

# *Construction Environmental Management Plan (CEMP)*

## *Wetland Development at Tremeirchion*

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## Revision History

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V1 28/08/2024	Shared for comment	Caulmert
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## Purpose

The purpose of the Construction Environmental Management Plan (CEMP) is to provide a framework for environmental management during the construction phase (including site preparation) and to provide mitigation against potentially adverse impacts on the environment including local residents. The CEMP should be read in conjunction with the scheme Contract Management Plan (CMP). The CEMP and CMP are both live documents and will be updated by the construction contractor throughout the duration of the works as required.



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## 1.0 Introduction

Dŵr Cymru Welsh Water (DCWW) are seeking to find alternative delivery of National Environment Programme (NEP) obligations at the Tremeirchion Wastewater Treatment Works (WwTW) in the Clwyd catchment, Denbighshire.

Working with the Wye & Usk Foundation (WUF), DCWW aim to deliver solutions by implementing a Sustainable Management of Natural Resources (SMNR) process, delivering a nature-based solution (NBS) in the form of an Integrated Constructed Treatment Wetland (ICTW) at the WwTW to achieve a P consent standard of 2mg/l.

This document provides sufficient detail for construction works to commence provided the proposed control measures as stated in this CEMP are in place. It also details roles and responsibilities of those involved in the project and refers to all temporary and permanent works.

The CEMP outlines the key environmental risks relating to the project, and identifies how the project will avoid, minimise and mitigate these environmental risks. The implementation of the CEMP will be monitored by the Quality Environment Safety team, and the environmental advisor supported by a suitably qualified ecologist as deemed appropriate.

An up-to-date copy of the CEMP will be available on-site during construction and the intention is that this is a dynamic document that will be regularly reviewed and revised when deemed necessary.

## 2.0. Project Description

The proposed wetland site is located in Tremeirchion, Denbighshire (NGR SJ 06871 72630). The site measures 1.1 ha and is currently an open field of improved grassland. The site is directly adjacent to the existing Tremeirchion WwTW, discharging to the Nant Penisa Waun (Figure 1).

The proposed ICTW scheme will consist of a gravity-fed system with two underground septic tanks for primary treatment, followed by a sequence of three open wetland cells planted with dense emergent vegetation for secondary and tertiary treatment before discharging to the Nant Penisa Waun, which flows parallel to the site. The wetland cells are shallow, densely vegetated, free surface flow systems which are interconnected by 225-mm UPVC pipes and fitted with an adjustable arm at the outlet for regulating water level within each cell. A 200mm water depth will be maintained in the cells. See Figure 2 for site layout.



