1 EMISSIONS TO AIR – GENERATING PLANT

The following tables describe the current emissions to air of the various generating plant within the DPS site. These tables are to be referenced with drawing *DPS-XZ-106*.

It is also to be noted that following decommissioning of DPS1, the emissions described Table 20 will no longer form part of ENE's IPPC permit. D2A and D2B are to retained as standby plant. As such the emission limit values are to remain unchanged. Following the transfer of operations of DPS3 to D3PG, the emissions described Table 23 will no longer form part of ENE's IPPC permit.

Installation	**DPS1 (Phase 1)**	
Current IPPC chimney nomenclatures	D1A	D1B
No of Flues	1	
Stack Location Coordinates (UTM, x,y)	460038 ; 3965822	
Stack Height (m)	154	154
Stack Diameter (m)	2.9	2.9
Stack Temp at max load (oC)	165	165
NOx emissions (g/kWh)	1.95	1.35
NOx emission Level (mg/Nm3)	418.407	409.604
NOx generated in 2014 (tonnes)	636	483
SO_2 emissions (g/kWh)	3.565	3.63
SO_2 emission Level (mg/Nm3)	1130.841	1064.923
SO_2 generated in 2014 (tonnes) (measured)	1720	1191
SO_2 generated in 2014 (tonnes) (calculated)	1162	1295
CO2 emission Level (mg/Nm3)	N/A	N/A
CO2 generated in 2014 (tonnes)	289479	322761
Ammonia Emissions (ppm)	n/a	n/a
Ammonia generated in 2014 (tonnes)	n/a	n/a
Dust Emissions (g/kwh)	0.193	0.084
Dust generated in 2014 (tonnes)	63.14	29.988
CO annual average pollutant concentration (mg/Nm3)	4.773	
Rated thermal input	332	
Energy output (GJ)	3686188	4109839
Energy generated in 2014 (MWh)	325930	356433
Number of hrs plant was operational in 2014	7625	7169
Fuel consumption (tonnes)	90217.275	100585.901

Table 20: Emissions to air – DPS1

Installation	DPS2A (Phase 2A)	
Current IPPC chimney nomenclatures	D2	D3
No of Flues	1	1
Stack Location Coordinates (UTM, x,y)	459869; 3965745	459881; 3965727
Stack Height (m)	16	16
Stack Diameter (m)	3.5	3.5
Stack Temp at max load (oC)	560	560
NOx emissions (g/kWh)	5.36	4.79
NOx emission Level (mg/Nm3)	358.26	358.26
NOx generated in 2014 (tonnes)	12.2	12.6
SO_2 emissions (g/kWh)	0.784	0.812
SO_2 emission Level (mg/Nm3)	51.912	51.912
SO_2 generated in 2014 (tonnes) (measured)	n/a	n/a
SO_2 generated in 2014 (tonnes) (calculated)	1.8	2.1
CO2 emission Level (mg/Nm3)	N/A	N/A
CO2 generated in 2014 (tonnes)	2974	3549
Ammonia Emissions (ppm)	n/a	n/a
Ammonia generated in 2014 (tonnes)	n/a	n/a
Dust Emissions (g/kwh)	0.005	0.005
Dust generated in 2014 (tonnes)	0.013	0.014
CO annual average pollutant concentration (mg/Nm3)	No CEMS	No CEMS
Rated thermal input	121	121
Energy output (GJ)	40753	48757
Energy generated in 2014 (MWh)	2275	2621
Number of hrs plant was operational in 2014	267	289
Fuel consumption (tonnes)	953.669	1140.971

Table 21: Emissions to air DPS2A

Installation	DPS2B (CCGT)			
Current IPPC chimney nomenclatures	D4A	D4B	D5A	D5B
No of Flues	1	1	1	1
Stack Location Coordinates (UTM, x,y)	460088; 3965766	460072; 3965789	460037; 3965731	460021; 3965754
Stack Height (m)	12.5	66	12.5	66
Stack Diameter (m)	3.1	3.2	3.1	3.2
Stack Temp at max load (oC)	560	170	560	170
NOx emissions (g/kWh)	1.02			
NOx emission Level (mg/Nm3)	290.247	153.865	0	1967.19
NOx generated in 2014 (tonnes)	4.209	108	0.071	124
SO_2 emissions (g/kWh)	0.418			
SO_2 emission Level (mg/Nm3)	20.707	28.201	0	23.253
SO_2 generated in 2014 (tonnes) (measured)	0.227	21.143	0.007	15.311
SO_2 generated in 2014 (tonnes) (calculated)	0	43.1	0	53.5
CO2 emission Level (mg/Nm3)	N/A	N/A	N/A	N/A
CO2 generated in 2014 (tonnes)	151088			
Ammonia Emissions (ppm)	n/a	n/a	n/a	n/a
Ammonia generated in 2014 (tonnes)	n/a	n/a	n/a	n/a
Dust Emissions (g/kwh)	0.003			
Dust generated in 2014 (tonnes)	0	0.724	0	0.046
Rated thermal input	121		121	
CO annual average pollutant concentration (mg/Nm3)	2.036		16.883/3.046	
Energy output (GJ)	2063728			
Energy generated in 2014 (MWh)	230814			
Number of hrs plant was operational in 2014	3185		3811	
Fuel consumption (tonnes)	0	21535.845	0	26757.692

