

B.03.01.01 WASTE GENERATION

Reference Drawings:

ENEM-URS-FS-00-DR-ME-00066

MT1001-6000-MFB102-444910804

The following table presents a list of waste products currently being produced at the Delimara Power Station which will also be produced by this new facility. In combination with the existing Delimara Power Station (DPS) the quantities of waste waters discharged into the sea will temporarily increase as the development becomes operational but will ultimately decrease once DPS Phase 1 is decommissioned, and the operational hours of DPS 2A and 2B are reduced.

Waste Type	EWC	Description	Quantity	Management
Sea Water Cooling System Oxidants and Disinfecting Agents	10 01 26	Effluent treated to Directive 2006/11/EC	10.8t/yr (0.03 m ³ /day)	Liquid treatment to Directive 2006/11/EC requirements prior to discharge back to sea
Oil Sludge (from Oil Separator and used lube oil)	13 05 02*	Liquid hazardous waste (a)	993t (2.74 m ³ /day)	Incinerated locally or exported to Special Waste/Hazardous Landfill for final treatment
Oily Water	13 05 07*	Effluent treated to Directive 76/464/EEC	9,933t/yr (27.44 m ³ /day)	Treated to <5ppm and which then can be discharged to the sea in accordance with Directive 76/464/EEC
Oily rags	15.02.02	Solid waste	5kg/day	Incinerated locally or exported to Special Waste/Hazardous Landfill for final treatment
Boiler Wash Down Sludge	10 01 22*	Semi-solid hazardous waste (a)	0.02 m ³ /day	Neutralised and transported offsite and exported to Special Waste/Hazardous Landfill
Sanitary Waste Water (sewage)	16 10 02	Liquid waste	2.3 m ³ /day	Sent to public sewer
Discharges from Demineralisation Tank*	10 01 99	May includes elevated acids or alkali	0.41 m ³ /day (b)	Process to comply with existing discharges. See *Note below
Excess brine from Evaporator*	10 01 99	May contain traces of scale control reagents	520.55 m ³ /day (b)	Process to comply with existing discharges. See *Note below

(a) = export of hazardous waste will require a transfrontier shipment permit.

(b) = estimations based on extrapolations from data in Axiak and Delia 2000, and Axiak 2004.

*Demineralised water will be supplied from the existing DPS facilities. Waste water generated from this process will not differ in composition from existing discharges and will continue to be managed by Enemalta.

Construction Phase

During the construction phase of the development, excavated material will be reused on the Site wherever possible. However where it is required to be removed from site it will be tested in accordance with MEPA requirements and disposed at sea or on land as appropriate. The majority of spoil is contaminated with sea water and meets the requirements of being able to be disposed of at sea. (Project Waste Consignment Permit No CP 8027)

Much of the equipment delivered to the Site is packaged, and the construction contractors is responsible for removing and recycling/disposing of all packaging and other waste materials that arise during the construction and commissioning of the development.

During the construction phase, requirements for the management of waste have been communicated to all contractors and sub-contractors to ensure that waste is managed in accordance with the waste hierarchy and relevant statutory controls. These measures are controlled through the Construction Management Plan (CMP) in consultation with the relevant authorities.

Operational Phase

The following table presents a list of waste products that are expected to be generated from the CCGT during operations. Refer also to the CCGT Water Balance Diagram MT1001-6000-MFB102-444910804

Operational Phase Waste from CCGT				
Waste Type	EWC	Description	Quantity	Management
Cooling Water	10 01 26	Sea water with maximum: 0.2mg/L Chloride	414,240 m ³ /day during normal CCGT operation. (includes auxiliary CW water which also services regasification plant)	Discharged into Bay of il- Hofra ż-Żgħira Note that this water is taken from the existing Enemalta CW intake downstream of the dosing system and discharged through the existing Enemalta outfall
Oily Water	13 05 07*	Effluent treated to Directive 76/464/EEC	0.55 m ³ /day (a)	Treated to <5ppm and which then can be discharged to the sea in accordance with Directive 76/464/EEC

Operational Phase Waste from CCGT				
Waste Type	EWC	Description	Quantity	Management
HRSG Blowdown Water	10 01 22*	Concentrated boiler water with phosphate and Ammonia	36 -48 m ³ /day (a) Once a year 65m ³	The blowdown will be sent to the neutralisation pit for treatment prior to discharge into Bay of il- Hofra ż-Żgħira
Neutralisation system discharge	10 01 22	Process effluent treated within the neutralisation system	Intermittent maximum of 40 m ³ /h	Discharged into Bay of il- Hofra ż-Żgħira (refer to CCGT Water Balance Diagram MT1001-6000-MFB102-444910804
Cleaning GTs	10 01 99	Water and cleansing agent	4 times a year. Unknown quantity	Transported offsite to authorised processing company
Scrub and Wash Water	10 01 99	Possible polluted wash water	4.8 m ³ /day (average)	Processed through oil separator, cleaned and discharged to sea
Floor Washing from potentially oil contaminated areas	10 01 99	Variable contaminants including oils, degreasers.	0.27 m ³ /day (a)	Processed through oil separator, cleaned and discharged to sea
Sanitary Water	10 01 99	Sanitary	4.8 m ³ /day (average)	To public foul sewer.
Boiler Washings	10 02 22* / 10 01 23	Containing substantial quantities of suspended solids, variable pH.	0.55 m ³ /day (a)	Neutralised and transported offsite for export to Special Waste/Hazardous Landfill (b)
CCGT Demin Polishing plant Resin	19 09 05	Waste resin from the mixed bed filters.	Varies depending on operating hours	In addition once every three to five years the filter medium will need to be changed and will be disposed of through our hazardous waste disposal route
	19 09 04	Waste activated carbon filters	Varies depending on operating hours	

During periodic maintenance, such as major equipment overhauls, there will be additional discrete waste stream, eg lube oil from the gas turbines, in these cases specific local disposal containers will be erected on site during these works and the waste generated disposed of appropriately. The actual disposal locations shall be detailed in the operational waste management plans. Records regarding disposal of such wastes will have to be kept and reported to the Authority as part of the Annual Environmental Report.

