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Dearne Reach Integrated Constructed Wetland

Outline Construction Environmental Management
Plan

March 2024

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Dearne Reach Integrated Constructed Wetland

Outline Construction Environmental Management Plan

March 2024

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
P01	14.03.24	KF/LM	GC/SS	JS/BC	First Issue

Document reference: YW.202043.02 | YW.202043.02-MM-WWT-WWT-RP-Z-0011 | P01 |

Information class: Standard

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1 Introduction

1.1 Scheme Overview

Yorkshire Water Services Limited (hereafter, Yorkshire Water) are proposing a development of an Integrated Constructed Wetland (ICW), motor control centre kiosk (MCC), wetland outfall weir and associated ancillary plant for operational improvements, such as updates to the pipework and pump station, to Clayton West Wastewater Treatment Works (WwTW) (hereafter referred to as the 'Scheme').

The Scheme (see Appendix A) is located along Wakefield Road, Denby Dale, Clayton West, Kirklees and comprises an area of 12 hectares (ha) of which 8.3ha is modified grassland fields and 3.7ha is the River Dearne and the existing WwTW. The Scheme crosses the River Dearne, which separates the wetland development from the existing WwTW. The OS Grid Reference for the approximate centre of the Scheme is National Grid Reference SE 26657 12083.

The Scheme requires the construction of the following developments:

1.1.1 ICW

- Construction of 13 wetland cells totalling an area of 4.3ha, using Scheme-won material utilised wherever possible;
- Construction of rising main below the River Dearne from Clayton WwTW to the inlet of the wetlands at the northeast of the Scheme;
- Stoned access track around the wetlands for maintenance;
- New inlet and outlet structures to the wetlands, including monitoring chambers; and
- Diversion of a Public Rights of Way (PRoW), public footpath DEN/15/40, which transects the Scheme from west to east. The diversion proposes a new footpath to be created at the southern edge of the ICW, running adjacent to the River Dearne from west to east.

1.1.2 Clayton West WwTW

- Construction of new below ground pumping station and ancillaries capable of delivering up to 350l/s of flow from the WwTW to the wetlands;
- Construction of new sewer lengths and manholes from existing infrastructure to the new pumping station; and
- New kiosk to house MCC and control panels.

1.2 Construction Activities

The construction of the Scheme will be undertaken in two parts, the first will be a construction of the Scheme compound and the second would be the construction of the ICW and Clayton West WwTW.

1.2.1 Scheme Compound

The construction of the proposed Scheme compound and haul roads are expected to begin in May 2024 and last for a period of three months (end July 2024). Once completed, the compound and haul roads shall be to facilitate the construction of the ICW, which is anticipated to last 14 months. Upon completion, the Scheme compound is to be returned to grazed modified grassland through reprofiled topography using surplus material, with the compound demobilised, stone removed, and tree, hedgerow and grass planting completed in line with Biodiversity Net Gain (BNG) requirements.

The Scheme compound works would include:

- Temporary Scheme compound access off Litherop Lane;
- Large temporary Scheme compound used to facilitate the construction of wetlands & improvements at the existing waste water treatment plant;
- Temporary speed reduction along Wakefield Road and Litherop Lane during construction to improve road and Scheme safety; and
- Vegetation / tree removal and habitat clearance.

1.2.2 ICW

The construction of the ICW is anticipated to commence in and last for a period of 14 months (end August 2025). Construction works would include:

- Topsoil removal;
- Vegetation / tree removal and pruning, and habitat clearance;
- Earthworks including excavation of 13 wetland cells and reprofiling of land;
- Installation and interconnecting of pipework between wetland cells;
- Liner installation of wetland cells;
- Soil cover over liner installation;
- Wetland planting;
- Installation of access road;
- Installation of ditch crossing, cattle track and associated infrastructure such as posts and rail fencing;
- Directional drilling, under River Dearne, from the WwTW to ICW to enable connection to discharge structure;
- Installation of shafts, pumps, valves, covers, MMC and ducting; and
- Installation of outfall, associated headwall, sampling and monitoring chambers.

1.3 Purpose of the Outline Construction Environmental Management Plan

The purpose of this outline CEMP is to provide details of the various Scheme-specific environmental / ecological control measures that will be implemented to avoid, minimise or mitigate effects on the environment and ecological receptors within the surrounding area of the Scheme during construction of the ICW. The CEMP accompanies the planning application submission and draws together environmental / ecological assessment work undertaken during the design of the Scheme.

This outline CEMP has been prepared in advance of appointment of the Principal Contactor and will be adopted and expanded upon into a detailed CEMP by the Principal Contractor in advance of the work commencing within the Scheme and when full construction details are known.

The aim of the CEMP is to:

- Define environmental roles and responsibilities during construction;
- Define the environmental / ecological risks during the construction of the scheme and any legal obligations to ensure environmental / ecological receptors are not affected;
- Set out the Scheme-specific environmental / ecological mitigation and control requirements that will be adhered to during construction, to limit the impacts of the construction phase of the proposed development on the environment and ecological receptors;

- Detail the environmental / ecological monitoring, reporting and reviewing procedures that will be adhered to during construction, detailing any required environmental permits, licences and consents; and
- Outline any time sensitive works that will require specialist environmental input or supervision.

