Margam Connection; Margam Substation Extension

Surface Water Management Plan

Prepared by: Laing O'Rourke
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Surface Water Management Plan
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P01	Elliot Hutchings	Matthew Wisdom	Rob Jones	21.02.25	Initial draft for review
P02	Elliot Hutchings	Matthew Wisdom	Robert Jones	12.06.25	Update for inclusion of regulation 5 exemption Abstraction and Impoundment Regulations 2017 and general changes
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Contents

1. Introduction

The purpose of this Surface Water Management Plan (WMP) is to identify Laing O'Rourke's activities that may require water-related consents and to outline control measures to prevent contamination of watercourses, interaction with water infrastructure, or the generation of water effluent (Trade Effluent). This plan also details the management and monitoring procedures in accordance with regulatory guidelines and advice.

Key areas of focus include:

- Dewatering of Excavation(s)
- Surface Water Runoff
- Groundwater Abstraction
- Horizontal Directional Drilling
- Flood Event

For detailed information on controls and procedures related to environmental management, including general pollution control, please refer to Laing O'Rourke's Construction Environmental Management Plan (CEMP) and Environmental Emergency Plan (EEP). Additionally, an Environmental Risk Assessment has been developed in conjunction with these plans, highlighting the key risks associated with the project.

Definitions

- Surface water is any fresh water that flows into wetlands, rivers, streams, estuaries, lakes and canals.
- Fresh water is naturally occurring water that exists above ground and is not salty, thus can be rainwater, a waterbody or watercourse of inland fresh water.
- Ground water is all water below the surface of the ground in the saturation zones.
- Trade effluent, any liquid waste discharged from a premises used by a business, trade or industrial process.

