Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

CANAL AND RIVER TRUST

THE CONSTRUCTION OF A PERMANENT VEHICULAR ACCESS TRACK LEGALLY REQUIRED AS A MEASURE IN THE INTEREST OF SAFETY UNDER THE RESERVOIRS ACT FOR ESSENTIAL SAFETY WORKS, ONGOING INSPECTION, MAINTENANCE, AND EMERGENCY ACCESS AND THE ERECTION OF FENCING AT MARCH HAIGH RESERVOIR

CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN (CEMP)

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CONSTRUCTION ENVIRONMENT MANAGEMENT PLAN (CEMP)

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This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed:__

Penny Anderson Associates Ltd
CONSULTANT ECOLOGISTS

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1. INTRODUCTION

1.1 Penny Anderson Associates Ltd (PAA) have prepared this document on behalf of the Canal & River Trust (the Client) as part of an application for a permanent access track to March Haigh Reservoir required as a measure in the interest of safety under the Reservoirs Act.

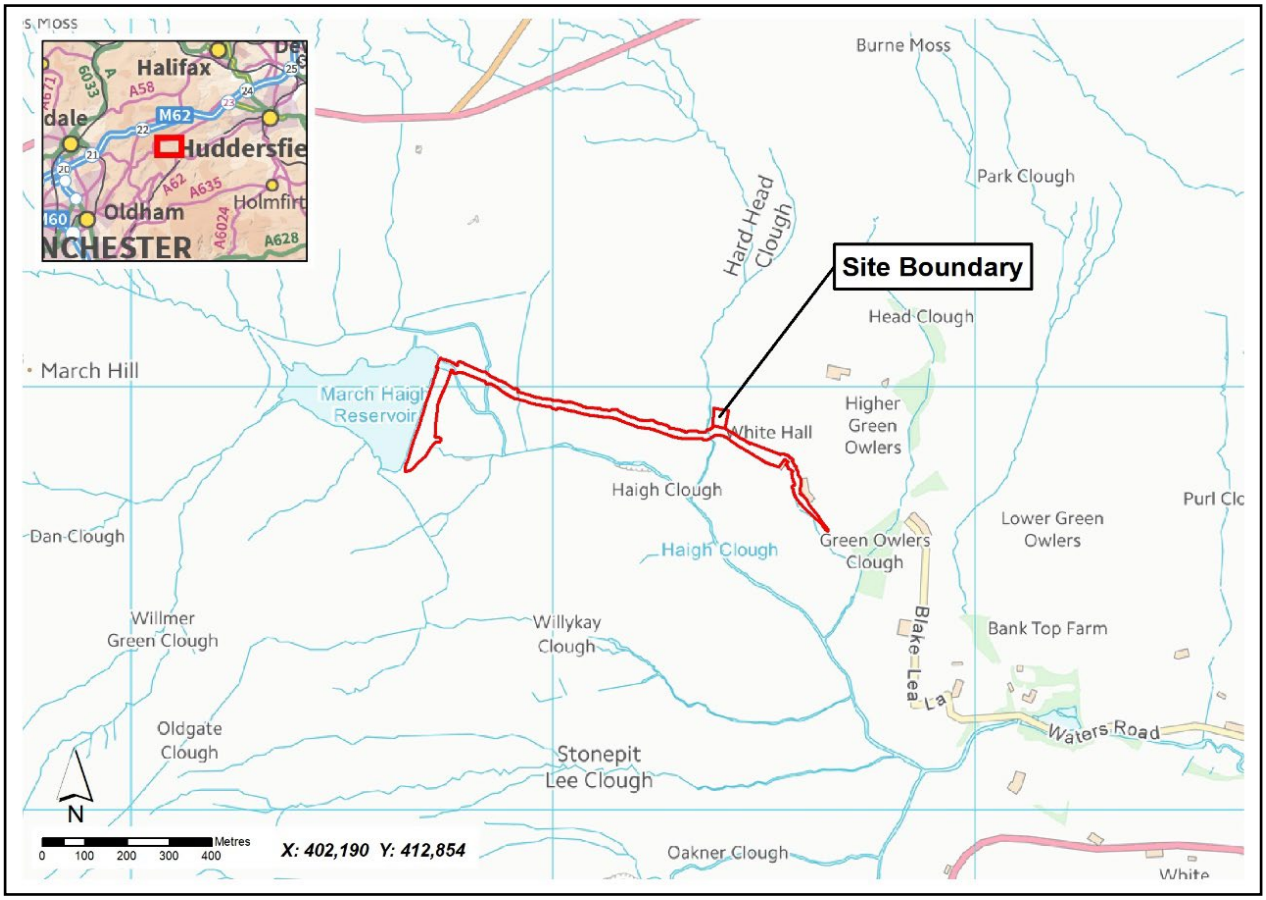
1.2 The purpose of this Construction Environment Management Plan (CEMP) is to outline the client and contractor responsibilities for ensuring the protection of the environmental features on Site for the duration of the construction works and identify when specialist input is required.

1.3 This document has been prepared with input from the Client and Main Contractor as required.

The Site

1.4 March Haigh reservoir is located approximately 1.6km north-west of the town of Marsden, in the Metropolitan Borough of Kirklees, West Yorkshire. The proposed access track begins at the access track to White Hall Farm just off Blake Lea Lane and runs towards the reservoir spillway. The Site includes the reservoir embankment (south of the spillway) to accommodate a stock fence proposed along the base of the embankment. An indicative Site location is presented at Figure 1 (below).