1.4 Structure of Report

The remainder of this document is structured as follows:

- Section 2 – Describes the roles, responsibilities and training anticipated for the Scheme;
- Section 3 – Identifies the relevant requirements of UK environmental law, as applicable to the Scheme, the key ecological and environmental receptors, impact risks and description of impactful activities of the Scheme;
- Section 4 – Identifies the mitigation to manage the ecological and environmental risks associated with the Scheme;
- Section 5 – Outlines the management, monitoring and reporting mechanisms that strive to continuously improve environmental performance across the Scheme; and
- Section 6 – Outlines any time sensitive input areas or works requiring specialist environmental support to mitigate any impacts of the Scheme.

1.5 Related Documents

A Construction Traffic Management Plan (CTMP) (YW.202043.02-MMB-WWT-WWT-PL-Z-0001) has been produced for the Scheme, which sets the principles for the overall management of construction traffic. This CTMP has been prepared in advance of detailed construction planning, enabling a strategic approach whereby key decisions have been taken to ensure opportunities for positive benefits in minimising environmental impact are secured during the delivery of the proposals.

The following environmental appraisals and assessments were undertaken prior to the production of this outline CEMP, these can be read in conjunction with the CEMP for further detail.

1.5.1 Scheme Compound

- Construction Traffic Management Plan (YW.202043.02-MMB-WWT-WWT-PL-Z-0001, Mott MacDonald Bentley, September 2023);
- Dearne Reach 1 Enabling Works Landscape and Visual Appraisal (70113565-LUD-S3-001, WSP, November 2023);
- Dearne Reach 1 Site Compound Flood Risk Assessment and Outline Drainage Strategy (DR1UMP-WSP-XX-RP-D-000001, WSP, October 2023); and
- Dearne Reach Site Compound Preliminary Ecological Appraisal YW.202043.02-MMB-WWT-WWT-RP-Z-0005, Mott MacDonald, October 2023).

1.5.2 ICW

- Clayton West Wastewater Treatment Works: Preliminary Ecological Appraisal Report (021-23 RE01, BL Ecology, July 2023); and
Dearne Reach 1 – Wetland Scheme Flood Risk Assessment and Outline Drainage strategy (DR1UMP-WSP-XX-RP-D-000001, WSP, December 2023).

1.5.3 Overall Scheme

- Clayton West Sewage Treatment Works Archaeological Watching Brief (Report no. 4025, West Yorkshire Archaeological Services, August 2023);
- Clayton West Water Framework Directive Assessment (WSP, December 2023);
- Dearne Reach Arboricultural Survey Report (YW.202043.02-MMB-WWT-WWT-RP-Z-0001, Mott MacDonald, November 2023);
- Dearne West Clayton Historic Environment Desk Based Assessment (331001734 ,Stantec, March 2023);
- Environmental Screening Document (331001734_Dearne_01_Environmental Constraints_Issue02.pptx, Stantec, February 2023);
- Dearne Reach Bats and Barn Owl Protected Species Report (YW.202043.02-MM-WWT-WWT-RP-Z-0009, Mott MacDonald, January 2024); and
- Dearne Reach Otter, Water Vole, Kingfisher and WCC Protected Species Report (YW.202043.02-MM-WWT-WWT-RP-Z-0009, Mott MacDonald, February 2024).

2 Roles, Responsibilities and Training

2.1 Introduction

To ensure that environmental standards are maintained throughout the construction works, it is necessary that every person working on the Scheme is aware of their responsibilities. Specific roles and responsibilities have been set out below. The Principal Contractor will have overall responsibility for implementation of the CEMP and will ensure that the provisions and commitments set out within the CEMP, including obtaining relevant permits, licences, consents, and associated mitigation measures that apply to the proposed work are adhered to.

2.2 Client

The Client shall provide general oversight and strategic direction to the works. Client representation on the Scheme relevant to the implementation of the CEMP would include a Project Manager (PM) and an Environmental Project Manager to ensure delivery of the commitments set out in the CEMP. They will liaise with the Key Principal Contractor roles as described below. The phasing in the works will result in changes in the parties responsible for these roles.

2.3 Principal Contractor

The Principal Contractor shall execute the work and would have direct responsibility for updating and implementing the CEMP. The Principal Contractor would ensure that all members of the Project Team, including sub-contractors, comply with the procedures set out in the CEMP. The Principal Contractor would also ensure that all persons working on the Scheme are provided with sufficient training, supervision, and instruction to fulfil this requirement.

The Principal Contractor shall ensure that all persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood. The Principal Contractor Environmental Team comprises of Scheme Agent, Project Manager, Environmental Advisor and Ecological Clerk of Work, the responsibilities of these roles are outlined throughout Section 2.3.1- 2.3.4.