Table 22: Emissions to air DPS2B

Installation	DPS2A (Phase 2A)
Current IPPC chimney nomenclatures	D6A/D6B/D6C/D6D
No of Flues	4
Stack Location Coordinates (UTM, x,y)	460137; 1965687 460134; 3965685 460104; 3965663 460101; 3965661
Stack Height (m)	65
Stack Diameter (m)	2.1
Stack Temp at max load (oC)	170
NOx emissions (g/kWh)	0.85
NOx emission Level (mg/Nm3)	142.394
NOx generated in 2014 (tonnes)	2-Shift 4,467 Base-load 3,727 728
SO_2 emissions (g/kWh)	0.554
SO_2 emission level (mg/Nm3)	84.842
SO_2 generated in 2014 (tonnes) (measured)	472.391
SO_2 generated in 2014 (tonnes) (calculated)	n/a
CO2 emission Level (mg/Nm3)	n/a
CO2 generated in 2014 (tonnes)	499620
Ammonia Emissions (ppm)	3.14
Ammonia generated in 2014 (tonnes)	15.689
Dust Emissions (g/kwh)	0.04
Dust generated in 2014 (tonnes)	2-Shift 814 base-load 875 33.992
CO annual average pollutant concentration (mg/Nm3)	92.001
Rated thermal input	77x4 (308)
Energy output (GJ)	6275023
Energy generated in 2014 (MWh)	852125
Number of hrs plant was operational in 2014	49323
Fuel consumption (tonnes)	153450.65

Table 23: Emissions to air DPS3

3.6.2 EMISSIONS TO AIR – FUEL STORAGE

Drawing *DPS-XZ-106* indicates the location emissions to air produced from the HFO storage tanks. Further details on emissions from HFO storage tanks have been provided in section C3.7 of this application.

3.6.3 EMISSIONS TO AIR - ABATEMENT TECHNIQUES

Currently abetment on generating plant is limited to DPS3, which reduces the concentration of oxides of nitrogen in the flue gas is by the Selective Catalytic Reduction NOx reduction system (SCR/DeNOx). The NOx reduction is achieved using an ammonia rich reactant and a catalyst. The reducing agent, which is an aqueous urea solution of 40% concentration, is injected, atomized, and distributed directly into the exhaust gas upstream of the SCR reactor. Following the transfer of DPS3's operations to D3PG the aforementioned abatement techniques will no longer be carried out by ENE.

DPS2A and DPS2B achieve emission limit values without the requirement of abatement techniques. DPS2A and DPS2B operation techniques are to remain unchanged.

HFO fuel tanks utilise wet-scrubbing-technology as an abatement measure to fugitive emissions. Details regarding the system are found in section C3.7.

3.7 ODOUR EMISSIONS

3.7.1 HFO STORAGE ODOUR EMISSIONS

ENE has a fuel storage plant consisting of two Heavy Fuel Oil (HFO) Tanks (dia. 40 mt, height 20 mt) each of nominal capacity 25,000 cub. Mts. These HFO tanks are heated by bottom steam tank heaters to be kept at a temperature of approx. 50 degree Celsius. The tanks are solely used for the storing of HFO and no other type of fuel/substance. Fugitive emissions are mostly present during the unloading from the vessel to fill-up the HFO Tanks. This is mainly due to the ullage or headspace of the tank above the Heavy Fuel Oil which is being vented to the atmosphere during filling. Following review of available technologies, "Wet Scrubbing Technology" was selected as the most effective means of controlling the VOCs.

3.7.1.1 OPERATIONAL PARAMETERS

The fuel tank is operated on the following modes:

Filling Mode where the tank is filled with fuel (same type and grade) from a ship at a filling rate of approx 1000 cub.mt per hour;

Standby/Operation Mode where the fuel tank is heated by bottom steam space heating and kept at a temperature of about +52 degree C max/ the heated fuel is pumped out of the tank at a rate of approx 40 cub.mt per hour.

A similar (standby) tank is also used for the same purpose. These tanks are completely filled about 6 times per year.

HFO Stored Fuel Properties	
Product Stored	Heavy Fuel Oil
Stored Temperature (operational)	+ 52 degree C max
Stored Temperature (out of service)	ambient (+40 degree C max

Table 24: HFO Stored fuel properties

HFO Tank Properties	
Tank height	20 meters
Tank Diameter	40 meters
Tank Volume	25,000 cub.mts
Tank max allowable pressure	70 mm WG (water gauge)
Tank max allowable vacuum	25 mm WG (water gauge)

Table 25: HFO Tank Properties

3.7.1.2 REVIEW OF EXISTING TECHNOLOGIES

Enemalta considered various existing technologies that could be utilised to perform the abatement of the Fugitive Emissions from the Phase 1 Heavy Fuel Oil Tanks.

Activated Carbon Absorption System, which is considered as a Dry Scrubbing System utilises activated carbon, whereby it adsorbs the volatile organic compounds present the gas stream. Such system is employed at the DPS3 Plant. However, it was found that the implementation of such a system poses risks to the safety of the HFO tanks. The increase in risk is due to the fact that the existing D1 HFO tanks were originally designed to operate at atmospheric pressure. In this case they do not cater for the installation of carbon filters. As a result of the VOC abatement process the carbon heats up, creating a potential source of fire. In order to eliminate the ignition source, tanks utilising carbon filters are fitted with flame arrestors which in turn increase the pressure within the tank creating a potential risk to the structural integrity of the tank. As a result Enemalta have considered "Wet Scrubbing System", as a safer option.

Following testing and research it was concluded that wet-scrubbing proved to be the best solution. In a wet scrubber, the polluted gas stream is brought into contact with the scrubbing liquid. There are two methods, 1) by spraying it with the liquid, 2) by forcing it through a pool of liquid. In the proposed abatement device both systems were employed. The main function of the "Wet Scrubbers" is to combine with any compounds in the polluted gas stream, absorbing and dissolving them. These droplets are then captured and collected, leaving the gas stream clean and free of any emissions or compounds.

3.7.1.3 VOC ABATEMENT SYSTEM DESIGN

Preliminary drawings and testing were performed prior and during the building of the system. Below are the designs that were used to build the abatement system.

