



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

APPENDIX G – Enemalta Emergency Response Plan

0466 – Enemalta DPS IPPC Application

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APPENDICES REFERENCE

Reference	Document Title
Appendix A	Reference Drawings
Appendix B	Best-Available-Technology Conclusions
Appendix C	Material Safety Data Sheets
Appendix D	Maintenance of Tank Bunds
Appendix E	Enemalta Safety Report
Appendix F	Enemalta Safety Management System
Appendix G	Enemalta Emergency Response Plan
Appendix H	Coordinated Safety Report
Appendix I	Coordinated Safety Management System
Appendix J	Coordinated Emergency Response Plan
Appendix K	Sewer Discharge Permit
Appendix L	VOC Abatement System Report
Appendix M	Enemalta DPS - Noise Monitoring Method Statement
Appendix N	DPS Noise Monitoring Reports 2014 & 2015
Appendix O	NEC Emissions Calculations Letter
Appendix P	Technically Competent Person - CV
Appendix Q	Decommissioning Plan
Appendix R	Expenditure Plan
Appendix S	EMS Documentation & ISO Certification
Appendix T	Environmental Impact Assessment



EMERGENCY RESPONSE PLAN

ENEMALTA PLC

AS REQUIRED BY LN179/2015 CONTROL OF MAJOR ACCIDENT
HAZARDS

Barcelona, July 28th, 2016

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Review 4.1

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0. GENERAL

0.1. DOCUMENT MANAGEMENT AND CONTROL

VERSION	REASON	DATE
0.0	First Final Draft	13.07.2005
0.1	Revision of numbers	23.11.2007
1.1	Formatting changes	06.09.2009
1.2	Formatting changes	20.05.2009
1.3	Changing oil spill procedure Revising phone numbers & contacts to reflect new structure	15.12.2009
2.0	Document transferred to Sharepoint	30.12.2009
2.1	Amended phone numbers Some formatting changes	16.06.2011
3.0	Major update Split annexes from document	16.05.2014
4.0	Major update according to COMAH requirements	01.06.2016
4.1	Minor review	26.07.2016

0.2. LIST OF ACRONYMS AND ABBREVIATIONS

ACRONYM OR ABBREVIATION	FULL TERM
ACSO	Assistant Chief Security Officer
AFM	Armed Forces of Malta
AM	Assistant Manager
CCA	Casualty Clearing Area
CCR	Central Control Room
CO	Communications Officer
COMAH	Control of Major Accident Hazards

ACRONYM OR ABBREVIATION	FULL TERM
CPD	Civil Protection Department
CWP	Cooling Water Pump
EC	Emergency Controller
EMS	Environmental Management System
ERP	Emergency Response Plan
ERT	Emergency Response Team
ERTL	Emergency Response Team Leader
FC	Forward Controller
GO	Generation Officer
HFO	Heavy Fuel Oil
H&S	Health and Safety
HSSE	Health, Safety and Security Executive
MAPP	Major Accident Prevention Policy
MDH	Mater Dei Hospital
MEPA	Malta Environmental Planning Authority
MP	Maintenance Personnel
MSDS	Material Safety Data Sheet
OHSA	Occupational Health and Safety Authority
PA	Personal Assistants
PMO	Plant Maintenance Officer
PPE	Personal Protective Equipment
SCE	Shift Charge Engineer
SCC	Standby Control Centre



ACRONYM OR ABBREVIATION	FULL TERM
SMS	Safety Management System
SO	Senior Operator
SOP	Standard Operating Procedure
TM	Transport Malta

0.3.INTRODUCTION

This Emergency Response Plan is referred to all emergency situations generated by the ENEMALTA Delimara Power Station activity in Marsaxlokk that can result in damages to the people, the environment and the facilities. This document is of application for personnel, the contractors and the visitors. Coordinated Emergency Response and Communication in case of emergencies generated by other stakeholders at the site is out of the scope of this document and is addressed in the Coordinated Emergency Response Plan.

The ERP defines the Emergency Response Team, and also the actions that will be taken during an emergency situation. The ERP includes protocols to ensure close coordination with local area emergency response organizations and authority. The ERP also addresses the reporting requirements compliant with the relevant provisions of EU and Maltese laws and regulations. The objective is to be prepared to:

- Ensure safety of personnel
- Prevent fatalities and injuries.
- Reduce damage to buildings, facilities and equipment.
- Avoiding or minimising damage to third party property
- Minimising or avoiding damage to plant
- Minimising or avoiding financial loss
- Minimising or avoiding loss of supply to consumers
- Protect the environment and the community.
- Speed up the resumption of normal operations.

The development of the plan begins with a proper risk analysis and damages assessment. The methodology and results of the assessment are collected in the Safety Report, while the following items are shown in the ERP:

- What can happen – the list of possible emergency scenarios
- What resources we have – human and material resources available for the emergency management.
- What organization structure we need – emergency crew and leaders, as well as their functions.

- What actions should be taken – the implementation of the ERP, through training, practices, drills and audits.

The SGS personnel who took part in the redaction and review of this document have visited the facility on July, 6-10th, 2015. During several meetings from July to October, 2015, they also discussed the emergency organization and the emergency procedures together with ENEMALTA's employee Michael Falzon, Sylvana Scicluna and Pierre Conti.

0.4. BASELINE DEFINITIONS

For the purpose of establishing a common level of understanding within the Company, the following definitions of terms related to Emergencies shall apply:

Accident – an unforeseen event or occurrence usually involving injury or death of a person or a group of persons. The term applies also to damage, with or without apparent cause, to property and/or the environment.

Control Centre – this is the location where all emergency activities are co-ordinated. The **Central Control Room** (CCR) is to act as the **Control Centre**. The **Control Centre** is normally manned by the CCR Senior Operators (SOs), D3 SOs, Dispatch Generation Officer (GO), D3 (GO). During an emergency, the Dispatch GO is to act as the Emergency Controller until one of the 'nominated persons' for this job takes over. All calls in case of an incident are to be routed to the **Control Centre** by radio, telephone, or runner. The **Control Centre** is to make all calls to outside agencies. There is to be no delay in summoning Emergency Services, if necessary. The **Control Centre** is to be immediately informed of any incident.

Crisis – Any global, regional, or local natural or human-caused event or business interruption that runs the risk of (1) escalating in intensity, (2) adversely impacting shareholder value or the organization's financial position, (3) causing harm to people or damage to property or the environment, (4) falling under close media or government scrutiny, (5) interfering with normal operations and wasting significant management time and/or financial resources, (6) adversely affecting employee morale, or (7) jeopardizing the organization's reputation, products, or officers, and therefore negatively impacting its future.

Crisis Management – Intervention and coordination by individuals or teams before, during, and after an event to resolve the crisis, minimize loss, and otherwise protect the organization.

Crisis Management Team – A group directed by senior management or its representatives to lead incident/event response comprised of personnel from such functions as human resources, information technology facilities, security, legal, communications/media relations, warehousing, and other business critical support functions.

Damage Assessment – The process used to appraise or determine the number of injuries and human loss, damage to public and private property, and the status of key facilities and services resulting from a natural or human-caused disaster or emergency.

Disaster – An unanticipated incident or event, including natural catastrophes, technological accidents, or human-caused events, causing widespread destruction, loss, or distress to an organization that may result in significant property damage, multiple injuries, or deaths.

Emergency – An unforeseen incident or event that happens unexpectedly and demands immediate action and intervention to minimize potential losses to people, property, or profitability.

Emergency Contact List – A list of team members and key players in a crisis. The list should include home phone numbers, cell phone numbers, etc.

Emergency Services - The Emergency Services include Civil Protection Department, Ambulance and Police. These can be contacted through the national emergency number 112. Additional resources may be called up to assist, for instance, Armed Forces of Malta (AFM), voluntary societies, etc.

Evacuation – Organized, phased, and supervised dispersal of people from dangerous or potentially dangerous areas.

Exercise – An activity performed for the purpose of training and conditioning team members and personnel in appropriate crisis responses with the goal of achieving maximum performance.

Hazardous Area – refers to locations within the Facility wherein a dangerous atmosphere may be present. Dangerous atmospheres are normally understood as potentially flammable or explosive atmospheres. The reference sources for the purpose of defining hazards and classifying hazardous areas shall be:

- The product SDS
- The Zoning System as specified in the ATEX Directive.
- Tank pits, pump stations, loading areas, jetties and oil/water separators are all classified as Hazardous Areas from time to time.

Health, Safety and Environmental Manager (HSE-M) – The HSE-M is the person within the Company assigned duties and responsibilities to organise, supervise, co-ordinate and control the HSE function, including all related activities within the facilities, which require particular attention from a health, safety and environmental risk and liability standpoint.]

Security Manager (Sec-M) – The Sec-M is the person within the Company assigned duties and responsibilities to organise, supervise, co-ordinate and control the security function, including all related activities within the facilities, which require particular attention from a security risk and liability standpoint.

Incident – An incident is an unforeseen event or occurrence, resulting in a minor material damage only, not involving personal injury. Under other circumstances it could have had more serious consequences.

Near Miss – A near miss is an event or occurrence that could have resulted in an incident or accident but by timing or other factors it did not. Under certain circumstances, a Near Miss is a reportable occurrence by Law.

Prevention – Plans and processes that will allow an organization to avoid, preclude, or limit the impact of a crisis occurring. The tasks included in prevention should include compliance with corporate policy, mitigation strategies, and behaviour and programs to support avoidance and deterrence and detection.



Recovery/Resumption – Plans and processes to bring an organization out of a crisis that resulted in an interruption. Recovery/resumption steps should include damage and impact assessments, prioritization of critical processes to be resumed, and the return to normal operations or to reconstitute operations to a new condition.

Response – Executing the plan and resources identified to perform those duties and services to preserve and protect life and property as well as provide services to the surviving population. Response steps should include potential crisis recognition, notification, situation assessment, and crisis declaration, plan execution, communications, and resource management.

Restricted Area – This is the fenced off area within the facilities property, entry to which is controlled by security and in which certain restrictions apply. The restricted Area also encloses the Hazardous Areas, but in order to pass from a Restricted Area into a Hazardous Area permission is to be granted from the control room and other requirements, as indicated from the control room, must be met.

Risk Assessment – Process of identifying internal and external threats and vulnerabilities, identifying the likelihood of an event arising from such threats or vulnerabilities, defining the critical functions necessary to continue an organization's operations, defining the controls in place or necessary to reduce exposure, and evaluating the cost for such controls.

Standby Control Centre – Should the main control centre be endangered, a standby control centre will be set up in the Security Guard Room, or as directed by the Emergency Controller.

Training – An educational process by which teams and employees are made qualified and proficient about their roles and responsibilities in implementing an Emergency Response Plan.

1. DESCRIPTION AND RISK ANALYSIS

1.1. COMPANY DATA

COMPANY NAME	
Denomination	Delimara Power Station
Street address	Power House
City	Marsaxlokk, Malta
CONTACT IN CASE OF EMERGENCY	
Name	Ing. Ismail D'Amato
Position	Generation Manager
Address	Triq il-Power Station
City	Marsaxlokk, Malta
Telephone number	
Mobile number	
email	

1.2. FACILITIES DESCRIPTION

The Delimara Power Station was established in 1991, and is currently the main provider of electricity generation in the Maltese Islands.

Throughout the years, Enemalta has been instrumental and pioneering the usage of new technology to reach its corporate objectives together with offering better products and the best service to its customers. Enemalta continues to invest in all areas of its operations making best use of technological developments and is committed to continue to improve its service delivery through a pro-active approach, to meet an ever-growing and diversified demand for energy.

The facilities are limited in its east side by a road that runs between Fort Tas-Silg and Fort Delimara. On the west side, the boundary of the site is delineated by the Marsaxlokk Bay.

The access to the installation is provided by a dedicated road which runs from outside Marsaxlokk Village, along the coast. A second access point is provided at the south-east corner of the site for emergency purposes. The power station occupies an area of approximately 184,500 m², approximately 103,500 m² of which reclaimed from the sea.

1.2.1. GEOGRAPHIC COORDINATES

The UTM and geographic coordinates of the installation are provided in the table below:

UTM coordinates	
X	459,662
Y	3,965,642
Geographic coordinates	
Longitude	35° 49' 92" N
Latitude	14° 33' 3" E

The position of the facility is shown in the drawings in the Annexure no. 4.

The nearest town to the facilities is Marsaxlokk Village.

TOWN	DISTANCE FROM DPS (m)	NUMBER OF POPULATION ¹
Marsaxlokk Village	1200	3200
Birzebuggia	2,500	8,800

¹ Population according to GeoNames database. Website: <http://www.geonames.org>

The immediate surroundings of the Delimara Power Station are mainly of agricultural use, with a few scattered residential buildings. There are roads of medium importance around the plant.

1.2.2. ACCESSIBILITY

Access to the installation is provided by a dedicated road which runs from outside Marsaxlokk Village, along the coast. A second access point is provided at the south east corner of the site for emergency purposes. The power station occupies an area of approximately 184,500 m², from which approximately 103,500 m² has been reclaimed from the sea.

Access roads to the installation can be seen graphically in the **Site Plan** attached in Annexure no 4.

1.2.3. OPERATIONS

The delivery and the handling of HFO and diesel are the most important activities from the point of view of safety as it is in those activities where we can identify the initiating event that could originate a major accident.

Other activities carried out in other parts of the installation, such as the cooling system and the water treatment system, are not directly correlated to a major accident but they can affect and determine the extension of its consequences, hence the following description of the plant activities have been carried out.

Handling heavy fuel oil and gas oil

These activities include all the steps from the delivery of the fuel at the quay until its final combustion in the turbines of the plant. HFO and diesel are delivered by sea



tankers to the quay which has been built for that purpose inside the station area. On average the following shipments are delivered:

- 12 of HFO shipments;
- 2 of diesel shipments.

In some cases, Diesel Oil might be received by road tankers as well.

After the arrival of the fuel, a hose is used to unload the HFO and pump it through steel pipes to the HFO storage tanks.

In the case of diesel, the fuel is unloaded from the vessel by coupling an unloading arm at the quayside and transferred afterwards to the diesel storage tanks located at the southern boundary by steel pipework.

On the quay, both the HFO and Diesel Oil unloading lines are equipped with a breakaway valve coupling.

Before the diesel is used in the gas turbines, the raw fuel receives a previous treatment by pumping it to centrifuges. As a result from this pre-treatment, traces of water are removed from the raw diesel and the purified diesel is stored in another storage tank (number 3). Afterwards it is directly pumped from this tank to the gas turbine through a series of above ground steel pipework. Diesel is circulated to the combined cycle gas turbines using a series of three transfer pumps rated at 20 m³/hr. To the open cycle gas turbines Diesel is also circulated using another series of two transfer pumps, rated at 60 m³/hr.

In the case of HFO, prior to being transferred to the boilers at the phase 1, it is steam heated in the fuel oil pumphouse. Afterwards two transfer pumps rated at 20 m³/hr circulate HFO to the boilers in phase 1 using three screw pumps rated at 25 t/hr each.

Fuel Transfer Preparation

As important as it is the fuel transfer from a safety point of view, a specific protocol has been established in order to avoid operational mistakes which could result in accidents.

The designated team involved in this delicate work is composed by: the Responsible Engineer, the Unloading Master, external surveyor, Pump-house operators, vessel operators.

Once the recipient date and the fuel quantity to be received has been confirmed, the Responsible Engineer shall ensure that by the scheduled date, the unloading quay is free from any other activities or obstacles that might hinder a successful fuel transfer operation. Also the designated receiving shore tank and its immediate ancillaries should be available and completely functional. Furthermore, any operation on the receiving tank, and adjacent unloading lines as well as any “Work Permits” ought to be terminated, postponed or retrieved. In the case of the HFO unloading line, the trace heating circuits are checked and switched on 24 hours prior arrival of the fuel in order to establish the necessary temperatures for a smooth fluid flow through all the unloading line sections.

The Responsible Engineer must also ensure that oil-spill response materials for land or sea spills, such as booms, spill kits, absorbent rolls, aggregate and waste disposal containers, are readily available and easily accessible in case of any spillages. He shall also forward instructions to the Generation Officer to prepare the pipeline configuration (Diesel/HFO) in such a way that ensures that no fuel enters or leaves the Receiving tank/s during the transfer and the transferred fuel enters only in the designated tank/s (diesel consignments are usually transferred into more than one tank simultaneously). In addition the Responsible engineer shall ensure the availability of the fire fighting system, particularly at the tank farm and the unloading point, the regular maintenance of the diesel unloading line and that the anchorage and mechanism of the HFO quick release valve is in order. Before the delivery date of the fuel, the Responsible Engineer shall endorse and issue a “*Fuel Transfer Form*” indicating the Receiving Shore tank/s and the required pipeline and tank/s valve status necessary for the forthcoming transfer.

When the fuel finally arrives at the quayside, it is the Unloading Master who performs the supervision tasks. Upon berthing, he/she shall board the vessel and together with ship’s assigned officer, conduct a joint inspection to ensure ship adheres to safety regulations as indicated in “*Ship/shore safety check list*”. Before unloading he/she shall

refer the observed quantities to Responsible Engineer and await confirmation of available storage space before authorising the initiation of the transfer. The surveyor on the other hand, performs the following tasks: he shall confirm the correct configuration and seal, tag and record the status of all valves adjacent to receiving tank in the presence of Enemalta representative. Afterwards, the surveyor shall proceed to sound the shore tank and take samples to establish the initial tank contents, witnessed by customs and Enemalta personnel. On their behalf, the Pump-house operators shall make a final site inspection to confirm that the Receiving Tank/s bunds' drains are closed and the area is safe. All parties are to endorse and record these initial conditions in the *"Fuel Transfer Form"*.

If the safety conditions are met and the vessel chief confirms that the unloading can start, the Petroleum Officer shall authorise the connection of the station's unloading flexible hosing to the ship's manifold. During this stage the Petroleum Officer will coordinate with the Pump-house operators in order to release the padlocks on the unloading line isolation valves and to indicate the ship's crew to start pumping the fuel at a reduced rate. Then the pressure ought to be slowly incremented until check valves at the unloading point and at the tank inlet are lifted. Once the pump-house operator signals the 'all clear' signal the Unloading Master will instruct the ship's officer to reach a pre-established line pressure.

The pump - house operators will walk along the unloading line inspecting every valve, seal or joint checking for evidence of any leaks. These visual checks are repeated every 2 hours for the duration of the transfer. The Responsible Engineer shall follow the transfer progress from the station's Distributed Control System, and Control Room Operators who are constantly monitoring the system alarms shall draw the Responsible Engineer's attention if any Fuel tank level alarm ensues. There should be no leakages on the hoses, flanges, valves or unloading arm and the Unloading Master shall be responsible to ensure that there are no contaminations to the port waters caused by discharges. Such incidents are to be reported to the responsible authorities for remedial action and contained or cleaned before leaving the site. In the event of a considerable leak the Unloading Master shall stop pumping and proceed to isolate the pipeline immediately to contain the spill until assistance from the Emergency Response Team arrives.

Once the Fuel transfer operation is complete the connecting flexible hoses are purged from the vessels manifold towards the shore tank using compressed air and the station's unloading line isolation valve is closed and padlocked. The hoses are disconnected from the vessel's manifold and the blanking flange is replaced. The hoses are lowered down to the quay and coiled properly.

The Surveyor checks for any water content and then proceeds to sound the tank/s, witnessed again by Customs and Enemalta representative as per procedure, and endorses the recorded data.

The consigned fuel is left to settle in the receiving tank/s for at least 24 hours or until the fluid movement is abated and any water content settles to the bottom. Fuel samples are drawn from the tank/s to establish the resulting density of the fuel mixture.

The layout of the Power Station is shown in the drawings in the Annexure no.4.

Steam plant

In the steam plant, the fuel is burnt in the boilers to produce steam to power the turbines. The gas resulting from the combustion is discharged to the atmosphere through two flues in a single concrete windshield.

Water treatment

Three seawater evaporators produce distillate water for the boilers using seawater in which anti foaming and anti scale additives are used and discharge the concentrated brine into the seawater outlet. The distillate is further treated in a demineralisation plant.

The water production and storage plant is then constituted by:

- Evaporated storage facilities, consist of 2 tanks of 700 m³ each and 3 tanks of 600 m³ each;

- Evaporated water is treated to make demineralised water; the resin of the demineralised water plant is regenerated using sulphuric acid and caustic soda;
- Demineralised storage facilities consist of 2 tanks of 600 m³ each and 5 tanks of 700 m³ each;
- Sulphuric acid is stored in a steel tank of 6.5m³, inside the plant itself within a contained area; caustic soda is received in bags and mixed with water inside the plant itself and stored in a tank, which is situated within a contained area;
- All drains are directed to a neutralizing pit where the ph of the effluent is tested and neutralized before it is discharged through the outfall.

Steam plant cooling system

From the turbines the steam is exhausted into the condensers, which are cooled by seawater drawn from Marsaxlokk Bay. The cooling water is then discharged through a tunnel to the other side of the peninsula. This cooling water, which is also used for the combined cycle plant and the seawater evaporator, is treated with the addition of anti-fouling chemical to prevent the accumulation of marine growths in the water passages. Anti-fouling is done by means of chlorine dioxide. Chlorine dioxide is generated on site by mixing two chemicals Sodium Chlorite and hydrochloric acid under water.

The amount of seawater passing through the system is approximately 21,000 m³ per hour for Phase 1 turbines and approximately 8,500 m³ per hour for Phase 2b.

Gas turbine plant

For the gas turbine plants the fuel is burnt in the gas turbines that provide the motive power for the generators. In the case of the combined cycle plant the exhaust gas delivers its heat energy to the heat recovery steam generators and is then emitted through one chimney for each gas turbine / HRSG unit. The open cycle gas turbines exhaust directly to atmosphere each through its own chimney.

1.2.4. CHARACTERISTICS OF THE FACILITIES

The main components in the Delimara Power Station are:

- **PHASE 1 (D1):** Two HFO steam units with boiler, steam turbine and generator, for baseload operations, 2 x 60 MW
- **PHASE 2A (D2A):** Two DO open cycle gas turbines and generator units at 37.5 MW, designed for peak load
- **PHASE 2B (D2B):** Two DO combined cycle gas turbines with heat recovery steam generators and a steam turbine for midrange duties, with a total capacity of 110 MW
- **PHASE 3 (D3):** Eight medium-speed diesel engines of the Wartsila Model 18V46 as well as a steam turbine generator of the Dresser-Rand model Frame 30 (Multi Stage Impulse Condensing), designed to combust heavy fuel oil as the main fuel and diesel fuel oil as a backup option.

The thermal power station of the plant is resumed in the table below:

Construction Phase	Source	Total Thermal Rating	Fuels
		MWTH	
Phase 1	Steam Boilers (Unit 1 and Unit 2)	332	Heavy Fuel oil (HFO)
Phase 2A	OCGT1	121	Diesel Oil (DO)
	OCGT2	121	
Phase 2B	CCGT3A	121	Diesel Oil (DO)
	CCGT3B	121	
Phase 3	Diesel engines 41 & 42	77	HFO & DO
	Diesel engines 43 & 44	77	
	Diesel engines 45 & 46	77	
	Diesel engines 47 & 48	77	



The total nominal capacities of fuel storage are as follows:

Fuel Type	No. of Storage Tanks	Total Nominal Capacity, m ³
Heavy Fuel Oil	3	56,710
Diesel Oil	4	33,884

Storage tanks

The fuel stored at the power station is heavy fuel oil (HFO) and diesel (DO). It is contained within steel, fixed roof, vertical storage tanks which are located towards the south of the power station. Fuel storage operations are controlled from the Central Control Room; however, tank and transfer valves are manually operated.

For heavy fuel there are two main heavy fuel oil tanks located in the same bounded area and a smaller service tank intended for daily operation of the plant.

There is a combined HFO/ DO pump-house to the north of the tank farm area.

For diesel storage, four diesel tanks are situated in separate bounded compounds: raw diesel is stored in Tanks 0, 1 and 2 and is transferred to tank 3 after receiving a pre-treatment through a centrifuge system. The centrifuge is fed by a series of three transfer pumps.

The following table lists total storage capacity for each tank previously mentioned:

Tank No.	Product	Capacity m ³
Fuel Oil Tank 1	Heavy fuel oil	25,540
Fuel Oil Tank 2	Heavy fuel oil	25,540
Fuel Oil Tank 3 (Service)	Heavy fuel oil	5,630
Diesel Tank 0	(Raw) Diesel	8,600
Diesel Tank 1	(Raw) Diesel	8,428
Diesel Tank 2	(Raw) Diesel	8,428
Diesel Tank 3	(Treated) Diesel	8,428



Other HFO and Diesel day tanks are installed as a part of Diesel power plant, as buffer tanks; the following table lists the additional storage tanks.

Tank No.	Product	Capacity m ³
Diesel Oil day storage tank	Diesel	140
Service tank	Heavy fuel oil	2 x 125
Buffer tanks	Heavy fuel oil	2 x 125

With reference to fuel storage facilities it can be detailed that:

- HFO and Diesel Oil are delivered via ships which berth at the quay at Delimara station; a steel pipeline connects the unloading facility on the quay to the HFO Tanks and another steel pipeline connects the unloading arm of the Diesel Oil to the DO tanks;
- The hose connecting the steel pipe to the ship is tested annually in the presence of a third party inspector;
- The fuel-unloading pipeline is also tested annually;
- All fuel tanks are contained within an enclosed bund wall; the bunds have 110% capacity of largest inventory in a single tank. Rainwater collected in the bund area is manually discharged through a valve to two oil interceptors connected in series before being discharged to the sea;
- HFO flows by gravity to a fuel oil pumping station where the oil is further heated and then transported in above ground pipes to the respective boilers;
- Diesel Oil received from the ship is stored in three tanks (0, 1, 2): these tanks are called raw Diesel tanks. From these tanks Diesel Oil is treated by means of centrifuge separators and the Diesel Oil is collected in DO tank (3). The drain system of the centrifuges is collected and piped through an oil interceptor;
- Diesel Oil from Tank 3 called treated diesel is then pumped to the gas turbines or the diesel engines day tanks in aboveground steel pipes;
- For the diesel engines, fuel from the storage tanks is transferred to smaller 2 HFO buffer tanks, 2 HFO service tanks, and 1 day DO service tank which are all included within this same D3 installation (in order to reduce the handling of the product); in the case of HFO, this is centrifuged prior use by the diesel engines;

- All fuel tanks have a foam injection system for applying foam to the tank, either above the fuel or below the surface (there are separate foam stations for the HFO and diesel tanks) and have water cooling rings around the outside of the tanks (shell cooling);
- Fire hydrants in the tank areas are fed by two sea water fire pumps; if necessary, these may be connected to a separate fresh water system for the purposes of exercises or wash-down and as a backup.

1.2.5. CHARACTERISTIC OF THE TANKS

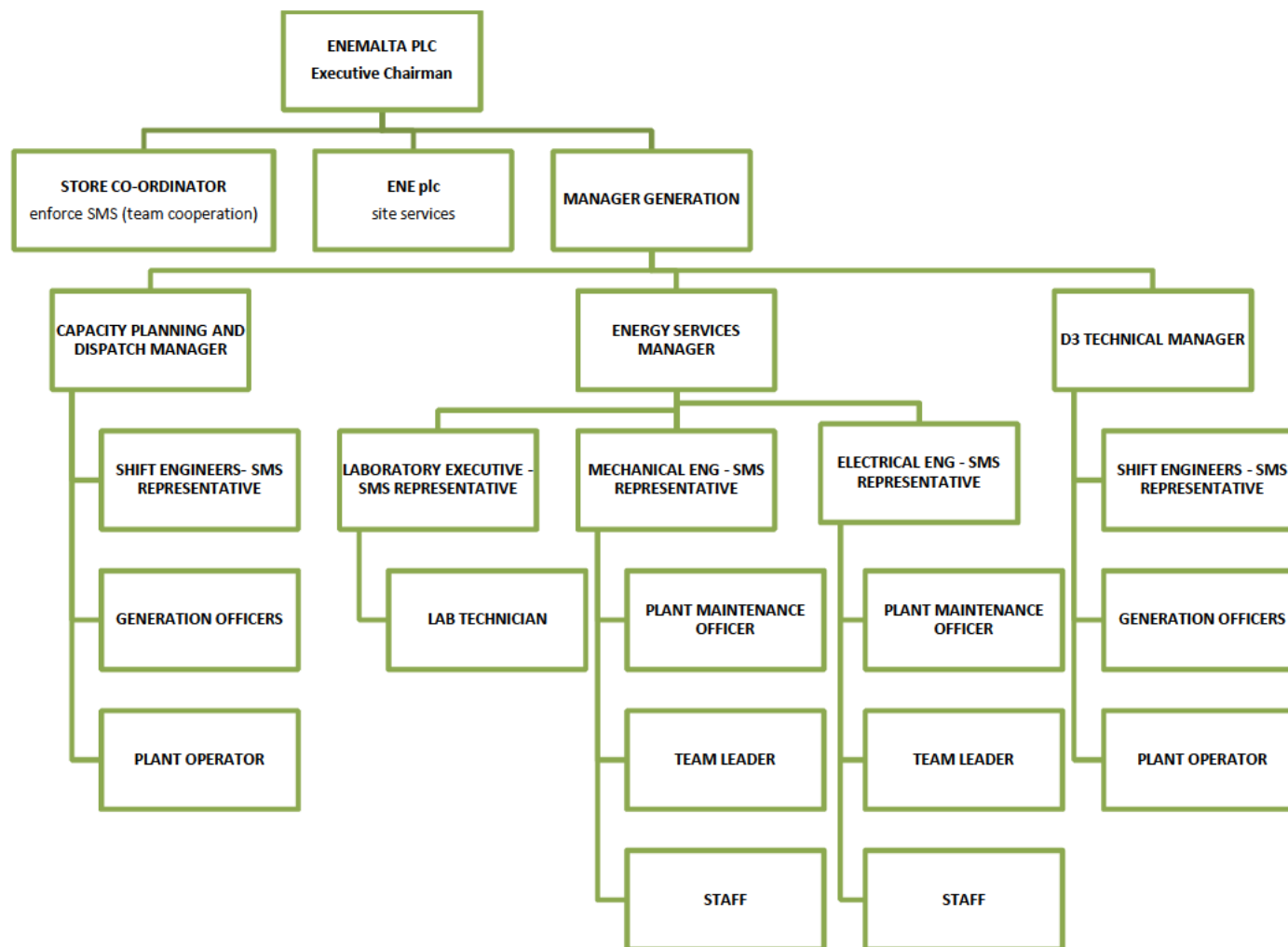
In this chapter the data on the storage tanks of fuel oil and Diesel Oil in the storage facility are presented in tables. The presence of the following auxiliary tanks is also recalled.