Figure 1 General Site Location



1.5 The Site comprises in-bye land and un-enclosed open moorland situated at approximately 300m Above Ordnance Datum[1]. The land continues to rise to the north of March Haigh Reservoir up to the A640 A-road, at approximately 425m AOD. To the south of the Site, the land falls away steeply into Haigh Clough. The Site is crossed by a number of small unnamed watercourses plus Hard Head Clough, all of which drain into Haigh Clough.

1.6 The area within which the Site is located is subject to a number of landscape and nature conservation designations reflecting the sensitive nature of the location.

1.7 The primary land uses are sheep farming on the in-bye land at the moorland edge, with nature conservation, recreation and water supply the main forms of land use on the open moorland areas. There is a dwelling and farmstead at the eastern end of the Site, accessed off Blake Lea Lane, comprising White Hall Farm. Other properties' access off Blake Lea Lane includes Blake Lea Lane Cottage and Bank Top Farm.

1.8 The Site falls within the catchment of March Haigh Reservoir which is owned and managed by the Client to provide potable water to Yorkshire Water's supply network. The Client currently visits the Site to inspect the reservoir up to three times a week, on foot.

1.9 Moorland on either side of the Site (to the north and south) falls within the Marsden Estate owned and managed by the National Trust. This land is subject to an ongoing programme of restoration in partnership between the National Trust and Yorkshire Water.

Description of Project

1.10 The proposed development comprises the construction of a permanent vehicular access track legally required as a Measure in the Interest of Safety[2] under the Reservoirs Act for essential safety works, ongoing inspection, maintenance, and emergency access and the erection of permanent fencing at March Haigh Reservoir.

1.11 The proposed access track begins on an existing track just off Blake Lea Lane (grid reference SE 0259 1272) and runs towards the reservoir spillway (grid reference SE 0172 1305) and, in part, crosses the open moorland area that forms part of the South Pennines.

1.12 An arm of the track then diverts south over the spillway and along the base of the existing reservoir embankment for approximately 180m (grid reference SE 0171 1287) to accommodate the installation of a permanent stock fencing to provide protection of the dam embankment from grazing cattle on the wider moorland.

1.13 Associated upgrades to the section of the existing track just off Blake Lea Lane that runs below the farm buildings and corresponds with the proposed new track alignment will also be required, to accommodate access by the necessary vehicles.

Scope of CEMP Document

1.14 The CEMP document is structured as follows:

- Summary of approach to safeguard environmental features (Section 2);
- Site Management Practices (Section 3);
- Transportation and Traffic Management (Section 4),
- Construction Methodology (Section 5), and;
- Re-instatement and Restoration (Section 6);

[1] *AOD*

[2] *MIOS*

2. SUMMARY OF THE APPROACH TO ENVIRONMENTAL SAFEGUARDING

Toolbox Talk

2.1 An environmental toolbox talk will be delivered by the Ecological Clerk of Works (ECoW), immediately before the mobilisation of Site works and repeated as required during construction.

2.2 All topics set out within this CEMP will be included in the talk to ensure Site staff have a good understanding of the methods that need to be applied to protect the environment, and the lines of communication available to manage this.

Practical Measures to Avoid Impacts During Construction

2.3 The detailed method statements presented in this report will be adopted during construction to safeguard the environmental features. These measures are summarised below.

- Implementation of best practice measures for managing risk of pollution, risk of fire, dust, vibration and noise during construction;
- Implementation of a Traffic Management Plan;
- Use of an archaeological watching brief on designated areas/when employing certain specified methods of construction; and
- Use of a suitably experienced ECoW on designated areas/when employing certain specified methods of construction.

Unexpected Discoveries

2.4 If any situation arises that is not covered by the method statements and there is concern about disturbance or harm to environmental features or offences in relation to relevant legislation, then works in that area must cease immediately and advice must be sought from the ECoW before works resume. Contact details are provided in Table 2.1.

Responsible Persons and Lines of Communication

2.5 Table 2.1 sets out details of responsible persons and lines of communication in respect of delivery of the CEMP document.

Table 2.1 Responsible Person Contact Details (in Respect of CEMP)

Contact Name/ Organisation	Responsibilities	Contact Details
Canal & River Trust	Client – overall responsibility for delivery of project.	Tania Snelgrove 07483 927932
J N Bentley	Main contractor – responsible for implementation of CEMP. Reports to client.	TBC
Penny Anderson Associates Ltd	Ecologist/ECoW – to provide ecological supervision as specified in CEMP and to be contacted in event of unexpected finds/matters. Reports to Client and works with the Main Contractor.	Andrew Keen 07780 602389
West Yorkshire Archaeological Services	Archaeologist – to provide watching brief as specified in the CEMP, and to be contacted in the event of unexpected finds/matters. Reports to the Client and works with the Main Contractor.	TBC

Project Manager

2.6 The Project Manager is the Client's representative for the works and responsible for ensuring the project progresses in line with the project sponsor's brief. They will attend weekly Site progress meetings or as required.

Principal Contractor's Site Manager

2.7 The Site Manager is responsible for the day-to-day management of the works and subcontractors. They are responsible for ensuring all works are carried out to the agreed standards and the CEMP requirements are followed.

Ecological Clerk of Works/Project Ecologist

2.8 The Project Ecologist/ECoW will be present on Site to observe the construction at key points. They can stop the works if an ecological/environmental issue is identified.