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Figure 1. Location plan

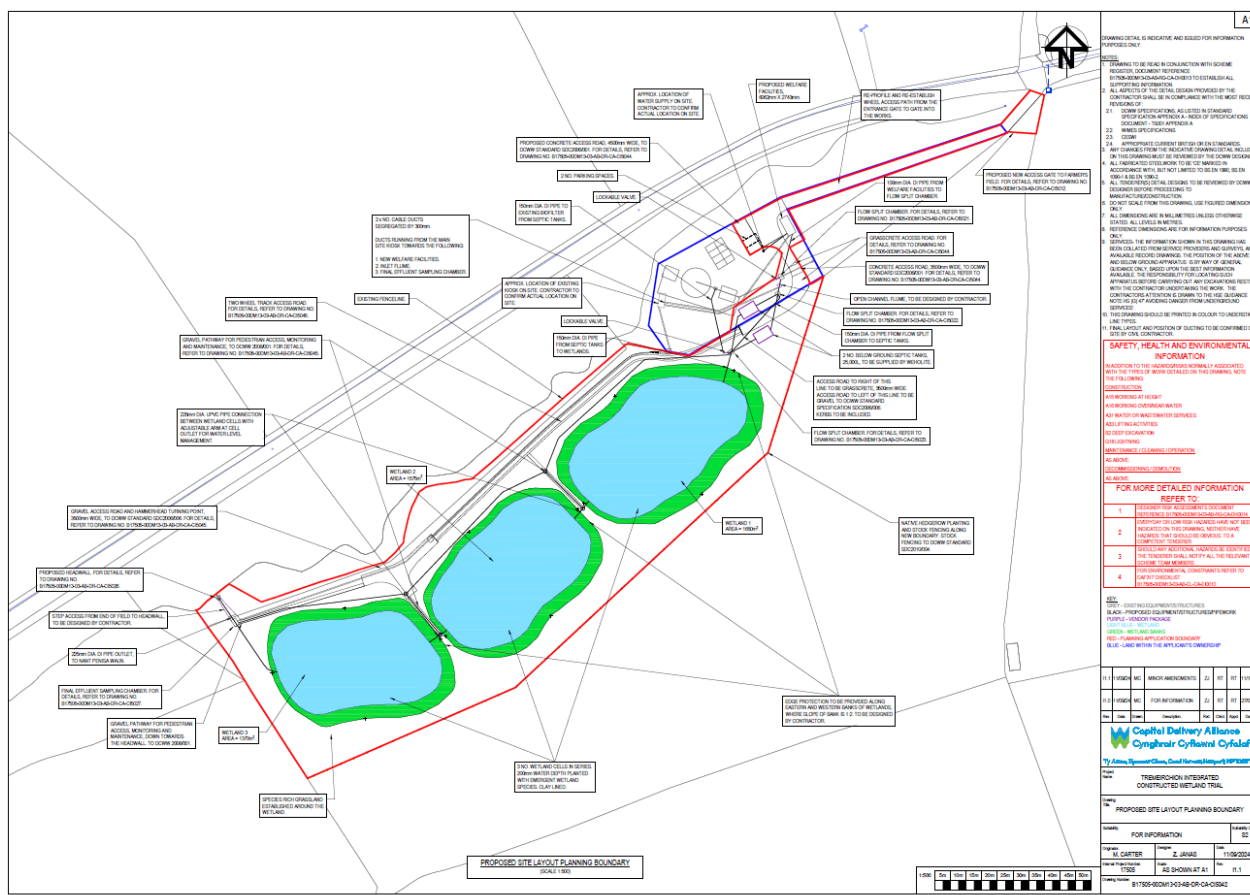


Figure 2. Site Plan

## 2.1. Construction Activities

Construction activities associated with the works include:

- Excavation and installation of two 25,000L below ground septic tanks.
- Excavation of three cells with an average excavation depth of 800mm. The wetland profile will be lined with clay sourced on site via the excavation of the wetland cells. The clay layer will be puddled to make it impervious.
- Interconnecting 225mm UPV pipework between wetland cells with adjustable arm for water level control
- Extension of existing vehicular access for septic tank maintenance (Grasscrete)
- Gravel pathway for pedestrian access for monitoring and maintenance (no-dig construction method).
- Installation of low-impact headwall as final outfall at Nat Penisa Waun watercourse
- The work will be undertaken in 2025 with specific timescales to be agreed between DCWW and their approved contractors. Work will take place when ground conditions are suitable.
- The construction period will take approximately 9 months.

## 2.2 Working Hours

The following working hours will be adopted for construction.

Time outside of these hours may be spent onsite preparing and surveying.

Monday-Friday 8am – 5pm

No work will take place before sunrise or after sunset.

## 2.3 Employment Number and Type

The following table outlines labour resources to be adopted on site.

Personnel Designation	Quantity
Clerk of Works (CoW)	1
Project Manager and H&S	1
Site Manager	1
Plant operator / ground worker	10

## 2.4 Plant and Equipment

The following plant and equipment is an indication of what will be used for the construction of the project.

Construction equipment	Approx. quantity
21t excavator	3
9t dumper	2
Water pump 2 or 4"	2
Clay compactor	2
Tractor with trailer	1





### 3.0 General Environmental Measures during Construction

DCWW / Eric Wright Water Ltd. will have full responsibility for maintaining Health and Safety throughout the construction phase. A risk assessment and method statement (RAMS) will be produced and will minimize the risks by:

- Identifying the health and safety impacts that will be anticipated.
- Assess the risks from these impacts.
- Identify the control measures to be taken.
- There will be no access to construction areas by the general public. The project site will be secured to avoid unauthorized access.
- A staff member will be tasked to engage with the local community and explain the objectives of the work, before and during construction.
- The following 'good practice' will be implemented:
  - Provision of Personal Protective Equipment (PPE) including footwear, protective clothing and goggles when required.
  - Designated welfare facility.
  - Designated first aid provision.