SUMMARY TABLE OF STORAGE TANKS											HEATING
TANK		CAPACITY	STORAGE CONDITION		DESIGN CONDITION		PRODUCT NAME	DIMENSIONS			
NAME	TYPE		(m ³)	P (bar)	T (°C)	P (bar)		T (°C)	DIAMETER (m)	HEIGHT (m)	
FO TANK n° 1	Cylindrical vertical	25,540	Atm	45	atm	60	FUEL OIL	40	20	18-14-10-8-8	Internal coil
FO TANK n° 2	Cylindrical vertical	25,540	Atm	45	atm	60	FUEL OIL	40	20	18-14-10-8-8	Internal coil
FO TANK n° 3	Cylindrical vertical	5,630	Atm	45	atm	60	FUEL OIL	22	15	14-12-12-10	Internal coil
DO TANK n° 0	Cylindrical vertical	8,600	Atm	amb	atm	60	DIESEL OIL	30	12	14-12-10-8	No
DO TANK n° 1	Cylindrical vertical	8,428	Atm	amb	atm	60	DIESEL OIL	30	12	14-12-10-8	No
DO TANK n° 2	Cylindrical vertical	8,428	Atm	amb	atm	60	DIESEL OIL	30	12	14-12-10-8	No
DO TANK n° 3	Cylindrical vertical	8,428	Atm	amb	atm	60	DIESEL OIL	30	12	14-12-10-8	No
Diesel Oil day storage tank	Cylindrical vertical	140	Atm	amb	atm	60	DIESEL OIL	5	7.5	6	No
Service tank 1	Cylindrical vertical	125	Atm	45	atm	60	FUEL OIL	5	7.5	6	Internal coil
Service tank 2	Cylindrical vertical	125	Atm	45	atm		FUEL OIL	5	7.5	6	Internal coil
Buffer tank 1	Cylindrical vertical	125	Atm	45	atm	60	FUEL OIL	5	7.5	6	Internal coil
Buffer tank 2	Cylindrical vertical	125	Atm	45	atm		FUEL OIL	5	7.5	6	Internal coil



1.2.6. ORGANIZATION CHART

ENEMALTA personnel is organized as shown below:



1.2.7. PRESENCE OF PERSONNEL

The presence of personnel inside the facilities may vary according to the operation scheduled and the time and weekday. Generally, the administration personnel are present Monday to Friday, from 07:00 h to 16:15 h.

The operations personnel are present in 4 shifts from 07:00 h to 15:00 h and from 15:00 h to 23:00 h and from 23:00 h to 07:00 h. Whenever the loading / unloading operation needs to extend overnight, the personnel is asked to extend their presence in the facility. The maintenance personnel are present in 3 shifts from 07:00 h to 18:30 h, seven days a week. During urgent maintenance operations, additional personnel may work overnight.

Thus, the presence of personnel when the facility is operative may vary from a minimum of 42 personnel during the night shift and a maximum of 130 personnel during the central hours.

Security officers are on duty on a 4 shift basis, 24/7.

1.3. RISK ANALYSIS

1.3.1. INTRODUCTION

Although emergencies by definition are unexpected events, their occurrence can be predicted with some degree of certainty, through the experience gained by the investigation of past accidents, the identification of the possible hazards and the assessment of the risk. For the purposes of this document five categories of hazards have been analyzed:

- **Major accident** (or process accident): Analyzed in the Safety Report. Are usually caused by the process and operations carried out in the facility and specifically to the handling of hazardous materials.
- **Other industrial accident**: Analyzed in the HAZID study and they are due to other causes apart from the handling of hazardous materials.

- **External incident:** Caused by events outside of the facility and analyzed within the HAZID study. Could be caused by environmental events and by human activities (intentional or not).
- **Job injuries:** Incident linked to personnel activities that can lead to different kind of emergency and that involve the employee safety at work.
- **Near misses:** Incident that do not have consequences neither on persons nor on the structures, but very useful to be analysed and recorded because they provide information to prevent future accident.

1.3.2. MAJOR ACCIDENTS

Major accidents, according to the definition above, include spillages of Diesel Oil or fuel oil, fires and explosion. The Safety Report concludes that only a few scenarios are realistic and must be taken into account, prevented and mitigated in case of happening.

For each major accident scenario identified, the emergency level have been categorized according to the definition included in chapter 3.2.

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
HFO-001	HFO Unloading hose	Leak in unloading hose with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm.	PFIRE	1,73E-04	34	34	18	18	15	15	30	30	27	27	20	20	Partial activation
			EXPLOSION	6,84E-05	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,03E-04	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	7,46E-04	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-001 FBR	HFO Unloading hose	Rupture of the unloading hose.	PFIRE	1,73E-05	110	110	63	63	57	57	96	96	87	87	69	69	Full activation
			EXPLOSION	6,84E-06	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,03E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	7,46E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
HFO-002	HFO Unloading pipeline from vessel to tank	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm. Pipeline from unloading point to tanks	PFIRE	5,00E-06	48	48	26	26	22	22	42	42	38	38	29	29	Partial activation
			EXPLOSION	1,98E-06	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	2,97E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	2,16E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-002 FBR	HFO Unloading pipeline from vessel to tank	Rupture in the pipeline	PFIRE	1,00E-06	48	48	24	24	22	22	42	42	38	38	26	26	Full activation
			EXPLOSION	3,96E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	5,94E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	4,32E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-003	HFO Storage tank n. 1 and 2	Continuous release from a hole with an effective diameter of 10 mm of the HFO storage tank	PFIRE	2,00E-06	42	42	22	22	52	52	38	38	52	52	24	24	Partial activation

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	7,92E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,19E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	9,50E-09	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-003 CF	HFO Storage tank n. 1 and 2	Instantaneous release of the entire contents of the HFO storage tank	PFIRE	1,00E-07	79	79	42	42	39	39	69	69	62	62	44	44	Full activation
			EXPLOSION	3,96E-08	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	5,94E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	4,75E-10	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-004	HFO Storage tank n. 3	Continuous release from a hole with an effective diameter of 10 mm of the HFO storage tank	PFIRE	1,00E-06	42	42	22	22	52	52	38	38	52	52	26	26	Partial activation
			EXPLOSION	3,96E-07	--	--	--	--	--	--	--	--	--	--	--	--	

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
			FLASHFIRE	5,94E-07	NA	NA	NA	NA	0		NA	NA	NA	NA	NA	NA	Partial activation	
			HFO SPILLAGE	4,75E-09	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA		NA
HFO-004 CF	HFO Storage tank n. 3	Instantaneous release of the entire contents of the HFO storage tank	PFIRE	5,00E-08	79	79	42	42	39	39	69	69	62	62	13	29	Full activation	
			EXPLOSION	1,98E-08	--	--	--	--	--	--	--	--	--	--	--	--		
			FLASHFIRE	2,97E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	2,37E-10	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	Partial activation
HFO-005	HFO pipelines from storage tank to D3 transfer pump	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	2,00E-06	31	31	15	15	13	13	26	26	23	23	16	16	Partial activation	
			EXPLOSION	7,92E-07	--	--	--	--	--	--	--	--	--	--	--	--		
			FLASHFIRE	1,19E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			HFO SPILLAGE	7,92E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-005 FBR	HFO pipelines from storage tank to D3 transfer pump	Rupture of the pipeline. Pipeline from unloading point to tanks	PFIRE	4,00E-07	48	48	24	24	22	22	42	42	38	38	26	26	Full activation
			EXPLOSION	1,58E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	2,38E-07	NA	NA	NA	NA	0		NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	1,73E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-006	HFO D3 Transfer Pumps	Leak (10 % diameter). Discharge line	PFIRE	9,82E-07	13	13	6	6	5	5	11	11	10	10	7	7	Alert
			EXPLOSION	3,89E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	5,84E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	5,23E-10	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
HFO-006 CF	HFO D3 Transfer Pumps	Catastrophic failure. Discharge line	PFIRE	1,96E-07	41	41	22	22	18	18	35	35	31	31	24	24	Full activation
			EXPLOSION	7,78E-08	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,17E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	8,56E-11	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-007	HFO pipelines from D3 transfer pump to D3 buffer tank	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	4,40E-06	21	21	10	10	8	8	18	18	16	16	11	11	Partial activation
			EXPLOSION	1,74E-06	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	2,61E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	1,74E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-007 FBR	HFO pipelines from D3 transfer pump to D3 buffer tank	Rupture in the pipeline. Pipeline from unloading point to tanks	PFIRE	6,60E-07	48	48	24	24	22	22	42	42	38	38	26	26	Full activation

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	2,61E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	3,92E-07	NA	NA	NA	NA	0		NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	2,85E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-008	HFO D3 buffer tanks	Continuous release from a hole with an effective diameter of 10 mm. HFO service storage tanks	PFIRE	2,00E-06	48	48	24	24	22	22	42	42	38	38	26	26	Partial activation
			EXPLOSION	7,92E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,19E-06	NA	NA	NA	NA	0		NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	8,63E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-008 CF	HFO D3 buffer tanks	Instantaneous release of the entire contents. HFO service storage tanks	PFIRE	1,00E-07	48	48	24	24	22	22	42	42	38	38	26	26	Full activation
			EXPLOSION	3,96E-08	--	--	--	--	--	--	--	--	--	--	--	--	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			FLASHFIRE	5,94E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	4,32E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-009	HFO pipelines from D3 buffer tank to D3 centrifuges supply pump	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	1,20E-06	21	21	10	10	8	8	18	18	16	16	11	11	Partial activation
			EXPLOSION	4,75E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	7,13E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	4,75E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-009 FBR	HFO pipelines from D3 buffer tank to D3 centrifuges supply pump	Rupture in the pipeline. Pipeline from unloading point to tanks	PFIRE	1,20E-06	63	63	41	41	23	23	57	57	53	53	44	44	Full activation
			EXPLOSION	4,75E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	7,13E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			HFO SPILLAGE	5,18E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-010	HFO D3 centrifuges supply pumps	Leak (10 % diameter). Discharge line of the supply pumps	PFIRE	1,68E-05	21	21	10	10	8	8	18	18	16	16	11	11	Partial activation
			EXPLOSION	6,67E-06	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,00E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	6,67E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-010 CF	HFO D3 centrifuges supply pumps	Catastrophic failure. Discharge line of the supply pumps	PFIRE	3,37E-06	48	48	24	24	22	22	42	42	38	38	26	26	Full activation
			EXPLOSION	1,33E-06	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	2,00E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	1,45E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
HFO-011	HFO pipelines from D3 centrifuges supply pump to D3 centrifuges	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	2,00E-07	21	21	10	10	8	8	18	18	16	16	11	11	Partial activation
			EXPLOSION	7,92E-08	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,19E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	7,92E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-011 FBR	HFO pipelines from D3 centrifuges supply pump to D3 centrifuges	Rupture in the pipeline. Pipeline from unloading point to tanks	PFIRE	3,00E-08	42	42	22	22	52	52	38	38	52	52	24	24	Full activation
			EXPLOSION	1,19E-08	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,78E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	1,29E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-012	HFO D3 centrifuges	Continuous release from a hole with an effective diameter of 10 mm. Centrifuges	PFIRE	3,00E-06	11	11	5	5	4	4	9	9	8	8	6	6	Alert

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	1,19E-06	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,78E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	1,19E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-012 CF	HFO D3 centrifuges	Catastrophic failure. Centrifuges	PFIRE	1,50E-07	33	33	18	18	14	14	29	29	25	25	19	19	Full activation
			EXPLOSION	5,94E-08	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	8,91E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	5,94E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-013	HFO pipelines from D3 centrifuges to D3 service tank	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	1,20E-06	17	17	9	9	6	6	15	15	13	13	10	10	Alert
			EXPLOSION	4,75E-07	--	--	--	--	--	--	--	--	--	--	--	--	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			FLASHFIRE	7,13E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	4,75E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-013 FBR	HFO pipelines from D3 centrifuges to D3 service tank	Rupture in the pipeline	PFIRE	1,80E-07	48	48	26	26	22	22	42	42	38	38	29	29	Full activation
			EXPLOSION	7,13E-08	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,07E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	7,13E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-014	HFO D3 service tanks	Continuous release from a hole with an effective diameter of 10 mm. HFO service storage tanks	PFIRE	2,00E-06	48	48	26	26	22	22	42	42	38	38	29	29	Partial activation
			EXPLOSION	7,92E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,19E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
			HFO SPILLAGE	8,63E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation	
HFO-014 CF	HFO D3 service tanks	Catastrophic failure. HFO service storage tanks	PFIRE	1,00E-07	48	48	24	24	22	22	42	42	38	38	26	26	Full activation	
			EXPLOSION	3,96E-08	--	--	--	--	--	--	--	--	--	--	--	--		
			FLASHFIRE	5,94E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	4,32E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	Partial activation
HFO-015	HFO pipelines from service tanks to D3 engines	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	1,20E-05	18	18	9	9	7	7	15	15	13	13	10	10	Alert	
			EXPLOSION	4,75E-06	--	--	--	--	--	--	--	--	--	--	--	--		
			FLASHFIRE	7,13E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	4,75E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	Alert

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
HFO-015 FBR	HFO pipelines from service tanks to D3 engines	Rupture in the pipeline	PFIRE	1,80E-06	48	48	26	26	22	22	42	42	38	38	29	29	Full activation
			EXPLOSION	7,13E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,07E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	7,13E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
HFO-016	HFO pipelines from storage tank to D1 HFO pump house	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	8,00E-06	18	18	9	9	7	7	15	15	13	13	10	10	Alert
			EXPLOSION	3,17E-06	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	4,75E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	3,17E-06	48	48	26	26	22	22	42	42	38	38	29	29	Alert
HFO-016 FBR	HFO pipelines from storage tank to D1 HFO pump house	Rupture in the pipeline	PFIRE	1,20E-06	--	--	--	--	--	--	--	--	--	--	--	--	Full activation

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	4,75E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	7,13E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	5,18E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-017	HFO D1 HFO Pumps	Leak (10 % diameter). Discharge line	PFIRE	2,00E-07	17	17	10	10	5	5	14	14	14	14	11	11	Partial activation
			EXPLOSION	7,92E-08	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,19E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	8,63E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-017 CF	HFO D1 HFO Pumps	Catastrophic failure. Discharge line	PFIRE	2,66E-07	41	41	22	22	18	18	35	35	31	31	24	24	Full activation
			EXPLOSION	1,06E-07	--	--	--	--	--	--	--	--	--	--	--	--	

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
			FLASHFIRE	1,58E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA		
			HFO SPILLAGE	1,15E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	Partial activation
HFO-018	HFO pipelines from D1 HFO pump house to heaters	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	1,64E-05	26	26	16	16	8	8	23	23	22	22	17	17	Partial activation	
			EXPLOSION	1,71E-07	--	--	--	--	--	--	--	--	--	--	--	--		
			FLASHFIRE	2,57E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	7,08E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	Partial activation
HFO-018 FBR	HFO pipelines from D1 HFO pump house to heaters	Rupture in the pipeline. Pipeline from unloading point to tanks	PFIRE	3,00E-08	48	48	24	24	22	22	42	42	38	38	26	26	Full activation	
			EXPLOSION	9,74E-07	--	--	--	--	--	--	--	--	--	--	--	--		
			FLASHFIRE	1,46E-06	NA	NA	NA	NA	0		NA	NA	NA	NA	NA	NA		

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			HFO SPILLAGE	1,29E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-019	HFO pipelines from D1 heaters to D1 boilers	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	4,32E-07	21	21	10	10	8	8	18	18	16	16	11	11	Alert
			EXPLOSION	1,71E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	2,57E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	1,86E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
HFO-019 FBR	HFO pipelines from D1 heaters to D1 boilers	Rupture in the pipeline. Pipeline from unloading point to tanks	PFIRE	2,46E-06	63	63	41	41	23	23	57	57	53	53	44	44	Full activation
			EXPLOSION	9,74E-07	--	--	--	--	--	--	--	--	--	--	--	--	
			FLASHFIRE	1,46E-06	NA	NA	NA	NA	0		NA	NA	NA	NA	NA	NA	
			HFO SPILLAGE	1,06E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
DO-001	DO Unloading arm	Leak in unloading hose with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm.	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	1,75E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
DO-001 FBR	DO Unloading arm	Rupture of the unloading arm.	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	1,90E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
DO-002	DO Unloading pipeline from vessel to raw tanks	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	2,51E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-002 FBR	DO Unloading pipeline from vessel to raw tanks	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	5,02E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation
DO-003	DO Raw tank n. 1/2/3	Continuous release from a hole with an effective diameter of 10 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	1,45E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	Alert
DO-003 CF	DO Raw tank n. 1/2/3	Instantaneous release of the entire contents of the DO Raw tank n. 1/2/3	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	7,27E-10	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA	Partial activation
DO-004	DO pipelines from raw tank to transfer pumps	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			DO SPILLAGE	9,25E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
DO-004 FBR	DO pipelines from raw tank to transfer pumps	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	1,70E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
DO-005	DO Transfer Pumps	Leak (10 % diameter). Discharge line	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,20E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
DO-005 CF	DO Transfer Pumps	Catastrophic failure. Discharge line	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	7,71E-09	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-006	DO pipelines from transfer pumps to centrifuges	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,40E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-006 FBR	DO pipelines from transfer pumps to centrifuges	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	8,08E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-007	DO centrifuges	Continuous release from a hole with an effective diameter of 10 mm. Centrifuges	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	1,76E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-007 CF	DO centrifuges	Catastrophic failure. Centrifuges	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	8,08E-08	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-008	DO pipelines from centrifuges to treated tank	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	1,15E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-008 FBR	DO pipelines from centrifuges to treated tank	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			DO SPILLAGE	2,10E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
DO-009	DO Treated tank n. 4	Continuous release from a hole with an effective diameter of 10 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,84E-09	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
DO-009 CF	DO Treated tank n. 4	Instantaneous release of the entire contents of the DO Treated tank n. 4	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	2,42E-10	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Partial activation

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
DO-010	DO return pipelines from centrifuges to raw tank nr 0, nr 1	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	7,49E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
DO-010 FBR	DO return pipelines from centrifuges to raw tank nr 0, nr 1	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	1,37E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	Alert
DO-011	DO return pipelines from centrifuges to raw tank nr 2	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,40E-05	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-011 FBR	DO return pipelines from centrifuges to raw tank nr 2	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	6,06E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-012	DO pipelines from treated tank to D2A forwarding pumps	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	1,05E-06	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-012 FBR	DO pipelines from treated tank to D2A forwarding pumps	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	2,10E-07	NA	NA	NA	NA	0	0	NA	NA	NA	NA	NA	NA	NA
DO-013	DO pipelines from treated tank to D2B forwarding pumps	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
			DO SPILLAGE	1,05E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert
DO-013 FBR	DO pipelines from treated tank to D2B forwarding pumps	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	2,10E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DO-014	DO D2A forwarding pumps	Leak (10 % diameter). Discharge line of the supply pumps	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,01E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
DO-014 CF	DO D2A forwarding pumps	Catastrophic failure. Discharge line of the supply pumps	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	8,02E-09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert
DO-015	DO D2B forwarding pumps	Leak (10 % diameter). Discharge line of the supply pumps	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,26E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert
DO-015 FBR	DO D2B forwarding pumps	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	8,52E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DO-016	DO pipelines from forwarding pumps tank to D2A	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,40E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DO-016 FBR	DO pipelines from forwarding pumps tank to D2A	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	6,59E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DO-017	DO pipelines from forwarding pumps tank to D2B	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	5,11E-05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert
DO-017 FBR	DO pipelines from forwarding pumps tank to D2B	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			DO SPILLAGE	7,03E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert
DO-018	DO pipelines from raw tank to D3 transfer pumps	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	3,56E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert	
DO-018 FBR	DO pipelines from raw tank to D3 transfer pumps	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	5,81E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation	

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
DO-019	DO D3 Transfer Pumps	Leak (10 % diameter). Discharge line	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	3,86E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert
DO-019 CF	DO D3 Transfer Pumps	Catastrophic failure. Discharge line	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	8,41E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation	
DO-020	DO pipelines from D3 transfer pump to D3 service tank	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	4,85E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DO-020 FBR	DO pipelines from D3 transfer pump to D3 service tank	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	7,27E-08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Alert
DO-021	DO D3 Service tank	Continuous release from a hole with an effective diameter of 10 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

					RISK ZONES												EMERGENCY ESCALATION	
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2			
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation
			DO SPILLAGE	4,04E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
DO-021 CF	DO D3 Service tank	Instantaneous release of the entire contents of the DO D3 Service tank	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	2,20E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation
DO-022	DO pipelines from D3 service tank to supply pumps	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
			DO SPILLAGE	4,85E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation
DO-022 FBR	DO pipelines from D3 service tank to supply pumps	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	7,93E-07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation	
DO-023	DO pipelines from D3 supply pumps to engines	Leak with an effective diameter of 10% of the nominal diameter, up to a maximum of 50 mm	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
			DO SPILLAGE	3,47E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation	

					RISK ZONES												EMERGENCY ESCALATION
ITEM	EQUIPMENT / PROCESS	SCENARIO	FINAL EVENT	FINAL FREQUENCY y ⁻¹	LETHALITY 1% 5 kW/m2		LETHALITY 50% 15 kW/m2		LETHALITY 99% 37,5 kW/m2		Low Damage 3% 7,3 kW/m2		High Damage 5% 9,3 kW/m2		Damage 40% 13,4 kW/m2		
					STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	STAB. D	STAB. F	
DO-023 FBR	DO pipelines from D3 supply pumps to engines	Rupture in the pipeline	PFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			EXPLOSION	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	5,68E-06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation
DO-024 DE	DO Raw tank n. 1/2/3	Catastrophic failure of the DO Raw tank n. 1/2/3 due to a jet fire domino effect from EGM	PFIRE	7,81E-05	74	74	36	36	29	29	62	62	54	54	40	40	
			EXPLOSION	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			FLASHFIRE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
			DO SPILLAGE	3,41E-09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Partial activation

1.3.3. OTHER INDUSTRIAL ACCIDENTS

Apart from the scenarios identified in the previous chapter, other possible industrial accidents have been identified:

- Fire in the workshop, in the administrative building, in the control room
- Truck and car accidents
- Scaffolding, ladders and cranes falling

All of them, when not properly controlled and minimized, may result in hazards to the storage and handling of the hazardous materials.

1.3.4. EXTERNAL INCIDENT

Amongst the external events that may result in an emergency inside Delimara Power Station facilities, unauthorized entries are the most relevant detected by the HAZID. All of them may result in spillages and/or fires and are prevented by the security systems:

- unauthorized entry jumping over the fence
- unauthorized entry from the main entrance
- unauthorized entry from the side close to the HFO bund
- access of external personnel (not belonging to DPS) in the port area
- organised people (former workers, environmental activists, terrorists)
- object throwing, light weapon, heavy weapon
- helicopter crashes inside the facility (no plane crash is expected, since the facility is out of the proximity area for landing and take-off)

Additionally, the only natural event which may result in damages to the tanks and spillages is the unlikely possibility for an earthquake / tsunami to occur.

1.3.5. JOB INJURIES

Many types of job injuries can happen while at work in the facility, even if the standard operating procedures, the job place risk assessment and the personal protective

equipment reduce their occurrence to a minimum. While some of them can be managed internally with first aid kit, others require rescue, stabilization and emergency medical responders. In those cases, the ERP must be activated.

1.3.6. NEAR MISSES

Near misses may include a large list of incidents, human errors and instrument failures. They do not produce damages or injuries but a similar occurrence may occur and result in actual damage or injury. Thus, although they are not treated as emergencies, they must be investigated in order to prevent recurrence.

2. MATERIAL AND HUMAN RESOURCES

2.1. MATERIAL RESOURCES

In order to achieve a safer level of operations when handling Diesel Oil and Fuel Oil products, and considering the unlikely risk of fire that may occur, the installation is protected with suitable systems. In the following chapters they are organized in six main categories:

- **Prevention system**, based on standard operating procedures, permit to work, training of the employees and safeguards installed on the field.
- **Detection system**, based on detectors and alarms on the field, they are focused on the early detection of any occurrence which may lead to an emergency.
- **Fire fighting systems** are the standard facilities designed, installed and maintained in order to quickly extinguish any incipient fire.
- **Other resources** are all the resources available for the solving of specific situations apart from fire, including spillages.
- **Warning systems and external communications systems** are the resources available for the communication of the emergency situation inside / outside the facility and among the employees and to the general public and the authorities.

For some resources, a full list will be available in Annexure no. 3.

2.1.1 PREVENTION SYSTEM

Most Preventive Measures are based on a proper management of the safety related issues and are described in the Safety Management System.

Other measures which can prevent or minimize the consequences of the accidents identified in the following chapter are summarized hereafter.

Electric installation

Several high voltage electric installations are located at the site. The electric installation in the terminal is designed, installed and maintained according to the international

standards and legal obligations in Malta. The system is protected by standard protection systems.

Lightning protection

Chimneys, stacks and high structures, as well as building are suitably earthed in order to prevent lightning and the associated effects.

Collection system for waste and rain waters

Rain water is, in general, collected in reservoirs and used for irrigation purposes within the site itself. Rain water falling onto areas which could, potentially, be contaminated with oil (like fuel tank banded areas), are directed to oily water interceptors, where the oil part is separated from the water part by virtue of the difference in densities between the two fluids, prior to be discharged to the sea.

There is installed on the site a foul water system which is connected to the main public sewer.

Security System

The perimeter of the site is secured by fencing. Gates are manned 24/7 by security officers. There is CCTV monitoring in key areas. All areas are adequately lit.

2.1.2 DETECTION SYSTEM

All areas are equipped with automatic fire detection (smoke or heat) and manual call points. Fire alarms are transmitted to the Central Control Room which is manned 24/7.

The Fire Detection System is subject to a suitable system of maintenance.

A fire alarm system covers the entire plant incorporating smoke & heat detectors, manual callpoints inside & outside the plant buildings, and sirens. The alarm system incorporates monitoring of the fire systems. The main alarm panel is in the Central Control Room (CCR).

2.1.3 FIRE FIGHTING SYSTEMS

The always activated fire protection system, the presence of a dedicated cooling system to the storage tanks and the immediate activation of the emergency procedures, allows to limit, if not exclude, the possibility that domino effects occur.

There are two 100% duty fire water pumps (one electric, the other diesel drive) and a jockey pump. Suction is from the inlet after the main screens for circulating water. Fire water can be pumped from the sea into a firewater main which circulates throughout the power station complex. The fire main is kept pressurised and the fire pumps start automatically on demand.

The fire main terminates at the foam station adjacent to the HFO tanks. There are fire hydrants at the fuel oil pump-house. There is a separate foam installation and monitor at the fuel import jetty head.

A sea water fire hydrant system at Delimara Power Station provides outlet points for the facility which enable firewater to be applied in the event of a fire either through sprinklers in arrays around the tanks or through fire monitors attached to the hydrants.

Fire fighting equipment at the Delimara Power Station fuel storage area consists of the following items:

- Hydrant main fed by pumped seawater;
- Hydrants (for Diesel tank and for HFO tanks common bund);
- Bulk Foam systems at diesel oil (base injection);
- A fixed foam station to apply foam to the HFO tanks (top pouring);
- Foam sprinklers on the diesel centrifuge and fuel oil pumps;
- Tank cooling deluge system is fitted to the HFO and diesel tanks.

The HFO tanks are also fitted with a foam pouring system; the diesel tanks are fitted with a base injection (semi-subsurface) foam system.

The tanks are fitted with a fire alarm. Operation of the fire systems is manually, in all cases from outside the bunds.

There are foam spray systems installed in the diesel centrifuge house and the HFO and DO pumps.

External Hydrant main - Seawater

The system is always pressurised at 10 bar; working pressure is typically at 8 bar depending on load. The fire pumps start automatically on pressure drop; suction is direct from the sea.

The fire main runs around the entire plant and is mostly underground. There are:

- 1 Fire Pump Electric Nijhuis 820m³/h @ 9bar;
- 1 Fire Pump Diesel Nijhuis 820m³/h @ 9bar;
- 53 Hydrants BS 336 – 2 ½".

Internal Deluge / Sprinkler Hydrant Systems (Fresh Water)

The system is always pressurised at 10 bar; the working pressure is typically at 8 bar depending on load. The fire pumps start automatically on pressure drop. There is a 330 m³ reserve, continuous filled from evaporators. The Reserve is based on 30 minutes for highest demand.

A cross connection is provided between the FFI and FFE systems in case of an emergency. There are:

- 1 Fire Pump Electric Nijhuis 630m³/h @ 8bar;
- 1 Fire Pump Diesel Nijhuis 630m³/h @ 8bar;
- Jockey pump / pressure tank – system always pressurized;
- Internal hydrant main – 43 hydrants BS336 2½" (Some with foam capability).

A water spray protection (Deluge or sprinklers) is installed in the following locations:

- All oil-filled transformers;
- All cable flats;
- Boiler fronts (conventional boilers; the HRSG's are not fired);
- Turbine lubricating oil tanks;
- Fuel oil heaters / pumps trays;

- Fixed water spray (cooling) on all fuel tanks (HFO & DO) (From FFE).

Foam systems

In the plant there are foam systems located as below:

- Fixed foam pourers / base injection on all fuel tanks. (20000 litres foam in 4 tanks);
- Fixed foam monitor on loading quay (3000 litres foam);
- Phase 3 – Foam on all FOT tanks + bund area. (1000 litres foam).

The storage of foam is:

- 2 x 5000 litre HFO;
- 2 x 5000 litre DO;
- 1 x 3000 litre Quay (tanker unloading protection);
- 1 x 1000 litre Phase 3 FOT;
- 5000 litres reserve (IBC's).

Foam is also present in sprinklers in:

- HFO pumping / heating shed;
- DO centrifuge (Phase 2);
- FOT pumping / centrifuge (Phase 3).

Other fire systems

There is a water mist fire suppression system for Steam Turbines 1 & 2 (Phase 1) - 120 bar @ 120 l/min.

In the plant is also present a CO₂ fixed systems at service of all gas turbines (Phase 2, Phase 2A).

Only for Phase 3 there is a Argonite flood systems is for all engine cells (x8) and all switchgear rooms.

In addition, everywhere are present portable equipment, about 450 various portable extinguishers mainly powder / CO₂. Cabinets situated close to most hydrants, with

equipment including hoses, branches. Several foam trolleys in high risk areas and for bund protection.

A system of checklists is used to inspect and maintain the fire safety systems.

2.1.4 WARNING SYSTEMS AND EXTERNAL COMMUNICATIONS SYSTEMS

A Wide Area Warning system is installed; this is intended to warn the surrounding population of a serious incident.