2.3.1 Principal Contractor's – Scheme Agent

The Scheme Agent's environmental management responsibilities will include but are not limited to:

- Ensure that all personnel have received and understood the Scheme induction;
- Undertake suitable checks to confirm that personnel are suitably qualified and have undertaken appropriate environmental training to cover tasks to be carried out in compliance with the CEMP;
- Sign off relevant work permit forms for staff;
- Undertake regular inspections on the Scheme. This will include daily considerations of weather conditions, with reference to the three-day weather forecast in order to ensure that appropriate mitigation measures are in place to manage weather challenges;
- Report any public complaint matters to the Principal Contractor PM as soon as practicable, completing the complaints log;
- Ensure that environmental incidents are reported to the Client Project Manager within 30 minutes for further communication to all relevant parties;

- If the Client Project Manager or Environmental Project Manager cannot be contacted, the Principal Contractor's Scheme Agent must notify the Client within 30 minutes by telephone;
- Ensure that any such events are subsequently reported via the Principal Contractor's incident reporting system;
- Undertake investigations into environmental incidents or near misses to determine the root / direct cause and present the findings, recommendations and lessons learnt;
- Oversee Scheme works, alongside the Principal Contractor's Environmental Advisor, with a view to eliminating / reducing the environmental impact of the works and raising any environmental concerns with the Principal Contractor's Environmental Advisor;
- Ensure Toolbox Talks are carried out and recorded on relevant environmental topics;
- Carry out environmental checks keeping records as appropriate;
- Ensure that environmental emergency plans are prepared by Principal Contractor's Environmental Advisor and tested;
- Ensure that the risk assessments for control of substances hazardous to health regulations (COSHH), noise and environmental risk are prepared by the Principal Contractor's Environmental Advisor and effectively monitored, reviewed, and communicated on the Scheme;
- Managing the preparation and implementation of method statements;
- Ensure that the Principal Contractor's Environmental Advisor reviews all method statements and that relevant environmental protocols are incorporated and appended;
- Regular weekly survey to monitor environmental / ecological sensitivities on the Scheme;
- Ensure the period and frequency of environmental monitoring, reflects higher risk areas and conditions – such as silt run off and changing weather. These high-risk areas will be monitored on a daily basis when high risk activities, e.g., drilling and excavation;
- Produce environmental emergency plans and conduct monthly checks to ensure that they are effective by means of emergency drills;
- Inspect the Scheme to ensure effective implementation / operation of any environmental mitigation measures, including inspections of construction activities in close proximity to sensitive environmental receptors;
- Review / comment on Scheme Risk Assessments and Method Statements (RAMS) as necessary with respect to environmental impacts and controls;
- Provide weekly report on environmental works on the Scheme, inclusive of programme updates;
- Assist with investigations into environmental incidents or near misses to determine the root / direct cause and present the findings, recommendations and lessons learnt; and
- Ensure the required audits and inspections are completed as per Section 5 of the CEMP.

2.3.2 Principal Contractor's PM

The Principal Contractor's PM's environmental responsibilities include but are not limited to:

- Facilitate dissemination of specific environmental requirements to the Scheme Delivery Team;
- Oversee the implementation and review of environmental procedures throughout the Scheme. Monitor the environmental performance of the Scheme through maintaining an overview of incidents, inspections and audits;
- Ensure that environmental reviews are undertaken as part of regular Scheme meetings;
- Implement and maintain a communications strategy to manage the Scheme's public relations and potential complaints;

- Review environmental matters with the Client Project Manager on a regular basis and as per Scheme requirements;
- Stop works, if necessary, should an environmental incident occur;
- Ensure that arrangements for liaison with respective regulatory bodies on all environmental issues is appropriate and maintained; and
- Ensure that all environmental incidents are reported to the Client in accordance with the detailed reporting requirements (Client Project Manager or Environmental Project Manager within 30 minutes of the Contractor being notified) and the respective regulatory bodies (where required) as soon as possible.

2.3.3 Principal Contractor's Environmental Advisor

The Principal Contractor's Environmental Advisor will work with the Principal Contractor's PM on environmental matters. It is recommended that the Environmental advisor to carry out regular Scheme inspections during construction, ensuring that best environmental practice is adhered to throughout the durations of the works.

The Environmental advisor will be responsible for overseeing the contractual construction requirements of the Planning Consent and the implementation of the requirements detailed within the CEMP.