### 4.0 Tree Survey and Plan

#### 4.1. Brief

An Arboricultural Impact Assessment (AIA) report was prepared for the purpose of providing an assessment of trees growing within and around the area proposed for the 'Tremerechion Integrated Constructed Wetland Trial' and has been prepared in accordance with the guidance specified in BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations.

The site was visited on the 14th September and 5th October 2024 for the tree assessment and tree plotting exercise.

#### 4.2 Tree Constraints Plan

A Tree Constraints Plan was prepared for the AIA (figure 3). The plan identifies trees considered as a constraint to development and which should be retained as either individual trees, groups or woodlands. The associated Tree Constraints Plan provides an illustrative guide to the above and below ground constraints in terms of crown spread and root protection area for the trees on site.

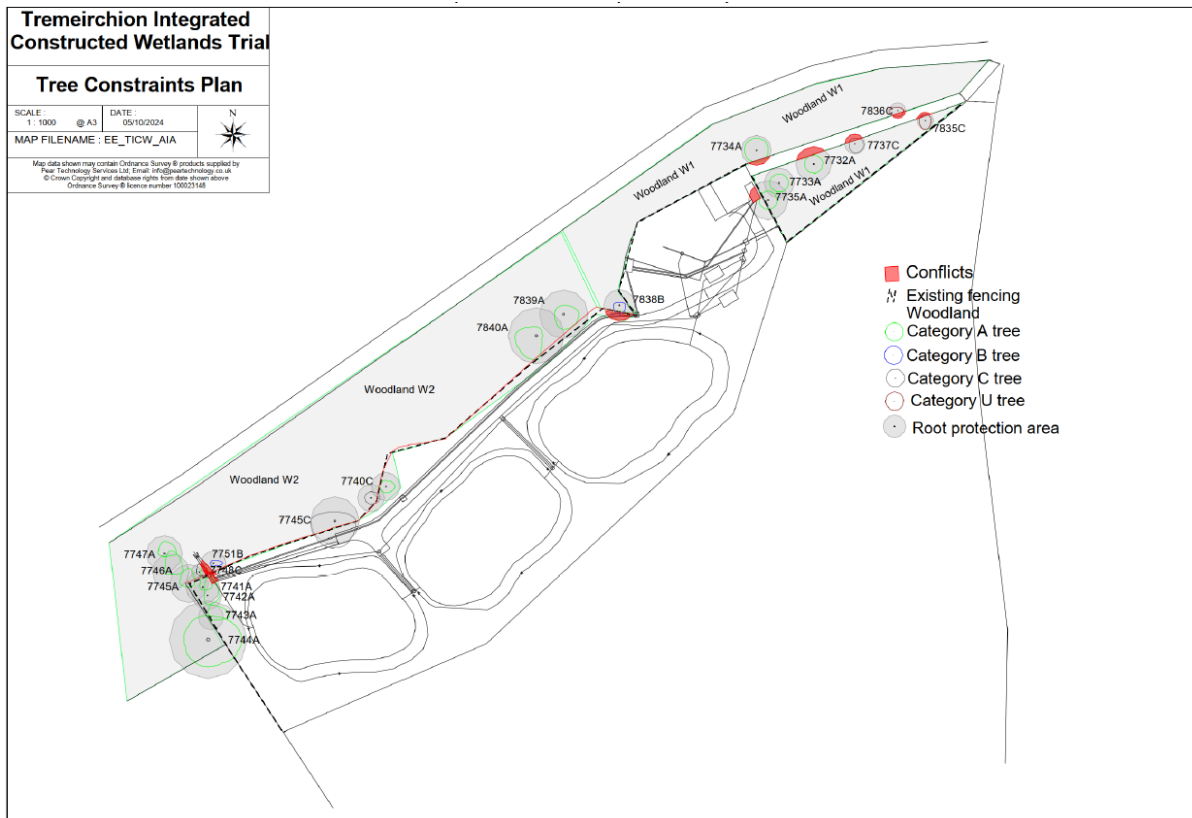


Figure 3. Tree Constraints Plan for the Tremeirchion wetland site

### 4.3 Impacts to trees

All identified trees, as shown in Figure 3, can be successfully retained with the percentage root protection area (RPA) affected being below the threshold whereby the tree would need to be removed. In all cases, the RPA can be offset into the adjacent woodland. There are cases where poor quality trees, such as Tree 7745, have ash die back and although the removal is not required due to development impact, it may be beneficial to remove these trees.

#### 4.3.1 Details of impact

##### i) Re-profile and re-establish wheel access path from the entrance gate to gate into works

Improvements to the existing entrance are unlikely to have an impact on trees provided that excavations are not required. Tree 7732 is located 3m south of track, however no-dig construction methods will be used to ensure minimal impact.

In terms of arboricultural impacts, provided that the proposed re-profiling does not go to a depth below that of the existing stone surface and follows a no-dig type construction, there would be no foreseeable impacts beyond those already experienced.