Additionally, a radio system is available for normal communication on field and in case of emergency. The system is licensed by the authorities and ensures no interferences are created with other systems used in the area. ATEX radios are also available and generally used for unloading operation at quay. Lower and upper frequencies and channels are available. Usual phone communication by land lines is available at offices, control rooms and several other points. Mobiles phone are also available for communication.

2.2. HUMAN RESOURCES

People who may be involved in an emergency situation inside the facility can be classified in the following lines:

- **Employees (work force):** any person who holds an employment contract signed with Enemalta. The total workforce as at 11/01/2016, in DPS is approximately 250 people.
- **Contractors (outsourced staff):** refers to the person/s that have a temporary employment relationship with DPS, to provide services to perform certain temporary tasks inside the DPS facilities, and can affect or be affected by the same risks as regular staff.

- **Third party:** People outside DPS, except the contractors, who for various reasons are in the vicinity of the installation.
- **Staff employed with D3 and D4:** Persons who will be inside the DPS facility, but are employed by D3PG and EGM.

The human resources available in DPS in Delimara can be split into active and passive staff as follows:

- Active Personnel: all those who have a specific function and are trained for the Emergency Response Plan.
- Passive Personnel: all those who have no specific function during an emergency and are not specifically trained. This group includes visitors, truck drivers and subcontractors together with administrative personnel not included in the active resources.

3. EMERGENCY PROCEDURES

The purpose of the plan is to reduce injuries to people and damages to the environment and properties in case of an emergency. To do so, it has to specify those staff members who may put the plan into action and to identify clearly the staff members who will take responsibility for the strategic and on field decision. It has also to ensure that at least one of them must be on site or available through the mobile at all times whenever the facility is operative.

3.1. EMERGENCY CLASSIFICATION

Many factors determine what procedures are needed in a real emergency. They can be summarized in the following classes:

- Nature of emergency: spill, fire, explosion, unauthorized entry, earthquakes, others. However, the ERP may also be activated by any other unforeseen circumstances that may cause a significant hazard to personnel or equipment.
- Emergency level: alert, partial activation, full activation
- External resources required: controllable or uncontrollable emergency.

Regarding the first classification, it can help to identify the hazards and the possible threat for the personnel and the environment outside of the facility. It can also help in further defining the emergency level and in the determination of whether external resources are required.

Controllable Emergency

This is an emergency in which the emergency crew can prevent harm to the personnel or equipment by taking reasonable and prudent actions such as valve manipulations, shutting down equipment, spill control, etc.



Uncontrollable Emergency

This is an emergency in which the emergency crew cannot prevent harm to personnel or equipment by taking reasonable and prudent actions such as in the previous case. An Uncontrollable Emergency involves situations that have the potential to result in exposure of personnel or property to fire, explosion or major spillage out of the bunds.

3.2. EMERGENCY ESCALATION

In the event of an emergency it will be necessary to identify the level of incident that has occurred in order to assess the appropriate level of response. Incidents can therefore be ranked in order of increasing seriousness to enable the appropriate response. Additional assessments will also be required to establish whether the incident has the potential to develop into a more serious incident, and the emergency level to be escalated. This assessment allows for the following levels of emergency:

Alert

This is a situation where a hazard is noticed but it is considered to be controllable by the resources available to the personnel who detect the situation.

At this level, the activation of Emergency Response Plan is not necessary since the emergency may be resolved by the staff. However, an escalation of the incident could lead to a partial Emergency.

Partial Activation

This is a situation where the hazard cannot be neutralized immediately by the personnel using the available resources. If, upon checking the situation, it appears clear that additional collaboration and material resources are required, public authorities must be immediately notified. A fire or explosion situation must always initiate partial activation of the ERP. The same holds for a spillage outside the bunds but inside the facility premises.

Full activation

This is a situation where the hazard cannot be controlled with internal resources and may have an impact on vulnerable elements and people outside the installation. This situation always requires external human and material resources for proper control. It can always have important negative impact on the environment, the personnel and properties. A major fire, a major spill in the sea or outside the facility always require a full activation of the ERP.

3.3. ORGANIZATION, FUNCTIONS AND RESPONSIBILITIES

The organization of the personnel in case of emergency is shown in the Organization chart, in the Annexure no.2. Their functions and responsibilities are also shown in the same Annexure.

3.4. EMERGENCY PROCEDURES

During an emergency, some standard actions are always taken. Common elements to be considered include pre-emergency preparation and provisions for alerting and evacuating staff, handling casualties, and controlling the hazards. They can be defined using simple and standard procedures, in order to minimize the effort and maximize the efficiency. The following emergency procedures in case of emergency are attached in Organization chart, in the Annexure no.2:

- Detection
- Alarm
- Evacuation
- Fire
- Injury
- HFO / GO / Oil Spillage on land
- HFO / GO / Oil Spillage into the sea
- Chemical Spillage

3.5. EVACUATION PLAN

The evacuation takes place when an accident happens inside the facility and the conditions are not safe for the personnel to stay in the facility or part of them. Thus, the evacuation is of capital importance for the safety of the workers. In several places inside the facility (see table below), maps showing the evacuation routes can be found. They are known by all staff. The emergency crew in the daily activity keep the routes unobstructed. It is specified the safe locations for staff to gather for head counts to ensure that everyone has left the danger zone. Employees with disabilities (if applicable) are assisted by other during the evacuation procedure.

Evacuation may be partial or full and shall take place as indicated in the corresponding procedure attached in the Attachement no.2.

Employees, visitors and contractors shall head to their corresponding assembly point.

AREA	ASSEMBLY POINT	LOCATION
Administration, Visitors, Third Party and Contractors	A	Main Gate
Workshop and Stores	B	Outside Workshop Main Door
Phase I and Phase IIB Operations	C	(*) Phase IIA/ John Brown LCR
Phase III and Fuel Tanks Operators	D	(*) DO centrifuge

4. IMPLEMENTATION OF THE PLAN

Completing a comprehensive plan for handling emergencies is a major step towards preventing disasters. However, it is difficult to predict the problems that may happen unless the plan is tested. Exercises and drills may be conducted to practice all or critical portions (such as evacuation) of the plan. A thorough and immediate review after each exercise, drill, or after an actual emergency will point out areas that require improvement.

The plan should be revised when shortcomings have become known, and should be reviewed at least annually. The plan should be updated when there are changes in facility infrastructure, processes, materials used, and key personnel.

It should be stressed that provision must be made for the training of both individuals and teams, if they are expected to perform adequately in an emergency. An annual full-scale exercise will help in maintaining a high level of proficiency.

The goals for a correct implementation can be summarized as follows:

- Developing and implementing procedures and incident and emergency protocols
- Providing adequate and ongoing training for personnel
- Conducting desktop and field exercises
- Regular auditing of construction activities
- Ongoing and effective communication
- Ongoing liaison with public authorities
- Identifying new or additional resources and equipment required for effective emergency response
- Identifying new or additional roles and responsibilities of individuals
- Identifying new or additional key personnel and reliable means of contacting them
- Maintaining documentation so potential incidents or emergencies can be properly managed

- Ongoing compliance checks with OHS requirements by Health and Safety Department and Environmental and Safety Coordinator.

4.1. PERSONNEL TRAINING AND DRILLS

All staff, depending on the area where such officers are employed, will receive basic training regarding the prevention, planning, response to and recovery from incident or emergency, which forms a key part of the overall training programme. Specific training regarding safe planning of works to prevent such occurrences includes:

- Training in the contents of this plan as described below.
- Training in basic first aid.
- Training in required response to manage environmental emergencies.
- Training in basic fire awareness

Apart from the basic training mentioned above, the ERT workers are also trained in the use of the industrial fire fighting equipment present on the site. This knowledge will be enforced in the practicing of drills that will be conducted on a regular basis.

DPS will conduct periodical emergency drills according to the requirement by L.N. 44 of 2002, as amended by Legal Notice 437 of 2012. These drills will ensure that workers are familiar with emergency procedures and that they are able to use the emergency equipment.

To make the above drills more fruitful, CPD members may be invited to the site for familiarisation.

4.2. ANALYSIS AND EVALUATION OF THE ACCIDENTS

Any incidents or accidents should be studied and analyzed to, amongst other requirements, detect any faults in the implementation, organization or preparation of this Emergency Response Plan.

In order to do so, a working group should be formed, comprising the crew who participated in resolving the emergency, together with the facility responsible, the HSE-M and the Sec-M to analyze the causes, assess the damage and propose a plan review.

4.3. ERP REVIEW

The ERP is a classified document and its filing, handling, replication and distribution shall be controlled by the HSE Manager and Security Manager in accordance with the procedures detailed.

The ERP shall be submitted to update at least in the following cases:

- Modification of the facilities or activities taking place (especially extensions or change of classified product).
- Incorporation of new risks
- Legislative changes
- Real emergency involving subsequent amendments to improve the operability of the ERP
- Result of the different drills.

Only the facilities Manager Generation and HSE Manager and Security Manager in collaboration together are authorised to amend the ERP. Amendments shall be inserted in full in the following manner:

- The HSE Manager shall implement all necessary changes and updates to the ERP. The OHSA may periodically review the ERP, including updates.
- The relevant page is amended on the electronic copy, with text changes being in red.
- The electronic copy is issued for internal approval even when minor changes are implemented.
- After approval, the ERP shall be re-printed and all employees informed to destroy and replace outdated copies by the Document Controller.
- The HSE Manager shall keep track and records of all changes and updates to the ERP.



ANNEXURE 1. EMERGENCY CONTACT LIST



DOC 5

EMERGENCY RESPONSE TEAM

(ERT) - DPS

Status:	Controlled	
Version	V 2.0	
Last revision dated:	13 th October 2015	
Maintained by:	Ing. M. Falzon	[signed]
	Mr. P. Conti	[signed]
	Ing. I. D'Amato	[signed]
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Name	Department
Ing. Joseph Gatt	Capacity Planning and Dispatch
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Mr. Simon Zammit	CCR
Mr. Jeffrey Galea	CCR
Mr. Martin Montebello	CCR
Mr. Michael Ghigo	CCR
Mr. Paul Aquilina	CCR
Mr. Martin Pace	D1
Mr. Saviour Galea	D1
Mr. Joseph Grech	D1
Mr. Joseph Camilleri	D1
Mr. Vince Beeston	D1
Mr. Carmelo Zammit	D1
Mr. Mark Farrugia	D1
Ing. Stephen Pisani	D3
Ing. Matthew Cauchi	D3
Ing. Luke Micallef	D3
Ing. Karl Agius	D3
Ing. Ian Camilleri	D3
Mr. Paul Grima	D3
Mr. Domenic Agius	D3

Mr. John Grech	D3
Mr. Emmanuel Coleiro	D3
Mr. Joseph Azzopardi	D3
Mr. Brian Gerada	D3
Mr. Albert Hili	D3



ANNEXURE 2. EMERGENCY PROCEDURES

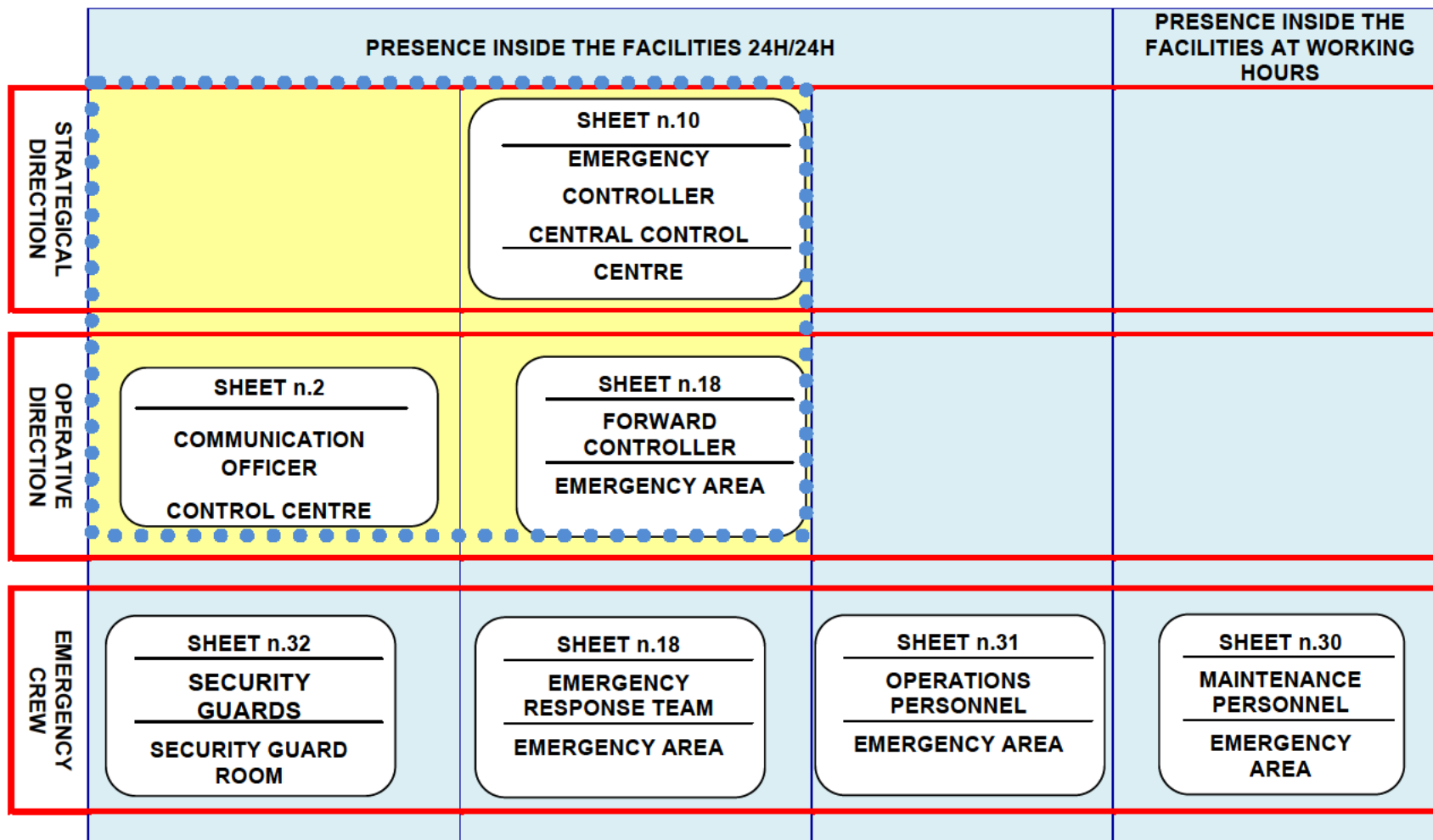
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ORGANIZATION CHART


SHEET No. 2 - FUNCTIONS

COMMUNICATION OFFICER

DEFINITION	Responsible of performing all internal and external (except the media) communications in emergency Activates the emergency response including emergency contact details
-------------------	--

ROLE HOLDER	CCR Operator designated by the EC
--------------------	-----------------------------------

LOCATION	First choice: Central Control Centre Second choice: Standby Control Centre
-----------------	---

AVAILABILITY	24/7
---------------------	------

FUNCTIONS

The person designated in the control centre, when informed of the emergency, assumes the following functions:

1. Alerts members of the ERT and the Emergency Controller.
2. Assists the Emergency Controller with communications, within and outside the plant.
3. Logs all actions during an emergency.
4. Non-emergency communications (e.g. press, general public etc) are to be referred to the Communications Office

SHEET No. 3 – ACTIONS

COMMUNICATION OFFICER

FIRE IN STRUCTURES
OPEN AIR FIRE
FIRE AT QUAY
GAS FIRE

DEFINITION	Responsible of performing all internal and external (except the media) communications in emergency Activates the emergency response including emergency contact details
-------------------	--

ROLE HOLDER	CCR Operator designated by the EC
--------------------	-----------------------------------

LOCATION	First choice: Control Centre Second choice: Standby Control Centre
-----------------	---

AVAILABILITY	24/7
---------------------	------

SPECIFIC ACTIONS

Receive the alarm communication and alert the available Emergency Controller

According to the EC directions proceed with the following actions:

1. Sounds fire alarm unless it is already working
2. Alerts Emergency Controller and ERT by radio or telephone
3. Calls Emergency Services immediately, informing their operator of:
 - **E**xact location
 - **T**ype of incident
 - **H**azards on site
 - **A**ccess to accident location
 - **N**umber of casualties/size of accident
 - **E**mergency Services on site
4. Alerts Security Guard Room and advise them of expected actions.

SHEET No. 4 - ACTIONS

COMMUNICATION OFFICER

HFO / DO / OIL SPILLAGE ON LAND
HFO / DO / OIL SPILLAGE INTO THE SEA
CHEMICAL SPILLAGE
GAS LEAKAGE OUTSIDE
GAS LEAKAGE INSIDE

DEFINITION Responsible of performing all internal and external (except the media) communications in emergency
Activates the emergency response including emergency contact details

ROLE HOLDER CCR Operator designated by the EC

LOCATION First choice:
Control Centre
Second choice:
Standby Control Centre

AVAILABILITY 24/7

SPECIFIC ACTIONS

Receive the alarm communication and alert the available Emergency Controller

According to the EC directions proceed with the following actions:

1. Alerts Emergency Controller and ERT by radio or telephone
2. Calls CPD immediately, if a hazard to personnel exists
3. Alerts workshop for support from Maintenance Personnel (available 0700 to 1830)
4. Emergency controller will alert outside agencies after assessment of situation.
5. Informs ERA/COMAH of any significant spill.
6. Informs TM in case of spill to sea.
7. In case of spill to sea, contacts pollution sub-contractor, if required.
8. Alerts Security Guard Room and advise them of expected actions.
9. Contact Enemalta Health & Safety Section and/or Regulatory Office as soon as possible.

SHEET No. 5 - ACTIONS

COMMUNICATION OFFICER

FIRST AID AND RESCUE

DEFINITION	Responsible of performing all internal and external (except the media) communications in emergency Activates the emergency response including emergency contact details
ROLE HOLDER	CCR Operator designated by the EC
LOCATION	First choice: Control Centre Second choice: Standby Control Centre
AVAILABILITY	24/7

SPECIFIC ACTIONS

Receive the alarm communication and alert the available Emergency Controller

According to the EC directions proceed with the following actions:

1. Alerts Emergency Controller and ERT by radio or telephone
2. Calls Emergency Services immediately, informing their operator of:
 - **E**xact location
 - **T**ype of incident
 - **H**azards on site
 - **A**ccess to accident location
 - **N**umber of casualties/size of accident
 - **E**mergency Services on site
3. Alerts Security Guard Room and advise them of expected actions.
4. Contact Enemalta Health & Safety Section as soon as possible.

SHEET No. 6 - ACTIONS

COMMUNICATION OFFICER

EXPLOSION

DEFINITION	Responsible of performing all internal and external (except the media) communications in emergency Activates the emergency response including emergency contact details
-------------------	--

ROLE HOLDER	CCR Operator designated by the EC
--------------------	-----------------------------------

LOCATION	First choice: Control Centre Second choice: Standby Control Centre
-----------------	---

AVAILABILITY	24/7
---------------------	------

SPECIFIC ACTIONS

Receive the alarm communication and alert the available Emergency Controller.

According to the EC directions proceed with the following actions:

1. Calls ERT by radio or telephone
2. Sounds fire alarm according to EC directions
3. Calls Emergency Services immediately, informing their operator of:
 - **E**xact location
 - **T**ype of incident
 - **H**azards on site
 - **A**ccess to accident location
 - **N**umber of casualties / size of accident
 - **E**mergency Services on site
4. Alerts Security Guard Room and advise them of expected actions.
5. Contact Enemalta Health & Safety Section and Regulatory Affairs Office as soon as possible.

SHEET No. 7 - ACTIONS

COMMUNICATION OFFICER

BOMB THREAT

DEFINITION	Responsible of performing all internal and external (except the media) communications in emergency Activates the emergency response including emergency contact details
ROLE HOLDER	CCR Operator designated by the EC
LOCATION	First choice: Control Centre Second choice: Standby Control Centre
AVAILABILITY	24/7

SPECIFIC ACTIONS

Receive the alarm communication and alert the available Emergency Controller

According to the EC directions proceed with the following actions:

1. Calls ERT by radio or telephone to remain on standby
2. Sounds fire alarm according to EC directions
3. Calls Emergency Services immediately, informing their operator of:
 - **E**xact location
 - **T**ype of incident
 - **H**azards on site
 - **A**ccess to accident location
 - **N**umber of casualties / size of accident
 - **E**mergency Services on site
4. Alerts Security Guard Room and advise them to activate bomb threat SOP.
5. Contact Enemalta Health & Safety Section as soon as possible.

SHEET No. 8 - ACTIONS

COMMUNICATION OFFICER

SECURITY INCIDENT

DEFINITION	Responsible of performing all internal and external (except the media) communications in emergency Activates the emergency response including emergency contact details
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ROLE HOLDER	CCR Operator designated by the EC
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LOCATION	First choice: Control Centre Second choice: Standby Control Centre
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AVAILABILITY	24/7
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SPECIFIC ACTIONS

Receive the alarm communication and alert the available Emergency Controller

According to the EC directions proceed with the following actions:

1. Inform Security Guards
2. Calls Emergency Services immediately, informing operator of:
 - **E**xact location
 - **T**ype of incident
 - **H**azards on site
 - **A**ccess to accident location
 - **N**umber of casualties / size of accident
 - **E**mergency Services on site
3. Contact Enemalta Health & Safety Section as soon as possible.

SHEET No. 9 - ACTIONS

COMMUNICATION OFFICER

NATURAL DISASTER

DEFINITION	Responsible of performing all internal and external (except the media) communications in emergency Activates the emergency response including emergency contact details
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ROLE HOLDER	CCR Operator designated by the EC
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LOCATION	First choice: Control Centre Second choice: Standby Control Centre
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AVAILABILITY	24/7
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SPECIFIC ACTIONS

Receive the alarm communication and alert the available Emergency Controller

According to the EC directions proceed with the following actions:

1. Calls ERT by radio or telephone
2. Sounds fire alarm according to EC directions
3. Calls CPD and Ambulance immediately, informing operator of:
 - **E**xact location
 - **T**ype of incident
 - **H**azards on site
 - **A**ccess to accident location
 - **N**umber of casualties / size of accident
 - **E**mergency Services on site
4. Alerts Security Guard Room and advise them of expected actions.
5. Contact Enemalta Health & Safety Section as soon as possible.

SHEET No. 10 - FUNCTIONS
EMERGENCY CONTROLLER

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

FUNCTIONS

The **Emergency Controller** has the overall responsibility for directing the company efforts during an emergency towards safe resolution of the emergency.

Above all, the Emergency Controller is to act as a fixed reference point for all responding agencies.

As soon as the EC is informed about the emergency, he / she takes on the following functions:

1. Contacts other agencies required (CPD, Police, pollution control, etc.)
2. Contacts Enemalta personnel as required:

	FIRE	INJURY	SPILLAGE
Manager Generation	✓	✓	✓
Health & Safety Section	✓	✓	✓
Communications Office	✓	✓	✓
Nurse		✓	
Environmental & Safety Coordinator	✓		✓
GOVERNMENT AGENCIES			
Transport Malta	✓ ¹		✓ ¹
Occupational Health & Safety Authority		✓	
Police		✓	
Environmental Health Directorate	✓ ²		✓ ²
Environment& Resources Authority (ERA)	✓		✓
COMAH	✓	✓	✓

¹: To be advised of any fire or spill which can affect the sea

²: To be advised of the sea may be affected (for bathing quality) or serious air pollution

SHEET No. 10 - FUNCTIONS

EMERGENCY CONTROLLER

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

FUNCTIONS

3. Acts as co-ordinator with other agencies, briefing them on arrival by phone or his deputy and arranging for their disposition.
4. Ensures availability of resources and personnel during the emergency.
5. Ensures that necessary action is taken to protect personnel and plant.
6. Shuts down the plant involved, if necessary.
7. Maintains normal operations of unaffected plant, as far as reasonably practicable.

After the emergency

1. Declares end of Emergency, once he has inspected the area and the situation is under control.
2. Investigates the causes of the accident/incident and prepares the accident/incident report.

SHEET No. 11 - ACTIONS
EMERGENCY CONTROLLER

FIRE IN STRUCTURES
FIRE IN OPEN AIR
FIRE AT QUAY
GAS FIRE

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

SPECIFIC ACTION IN CASE OF FIRE IN STRUCTURES / FIRE IN OPEN AIR / FIRE AT QUAY /GAS FIRE

1. Assess situation through the FC and /or communication received
2. Decides the escalation of the emergency
3. Ensures Emergency Services have been called
Emergency Services: 112
4. Ensures evacuation of affected areas and account for personnel
5. Directs ERT to required action
6. Keep permanent contact with FC
7. Communicates the situation to security personnel through CO
8. Be informed at any moment of the extent of the situation
9. Responsible for informing DPS management
10. Informs H & S Section
Health & Safety [REDACTED]
11. In case of fire at quay, advises Transport Malta
TM (VTS) [REDACTED]


SHEET No. 12 - ACTIONS
EMERGENCY CONTROLLER

HFO / DO / OIL SPILLAGE ON LAND
HFO / DO / OIL SPILLAGE TO THE SEA
CHEMICAL SPILLAGE
GAS LEAKAGE OUTSIDE
GAS LEAKAGE INSIDE

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

SPECIFIC ACTION IN CASE OF HFO / DO / OIL SPILLAGE ON LAND, HFO / DO / OIL SPILLAGE TO THE SEA, CHEMICAL SPILLAGE, GAS LEAKAGE OUTSIDE or GAS LEAKAGE INSIDE

1. Assess situation through the FC and /or communication received
2. Decides the escalation of the emergency
3. Directs ERT to required action by radio or phone
4. Ensures further spillage is halted by co-operation of Maintenance Personnel or Operation Personnel
5. Contacts Emergency Services
Emergency Services:112
6. In case of marine spills, advises Transport Malta
TM (VTS) [REDACTED]
7. In case of gas leakage contact ELECTROGAS
8. Advises ERA/COMAH
ERA [REDACTED]
9. Informs Regulatory Office
Regulatory Office [REDACTED]
10. Contacts pollution sub-contractor, if required

	EMERGENCY RESPONSE PLAN	Rev. 1.0 May 2016
SHEET No. 13 - ACTIONS		
EMERGENCY CONTROLLER		
EXPLOSION		
DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken	
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *	
LOCATION	CCR	
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour	
SPECIFIC ACTION IN CASE OF EXPLOSION		
<ol style="list-style-type: none"> 1. Assesses situation through the FC and /or communication received 2. Decides the escalation of the emergency 3. Ensures Emergency Services have been called <div style="text-align: center;">Emergency Services: 112</div> 4. Ensures evacuation of affected areas and account for personnel 5. Directs ERT to required action 6. Keeps permanent contact with FC 7. Communicates the situation to security personnel through CO 8. Account for missing personnel by taking a roll call 9. Be informed at any moment of the extent of the situation 10. Responsible for informing DPS management 11. Informs H & S Section <div style="text-align: center;">Health & Safety [REDACTED]</div> 12. In case of explosion at quay, advises Transport Malta <div style="text-align: center;">TM (VTS) [REDACTED]</div> 		

SHEET No. 14 - ACTIONS
EMERGENCY CONTROLLER
FIRST AID AND RESCUE

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

SPECIFIC ACTION IN CASE OF FIRST AID AND RESCUE

1. Assesses situation through the FC and /or communication received
2. Decides the escalation of the emergency
3. Ensures Nurse (when available) and Emergency Services have been contacted
Emergency Services: 112
4. Directs ERT to required action
5. Keep permanent contact with FC
6. Communicates the situation to security personnel through CO
7. Be informed at any moment of the extent of the situation
8. Responsible for informing DPS management
9. Informs H & S Section

Health & Safety

SHEET No. 15 - ACTIONS

EMERGENCY CONTROLLER

BOMB THREAT

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

SPECIFIC ACTION IN CASE OF BOMB THREAT

1. Calls Emergency Services

Emergency Services: 112

2. Alerts Security Guard Room and advise them to activate bomb threat SOP.
3. Directs ERT to remain standby
4. Keep permanent contact with FC
5. Be informed at any moment of the extent of the situation
6. Responsible for informing DPS management
7. Informs H & S Section

Health & Safety [REDACTED]

SHEET No. 16 - ACTIONS

EMERGENCY CONTROLLER**SECURITY INCIDENT**

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

SPECIFIC ACTION IN CASE OF SECURITY INCIDENT

1. Alerts Security Guard Room and advise them of a security breach
2. Calls Emergency Services
Emergency Services: 112
3. Directs ERT to remain standby
4. Keep permanent contact with FC
5. Be informed at any moment of the extent of the situation
6. Responsible for informing DPS management

SHEET No. 17 - ACTIONS

EMERGENCY CONTROLLER

NATURAL DISASTER

DEFINITION	Responsible for the management of the emergency Takes decision on the event because of his competence and ensures the necessary actions are taken
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) ** Shift Engineer (D3) ** If none of the above is available, Dispatch GO / CCR SO ** In extended emergencies: Manager Generation * Manager Capacity / Planning and Dispatch * Manager Energy Services *
LOCATION	CCR
AVAILABILITY	* Present during normal office hours ** Available 24/7 hour

SPECIFIC ACTION IN CASE OF NATURAL DISASTER

1. Assess situation through the FC and /or communication received
2. Decides the escalation of the emergency
3. Ensures Emergency Services have been called
Emergency Services: 112
4. Ensures evacuation of affected areas and account for personnel
5. Directs ERT to required action
6. Keep permanent contact with FC
7. Communicates the situation to security personnel through CO
7. Be informed at any moment of the extent of the situation
8. Responsible for informing DPS management
9. Informs H & S Section

Health & Safety [REDACTED]

SHEET No. 18 - FUNCTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team (ERT).
HOLDER AND ALTERNATE	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

FUNCTIONS

As soon as the Forward Controller (FC) is informed about the emergency he takes on the following functions:

1. Collects PPE and take command of the Emergency Response Team (ERT).
2. Verifies that the Emergency Response Team (operators) is properly equipped.
3. Moves to the emergency area with the ERT.
4. Coordinates the operations of the ERT, prioritizing 1) ERT personnel safety, 2) safety of other personnel including injured or trapped persons, 3) other employees and 4) assets
5. Ensures accountability of personnel
6. Maintains constant contact with the EC, communicating the progression of the emergency.
7. Requests additional resources (human and / or materials) from the EC if required.
8. Informs emergency services on site and coordinates with them.