The Environmental Advisor will be responsible for ensuring all stakeholders and environmental constraints are managed in line with procedures set out in the CEMP. Their role will include:

- Implement, review and update Construction Environmental Management Plan (in conjunction with the Scheme Delivery Team) in accordance with Client requirements, Contractor's procedures, licence / consent requirements and current legislation;
- Ensure that specific environmental management plans are implemented for: pollution, water, waste, ecology, noise and air quality management;
- Lead the implementation of environmental mitigation particularly management of noise and vibration impacts from works during construction;
- Regularly provide training and Toolbox Talks for Scheme staff to make sure that all personnel work strictly in accordance with the environmental requirements defined in consents / licenses and CEMP;
- Ensure that all appropriate consents and licences are in place prior to work starting on the Scheme;
- To be a key interface point for the Client Environmental Project Manager;
- Monitor and report Scheme environmental performance including key performance indicators;
- Engage and manage specialist sub-contractors / consultants;
- Manage and update the environmental programme, with surveys, mitigation measures, and monitoring;
- Investigate and report on environmental incidents;
- Approve the closure of any environmental corrective actions and non-compliance from audits / inspections;
- Provide the necessary updates and reports to the Scheme Delivery Team and Client Environmental Project Manager;
- Interface with Contractor's Scheme staff and subcontracted companies on environmental issues; and
- Check environmental control measures have been effectively implemented.

2.3.4 Ecological Clerk of Work (ECoW)

A lead ECoW for the Scheme, should be appointed (by either the Client or Principal Contractor), will be at least an associate member or higher, of the Chartered Institute of Ecological and Environmental Management (CIEEM), although different ECoW's may be used for different tasks. The ECoW will work with the Principal Contractor's PM and Environmental Advisor on environmental matters. The ECoW's role will be to oversee any works that are sensitive to protected species and habitats. Responsibilities will be to ensure the Contractor is undertaking works legally and in a sensitive way to protected species and habitats within and around the Scheme area.

Key responsibilities and duties include:

- Ensure that specific ecological mitigation is implemented;
- Regularly provide training and Toolbox Talks for Scheme staff to make sure that all personnel work strictly in accordance with the ecological requirements defined in the CEMP;
- Investigate and report on environmental / ecological incidents;
- Approve the closure of any ecological corrective actions and non-compliance from audits / inspections;
- Provide the necessary updates and reports to the Scheme Delivery Team and Client Environmental Project Manager; and
- Check environmental / ecological control measures have been effectively implemented.

2.3.5 Principal Contractor's Heritage Consultant

A Lead Heritage Consultant (LHC) for the Scheme, should be appointed (by either the Client or Principal Contractor), will be at least an associate member or higher, of the Chartered Institute of Archaeologists. The LHC will have a number of responsibilities:

- Preparing task specific WSI's which address the methodological approaches and area specific aims and objectives;
- Preparing and maintaining the programme of archaeological work; in line with the construction programme, which will be provided by the Principal Contractor;
- Development and delivery of the community engagement elements of the Scheme with support from the LHC;
- Managing the budget and programme of archaeological work;
- Preparing defined outputs, such as the report;
- Preparing and delivering the physical and digital archive materials;
- Engaging with the Principal Contractor and LHC; and
- Attending specified progress meetings with the LHC and Client.

It will be the responsibility of the Principal Contractor to ensure that sufficient time is included in the construction programme to undertake the archaeological works and deal with any unexpected or significant archaeological remains (if present) in accordance with the strategy outlined in the Risk Assessment Method Statements.

2.4 Scheme Induction

As part of a Scheme induction, all personnel involved in the Scheme construction will be made aware of the environmental / ecological aspects and impacts of the Scheme. This awareness procedure will ensure that staff are familiar with the principles of the CEMP and the consequences of deviating from these procedures.

All documentation relating to the environmental management of the Scheme will be kept within the Principal Contractor's Scheme office. As part of the Scheme audit, checks will be made to ensure that appropriate documentation is being held and maintained on the Scheme. On completion of the Proposed Development, the final versions of the CEMP and all other documents that record environmental risks, best practice examples, mitigation measures, commitments, environmental incidents, and other relevant information will be provided for inclusion in the project file.

2.5 Specific Environmental Training and Awareness Raising

The risk of adverse environmental effects can be minimised through training and awareness. A project specific training plan that identifies the competency requirements for all personnel allocated with environmental responsibilities will be produced by the Principal Contractor and a register of completed training will be kept by the Principal Contractor's Scheme Agent including the dates on which all personnel undertook environmental training.

The purpose of environmental training is to ensure that all Scheme personnel have the knowledge to successfully implement the environmental requirements of the Proposed Development. In order to ensure the CEMP is implemented on the Scheme, the following environmental training will be carried out.

