Margam and Port Talbot Substations and Interconnector

Margam Site Water Management: Best Practices and Procedures

Prepared by: Laing O'Rourke
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P01	Elliot Hutchings	Matthew Wisdom	Rob Jones	14.04.2025	Initial draft for review
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Contents

1. Introduction

This Margam Site Discharge Management Plan is to identify Laing O'Rourke's activities that will require water-related consents to prevent contamination of existing watercourses. This plan also details the management and monitoring procedures in accordance with regulatory guidelines and advice.

Key areas of focus include:

- Surface Waters (Turbid waters from earthworks)
- Cementitious waters (Interaction of cement-based products)

Definitions

Surface waters	are a manageable unit of water, including streams, rivers, canals, lakes, and reservoirs. Waters from excavations and clearance may become contaminated with silt due to the disturbance of ground activities and mixing with rain-dependent waters and surface waters (perched waters).
Perched waters	an accumulation of surface water that is above the main water table due to an impermeable layer i.e. Clay.
Cementitious waters	are the byproducts of water used involving cement-based materials in construction.

References

- Margam Drainage Report MARPT-BHK-01-XX-RP-C-000001
- Port Talbot Drainage Report MARPT-BHK-02-XX-RP-C-090001
- Margam Cable Route Drainage Report MARPT-BHK-ZZ-XX-RP-C-090001
- LOR Construction Environmental Management Plan – MARPT-LOR-XX-XX-PL-R-090009
- LOR Environmental Emergency Plan - MARPT-LOR-XX-XX-PL-R-090013
- Stantec_Margam Port Talbot Sustainabillity Statement_Rev02
- Margam Site Water Management: Best Practices and Procedures MARPT-LOR-XX-XX-PL-R-090019
- Ciria Control of Water Pollution from Linear Projects

Note: This management plan should be read in conjunction with Activity 1 permit applications:

- **Activity 1:** MARPT-LOR-XX-XX-PL-R-090022

2. Preliminaries

2.1 Scope

Turbid and cementitious waters are by-products of site activities such as earthworks, drainage, and the use of cement-based materials. Turbid waters can degrade water quality by depositing heavy silt, restricting habitats, reducing sunlight, and depleting oxygen levels. Cement-based products and activities, such as soil stabilisation with cement, are highly alkaline and corrosive, generating fine silt (pH 11.5) that can damage both terrestrial and aquatic environments. Operators must prevent cement-based products used within construction from entering waterways, drains, and groundwater, adhering to regulatory guidelines for wastewater management.

- Follow guidance set out within Pollution Prevention Guidelines 6, Section 2 Drainage, Section 3 Excavations, Section 4 Materials Storage, Stockpiles and Exposed Ground.
- Follow guidance set out within Pollution Prevention Guidelines 6, Section 7 Cement, Concrete & Grout.

Note: *It is understood that these guidelines have been withdrawn. However, Laing O'Rourke has received communication from NRW that certain Regulatory Position Statements do not apply in Wales, and PPGs are to be adhered to.*

2.2 Purpose

The purpose of this plan is to establish a site-wide protocol that ensures the control of surface waters and the introduction of cement-based products on the project. Works involving cut and fill activities will result in the generation of turbid water, while the use of cement for ground stabilisation has the potential to produce high pH water:

- Formal discharge to surface waters or ground under an environmental permit.
- Temporary exemption of water for engineering works under regulation 5.
- Reuse where applicable after treatment under a Regulatory Position Statement.
- Tanking from the site as hazardous waste, as a last resort.

3. Responsibilities

All personnel are considered responsible for the prevention of pollution and the provision of an immediate and effective response in the event of an incident.