If informed about a bomb threat , security incident or natural disaster:

1. Remains on standby at CCR
2. Assists authorities as required

After the emergency:

1. Collaborates with the EC in inspecting the damaged area before declaring the emergency over.
2. Plans or co-ordinates with Maintenance Personnel to restore the situation.

SHEET No. 19 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**FIRE IN STRUCTURES**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF FIRE IN STRUCTURES

1. Collect breathing apparatus located in the CCR
2. Proceed to the affected building
3. Set the forward control point as close as possible to the entrance to the building in a safe location
4. Assess the situation and plan the strategy
5. Consider whether entry is safe or additional resources are required
6. Any entry must be made in pairs using breathing apparatus
7. No entry in a high risk situation unless there is a backup onsite
8. Consider specific risks such as high voltage, confined spaces, chemicals, stability of structures, etc
9. Prioritize the usage of fixed fire fighting system where available
10. Coordinate with Emergency Services onsite

SHEET No. 20 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**OPEN AIR FIRE**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF OPEN AIR FIRE

1. Collect breathing apparatus if required
2. Proceed to the affected area
3. Set the forward control point as close as possible to the affected area in a safe location upwind
4. Assess the situation and plan the strategy
5. Consider whether the additional resources are required
6. Consider specific risks such as high voltage, chemicals, stability of structures, weather conditions, etc
7. Prioritize the usage of fixed fire fighting system were available
8. Coordinate with Emergency Services onsite

SHEET No. 21 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**FIRE AT QUAY**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF FIRE AT QUAY

1. Collect breathing apparatus if required
2. Proceed to the affected area
3. Set the forward control point as close as possible to the affected area in a safe location upwind
4. Assess the situation and plan the strategy
5. Consider whether the additional resources are required
6. Consider specific risks such as high voltage, chemicals, stability of structures, weather conditions, falling into the water, etc
7. Consider environmental impact from contaminated water
8. Prioritize the usage of fixed fire fighting system were available
9. Coordinate with the unloading master and ship captain
10. Coordinate with Emergency Services onsite

SHEET No. 22 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**GAS FIRE**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF GAS FIRE

1. Proceed to the affected area
2. Set the forward control point as close as possible to the affected area in a safe location upwind
3. Assess the situation and plan the strategy
4. Consider whether additional resources are required
5. Consider whether it is advisable to put out the fire (unignited gas may accumulate and cause an explosion hazard in congested spaces)
6. Consider specific risks such as high voltage, chemicals, stability of structures, weather conditions, etc
7. Prioritize cooling structures, vessels and pipelines exposed to the thermal radiation
8. Prioritize the usage of fixed fire fighting system where available or portable monitors
9. Coordinate with Emergency Services onsite

SHEET No. 23 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**HFO / DO / OIL SPILLAGE ON LAND**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF HFO / DO / OIL SPILLAGE ON LAND

1. Proceed to the affected area
2. Set the forward control point as close as possible to the affected area in a safe location upwind
3. Assess the situation and plan the strategy
4. Isolate the source of the spillage. Ensure any drains are closed. Plug the entry to the drain lines.
5. Consider whether additional resources are required
6. Contain the spill
7. Recover the spilled material. Start interceptors' cleaning immediately to avoid oil spilling through.
8. Consider specific risks such as possibility of ignition for HFO downstream heaters, weather conditions, etc
9. Coordinate with Emergency Services onsite and other support
10. Dispose of spilled material as per current EMS procedures

SHEET No. 24 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**HFO / DO / OIL SPILLAGE TO THE SEA**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF HFO / DO / OIL SPILLAGE TO THE SEA

1. Proceed to the affected area
2. Set the forward control point as close as possible to the affected area in a safe location upwind
3. Assess the situation and plan the strategy
4. Request EC to activate emergency services and other contractors for spillage recovery in the sea
5. Isolate the source of the spillage. Ensure any drains are closed.
6. Consider whether additional resources are required
7. Contain the spill with the assistance of the contractors
8. Supervise the recovery of the spilled material by contractors
9. Consider specific risks such as possibility of ignition for HFO downstream heaters, weather condition, etc
10. Coordinate with Emergency Services onsite and other support
11. Dispose of spilled material as per current EMS procedures

SHEET No. 25 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**CHEMICAL SPILLAGE**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF CHEMICAL SPILLAGE

1. Proceed to the affected area
2. Set the forward control point as close as possible to the affected area in a safe location upwind
3. Identify the chemical, size of spillage, assess the situation and plan the strategy
4. Ensure personnel safety by distance and PPE
5. Isolate the source of the spillage. Ensure any drains are closed.
6. Consider whether additional resources are required
7. Contain the spill
8. Recover the spilled material
9. Consider specific risks such as hazards of the chemical, weather conditions, etc
10. Coordinate with Emergency Services onsite and other support
11. Dispose of spilled material as per current EMS procedures

SHEET No. 26 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**GAS LEAKAGE OUTSIDE**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF GAS LEAKAGE OUTSIDE

1. Proceed to the affected area
2. Set the forward control point as close as possible to the affected area in a safe location upwind
3. Eliminate any source of ignition
4. Assess the situation and plan the strategy
5. Use gas detectors to determine the source extent
6. Communicate with Electrogas and/or D3PG as applicable such that the source is isolated. Consider whether additional resources are required
7. Consider specific risks such as ignition and/or explosion, wind direction, etc
8. Coordinate with Emergency Services onsite and other support

SHEET No. 27 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**GAS LEAKAGE INSIDE**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF GAS LEAKAGE INSIDE

1. Alert EGM control room
2. Proceed to the affected area
3. Set the forward control point as close as possible to the affected area in a safe location upwind
4. Eliminate any source of ignition
5. Assess the situation and plan the strategy
6. Ensure ventilation is correctly operating or ventilate by natural ventilation. Use portable gas detectors to ensure safe conditions
7. No entry in a high risk situation unless there is a backup onsite
8. Consider whether the additional resources are required
9. Consider specific risks such as ignition and/or explosion, wind direction...
10. Coordinate with Emergency Services onsite and other support

SHEET No. 28 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**EXPLOSION**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF EXPLOSION

1. Proceed to the affected area
2. Set the forward control point as close as possible to the affected area in a safe location upwind
3. Eliminate any source of ignition
4. Assess the situation and plan the strategy
5. In case of fire, proceed applying procedures on sheet no. 19
6. In case of spillage proceed applying procedures on sheet no. 23
7. In case of missing personnel proceed applying procedure on sheet no. 29
8. No entry in a high risk situation unless there is a backup onsite
9. Consider whether additional resources are required
10. Consider specific risks such as ignition and/or additional explosions, instability of structures, wind direction
11. Coordinate with Emergency Services onsite and other support

SHEET No. 29 - ACTIONS

FORWARD CONTROLLER & EMERGENCY RESPONSE TEAM**FIRST AID AND RESCUE**

DEFINITION	Responsible for the intervention in the emergency area and the safety of members of the Emergency Response Team.
ROLE HOLDER	Principal: Dispatch Engineer (Shift Charge Engineer) Shift Engineer (D3) Deputy: Dispatch GO / CCR SO
LOCATION	Meeting Point: CCR Location in emergency: Emergency area
AVAILABILITY	Available 24/7 hour

SPECIFIC ACTION IN CASE OF FIRST AID AND RESCUE

1. Proceed to the affected area
2. Set the forward control point as close as possible to the affected area in a safe location upwind
3. Assess the situation and plan the strategy
4. No entry in a high risk situation unless there is a backup onsite
5. Consider whether additional resources are required
6. In case of potential missing persons, EC coordinates with PMO for maintenance personnel roll call, Security guards for visitors/contractors roll call and the respective GO s for operations/dispatch personnel
7. Don't move casualties before their physical integrity is ensured
8. Consider specific risks such as ignition and/or additional explosions, instability of structures, wind direction
9. Coordinate with Emergency Services onsite and other support

SHEET No. 30 - FUNCTIONS

MAINTENANCE PERSONNEL

DEFINITION	Responsible for supporting ERT in the emergency plan providing material resources or man power in case of fire and spillage
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HOLDER AND ALTERNATE	Maintenance personnel
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LOCATION	Maintenance workshop
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AVAILABILITY	Available 0700 to 1830
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FUNCTIONS

In case of fire, as soon as the Maintenance Personnel on duty are informed about the emergency by the alarm they take on the following functions:

1. Proceed to their workshop and remain there unless directed to do so by the Plant Maintenance Officer (PMO).
2. PMOs will conduct roll call as per daily work assignment, and report to the EC.
3. Personnel not involved in the emergency operations are to remain available as the Emergency Controller may require them.
4. Where personnel are working on critical plant, they are to ensure that all machinery has been made safe before leaving.
5. If hot work was in progress, advise EC.
6. In case of any work relating to the fire protection systems, it is essential that operation is restored as a priority.

In case of spillage, as soon as the Maintenance Personnel on duty are informed about the emergency take on the following functions:

1. Proceed to their workshop for task reassignment according to the ERP priorities.

SHEET No. 31 - FUNCTIONS**SECURITY GUARDS**

DEFINITION	Responsible for ensuring security of the plant
HOLDER AND ALTERNATE	ASCOs and security guards
LOCATION	Security Guard Room
AVAILABILITY	Available 24/7

FUNCTIONS

1. To communicate with ACSO and advise of the situation.
2. No vehicles except emergency vehicles are to enter the plant. The emergency vehicles are to be directed to the rendezvous point as indicated by the EC.
3. It may be helpful to assign someone with Enemalta identification at the roundabout leading to the power station, as it is easy for persons unfamiliar with the area to miss it.
4. Maintain clear access, ensuring all gates are kept clear. If necessary police are to be called to assist.
5. Responsible for assisting with roll call and identifying any missing personnel.
6. To notify EC of any missing persons.
7. To take record of personnel entering and leaving site.
8. In major incidents, the security guards are to ask for reinforcements as required.

SHEET No. 32 - FUNCTIONS

OPERATIONS PERSONNEL

DEFINITION	Responsible for continuity of operation in case of emergency
HOLDER AND ALTERNATE	Operations personnel not in ERT
LOCATION	Plant according to their duty
AVAILABILITY	Available 24/7

FUNCTIONS

1. Proceed immediately to their assigned post of duty by a safe route.
2. Where operators are assigned to an area of plant rather than a specific unit, operators will assemble near the panel of the closest unit.
3. Report to their superior officer
4. Remain available
5. Carry out the following tasks, as instructed by the EC:
 - Isolate any electrical supplies.
 - Isolate any valves that have been opened.
 - Isolate & make safe any hazardous equipment that might interfere with work.
6. If their normal place of duty has been affected, they are to go to the nearest assembly point and report to the EC.

SHEET No. 33 PROCEDURE

EMERGENCY DETECTION

DEFINITION:	Process of detecting an unusual situation, report, check and alert
WHEN:	Whenever there is an emergency
STARTER:	Anyone from DPS
WHERE:	Central Control Centre
WHO:	EC

PROCEDURES TO BE TAKEN:If you discover an emergency

1. Keep calm.
2. Notify the alarm to the Central Control Centre explaining the emergency type at the following number:

CCR TEL. [REDACTED]
3. Try to control the situation using the resources available in the area, if safe to do so.
4. Follow the instruction of Emergency Controller.
5. Go to the assembly point.

If you receive a call or an emergency message

1. Keep calm.
2. Immediately notify the CCR communicating the data collected and follow instructions.

SHEET No. 34 - PROCEDURES

ALARM

DEFINITION:	Action to be taken on hearing the plant alarm
WHEN:	Whenever the plant alarm sounds
STARTER:	All DPS personnel
WHERE:	Anywhere on the plant depending on their duties
WHO:	All DPS personnel

PROCEDURES TO BE TAKEN:

On hearing the alarm, employees act as follows:

Administration:

- all work in progress.
- Go to the Assembly Point and follow EC instructions

Maintenance personnel:

- Stop immediately all operations in safe way.
- Monitor that equipments are stopped safely
- Assume the duties as directed by the Emergency Response Team Leader
- Ensure the possibility for fire brigade to enter the facilities and keep free the entrance and roads

Operations personnel:

- As in Sheet No. 32

Drivers of DPS or subcontractor's vehicles:

- Immediately suspend any loading and unloading operations.
- Shut off any valves on transfer lines.
- Do not move any vehicle without permission of the EC
- If asked to evacuate, leave vehicle unlocked and keys in ignition
- Go to the Assembly Point notifying the presence

Contractors working at the facilities

- Stop all work in progress.
- Before leaving the working place, make safe by stopping all the hot work, disconnecting all power tools, closing welding system, extinguishing all open flames, turning off lighting equipment, etc.
- Go to the Assembly point and wait for instructions from the EC.

Visitors

- Direct to the Assembly Point A near the Security Guard Room.

SHEET No. 35 - PROCEDURE

EVACUATION

DEFINITION:	Procedure to leave the facilities when required
WHEN:	When the emergency has an effect on the integrity of facilities and personnel
STARTER:	EC
WHERE:	External assembly point
WHO:	DPS staff and external

PROCEDURES TO BE TAKEN:

The evacuation of the facility is ordered by the EC.

When hearing the emergency siren with evacuation tone (high-low tone), the ERT, the EC and the FC perform their specific functions, while the other staff is addressed to the assembly point, next to the entrance.

Partial evacuation:

- Stop what you are doing, if not required for the evacuation.
- Leave the area or building in an orderly manner, following the safest and quickest route.
- If you suspect that someone may be trapped in a building or affected area, report immediately to the Security Guard.
- Should you see any visible smoke, stay away from it and run away.
- Once outside, go directly to the External Assembly Point.
- If you are responsible for a visitor, direct him or her to the External Assembly Point.

Full evacuation:

The total evacuation takes place when the ERT and Emergency Services cannot safely fight the dangerous event.

The FC orders the ERT to leave the facilities in order to avoid any hazards for the team itself. All the people have to follow the instructions and go towards the external assembly point.

Assembly points

AREA	ASSEMBLY POINT	LOCATION
Administration, Visitors, Third Party and Contractors	A	Main Gate
Workshop and Stores	B	Outside Workshop Main Door
Phase I and Phase IIB Operations	C	(*) Phase IIA/ John Brown LCR
Phase III and Fuel Tanks Operators	D	(*) DO centrifuge

SHEET No. 36 - PROCEDURES**FIRE****APPLY TO:** All DPS personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Fire extinguishers, foam systems, water cooling systems, hydrants**PROCEDURE:**

The FC receives information from the CO and communicates them to the EC.

The FC organizes the ERT and indicates the procedures to adopt to fight the fire. Helps the fire-fighters and asks for more resources if necessary.

In case of fire inside the plant, all Staff should:

- Cease all work.
- Switch off all equipment safely.
- Make situation safe.
- Proceed to Assembly near the designated assembly points.
- If not possible, proceed to or stay at the safest point available and call for help.
- Inform CCR of fire stating:
 - What is involved
 - Any injuries
- Attempt to fight fire using available equipment, if it is safe to do so
- Trained staff shall take part in fire fighting as directed by the FC.

In case of fire in vehicle, all Staff should:

- Cease all work.
- Switch off all equipment safely.
- Make situation safe.
- Proceed to Assembly near in the designated areas.
- If not possible, proceed to or stay at the safest point available and call for help.
- Inform CCR of fire stating:
 - What is involved
 - Any injuries
- Attempt to fight fire using available equipment, if it is safe to do so
- Trained staff shall take part in fire fighting as directed by the FC.
- Move adjacent vehicles to a safe area, if it is safe to do so

SHEET No. 36 - PROCEDURES

FIRE

APPLY TO: All DPS personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Fire extinguishers, foam systems, water cooling systems, hydrants**PROCEDURE:****In case of fire in Administration Block, all Staff should:**

- Cease all work.
- Make situation safe.
- Proceed to Assembly near the Security Guard Room
- If not possible, proceed to or stay at the safest point available and call for help.
- Inform CCR of fire stating:
 - What is involved
 - Any injuries
- Attempt to fight fire using available equipment, if it is safe to do so
- Trained staff shall take part in fire fighting as directed by the FC.

In case of fire at quay, all Staff should:

- Shut down all transfer operations
- Make situation safe.
- Inform ship
- Proceed to Assembly near Assembly point B Outside Workshop Main Door.
- If not possible, proceed to or stay at the safest point available and call for help.
- Inform CCR of fire stating:
 - What is involved
 - Any injuries
- Attempt to fight fire using available equipment, if it is safe to do so
- Trained staff shall take part in fire fighting as directed by the FC.
- Set up Forward Control Point to maintain contact with Central Control Centre, pending arrival of ERT

The FC should follow the instructions below:

- Account for personnel.
- Prepare to assist Emergency Services as appropriate.

SHEET No. 36 - PROCEDURES

FIRE

APPLY TO: All DPS personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Fire extinguishers, foam systems, water cooling systems, hydrants**PROCEDURE:**

- If necessary and approved by CPD, conduct search for missing persons:
 - Start from the Assembly Area
 - Maintain safety; do not endanger your life in trying to rescue others.
- When found, the missing persons shall be escorted to the entrance along the safest route.
- Searches for missing persons shall be continued until order to Stand Down is given by CPD / EC.

The EC should consider the following instructions:

- Establish and maintain Communications with FC.
- Direct CO to notify the following in accordance with Emergency Contact List:
 - Notify TM Port Control (VTS)
 - Emergency Services
 - Health & Safety Section
 - OHSA (21247677)
 - All any required DPS employees as per **DOC 9 – Emergency Telephone Directory**
 - If required phone other authorities listed in the **DOC 9 – Emergency Telephone Directory**
- Directly support FC and ERT.
- Obtain information on extent of damages:
 - Human
 - Material
 - Environmental
 - Asset Losses
- Seek guidance as appropriate.

The ERT should keep in mind the following general considerations:

- A small fire may be controlled with portable fire extinguishers, if the jet is properly direct to the base of the fire.
- Apply the proper extinguisher to each fire for an optimum result.
- Remember that fires can evolve rapidly and engulf you when too close.

SHEET No. 36 - PROCEDURES

FIRE

APPLY TO: All DPS personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Fire extinguishers, foam systems, water cooling systems, hydrants**PROCEDURE:**

- If you have alerted external fire-fighters, upon their arrival you must inform them of the current state of the emergency, possible evolution and possible hazards they may come across, as well as areas where it is incompatible the use of water (combustible liquid, electric fire, etc).
- Remember that there is a risk of suffocation in the vicinity and within clouds of smoke caused by the fire.
- According to the FC instructions, activate the cooling system or the foam extinguishing system installed on the tanks.
- According to the FC instructions, connect the water lines and hydrant and be prepared to fight the fire.

SHEET No. 37 –PROCEDURES

INJURIES**APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** First Aid Equipment**PROCEDURE:****In case of injuries inside the plant**

- Check casualty and apply immediate First Aid
- Inform Central Control Centre of injury stating:
 - o Name of casualty
 - o Type of injury
- Assist casualty as necessary
- Do not move the casualty in case of serious injury
- For minor injury or illness, casualty may be taken to the First Aid Room if safe to do so.
- Unless injury is minor, all operations in the vicinity are to be suspended
- All machinery and plant is to be left as it was at time of accident until Health & Safety have cleared to resume operation. (Except as necessary to secure area)

SHEET No. 38 – IMMEDIATE ACTION

**HFO, DIESEL, LUBRICATING OILS AND TRANSFORMERS OIL
SPILLAGE ON LAND****APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Spill kits**PROCEDURE:**

These oils do not offer particularly high fire or injury potential; however, still all precautions should be taken. Most oils may be harmful after extended exposure so unnecessary exposure should be avoided.

Most of the oils used offer a fairly low fire risk because of their high flashpoint; however, when heated, they can ignite.

In any case, seek appropriate guidance from the Safety Data Sheets (SDS) and site chemists.

MINOR SPILLAGES

Minor spills are those less than 20 litres.

Minor spillages on land

The action for minor spills on land is as follows:

- Use appropriate PPE as necessary
- Isolate source
- Consider calling Emergency Services if assistance is deemed necessary.
- Contain spill as far as possible especially if it can go into the road or drains. Spill kit cabinets are available:
 - o In the container found on the jetty
 - o Near D3 HFO Separator's Room
- In culverts where isolating valves are installed, these should be closed in a way as to reduce the flow to the interceptors
- Place warning signs if spill is in the road and can cause a hazard to traffic.
- Recover spill using suitable means:
 - o Bucket & shovel / dustpan work well on smooth floors
 - o Absorbent pads which can each absorb (approx) 1 litre
 - o Sand or other oil absorbing particulates
- Recovered oil and absorbent materials to be dealt with as "hazardous waste". Refer to **SOP DPS 29 - Waste Management Procedure**, available on the Enemalta Portal as follows:

SHEET No. 38 – IMMEDIATE ACTION

**HFO, DIESEL, LUBRICATING OILS AND TRANSFORMERS OIL
SPILLAGE ON LAND****APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Spill kits**PROCEDURE:**

[Documents/Environmental Management System \(EMS\)/Standard Operating Procedures\(SOPs\)/Delimara Power Station/SOP DPS 29 - Waste Management](#)

Minor spills in tank area

- Use appropriate PPE as necessary
- Isolate source
- Inform Central Control Centre stating:
 - o Type of fuel
 - o Approximate quantity
 - o Whether source has been isolated
- Ensure all drains are closed
- Attempt to limit spread of fuel by available equipment.
- Recover spill using suitable means:
 - o Pumping from pit / sump
 - o Using skimmers (various types)
 - o Absorbent pads which can each absorb (approx) 1 litre
 - o Sand or other oil absorbing particulates
- Recovered oil and absorbent materials to be dealt with as “hazardous waste”. Refer to SOP DPS 29 - Waste Management Procedure, available on the Enemalta Portal as follows:
[Documents/Environmental Management System \(EMS\)/Standard Operating Procedures\(SOPs\)/Delimara Power Station/SOP DPS 29 - Waste Management](#)

SHEET No. 38 – IMMEDIATE ACTION

**HFO, DIESEL, LUBRICATING OILS AND TRANSFORMERS OIL
SPILLAGE ON LAND****APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Spill kits**PROCEDURE:****MAJOR SPILLAGES**

Major spillages are considered over 20 litres.

Major spillages on land

The action for major spills on land is as follows:

- Assess spill potential
- Call Emergency Services Consider calling spill recovery contractor if necessary
- Don appropriate PPE as necessary
- Isolate source
- Contain spill as far as possible, especially if it can go into the road or drains
- Place warning signs if spill is in the road and can cause a hazard to traffic
- Recover spill using suitable means:
 - o Suitable pump
 - o Bucket & shovel / dustpan work well on smooth floors
 - o Absorbent pads which can each absorb (approx) 1 litre
 - o Sand or other oil absorbing particulates
- Recovered oil and absorbent materials to be dealt with as “hazardous waste”. Refer to **SOP DPS 29 - Waste Management Procedure**, available on the Enemalta Portal as follows:
[Documents/Environmental Management System \(EMS\)/Standard Operating Procedures\(SOPs\)/Delimara Power Station/SOP DPS 29 - Waste Management](#)
- Inform ERA
- Inform Environmental and Safety Coordinator

SHEET No. 39 – IMMEDIATE ACTION

**HFO, DIESEL, LUBRICATING OILS AND TRANSFORMERS OIL
SPILLAGE INTO THE SEA****APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Spill Kit**PROCEDURE:**

These oils do not offer particularly high fire or injury potential; however, still all precautions should be taken. Most oils may be harmful after extended exposure so unnecessary exposure should be avoided.

Most of the oils used offer a fairly low fire risk because of their high flashpoint; however, when heated, they can ignite.

In any case seek appropriate guidance from the Safety Data Sheets (SDS) and site chemists.

MINOR SPILLAGES

Minor spills are those less than 20 litres.

Minor spillages into the sea

- Shut down all transfer operations
- Use appropriate PPE as necessary
- Isolate source
- Inform Central Control Centre of spill stating:
 - o Type of spill material
 - o Approximate quantity
 - o Whether source has been isolated
- Call the spill recovery contractor, if necessary
- Contain with booms (PU/PVC booms are preferred as they are reusable, whereas absorbent booms are quick to deploy but cannot be re-used after contamination)
- Contact ship (if involved)
- Inform Transport Malta and ERA
- Contact chemists to assist with identification and dealing with material, if needed

SHEET No. 39 – IMMEDIATE ACTION

**HFO, DIESEL, LUBRICATING OILS AND TRANSFORMERS OIL
SPILLAGE INTO THE SEA****APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Spill Kit**PROCEDURE:**

- Recover spill using suitable means:
 - o Pumping from pit / sump
 - o skimmers (various types)
 - o Absorbent pads which can each absorb (approx) 1 litre
 - o Sand or other oil absorbing particulates
- Recovered oil and absorbent materials to be dealt with as “hazardous waste”. Refer to **SOP DPS 29 - Waste Management Procedure**, available on the Enemalta Portal as follows:

[Documents/Environmental Management System \(EMS\)/Standard Operating Procedures\(SOPs\)/Delimara Power Station/SOP DPS 29 - Waste Management](#)

MAJOR SPILLAGES

Major spillages are considered over 20 litres.

Major spills into the sea

- Shut down all transfer operations
- Don appropriate PPE as necessary
- Isolate source
- Inform Central Control Centre of spill stating:
 - o Type of spill material
 - o Approximate quantity
 - o Whether source has been isolated
- Set up forward control point to maintain contact with Central Control Centre.
- Consider calling Emergency Services if assistance is necessary.

SHEET No. 39 – IMMEDIATE ACTION

**HFO, DIESEL, LUBRICATING OILS AND TRANSFORMERS OIL
SPILLAGE INTO THE SEA****APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Spill Kit**PROCEDURE:**

- Call the spill recovery contractor
- Contain with booms (PU/PVC booms are preferred as they are reusable, whereas absorbent booms are quick to deploy but cannot be re-used after contamination)
- Contact ship (if involved)
- Inform Transport Malta and ERA
- Contact chemists to assist with identification and dealing with material, if needed
- Recover spill using suitable means:
 - o Pumping from pit / sump
 - o Using skimmers (various types)
 - o Absorbent pads which can each absorb (approx) 1 litre
 - o Sand or other oil absorbing particulates
- Recovered oil and absorbent materials to be dealt with as “hazardous waste”. Refer to **SOP DPS 29 - Waste Management Procedure**, available on the Enemalta Portal as follows:
[Documents/Environmental Management System \(EMS\)/Standard Operating Procedures\(SOPs\)/Delimara Power Station/SOP DPS 29 - Waste Management](#)

SHEET No. 40 – PROCEDURES


CHEMICAL SPILLAGES**APPLY TO:** All personnel**HUMAN RESOURCES:** ERT**MATERIAL RESOURCES:** Spill kit**PROCEDURE:**

The same principles for oil spillages generally apply for chemical spillages, that is:

- Isolate source
- Contain spill
- Collect spill
- Dispose of in appropriate manner

However, the following points are also to be observed:

- Whereas the difference between a major and minor oil spill is defined whether the volume of oil spilt is 20 litres or more, for chemicals, this volume is set to 5 litres. Therefore:
 - Major chemical spills are considered over 5 litres
 - Minor chemical spills are considered under 5 litres
- Do not try to handle unknown chemicals – make sure you have the right information from the right SDS
- Get advice from the site chemists
- Greater precautions may be needed as there are several hazardous chemicals on site.
- Always operate from upwind if gases, airborne vapours or dust is present
- Use chemical absorbent pads, since oil absorbents may not work with chemicals.