- Emergency response training;
- Induction, which would include all environmental aspects of the Scheme such as materials and waste management, working in or near waterbodies, surface water pollution and control, ecology, dust management, noise management, archaeology, and emergency preparedness and response;
- Environmental awareness including Toolbox talks will be carried out, by the Principal Contractor's Environmental Advisor, at a minimum of one per week appropriate to the construction works being carried out at that time and also to all existing and new persons carrying out work on the Scheme (Scheme personnel, sub-contractors and any other visitors). Training would cover as a minimum:
 - Legal responsibilities;
 - Noise reduction and abatement;
 - Dust abatement;
 - Water management / pollution control / sedimentation;
 - Waste management;
 - Discovery of archaeological remains;
 - Local terrestrial and aquatic ecology;
 - Biosecurity;
 - Spill management / emergency preparedness and response;
 - Management and storage of materials, fuel, lubricants and oils;
 - Good housekeeping requirements;
 - Communication with the public; and
 - Individuals' responsibilities.
- Environmental bulletins / legalisation briefings / best practice briefings will be used to brief all those carrying out work on the Scheme (Scheme personnel, subcontractors and visitors);
- Task specific training e.g., IOSH Working with Environmental Responsibilities, IOSH Managing Environmental Responsibilities, Scheme Water Management, Use of Pollution Prevention Equipment, Sediment Management and Noise Management, will be provided for

specific personnel with environmental responsibilities e.g., potential sheet piling, surface water management for Scheme supervisors / managers; and

- Project specific information, including relevant elements of the CEMP, would be delivered to all Scheme staff by the Principal Contractor's Environmental Advisor.

3 Risk Assessment

3.1 Environmental Setting and Key Constraints

The ICW and Scheme compound areas predominantly comprises of modified grassland used for grazing livestock. Hedgerows and trees surrounded the majority of the Scheme with some hedgerows running through the Scheme footprint along with lines of trees. An unnamed watercourse runs through the Scheme from north to south into the River Dearne. The River Dearne is surrounded by a broadleaved woodland corridor that runs adjacent to the southern boundary of the ICW.

Clayton West WwTW is located south of the River Dearne and comprises of mostly operational infrastructure and grassland habitats. The Scheme is surrounded by roads to the north, east and west, but is well connected to woodland habitats to the east via the River Dearne. Other surrounding habitats includes arable fields surrounded by hedgerows and trees.

Following a review of the Kirklees Planning Policy Map the Scheme is subject to the following Local Planning Designations:

- Strategic Green Infrastructure Network;
- Biodiversity Opportunity Zone;
- Green Belt; and
- Mineral Safeguarding.

Key environmental receptors of the Scheme at risk are listed below and the locations shown in the environmental constraints plan in Appendix B.

3.1.1 Ecology

3.1.1.1 Designated Sites

- Bretton Park Local Wildlife Site (LWS) and Habitat of Principal Importance (HPI) deciduous woodland located 35m and 10m east of the Scheme.

3.1.1.2 Habitats

The below habitats have been identified as sensitive habitats at risk of being impacted by the proposed Scheme works:

- Hedgerows;
- Trees;
- River Dearne; and
- Unnamed stream

3.1.1.3 Protected / Notable Species

The below protected / notable species have been identified to be at risk of being impacted by the Scheme works:

- Common nesting birds;
- Kingfisher *Alcedo atthis*;
- Barn Owl *Tyto alba*;
- Otter *Lutra lutra*;

- Bats;
- Badger *Meles meles*;
- Widespread mammals;
- Widespread amphibians;
- Widespread reptiles; and
- Coarse fish.

3.1.1.4 Invasive Non-native Species

- Invasive Schedule 9 species Indian balsam *Impatiens glandulifer* has been identified within the footprint of the Scheme.

3.1.2 Arboriculture

- A tree protection order (TPO) (ID: DD2/51/w54) is located along Wakefield Road junction into Litherop Lane. This is located outside of the redline boundary however sits upon the access route to the Scheme.

3.1.3 Water Environment

- Flood Zones 1,2 and 3 situated within the Scheme boundary.

3.1.4 Heritage and Archaeology

- Potential archaeological remains within the Scheme boundary;
- A Grade II Listed Building, a milepost (Historic England entry number: 1135308), located immediately north of the Scheme approximately 180m south of Litherop Lane junction along Huddersfield Road (A636); and
- Bretton Hall Registered Park and Garden (Historic England entry number: 1001217), is located immediately east of Litherop Lane.

3.1.5 People

- Human receptors; and
- PRow public footpath DEN/15/40 transects the Scheme from west to east.

3.2 Legislative requirements

All work must be carried out in compliance with the relevant requirements of UK environmental legislation and policy, as applicable to the Scheme. Relevant legislation and policy include but is not limited to the following:

- Control of Pollution Act 1974;
- Environmental Protection Act 1990;
- Environment Act 2021;
- Wildlife and Countryside Act (WCA) 1981 (as amended);
- Conservation of Habitats and Species Regulations (CHSR) 2017 (as amended);
- Natural Environment and Rural Communities (NERC) Act 2006;
- Protection of Badgers Act (PBA) 1992;
- Wild Mammals (Protection) Act 1996;
- Invasive Alien Species (Permitting and Enforcement) Order 2019;
- Water Act 1974; and
- Waste (England and Wales) Regulations 2011.

The Contractor will be responsible for complying with all the legislative and policy requirements as well as any other requirements specified by the relevant regulatory authorities, including the Environment Agency and Kirklees Council, such as Kirklees Biodiversity Action Plan (BAP).

3.3 Specific Ecology Impact Risks

Table 3.1 identifies the key impact risks, associated relative legislation or policy, description of activity that may cause an impact to the ecological receptors.