2.9 The role and responsibilities on Site of the ECoW or similarly competent person are defined as follows:

- Preparing and giving the 'toolbox talk' to the main contractor/Site staff prior to commencement of Site work, recording this and providing this record to the client;
- Implementing the agreed Method Statements for each environmental feature as presented within this document, recording the dates and outcomes of these tasks and providing this record to the client;
- Liaising with the Project Archaeologist in relation to any archaeological watching brief as presented in the document;
- Being the point of contact for the client and main contractor for all matters in relation to environmental matters on the Site, attending project briefings and meetings as necessary; and
- Reporting to the client in a timely fashion any concerns in relation to impacts on environment at the Site for the duration of the construction period.

Project Archaeologist

2.10 The Project Archaeologist will be present on Site to observe the construction at key points. They can stop the works if an archaeological/heritage issue is identified.

2.11 The role and responsibilities on Site of the Project Archaeologist are defined as follows:

- Input into the 'toolbox talk' to the main contractor/Site staff prior to commencement of Site work, via liaison with the ECoW;
- Implementing the agreed Method Statements for archaeology and heritage features as presented within this document, recording the dates and outcomes of these tasks and providing this record to the client;
- Liaising with the ECoW as required to ensure the correct execution of the archaeology watching brief;
- Being the point of contact for the client and main contractor for all matters in relation to archaeology and heritage matters on the Site, attending project briefings and meetings as necessary; and
- Reporting to the client in a timely fashion any concerns in relation to impacts on archaeology and heritage at the Site for the duration of the construction period.

3. SITE MANAGEMENT PRACTICES

Ecology Management

3.1 Key ecological features on Site are the sensitive upland habitats, populations of breeding birds, and a small population of common lizard (*Zootoca vivipara*). In addition, there is a low risk of common toad (Bufo bufo), mountain hare (*Lepus timidus*) and water vole (*Arvicola amphibius)* being present in the local area, although no evidence of these species has been detected on or near to the Site.

3.2 Protected faunal species may be found in the associated habitats and features:

- Trees;
- Scrub and dense vegetation, such as bracken (*Pteridium aquilinum*) or rushes (*Juncus* sp.);
- Large brash piles;
- Undisturbed moorland habitats;
- Bare earth and recently cleared ground, and
- Gaps and holes in dry stone walls or other structures.

3.3 Habitat clearance and/or construction works and vehicle movements in suitable habitats may inadvertently harm or disturb these protected species.

3.4 The risks to habitats and faunal species during construction are managed through a series of Precautionary Working Method Statements (PWMS) presented below.

3.5 The associated underlying peat deposits are dealt with below under Peat Soil Management.

Habitat Precautionary Working Method Statement

3.6 The key aim is to minimise the extent of impacts on habitat outside of the development footprint, and this will be achieved by the Contractor undertaking the following measures under guidance from ECoW:

- Route and footprint of track and passing places to be clearly demarcated on the ground with flags/fencing or similar;
- Contractor working from the line of the track only, with no machinery entering any adjacent habitat and no peat to be removed other than the absolute minimum required to create the track footprint;
- No vehicles being taken off the route of the track or parked on adjacent habitats for any reason;
- Materials and waste stored within the designated areas on the compound only;
- Vehicle servicing and refuelling to take place in designated areas only within the compound;
- No hot-works and no smoking anywhere other than designated areas;
- No littering of the Site;
- Suitable protection zones clearly established and maintained around adjacent retained features, such as trees, scrub, watercourses, dry stone walls, etc; and
- Suitable protection measures employed as required to avoid risk of erosion or pollution of the water environment and peat resource (see sections below).

Herptile Precautionary Working Method Statement

3.7 A small population of common lizard is known to be present on Site, with a single animal observed at the western end of the Site close to the reservoir embankment. There is suitable habitat for common toad to be present on Site.

3.8 Common lizard may shelter in any of the denser tussocky vegetation or dry stone walls on or near to the Site and bask on more open areas, such as exposed rocks, shorter grassland/bare soil areas and dry stone walls. Common toad could potentially use damper tussocky vegetation and gaps in dry stone walls for shelter.

3.9 Given the low risk in relation to these two species, a herptile displacement approach will be adopted. This will comprise:

- Clearance of suitable habitat in a sensitive manner, by initial strimming of any taller areas to 200mm in height and then a further strim no less than two hours later to 50mm height. The strim will occur in an east to west direction across the habitat to allow any reptiles to move towards unaffected habitat off Site;
- The ECoW will inspect the area between strimming episodes and after the final strim to ensure no herptiles remain. Should any be found during the ecologist checks, they will be carefully moved by hand off Site to other suitable habitat;
- Once clear of the risk of sheltering herptiles, the remaining vegetation will be removed within one week by stripping to bare soil;
- Re-strimming and checks by the ECoW will need to be repeated if vegetation removal cannot be completed within one week of strimming;
- The final stripping of vegetation to bare soil will only occur when weather is suitable for herptile movement, with temperatures 9ºC or higher, and with no heavy rain/fog or high winds; and
- Clearance (stripping to bare soil) will not be undertaken during the winter period (December to February, inclusive) as reptiles will be in hibernation and unable to be displaced.

