



Document Reference:

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**WYLFA CABLE PACKAGE – WATER
MANAGEMENT PLAN**

Business Function: Health & Safety

Document Owner: Sector SHE Manager

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1.0 INTRODUCTION

General Project Description

The project is based adjacent to the existing Wylfa Power Station and is undertaking works on behalf of National Grid to enable the Horizon Nuclear Power station to start their enabling works. Costain have taken over from Carillion with approximately 40% of the work left to complete. The Project is currently in the construction phase.

Governance

The Site Construction Manager & Project SHE Manager shall ensure that the contents of this Water Management Plan (WMP) are communicated to all staff working on the contract who are affected by its contents. This includes any interface with the Client, Site Operators, Subcontractors, or any others who may be affected by Costain's work on the Wylfa site. A controlled copy of the WMP is held by Doc Control (D2). An un-controlled copy is held by the SHE department on site. The SHE Team will ensure that the site copy is kept up to date and re-issued as appropriate. Each copyholder is responsible for ensuring that they are in possession of the current issue. This plan and any amendments are made available and communicated to all staff and Sub-Contractors under Costain's control.

Purpose

The purpose of this document is to identify arrangements and methods for control and removal of surface water, ground water and concrete wash water arising during the construction phase of the works. These waters if not disposed of correctly, have the potential to cause damage to the works in terms of delay, disruption and unnecessary rectification measures. As important, if not disposed correctly, these waters also have the potential to contaminate ground and watercourses near to the site. The management of all water related matters throughout the construction phase of the project has been formally assessed via a project-specific Environmental Aspects and Impacts Register.

The successful implementation of this WMP will help protect the works from water related hazards and ensure that contamination of existing watercourses is prevented via provision of temporary protection measures. The purpose of this plan is therefore to describe all control measures that will be implemented for each water related activity, to ensure all identified risks are appropriately mitigated.

Abbreviations

CBS	Cement Bound Sand
D2	Document Control
HASEMP	Health, Safety and Environmental Management Plan
NRW	Natural Resources Wales
RAMS	Risk Assessment Method Statement
SHE	Safety, Health and Environment
WMP	Water Management Plan

2.0 RELATED DOCUMENTS

Document Number	Document
[1]	Environmental Impacts & Aspects Register
[2]	HASEMP
[3] HNP-S3-EWM-PRC-00007	HORIZON – Discharge of Uncontaminated Water to Land
[4]	Incident & Emergency Response Plan
[5]	Permit to Pump
[6]	Water Discharge RAMS
[7] 856859	Wylfa Diversions – Ecological Constraints Walkover

3.0 SAFETY, HEALTH AND ENVIRONMENT

SHE is of the highest importance. All surface water and groundwater management works are considered potentially dangerous activities, requiring rigorous health and safety processes to be in place always. Specific risk assessments shall be required to be developed by all sub-contractors prior to the onset of the works.

It is important that all surface water management works are flexible and adaptable to take account of changing conditions, particularly in relation to weather, ground conditions and any protected species that may be encountered during the works. All dewatering activities will be managed through Costain's Permit to Work System on-site.

This document will be referenced in the project HASEMP, RAMS & the contents communicated to the workforce through tool box talks.

4.0 CONTRACT ESTABLISHMENT

Compound Set-up

4.1.1 Surface Water Run-off – Ground Water

4.1.2 Surface Water Run-off – Roof Water

4.1.3 Mains Water Supply

The mains water supply for the compound will be made by connecting into the existing potable water supply associated with the operational site. Monthly water usage is calculated using the water delivery notes given by the water supplier. This data will be used to formulate water reduction strategies which will be implemented throughout the project lifespan.

4.1.4 Management of Effluent

Foul waste from the site cabins will be removed from site using septic tank/tanker. Although we originally planned for a mains sewer connection, it was not possible.

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5.0 MAIN WORKS

The main construction works on site pose several risks for consideration regarding management, control and protection of water. These will be discussed in detail in the following sections and cover; concreting works and washout activities, dewatering of large excavations, treatment of dewater and concrete wash water, discharge of dewater and concrete wash water and general surface water control.