	File: DOC 9 - Emergency Telephone Directory_r0_2016-01-14	
	Environmental and Safety Management System	Page 1 of 9



DOC 9 - EMERGENCY TELEPHONE DIRECTORY

Status:	Final
Version	V 1.0
Last revision dated:	14 th January 2016
Maintained by:	Ms. Rachel D'Amato
	Ing. S. Scicluna

ANNEXURE 3. MATERIAL RESOURCES

Site: **Delimara PS**Checklist: **Fire Alarms - Admin & Stores**

Type of Check	Checked by:
Date	Signature:

Administration building(Terofire)			
Fire Alarm panel		Terofire	
Installed on			
Detector type		Terofire	
Fire Alarm		Check	Remarks
Panel on / condirtion.			
Alarm test			
Logbook signed			
ZONES			
1	Ground		
2	Ground		
3	Ground		
4	First		
5	First		
6	First		

Workshop & Stores (TW)							
FP	PLACE	Panel	BGU	DS	DT	Bell	
8	Main Store (spare batteries)			1	-		
9	Main Store (issue)	TF	1	1	-	1	
10	Ex-Oil Store (facing BEI)		1	-	-	1	
11	Paint stores			-	-		
12	Work/shop switchgear room			1	-		
13	New Chemical Stores			-	-		
14	W/Shop		1	-	-	1	
15	W/Shop		1	-	-	1	
16	W/Shop Electronics			1	-		
17	W/Shop Electrical			1	-		
18	W/Shop Welders			-	1		
19	W/Shop C/hand office	TW	1	1	-	1	
20	Drawing Office 1st floor	TW	1	1	-	1	
21	Mess			-	1		

Workshop & Stores (Terofire)			
Fire Alarm panel		Terofire	
Installed on		2013	
Detector type		Terofire	
Fire Alarm	Check	Remarks	
Panel on / condirtion.			
Alarm test			
Autodialler working			
SCADA working			
Logbook signed			
ZONES			
1			
2			
3			
4			
5			
6			

Notes:

Site:

Delimara PS

Checklist:

Fire Alarms - PLANT

Type of Check							Checked by:
Date							Signature:
FP	PLACE	Panel	BGU	DS	DT	Bell	
Cable corridor behind canteen							Alberta - Terofire - Apollo
1	Left bay		1	1	-	1	
2	Right bay	Y	1	1	-	1	
	EHV Building						Total Walther - Apollo
22	EHV (ex Tel. Operator)		1	1	-	1	
23	EHV Sub-Station			1	-		
24	EHV Batt. Room			1	-		
25	EHV (Old ECR 2nd flr)	TW		6	-		
26	Relay Room EHV			4	-		
27	Relay Room EHV		1	1	-	1	
28	Feeders EHV 132KV			1	-		
29	Feeders EHV 33KV		1	6	-	1	
30	Feeders EHV 132KV			14	-		
31	Feeders EHV 132KV		1	1	-	1	
32	Cable Flat EHV 132		1	1	-	1	
33	Cable Flat EHV 132			12	-		
34	Cable Flat EHV 33		1		-	1	
35	Cable Flat EHV 34			7	-		
36	EHV SCE Office		1	1	1	1	
	Turbine Hall PH/1&2						Total Walther - Apollo
37	4m Auxiliaries		4	-	-	1	
38	13m Turbine		1	-	1	1	
39	13m Turbine		1	-	1	1	
40	13m Turbine		1	-	1	1	
41	13m Turbine		1	-	1	1	BGU out of order
42	13m Batt. Charger			2	-		
43	13m AVR 1			2	-		
44	13m AVR 2			1	-		
45	13m C/Room	TW		6	-	1	
46	18m Cable Flat					1	
47	21m S/Gear		1		-	1	
48	21m S/Gear			12	1		

FP	PLACE	Panel	BGU	DS	DT	Bell	
49	21m S/Gear			1	-	1	
50	21m S/Gear		1	1	-		
51	Dearator			-		1	
52	4m Boiler 1		1	-			
53	12m Boiler 1		1	-	1	1	
54	12m Boiler 2		1	-	1	1	
55	17m Boiler 1		1	-	1	1	
56	17m Boiler 2		1	-	1	1	
57	19m Boiler 1		1	-	1	1	
58	19m Boiler 2		1	-	1	1	
59	Lift Room				1		
	Phase 1 areas						
60	Demin. P/house		1			1	
61	Demin. P/house WT2			3	1		
62	Generator Room						
63	FFI Pumphouse	TW	1	-	1	1	
64	CW Switchgear	TW	1	2	-	1	
65	CW Switchgear		1	1	-	1	
	FO areas						
68	Diesel Centrifuge	TW					
69	FO Pumping		2		15	1	
70	FO S/Gear	TW	1	3	-	1	Bell not working
71	FO S/Gear			1	-		
72	Bladder Tank Diesel						
73	Diesel pump Switchgear						
	Phase 2A John Brown						
74	GT c/room - S/Gear	CPI	1	x	-	1	
75	GT c/room - Cable flat		1	x	-		
	Phase 2B						
76	CCR ground (lift)		1	1	-	1	
77	CCR 1st floor mess			4	-		
78	CCR 1st Floor (lift)		1	1	-	1	
79	CCR 2nd floor C/R	1	1	5	-	1	
80	CCR 2nd floor lift		1	1	-	1	
81	CCR roof				-		
	CCR COMAH Siren						Check visual
82	HV room (SF6) entrance		1	1	-	1	

FP	PLACE	Panel	BGU	DS	DT	Bell	
83	HV room (SF6) cable flat				5		
84	HV room (SF6) battery room		1	2	-		
85	HV room (SF6) switchgear		1	2	-		
86	HV room (SF6) chargers		1	2	-		
87	HV room (SF6) HV switchgear		1	4	-		
88	LCR 1st floor		1	3	-		
89	LCR 2nd floor		1	3	-		
	Ph 2B Hall						
90	GT 1 Exhaust		1	1			
91	Condenser	1	1	1		1	
92	GT 2 Exhaust		1	1			
93	Steam Generator		1			1	
94	Compressor room			15			
	Phase 3						
			50	141	35	39	265

Notes:

Site: **Delimara PS**Checklist: **Fire Points - Extinguishers (Plant)**

Type of Check	Checked by:
Date	Signature:

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
	Admin						
1	Security	2					
2	Admin Ground floor hall	2					
3	Drawing Office	1		1			
4	Admin. AHU	1		1			
5	Admin 1st floor	2					
	Workshop						
10	Main Store	2					
11	Main Store (DO)	3					
12a	Main Store (spare batteries)			1			
12b	Stores messroom (Ground)			1			+fire blanket
13	Main Store (issue)	2					
14	Ex-Oil Store (facing BEI)	1					
15	Paint stores	1					(facing cliff)
16	Workshop Garage	1					
17	Work/shop switchgear room			2			
18	New Chemical Stores	2					
19	W/Shop	2					
20	W/Shop	2					
21	New drawing office			1			+fire blanket (kitchen)
22	W/Shop Electronics			2			
23	W/Shop Electrical			2			
24	W/Shop Welders	1					
25	W/Shop C/hand office	1					
26	New drawing office	2					(1st floor near stairs)
27	Mess	2					
28	Canteen			2			+fire blanket

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
	Phase 1						
29	EHV (ex Tel. Operator)			1			
29A	EHV Electrical store			1			(key from elec STO)
30	EHV Sub-Station			2			
31	EHV Batt. Room			2			
32	EHV (Old ECR 2nd flr)					1	
33	Relay Room EHV			2			
34	Relay Room EHV			1			
35	Feeders EHV 33KV					1	
36	Feeders EHV 33KV			2			
37	Feeders EHV 132KV					1	
38	Feeders EHV 33KV			1			
39	Feeders EHV 132KV			1			
40	Feeders EHV 132KV			1			
41	Cable Flat EHV	1					
42	Cable Flat EHV	1					
43	Cable Flat EHV	1					
44	Cable Flat EHV	1					
45	Unloading Bay EHV	1					
46	EHV SCE Office	2					
47	4m Auxiliaries	4	1				
48	4m Auxiliaries	2					
49	4m Auxiliaries	2					
50	4m Auxiliaries	4					
51	4m Auxiliaries	2					
52	4m Auxiliaries	4					
53	4m Auxiliaries	4					
54	4m Auxiliaries	4					
55	4m Auxiliaries	2					
56	4m Auxiliaries	4					
57	8m Heaters	2					
58	8m Heaters	2					
59	8m Heaters	2			1		
60	8m Heaters	2					
61	8m Heaters	2					
62	8m Heaters	2					

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
63	13m Turbine	2	1			1	
64	13m Turbine	4					
65	13m Turbine	4					
66	13m Turbine	3	1				
67	13m Turbine	3	1				
68	13m Turbine	2					
69	13m Batt. Charger			1			
70	13m AVR 1			1			
71	13m AVR 2			1			
72	13m Outside C/Room (A & B)	2					
73	13m C/Room					1	
74	10m Cable Flat	3					
75	10m Cable Flat	3					
76	TA Crane oper (coridor)	2					
79	18m Cable Flat	3					
80	18m Cable Flat	3					
81	21m S/Gear			4			
82	21m S/Gear			2			
83	21m S/Gear			2			
84	21m S/Gear			4			
85	Dearator	2					
86	Dearator	2					
87	Dearator	2					
88	4m Boiler 1		1				
89	4m Boiler 2		1				
90	12m Boiler 1	1					
91	12m Boiler 2	1					
92	15m Boiler 1	1					
93	15m Boiler 1	1					
94	15m Boiler 1	1					
95	15m Boiler 2	1					
96	15m Boiler 2	1					
97	15m Boiler 2	1					
98	17m Boiler 1	1					
99	17m Boiler 1	1					
100	17m Boiler 2	1					

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
101	17m Boiler 2	1					
102	19m Boiler 1	1					
103	19m Boiler 1	1					
104	19m Boiler 2	1					
105	19m Boiler 2	1					
106	Lift Room	1					
107	GT 1 (John Brown)	2					
108	GT 1 (John Brown) Co2 battery	2	1				
109	GT 2 (John Brown)	2					
110	GT c/room - S/Gear			1			
111	GT c/room - S/Gear			1			

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
112	GT c/room - Cable flat	2					
113	Demin. P/house	3					
114	Demin. P/house WT2			1			
115	Evaporator	1					
116	Evaporator	1					
117	Generator Room	2					Keys @ GO
118	FFI Pumphouse	4					
119	Chlorination Plant	2					
120	First Aid Room (BWSC)			1			
121	CW Switchgear			1			
122	CW Switchgear			1			
123	CW Pump area	2					
124	CW Pump area	2					
125	CW Pit	1					
126	CW Pit	2					
127	Dry Pit	1					Missing April 2014 to be replaced
128	CWP Crane						
129	Diesel Centrifuge				2		
130	FO Unloading	2					
131	FO Storage (Tanks)	2					
132	FO Pumping	1					
133	FO Pumping	1					
134	FO Pumping	1					
135	FO Pumping	2					
136	FO S/Gear			2			
138	FO S/Gear	1					
139	Bladder Tank Diesel	2					
140	Diesel pump Switchgear			1			

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
	Phase IIB General areas						
141	CCR ground (stairs)	2					
142	CCR ground (lift)	2					
143	CCR 1st floor (stairs)	2					
144	CCR 1st floor corridor	2					
145	CCR 1st floor mess	2					
146	CCR 1st Floor (lift)	2					
147	CCR 2nd floor C/R			4			
148	CCR 2nd floor lift	2					
149	CCR roof	2					
150	HV room (SF6) entrance	2		2			
151	HV room (SF6) cable flat	2					
152	HV room (SF6) battery room			2			
153	HV room (SF6) switchgear			4			
154	HV room (SF6) chargers			2			
155	HV room (SF6) HV switchgear	2					
156	HV room (SF6) HV switchgear			2			
157	LCR 1st floor			2			
158	LCR 2nd floor			2			

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
	Phase IIB Turbine Hall						
159	GT 1 Exhaust	2					
160	Condenser	2	1				
161	Condenser	2	1		2		
162	GT 2 Exhaust	2					
163	Steam Generator	2					
164	Steam Generator	2					
164a	HRS turbine	2					
164b	HRS turbine	2					
165	GT 1 (roof)	2					
166	GT 2 (roof)	2					
167	Outside - GT 1 (Chimney)	2					
168	Outside - GT 1 (Inlet)	2					
169	Outside - GT 2 (Inlet)	2					
170	Outside - GT 2 (Chimney)	2					*Box & ext to be replaced!
171	Compressor room	2					
172	Boiler 1	2					
173	Boiler 2	2					
174	Diesel Tank 0	2					
175	Diesel Tank 1	2					
176	Diesel Tank 2	2					
177	Diesel Tank 3	2					
190	Waste area				2		

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
Vehicles							
	Forklift (Eagle - Diesel)						1 DP2 new fitted 21-11-06
	Forklift (Electric)						1 DP2
	ENE050 (Surveyors)						1 DP2
	Manitou Stacker						
	ENE043 (HiAB)						
	ENE047 (workshop)						1 DP2
	ENE039 (Workshop)						1 DP2
	TOTAL	243	9	71	7	5	335
	Assembly Point A						
	Assembly Point B						
	Assembly Point C						
	Assembly Point D						

Notes:

Site: **Delimara PS**Checklist: **Extinguishers - Admin & W/shop**

Type of Check	Checked by:
Date	Signature:

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
	Admin						
1	Security	2					
2	Admin Ground floor hall	2					
3	Drawing Office	1		1			
4	Admin. AHU	1		1			
5	Admin 1st floor	2					
	Workshop						
10	Main Store	2					
11	Main Store (DO)	3					
12a	Main Store (spare batteries)			1			
12b	Stores messroom (Ground)			1			+fire blanket
13	Main Store (issue)	2					
14	Ex-Oil Store (facing BEI)	1					
15	Paint stores	1					(facing cliff)
16	Workshop Garage	1					
17	Work/shop switchgear room			2			
18	New Chemical Stores	2					
19	W/Shop	2					
20	W/Shop	2					
21	New drawing office			1			+fire blanket (kitchen)
22	W/Shop Electronics			2			
23	W/Shop Electrical			2			
24	W/Shop Welders	1					
25	W/Shop C/hand office	1					
26	New drawing office	2					(1st floor near stairs)
27	Mess	2					
28	Canteen			2			+fire blanket
	TOTAL	30	0	13	0	0	43
	Assembly Point A						
	Assembly Point B						
	Assembly Point C						

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
	Assembly Point D						

Notes:

Site: **Delimara PS - D3**Checklist: **Extinguishers D3**

Type of Check	Checked by:
Date	Signature:

FP	PLACE	DP	DP	CO ₂	AFFF	CO ₂	REMARKS
		9	50	5	9	30	

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
Phase 3 (Block IV) - engine hall							
401	Engine 1	5		2			
402	Engine 2	5		2			
403	Engine 3	5		2			
404	Engine 4	5		2			
405	Engine 5	5		2			
406	Engine 6	5		2			
407	Engine 7	5		2			
408	Engine 8	5		2			
409	Engine hall			1			
410	Engine hall			1			
411	Engine hall			1			
412	Engine hall			1			
413	Engine hall			1			
414	Battery room			2			
415	HV Switchgear			2			
416	Stairs			2			
417	Cable flat	2					(To be installed)
418	Switchgear 2nd floor			2			
419	Switchgear 2nd floor			2			
420	Stairs			1			
420a	UAT42			1			
420b	UAT41			1			
420c	UAT43			1			
420c	UAT44			1			
421	Switchgear 4th floor			2			
422	Switchgear 4th floor			2			
423	Switchgear 4th floor			1			
424	Switchgear 5th floor			1			
425	Control Room 5th floor stairs			1			
426	Control Room			1			
427	Control Room			1			
428	Control Room Switchgear			2			

FP	PLACE	DP 9	DP 50	CO ₂ 5	AFFF 9	CO ₂ 30	REMARKS
	Phase 3 (Block IV) - Turbine Hall						
429	Ground floor	1					
430	Ground floor	1					
431	First Floor	1					
431b	Battery charger room			1			
431c	Motor Control Room			2			
432	First Floor	1					
433	2nd floor	3		2			
434	Boiler lift 1 - level 3	2					
434a	Boiler lift 1 - level 2	2					
435	Boiler lift 2 - level 3	2					
435a	Boiler lift 2 - level 2	2					
	FOT Area						
436	FOT Building			2			
437	Transformers			2			
438	Centrifuges	1					
439	Compressors	1					
440	Switchgear 1st floor		1				
441	Switchgear 1st floor		1				
442	Tank farm	2					
443	Tank area LO	1					
444	Tank Area HFO	2					
445	Tank Area DM	1					

Site: Delimara Power StationChecklist: FFE Fire Pumps

Type of Check:	Checked by:
Date:	Signature:

Item	Unit	Pump 1 (Electric)	Pump 2 (Diesel)	Jockey Pump	Remarks
Starting	Check				
Start Pressure	Bar				
Stop Pressure	Bar				
Discharge	Bar				
Suction	Bar				
Flow	m³/h				
Running Amps	A				
Engine revs.	RPM				
Fuel Level	%				
Oil level	Check				
Oil pressure	Bar				
C/Water level	Check				
C/Water Temp.	°C				
C/Water press.	Bar				
Running Hours	Hours				
Batteries					
Set 1 Volts	V				
Set 1 Amps	A				
Set 2 Volts	V				
Set 2 Amps	A				
Lamp test					
Local Alarm	Check				
C/Room Alarm	Check				

Notes	
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Fuel to be replenished at 75% Fuel level below 50% to be reported </div>	

Site: **Delimara Power Station**

Checklist: **FFE Fire Pumps**

Type of Check: FLOW TEST	Checked by:
Date:	Signature:

[illegible][illegible]

Site: **Delimara PS**
 Checklist: **FFE Hydrants**

Type of Check				Checked by:
Date				Signature:
FP	Location	Type	Check	Remarks
1	Punchroom	2AG		
2	Adm Parking (skips)	2AG		
3	Piazza monument	2AG		
4	Stores (behind)	2AG		
5	Canteen	2AG		
6	Quay (Unloading)	2AG		
21	Quay - CW inlet	U/G		
23	Quay	U/G		
23a	Quay	4C/H		
24	Workshop	U/G		
25	Workshop	U/G		
26	Chimney	U/G		
27	Chimney	U/G		To Check
28	DM Plant	U/G		
29	EHV Building	2AG		
30	Turbine Hall	U/G		
31	Turbine Hall	A/G		
34	FO pumphouse	U/G		
35	FO pumphouse	AG		
143	FO foam tanks	AG		
Phase 2B				
41	2B Boiler 1 Chimney	U/G		
42	2B GT 1 Chimney	U/G		
43	2B GT 1 inlet	U/G		
44	2B GT 2 inlet	U/G		
45	2B GT 2 Chimney	U/G		
46	2B Boiler 2 Chimney	U/G		
	Section Valve 1			
	Section Valve 2			
	Section Valve 3			

FP	Location	Type	Check	Remarks
	Interconnect			Between FFE-FFI
	Tank Area			
141	FO Tank 1	AG		
142	FO Tank 2	AG		
36	Diesel Tk 1	2AG		
37	Diesel Tk 3	2AG		
47	Diesel Tank 0	2AG		
48	Diesel Tank 3	AG		
49	Diesel Tank 3	AG		
50	Diesel Tank 2	AG		
51	Diesel Tank 1	AG		
	Section valve			(Near weighbridge)
	Section valve			Near FO foam tanks
			TOTAL:	54

Notes	NOTE GT 1 nearer the sea
UG underground / AG above ground / CH Collecting head/inlet	

Site: **Delimara PS**Checklist: **Equipment -FFE Cabinets**

Type of Check		Checked by:							
Date		Signature:							
FP	PLACE	Hose 70mm	Hose 38mm	MP Branch	Foam Branch	Inductor	S/pipe & key	Hose Test (Year)	Remarks
12	Admin block		4	2			4		(removed)
15	Quay (Main gate)	2		1			1		
16	Stores	2		1			1		
17	Stores	1	1	1			1		
18	BEI block		2	1			1		
19	Quay								(removed)
20	Fire Section								(removed)
22	Quay	2		1					
23	Quay	2		2			1		(1)
24	Workshop	2	1	2			1		
25	Workshop	2	1	2			1		
26	Chimney								(To be sited)
28	DM Plant	2	1	1			1		
29	EHV Building	2	2	1					
30	G/T 1&2 C/room	2		1			1		
31	G/T 1&2 C/room	2		1					
34	FO Pumphouse	2		1			1		
35	FO Pumphouse	2		1			-		
36	Diesel Tk 3	2		1					
141	FO Tank 1	1	1	1					
142	FO Tank 2	1	1	1					
143	FO foam tanks		1		1				
41	2B Boiler 1 Chimney	2		1			1		
42	2B GT 1 Chimney	2		1			1		
43	2B GT 1 inlet	2		1			1		
44	2B Boiler 2 Chimney	2		1			1		
45	2B GT 2 Chimney	2		1			1		
46	2B GT 2 inlet	2		1			1		
	Phase 3								
A21	Steam turbine	2		2			1		
A22	Transformers	2		2			1		

A23	Evaporators West	2		2		1		
A31	Lift 2	2		2				
A32	Lift 1	2		2				
A41	Chimney 3/4	2		2		1		
A42	Silo	2		2		1		
A43	Chimney 1/2	2		2		1		
A44	Evaporators East	2		2		1		
A71	Weighbridge	2		2		1		
A72	Containers	2		2		1		
A81	FOT	2		2		1		
A82	Containers	2		2		1		

Foam making machines (120 ltr FP)							Full		Check level & inductor function
1	T/A Feed pumps		2		1	1			
2	FFI pumps		2		1	1			
3	FFI pumps		2		1	1			
4	FO Pumps		2		1	1			
5	TA Auxiliaries		2		1	1			
7	Diesel Tanks		2		1	1			
8	Ph3 turbine ground		2		1	1			
9	Ph3 turbine 2nd		2		1	1			
10	Ph3 Engine hall		2		1	1			
11	Ph3 Engine hall		2		1	1			
12	Ph3 FOT - foam		2		1	1			
TOTAL		67	37	54	12	11	28		209

[illegible]

Site: **Delimara PS - D3**Checklist: **FFE Hydrants - D3**

Type of Check				Checked by:
Date				Signature:
FP	Location	Type	Check	Remarks
Phase 3				
	Steam turbine	UG		
A22	Transformers	UG		
A23	Evaporators West	UG		
A31	Lift 2	2AG		
A32	Lift 1	2AG		
A41	Chimney 3/4	UG		
A42	Silo	UG		
A43	Chimney 1/2	UG		
A44	Evaporators East	UG		

FP	Location	Type	Check	Remarks
A71	Weighbridge	UG		
A72	Containers	UG		
A81	FOT	UG		
A82	Containers	UG		
	Section valve			Near FO foam tanks
			TOTAL:	54

Notes	NOTE GT 1 nearer the sea
UG underground / AG above ground / CH Collecting head/inlet	

Site: **Delimara PS**Checklist: **FFI Hydrants**

Type of Check	Checked by:
Date	Signature:

No	PLACE	Type	Valve	Washer	Remarks
1	Admin (Parking)	2WH			
2	Stores (outside corner)	2WH			
11	FFI Pumps	WH			
12	FFE Pumps	WH			
13	D/M Plant	WH			
14	T/A Hall 4m	WH			
15	T/A Hall 4m	WH			
16	T/A Hall 13m	WH			
17	T/A Hall 4m	FWH			
18	T/A Hall 4m	FWH			
19	T/A Hall 13m	FWH			
20	T/A Hall 4m	WH			
21	T/A Hall 4m	WH			
22	T/A Hall 13m	WH			
23	T/A Hall 4m	FWH			
24	T/A Hall 13m	FWH			
25	Boiler 1 4m	WH			
26	Boiler 1 4m	WH			
27	Boiler 1 14.4m	WH			
28	Boiler 1 12.6m	WH			
29	Boiler 2 4m	WH			
30	Boiler 2 14.4m	WH			
31	Boiler 2 4m	WH			
32	Boiler 2 12.6m	WH			
	FFI Interconnect hydrant	WH			
41	2B GT 1 generator	WH			
42	2B Condenser	WH			
43	2B Condenser	WH			
44	2B GT 2 generator	WH			
45	2B Steam T/A Generator end	WH			
46	2B Steam T/A Generator end	WH			

No	PLACE	Type	Valve	Washer	Remarks
D3 - Engine Hall (All hydrants single & above ground)					
401	Engine Hall	WH			
402	Engine Hall	WH			
403	Engine Hall	WH			
404	Engine Hall	WH			
405	Engine Hall	WH			
406	Engine Hall	WH			
407	Engine Hall	WH			
D3 - Turbine Hall (All hydrants single & above ground)					
408	Steam turbine Ground	WH			
409	Steam turbine Ground	WH			
410	Steam turbine Ground	WH			
411	Steam turbine 2nd floor	WH			
412	Steam turbine 2nd floor	WH			
413	Steam turbine 2nd floor	WH			
	TOTAL	43			43

No	PLACE	Type	Valve	Washer	Remarks
	Section Valves	Norm	State	Check	
	FFI Interconnect FFE side	NC			
	FFI Interconnect FFI side	NC			
	Connection to phase IIB	NO			
	IIB section 1	NO			
	IIB section 2	NO			
	IIB section 3	NO			
	Phase 3 (418)	NO			(*)
	Phase 3 (413)	NO			
	Phase 3 (412)	NO			
	Phase 3 (407)	NO			
	Phase 3 (406)	NO			

Notes

(*) - closest hydrant for indication

Site: **Delimara PS**Checklist: **FFI Equipment**

Type of Check	Checked by:
Date	Signature:

No	PLACE	Hose 64mm	Hose 38mm	MP Brch	FI + B	Foam 25ltr	Hose Tested	Remarks
11	FFI Pumps	2		1				
12	FFE Pumps	2		1				
13	D/M Plant	2		1				
14	T/A Hall 4m	2		1				
15	T/A Hall 4m	2		1				
16	T/A Hall 13m	2		1				
17	T/A Hall 4m	1		1	1	2		
18	T/A Hall 4m	1		1	1	2		
19	T/A Hall 13m	1		1	1	2		
20	T/A Hall 4m	2		1				
21	T/A Hall 4m	2		1				
22	T/A Hall 13m	2		1				
23	T/A Hall 4m	1		1	1	2		
24	T/A Hall 13m	1		1	1	2		
25	Boiler 1 4m	2		1				
26	Boiler 1 4m	2		1				
27	Boiler 1 14.4m	2		1				
28	Boiler 1 12.6m	2		1				
29	Boiler 2 4m	2		1				
30	Boiler 2 14.4m	2		1				
31	Boiler 2 4m	2		1				
32	Boiler 2 12.6m	2		1				
	FFI Interconnect hydrant	1		1				

No	PLACE	Hose 64mm	Hose 38mm	MP Brch	FI + B	Foam 25ltr	Hose Tested	Remarks
41	2B GT 1 generator		2	1				
42	2B Condenser		2	1				
43	2B Condenser		2	1				
44	2B GT 2 generator		2	1				
45	2B Steam T/A Generator end		2	1				
46	2B Steam T/A Generator end		2	1				
Phase 3 - Engine Hall								
401	Engine Hall	2		1				
403	Engine Hall	2		1				
405	Engine Hall	2		1				
407	Engine Hall	2		1				
Phase 3 - Turbine Hall								
410	Ground	2		1				
413	Second floor	2		1				
	Fire Store (FFI Pumps)	8	4					
	TOTAL	60	16	35	5	10		126

Notes

Foam trolleys on FFE Equip list

FWH - Foam & Water hydrant
 WH - Water hydrant
 FI+B - Foam inductor & Branch

IMPORTANT

**In the hose cabinets the hose
 is NOT TO BE LEFT
 CONNECTED to the hydrant
 coupling**

Site: **Delimara PS**Checklist: **FFE - Fixed equipment**

Type of Check	Checked by:
Date	Signature:

PLACE	Valve	Nozzles	Dry test	Wet test	Rinsed	Remarks
HFO Tanks 1 & 2						
Tank 1 Cooling (S)						
Tank 1 Cooling (N)						
Tank 1 Foam						
Tank 2 Cooling (S)						
Tank 2 Cooling (N)						
Tank 2 Foam						
Tank 3 Cooling						
Tank 3 Foam						
Bladder tank 1						
Bladder Tank 2						
FO Pumphouse						
Foam Sprinklers						
Diesel centrifuge room						
Foam Sprinklers						
FO Unloading						
Bladder tank 3						
Monitor						

PLACE	Valve	Nozzles	Dry test	Wet test	Rinsed	Remarks
Diesel tanks						
Tank 0 Cooling						
Tank 0 Foam						
Tank 1 Cooling						
Tank 1 Foam						
Tank 2 Cooling						
Tank 2 Foam						
Tank 3 Cooling						
Tank 3 Foam						
Bladder tank 4						
Bladder tank 5						
Notes:					<div>>Advise Shift Engineer & pumphouse >Isolate FFE section to tanks >Drain line (near isol. valve) >Connect FFI from near FO transformers >Flush with fresh water only >Check nozzles / valves >Drain & restore system >NO WATER TO FOAM SYSTEM (Check valves only while isolated)</div>	

Site:

Delimara PS

Checklist:

FFI - DELUGE VALVE SYSTEM

Type of Check					Checked by:
Date					Signature:
No	Loc	Description	Type	Pos.	Remarks
	CW	FFE Fire pumps	S	N.O.	
	CW	FFI Fire Pumps	S	N.O.	
41	CW	Diesel Generator	A	N.O.	
42	FO	Transformer 1	A	N.O.	
43	FO	Transformer 2	A	N.O.	
44	CW	Transformer 1	A	N.O.	
45	CW	Transformer 2	A	N.O.	
46	ECR	Workshop TX 1	A	N.O.	
47	ECR	Workshop TX 2	A	N.O.	
48	ECR	Interbus TX 1	A	N.O.	
49	ECR	Interbus TX 2	A	N.O.	
50	ECR	EHV Subst. TX 1	A	N.O.	
51	ECR	EHV Subst. TX 2	A	N.O.	
52	ECR	Cable Flat EHV	S	N.O.	
53	DM	Transformer 1	A	N.O.	
54	DM	Transformer 2	A	N.O.	
55	T/A	Unit TX 1	A	N.O.	
56	T/A	Generator TX 1	A	N.O.	
57	T/A	Station TX 1	A	N.O.	
58	T/A	Cable Flat 10m	S	N.O.	(over unit trans.)
59	T/A	Station TX 2	A	N.O.	
60	T/A	Generator TX 2	A	N.O.	
61	T/A	Unit TX 2	A	N.O.	
62	T/A	BFP 1A	A	N.O.	
63	T/A	BFP 1B	A	N.O.	
64	T/A	T/A 1 Lub Oil Tank	M	N.C.	
65	T/A	Cable Flat 18m	S	N.O.	(above c/room)
66	T/A	Unit Aux TX 1	A	N.O.	
67	T/A	Station Aux TX 1	A	N.O.	
68	T/A	Ess. Services TX 1	A	N.O.	
69	T/A	BFP 2A	A	N.O.	
70	T/A	BFP 2B	A	N.O.	
71	T/A	T/A 2 Lub Oil Tank	M	N.C.	
72	T/A	Ess. Services TX 2	A	N.O.	