3.10 If common lizards or common toads are found on Site at any time, the ECoW should be notified for advice.

Wild Mammal Precautionary Working Method Statement (Badger, Water Vole and Mountain Hare)

3.11 No sighting or evidence of badger, water vole or mountain hare have been confirmed on Site to date. However, some suitable habitat is present on Site and, as a precautionary measure, supervised vegetation clearance is recommended.

3.12 A pre-work walkover survey will be conducted by the ECoW to look for any new indications of these species being present on or close to the Site to confirm continued absence.

3.13 The approach adopted for vegetation clearance under the reptile PWMS will also enable any risks to these species to be managed by ensuring careful managed removal of potential habitat.

3.14 Should any of these species be confirmed on Site, the ECoW will provide additional guidance on appropriate steps. Actions with regard to confirmed badger setts and/or presence of water vole may require a separate licence to be in place before works can recommence.

Breeding Bird Precautionary Working Method Statement

3.15 For the purposes of this Method Statement, the main bird nesting season is taken to be within the period March 1st to August 31st.

3.16 All work is planned to occur in the period October 2023 to February 2024, which is outside of the main nesting season for most species. An approach to adopt if nests are discovered at any time of year (and also cover works within the nesting season, if unavoidable) is, however, provided. See below for further details.

3.17 It is possible to find nesting birds outside of this window and so precautions shall be taken if weather conditions are deemed suitable for nesting by the ECoW. For example, a very mild winter may trigger early nest building during February.

3.18 Habitat clearance will be carried out during September to October 2023 (inclusive) to avoid the main nesting season. There is no requirement for ECoW supervision within this period in respect of nesting birds, however, supervision will be required as part of the herptile PWMS.

3.19 Should any signs of a nesting bird be observed on Site at any time during the construction period, the ECoW should be immediately notified and work in that area stopped until advice is given. The ECoW may need to undertake further observational surveys to confirm any active nest/nesting behaviour before providing advice, and in such cases, works in the area will remain suspended until such time as works can proceed without risk of disturbance to nesting birds.

3.20 If vegetation clearance needs to continue into March 2024 or beyond, the ECoW and Contractor will employ the measures presented below:

Bird Deterrent Measures

3.21 Measures to deter nesting birds from nesting within the immediate footprint of the proposed track will be adopted prior to construction, if this extends beyond 1st March 2024. The aim of bird deterrent measures is to deter nesting by any of the moorland breeding bird assemblage along the proposed construction route by making the route and immediate environs less attractive. This will be achieved through a combination of:

- Retaining closely strimmed vegetation along the length of the construction area; and
- Use of controlled dog walking to supplement the above measure, walking the route at particular times or locations, as required.

3.22 The deterrent measures would be removed as track construction progresses.

Temporary Screening

3.23 Temporary visual screening will be installed, if needed, along either side of the track with location and extent of any fencing to be determined by the ECoW on the moorland area if ground nesting species are confirmed in this area.

3.24 The screens will comprise Heras fencing covered in a suitable mesh to provide a visual barrier, securely fastened in place and tethered as necessary to reduce risk of wind damage. The screens will be checked each morning by the contractor and any damage/re-instatement dealt with promptly to ensure that the visual screen remains in place at all times.

3.25 If the bird monitoring indicates that the use of screening needs to be extended further along the working area, this will be implemented as necessary and its use will be recorded and monitored by the ECoW. Conversely, as soon as monitoring confirms that screening is no longer required it will be carefully removed.

Contingency if Nesting Birds Found

3.26 It is anticipated that use of the above-described bird mitigation methods would be sufficient to deter nesting birds from the majority of the immediate construction footprint. However, should any nesting bird be located within the route of the proposed track then all work will cease at that location until monitoring confirms that any chicks have successfully left the nest.

3.27 Where possible, alternative methods would be used to allow construction to continue, e.g. working around any active nest site with use of additional screening or (for non-ground nesting

species) clearly marked out buffer area to provide an undisturbed zone around an active nest so nesting can continue.

Hydrology Management and Safe Working Near Water

3.28 All permanent and temporary works are situated outside of the flood zone of Haigh Clough and any works in the vicinity of the March Haigh spillways will be designed appropriately with all crossings suitably sized to ensure there is no negative impact on surface water flood risk. A suitable drainage solution will be implemented to remedy any negative effects of the permanent access track impeding subsurface flow paths whilst minimising impact on the peat deposits and retaining the hydrological connectivity across the access track.

3.29 Pollution prevention measures will be put into place where working in the watercourse cannot be avoided. Further information is presented below under Section 5.

3.30 JN Bentley will manage the risk of working adjacent to water much the same as working at heights, in that fall prevention measures must be taken to prevent persons falling into the water. Safe systems of work will include work permits when working near water, life jackets to be worn when working within 3m of a watercourse and knowledge of rescue techniques, for example.

3.31 Where the risk of accidental entry into a watercourse is still present, an emergency response plan MUST be put in place to ensure safe means of rescue. The provision of rescue equipment and training will be provided in accordance with any plan being implemented. This will be dealt with in accordance with the schemes being delivered and will be reviewed at the Pre-Start Handover Meeting to ensure these risks are adequately mitigated and appropriately managed.

3.32 All persons named on rescue plans will be trained and qualified in the specified rescue method being implemented.

3.33 All on-Site plant with hydraulic systems working in, over, or within 10m of watercourses, vulnerable groundwater zones and sensitive areas, such as Sites of Special Scientific Interest (SSSI), will use biodegradable hydraulic oil.