Method of Works

The following general philosophy applies to the proposed Water Management Procedures, to ensure that;

- Any consents relating to surface water discharge that are required are obtained;
- Compliance with Horizons Document 'Discharge of Uncontaminated Water to Land (HNP-S3-EWM-PRC-00007)
- Regular inspection of the ground surface conditions, to assess for any issues which may result in water management problems e.g. mud, are routinely conducted;
- Operations are carried out in accordance with the Environmental Protection Act 1990;
- Watercourses are not polluted by the construction activities;
- Inspections and monitoring of the water courses and standing areas of water to check for any sign of pollution are conducted regularly
- A periodic review of environmental performance is undertaken to allow for the system to be improved

Potential Sources of Water Management Issues

The prime sources of surface water issues on site are;

- Rainwater, Snow and Ice
- Groundwater from existing land drainage
- Pumping out of excavations
- Pumping out of excavations containing CBS (high pH water)
- Flooding
- Concrete Washout
- Watercourses/ditches near to the project footprint

Water Management Techniques

Facilities available to manage water will include;

- Pumps 2, 4 and 6 inch (submersible and static)
- Road sweeper to keep areas clean of potential material for silt contamination
- Silt fencing
- Silt socks and filter bags
- Straw bales
- Watercourse sampling and analysis

- Spill control kits – See environmental emergency and incident control procedure

NOTE: Siltbuster treated water cannot be discharged to Horizon land due to constraints on the discharge conditions set by NRW due to pH11 requiring chemicals.

Existing Site Conditions

Parts of the Project particularly the Tregale area are within low to medium surface water flood risk zones and West of Tyddyn-Goronwy are within low-to high surface water flood risk zones.

Dewatering of Excavations

At various times during the construction programme, there will be a need to leave open several large ground excavations to remove existing cable and to facilitate installation of new cable and tie-in to existing.

There is also a requirement to manage current standing water created by open excavations and depressions in the ground.

Permit to Discharge

Horizon has agreed with NRW that we are able to discharge uncontaminated water to land. To enable us to do this we must follow their agreed procedure [3]. A Water Discharge RAMS has also been written in compliance with Horizons procedure. This will act as our control over any uncontaminated water discharged to land. A Permit to Pump [5] has been written in parallel with the Water Discharge RAMS [6] and will be used to ensure controls are in place prior to pumping of any water. Both the RAMS and the Permit to Pump will be briefed to the responsible people and operatives in charge of the pumping operation. Monitoring of the discharge is a requirement of the RAMS and is recorded on the Permit to Pump.

Discharge Locations

All discharge locations shall be identified and agreed with Horizon when we are working on Horizon land. For discharge on non-HNP land, seek agreement from project environmental team. Discharge locations must be identified on the Permit to Pump and monitored to ensure percolation of clean uncontaminated water.

Treatment of Discharge

The main consideration for discharge treatment of dewater is the reduction in pH to a more acceptable level pH6-pH9 and visual/olfactory inspection of discharge for any pollutants.

5.1.1 Uncontaminated Water

Uncontaminated water which does not require treatment will be discharged without treatment.

5.1.2 Contaminated Water (High pH)

CBS used in excavations on site has resulted in excavations/areas on site containing water with high alkalinity levels in excess of pH 11.

As we are unable to process the alkaline water through a Siltbuster system due to discharge constraints, and local sewers do not have the capacity, tankering remains the main option for water removal.

It will also be necessary to discharge accumulated/captured concrete wash water through the treatment system at various times during the construction programme. Water which has come into direct contact with recently exposed/cut concrete/CBS elevates in pH and adopts an alkaline level of circa 11-12 which must be neutralised to below pH 9 prior to discharge.

In the event of low contaminated water volume levels then it may be easier to remove contaminated water via a tanker to a suitably licenced offsite disposal facility.

Treatment System Specification

The DS4 incorporates the following stages of treatment:

- Water is pumped into the Siltbuster DS4 where a digital pH probe and controller monitor's the incoming pH level. When an alkaline value is detected, the system automatically doses vapour Carbon Dioxide (CO₂) to neutralise the waters to pH7 or pH8.
- The now near neutral pH waters are then free to gravity drain through the interconnecting pipework to the discharge point.
- A submersible pump will be placed on a raft within a constructed excavation, ensuring a continuous flow of water will pass through the system. A filter will need to be placed onto the inlet hose to prevent ingress of particles damaging the mixer blades.
- A warning system will be added to the DS4 system which will alert the operator that the pH level is outside the discharge specification.
- The DS4 is not designed to reduce suspended solids loading.

Contaminative sources

Ground investigation data has confirmed that there are areas of the project which are contaminated. Known large scale contamination is present in Field 9a, 21 and 23. Fields 9 and 23 are contaminated with TPH concentrations and Field 21 is contaminated with asbestos containing materials. It is likely that other areas contain contamination and there is an ongoing programme to sample and analyse excavated material to ensure any contamination is identified.