No	Loc	Description	Type	Pos.	Remarks
73	T/A	Station Aux TX 2	A	N.O.	
74	T/A	Unit Aux TX 2	A	N.O.	
75	BLR	Boiler 1 Front	M	N.C.	
76	BLR	Boiler 2 Front	M	N.C.	
	T/A	Water Mist	A	NO	
	T/A	Water Mist	A	NO	
D2A					
		2A Gas TA Unit tx 1	A	NO	
		2A Gas TA Unit tx 2	A	NO	
		2A Gas TA Aux TX	A	NO	
D2B					
		Block Main TX 3	A	NO	
		SF6 Cable flats	A	NO	
		Unit TX	A	NO	
		Steam T/A front standard	A	NO	
		Steam T/A oil skid	A	NO	
		Centrifugal Separators	M	NO	(Foam)
D3 Main block					
		3.3kv/15kv Start up Trx	A	NO	Leaking
		Main Block Trx 43	A	NO	
		Main Block Trx 42	A	NO	
		Main Block Trx 41	A	NO	
		Engine Hall Cable Trench	A	NO	
		132Kv Basement	A	NO	
D3 FOT					
		FOT Separators Room	A		
		1 4 OSGF41 AA010	M		
		2 4 OSGF42 AA010	M		
		3 4 OSGF43 AA010	M		
		4 4 OSGF44 AA010	M		
		5 4 OSGF45 AA010	M		
		6 4 OSGF46 AA010	M		
		7 4 OSGF47 AA010	M		
		8 4 OSGF48 AA010	M		
		9 4 OSGF49 AA010	M		

(*) Foam deluge are on FFE except Separators room on FFI

Notes:

PIC
SCE (Phase I) 79008917
SCE (Phase II) 79008986
Central Control Room
508/509/510 / 79009905

CW- Circ. water pumps
FO- Fuel oil
ECR- Elect. c/room
DM- Water plant
T/A- Turbine hall (1&2)
BLR- Boiler 1&2
TX - Transformer
All valve numbers are prefixed AA 72
A-Auto
M-Manual
S-Conventional sprinkler (with bell)

Site: **Delimara PS**
 Checklist: **PPE in ERT room**

Type of Check	Checked by:
Date	Signature:

ERT room							
PPE	Quantity	Check		Remarks			
BA sets with 3 spare cylinders	3						
Spare cylinder	3						
Fire proof overall							
Fire helmets	6						
first aid bag (1ft x 1ft x 2ft)	1						
Stretcher	1						

Site: **Delimara PS**Checklist: **Spillage recovery material**

Type of Check	Checked by:
Date	Signature:

Container at Quay				
Type	Quantity	Check		Remarks
Absorbent pads	1pkt--200			
Absorbent socks	47			
Wheel barrows	2			
Floating booms	121 m			
Oil skimmer	1			
Brooms	5			
Spades	5			
Mop squeezer	5			
Fish nets	2			
Hooks	3			
Plastic bags	3 rolls			
20lt empty barrels	5			
Ropes	40 m			
Bag absorbent flakes	1			
10lt buckets	3			
Drum funnels	2			
Diesel fuel	10 ltrs			
Life jackets	3			
Boat with oars	1			
Bag with rags	1			
Sand bags	50			
Tyvek				

Site: DPSChecklist: FFI Pumps - Fire Store

Type of Check - Inventory	Checked by:
Date	Signature:

	ITEM	QTY.	REMARKS
1	CO2 Trolley 30 Kg	3	
2	Foam Machines	2	
3	64mm Hoses	6	
4	38mm Hoses	4	
5	Foam Monitors	2	
6	Water Monitor	1	
7	Oil Spill Trailer	1	<i>Separate Checklist</i>
8	Foam Jerry Cans x 25 Lt	5	<i>Komet</i>
9	Expandol x 25 Lt	4	
10	Foam 3% x 25 Lt	34	

Notes:

Site: **Delimara PS**Checklist: **GT 2A-1 (John Brown)**

Type of Check	Checked by:
Date	Signature:

Cylinders							
	Date				Date		
<-Front	Filled	Test	Check	Rear	Filled	Test	Check
1 / Act		1994		2		1994	
3 / Act		1994		4		1994	
5		1994		6		1994	
7		1994		8		1994	
9		1994		10		1994	
11		1994		12		1994	
13		1994		14		1994	
15		1994		16		1994	
17		1994		18		1994	
CO2 Nozzles							
Initial				Extended			
Accessory				Accessory			
Turbine				Turbine			
Turbine				Turbine			
Generator				Generator			
Generator BRG							
Dampers							
Accessory				Reduction Gear			
Combustion				Generator			
Generator BRG							
Remarks							

Site: **Delimara PS**Checklist: **GT 2A-2 (John Brown)**

Type of Check	Checked by:
Date	Signature:

Cylinders							
	Date				Date		
<-Front	Filled	Test	Check	Rear	Filled	Test	Check
1 / Act		1994		2		1994	
3 / Act		1994		4		1994	
5		1994		6		1994	
7		1994		8		1994	
9		1994		10		1994	
11		1994		12		1994	
13		1994		14		1994	
15		1994		16		1994	
17		1994		18		1994	
CO2 Nozzles							
Initial				Extended			
Accessory				Accessory			
Turbine				Turbine			
Turbine				Turbine			
Generator				Generator			
Generator BRG							
Dampers							
Accessory				Reduction Gear			
Combustion				Generator			
Generator BRG							
Remarks							

Site: **Delimara PS**Checklist: **GT3A**

Type of Check	Checked by:
Date	Signature:

Cylinders							
	Date				Date		
<-Front	Filled	Test	Check	Rear	Filled	Test	Check
1 / Act				2			
3 / Act				4			
5				6			
7				8			
9				10			
11				12			
13				14			
15				16			
17				18			
19				20			
21				22			
23				24			
CO2 Nozzles							
Initial				Extended			
Accessory				Accessory			
Turbine				Turbine			
Turbine				Turbine			
Generator				Generator			
Generator BRG							
Dampers							
Accessory				Reduction Gear			
Combustion				Generator			
Generator BRG							
Remarks							

Site: **Delimara PS**Checklist: **GT3B**

Type of Check	Checked by:
Date	Signature:

Cylinders							
	Date				Date		
<-Front	Filled	Test	Check	Rear	Filled	Test	Check
1 / Act				2			
3 / Act				4			
5				6			
7				8			
9				10			
11				12			
13				14			
15				16			
17				18			
19				20			
21				22			
23				24			
CO2 Nozzles							
Initial				Extended			
Accessory				Accessory			
Turbine				Turbine			
Turbine				Turbine			
Generator				Generator			
Generator BRG							
Dampers							
Accessory				Reduction Gear			
Combustion				Generator			
Generator BRG							
Remarks							

Site: **Delimara PS**

Checklist: **Phase 2B - Generator CO2 system**

Type of Check	Checked by:
Date	Signature:

	Item	Date		Remarks
		Filled	Test	
3A-1	Initial			
3A-1	Extended			
3A-2	Initial			
3A-2	Extended			
3A-3	Initial			
3A-3	Extended			
Remarks				

Boiler	Wagner Biro	2	1992	260 T/hr	87bar
Feed pumps		4		295m3/hr	126bar
CW pumps		3		10500m3/hr	

HRSG	Stork			100t/hour (55bar
CCGT					

	Nouvo Pignone 3A	37MW	Brush
	Nouvo Pignone 3B	37MW	Brush
	Nouvo Pignone 3C	36MW	Brush
Combined		110MW	

<i><u>Delimara PS - Transformers</u></i>				
Description	Quantity	Type	Capacity (MVA)	Voltage (kV) (415 =
Interbus TX 1	2	Oil	90	132/33
Block Main TX / CCGT	1	Oil	150	13.8/132
Generator TX 1	2	Oil	75	11/132
Unit TX 1	2	Oil	8	11/3.3
Unit TX	1	Oil	5	13.8/3.3
Station TX	2	Oil	15	33/3.3
HV S/station	2	Oil	630kVA	3.3/415
Workshop	2	Oil	630kVA	3.3/415
Water Treatment plant	2	Oil	630kVA	3.3/415
Fuel Oil Pumphouse	2	Oil	630kVA	3.3/415
CW & Chlorination	2	Oil	630kVA	3.3/415
Essential Services	2	Oil	1,5	3.3/415
Unit Auxiliary	2	Oil	1,5	3.3/415
Station Auxiliary	1	Oil	2.5MVA	3.3/415
Gas T/A Auxiliary	1	Oil	630kVA	3.3/415
Gas T/A Generator TX	2	Oil	50	11/33
Auxiliary TX	2	Cast resin	750kVA	11/415
Auxiliary TX	2	Cast resin	1,5	33/415

ANNEXURE 4. MAPS AND DRAWINGS

NUMBER	DESCRIPTION	DRAWING SCALE
01	Area of concern	1 / 10,000
02	Land use	N / S
03	General Plot Plan	1 / 3,000
04	Plot Plan – North Area Detail	1/1,000
05	Plot Plan – East Area Detail	1/1,000
06	Plot Plan – South Area Detail	1/1,000
	Enemalta Block 4 FOT BUILDING (UEM), SERVICE T.F. (UEK) LAYOUT GROUND FLOOR PLAN	NTS
	Enemalta Block 4 FOT BUILDING (UEM), SERVICE T.F. (UEK) & UREA T.F. (UVJ) LAYOUT SECTIONS LOOKING NORTH	NTS
DPS/XZ/170	DPS HFO FUEL LINES	NTS
DPS/XZ/169	DPS HFO FUEL LINES	NTS
DPS/FD/0001	Diesel Fuel Oil Pipelines at Delimara Power Station	NTS
DPS/FC/37	Delimara Power Station Heavy Fuel Oil Piping Diagram	NTS
DPS/XZ/84	Delimara Power Station Pits & Interceptors	NTS
0466 IPPC 0050	Delimara Power Station Tie-In Points - EGM	1 / 500
0466 IPPC 0040	Delimara Power Station Tie-In Points - SEP	1 / 500
0466 IPPC 0051	Delimara Power Station Proposed Route for Interconnection Cables to EGM Facilities	1 / 500
DPS/XZ/107	Delimara Power Station Services	NTS



NUMBER	DESCRIPTION	DRAWING SCALE
7	Emergency Response Plan Escape Routes & Assembly points	1 / 2000



SGS

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C/ Llull, 95-97, 6ª planta
08005 Barcelona
Telf: +34 93 320 36 33
www.sgs.com/

CLIENT:

enemalta
ENEMALTA PLC

PROJECT:

EMERGENCY RESPONSE PLAN

DRAWING NAME:

AREA OF CONCERN

DRAWING:

1

LOCATION:

DELIMARA- MALTA

SCALE:

DINA3: 1/10000

REFERENCE:

02/901/200560

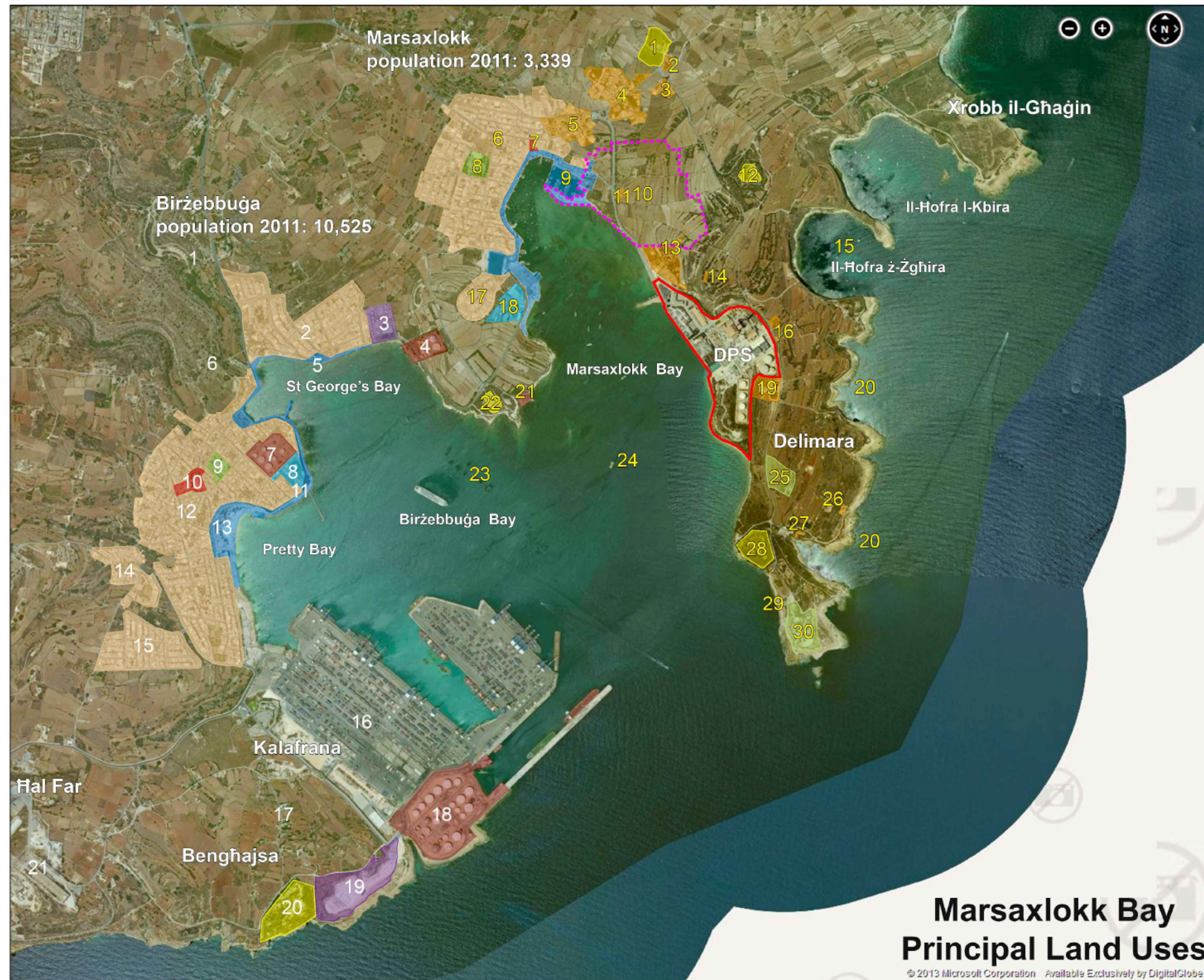
DATE:

MAY 2016

DRAWN BY: JORDI ÀLVAREZ

Birżebbuġa

- 1 Important archaeological find
- 2 Predominantly residential
- 3 Unused LPG storage depot
- 4 Petroleum storage tanks
- 5 Historic redoubt
- 6 Important archaeological find
- 7 Petroleum storage tanks
- 8 Importer of petroleum products
- 9 Primary school
- 10 Parish Church and square
- 11 Historic redoubt
- 12 Predominantly residential
- 13 Recreation & tourism (along coast)
- 14 Predominantly residential
- 15 Predominantly residential
- 16 Malta Freeport (transshipment)
- 17 Small residential hamlet
- 18 Active petroleum storage depot
- 19 Active LPG storage facility
- 20 Historic fort
- 21 East of Industrial Estate



Marsaxlokk

- 1 Important archaeological find
- 2 Low density residential
- 3 Convent/Chapel
- 4 Low density residential
- 5 Low density residential
- 6 Predominantly residential
- 7 Parish Church and square
- 8 Primary school
- 9 Fishing, recreation, and tourism
- 10 Site of Community Importance
- 11 Low density residential
- 12 Historic fort (used as dog sanctuary)
- 13 Low density residential
- 14 Low density residential
- 15 Fish farm
- 16 Low density residential
- 17 Medium density residential
- 18 Light industry
- 19 Low density residential
- 20 Coastal ecology/swimming
- 21 Petroleum tank (disused)
- 22 Historic fort/research centre (fish)
- 23 Fish cages
- 24 Dolphin
- 25 Horse farm
- 26 Low density residential
- 27 Low density residential
- 28 Historic fort
- 29 Light house
- 30 Farm

Marsaxlokk Bay Principal Land Uses

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www.sgs.com/

CLIENT:

enemalta
ENEMALTA PLC

PROJECT:

EMERGENCY RESPONSE PLAN

DRAWING NAME:

LAND USE

DRAWING:

2

LOCATION:

DELIMARA- MALTA

SCALE:

NOT SCALED

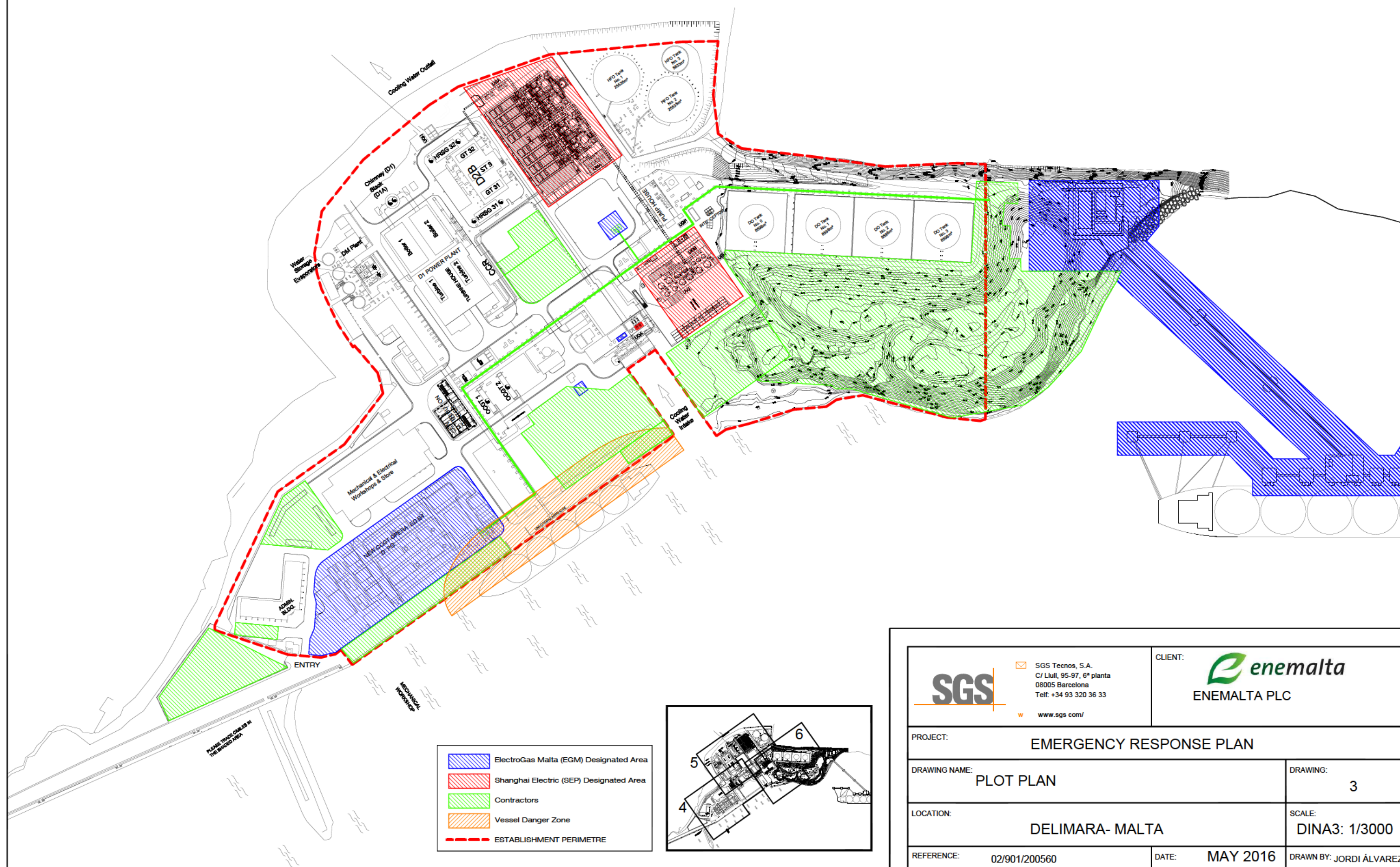
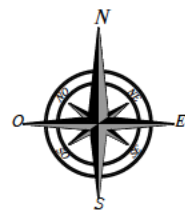
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DATE:



MAY 2016

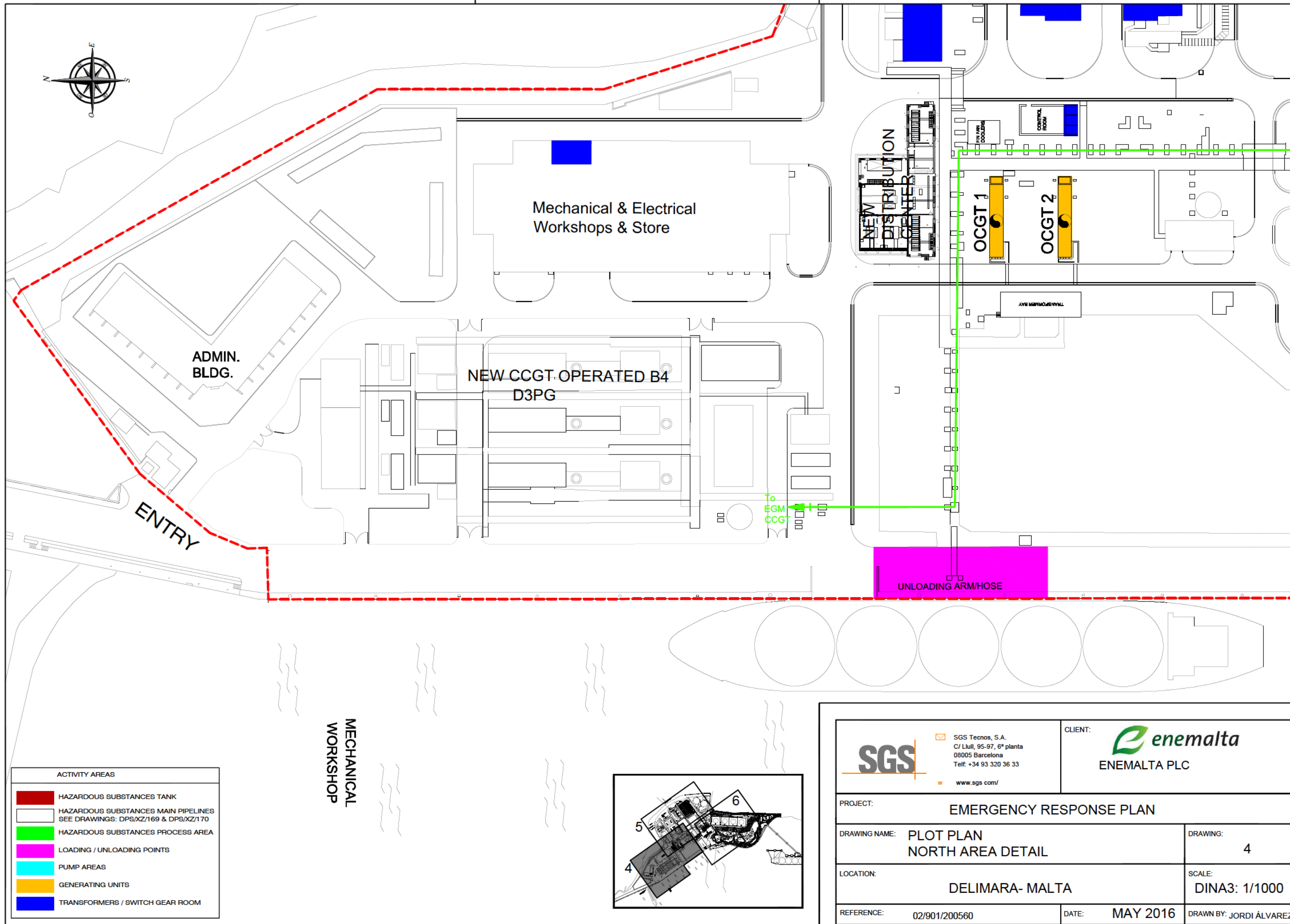
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- ElectroGas Malta (EGM) Designated Area
- Shanghai Electric (SEP) Designated Area
- Contractors
- Vessel Danger Zone
- ESTABLISHMENT PERIMETRE

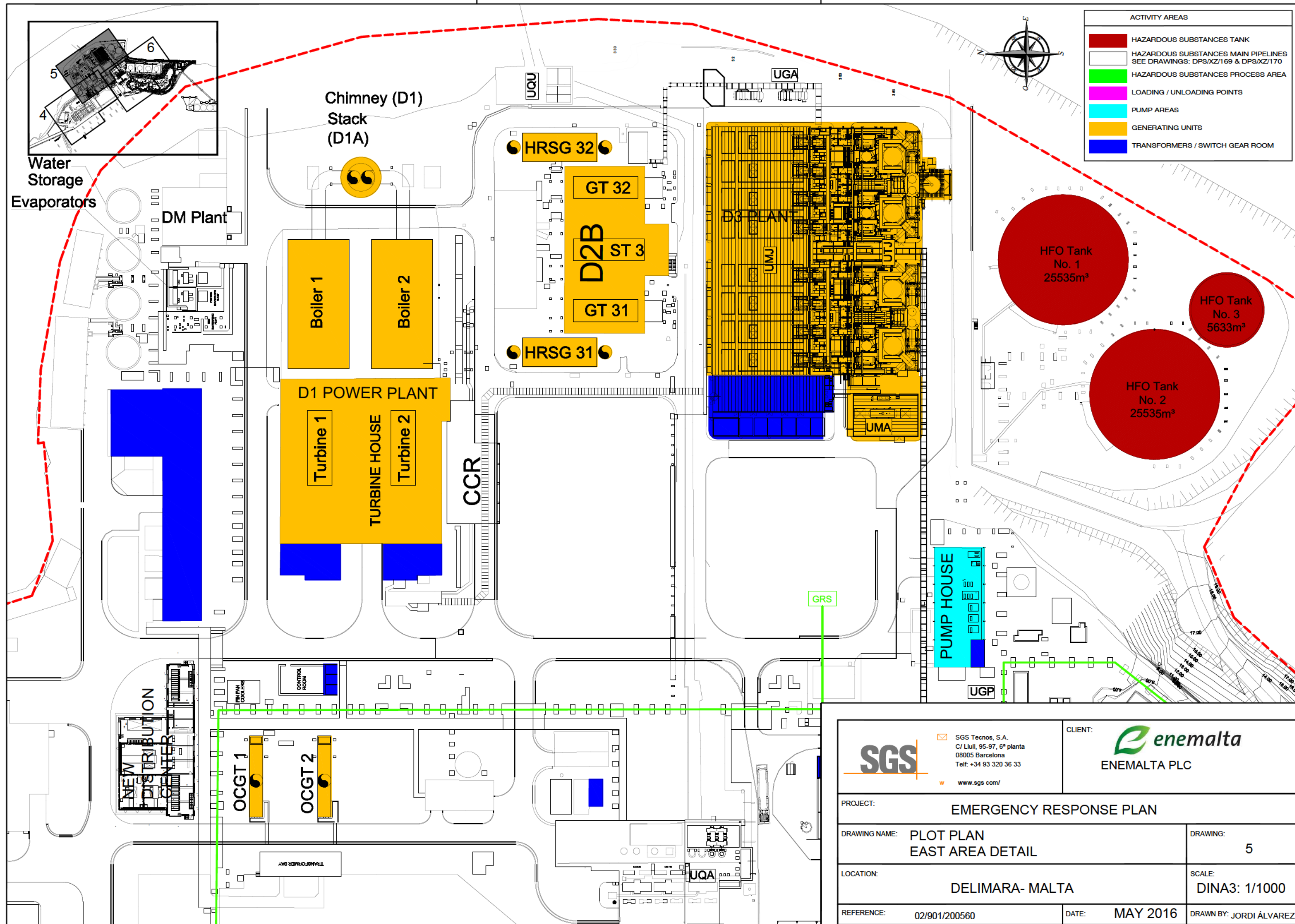


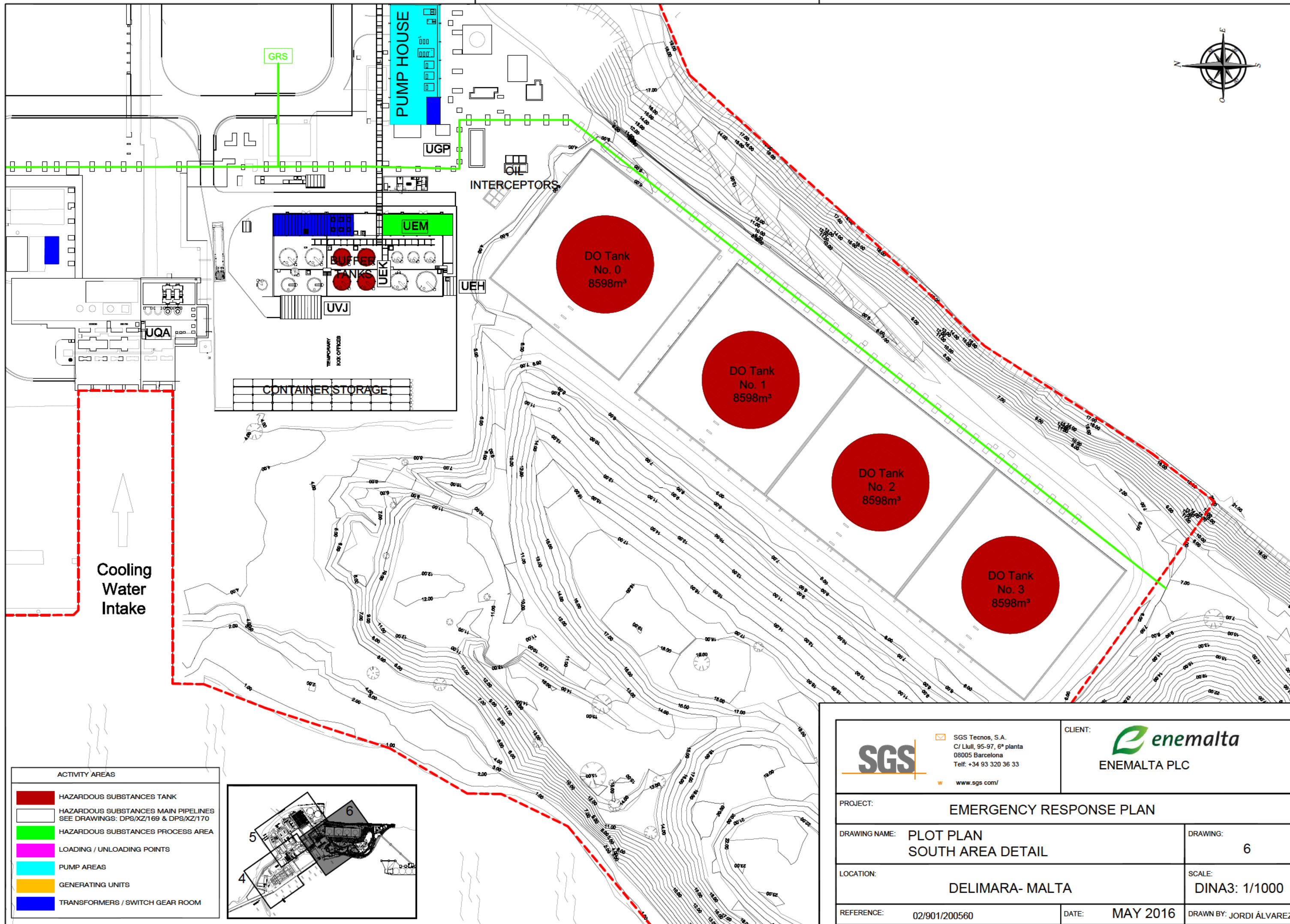
 <div>SGS Tecnos, S.A. C/ Llull, 95-97, 6ª planta 08005 Barcelona Telf: +34 93 320 36 33 www.sgs.com/</div>		CLIENT:  ENEMALTA PLC	
PROJECT:		EMERGENCY RESPONSE PLAN	
DRAWING NAME:		PLOT PLAN	DRAWING: 3
LOCATION:		DELIMARA- MALTA	SCALE: DINA3: 1/3000
REFERENCE: 02/901/200560		DATE: MAY 2016	DRAWN BY: JORDI ÀLVAREZ