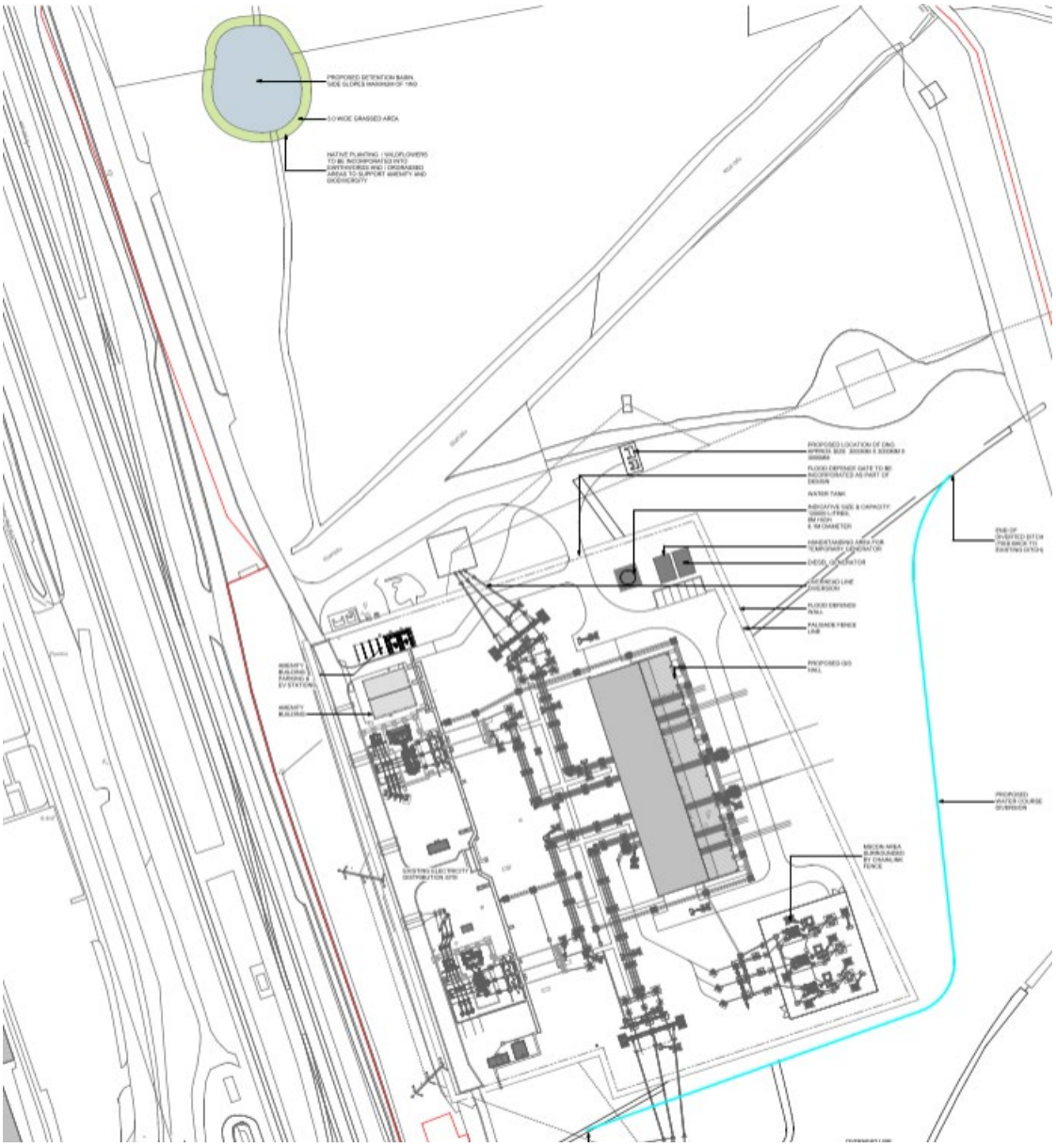
References

- Margam Drainage Report MARPT-BHK-01-XX-RP-C-000001
- LOR Construction Environmental Management Plan – MARPT-LOR-XX-XX-PL-R-090009
- LOR Environmental Emergency Plan - MARPT-LOR-XX-XX-PL-R-090013
- Ciria Control of Water Pollution from Linear Projects

2. Scope of Works

2.1 Project Overview

The contract is a two-stage, collaborative process to develop the project, including design and planning for construction before the main construction phase. The existing Margam 275kV substation will be extended and reconfigured with new GIS, while existing overhead line circuits and SGT HV connections will be modified and diverted to new bays within the GIS. Works will include external soft landscaping and surface water management.



Ref: MARPT-BHK-01-ZZ-DG-A-130023; P05 Margam GIS Hall – Proposed Site Plan

2.2 Key Site activities

During the construction phase, several key elements will influence water management across the site. Based on previous ground investigation studies, groundwater has been identified at depths ranging from 0m to 11m below ground level. Additionally, the site is intersected by several bodies of surface

water, all of which are classified as unnamed sources by Natural Resources Wales, thus falling under Local Authority ownership. The following construction activities are anticipated to have potential impacts on water quality:

- **Open Excavations**: Excavation works may result in the exposure of groundwater and soil, which could lead to sedimentation and contamination of surrounding water sources.
- **Groundwater Abstraction**: Groundwater abstraction for enabling works and throughout the construction period could alter local groundwater levels, potentially affecting nearby water bodies.
- **Concrete and Grouting Works:** Concrete pouring and grouting associated with piling and foundation works could lead to leachate or chemical runoff, potentially impacting nearby watercourses if adequate containment and mitigation measures are not in place.

Effective water management plans will be necessary to mitigate these risks, ensuring compliance with local regulations and the protection of water quality throughout the construction phase.

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:

- **Material Storage**: No materials, machinery, COSHH (Control of Substances Hazardous to Health) items, fuel, or stockpiles should be stored within 10 meters of any surface water body.
- **Silt Mitigation**: Silt mitigation measures, such as silt fencing, coir matting, or wrapped hay bales, must be installed before commencing any construction activities that could impact water quality.
- **Environmental Permit Compliance**: Ensure that the relevant environmental permits are submitted, reviewed, and signed off by the Sustainability Manager before starting any construction work.
- **Emergency and Management Plan Awareness**: All personnel must read and understand the Environmental Emergency Plan and the Water Management Plan, and implement the preventive measures outlined in these documents.

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 Manager	07385 487733	rjones@laingorourker.com
TBC	Construction Manager		
Ali Sehat	Technical Lead	07385 945206	Asehat@laingorourke.com
Gareth Williams	H&S Manager	07917 040708	garwilliams@laingorourke.com
Jordan Riseley	Temporary Works Co	07384 526298	Jriseley@laingorourke.com
TBC	Sustainability Manager		

4. Risk of flooding

There are several watercourses located across the project area, primarily consisting of drainage ditches, which fall under the jurisdiction of the Local Authority and are subject to Ordinary Watercourse Consents. One notable water feature outside of the boundary of the works and not impacted by the planned activity is a named reservoir, which is under the statutory ownership of Dŵr Cymru (Welsh Water).