Table 3.1: Ecological Impact Risks

Receptor	Impact risk type	Description of activity
Common Nesting birds	Destruction of active birds nest which is an offence under the WCA 1981 (as amended)	The works require tree / hedgerow / vegetation clearance where nests could be present.
Kingfisher	Disturbance of active kingfisher burrows which is an offence under the WCA 1981 (as amended)	Installation of the outfall within the River Dearne, heavy landscaping adjacent to the River Dearne for the ICW, sheet piling for the pumping station and directional tunnelling for a new pipeline have potential to disturb potential active kingfisher burrows within the River Dearne.
Barn owl	Destruction and / or disturbance of active barn owl nesting sites which is an offence under the WCA 1981 (as amended)	The works require the removal of a tree (BT22) that has potential to support barn owl. The works also has potential to disturb nesting barn owl through heavy landscaping for the ICW in proximity to a potential nesting site (BT23).
Otters	Disturbance to otters which is an offence under WCA 1981 (as amended) and CHSR 2017 (as amended)	The installation of the wetland outfall on the bank of the River Dearne, heavy landscaping for the ICW, sheet piling for the pumping station and directional tunnelling for a new pipeline may disturb any potential active otter resting sites that have been identified along the banks of the river.
Bats	Destruction and / or disturbance to roosting bats which is an offence under WCA 1981 (as amended) and CHSR 2017 (as amended)	The works require the removal of trees that have suitability for roosting bats. The heavy landscaping for the ICW and potential lighting from the construction compound are to take place adjacent to trees that have a suitability for roosting bats which could cause disturbance. Any works within 20m of Back Lane Bridge could cause disturbance to roosting bats with a soprano pipistrelle day roost identified within the bridge.
Badgers	Injure or kill badgers which is an offence under PBA 1992	The works have potential to injure or kill badgers should they become trapped or fall into open excavations or heavy machinery crush badgers within new setts should they have been created.
Widespread mammals	Killing / injuring of widespread mammals such as hedgehog <i>Erinaceus europaeus</i> and brown hare <i>Lepus europaeus</i> which would contravene the NERC Act 2006	The works have potential to injure or kill widespread mammals should they become trapped or fall into open excavations. The works also have potential to injure or kill hedgehogs through hedgerow / vegetation / brash pile clearance where they might be present.
Widespread reptiles	Killing / injuring of widespread reptiles which is an offence under WCA 1981 (as amended)	The works have potential to injure or kill widespread reptiles through hedgerow / vegetation / brash pile clearance where they might be present.
Widespread amphibians	Killing / injuring of widespread amphibians such as common toad <i>Bufo bufo</i> which would contravene the NERC Act 2006	The works have potential to injure or kill widespread amphibians through hedgerow / vegetation / brash pile clearance where they might be present.
Coarse Fish	Disturbance to fish populations which would contravene the NERC Act 2006	The construction of the new outfall may cause disturbance to fish through sediment release and any accidental chemical spillage.
Non-native invasive species	Spreading of invasive species which is an offence under WCA 1981 (as amended)	The construction of the outfall, pumping station and the heavy landscaping for the ICW adjacent to the River Dearne has the potential to spread Indian balsam.
Bretton Park LWS and HPI	Damage and disturbance of designated sites and habitats of principal importance which would	The works have potential to damage and disturb Bretton Park LWS and the HPI deciduous woodland located 35m and 10m east of the Scheme,

Receptor	Impact risk type	Description of activity
deciduous woodland	contravene the Kirkless BAP and NERC Act 2006	through dust pollution and increased noise and lighting from the operational compound.
Habitats within the Scheme	Damage of habitats to be retained will contravene local planning policies (Biodiversity Opportunity Zone and the Strategic Green Infrastructure Network "River Deane Corridor") to maintain biodiversity and connectivity within the Scheme	The Scheme retained habitats could be damaged through direct damage from construction works, dust pollution or sediment run off into watercourses.

Source: Mott MacDonald, 2024

3.4 General Environmental Impact Risks

Table 3.3 below identifies general environmental risks that could result in an environmental impact. It identifies the receptors, impact risks and description of activities which could lead to a potential impact. Appropriate measures to mitigate these impacts are outlined in Section 4.