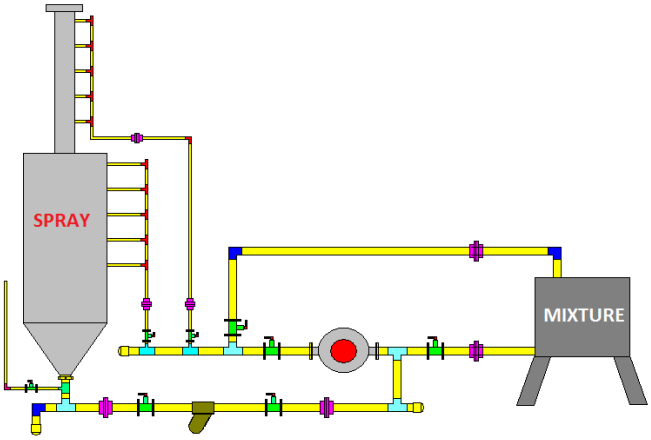


Figure 10: VOC Abatement system - Piping arrangement

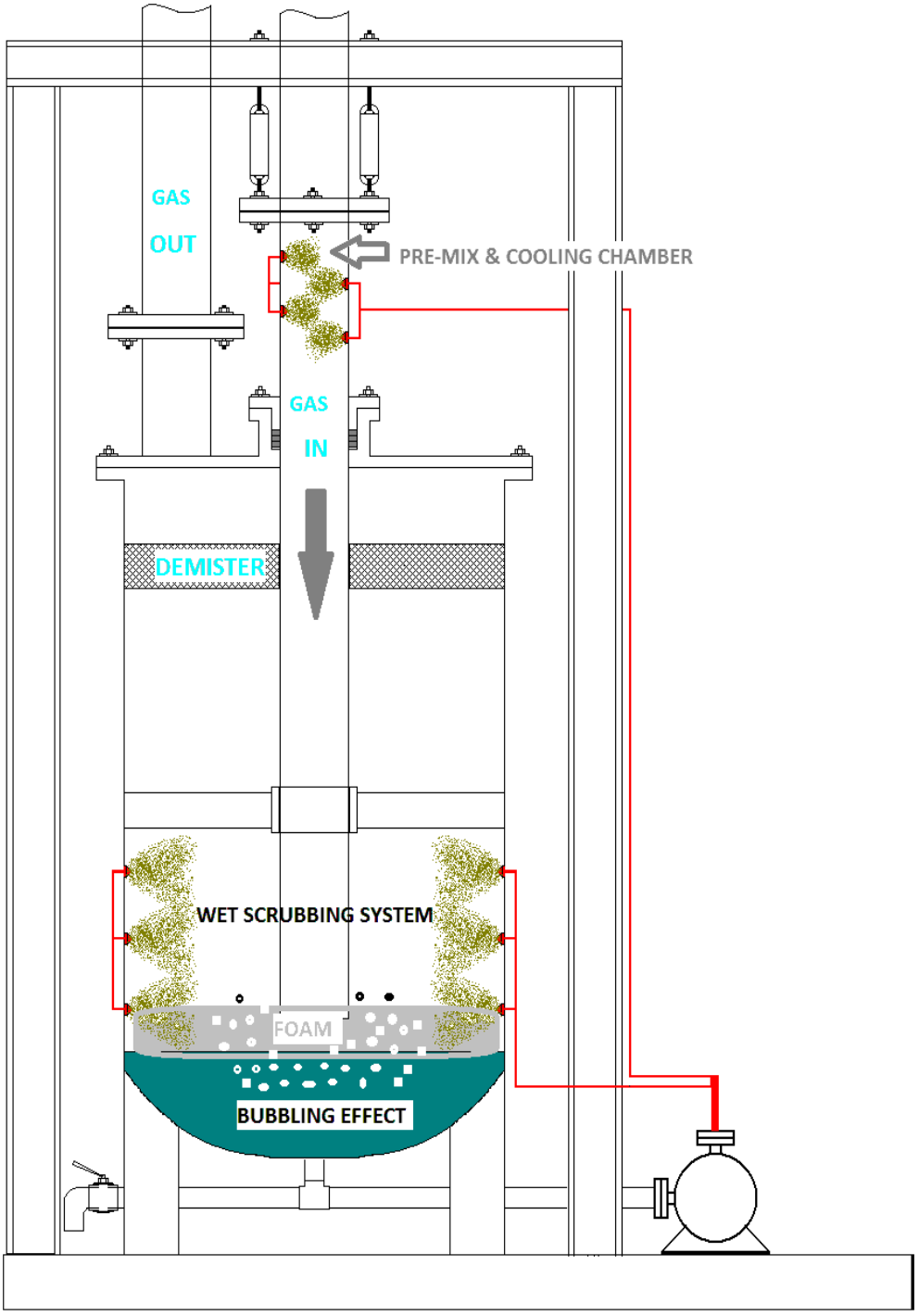


Figure 11: VOC Abatement System - Principle of operation

3.7.1.4 ABATEMENT SYSTEM PERFORMANCE

The VOC Abatement system was tested by the external auditors: ECOSERV in collaboration CADA at the maximum unloading rate permissible of 1060 metric.tons/hour (approx 1082 cub.mt/hr). Prior to abatement the VOCs being vented to the atmosphere amounted to: 350.6 mg/Nm^3. After passing

through the abatement system, the amount of VOC being vented to the atmosphere decreased to 42 mg/Nm3. This implies a reduction of 88 percent in the emissions to the atmosphere .

Further monitoring and tests were performed on the abatement system on 6th December 2014. What follows is an account by Enemalta of what happened during this monitoring. The abatement system was left off until the unloading began, at which point a strong odour of venting gas was observed, especially next to the Venting Pipe. The abatement system was then started, at which point the odour of the venting gases was not observed anymore. The temperature of the air being vented was also noticeably cooler once the wet scubbing abatement system was started. With the abatement system running the VOC logging instrument immediately registered a sharp drop in the VOCs, reaching a minimum reading of approx 12 mg/m3 after some time.