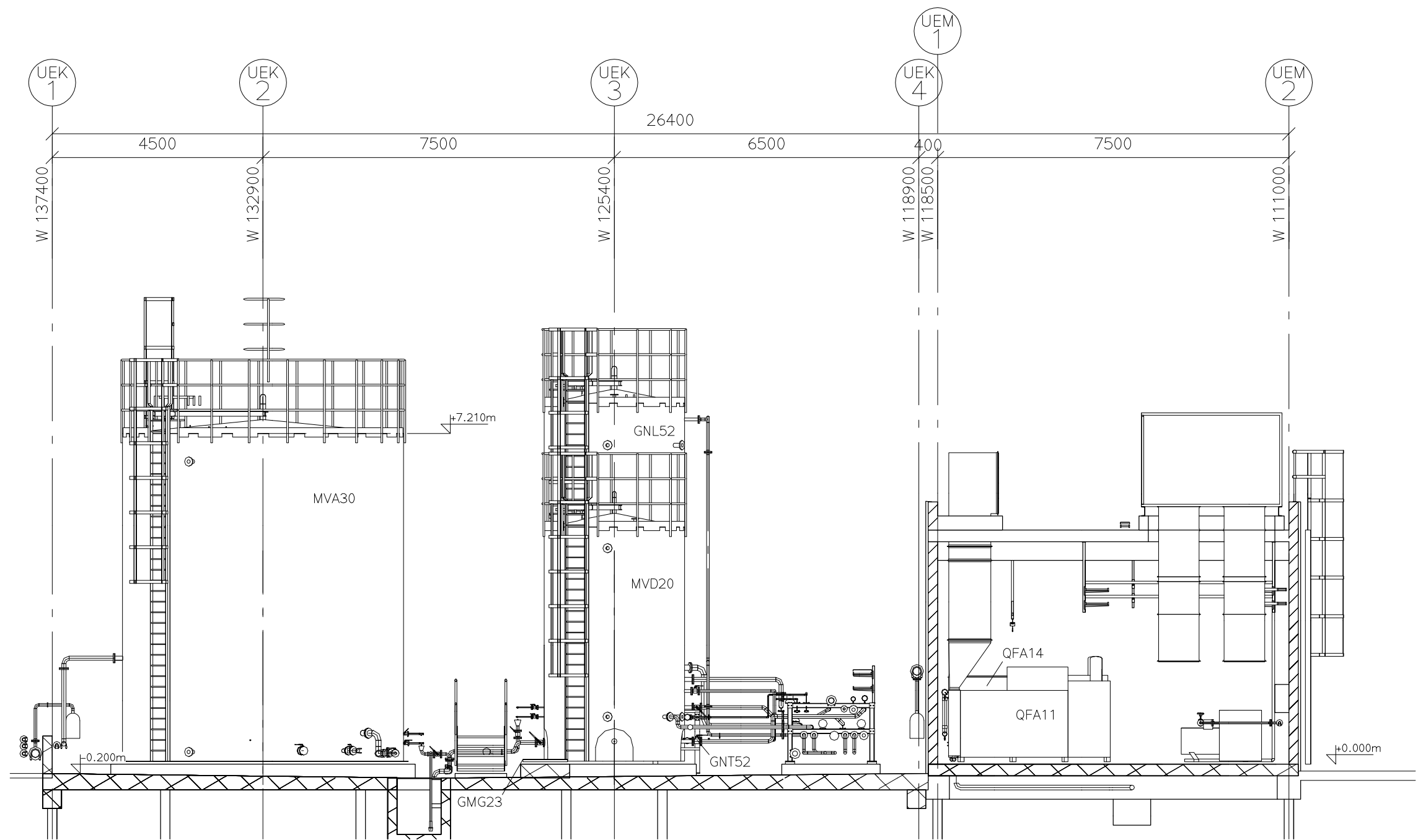


ACTIVITY AREAS	
	HAZARDOUS SUBSTANCES TANK
	HAZARDOUS SUBSTANCES MAIN PIPELINES SEE DRAWINGS: DPS/XZ/169 & DPS/XZ/170
	HAZARDOUS SUBSTANCES PROCESS AREA
	LOADING / UNLOADING POINTS
	PUMP AREAS
	GENERATING UNITS
	TRANSFORMERS / SWITCH GEAR ROOM

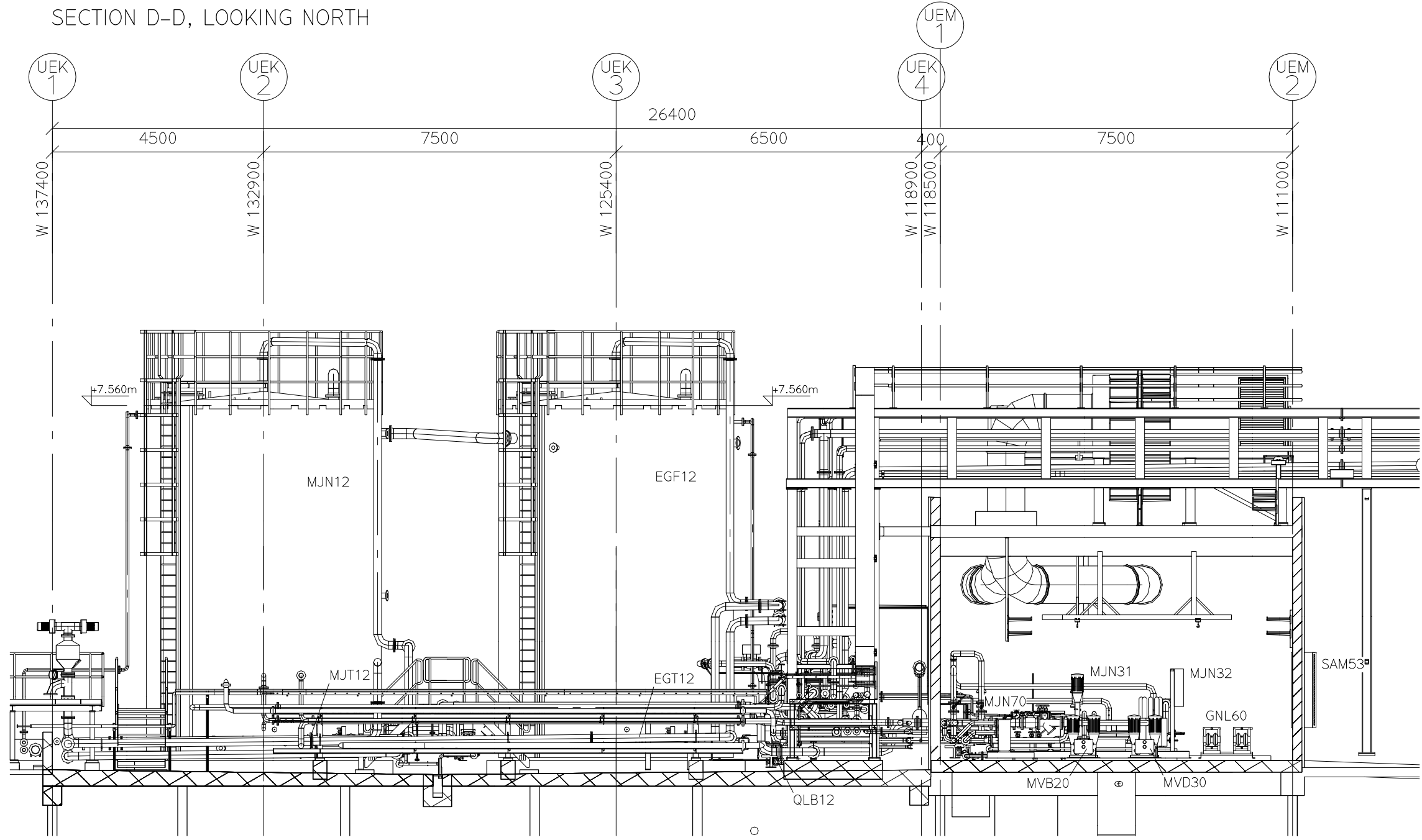
 <div>SGS Tecnos, S.A. C/ Llull, 95-97, 6ª planta 08005 Barcelona Telf: +34 93 320 36 33 www.sgs.com/</div>		CLIENT:  ENEMALTA PLC	
PROJECT:		EMERGENCY RESPONSE PLAN	
DRAWING NAME:		PLOT PLAN NORTH AREA DETAIL	DRAWING: 4
LOCATION:		DELIMARA- MALTA	SCALE: DINA3: 1/1000
REFERENCE:		02/901/200560	DATE: MAY 2016 DRAWN BY: JORDI ÀLVAREZ



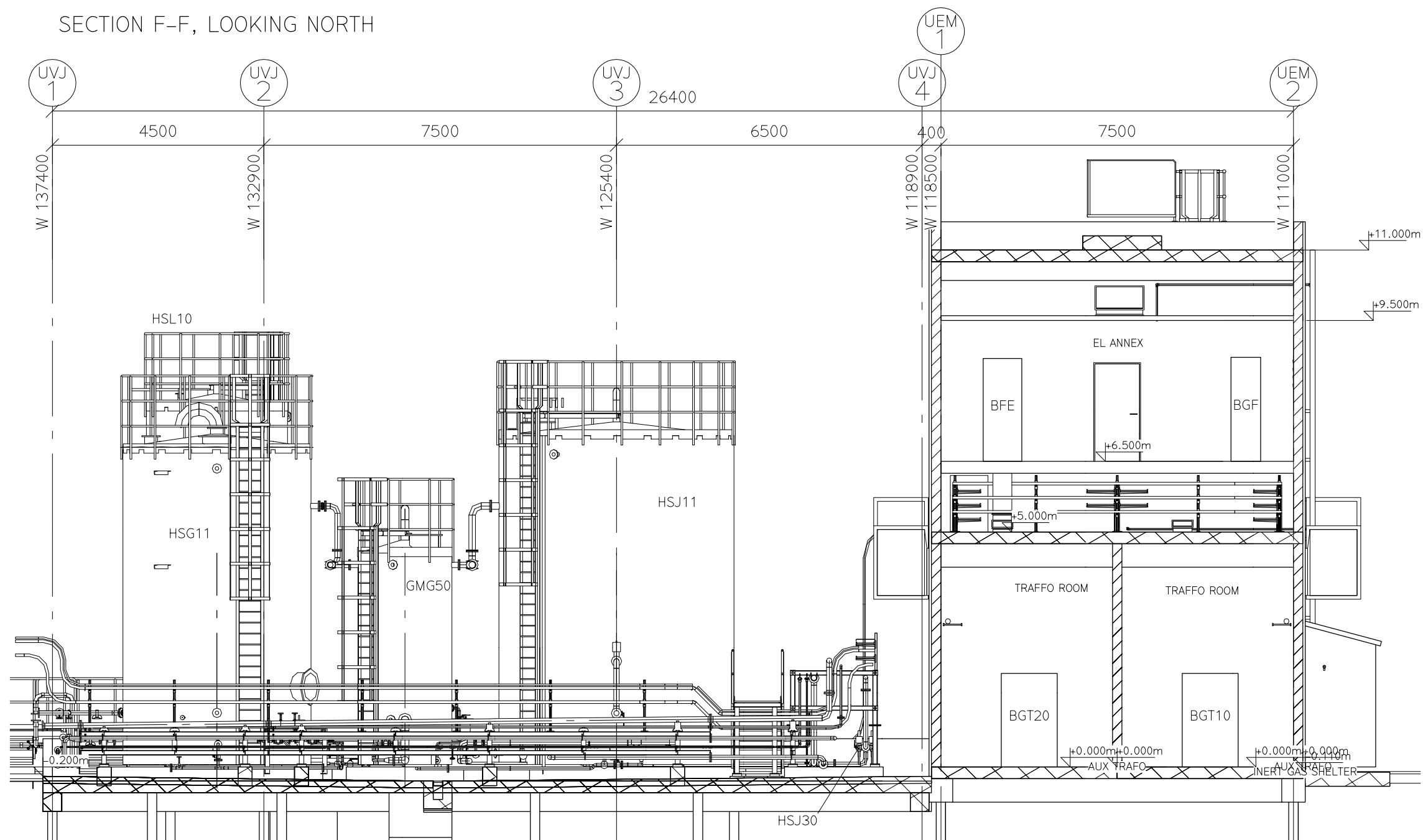




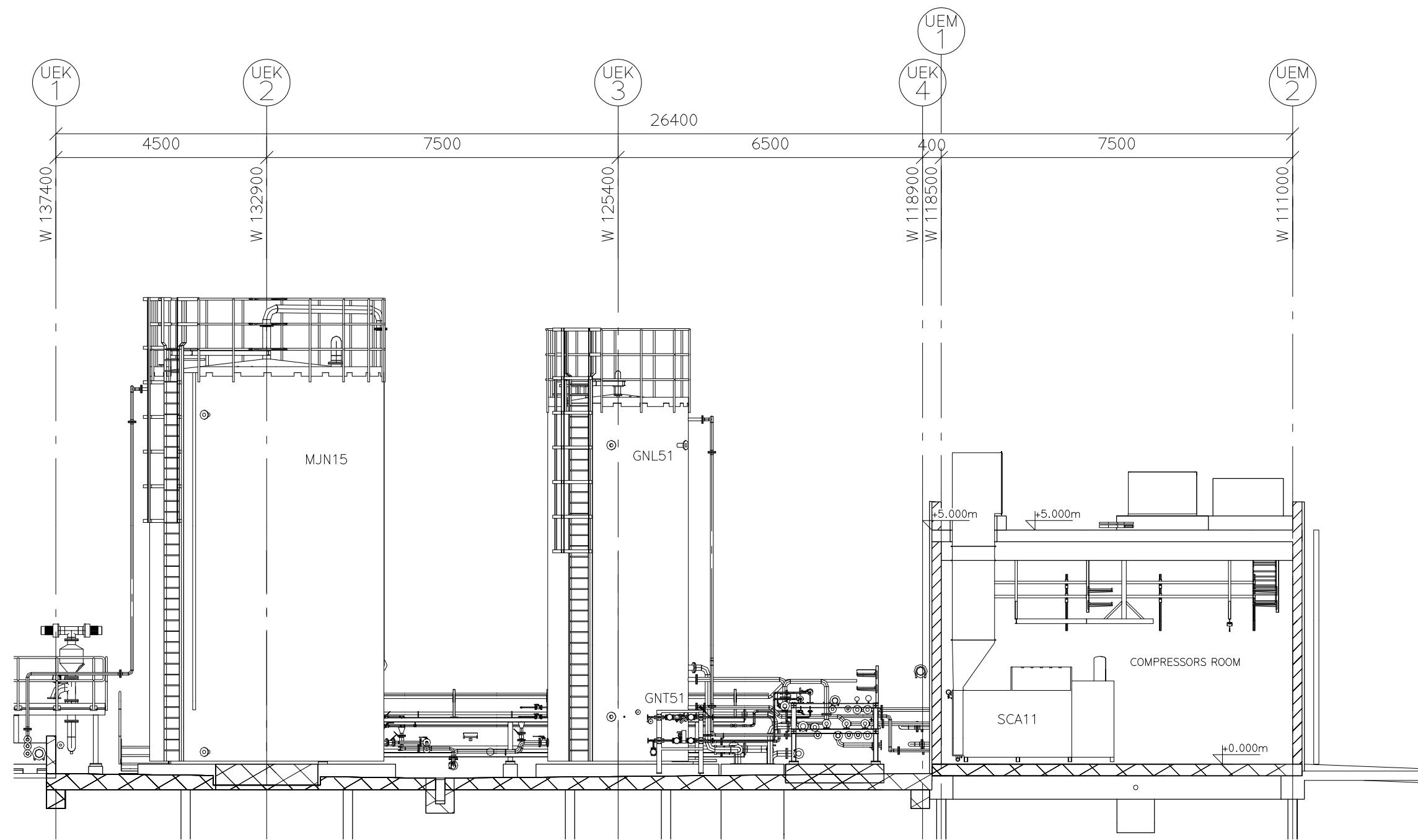
SECTION D-D, LOOKING NORTH



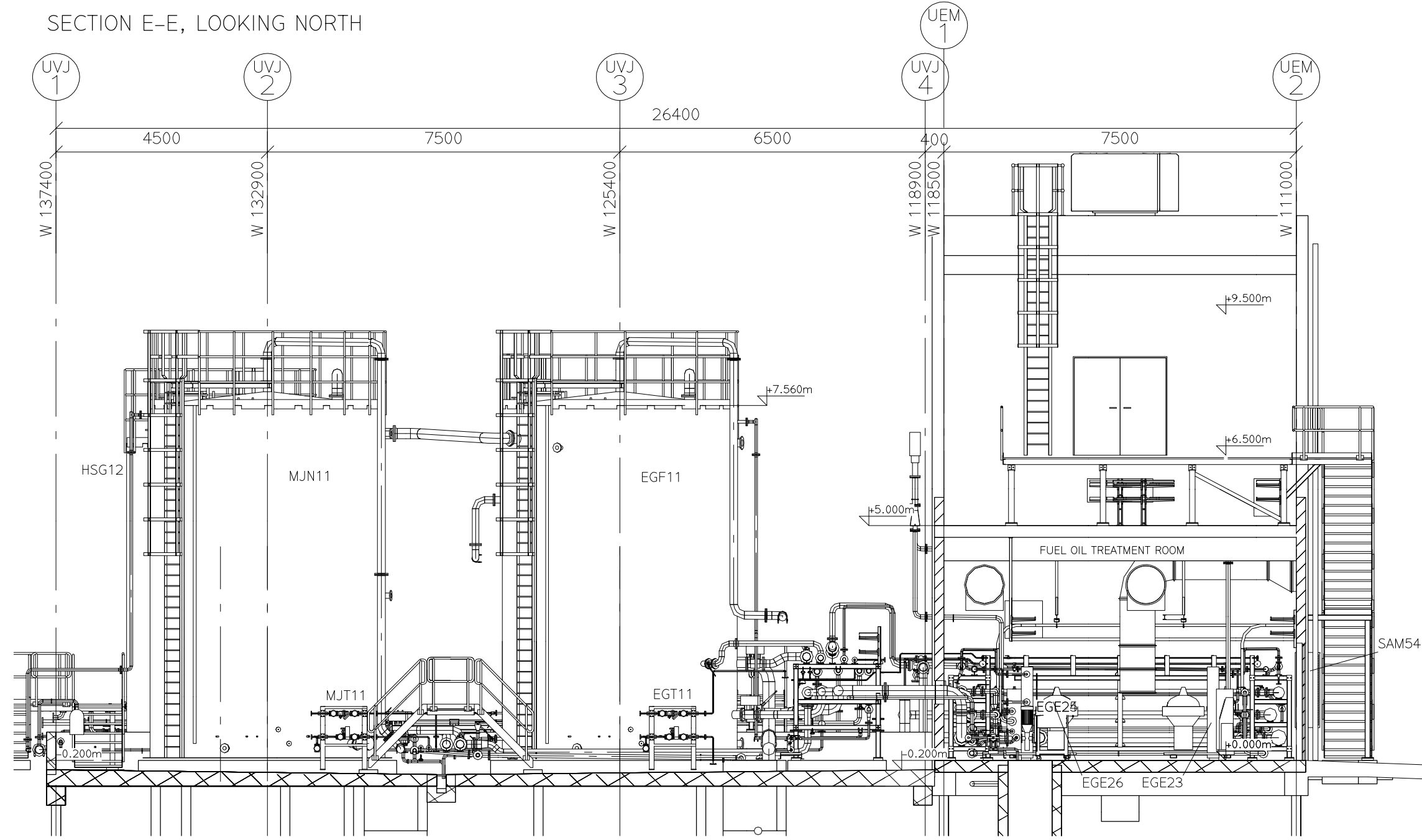
SECTION F-F, LOOKING NORTH



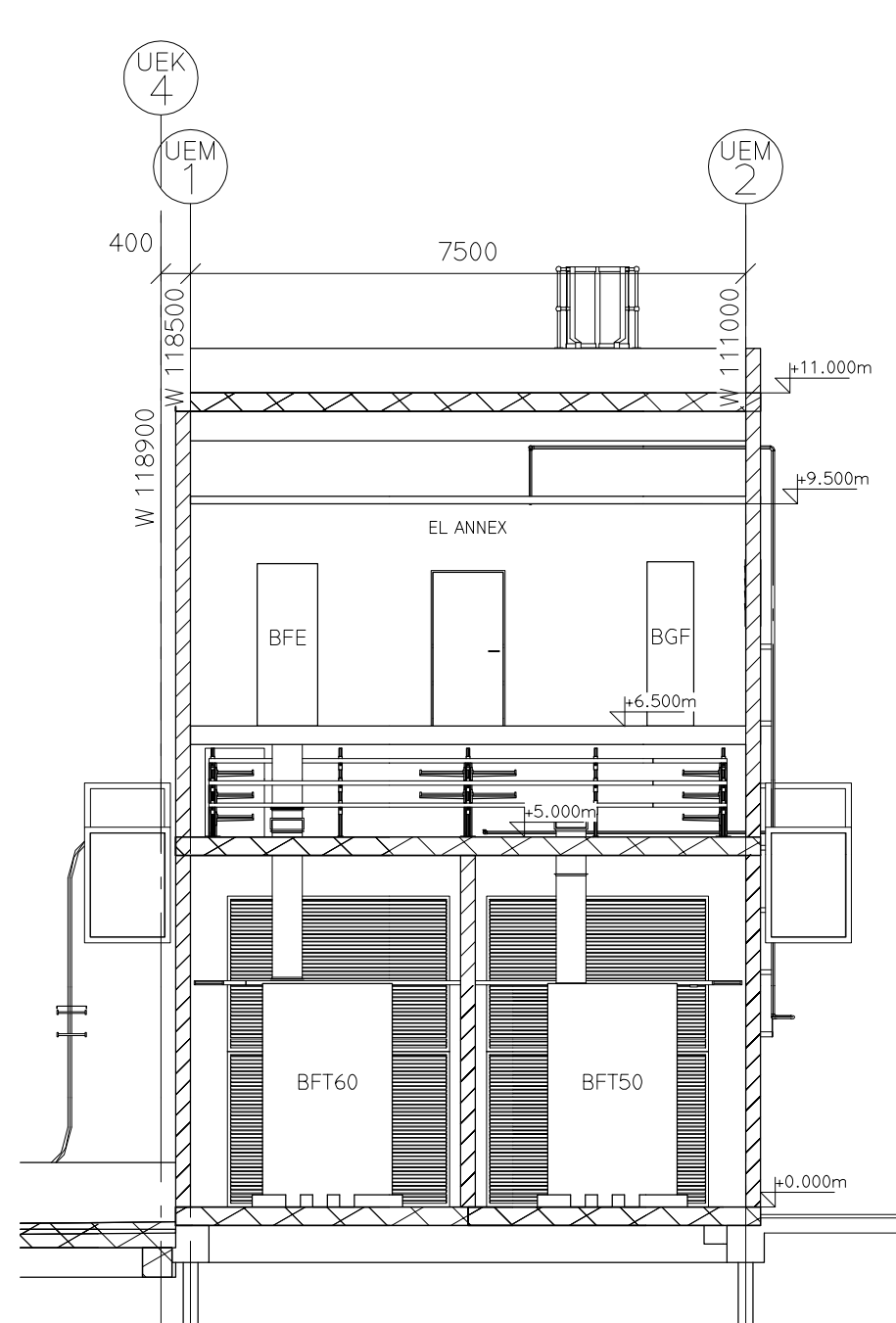
SECTION H-H, LOOKING NORTH



SECTION E-E, LOOKING NORTH



SECTION G-G, LOOKING NORTH



SECTION I-I, LOOKING NORTH

MECHANICAL EQUIPMENT			WEIGHT
EGT11	STEAM TRAP UNIT, TYPE 2		120 kg
EGE23	FO SEPARATOR NO.3		2080 kg
EGE24	FO SEPARATOR NO.4		2080 kg
EGE25	FO SEPARATOR NO.5		2080 kg
EGE26	FO SEPARATOR NO.6		2080 kg
EGF11	HFO BUFFER TANK NO.1: 125m3 ø5.000mm		156000 kg
EGF12	HFO BUFFER TANK NO.2: 125m3 ø5.000mm		156000 kg
EGT12	STEAM TRAP UNIT, TYPE 2		120 kg
GMG21	FOT BUILDING OILY WATER PUMP UNIT		100 kg
GMG23	SERVICE TF OILY WATER PIT PUMP UNIT		50 kg
GMG50	UREA SPILLAGE TANK		16000 kg
GNL51	SLUDGE STORAGE TANK NO.1		55000 kg
GNL52	SLUDGE STORAGE TANK NO.2		35000 kg
GNL60	SLUDGE TRANSFER PUMP UNIT		100 kg
GNT51	STEAM TRAP UNIT, TYPE 2		120 kg
GNT52	STEAM TRAP UNIT, TYPE 2		120 kg
HSG11	UREA DISSOLVING TANK NO.1		83000 kg
HSG12	UREA DISSOLVING TANK NO.2		83000 kg
HSJ11	UREA STORAGE TANK NO.1		155000 kg
HSJ30	UREA PRESSURE CONTROL UNIT		75 kg
HSL10	DEMINEALIZED WATER TANK		58000 kg
MJN11	HFO SERVICE TANK NO.1: 125m3 ø5.000mm		156000 kg
MJN12	HFO SERVICE TANK NO.2: 125m3 ø5.000mm		156000 kg
MJN15	DO SERVICE TANK: 140m³, D=5.000mm		172000 kg
MJN31	HFO FEEDER PUMP UNIT		3900 kg
MJN32	DO FEEDER PUMP UNIT		850 kg
MJN70	DO FILTER UNIT		300 kg
MJT11	STEAM TRAP UNIT, TYPE 2		120 kg
MJT12	STEAM TRAP UNIT, TYPE 2		120 kg
MVA30	LO STORAGE TANK		208000 kg
MVB20	LO TRANSFER PUMP UNIT		400 kg
MVD20	MAINTENANCE LUBE OIL DRAIN TANK		55000 kg
MVD30	MAINTENANCE LUBE OIL PUMP UNIT		400 kg
QEA13	STARTING AIR COMPRESSOR NO.3 UNIT		1250 kg
QFA11	CONTROL AIR COMPRESSOR NO.1 UNIT		2720 kg
QFA14	CONTROL AIR COMPRESSOR NO.4 UNIT		2720 kg
QLB12	STEAM TRAP UNIT, TYPE 4		60 kg
SAA10	VENTILATION INLET LOUVRE		1500 kg
SAA20	SEPARATOR ROOM EXHAUST UNIT		1000 kg
SAA22	VENTILATION,UAT 42 TRAFQ ROOM		584 kg
SAA23	VENTILATION,UAT 41 TRAFQ ROOM		584 kg
SAM53	INLET LOUVRE		200 kg
SAM54	INLET LOUVRE		200 kg
SCA11	SERVICE AIR COMPRESSOR NO.1 UNIT		2720 kg

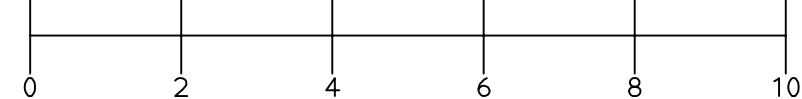
ELECTRICAL EQUIPMENT			WEIGHT
BFE	690 V MAIN SWITCHBOARD 2		9500 kg
BFT50	UNIT AUXILIARY TRANSFORMER UAT45		12535 kg
BFT60	UNIT AUXILIARY TRANSFORMER UAT46		12535 kg
BGF	COMMON/FUEL TREATMENT SWITCHBOARD		4000 kg
BGT10	AUX. TRANSFORMER 41		2055 kg
BGT20	AUX. TRANSFORMER 42		2055 kg
SAA22	VENTILATION,UAT 42 TRAFQ ROOM		584 kg


AS BUILT

NOTE:

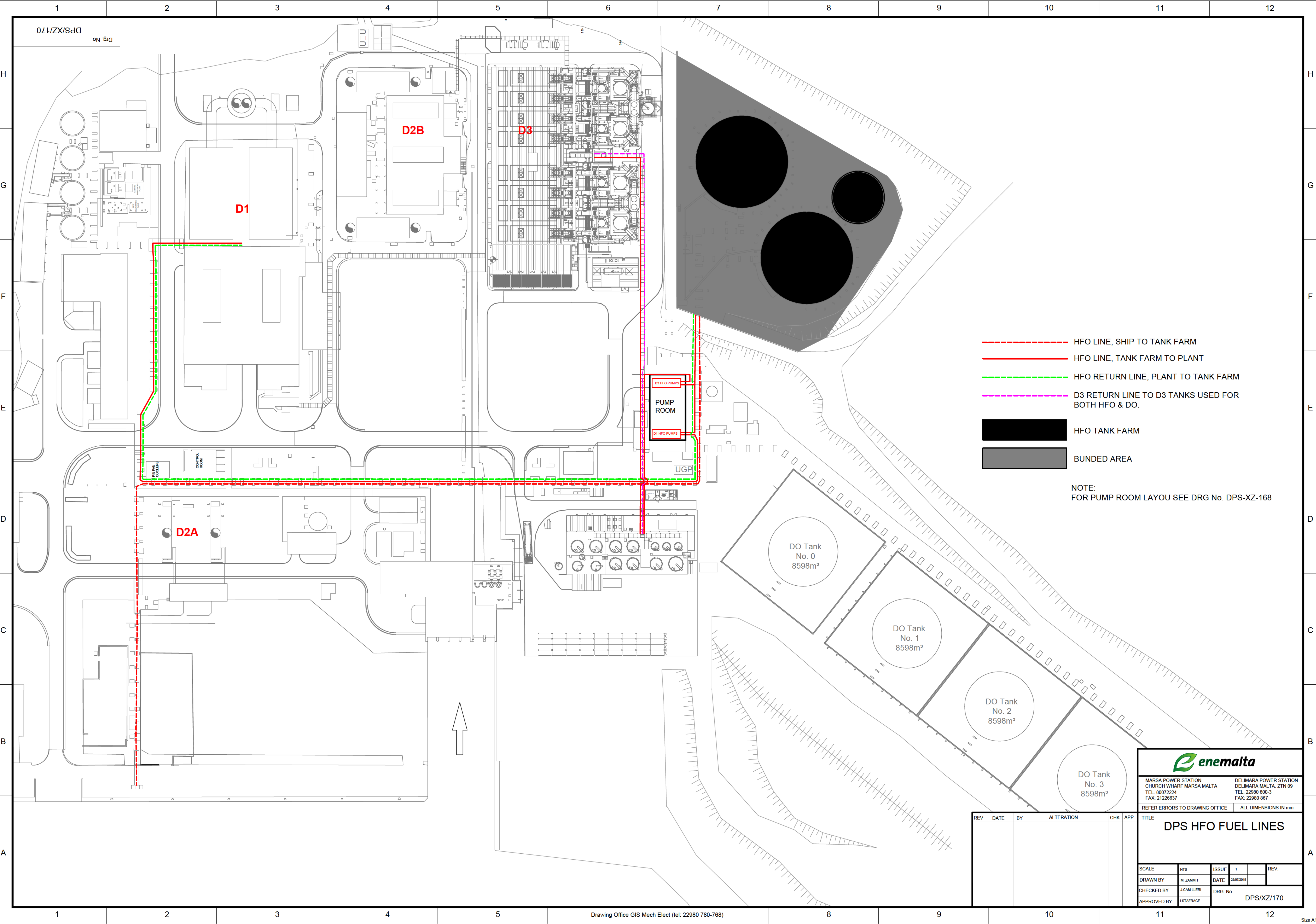
NO.: 1. ALL MEASUREMENT IN mm
NO.: 2. ALL LEVELS ARE RELATIVE IN METRE

METRE



4	2012.07.12	MOMA	JNJ		WSH
2	2010.03.19	JAV	JES	CROSS DISCIPLINARY REVIEWED	CHH
1	2010.01.08	JES	JVS	NEW FOT LAYOUT INCL. NEW FIRST FLOOR.	CHH
0	2009.10.30	JES	CHH		JNJ
REV	DATE	DRAWN BY	ISSUED/VERIFIED BY	DESCRIPTION	APPROVED BY
OWNER					
				Enemalta Corporation	
CENTRAL ADMINISTRATION BUILDING CHURCH WARRF, MARSA MRS 1000 MALTA TEL.: +356 2298 0755 FAX: +356 2125 1241					
CONTRACT		DRAWING No.			REV
PROJECT					
PROJECT NO. GR. NO. SHT.					
SUBJECT					
FOT BUILDING (UEM), SERVICE T. F. (UEK) & UREA T. F. (UVJ) LAYOUT SECTIONS, LOOKING NORTH					
SCALE		DWG. NO.		4 REV.	
A1=1:100 A3=1:200		2970.D2.612.001			

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HFO LINE, SHIP TO TANK FARM

HFO LINE, TANK FARM TO PLANT

HFO RETURN LINE, PLANT TO TANK FARM

D3 RETURN LINE TO D3 TANKS USED FOR BOTH HFO & DO.