The project is subject to varying flood risks, as outlined in the image below, which details the flood risk zones within the project's vicinity. It is important to consider these flood risks throughout the planning and construction phases to ensure appropriate measures are in place to manage potential flood events and protect surrounding watercourses, infrastructure, and properties.

A Flood Consequence Assessment (MARPT-BHK-01-XX-RP-C-090003) has been undertaken for the permanent works. This identifies the following risks

Potential Source	Significant flood risk (Y/N)
Rivers or Fluvial flooding	Y
Sea or Tidal flooding	Y
Surface water or pluvial flooding	Y
Groundwater	Y
Sewers	N
Reservoir, Canals, other Artificial Sources	N
Infrastructure failure	Y

AS a result the following control measures as detailed in section 5 will be applied to the project.

5. Flood Risk Management

This section details the flood risk mitigation strategies tied to the construction works, outlining how effective management practices will be implemented to minimise flood risk exposure and prevent any increase in the likelihood of offsite flooding.

Laing O'Rourke (LOR) intends to manage surface water runoff by directing it towards existing watercourses downstream, in accordance with the requirements set by the Lead Local Flood Authority (LLFA) and the necessary Discharge Permits issued by Natural Resources Wales (NRW). Flood risk management will be conducted in line with procedural and physical controls related to rainfall runoff and groundwater abstraction, as described in Section 6 of this plan. The proposed outfalls are outlined in the accompanying plan. Furthermore,

5.1 Flood & Weather Alerts

LOR will subscribe to weather alert systems, such as the Natural Resources Wales Flood Warnings Service and the Met Office weather alerts, to stay informed of weather events that may necessitate action. These alerts, issued by the Met Office's National Severe Weather Warning Service, are categorized by severity (yellow, amber, or red) to indicate the potential impact of severe weather events in the UK.

6. Procedural and Physical Controls

The following outlines the works management, procedural, and physical controls to be implemented for each aspect of water management during the construction phase. These guidelines will form the principles for all water management activities across the project. Procedures and control measures are derived from CIRIA Control of Pollution from Linear Construction. As the project progresses, these procedures and control measures will be adapted based on site-specific conditions and requirements.

6.1 Groundwater Abstraction

Location/Works Management:
Site-wide engineering controls for groundwater management will be implemented, with external parties involved where necessary. Please refer to Appendix B for further clarity on processes.

Procedural Controls:
Groundwater abstraction will be required at various locations on-site for different work activities. Adequate abstraction consents must be in place for formal discharge or for reuse within construction activities.

Physical Controls:
Engineering consultation will be provided for abstraction methods, ensuring all activities comply with consented parameters. Abstraction methods and procedures will be strictly followed according to the established consents.

6.2 Rainwater-Dependent Surface Runoff

Location/Works Management:
Site-wide earthworks may generate rainfall-dependent, uncontaminated runoff, which must be appropriately managed to avoid contamination.

Procedural Controls:
Earthworks should, where reasonably practicable, allow for the passage of such water and prevent mixing with silt-laden runoff. Uncontaminated water should be routed for natural filtration through drainage systems designed to handle this flow.

Physical Controls:
Drainage systems, including gravel beds, terram, or similar filtration methods, will be installed along construction excavations, along with silt traps, sediment barriers, and diversion channels, where practicable, to manage water runoff, prevent erosion, and ensure that uncontaminated water does not pick up sediment or particulate matter, allowing it to be filtered naturally before reaching inland areas or existing drainage.

6.3 Silt Water Generation

Location/Works Management:
Deep excavations and soil removal activities will expose areas to potential erosion and silt runoff. Drains will be constructed to manage water runoff from works to ensure that uncontaminated rainfall does not mix with water containing silt.

Procedural Controls:
Only excavation water will be directly removed from the site, varying based on seasonal rainfall (e.g., higher during winter, lower in summer). Measures will be in place to prevent silt from contaminating the runoff.

Physical Controls:
Physical measures such as silt fencing, filtration bags, and matting will be deployed to manage silt generation and meet the Total Suspended Solids (TSS) standards required by the local authority or regulators. 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 points will be pre-approved by Natural Resources Wales or the Local Authority.

6.4 Concrete Washout

Location/Works Management:
A dedicated washout area will be established for concrete washout. Wherever possible, delivery trucks or pumps will return to their operations base for washdown procedures to reduce the volume of washout on-site.