Some further tests were conducted leaving all parameters constant, varying only the level of scrubbing mixture. The VOC reading with the utilising spray nozzles only was of about 160 mg/m3. It was therefore decided to increase the level of the foaming mixture until the venting nozzle was just slightly below the foaming surface. This had a considerable effect in the reduction of the VOCs such that the concentration of VOC was reduced to the min level. This indicates that the abatement system is benefitting from using both techniques (Spraying and Bubbling) of the Wet Scrubbing System. The spraying system captured 350 – 160 mg/Nm3 = 190 mg/Nm3 : 55 percent of the VOCs – the Bubbling System captured 160 – 12 mg/Nm3 = 148: 93 percent of the remaining VOCs. For a total abatement of 350 – 12 mg/Nm3 = 338 mg/Nm3 : 96 percent.

Works on the Abatement System are still ongoing. The HFO Tank 2 will also be connected to the same Abatement System of Tank 1. In fact much of the preparatory such as the scaffolding works which would enable the piping system to be interconnected with the System is ongoing.

3.7.2 AMMONIA ODOUR EMISSIONS

ENE does not propose any changes to the Ammonia dosing system. As per previous sections it is to be noted that following transfer of operations to D3PG, ENE shall no longer utilise ammonia for abatement

3.8 EMISSIONS TO LAND

3.8.1.1 EXISTING GROUNDWATER RISK ASSESSMENT

So as to fulfill condition 1.5.1 of IP0002/07/E permit requirements, ENE has submitted a soil monitoring investigation forming part of the Outline Decommissioning Plan. The Outline Decommissioning plan has been attached for reference. Independently from the soil monitoring investigation for the IPPC permit, ERA had also requested that the mound ('landfill') outside (and to the south) of the IPPC permit is investigated to characterise ground conditions and analyse potential ground contamination.

ENVIRON UK Limited undertook and managed an intrusive site investigation on behalf of Enemalta Corporation in order to collect the site reference data. The main site investigation was undertaken between the 2nd June to the 28th June 2011. Twenty boreholes within the IPPC permit boundary to depths of 5m to 10m using a rotary solid stem auger to allow the sampling of the soil. Another three boreholes were drilled on an area of 'landfill' outside (and south of) the IP0002/07/E permit boundary to prove the base of the 'landfill'. The boreholes were drilled to depths of between 19.0m bgl and 42.0m bgl using solid stem auger to 6.0m bgl, continued to depth using rotary open hole drilling. Sample locations were positioned to provide general coverage across the site and to target potential sources of contamination. Sampling locations have been identified in Figure 2 below.

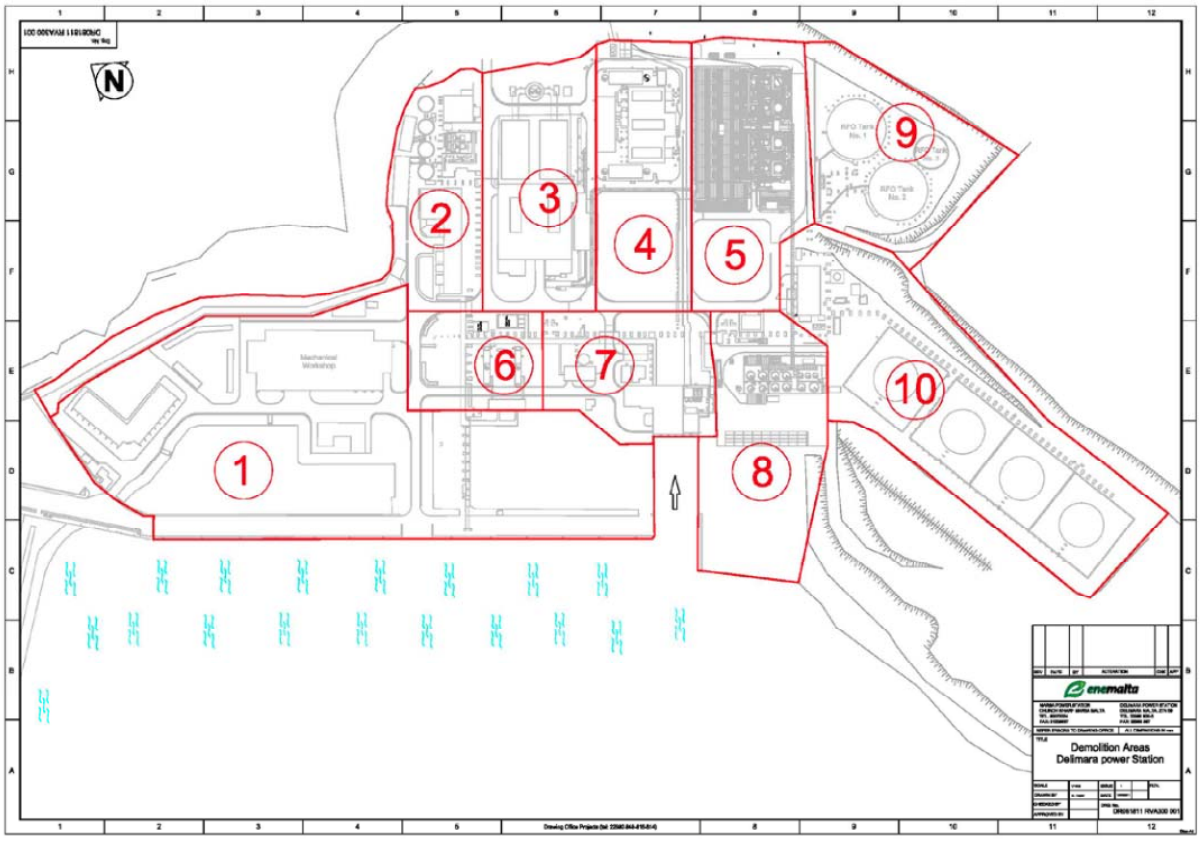


Figure 12: Location of bore-holes

From the twenty three boreholes, a total of thirty two soil samples were tested for a range of determinands specified in Schedule 9 of the IPPC permit, including a suite of metals, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), volatile and semi-volatile organic compounds, polychlorinated biphenyls (PCBs) and asbestos.