Peat Management

3.34 Peat underlies much of the habitats across the Site and is deep (>50cm) in some localised areas. Some of the peat is re-deposited material following the former temporary track construction (that was later re-buried) and is likely to be highly unconsolidated. To enable the track to be constructed these peat deposits need to be removed and/or earthworks completed that will disrupt the peat.

3.35 The aim is to re-use a proportion of the more intact consolidated peat material on the Site to form a batter along the southern side of the track where it crosses the moorland, or during re-instatement of the inbye field that will be temporarily used as the contractor's compound.

3.36 The unconsolidated peat that is unsuitable for re-use and any other non-peat material removed from Site will be treated as per the Waste Management Plan.

3.37 Peat to be temporarily stockpiled for re-use will be handled as follows:

- Following vegetation strip, peat will be removed and stockpiled on the compound, using a suitable geotextile as a base;
- Once stockpiled the peat should remain undisturbed until re-used on site to avoid double handline and protect the peat structure;
- Peat stockpiles will be no more than 2m in height and covered with a suitable material to reduce desiccation and prevent 'weedy' plant species from establishing on them;

- Stockpiles will be formed in such a way as to prevent material instability or risk of runoff into watercourses and sited away from watercourses. Stockpiles would include appropriate bunding where required to achieve stability; and
- Peat storage bunds will be suitably labelled and kept separate from other materials or non-peat soil storage areas.

3.38 Peat will be re-used to form batters and complete minor earthworks along the edges of the track where it crosses the moorland, and within the reinstatement scheme for the compound. Further details are provided in 'Reinstatement and Restoration' section below.

Dust Management

3.39 JN Bentley Ltd will take all necessary measures to avoid creating a dust nuisance. Contract-specific hazards will be identified at the activity risk assessment stage and control measures will be identified within task specific method statements.

3.40 The main potential generation of dust will be from the transportation and placement of stone for the construction of the access track. The main aspect to control this is transportation of the materials to Site using covered wagons. Water spraying from bowsers for dust suppression may be required if extremely dry weather, also possible use of temporary screens and barriers if nuisance dust is present near residential areas.

3.41 Road sweepers will be implemented to reduce the impact of any dust on the local access routes.

Noise Management

3.42 JN Bentley Ltd will take all necessary measures to avoid creating a noise nuisance during construction and civil engineering operations. Contract-specific hazards will be identified at the project risk assessment stage and control measures identified within task specific method statements.

3.43 As a minimum, all plant will be maintained in good working order and will be fitted with its original silencing equipment. When requested by either the client or local authority, Site-specific noise assessments will be undertaken for both pre-works and construction-phase activities to ensure compliance with planning requirements.

3.44 Where operations creating noise cannot be avoided, local communities will be contacted and consulted and where necessary, activities will be timed to create the least nuisance.

Archaeological Watching Brief

3.45 A desk-based archaeological study of the proposed development area and 1km around it has been completed by West Yorkshire Archaeology (2023), which details the known heritage and archaeological features.

3.46 There have been many archaeological 'find' sites in the surrounding area, one is close to the track's terminus where flints, a knife and scrapers have been found from the Mesolithic period. The Site compound is on an area recorded as an archaeological site in connection with a three-cell farmhouse and its surrounding field network.

3.47 In areas where digging is necessary, an archaeological watching brief will take place which includes the presence of the Project Archaeologist during excavation. The Project Archaeologist will have the ability to pause or stop works as necessary to make further investigations and to restart works once satisfied that archaeological materials have not been found.

3.48 The full 'Written Scheme of Investigation' (details of the watching brief) has been prepared by West Yorkshire Archaeology, who will also coordinate the team to undertake the watching brief once construction begins.

3.49 Any items discovered will first demand a pause in construction in that works area, whilst experts at West Yorkshire Archaeology investigate further.

Public Access

3.50 All signage and temporary fencing to manage public access will be implemented as agreed for the scheme, and checked regularly by the contractor to ensure it remains in place as required throughout the construction period. Heras fencing will be erected around the site compound and around any works that may cause a potential hazard but will not impinge on any public right of way (PRoW). The fencing will be arranged and will contain triple panels (triangle) supports at agreed locations to ensure wind conditions do not blow the fence lines over.

3.51 The track will cross an existing PRoW (Col/195/40) at Hard Head Clough. Temporary Heras fencing and signage will be used during construction, with a banks person as necessary, to ensure the footpath remains accessible and to ensure public safety throughout construction. The banks person will act as a lookout for pedestrians and advise when vehicles approach during construction hours. The PRoW will be left in a safe condition when operatives leave site.

3.52 In addition, PRoW Col/195/20 and Col/195/10 will meet the beginning of the access track. This initial point of the track route is already an established vehicular access where there are very little/no construction works required. Any alterations to the surface in this location will be minor and entirely limited to no more than infilling any depressions where necessary.

3.53 Further details are provided below:

During Hours of Construction

- Operational employees (banks person) permanently *in situ* along the track route to manage any conflict between vehicular traffic and pedestrians;
- Banks persons to have radio contact to maintain an open line of communication for seamless monitoring of vehicles and pedestrians along the track route;
- Advanced warning signage *in situ* on pedestrian and vehicular routes to pre-warn drivers and pedestrians of crossings points;
- For PRoW Col/195/40, which crosses the track at chainage 333, secure temporary fencing will be *in situ* to physically prevent pedestrian access on to the track. This interface will be managed by a patrolling banks person with radio contact to maintain full awareness; and
- Signage will be *in situ* along the PRoW to provide full detailed information of the pedestrian safety control measures in place at this location.