Procedural Controls:
Concrete wash water will be managed in accordance with Pollution Prevention Guidelines, Section 7. . Further discharge consent shall be sought with sewerage undertaker under a trade effluent consent. In case of non-compliance, appropriate actions will be taken, including obtaining bespoke environmental permits.

Physical Controls:
Designated washout area(s) will be established , all washout shall be conducted within identified location(s. Water should be allowed to evaporate or dry as much as possible. Any remaining solidified material will settle into a slurry, which will be safely contained. Excess water will be dealt with through appropriate discussions with wastewater providers, following the Pollution Prevention Guidelines as outlined in Section 7: Cement, Concrete & Grout or any required consents from Natural Resources Wales and local sewage undertaker. In the event of an emergency, external waste management companies may be used for disposal.

6.5 Drilling and Piling Activity

Location/Works Management:
Certain sections of the project will require auger drilling for foundation placement. Although "wet drilling" is planned, its exact nature will be confirmed, and the potential for drill water use must be managed.

Procedural Controls:
Drilling will be carried out using a closed-loop system to prevent water escape. Water will be used solely for lubrication, and any solids generated from the spoil will be considered for dewatering and filtration. Settlement tanks or Siltbuster systems (or similar) will be employed, and chemical treatment will not be used unless approved.

Physical Controls:
The drilling apparatus and site setup will ensure that no water escapes the system. In case of any water escaping, it will be contained or returned to the drilling operation. Any formal discharge will be subject to approval under Natural Resources Wales or local Sewage undertaker. Pollution Prevention Guidelines as outlined in Section 7: Cement, Concrete & Grout235 may be utilised on site as a means for managing wastewater with suspended solids, including treatment (strictly no chemical usage).

6.6 Drainage

A temporary surface water trench will be constructed on the boundary of the working platform. Water will flow naturally along the trench and into existing watercourses via settling ponds or filtration beds.

The cut-off trench will minimise vegetation removal, soil movement, and compaction on the construction swathe corridor, thereby reducing the impact on local watercourses and protecting drainage patterns.

Any rainwater falling on the footprint of the construction compounds will be directed to the cut-off drains and filtered through a filtration bed before entering existing watercourses or further treatment.

Drainage systems will be inspected by the construction management team and environmental advisor to ensure they function effectively and provide adequate filtration.

6.7 Watercourse Diversions

All waterways that intersect with or are affected by construction activities will be re-routed to maintain the continuous flow of water. Any work on these waterways will be carried out in consultation with Natural Resources Wales or the Local Authorities, as necessary.

These procedural and physical controls are essential to managing water quality and minimizing environmental impacts during the construction phase. Each activity will be carefully monitored, and necessary adjustments will be made to the control measures based on site conditions and evolving project requirements. Through proper planning, monitoring, and compliance with the guidelines outlined above, the project aims to protect local water resources and meet all regulatory requirements.

6.8 Permit to Pump

A permit to pump will be required for any water management activities to ensure compliance with the operational controls of any permits or to ensure compliance with relevant exemptions. Examples of such exemptions include the pumping of excavations or the abstraction of water in quantities not exceeding 20m³ per day. Prior to carrying out any pumping operations, a permit must be issued by an environmental staff member, or appropriate correspondence must be made. The applicant will be briefed on the relevant conditions, and confirmation of their acknowledgment will be required before operations commence. For further details, please refer to Appendix [A]

7. Consent Requirements & Pollution Prevention Guidelines

This section details the status of licensing and consent on the project as of the time of reporting the report.

Reference	Type	Description	Location	Status
Regulation 5	Abstraction Exemption	Temporary abstractions of water for building or engineering works	Ditch 4 / 5	Active
TBC	Abstraction Licence	Removal of ground waters to manage works for piling and foundation works	Margam Sub	*TBC*
WPCC15899	Discharge Licence	Removal of silt laden waters from excavations and working platforms	Margam Sub	*Submitted to NRW*
N/A	Flood Risk Activity Permit	Due to the location and nature of the works NRW have confirmed a flood risk activity permit is not required	Margam Sub	-
RPS 261	Discharge	Removal of surface waters from excavations	Site wide	Active
PPG6	Guidelines	Section 2: Drainage	Site wide	-
PPG6	Guidelines	Section 3: Excavations	Site wide	-
PPG6	Guidelines	Section 7:Cement, Concrete & Grout	Site wide	-

8. Monitoring

The Sustainability Manager or their appointed deputy will oversee and ensure compliance with this plan through regular site inspections and monitoring. The following procedures outline the responsibilities and actions required to maintain environmental integrity and manage water quality during the construction phase:

8.1 Site Inspections and Monitoring

- Regular Site Inspections:
  The Sustainability Manager will conduct routine site inspections to ensure compliance with water management procedures and the effectiveness of mitigation measures. These inspections will be carried out at regular intervals and in response to specific activities or concerns.
- Temporary Drainage and Sedimentation Features:
  Site supervision will visually inspect temporary drainage systems and sedimentation control

measures daily to ensure their continued functionality. Any abnormalities or issues identified during these inspections will be promptly reported to the Construction Management for immediate attention.