All personnel are responsible for ensuring the following actions are implemented to maintain water quality and prevent contamination:

- Concrete and cement mixing should be:
  - Sited on an impermeable designated area.
  - At least 10 metres away from a watercourse or surface water drain to reduce the risk of run-off entering a watercourse.
- Surplus dry concrete, cement, and grout:
  - Should be used elsewhere on site if possible, or as inert rubble.
  - If not reusable, it must be disposed of off-site and transported using a registered waste carrier.
- Equipment such as chutes, portable mixers, barrows, pump lines, and shovels:
  - Should be washed out in a designated area specifically designed to contain wet concrete/wash water.
- Concrete mixing and delivery lorries:
  - Should return to the batching plant for washout.
- Excess concrete:
  - Should be sent back to the batching plant.
  - If returning is not possible (e.g., with design concrete), a designated area should be built to allow the concrete to cure without polluting the ground or watercourses
- Separation of concrete waters:
  - Concrete wash waters must be kept separate from surface waters and ground waters to prevent contamination.

These measures are crucial to mitigate the potential impact of construction activities on local water resources and comply with environmental regulations.

Rey roles for flood risk management include:

Name	Role	Contact	Email
Robert Jones	Project Leader	07385 487733	rjones@laingorourker.com
Colm McDaid	Construction Manager	07920211754	cmcdaid'laingorourke.com
Jon Lee	Technical Lead	07392 120053	Jolee@laingorourke.com
Rhodri Davies	Sustainability Lead	07353 887557	rhdavies@laingorourke.com
Gareth Williams	H&S Manager	07917 040708	garwilliams@laingorourke.com
Jordan Riseley	Temporary Works Co	07384 526298	Jriseley@laingorourke.com

4. Compliance

4.1 Environmental Permitting Regulations 2016

These Regulations establish an environmental permitting and compliance regime applicable to various activities and industries. Permits set controls and emission standards to minimise pollution and allow operators of certain installations to operate. Any operational 'regulated facility' requires an environmental permit. A regulated facility includes water discharge, groundwater, and radioactive substances activities.

4.2 Regulation 5 of the Water Abstraction and Impounding (Exemptions) Regulations 2017

Regulation 5 exempts small-scale, temporary dewatering during building or engineering works from needing an abstraction license under specific conditions, including duration, impact on protected sites/species, immediate discharge to a soakaway, and a daily volume of less than 100 cubic meters.

5. Procedural Control Measures

5.1 Silt netting and Sediment Control

As part of the comprehensive water management for the proposed works, there will implement sediment control measures in accordance with CIRIA C648 guidance. Specifically, proposed use of silt netting, sediment fences, and check dams to intercept and retain suspended solids within the site boundary. These controls aim to minimise sediment transport to adjacent watercourses.

5.2 Drainage Management

To mitigate potential impacts on local watercourses, a robust drainage system shall be developed using existing drainage features on site, based on CIRIA C648 principles. The design will promote natural infiltration and drainage where practicable. It ensures the quality of water at the point of discharge and manages runoff volumes and velocities to prevent downstream flooding. Drainage shall be sufficiently controlled and monitored in line with the sediment control features mentioned above.

5.3 Enhanced Water Treatment Solutions

In addition to standard sediment control measures, it is recognized that certain site conditions and environmental sensitivities may necessitate enhanced water treatment solutions. Therefore, it is proposed to use a water management treatment system, such as a Siltbuster unit, to manage and treat sediment-laden water before discharge from the site. This system effectively removes suspended solids and other contaminants, ensuring that all discharged water consistently meets or exceeds the environmental quality standards required by the regulatory authority.



5.4 Permit to Pump

Before any works for dewatering commences all Contractors must submit a 'Permit to Pump' works authorisation will be sought from the Environmental Team.

- Submit a Permit to Pump request to the Sustainability Lead

The following details will be included as a minimum:

- Where are the pumping operations being carried out and why?
- Where is the water discharging to?
- Who is responsible for checking the discharge during pumping operations to ensure that no environmental damage is being caused?
- Is settlement of solids required as part of discharge?
- If pumping to a watercourse or land outside the project boundary has corrective consent been approved
- Testing methodology in line with permit requirements

All permit requests will be completed by those preparing for the work e.g. section engineers or project managers, refer to MARPT-LOR-XX-XX-PL-R-090016

6. Waste Arisings

6.1 Silt Management

Waste silt from the treatment process shall be stockpiled on site and tested against reuse criteria to determine if the material is suitable for landscaping. If the material is not deemed suitable, it shall be removed from the site by a licensed contractor, either through muck away or vacuum excavation, depending on the material's stability. When materials are stored on site, they shall comply with general pollution prevention guidelines as outlined in PPG 6, Section 4, for stockpile management.