During Non-working Hours

- PRoW Col/195/40 will remain uninterrupted. The secure temporary fencing in situ, used during hours of construction to control pedestrian access on to the track, will be realigned to allow continued pedestrian access along the PRoW over the proposed track. The realigned temporary fencing will then prevent pedestrian access on to the access track route to either side of the PRoW during these non-working times; and
- No non-working hours measures are required for PRoW Col/195/20 and Col/195/10 as continued accessibility will be maintained.

4. TRANSPORTATION AND TRAFFIC MANAGEMENT

Traffic Management

4.1 A Construction Traffic Management Plan (CTMP) has been prepared for the Site and will be implemented in full throughout the duration of construction.

Waste Management

4.2 Waste management will be in accordance with section 34 of The Environmental Protection Act 1990: the duty of care, OES002 and JNB OES 002.

4.3 Prior to construction a Site Waste Management Plan (SWMP) and Materials Management Plan (MMP) will be compiled, giving reference to the predicted waste streams, likely quantities and preferred disposal routes. Although waste will be limited and prevented where possible, there may be small amounts of waste from the on-Site operations. These are predicted to be predominantly amenity waste from Site offices/cabins, hazardous (such as aerosols, saturated cloths) and packaging/material bunds from deliveries and materials brought to Site.

4.4 All waste generated will be placed within the appropriate skips/containers for disposal. Waste segregation will be practised via separate suitable containers, lidded where appropriate and labelled.

4.5 All waste containers will be stored on an impervious surface and within the designated area. This designated area will be located away from environmental sensitive areas on Site, such as pathways to watercourses. The area around the skips will be kept tidy and full skips will be removed from Site within four working days. The area will be inspected regularly.

4.6 The Site Manager will be appointed as a waste champion on Site who will ensure documentation is completed appropriately for the removal of waste off Site. This will be maintained on Site during the construction phase of the project so that the MMP and SWMP will be always kept up-to-date, along with on Site stores. This will be adhered to by Site operatives and project staff. They will also promote the compliance with the waste hierarchy for when disposing of waste materials from the project, where possible.

4.7 From the works carried out there will need to be the removal of excess peat and other soil/stone deposits from the Site, where they cannot be re-used within the scheme.

5. CONSTRUCTION METHODOLOGY

Site Construction Compound and Laydown Area

5.1 The project team will establish a temporary Site compound to help deliver the project. All welfare, stores and material storage will be located within this compound, along with staff parking. Some additional staff parking will be provided on land close adjacent to the existing stable block. On establishment, the existing Site topsoil will be carefully stripped and stored on Site, ready for its reinstatement on completion of the works. This topsoil bund will be sealed and proactively managed to prevent the spread of weeds or other plant species.

5.2 Once the topsoil has been removed, a geogrid and stone layer will be laid to provide a hardstanding for plant, vehicles and welfare facilities. Heras fencing will be installed around the perimeter of the compound to prevent livestock or other unauthorised access. Gates into the compound will normally remain closed, again to limit unauthorised entry. An assessment on the security requirements will be made closer to the start of the works.

5.3 Upon completion of the works, the Site compound will be removed and the existing soil topsoil replaced. The area will be re-seeded to match the local planting (see Section 6).

Access Track Construction

5.4 The track geometry has been designed to follow the alignment of the previously constructed temporary track where possible, and the natural ground profile as a best fit, without introducing what could appear to be an undulating track following the ground profile exactly. The existing track is understood to be 3m wide and constructed in the late 1990's.

Upgrade of Existing Farm Track

5.5 Sections A to C of the track are through White Hall Farm. This section is currently in use by the landowners. This section will be upgraded by removing the existing track and building back to ground level. Drainage will be required in this section to reduce the likelihood of standing water.

New Track

5.6 Section C to D of the track follows the alignment of the former temporary track where possible. This section of the temporary track was re-covered with peat following the completion of reservoir works in the 1990's. The track will be uncovered along the full length in the first instance to establish the exact location. Peat removed from the surface will be stored on the Site compound for later re-use. The new track will be constructed on top of the temporary track where possible, using the design as detailed in the scheme technical drawings. This will include replacement and/or new culverts at watercourses as required, with associated metal railings included where the design specification requires this. Snow poles are also to be installed as per the approved technical drawings.

Watercourse Crossings and Construction near Watercourses

5.7 JN Bentley will implement a pollution incident response plan in accordance with JNB OES 003 to ensure activities are controlled in a way to minimise the potential for an environmental incident in the first instance. Pollution Prevention Guidelines (PPG'S) and CIRIA guidance below will be followed and adhered to within this section of the CEMP, as well as reflecting the guidelines below

- PPG 1: General Guide to the Prevention of Water Pollution;
- PPG 5: Works in, Near or Liable to Affect Watercourses;
- PPG 6: Working at Construction and Demolition Sites;
- PPG 21: Incident Response Planning;
- PPG 23: Maintenance of Structures Over Water;

- CIRIA C532: Control of Water Pollution from Construction Sites; and
- CIRIA C648: Control of Water Pollution from Linear Construction Projects.

5.8 The pollution control responsibilities, information and procedures will be communicated to all project staff and Site operatives during Site inductions and reiterated during emergency response drills.