##### ii) Proposed welfare facilities

The proposed welfare facilities sit close to the woodland edge and may impact on trees, particularly tree 7735. The impact caused by the welfare facility is 8.2% and is not thought to be considerable (Sect. 3.1 in the report).

iii) *Gravel pathway for pedestrian access*

The proposed gravel pathway affects trees 7745 and 7738 only. Tree 7745 is a category U tree that should not be seen as a constraint and which could be removed prior to any development.

Tree 7838 is a mature larch that can be retained without any alteration to the layout.

iv) *Gravel access road and hammerhead turning point*

Large diameter oak trees follow the woodland edge from the south-west corner of the compound for approximately 75m south-west.

The largest trees in this group have been measured and used to provide the woodland edge shown in the Tree Constraints Plan.

With the exception of tree 7745, the proposed gravel access road does not impact on trees in this area.

Tree 7745 is a category C tree which has the mid-stages of the disease ash dieback. With this in mind, the tree should not be seen as a constraint and removed prior to any development.

An early mature pine tree leans into the site and is plotted as tree 7736. Tree 7736 is likely to obstruct construction and should be removed if the development uses the layout shown in Appendix 6.

v) *Proposed headwall*

The proposed headwall will affect woodland W2 and involve the removal of smaller diameter trees together with two category U trees.

Low impact methods will be used including a micro digger and tracker plates. There is one mature oak tree at the entrance to the wetlands. This will be retained. There is no permanent construction work undertaken in the canopy area. There will be protective measures taken to protect this tree.

#### 4.4. Tree Protection Plan

A Tree Protection Plan (TPP) is shown in figure 4 below.