7. Water Quality

At Margam Substation Laing O'Rourke has conducted tests on the site waters to confirm their quality, as well as that of the proposed discharge point, namely the Upper Mother Ditch. The aim is to discharge waters from the site, ensuring they match the quality of the existing watercourse or do not exceed the environmental quality standards. It is also noted that silt contamination is a possibility, and measures have been considered as part of the water quality aspect, along with pH correction for dewatering of trenches where Concrete Bound Sand is to be utilised.

- Total TPH and PAH
- Metals (Lead, Cadmium, Mercury, Arsenic, Chromium, Nickel, Zinc, Iron, and Manganese)
- Selenium (based on previous mine workings and 5 outcrop seams within the footprint of the development)
- Solid settlement based on earthworks soil strata interactions

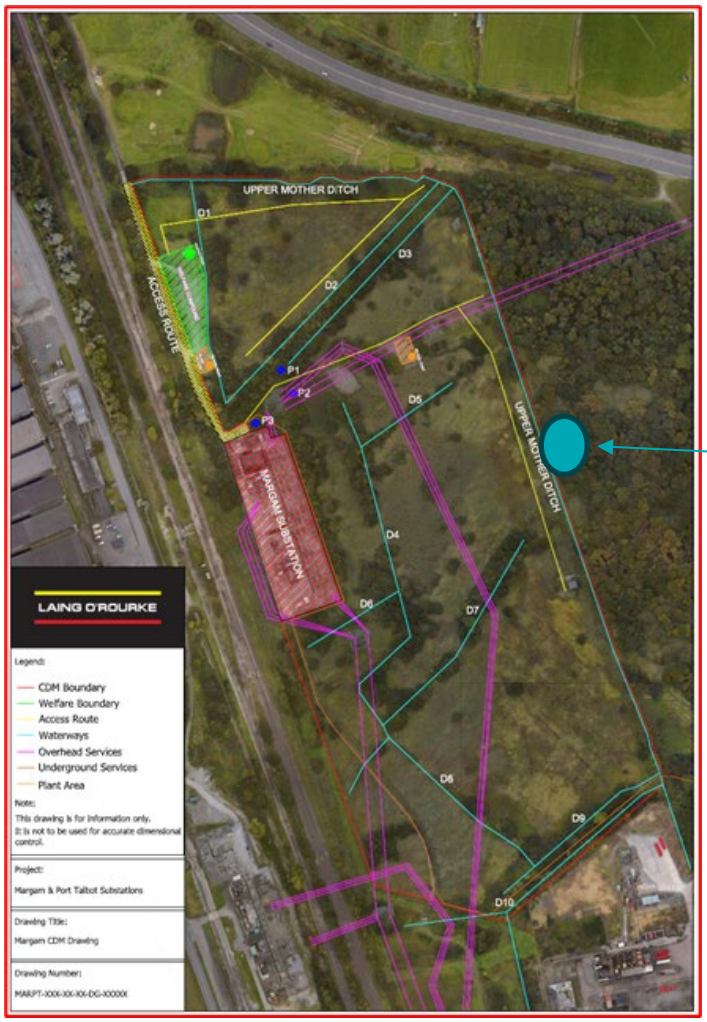
7.1 Discharge Requirements

The below details the water management/discharge requirements through each section of the works.

7.2 Margam

Discharge licence

LOR have applied for a Discharge Licence through Natural Resources Wales for removal of silt laden waters to manage works for piling and foundation works. Where fine or coarse silt is present, chemical or physical treatment, such as a Siltbuster system, will be employed to ensure water quality standards are met. Discharge location will be pre-approved by Natural Resources Wales which within the application is stated as being the Upper Mother Ditch.



