Management System for flood risk activities under environmental permit application for weir removal works (Snake Lane Weir) on the River Ecclesbourne, Duffield, Derbyshire.

Document version	Date	Prepared by
Version 1.0	11/09/2020	**Tim Jacklin, Wild Trout Trust. Tel. 07876 525457 email tjacklin@wildtrout.org**
Version 2	01/02/2021	Tim Jacklin
Version 3	17/08/21	Tim Jacklin

Risk Assessment

See ***Ref_05***_*Designers Risk Register Ecclesbourne at Snake Lane v1.0 _Mar20_Issued*

Site infrastructure plan

Snake Lane Weir location is NGR SK3388943492. ***Ref_02***_*Snakelane_Design Drawings_FINAL_v1.0_May20_Issued* provides a scale site plan including the extent of the works and utility locations.

Figure 1 shows the flood risk pertaining to the area. The location of the site compound and materials storage area is in a low flood risk area. The location of the works is in-channel, hence unavoidably within a high flood risk location. Mitigation measures for flood risk during the works are described below in *Method of Work.*

The flood risk impacts of the completed project have been modelled in detail (see ***Ref_01***_*Ecclesbourne at Snake Lane Weir Removal Design Technical Note v1.0 May20*) for the 100yr plus allowances for climate change and 5yr event. There is no flood extent increase associated to the 100yr + CC event within model tolerances. For the 1 in 5yr event, there is very little out of bank flow and therefore limited difference between baseline and post-project conditions.

There are no sites with statutory designations for conservation (SAC, SSSI) near the project site. The nearest SSSI is Kedleston Park approximately 2.8 km away and the nearest Local Nature Reserve is Duffield Millenium Meadow approximately 0.9 km away. A Preliminary Ecological Appraisal (PEA) has been commissioned and will inform mitigation measures to protect biodiversity during the works.

Archaeological assessments have been carried out and reviewed by the County Archaeologist.

Waste generated by the works will comprise:

- approximately 20 cubic metres of concrete (from the weir structure); this will be removed to a crushing facility locally for recycling.
- Approximately 300 cubic metres of river sediments (gravels); if suitable, these will be re-used in forming the river bed between the introduced rock-riffle structures. If unsuitable they will be removed from site to an appropriate waste disposal facility.

Any storage of materials on site will be on a temporary basis for the duration of the works in the area indicated in Figure 1. No buildings and other man-made constructions will be affected by the work.