- Water Quality Monitoring:
  Water quality will be continuously monitored to detect any negative effects of construction activities on surrounding watercourses. Monitoring results will serve two purposes:
  - Early Warning: To alert the Sustainability Manager if the construction works are causing harmful changes in water quality.
  - Effectiveness of Mitigation: To assess the effectiveness of the water management procedures and controls implemented on-site.

8.1.1 Monitoring

Monitoring shall follow the principles outlined below, and where additional monitoring is required, these shall be incorporated into the matrix:

- Suspended solids: Visual checks or formal turbidity testing
- pH levels: Litmus tests shall be conducted as needed.
- Visual checks: Signs of oils and grease to identify hydrocarbons along with olfactory (smell)

Where additional consent has been sought, further monitoring shall be carried out in accordance with the conditions set out in the permitted conditions.

8.2 Staff Awareness and Reporting

- Site Worker Induction: All site workers will undergo an induction program that includes clear instructions on:
  - How to report environmental incidents, including spillages or abnormal situations.
  - How to respond appropriately in the event of an emergency or abnormal situation involving the water environment.
- Encouraging Reporting of Potential Issues: All staff members will be encouraged to actively observe and report potential pollution sources or hydrological concerns. These observations should be reported immediately to the Construction Management Team and the Sustainability Manager.

8.3 Incident Management and Investigation

- Abnormal Situations or Public Complaints: If monitoring identifies any abnormal conditions that exceed the pre-agreed thresholds, or if a complaint from the public is received, or if polluted water is observed that cannot be traced to an external source, the following actions will be taken:
  - Immediate Investigation: The source of the pollution will be investigated promptly to identify whether it is linked to construction activities.
  - Corrective Actions: If the pollution source is determined to be related to construction activities, immediate measures will be taken to halt the activity and mitigate the release of pollutants. The activity will not resume until mitigation is successfully implemented.
- Root Cause Analysis: A detailed investigation will be conducted to identify the root cause of any pollution incident. The investigation will assess all aspects of the construction activities, environmental conditions, and water management controls to pinpoint the specific issue.
  Based on the findings, corrective actions and preventative measures will be implemented to ensure that similar incidents do not occur in the future.

8.4 Corrective Measures and Mitigation

- Immediate Mitigation: If construction activities are identified as the source of pollution, measures will be put in place immediately to prevent further pollution, including ceasing the activity if necessary.
  Examples of immediate actions could include:
  - Installing or improving sediment control measures (e.g., silt fencing, sedimentation ponds).
  - Temporarily halting activities that may contribute to water contamination until corrective actions are implemented.

- Long-term Preventative Measures: Following a root cause investigation, any necessary changes to the environmental management procedures or water quality controls will be implemented to prevent recurrence of the pollution event. These may include:
    - Modifying construction methods.
    - Updating environmental controls or monitoring systems.
    - Providing additional staff training or briefings.

This monitoring and incident management framework ensures that the Sustainability Manager and the construction team maintain a proactive approach to managing water quality throughout the project.

Appendix A

Contract No.		**Form Ref No.**		**Date**	
Contract Name					
Contractor					
Persons responsible for communicating content					

Where are the pumping operations being carried out and why?	
Where is the water discharging to?	
Who is responsible to ensure drip trays, spill kits etc are in place?	
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?	
Please reference permit of above	

No.	Permit stage	Details	Name & Signature	Date
1.	**Issue**	Precautions identified. Consents understood. Personnel inducted.	LOR	
2.	**Receipt**	Acceptant of responsibilities for work area covered by this permit and wider consent	SubContractor	
3.	**Completion/ Cancellation**	Works complete in line with permit and consent / Works no longer required	LOR	

Appendix B – Ground Water Management

This section will be updated once the final Ground Investigation reports are received and after consultation with specialist contractors.