Low concentrations of metals were identified site wide. Low concentrations of PAHs, VOCs, SVOCs and EPH were identified in localised areas. EPH were identified above detection limits in two samples of natural material in BH08, located in close proximity to a sump associated with Boiler No2, approximately 2.0 – 2.5m bgl in depth. The borehole logs identify that water was encountered at 2.2m bgl at this location which is not consistent with the geological logs from boreholes located in natural mudstone on the Delimara Peninsula. The presence of water may indicate a local seepage, for example from the nearby sump, which is a potential source of hydrocarbon contamination. The presence of petroleum hydrocarbons suggests that the pollution prevention measures may be inadequate in this area.

3.8.1.2 PROPOSED GROUNDWATER RISK ASSESSMENT

With respect to the groundwater risk assessment, ENE has prepared a proposed methodology in line with "Communication from Commission - European Commission Guidance concerning baseline reports under Article 22(2) of Directive 2010/75/EU on industrial emissions (2014/C 136/03)", which is being discussed with ERA for approval.

3.9 NOISE

As per agreement with ERA, each operator shall present a method statement that has been coordinated with other operators.

Reference is to be made to APPENDIX M for ENE's IPPC noise monitoring method statement and APPENDIX M for the noise monitoring results of 2014 and 2015.

3.10 MONITORING

3.10.1 MONITORING – NOISE EMISSIONS

In view of the proposed multiple operator installation, ENE is proposing the noise monitoring plan described in section C3.9 of this application.

3.10.2 MONITORING – EMISSIONS TO AIR

Drawing *DPS-XZ-106* indicates the location of sources of emission to air. During operation, DPS1 shall be monitored utilising continuous, discontinuous and periodic monitoring. Table 26 below described the parameters and frequencies to be monitored together with the appropriate standard to be used for DPS1. The table has been extracted from Table 2.2.2.1-Monitoring and emission limits for DPS1 of IP 0002/07/E. Following cold-standby, monitoring will seize.

DPS2A and DPS2B shall be monitored in accordance Table 28 Table 27 below, extracted from Table *2.2.3.1-Monitoring and emission limits for DPS2-5*.

Prior to transfer of operations to D3PG, DPS3 shall be monitored in accordance Table 27 below, extracted from *Table 2.2.4.1- Monitoring and emission limits for DPS6*.

There is also Air quality monitoring at Marsaxlokk village for particulate matter sizes 2.5µm and 10µm. This is ongoing and reports are issued biweekly. Every quarter we also have to check for the level of heavy metals in particulate matter as well.

As part of the improvement programme and due to the use of HFO for diesel engine, ENE assess air quality in Marsaxlokk by carrying out daily monitoring of PM10 and PM2.5 utilising a Beta Attenuation Method. Monitoring is carried out under representative. The results of such monitoring is submitted as part of the Monthly and Annual Environmental Reports. Accompanying the air dispersion monitoring, ENE also monitors winds speed and direction with equipment located on the ENE administration building, wind speed and the direction is continuously monitored.

Parameter	Monitoring frequency	Monitoring method	Sample points located according to	Emission value	Limit	Maximum allowable factor subtracted by validation, in accordance with LN 172/10
Dust (TSP)	Continuous	EN 13284-2:2004	EN 13284-1: 2004	55 mg/Nm3 (97% of all 48 hourly mean values)	50 mg/Nm3 (calendar monthly mean value)	30%
SO2	Continuous	ISO 7935:1992 or the equivalent EN standard	ISO 10396:2007 or the equivalent EN standard.	1639 mg/Nm3 (97% of all 48 hourly mean values)	1490 mg/ Nm3 (calendar monthly mean value)	20%
NOx	Continuous	ISO 10849:1996 or the equivalent EN standard	ISO 10396:2007 or the equivalent EN standard	495 mg/ Nm3 (95% of all 48 hourly mean values)	450 mg/ Nm3 (calendar monthly mean value)	20%
CO	Continuous	EN 10558:2006	ISO 10396:2007 or the equivalent EN standard	110 mg/Nm3 (97% of all 24 hourly mean values)	100 mg/Nm3 (monthly average)	10%
Dioxins and furans (PCDDs and PCDFs)	Every two years	EN 1948-1,2,3,4:2006, sampling to be carried out over at least 6 hours		0.1 ng TEQ /Nm3 (annual average) calculated as per schedule 6		NA
Cadmium (Cd) and Thallium (Tl)together	Every six months	EN 14385:2004, sampling to be carried out over at least 6 hours	EN 13284-1: 2004	0.05 mg/Nm3 (annual average)		NA
Arsenic (As), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Lead (Pb), Antimony (Sb) and Vanadium (V) together	Every six months	EN 14385:2004, sampling to be carried out over at least 6 hours	EN 13284- 1: 2004	0.5 mg/Nm3 (annual average)		NA
PAHs	Annually	ISO 11338-1:2003 or equivalent, sampling to be carried out over at least 6 hours	ISO 12884:2000 or equivalent	NA	NA	NA