HFO TANK FARM

BUNDED AREA

NOTE:
FOR PUMP ROOM LAYOU SEE DRG No. DPS-XZ-168

MARSA POWER STATION
CHURCH WHARF MARSA MALTA
TEL: 80072224
FAX: 21228637

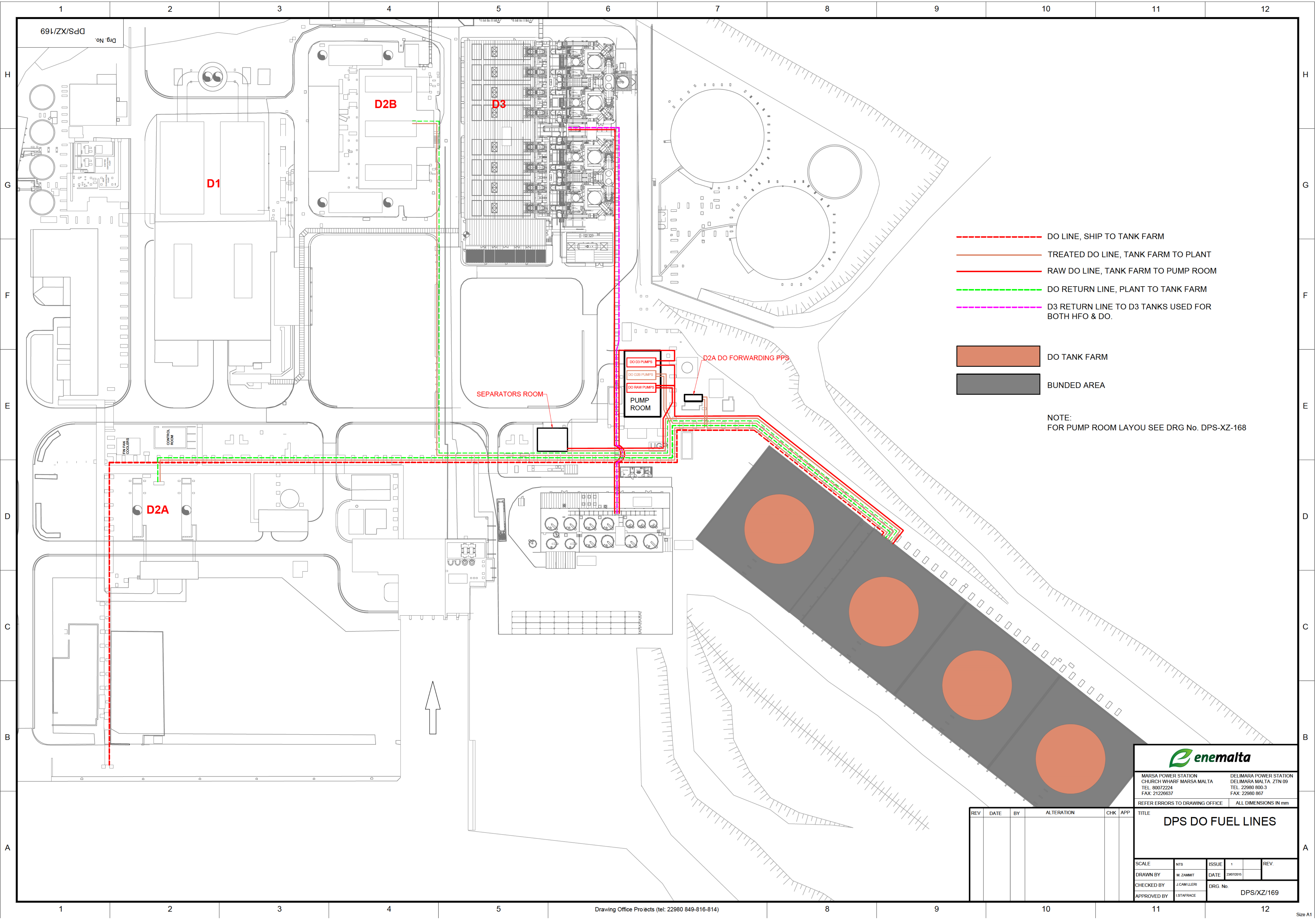
DELIMARA POWER STATION
DELIMARA MALTA, ZTN 09
TEL: 22980 800-3
FAX: 22980 867

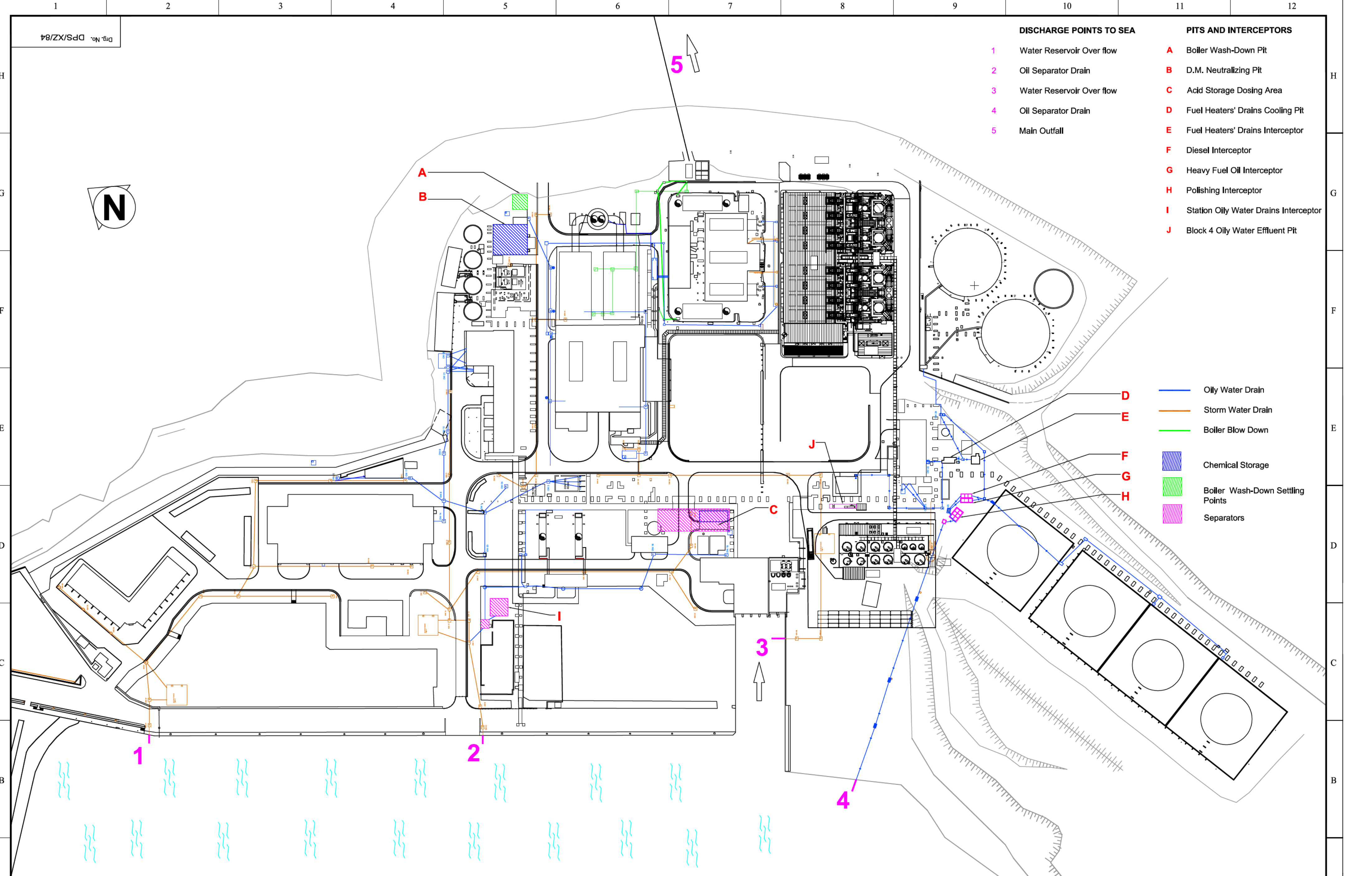
REFER ERRORS TO DRAWING OFFICE

ALL DIMENSIONS IN mm

REV	DATE	BY	ALTERATION	CHK	APP	TITLE
						DPS HFO FUEL LINES

SCALE	NTS	ISSUE	1	REV.
DRAWN BY	M. ZAMMIT	DATE	23/07/2015	
CHECKED BY	J. CAMILLERI	DRG. No.	DPS/XZ/170	
APPROVED BY	I. STAFRACE			





- DISCHARGE POINTS TO SEA**
1 Water Reservoir Over flow
2 Oil Separator Drain
3 Water Reservoir Over flow
4 Oil Separator Drain
5 Main Outfall
- PITS AND INTERCEPTORS**
A Boiler Wash-Down Pit
B D.M. Neutralizing Pit
C Acid Storage Dosing Area
D Fuel Heaters' Drains Cooling Pit
E Fuel Heaters' Drains Interceptor
F Diesel Interceptor
G Heavy Fuel Oil Interceptor
H Polishing Interceptor
I Station Oily Water Drains Interceptor
J Block 4 Oily Water Effluent Pit

- Oily Water Drain

Storm Water Drain

Boiler Blow Down
- Chemical Storage

Boiler Wash-Down Settling Points

Separators

MARSA POWER STATION
CHURCH VILLAGE MARSA MALTA
TEL. 21223601, 21221907, 21220462
TELEGRAMS: ELPDGA MALTA
TELEX No.: 1735 ENECOR MW, 1942-ENERGY MW
FAX: 21243055, 21232592

DELIMARA POWER STATION
DELIMARA MALTA. ZTN 09
TEL. 21650293/5
FAX: 21653519, 21657449

REFER ERRORS TO DRAWING OFFICE

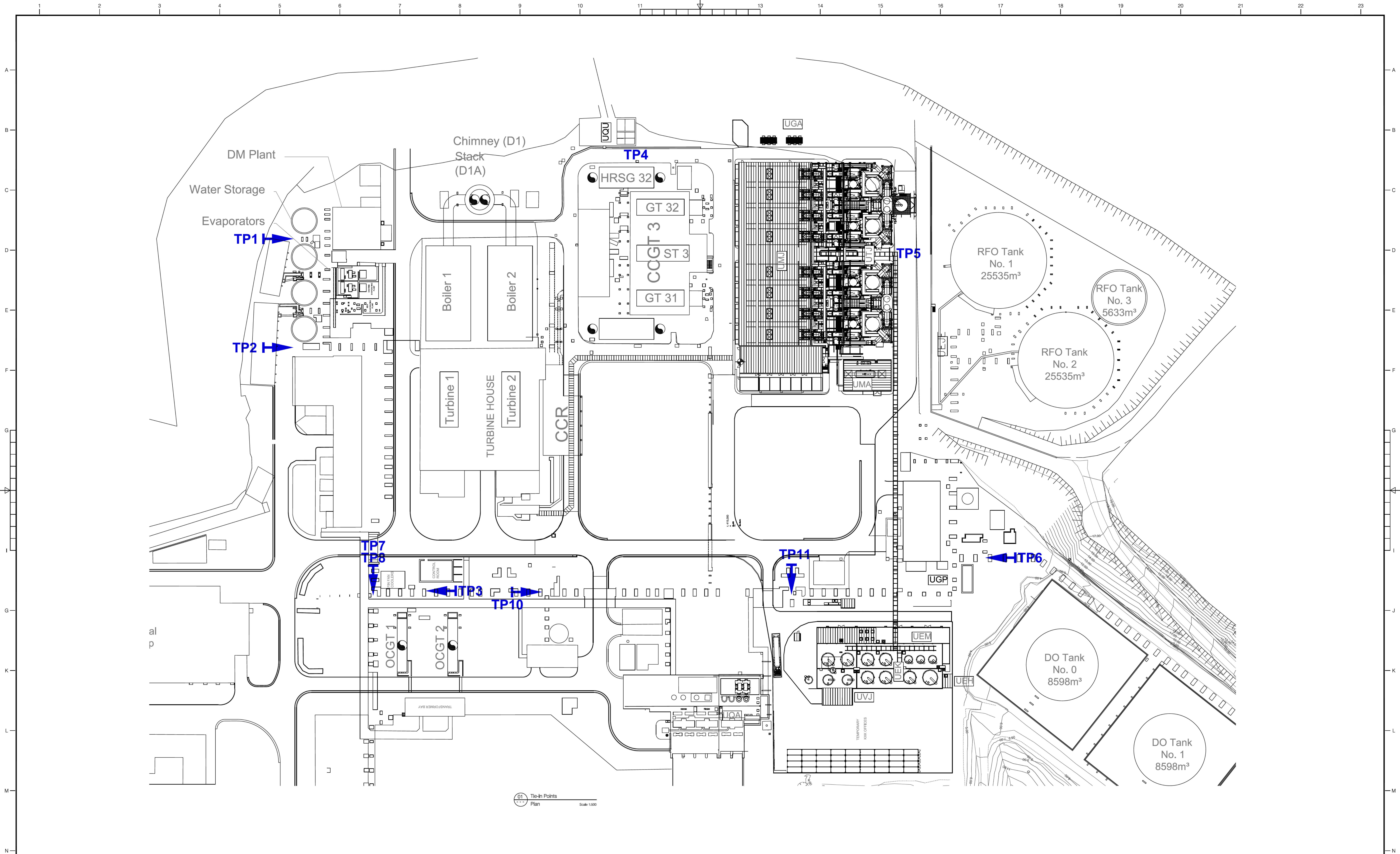
ALL DIMENSIONS IN MM

**Delimara Power Station
Pits & Interceptors**

REV	DATE	BY	ALTERATION	CHK'D	APP'D
A	16/08/2010	M. Borg	Added Acid Storage and Dosing Area		
B	06/03/2013	M. Borg	Added Block 4, marked Block 4 oily water effluent pit as 11		
C	07/05/2013	M. Borg	Legend modified Nos. from 1-11 changed to A-K_ Added No.5 Main Outfall	C. G	C. A
D	21/03/2014	M. Borg	Pits I & H renamed	C. G	C. A
E	11/04/2014	M. Borg	Waste management area and Turntable added	C.G.	I.S.

SCALE	NTS	DO NOT SCALE DRAWING	
DRAWN BY	M. Borg	ISSUE	1
CHECKED BY	C. Busuttil	DATE	16/11/09
APPROVED BY	Ing. C. Agius	DRG. No.	DPS/XZ/84
REVISION	A B C D E		

Mechanical Engineering Design Section (tel: 22980 849)



Legend	
Tie in points	System
TP1	Evaporated water
TP2	Domesticated water
TP3	Potable water/Threaded
TP4	Sea water
TP5	Natural Gas
TP6	Diesel Oil
TP7	Internal Fire fighting water (Generating Plant)
TP8	External Fire fighting water (Generating Plant)
TP9	Foul water
TP10	Internal Fire fighting water (LNG Facility)
TP11	External Fire fighting water (LNG Facility)
DPA	Sea water discharge point (LNG Facility)



0 2,00m 4,00m 6,00m 8,00m
Scale 1:100

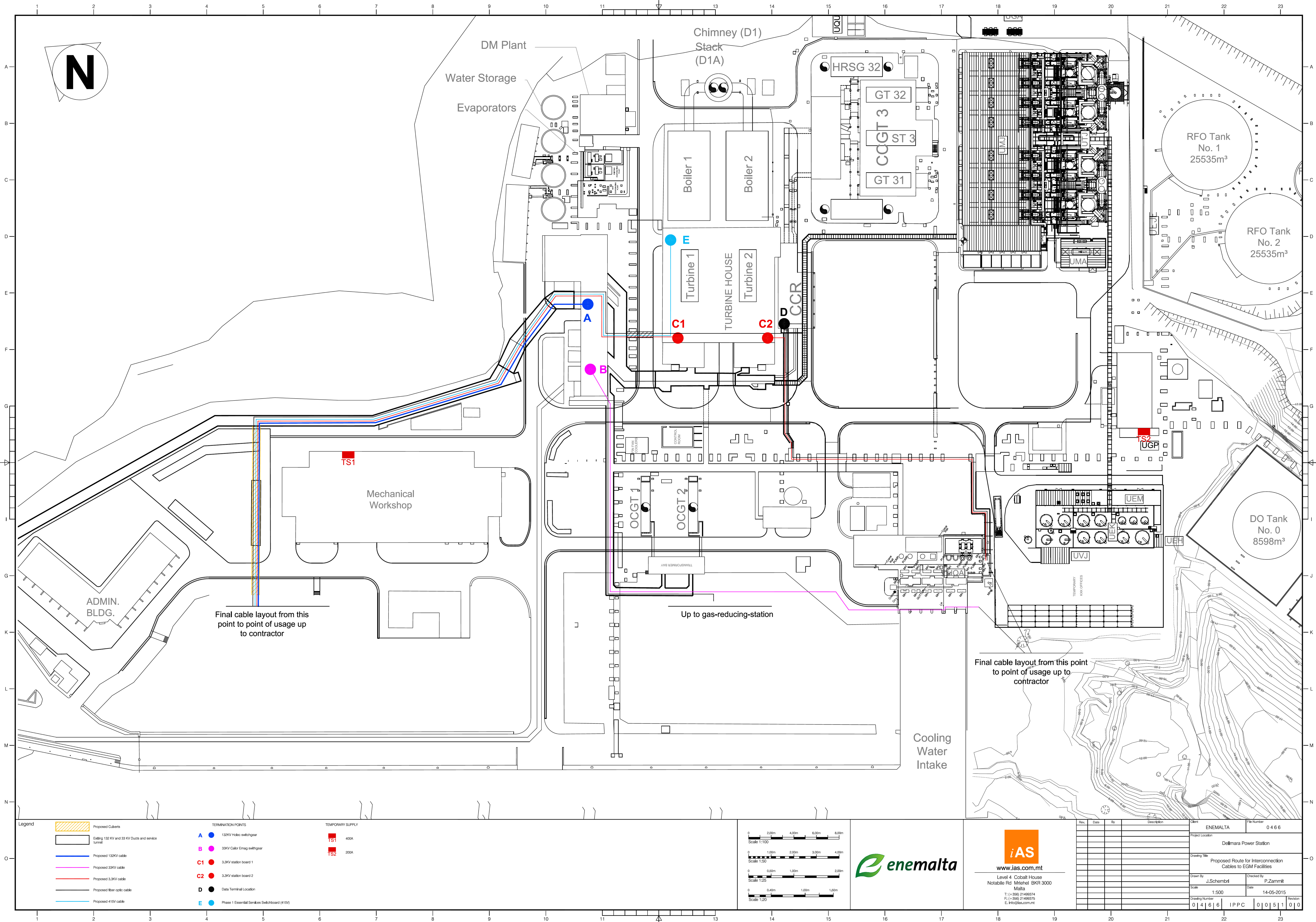
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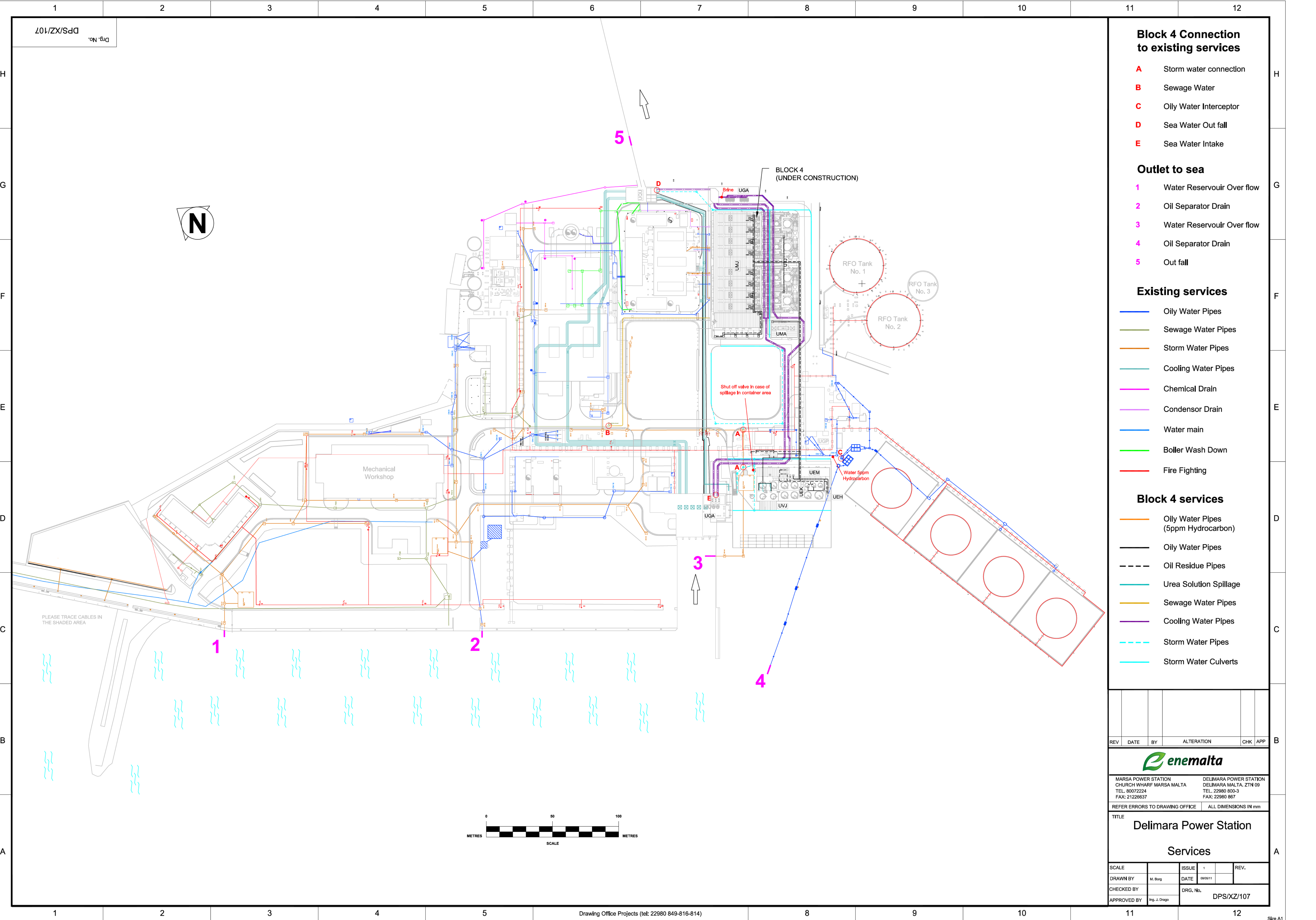
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Scale 1:25

0 0,40m 1,00m 1,50m
Scale 1:20

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	 www.ias.com.mt Level 4 Cobalt House Notabile Rd Mriehel BKR 3000 Malta T: (+356) 21499374 F: (+356) 21499375 E: info@ias.com.mt	Rev.	Date	By	Description	Client	File Number	
						ENEMALTA	0466	
						Project Location		
						Deltmara Power Station		
						Drawing Title		
						Tie-in Points - EGM		
				Drawn By	Checked By			
				J.Schembri	P.Zammit			
				Scale	Date			
				1:500	14-05-2015			
				Drawing Number	Revision			
				0466 IPPC	005000	010		





Drg. No.
DPS/XZ/107

Block 4 Connection to existing services

- A** Storm water connection
- B** Sewage Water
- C** Oily Water Interceptor
- D** Sea Water Out fall
- E** Sea Water Intake

Outlet to sea

- 1** Water Reservoir Over flow
- 2** Oil Separator Drain
- 3** Water Reservoir Over flow
- 4** Oil Separator Drain
- 5** Out fall

Existing services

- Oily Water Pipes
- Sewage Water Pipes
- Storm Water Pipes
- Cooling Water Pipes
- Chemical Drain
- Condensor Drain
- Water main
- Boiler Wash Down
- Fire Fighting

Block 4 services

- Oily Water Pipes (5ppm Hydrocarbon)
- Oily Water Pipes
- Oil Residue Pipes
- Urea Solution Spillage
- Sewage Water Pipes
- Cooling Water Pipes
- Storm Water Pipes
- Storm Water Culverts

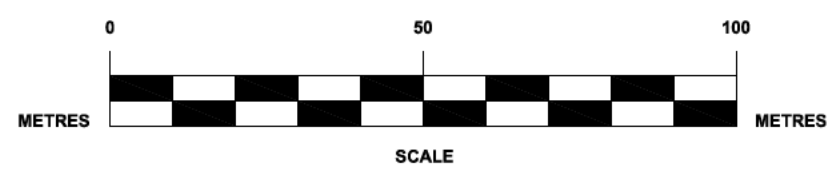
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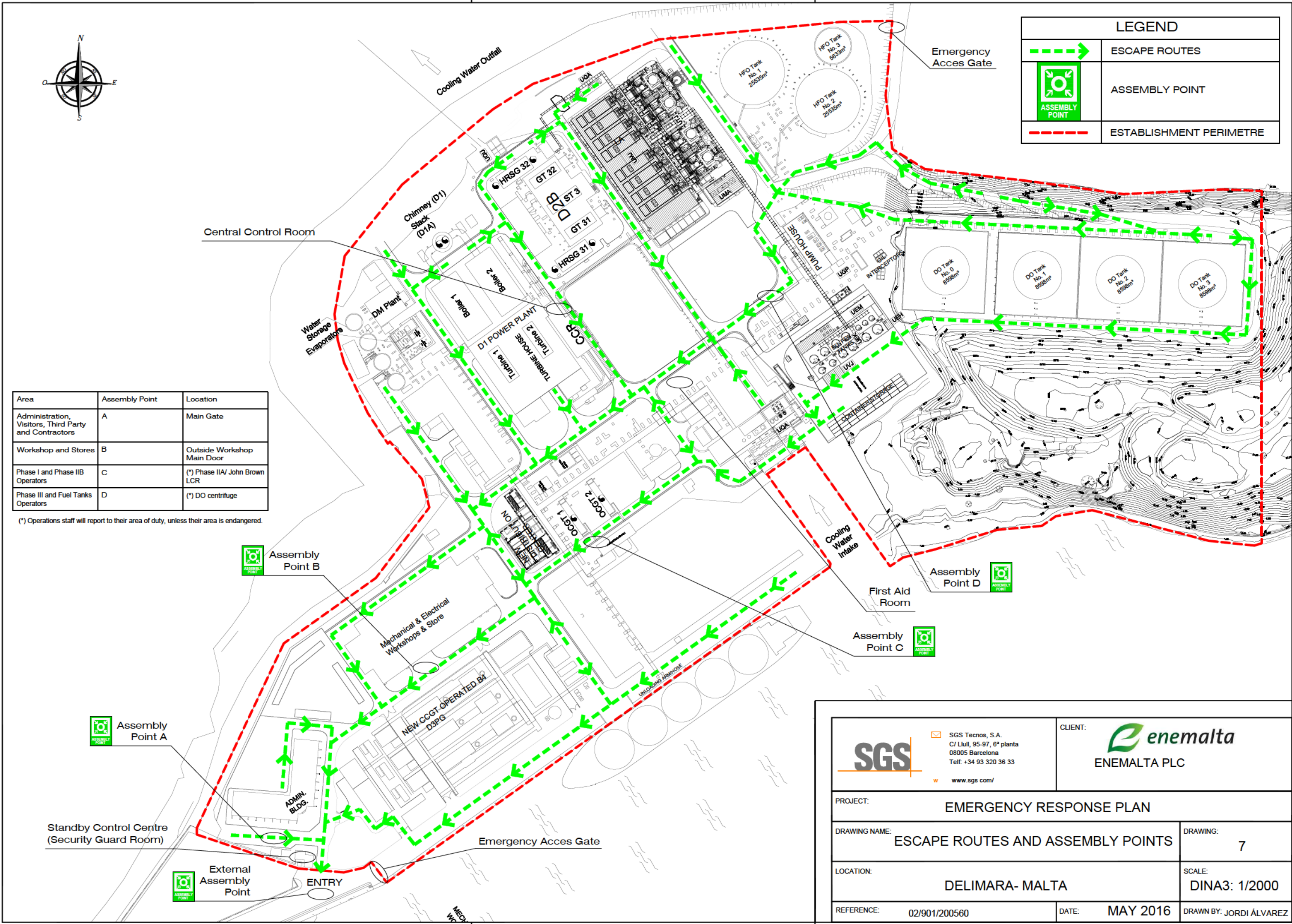
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DELIMARA POWER STATION
DELIMARA MALTA, ZTN 09
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REFER ERRORS TO DRAWING OFFICE ALL DIMENSIONS IN mm

TITLE Delimara Power Station			
Services			
SCALE		ISSUE	1
DRAWN BY	M. Borg	DATE	08/05/11
CHECKED BY		DRG. No.	DPS/XZ/107
APPROVED BY	Ing. J. Drago		





(*) Operations staff will report to their area of duty, unless their area is endangered.

  SGS Tecnos, S.A. C/ Llull, 95-97, 6ª planta 08005 Barcelona Telf: +34 93 320 36 33  www.sgs.com/		CLIENT:  enemalta ENEMALTA PLC	
PROJECT: EMERGENCY RESPONSE PLAN			
DRAWING NAME: ESCAPE ROUTES AND ASSEMBLY POINTS		DRAWING: 7	
LOCATION: DELIMARA- MALTA		SCALE: DINA3: 1/2000	
REFERENCE: 02/901/200560		DATE: MAY 2016	
DRAWN BY: JORDI ÁLVAREZ			