5.9 JN Bentley will take all necessary precautions to protect all watercourses, together with groundwater in underlying strata, against silting, erosion and pollution.

5.10 Pollution protection measures to be included during works to culverts will include temporary works damming and over-pumping of existing watercourse, control of pump inlets to avoid suction of bed silts (this will include suspension of pump inlet hoses), also use of pollution barriers including oil spillage booms and spill response kits. All plant and machines to use bio fuels/oils, site operatives trained in pollution clean-up techniques.

5.11 Environmental mitigation measures will include ecology visits and input, fish-friendly inlet hoses on pumps, silt mitigation at pump outlets, also dissolved oxygen and water quality checks at downstream locations. All to be included in JNB's Pollution Response Plans.

5.12 To reduce likelihood of spillages occurring on Site, it will be ensured that:

- Equipment is maintained to ensure efficiency and to minimise emissions;
- All fuel, hydraulic fluids, lubricating oils or chemicals stored in bulk on working areas are located as far away as reasonably possible from any watercourse/drain and that such stores are sited on impervious bases and surrounded with an effective and impervious bund capable of holding the full contents of the store plus 10%. The tank vent pipe should always be directed downwards into it as per PPG 1;
- All stores are kept locked when not in use, and all containers are clearly labelled with their contents. Leaking or empty oil drums or chemical containers shall be removed from Site immediately;
- Equipment which leaks any fuel, lubricant or hydraulic fluid is not used, and all static equipment using fuel or oils is located as far away as reasonably possible from any watercourse, with oil-absorbent material to contain spills or leaks available and use of drip trays as appropriate.
- Refuelling or servicing of equipment is undertaken in designated locations by pumping through a trigger type delivery nozzle where possible;
- Refuelling to always take place further than 10m from any watercourse. To ensure spillage response can be timely and effective, the following will be ensured on Site at all times:
    - An adequate supply of oil absorbent materials is always readily available on Site and in close proximity to plant/equipment;
    - Staff are appropriately trained on use of absorbent materials. Any spillage is immediately contained, removed from Site and disposed of to a licensed tip. Emergency drills will be conducted to ensure all Site operatives and project staff are aware of the procedures following a spill;
    - Appropriate spill kits are held on Site and in close proximity of plant and equipment, as per PPG 1; and
    - An up-to-date drainage plan will be maintained and kept on Site with hazards identified on this, with a contingency plan for if there is a pollution incident. This will include advice on what action to take and who should be informed in the event of an incident. These will be stored on Site and displayed clearly, with regular incident response drills undertaken.

6. RE-INSTATEMENT AND RESTORATION

Site

6.1 The majority of the Site comprises a permanent track that would remain *in-situ* for the operational phase of development. Some small areas of cut and the batter along the southern side of the permanent track across the moorland will require some habitat creation to stabilise bare peat areas. This is proposed for acid grassland habitat creation using a suitable native grass and heather seed mix as presented in Table 6.1, sown at a rate of 50kg/ha. A suitable geotextile will be installed prior to seeding where there is risk of peat erosion, to be installed using biodegradable pins (not plastic or metal).

6.2 The installation of the permanent fence along the base of the embankment would have minimal impact on the habitats and soils and as such no restoration is required in this area. The fence route and post-and-wire fence design (with stock netting) will be to the agreed plans and specifications.

6.3 The only area requiring significant restoration is the temporary Site compound east of Hard Head Clough.

6.4 On completion of works, the compound will be re-instated for agricultural use by removing the stone surface or geotextile, spreading over no more than 500mm of peat (as excavated from the moorland section of the track) and re-seeding the field with a suitable native grass and heather seed mix as presented in Table 6.1, sown at a rate of 50kg/ha. The seed mix will be supplemented with seed of additional plant species that will support foraging twite (*Linaria flavirostris*) as an enhancement measure, comprising autumn hawkbit (*Scorzoneroides autumnalis*), cat's ear (*Hypochaeris radicata*), sheep's sorrel (*Rumex acetosella*) and common sorrel (*Rumex acetosa*). These additional species will be in equal proportions by weight within the seed mix sown at a rate of 10kg/ha.

6.5 The ECoW will provide input throughout the above restoration process to ensure the target habitat is achieved. Any poor establishment of reseeded area will be addressed by the Contractor to the satisfaction of the Client.

Table 6.1 Upland Acid Grassland Seed Mix

Common Name	Scientific Name	% By Weight
Common bent	*Agrostis capillaris*	40
Sheep's fescue	*Festuca ovina*	40
Wavy hair-grass	*Deschampsia flexuosa*	10
Heather	*Calluna vulgaris*	10
	Total	**100**

Farm Track

6.6 Edges of the farm track will be reinstated to the satisfaction of the client to ensure the landowner retains unimpeded use of the area and ease of access across the upgraded farm track. Two lockable metal 5-bar gates will be installed to the agreed specification (see Appendix 1).

Public Road

6.7 The public road and its immediate environs (such as verges and dry stone walls) will be reinstated to original condition. A pre-start survey will be completed by the contractor to aid this.

Signposts

6.8 Wooden finger posts and any additional informative signage will be installed at locations as shown in the approved technical drawings.

7. REFERENCE

WYAS, 2023.*March Haigh Reservoir, Marsden, West Yorkshire. Archaeological Desk-based Assessment*. Prepared for Canal & River Trust.