Discharge Location to Upper Mother Ditch (subject to permit approval)

Regulation 5 exemption

Regulation 5 provides that certain low-risk or small-scale activities are exempt from licensing requirements. These exemptions are designed to reduce regulatory burdens where the environmental impact is minimal. Examples include:

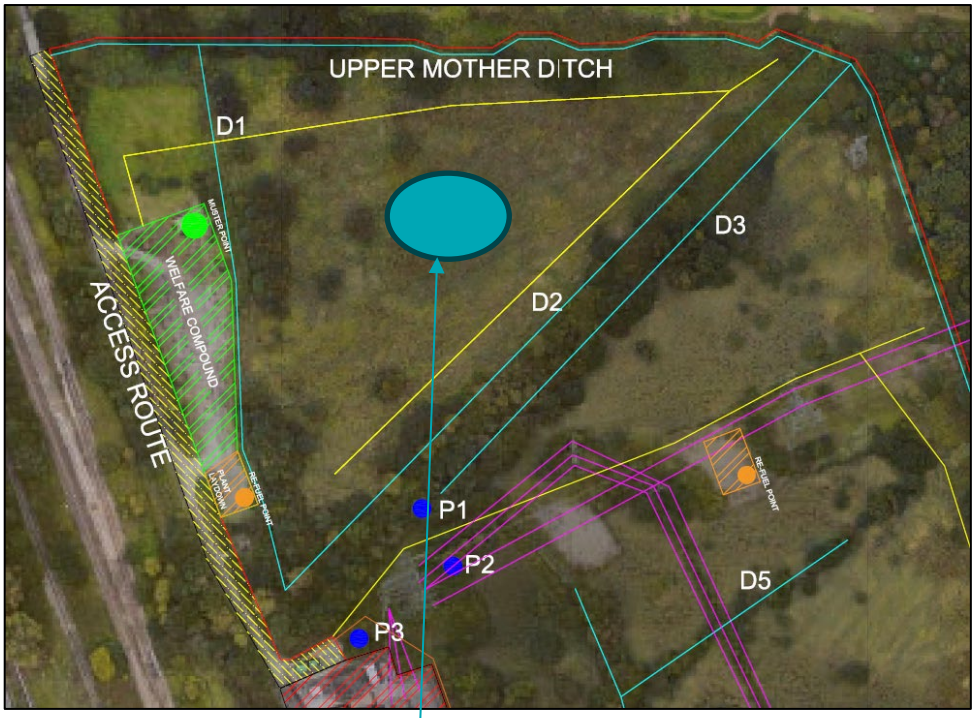
Abstractions of small volumes of water (typically below a daily threshold).

Temporary abstractions for specific short-term purposes (e.g., firefighting or dewatering for construction).

The regulation ensures that while essential environmental protections remain in place, unnecessary bureaucracy is avoided for minor or low-impact activities.

LOR will utilise this exemption where necessary to ensure the continuation of site operations. Key exemption requirements will be monitored daily via the discharge record sheet which includes the following stipulations:

Summary Table: Key Permit Avoidance Conditions	
Requirement	**Must Be True to Avoid Abstraction Licence**
Purpose	For engineering/construction works
Duration	< 6 consecutive months
Volume	< 100 m^3/day (or 50 in sensitive areas)
Discharge	To soakaway, or surface water with no intervening use
Environmental	No harm to protected species or conservation sites



Soakaway Location as per Regulation 5

7.3 Port Talbot

Discharge Licence

The reen ditch network of Margam Moors drains towards the Tata Steel site, the lower mother ditch then pump house B and final discharge via the Long Sea Outfall into the Bristol Channel. Water treatment processes are in place on this system to allow for discharged water to meet NRW permitting guidelines.

Agreement has been reached between NRW and TATA to allow LOR to discharge into the ditches that link into the Long Sea Outfall. LOR will be required to undertake weekly monitoring of their discharge to ensure alignment with the TATA environmental Permit from NRW. The proposed treatment train is detailed below to ensure alignment with TATA requirements:

1. **RCW (P5)**: Batch process where solids are removed pre-water treatment in geo bags. The water is stored in containment and then dosed via CO2. This battery-operated unit is programmed for pH and is ideal for applications like wagon washout.