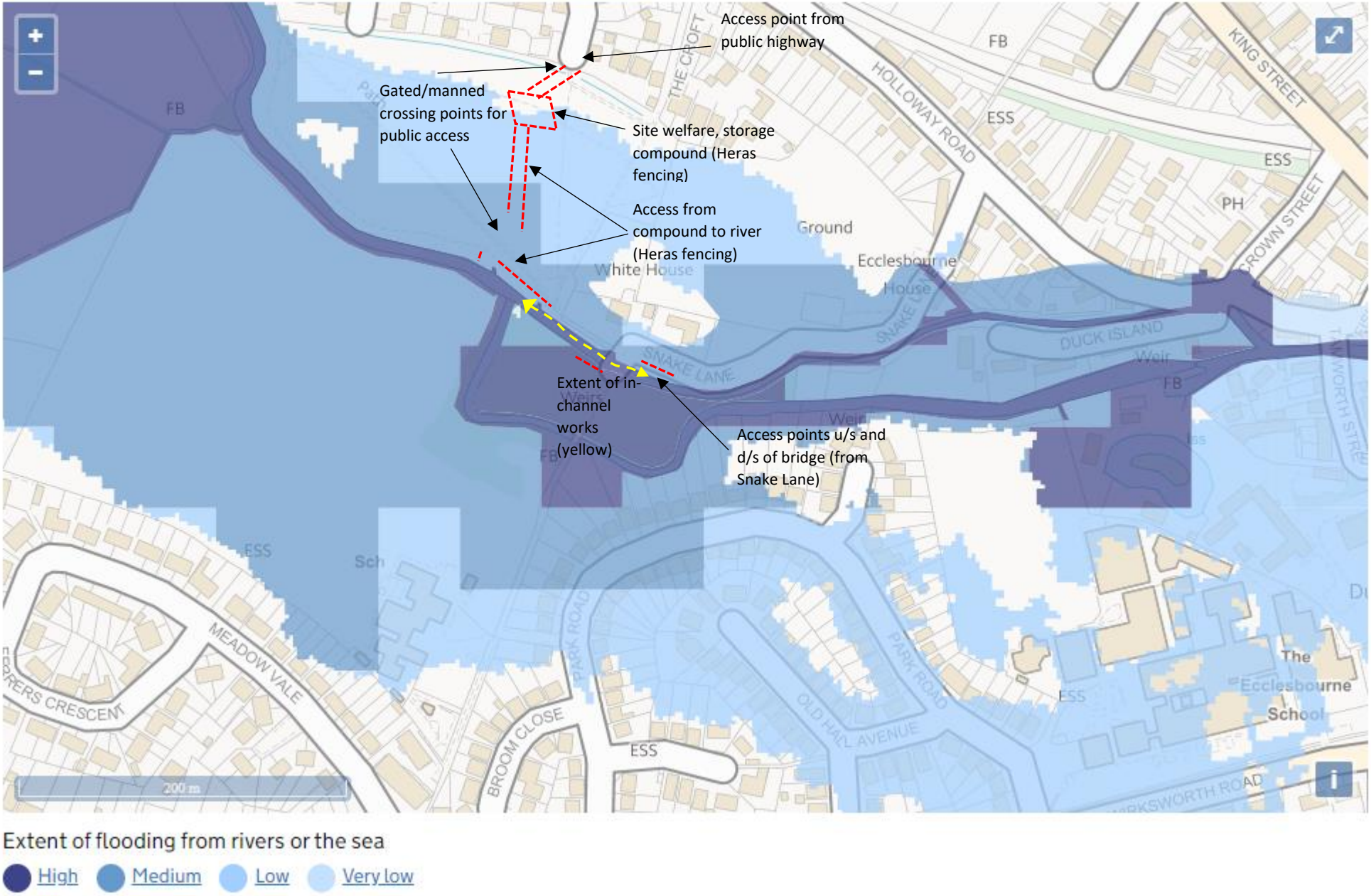

Figure 1 Results from https://flood-warning-information.service.gov.uk/long-term-flood-risk/map

Method of work

1. Introduction

The aim of this project is to partially remove a weir from the River Ecclesbourne and install a series of rock cascades/riffles to restore fish passage and improve in-stream habitat and the fishery. The work will be carried out in summer 2022. The work involves four stages:

1. Weir notching

2. Bed excavation, rapid installation and bank reinforcement

3. Bed construction between rapids

4. Riffle installation on mill leat

The detailed method for each stage is described in ***Ref_03***_*Ecclesbourne at Snake Lane Method Statement v1.0_Mar20_Issued.*

To facilitate the works, the working areas within the channel will be coffer-dammed and the flow diverted. For stages 1 – 3 above, a coffer dam will be constructed in the main channel from plastic sheeting and bulk bags filled with ballast, diverting the flow via the side channel to the south (Figure 2). The height of the coffer dam will be set to a level which will overtop during elevated flows. A fish rescue will be carried out immediately after installation of the coffer dam and the fish placed downstream of the confluence of the two channels (downstream of Duck Island).

For stage 4, the above coffer dam will be removed restoring flow to the main (north) channel. Flow into the side channel to the south will be stopped using sand bags placed on the crest of the existing low weir structure at the entrance to the side channel (if necessary – at present, flow into the side channel ceases in dry weather and water in the side channel is ponded behind the weirs at the downstream end at the eastern end of Duck Island). The ponded water behind the weirs at the downstream end of the side (south) channel makes a fish rescue unnecessary here (Figure 3).

The principal contractor will register with the EA flood warning system and implement a pre-planned procedure for rapid removal of the bunds at an agreed flow trigger at the EA Duffield flow gauging station.

Figure 2 Position of bund for stages 1, 2 qnd 3 of the works, showing diversion of flow into side channel and de-watered section.