There may also be the occasional broken PC or similar, however it is not anticipated that routine maintenance and operation will generate significant amounts of electrical waste, however that which is generated, due to unexpected equipment failure, will be sent to an authorised disposal site

Recyclable solid wastes, paper, plastics etc will be stored in the ElectroGas Malta waste storage area south of the CCGT site, refer to drawing ENEM-URS-FS-00-DR-ME-00066.

The following table presents a list of waste products that are expected to be generated during the normal operational phase from the FSU .

Operational Phase Waste from FSU				
Source of Waste Water	EWC	Description	Quantity p.a.	Management
Bilge Water	13 05 07	Possible oils	1.0 m ³ /week	Stored on board in the converted oily water storage tank and then discharge to barge for disposal through licenced operator
Used lube oil / oil sludge	13.02.15	Oil	0.02 m ³ /week	Stored on board and sent to specialist off site treatment site.
Firefighting Water	05 07 99	Freshwater and seawater.	Unknown	Firefighting water from potentially oil contaminated areas will be contained within the associated bunded areas.
Floor Washing	10 01 99	Variable may be contaminants with oils degreasers.	0.27 m ³ /day (a)	From oily areas will be directed to oily water storage tank, from non-oily areas will be stored in grey water tank and discharge via barge to suitable disposal facility.
Sanitary Water	10 01 99	Sanitary Treated on board to: <ul style="list-style-type: none"> • BOD5 < 40ppm • SS < 50 ppm • Chlorine < 2ppm 	Circa 2 m ³ /week	Treated on board, the resulting effluent will be stored on the vessel in the grey water holding tank
Grey Water	10.01.99	Effluent from the STP, waste from galley and domestic washing water.	14 m ³ /week	Stored on-board and pumped to barges for disposal to onshore treatment plant.
Blowdown from auxiliary steam boilers	10 01 22	Concentrated boiler water	30 m ³ /year	Stored on board in the Bilge Water Tank
Other effluent/waste	20.03.01	Liquid and solid domestic waste	126m ³ /week	Sorted and stored on-board; pumped/craned to

Operational Phase Waste from FSU				
Source of Waste Water	EWC	Description	Quantity p.a.	Management
generated on-board				barge for treatment on-shore
Food Waste	20 01 08	Galley waste	Variable	Sorted and Stored on-board; pumped/craned to barge for disposal at municipal waste disposal
Sewage Treatment Plant	19 08 05	Sludge	Every five years 6 litres of sludge	Containerised and disposed of via barge to register treatment facility.
Hull Cleaning	10.01.99	Marine growth	Variable	This will be marine growth from the Marsaxlokk harbour and will be returned to the same

The following table presents a list of waste products that are expected to be generated during the normal operational phase from the Regasification Plant

Operational Phase Waste from Regasification Plant				
Source of Waste Water	EWC	Description	Quantity p.a.	Management
Firefighting Water	05 07 99	Fresh water and/or seawater.	Unknown, in an emergency only	The water will be discharged to drains. Potentially oil contaminated areas will be contained in local bunds.
Discharge of cooling Water for Regasification	05 07 99	If required additional heat will be transferred from the auxiliary cooling water already being issued for the CCGT operation	Already included in CCGT discharge (specifically 42,240 m ³ /day)	Discharged into Bay of il-Ħofra iż-Żgħira
Floor Washing	10 01 99	Variable contaminants including oils, degreasers.	0.27 m ³ /day	Generally internal to building and will be discharge to cesspit.
Sanitary Water	10 01 99	sewage	0.1 m ³ /day	To local Cesspit and emptied by licenced tankers.
Used lube oil	13.02.15	Oil	0.004m ³ /day	Stored on site for disposal off site at specialist treatment centre
Gas filtration waste	10.01.19	Particulates	Nominal	To licenced off site waste disposal

Details of specialist waste brokers and carriers will be confirmed by the O&M team during compilation of the Waste Management Plans but it is anticipated that the majority of the waste streams requiring export from site will already be being generated and handled in the adjacent existing DPS site and as these disposal routes are already well established they will be utilised for this development. Refer to section B3.1.3 for further details of export waste streams.

The development is expected to contribute towards an overall reduction in the rates of discharge of cooling waters in il-Hofra ż-Żgħira. The current rate of discharge of 1,034,400m³/day is expected to be reduced by over 30% to 710,400m³/day. The rate of release and nature of chemical dosing being currently dosed into this waste-stream (cooling water) would remain unaltered. Furthermore, the water temperatures within the flow and possibly prior to discharge would remain unaltered (i.e. +8oC). There is also no reason to suggest that the present chemical profile of this discharge would be significantly altered (for example with respect to total suspended solids, or pH).