Table 26: Monitoring and emission limits for DPS1

Parameter	Monitoring frequency	Monitoring method	Emission value	Limit	Maximum allowable factor subtracted by validation, in accordance with LN 172/10
Dust (TSP)	Continuous	EN 15267-3, EN 14181	55 mg/Nm3 (97% of all 48 hourly mean values)	50 mg/Nm3 (calendar monthly mean value)	30%
SO2	Continuous	EN 14181, EN 15267-3, EN ISO14956	132 mg/Nm3 (97% of all 48 hourly mean values)	120 mg/ Nm3 (calendar monthly mean value)	20%
NOx (Measured as No2)	Continuous	EN 14181, EN 15267-3, EN ISO 14956	176 mg/ Nm3 (95% of all 48 hourly mean values)	160 mg/ Nm3 (calendar monthly mean value)	20%
CO	Continuous	EN 14181, EN 15267-3, EN ISO 14956	264 mg/Nm3 (97% of all 24 hourly mean values)	240 mg/Nm3 (monthly average)	10%
Ammonia	Continuous	EN 14181, EN 15267-3, EN ISO 14956	2.6 mg/Nm3 (annual average)		NA
Cadmium (Cd) and Thallium (Tl)together	Every three months	EN 14385:2004, sampling to be carried out over at least 6 hours (sampling points located according to EN 13284- 1:2004)	0.02 mg/Nm3 (annual average)		NA
Chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), lead (Pb) and antimony (Sb) together			0.02 mg/Nm3 (annual average)		NA
Arsenic (As)			0.005 mg/Nm3 (annual average)		NA
Nickel (Ni)			0.345 mg/Nm3 (annual average)		NA
Vanadium (V)			3.1 mg/Nm3 (annual average)		NA
PAHs	Annually	ISO 11338- 1:2003 or equivalent, sampling to be carried out over at least 6 hours (sampling points located according to ISO 12284:2000)	0.009 mg/Nm3		NA

Table 27: Monitoring and emission limits for DPS3

Parameter	Monitoring frequency	Monitoring method	Emission Limit value		Maximum allowable factor subtracted by validation, in accordance with LN 172/10
Dust (TSP)	Continuous	ISO 11042- 2: 1996 or the equivalent EN standard	NA		NA
SO2	Continuous	ISO 11042- 2: 1996 or the Equivalent EN standard	NA		NA
NOx (measured as NO2)	Continuous	ISO 11042- 2: 1996 or the Equivalent EN standard	495 mg/ Nm3 (95% of all 48 hourly mean values)	450 mg/ Nm3 (calendar monthly mean value)	20%
CO	Continuous	ISO 11042- 2: 1996 or the Equivalent EN standard	55mg/Nm3 (97% of all 24 hourly mean values)	50 mg/Nm3 (monthly average)	10%

Table 28: Monitoring and emission limits for DPS2A and DPS2B

3.10.3 MONITORING - EMISSIONS TO SEA

As per IP 0002/07/E ENE shall continue to utilise the five outflow points shown in drawing DPS-XZ-166 and tabulated in Table 29 below. Monitoring is carried out at the outfall (Point 5) and the oily water interceptor (Point 2).

Outlet No.	Details	UTM Coordinates	
		x -coordinate	y-coordinate
Point 1	Water reservoir overflow	459,647	3,965,869
Point 2	Oil interceptor (water from the waste storage area, turbine hall drains)	459,754	3,965,707
Point 3	Water reservoir overflow	459, 903	3,965,595
Point 4	Oil interceptor (fuel tank area), water from fuel centrifugation	459,860	3,965,516
Point 5	Water treatment, cooling systems, waste water from steam generation, waste water from boiler washdown	460,154	3,965,839

Table 29: UTM Coordinates of seawater outflow points

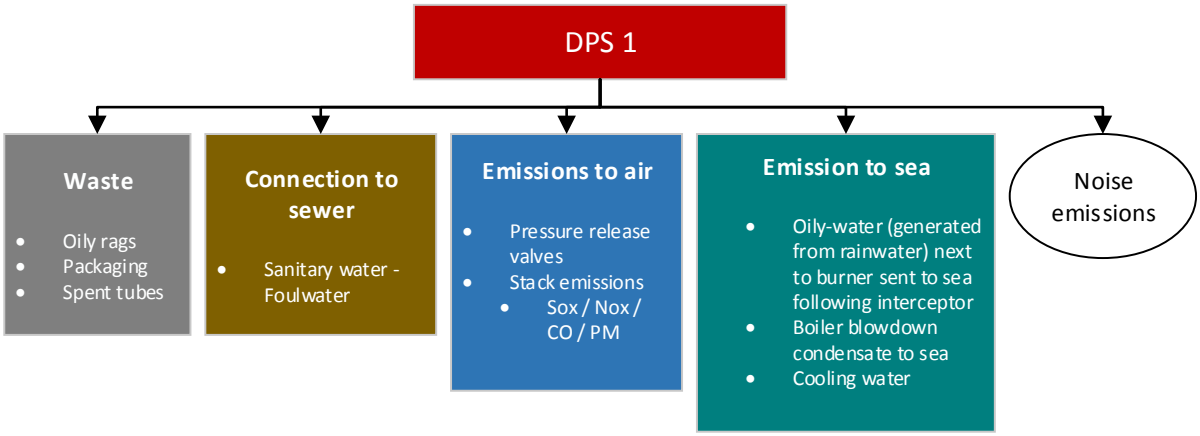
Samples are also taken Point 3, and subjected to the same tests as those performed for the outfall. The results of the sea water inlet are used as a reference point of the water quality downstream of all processes. Therefore, contamination may be assessed from the variance in results of the outfall samples and those gathered from the seawater inlet.