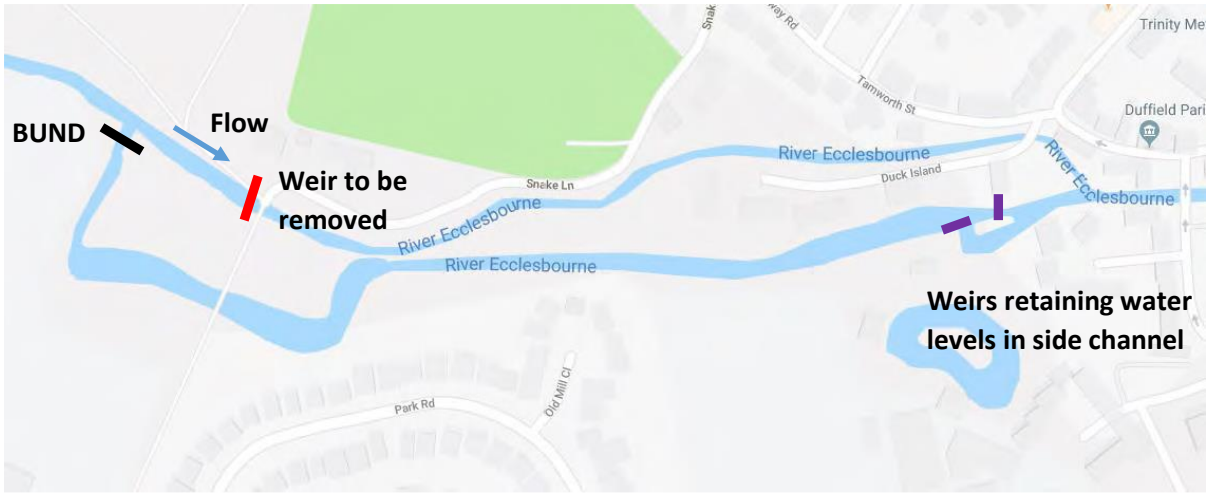

Figure 3 Position of bund for stage 4 of the work, sending all flow down the main channel. This situation is normal during dry weather with the weir at the head of the side channel preventing flow into the side channel and water ponded behind the weirs at the downstream end of the side channel.

2. CDM roles and responsibilities

The work described in this MS is not notifiable to HSE under 2015 CDM regulations as it is not expected to:

- last longer than 30 working days **and** have more than 20 workers working at the same time at any point on the project or
- exceed 500 person days

therefore an F10 document will not be submitted. Covering of the roles of Client, Designer and Principal Contractor (and summary of responsibilities) is given below. Whether a project is notifiable or not, does not affect type, severity and likelihood of risks: therefore practical risk assessments (and mitigation measures) will be produced for the different tasks within this project to ensure a safe working environment. Furthermore all parties and persons with a CDM role will be made aware of their responsibilities.

2.1. Client

Environment Agency

Dr. Ryan Taylor, Derbyshire Derwent & Erewash Catchment Co-ordinator, Environment Agency, Trentside Offices, Scarrington Road, West Bridgford, Nottingham NG2 5BR

Tel. 020302 53397 Email: Ryan.Taylor@environment-agency.gov.uk

Main responsibilities (summary):

- Make suitable arrangements for managing the project, including making sure:
- other dutyholders are appointed as appropriate
- sufficient time and resources are allocated

Make sure:

- relevant information is prepared and provided to other dutyholders

- the principal designer and principal contractor carry out their duties
- welfare facilities are provided

2.2. Principal Designer

Wild Trout Trust

c/o Tim Jacklin, Conservation Officer, PO Box 120 Waterlooville PO8 0WZ

07876 525457 tjacklin@wildtrout.org

Main responsibilities:

- When preparing or modifying designs, eliminate, reduce or control foreseeable risks that may arise during construction
- Provide information to other members of the project team to help them fulfil their duties.

Supporting designers:

- Dynamic Rivers Ltd. Tel: 07722060056 Email: George.Heritage@DynamicRivers.co.uk
- GCA Consulting Babington Lodge, 128 Green Lane, Derby DE1 1RY; James Thomson MEng (Hons), CEng, MICE, MIStructE T: 01332 362411 M: 07920 775895

2.3. Principal Contractor

To be appointed

Main responsibilities:

- Plan, manage, monitor and coordinate health and safety in the construction phase of the project. This includes:
- liaising with the client and principal designer
- preparing the construction phase plan
- organising cooperation between contractors and coordinating their work

Make sure:

- suitable site inductions are provided
- reasonable steps are taken to prevent unauthorised access
- workers are consulted and engaged in securing their health and safety
- welfare facilities are provided

3. Site safety and security

3.1. Accessing the site, material delivery and storage

The access point to the site is via William Close (off Ecclesbourne Meadows) through the public open space adjacent to the river to the south of Ecclesbourne Meadows (Figure 1), owned by Amber Valley Borough Council. Access to this land will be under a licence agreement with Amber Valley Borough Council (contact: Stephen Knox).

All deliveries will be scheduled to take place to avoid the times of the school/work commute to minimise disruption to local residents.

All deliveries will be supervised by a banksman to ensure safety of deliverer, as well as other road users. All materials will be temporarily stored in the site compound, away from flood risk areas, then removed from site within one week of completion of the weir removal.