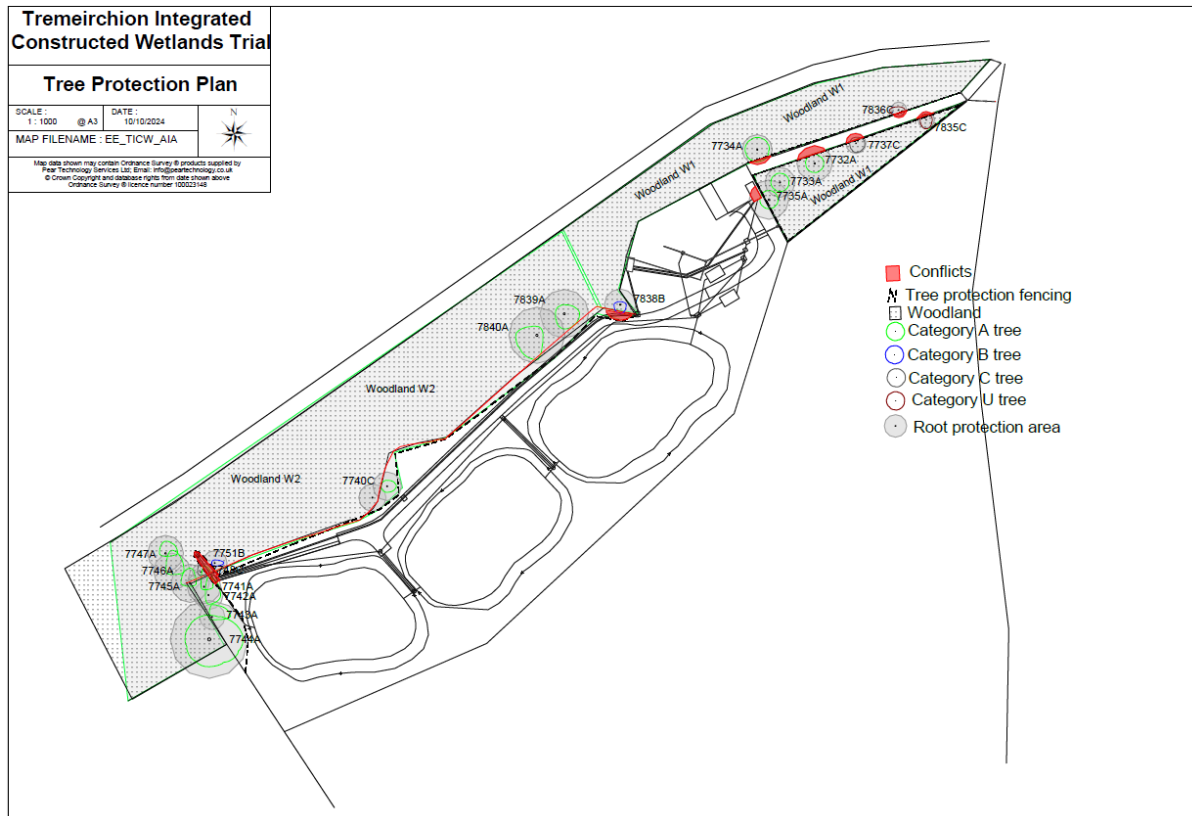


Figure 4. Tree Protection Plan for the Tremeirchion wetland site

#### 4.5. Tree planting

New tree and hedge planting will be undertaken within the site to provide net biodiversity benefit in addition to the wetlands.

Proposed planting specification and details can be found in the Landscape Management Plan.

#### 5.0 Project Roles, Responsibilities and Contacts

POSITION	RESPONSIBILITIES	LINE MANAGER	NAME	CONTACT DETAILS
<b>Framework Manager</b>	Overall			<b>Peter Gale</b>
<b>Project Manager</b>	Construction Phase planning and advice.			<b>Mark Rimmer</b>
<b>Civil Manager</b>	Day to day organisation of work force. H&S onsite. Surveying Landowner liaison			<b>Reece Duffy</b>



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<b>Site Manager</b>	Team leadership. Risk assessments onsite H&S implementation onsite Organisation of materials and plant onsite Environmental considerations			<b>TBC</b>
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## 6.0 Training, Awareness and Competency

Environmental training, procedure and induction will be reviewed by the Civil Manager before it is implemented to all staff and visitors. The training will be reviewed by the site manager when changes in procedures are planned in coordination with head of operations.

### 6.1 Induction

All project personnel, consultants and visitors will receive inductions on Tremeirchion Wetland environmental obligations prior to commencing on site.

All environmental inductions will be conducted as part of the site risk assessment. The Project Induction shall be reviewed in the event of a substantial change in work activity and/or environmental procedure, to ensure it reflects current working practice.

Project Induction will fall into the following three main categories:

1. General Project Induction
2. Site Induction
3. Visitor Induction

#### General Project Induction

A General Project Induction will be developed to induct personnel into the broad aspects of the project. The environmental component of this induction will reinforce that it is the responsibility of all personnel to adhere to the environmental requirements. The Induction will cover the following environmental components with respect to the project as a whole:

- Local Community Issues
- Role of DCWW
- Project contact details
- Hours of Operation
- Key environmental issues including; Soil and Water Management; Noise, Traffic and Access, INNS and native Flora and Fauna.