Table 3.2: Potential environmental impacts

Receptors	Impact Risk type	Description of activity
Members of the general public	Traffic disruption to the general public through Scheme traffic.	Increased traffic, abnormal sized loads and movement of machinery and plant equipment to and from the Scheme area.
Human health	Adverse impacts on human health due to changes in air quality.	Temporary construction traffic in the area is expected to increase as a result of the Scheme. There is the potential for the release of particulate matter (PM10 and PM2.5) as a result of construction which can have adverse impacts on human health
Archaeological remains	Impacting potential unknown archaeological remains	Excavations required during construction have the potential to remove unknown archaeological remains which may exist within the footprint of the Scheme.
Members of the public	Increased noise levels	Increased temporary noise impacts from construction works and resultant effects on members of the public that pass through and along the PRow within the Scheme (footpath DEN/15/40).
Water Environment Contamination	Impact of water quality	Movement of plant and equipment within the riparian zone (within 10m of bank top) has potential to result in the generation of sediment runoff, increased surface water runoff and / or pollution incidents due to fuel / chemicals, resulting in temporary deterioration in water quality. Use of plant and machinery within the river channel could cause pollution incidents and / or disturbance / mobilisation of sediment, causing temporary changes in water quality and / or damage / permanent destruction of in channel bedforms and habitat.
Water Environment (Flooding)	Risk of flooding and displacement of equipment and material. Risk to people during a flood event.	Stockpiling of construction material / sediment at construction compounds could be at risk of flooding, and flood waters could be displaced as a result of the storage materials.
Soils	Impact on soil quality and quantity	Construction has the potential to damage or permanently remove agricultural soils.
Human health and watercourses	Impact on human health and watercourse contamination.	Construction activities may create dust which may impact adjacent Scheme users and mobilise any existing contamination impacting on controlled waters.

Source: Mott MacDonald, 2024

4 Measures to Avoid / Reduce Impacts During Construction

4.1 Introduction

This section outlines the key ecological and environmental impacts risks associated with the Scheme, as well as the measures to be undertaken to manage and mitigate these impacts.

4.2 Biodiversity and Ecology Mitigation

4.2.1 Destruction of Active Bird Nests

Hedgerows and trees identified for removal are shown in the tree protection plan (Appendix C) (reference: YW.202043.02-MMB-WWT-WWT-DR-Z-1007). Any vegetation clearance including hedgerow and tree removal should be completed outside the bird breeding season of March to September inclusive. Should any vegetation clearance occur during this time, a nesting bird check will be required to be undertaken by the ECoW a maximum of 24 hours prior to the clearance and the ECoW will be present during the clearance works. Should an active nest be identified then the Scheme ECoW be notified to determine a no-works buffer zone dependant on the species, until the juveniles have fledged the nest.

4.2.2 Disturbance to Kingfisher

Prior to the installation of the outfall, sheet piling for the pumping station, directional tunnelling for a new pipeline and heavy landscaping commencing within 50m of the River Dearne, a pre-commencement check of the potential burrows and any new burrows should be completed for nesting kingfisher between April-September.

Should kingfishers be found to be nesting, then further advice on working restrictions in the vicinity of any active burrows may be required.

4.2.3 Destruction and / or disturbance of active barn owl nesting sites

Prior to the felling of any trees, a ground level inspection and / or aerial inspection of the trees should be conducted to check for any suitability or evidence of barn owl. Should no evidence be found, then the tree can be felled within 24 hours following any other methodology related to other protected species, as required.

Prior to the heavy landscaping within the ICW, tree BT23 (shown within appendix E) should be subject to an aerial inspection for any signs of nesting barn owl within the barn owl box. Should barn owls be found to be nesting, then further advice on working restrictions in the vicinity of the tree may be required.

4.2.4 Disturbance to Otters

Within three months prior to the installation of the outfall, sheet piling for the pumping station, directional tunnelling of a new pipeline and heavy landscaping commencing within 30m of the River Dearne, a pre-commencement check of the potential resting sites should be undertaken for any signs of active otter use. Should any signs of use be identified then the potential resting site should be monitored for a minimum of 21 days to confirm it is not currently in active use.

The artificial holt that has been created by a local group (Grid Reference SE 26684 11929, also shown in appendix F) should be monitored for a minimum of 21 days, within three months prior to works starting within 30m of it.

If otters are found to be actively using any of the resting sites, then an otter mitigation licence from Natural England may be required, to allow the works to continue within 30m of the resting sites.

Other general mitigation to safeguard otters and avoid disturbance during the works include:

- Due to the potential for otter and other mammals moving through the Site, any excavations should be covered overnight, or a plank should be placed inside at no more than a 45° angle to provide an escape route for any animals that may become trapped inside;
- Work hours should be restricted to day-light hours. Use of artificial lighting should be minimised, with any artificial lighting be directed away from the River Dearne and should be hooded to minimise light spill;
- Measures should be in place to avoid excessive dust entering the watercourse and covering bankside vegetation;
- Materials, stored equipment and chemicals should be stored safely and away from any watercourse, with a minimum distance of 30m away from the River Dearne and any potential resting sites or areas of sprainting. Spill kits should also be used for use of any chemicals or harmful pollutants; and
- Good practice pollution prevention methods should be implemented such as 'CIRIA Control of Water Pollution from Construction Sites: Guidance for Consultant and Contractors (C532)'.

4.2.5 Destruction and / or Disturbance to Roosting Bats

4.2.5.1 Trees

Prior to the felling of any trees, a ground level inspection and / or aerial inspection of the trees should be conducted to check for any new feature(s) that might have established since the initial assessment.