3.2. Fencing and signage

The site compound and access route to the river will be fenced with Heras fencing, with gated crossing points manned by a banksman to maintain public access along the footpaths. The north side of the river channel adjacent to the public open space will be fenced with Heras fencing. The south side of the river channel is not publicly accessible. The area around the bridge at Snake Lane will require access for some of the works; fencing and signage will be installed to ensure public safety and continued access, and works in this area supervised by a banksman at all times.

'Construction site' signs will be installed at all work access points, including a map of the project and information on site safety rules.

3.3. Site induction

All workers and visitors on site will receive a site induction. This induction will include information on:

- Project objectives and design;
- Site hazards and risks, control measures and the project Works Method Statement;
- Site designations, protected species e.g. water voles, bats, salmonids;
- Compulsory bio-security risks and control measures;
- Pollution control and the response to incidents;
- Emergency procedures.

A daily register will be held to account for everyone being on site.

4. Environmental legislation and pollution control

The principal contractor shall undertake all works in a manner which ensures compliance with all relevant environmental legislation.

4.1. Protected species

Fish spawning

- Tracking of machinery on the river bed and dewatering of the channel poses a risk to fish and their spawning habitat. To prevent this, works will take place during the period July - September which avoids the spawning period for trout, salmon, grayling, lamprey, bullhead, stone loach and minnow (the fish species known to be present). A fish rescue will be carried out prior to and during dewatering.

Breeding birds

- Some tree works are necessary for access and pose a risk to nesting birds. All trees to be inspected by an ecologist prior to removal.

- Access routes to the river to be inspected by an ecologist to minimise the risk of encountering ground-nesting birds.

Bats

Works to mature trees (potential summer bat roosts) will be avoided. All trees to be inspected by an ecologist prior to removal.

Water voles, otters and other protected species

A Preliminary Ecological Assessment has been carried out to determine the risk of disturbance and further surveys and measures recommended in the PEA will be included in the method statement and implemented prior to commencement/during the works as appropriate.

Risk to water voles, otters, other protected species and their habitat is considered to be low because of the nature of the existing banks (concrete and stone reinforced vertical banks). Indirect effects through changes in water level following weir removal may occur; however, this will involve a drop in water levels upstream, so will not drown out any burrows and will allow natural redistribution of any voles present. Works will take place largely within the dewatered channel (rather than tracking along the bank).

4.2. Bio-security

Wild Trout Trust is committed to a high level of biosecurity in order to prevent the transfer of undesirable plants, disease or animal species between sites. Particular attention is paid to the prevention of invasive plant species such as Himalayan balsam and Japanese knotweed, the transfer of Signal crayfish and the associated crayfish plague, and the transmission of Killer and Demon shrimp.

Biosecurity measures include:

- Inclusion of biosecurity in site inductions and method statements
- Training of site operatives to ensure they understand the importance of biosecurity , can identify species which pose a biosecurity risk, and are fully aware of the potential vectors for invasive species
- Mechanical cleaning and disinfection of personnel, kit, tools and machinery

The excavator and other plant and equipment brought in by sub-contractors will be inspected for cleanliness prior to being allowed on site. PPE and clothing will be dipped or sprayed with 'Virkon' before being brought to site to eliminate transfer of any unwanted alien diseases or species.

4.3. Refuelling, oil and use of plant

All refuelling is to be carried out in the site compound away from the river to avoid spillages leaching through the ground and into the river. If a spillage does occur, refer to PPG-5 (Pollution Prevention Guidelines part 5), which can be found in the spill kit readily available on site. PPG5 guidelines shall be included in the site file for reference in an emergency spill incident. Biodegradable oil will be used in all plant and machinery. Plant will be continuously monitored for any leaks or spillages.

Any incident shall be reported promptly to the Environment Agency - Tel 0800 80 70 60.

5. Welfare

Toilet, washing and rest facilities will be provided on site.

6. Services search

Utility searches have been completed and are detailed in ***Ref_02**_Snakelane_Design Drawings_FINAL_v1.0_May20_Issued.* All workers on site will be informed about any services that are present on site (overhead cables as well as services in the ground) and these will be clearly marked.

7. Health and safety

7.1. H&S file and policy

A Health and safety file is kept on site as an active document and updated accordingly with risk assessments, site safety sheets, induction sheets and current method statement any changes to design shall be entered according to current CDM rules.

Any accident that occurs will be recorded in the accident book held at the registered office in Waterlooville and, if regulations demand reported to the HSE.