## Site Induction

Site Inductions will highlight the specific environmental requirements and activities being undertaken at the worksite. The environmental component of this induction will cover:

- The scope and requirements of the specific Construction Methods
- Application of regulations, licences and permits
- Hours of operation
- Noise and vibration limits/ mitigation measures necessary
- Soil and Water control measures to be implemented during works
- Local sensitive community and fishery issues
- Traffic/access, location of entry/exit points, traffic routes, parking
- Identification of Invasive and Non-invasive species on site

A record of training attendance will be recorded by the Site Manager and will be kept on site in the site risk assessment.

## Visitor Induction

Special short inductions may be provided for visitors and personnel working short-term on the project where there is minimal potential for environmental harm. All visitors must undergo a visitor's induction. Subcontractors are responsible for the actions and conduct of their visitors and shall ensure that visitors obey all environmental requirements of the site. All visitors shall be accompanied at all times. Under no circumstances shall a visitor undertake any physical work on site.

## 6.2 In-house Competency Training

The Civils Manager will coordinate toolbox talks, environmental training, maintain training records and assess the effectiveness of the training.

The Site Manager shall ensure that all personnel with environmental responsibility on the project are competent to perform their duties.

Toolbox talks will be conducted for employees regularly to maintain and improve environmental issues awareness.

Training shall be provided to all staff that will include training in the areas of:

- Incident Notification, Investigation and Reporting
  - Emergency Response
  - Environmental Monitoring
  - Environmental Auditing
-



## 7.0 Environment and Risk Management

SEDIMENT CONTROL			
<b>Objective(s)</b>	To ensure that the effects of sedimentation on the environment and biological communities are minimised.		
<b>Management Strategy</b>	<b>When and if necessary</b> ensure that sumps and catch pits are pumped out across surrounding grassland well away from work site		
		<b>Responsibility (Role)</b>	<b>Timing</b>
<b>Control(s)</b>	<p>Sump/catch pit area will be minimised and clearly demarcated.</p> <p>Sump will be of suitable size to cope with sedimentation expected.</p> <p>Vehicle movements will be restricted to the defined roads/tracks.</p> <p>Two water pumps will be onsite, one as back up.</p> <p>Where runoff from the site is required, it will be via the longest flow path possible to ensure maximise sediment retention. Flows to undisturbed areas will be prioritised.</p> <p>Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff).</p>	Site Manager	Daily
<b>Performance Indicator(s)</b>	No evidence of significant sediment deposition outside the works area. No evidence of significant gullies or other instances of run-off erosion.		
<b>Monitoring</b>	<p>Daily inspection of work site to occur.</p> <p>Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff). Review will include removal of accumulated sediments as required.</p>	Site Manager	Throughout project
<b>Reporting</b>	<p>Incident report for non-conformance of sediment control</p> <p>Logging of sediment control structures - location and condition during weekly site inspection</p>	Site Manager	



SEDIMENT CONTROL			
<b>Corrective Action(s)</b>	Investigate cause of sediment control failure	Site Manager	
	Review flow path and determine most appropriate controls are in place, additional controls which can be place in-stream and/or changes that can be made to flow path		
	Review similar controls on-site (even though these may not have failed) for similarities		