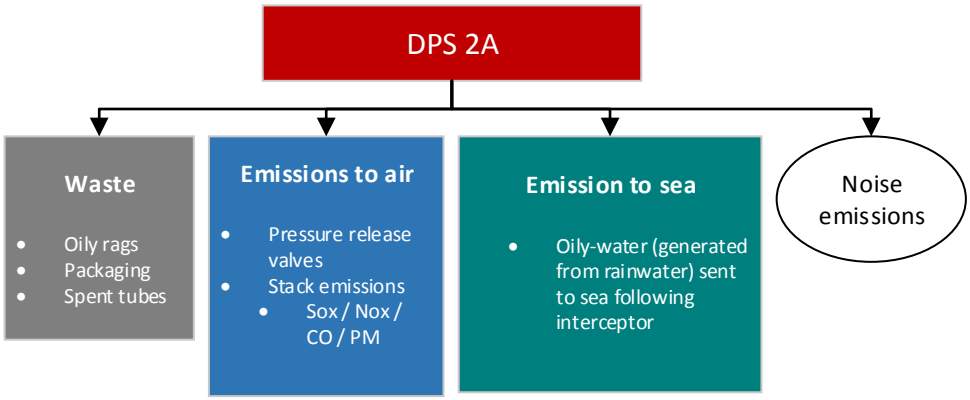
No.	Parameter	Emission limit value (Annual average)	Measurement methodology	Monitoring frequency	
				Point 5	Point 2
1	Flow	-	Flow meter	Continuous Or calculated	Continuous Or calculated
2	pH	6-10	pH meter	Continuous	-
3	Temperature	8 °C above marinewater	Digital thermometer	Continuous	-
4	Biological oxygen demand (BOD5)	25 mg/L	EN 1899: 1998	Annual	Annual
5	Total Nitrogen	10 mg/L	EN 12260:2003	Quarterly	Annual
6	Phosphorous compounds as total phosphorous, as per EN ISO 15681	1 mg/L	EN ISO 15681: 2004	Annual	Annual
8	Chlorine dioxide and oxidants (given as chlorine)	0.3 mg/L	DIN 38408-5	Quarterly	Annual
9	Arsenic	5 µg/L	ISO 11885: 2007	Quarterly	Annual
10	Cadmium	0.2 µg/L	ISO 11885: 2007	Quarterly	Annual
11	Chromium (Total)	0.5 mg/L	ISO 11885: 2007	Every six months	Annual
12	Copper	0.5 mg/L	ISO 11885: 2007	Quarterly	Annual
13	Lead	7.2 µg/L	ISO 11885: 2007	Quarterly	Annual
14	Mercury	0.05 µg/L	ISO 11885: 2007	Every six months	Annual
15	Nickel	20 µg/L	ISO 11885: 2007	Quarterly	Annual
16	Tin	1.0 mg/L	ISO 11885: 2007	Annual	Annual
17	Vanadium	4 mg/L	ISO 11885: 2007	Annual	Annual
18	Zinc	4 mg/L	Method 3125B, AWWA/APHA, 20th Ed, 1999	Every six months	Annual
19	Total petroleum hydrocarbons	5 mg/L	ISO 9377-2: 2000	Every six months	Annual
20	Tributyl tin compounds(tributyltin cation; CAS number 36643-28-4)	0.0002 µg/L	EN ISO 17353: 2005	Quarterly	Annual
21	Total Suspended Solids	35 mg/L	EN 872:2005	Annual	Annual
22	Benzene (CAS number 71-43-2)	8 µg/L	EN ISO 15680:2003	Quarterly	Annual
23	PAHs as follows:				
23.1	Benzo(a)pyrene	0.05 µg/L	EN ISO 17993:2003	Annual	Annual
23.2	Benzo(b)fluoranthene, Benzo(k)fluoranthene	Sum of 2 PAHs: 0.03 µg/L	EN ISO 17993:2003	Annual	Annual
23.3	Benzo(g,h,i)- perylene, Indeno(1,2,3- cd)-pyrene	Sum of 2 PAHs: 0.03µg/L	EN ISO 17993:2003	Annual	Annual
24	C10-C13 chloroalkanes (CAS number85535-84-8)	0.4 µg/L	EPA 8270D:2007	Annual	Annual
25	Polychlorinated biphenyls (CAS number 1336-36-3)	3 µg/L	USEPA method 8082, EA method 174 and 5109631	Annual	Annual

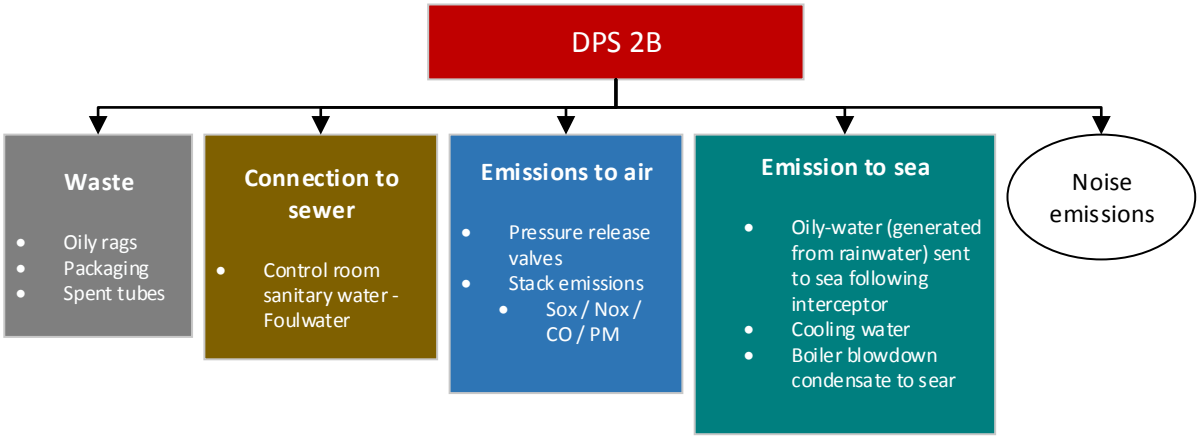
Table 30 Emission limits and monitoring for emissions to marine water