2. **DS4 (P9)**: If the water requires pumping, this option includes a lamella siltbuster system capable of safely treating and dewatering at a rate of 15m³/hr. Water enters the DS4 where CO2 dosage occurs, then passes to the lamella system where solids are filtered out. This process also allows for the potential addition of chemical treatment for solids if required.

3. **PMPU (P10)**: This is the larger option, capable of handling 25m³/hr upwards.

The above options are proposed for high pH scenarios, such as waters from stabilisation works or concrete waters where fresh concrete is subject to pH interaction. However, LOR will evaluate these options as dewatering will be ongoing and may require switching between methods.

A permit to pump MARPT-LOR-XX-XX-PL-R-090016 must be in place before discharge is undertaken and sign off by the site Sustainability Lead that discharge is accepted or further settling is required.

Tata Ditch Network

7.4 BOC & Cable Route

During construction of the HDD all water and drilling fluid will be managed in a closed loop system within the HDD compound.

During open cut trenching water management will align with discharge consents. Ingress into open cut trenching is expected to be minimal. Water quality/discharge will be agreed by LOR and the subcontractor but will likely involve drainage management and enhanced water treatment system such as a silt buster. Any water discharged as a result of this activity will need to be clean and unpolluted.

Regulation 5 exemption will be utilised within the BOC land where possible. Regulation 5 provides that certain low-risk or small-scale activities are exempt from licensing requirements. These exemptions are designed to reduce regulatory burdens where the environmental impact is minimal. Examples include:

Abstractions of small volumes of water (typically below a daily threshold).

Temporary abstractions for specific short-term purposes (e.g., firefighting or dewatering for construction).

The regulation ensures that while essential environmental protections remain in place, unnecessary bureaucracy is avoided for minor or low-impact activities.

LOR will utilise this exemption where necessary to ensure the continuation of site operations. Key exemption requirements will be monitored daily via the discharge record sheet which includes the following stipulations:

Summary Table: Key Permit Avoidance Conditions	
Requirement	**Must Be True to Avoid Abstraction Licence**
Purpose	For engineering/construction works
Duration	< 6 consecutive months
Volume	< 100 m^3/day (or 50 in sensitive areas)
Discharge	To soakaway, or surface water with no intervening use
Environmental	No harm to protected species or conservation sites

A permit to pump MARPT-LOR-XX-XX-PL-R-090016 must be in place before discharge is undertaken and sign off by the site Sustainability Lead that discharge is accepted or further settling is required. A pumping location will be agreed between LOR and the relevant subcontractor to ensure alignment with the regulation 5 requirement.

BOC Ditch Network

8. Monitoring

Daily / Weekly physical checks will be completed in line with the requirements of the permit. For monitoring purposes and consistency, these checks will be completed at the location of the upstream, downstream and discharge point as identified in Activity 1: MARPT-LOR-XX-XX-PL-R-090022
. The checks will include the following:

- pH test
- Total Suspended Solids (at discharge)
- Turbidity (up and down stream)
- Check for visible oil or grease (i.e. 'rainbow' sheen);
- Check that the pumping set up appears to be functioning as designed.
- Check for the build-up of solids; and
- Check the pollution prevention controls are in place.

9. Discharge and Calculations

For the specific details and calculations related to each activity, please refer to the respective permit applications listed below:

- **Activity 1:** MARPT-LOR-XX-XX-PL-R-090022

10. Operational Arrangements

Laing O'Rourke shall operate the Siltbuster units at the designated locations on a daily basis. The operational schedule shall follow the regular work pattern, Monday to Friday, from 07:00 to 17:00. The unit will only be operated at night in the event of consistent heavy downpour causing subsequent flooding of excavations. This will be monitored daily based on weather patterns, and notice will be given for a dedicated night/weekend shift team when required. Provision is made for 24/7 support for Siltbuster operations.