OIL AND OTHER NOXIOUS SUBSTANCES			
<b>Objective(s)</b>	To minimise the potential for spills of oils and fuel to as low as reasonably practicable.		
<b>Management Strategy</b>	Reduce quantity of fuel and oil stored to that required, implement appropriate controls and provide appropriate training and resources for a spill response.		
		<b>Responsibility</b>	<b>Timing</b>
<b>Control(s)</b>	<p>All fuels and oil to be stored in an appropriate bund that is capable of holding 110% of a spill from the largest container, or 10% of total volume of stored liquids, whichever is greater.</p> <p>Refuelling of vehicles/equipment will be undertaken on land (not over water), unless the task is not possible.</p> <p>To reduce the impact of a spill, the lowest volume of fuel and oil required will be stored in proximity to the riparian environment.</p> <p>A copy of the current fuel and oil COSHH will be kept in the risk assessment on site.</p> <p>All equipment will be regularly serviced to reduce emissions and reduce the chance of oil leaks on site.</p> <p>Only qualified personnel are to carry out services on plant, equipment.</p> <p>Training / awareness to be included in site induction (including all staff, contractors, subbies etc.).</p> <p>Appropriate volume and type of spill response materials will be available at each work site</p> <p>Spill will be contained and cleaned-up immediately. Resultant wastes (soils, rags and absorbent material) appropriately stored and disposed of by an appropriately licenced waste contractor as controlled waste.</p> <p>All spills reported and investigated as required.</p>	Site Manager	During construction
<b>Performance Indicator(s)</b>	<p>Minor spills (&lt;10L) to land contained, controlled and all contamination removed / cleaned-up within 24 hours.</p> <p>No contamination of soil or surface / ground waters.</p> <p>No spills that require an emergency response</p>		



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OIL AND OTHER NOXIOUS SUBSTANCES			
<b>Monitoring</b>	Incident report outlining corrective actions taken and preventative measures to be implemented sent to HO with 48 hours	Site Manager	
<b>Reporting</b>	All riparian spills (regardless of volume) to be reported to the HO and Environment Agency immediately.	All Staff	
<b>Corrective Action(s)</b>	Stop work immediately, contain spill (if safe). Investigate cause of spill and assess. Implement improvements as required. Investigate and assess adequacy of response – implement improvements as required. Implement corrective measures prior to the recommencement of site works.		

HOUSEKEEPING AND WASTES			
<b>Objective(s)</b>	Reduce waste volume, maximise recycling, reuse and recovery, prevent any construction waste/litter entering the environment.		
<b>Management Strategy</b>	Minimise environmental impacts through appropriate controls and site inductions of employees and sub-contractors.		
		<b>Responsibility (Role)</b>	<b>Timing</b>
<b>Control(s)</b>	Provide appropriate waste bins, type, and volume to accommodate anticipated waste streams. All loads arriving or leaving the site will be appropriately secured. Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads. Ensure licensed contractors are used to collect controlled wastes	Site Manager	Throughout construction
<b>Performance Indicator(s)</b>	Hazardous materials all appropriately disposed. Recycling of all recyclable construction metal waste Records kept of waste leaving site.		
<b>Monitoring</b>	Daily inspection of work site to occur. Review of waste bins (% full, time to next service). Waste volumes leaving site from waste contractors	Site Manager	Throughout construction
<b>Reporting</b>	Environmental incident reports.	Site Manager / Project Manager	



HOUSEKEEPING AND WASTES			
<b>Corrective Action(s)</b>	Investigate cause of inappropriate waste disposal Review cause of issue and develop response, such as variation to bin size, service schedule or waste separation awareness. Implement controls	Site Manager	If required

TERRESTRIAL FAUNA			
<b>Objective(s)</b>	1. To minimise the impact to fauna 2. To prevent the spread of introduced species		
<b>Management Strategy</b>	Ensure impacts to fauna are minimised, and impacts outside the disturbance zone are avoided.		
		<b>Responsibility (Role)</b>	<b>Timing</b>
<b>Control(s)</b>	Provide site specific information on fauna within the Environmental Induction Include toolbox talks for site specific fauna information during project to ensure currency of information Ensure no activities outside the works zone through clear delineation of the works area, and communication in site inductions Ensure traffic is restricted to established tracks and roads, and speed limits observed. Where excavations are created which may entrap fauna, suitable escape measures are put in place, and excavation are checked for fauna before backfilling.	Site Manager	During construction