7.2. PPE

Appropriate Personal Protective Equipment (PPE) is to be worn whenever required by risk assessments. The minimum requirement is expected to include steel toe-capped boots, wellies or waders, Hi-Visibility jackets and hard hats when working in an area where plant is operating. Heavy-duty rigger's gloves or waterproof gloves will also be supplied and will be the required PPE for most tasks. Ear defenders will be required if noise levels are judged to exceed 85dB. When working in water, a risk assessment shall be used to evaluate the correct PPE. It will be ensured that the right type of PPE (and right size) is available to everyone working or visiting the site.

In case of emergency dial 999

Nearest A&E Hospital: Royal Derby Hospital, Derby, Derbyshire DE22 3NE

8. Machinery

All machinery for these works are owned by the contractor or leased from specialist plant hire companies and are routinely serviced and inspected (according to regulations). Only staff trained to use designated plant shall operate machinery. Sub-contractors will only be allowed to use (their own) machinery and equipment under the same conditions and they should provide their own Risk Assessment (which will become part of the active H&S file).

Machines and equipment used by sub-contractors include

- 14t and 9t tracked excavators
- 9t Dumper
- 8-wheel tipper lorries for material delivery

9. Staff

One operative from the principal contractor or sub-contractor will be on site all the time:

- Tim Jacklin, Principal First aider
- Principal contractor site supervisor (to be appointed)

The ratio of first aider: non first-aider shall not exceed 1:10.

10. Works Method

10.1. General approach

All work will be carried out in a manner which does not harm the site's habitats or wildlife in general. Works shall be carried out from within the river channel, accessing the channel via an area of re-profiled bank upstream of the weir. Plant will track into and out of the river via the constructed access, reinstating the bank upon completion of the weir removal. See ***Ref_03**_Ecclesbourne at Snake Lane Method Statement v1.0_Mar20_Issued.*

10.2. Timeline

The actual works will be delivered in July – September 2021 and will take approximately 7 – 12 weeks to complete.

Week No.	Activity	Duration
1	Site preparation: establish site compound and fencing; signage; welfare unit; initial materials deliveries.	1 day
	Ecological inspection and creation of machine access to river channel: check trees for bird nesting/bat roosts; remove selected trees.	1 – 2 days
	Install coffer dam (Figure 2) and carry out fish rescue. Install silt control measures downstream of site.	1 day
2	Undertake Stage 1 works – weir notching (under supervision of structural engineer) – see Method Statement (Ref_03).	3 - 4 days
3	Undertake any contingency works identified by the structural engineer	3 – 4 days
4	Undertake Stage 2 works – bed excavation and rapid installation – see Method Statement (Ref_03).	3 - 4 days
5	Undertake Stage 3 works - bed construction between rapids – see Method Statement (Ref_03).	2-3 days
5	Undertake bank reinforcement works	Alongside above
6	Remove coffer dam and silt control measures and reinstate flow to main channel	0.5 day
	Install coffer dam and silt control measures at the head of the side channel. Install pump around for sweetening flow.	0.5 day
	Undertake Stage 4 works - riffle installation on mill leat – see Method Statement (Ref_03).	2-3 days
	Remove coffer dam and silt control measures from side channel.	0.5 day
7	Track machinery out of channel and make good the banks.	1 day
	Make good the access routes between river and site compound. Remove all waste and unused materials from site. Remove site compound, fencing, signage and make good the site to the satisfaction of the landowner (Amber Valley BC).	1 – 2 days

11. Contingency Plans

11.1. Flooding/extreme weather

During the works, the principal contractor will review the weather forecast at the end of each working day. If significant rainfall is predicted which threatens to increase river levels, the coffer dam will be removed overnight.

The principal contractor will register with the EA flood warning system and ensure the coffer dam is removed in advance of any significant rises in water level.

11.2. Spillages

All refuelling is to be carried out in the site compound away from the river to avoid spillages leaching through the ground and into the river. If a spillage does occur, refer to PPG-5 (Pollution Prevention Guidelines part 5), which can be found in the spill kit readily available on site. PPG5 guidelines shall be included in the site file for reference in an emergency spill incident. Biodegradable oil will be used in all plant and machinery. Plant will be continuously monitored for any leaks or spillages.

Any incident shall be reported promptly to the Environment Agency - Tel 0800 80 70 60.

11.3. Materials stored on site

No materials will be stored on site beyond the period of construction, which is anticipated to be 12 weeks maximum. All materials will be stored in the site compound which is in a low flood risk area.

12. Waste Management

The value of works falls under the threshold which would require a Site Waste Management Plan. However, consistent with good site husbandry we shall demonstrate that:

- Waste is minimised, and all waste is taken off site
- No off-cuts will be left on site after the works.
- All waste produced will be re-used or recycled.