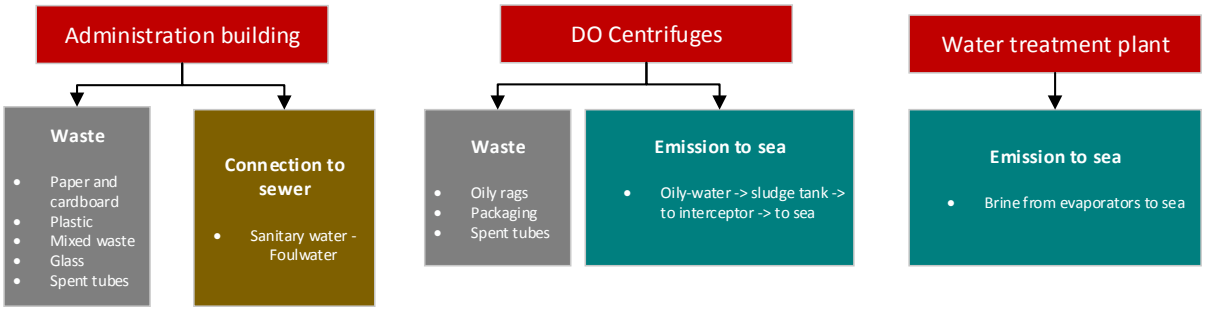
Point 4 marks the location of the fuel-tanks' interceptor. This point is to be sampled prior to discharge of waste water following a spill from the tanks. Also if there is fuel centrifugation (or other forms of water removal) and water is discharged then testing for total petroleum hydrocarbons shall be carried out continuously.

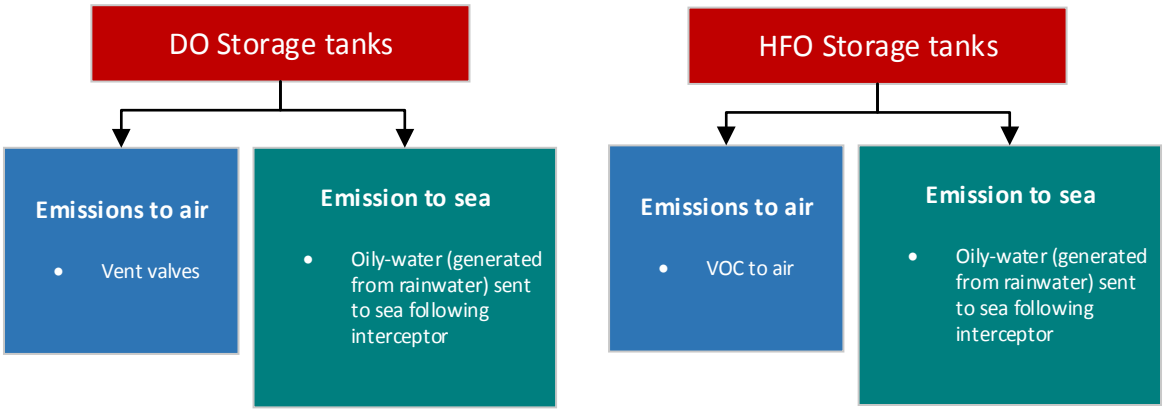
3.11 EMISSIONS & WASTE SUMMARY






DPS 2B
Waste
Oily rags
Packaging
Spent tubes
Connection to sewer
Control room sanitary water - Foulwater
Emissions to air
Pressure release valves
Stack emissions
Sox / Nox / CO / PM
Emission to sea
Oily-water (generated from rainwater) sent to sea following interceptor
Cooling water
Boiler blowdown condensate to sear
Noise emissions


Administration building
Waste
Paper and cardboard
Plastic
Mixed waste
Glass
Spent tubes
Connection to sewer
Sanitary water - Foulwater
DO Centrifuges
Waste
Oily rags
Packaging
Spent tubes
Emission to sea
Oily-water -> sludge tank -> to interceptor -> to sea
Water treatment plant
Emission to sea
Brine from evaporators to sea


DO Storage tanks
Emissions to air
Vent valves
Emission to sea
Oily-water (generated from rainwater) sent to sea following interceptor
HFO Storage tanks
Emissions to air
VOC to air
Emission to sea
Oily-water (generated from rainwater) sent to sea following interceptor

4 IMPACT ON THE ENVIRONMENT

This IPPC submission is to be viewed in context of the proposed changes to ENE operated plant. The overall impact on the environment from ENE operated plant is to decrease considerably following the implementation of the proposed changes. This reduced impact is due to the reduction in generating plant to be operated and maintained by ENE.

As discussed in section C1.2, DPS1 is to be placed on cold standby and eventual decommissioning. DPS2A and DPS2B are to be retained as standby plant, and as such their operations are to remain unchanged. DPS3 operations are to be handed to D3PG. Therefore when assessing ENE's proposed scenario in isolation it is clear that an overall reduction in environmental impacts is to be expected.

It is to be noted that as part of the development PA0021/14 & PA0022/14 a comprehensive EIA study was carried out. The aforementioned EIA assessed the impact that all proposed plant within the Delimara Power Station Installation would have on the environment. The following is a list of assessments that were carried out as part of the EIA, which can be found in section C5.0 of this application:

- Cultural Heritage (Terrestrial)
- Marine Water Bodies
- Vertebrate Fauna
- Marine Ecology
- Noise
- Land Use and Land Cover
- Landscape and Visual Assessment
- Air Dispersion
- Social Impact Assessment
- Marine Archaeology
- Terrestrial Ecology
- Health Impact Assessment
- Agricultural Land
- Geology – Geomorphology – Hydrogeology – Hydrology – Soils
- Quantitative Risk Assessment

A summary of the impacts has been provided in "*A05_CCGT-LNG DPS_EIS_CoorAssVol5 Summary of Impacts_A3 Simple"* which has been attached to this submission for reference.