8. ABBREVIATIONS

AOD Above Ordnance Datum

CEMP Construction Environmental Management Plan

CTMP Construction Traffic Management Plan

ECoW Ecological Clerk of Works

MIOS Measure in the Interest of Safety

MMP Materials Management Plan

PAA Penny Anderson Associates Ltd

PPG Pollution Prevention Guidelines

PRoW Public Right(s) of Way

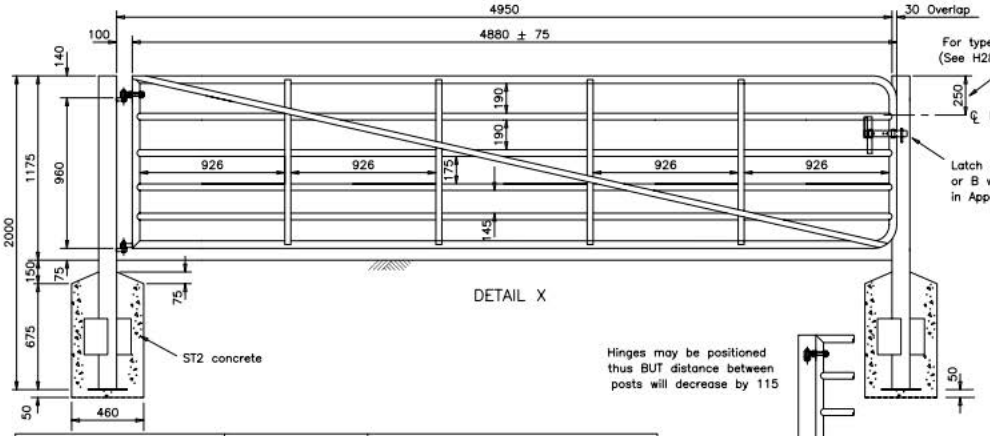
PWMS Precautionary Working Method Statement

SSSI Site(s) of Special Scientific Interest

SWMP Site Waste Management Plan

APPENDIX 1

Gate Specification



DESCRIPTION OF MATERIAL	SIZE	FIXINGS AND FITTINGS
Hanging post (Tubular steel)	139.7 outer dia.x 4.5 thick	Top capping plate 4.8 thick Two 230x150x4.8 wing plates stitch welded to post Base plate 250x250x4.8 Cap and base plates to be continuously flush welded to tube
Shutting post (Tubular steel)	114.3 outer dia.x 3.6 thick	
Outer frames	48.3 outer dia.x 2.9 thick	
Infilling horizontal rails (All tubular steel)	42.4 outer dia.x 2.6 thick	
Vertical braces (steel flat)	Four 38x4.8	Fillet welded to each gate member crossed by braces
Diagonal braces (steel flat)	Two 38x4.8	

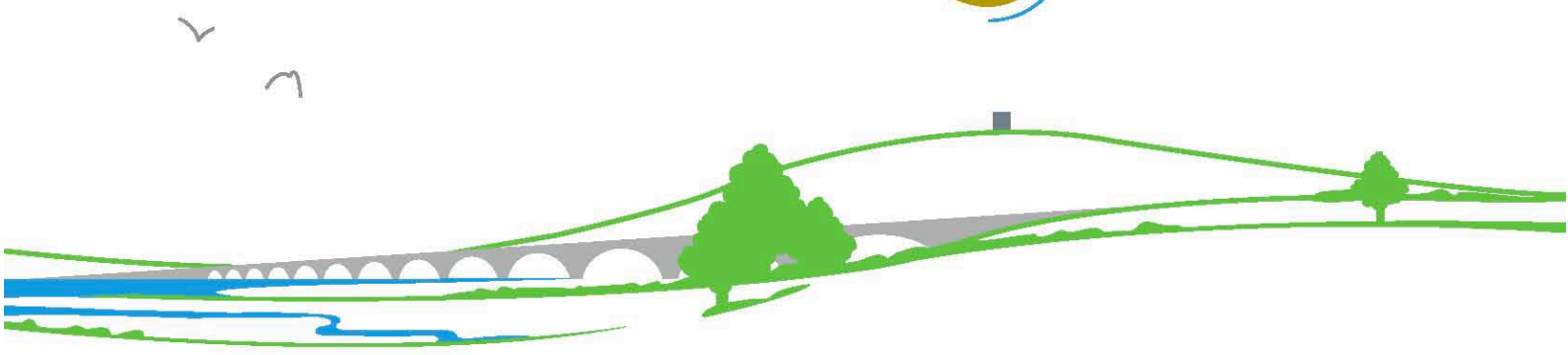
NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. Gates shall comply with the appropriate Clauses in Series 300, any further requirements in Appendix 1/15 or 3/1, and with BS 3470. (Cattle yard).
3. For details of latches and fittings see Drawing Nos. H26,H27 & H28.
4. Gate stops to be provided in accordance with Drawing No. H33.
5. The gate shall open into the owner's property.
6. The corners of the main frame may be rounded, rounded and mitred (as drawn),mitred,saddled or crimped.
7. Protective treatment to be as described in Appendix 1/15 or 3/1.

HIGHWAY CONSTRUCTION DETAILS	FENCES, STILES & GATES	B	MAY 04	STEEL EXTRA WIDE SINGLE FIELD GATE	Drawing No.
		A	DEC 91		H19
		Issue	Date		

Penny Anderson Associates Ltd

CONSULTANT ECOLOGISTS



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