TERRESTRIAL FAUNA			
	Ensure appropriate waste management (lidded bins), including food scraps, to reduce potential for feral species to become established on-site Disinfection, Virkon aquatic.		
<b>Performance Indicator(s)</b>	No disturbance outside the disturbance zone No injury or death of any fauna caused by vehicles or excavations No injury or death of protected fauna.		
<b>Monitoring</b>	Daily inspection of work site to occur.	Site Manager	During construction
<b>Reporting</b>	Sightings and incidents reported in weekly to HO.	Site Manager	During Construction
<b>Corrective Action(s)</b>	Investigate cause of incident Review opportunities/constraints for further minimisation of potential incidents given work procedure parameters Implement corrective measures prior to the recommencement of site works	Site Manager / Project Manager	If required
NATIVE VEGETATION AND WEEDS (FLORA)			
<b>Objective(s)</b>	1. To minimise the disturbance to existing flora 2. To minimise the introduction and/or spread of weed species		
<b>Management Strategy</b>	Ensure impacts to native vegetation are minimised, impacts outside the disturbance zone are avoided and appropriate management is in place to control spread / introduction of weeds.		
		Responsibility (Role)	Timing
<b>Control(s)</b>	Provide site specific information on flora within the Environmental Induction Ensure that any native vegetation clearing occurs within the limits of an approved area under the appropriate consent. Ensure no activities outside the works zone through clear delineation of the works area, and communication in site inductions Ensure traffic is restricted to established tracks and roads, and speed limits observed.	Site Manager	Before and during construction



NATIVE VEGETATION AND WEEDS (FLORA)			
	<p>Ensure effective sediment and erosion control to reduce potential impacts to non-disturbance zone.</p> <p>Ensure all plant and equipment coming to site has been cleaned for site access (weeds and seeds).</p>		
<b>Performance Indicator(s)</b>	<p>No disturbance of vegetation communities outside the disturbance zone</p> <p>No introduction of weed species</p>		
<b>Monitoring</b>	Daily inspection of work site and boundary to occur.	Site Manager	Before and during construction
<b>Reporting</b>	Any accidental clearing of native vegetation to be reported to the PPA project representative and followed through with an incident report.	Site Manager	
<b>Corrective Action(s)</b>	<p>Investigate cause of incident</p> <p>Implement corrective measures prior to the recommencement of site works</p> <p>Review opportunities/constraints for further minimisation of potential incidents given work procedure parameters.</p>	Site Manager / Project Manager	If required

NESTING BIRDS	
<b>Objective(s)</b>	To minimise the disturbance to existing Nesting birds that are on or in immediate proximity of the site.
<b>Management Strategy</b>	<p>As the works might occur within, or extend into within the breeding bird season (March-August inclusive), the site will be inspected for any signs of nesting birds prior to commencement. There are no trees in the development area, and a 20m buffer will be established between the area of work and the hedge and river bank to limit nesting bird impact to ground nesting birds. Breeding birds and their nests are protected from harm under the Wildlife and Countryside Act (1981). Additionally, if any Schedule 1 breeding bird is present, these are also protected from disturbance so works may need to be postponed until the young have fledged.</p> <p>Ensure impacts to nesting birds are minimised, impacts outside the disturbance zone are avoided and appropriate management is in place to mitigate any disturbance.</p>



## NESTING BIRDS

		Responsibility (Role)	Timing
<b>Control(s)</b>	<p>Survey site prior to construction resulting in written report with mitigation measures if necessary</p> <p>Provide site specific information on nesting birds within the Environmental Induction</p> <p>Ensure that any mitigation or control occurs within the limits of an approved area under the appropriate consent.</p> <p>Ensure traffic is restricted to established tracks and roads, and speed limits observed</p> <p>Ensure <b>BIOSECURITY</b> protocol is followed, see appendix for full instructions</p>	Site Manager	Before construction
<b>Performance Indicator(s)</b>	<p>No disturbance of nesting Bird communities outside the disturbance zone</p> <p>No introduction of disease</p>		
<b>Monitoring</b>	Daily inspection of work site and boundary to occur.	Site Manager	During construction
<b>Reporting</b>	Any accidental disturbance of nesting birds to be reported to the H.O and followed through with an incident report.	Site Manager	
<b>Corrective Action(s)</b>	<p>Investigate cause of incident</p> <p>Implement corrective measures prior to the recommencement of site works</p> <p>Review opportunities/constraints for further minimisation of potential incidents given work procedure parameters.</p>	Site Manager / Project Manager	If required