The most significant source of contamination to surface waters is suspended solids from dewatering activities and high pH due to the use of CBS in excavations. However areas of known and unknown contamination have the potential to cause surface water pollution and hence the visual and olfactory inspections of all discharged water.

Another source is the accidental release of hydrocarbons e.g. diesel, however there will be limited sources within the working area. In the event of any accidental spillage or discharge of a pollutant, the Incident & Emergency Response Plan [3] will be initiated.

6.0 MONITORING

The treatment system based on the following discharge criteria:

- pH Level: 6 – 9

A flashing beacon will be fitted to the treatment system which will activate if the waters leaving the outlet weir of the Siltbuster DS4 System are not within the discharge limits (pre-set parameters on the control panel).

The system has the capability of being able to automatically switch off the feed pump if the waters are registered to be outside the discharge criteria via a no volt contact switch.

The responsible person as identified in the RAMs and Permit to Pump will ensure that daily visual inspections of potentially affected areas are undertaken daily. Observation of any of the following should be recorded and investigated;

- Visual discolouration
- Odour
- Oily sheen
- Scum or Foam on the surface of the water
- Litter

- Failure or poor condition of any pollution control measures

7.0 GENERAL WATER MANAGEMENT MITIGATION MEASURES

The following measures consider the information detailed in the sections above.

- All dewatering operations will be required to be operated under a Costain RAMS and Permit to Work.
- Where feasible, concrete protection socks will be placed over discharge chutes and concrete washout operations will be undertaken off-site at the applicable concrete company's premises.
- Where this is not possible, cleaning of concrete plant and equipment shall only be carried out at agreed locations where resulting effluent cannot flow into watercourses and drains.
- Wherever possible the use of concrete is to be minimised.
- General operational control measures will ensure no pollution occurs in the vicinity of watercourses.
- All fuels, oils and chemicals shall be stored in containers specifically manufactured for the purpose, to prevent contamination in the event of spillage or damage. Tank capacity shall be checked before delivery to prevent overfilling.
- Fuel tanks or bowsters must comply with the specifications set out in the regulations. All ancillary equipment (hoses, pistols, valves etc.) will be kept within secondary containment. Tanks and bowsters must be lockable and kept locked when not in use.
- Requirement to use Enviropad's or Plant Nappies over traditional drip trays.
- Fuel stores will be equipped with bunds and Enviropad's or Plant Nappies.
- Diesel generators must be equipped with Enviropad's or Plant Nappies.
- The contents of storage containers shall be clearly marked to prevent accidental cross contamination.
- Arising's from earthworks shall only be stored on site in areas designated for the purpose and should be regularly inspected to ensure that no surrounding ground or watercourse is being contaminated by runoff or seepage.
- A site plan will show refuelling and storage arrangements for the project and must form part of the site induction. A refuelling procedure for the site will also be developed and delivered to all contractors during inductions and toolbox talk training.

Storage of Excavated Material

Excavated material that is stockpiled on site for further use should be managed to prevent silty run-off or losses due to wind. When stockpiling material, the following control measures should be considered:

- Always segregate different grades of soil, i.e. subsoil from topsoil.
- Where feasible locate all stockpiles at least 10 meters from watercourses.
- Temporary stockpiles should be no more than 2m high to prevent damage to soil structure.
- Seeding with suitable grass species may help prevent slippage and erosion from wind or rain. Ensure adequate weed control.
- A silt fence may be constructed at the base of the pile using a suitable geotextile.
- Direct surface water away from the stockpiles to prevent erosion at the base.

Dust and Mud Prevention

The main entrance / exit utilised by operational vehicles should be regularly monitored to ensure that excessive mud does not affect the adjoining highway.

- A sweeper will be employed when ground conditions are unsatisfactory and may lead to mud on the road or dust emissions.
- Dust control measures will be employed when using cutting equipment.
- Wheel cleaning facilities may be required.

8.0 EMERGENCY RESPONSE

In the event of a Pollution Incident, the Safety, Health and Environmental (SHE) Incident and Emergency Response Plan [1] will be initiated.

All project staff will be briefed and be familiar with the emergency procedures, which will stipulate the following significant actions:

- Stop work immediately
- Isolate source if possible to prevent further contamination
- Use spill kits and other materials to limit impact
- Notify Costain supervisor for further instruction and escalation to National Grid and Horizon.