Trees to be felled that have suitability for roosting bats, should be removed between November to March (inclusive). Where removal between this period is not possible, ecological supervision from an ECoW should be present during the felling of any trees with bat roosting suitability.

Soft felling methods should be adopted for any trees with bat roosting suitability that are to be felled. This involves sectioning limbs with potential roosting features and lowering them to the ground, to be checked fully by a ECoW that is a licenced bat ecologist. If they can't be fully checked by a licenced bat ecologist, they are to be left for 24hours before being removed and / or chipped. In the unlikely event a bat is recorded, works would cease immediately in that area and the ECoW would consult with Natural England, as required.

4.2.5.2 Back Lane Bridge

Two roosts were identified within the bridge (one on the northern underside and one on the north east aspect) with a maximum of two soprano pipistrelle bats observed emerging from either of the roosts. Any works within 20m of the bridge should be undertaken between November to March (inclusive). Should works need to be undertaken outside of this period, the works should be supervised by an ECoW that is a licenced bat ecologist.

4.2.5.3 General mitigation

Other general mitigation to safeguard roosting bats and avoid disturbance during the works include:

- Night works should be avoided, where possible. Where this is not possible, a sensitive artificial lighting plan should be designed to minimise light spill onto habitats adjacent to the works area(s) during any proposed night works. A Toolbox Talk on bats should also be delivered to all contractors by an ECoW prior to any night works commencing.
- No artificial lighting is proposed for the development of the wetland. Should lighting be required then a sensitive lighting strategy should be developed following the guidance set out in *Bats and artificial lighting at night* (BCT and ILP, 2023).
- Should artificial lighting be required for the compound area (east of the Scheme), this should be directed away from the perimeter habitats and habitats running through the Scheme, such as the lines of trees and hedgerow and stream that runs south down the centre of the Site. These habitats are used by bats for foraging. Any lighting in proximity to these habitats should consider light spill accessories to reduce light spill onto these habitats and upwards. Lighting should be at the lowest permissible lighting levels and column height required and directed downwards following the guidance set out in *Bats and artificial lighting at night* (BCT and ILP, 2023).
- Fencing with dust netting should be in place to avoid excessive dust as not to impact retained trees with bat roosting suitability.
- No storage of material, parking or movement of vehicles and/or plant vehicles within tree root protection areas of trees to protect and avoid the deterioration of a tree's health, which may result in the loss of potential roosting trees in the future. For example, a tree may require felling on grounds of safety, if its structural integrity is compromised as a result of roots failure.
- Any welfare units should be located as far away as possible from trees with bat roosting suitability, with a minimum buffer of 30m.

4.2.6 Killing / Injuring Badgers and Widespread Mammals

Prior to the works commencing on the Scheme, a pre-commencement check for badgers and other mammals should be completed to identify any recent badger setts or other mammal activity that may require safeguarding from works such as heavy landscaping using heavy machinery.

Should any badger setts be identified on, or immediately adjacent to the Scheme then a badger mitigation licence could be required prior to any works commencing within 30m of the sett. It should be noted that licences to exclude badger from setts and to temporarily close or destroy a sett are only issued between 1 July and 30 November, other than in exceptional circumstances.

Due to the potential for badgers and other mammals moving through the Scheme, any excavations should be covered overnight, or a plank should be placed inside at no more than a 45° angle to provide an escape route for any animals that may become trapped inside.

Any brash or log piles within the Scheme that require removal should be dismantled by hand to avoid injure or harm to small mammals such as hedgehogs.

4.2.7 Killing / Injuring of Widespread Amphibians and Reptiles

A pre-cautionary method statement should be produced by the Scheme's ECoW that outlines that removal of any hibernacula such as log piles or brash to be completed by hand and during the months of March to October when amphibians and reptiles are active. For any vegetation / hedgerow removal, phased cutting techniques should be adopted where the vegetation /

hedgerow is trimmed to a height of 150mm, with arising removed from the area. Then the vegetation / hedgerow is either left over night or the area or base of the hedgerow hand searched by an ECoW before being strimming down to ground level if required.

Should any amphibians or reptiles be found during the works, then works will stop immediately in that area and advice be sought by an ECoW.

4.2.8 Disturbance to Fish Populations

The construction of the new outfall should occur outside the coarse fish breeding season between 15th March and 15th June.

Any machinery or person entering any watercourse should have clean equipment or boots free of mud or debris from previous Schemes, disinfected using Virkon S and be dry before undertaking any works.

Prevent silt deposits entering the watercourse, which affects water quality, during the construction of the new outfall by following the good practice pollution prevention methods in 'CIRIA Control of Water Pollution from Construction Sites: Guidance for Consultant and Contractors (C532)'..

4.2.9 Spreading Invasive Non-native Plant Species

To control the spread of invasive non-native plant species during the construction works, general mitigation and work specific mitigation have been outlined below to prevent their spread within the Scheme. Indian balsam was the only invasive non-native species identified within the Scheme and the extent of the balsam is shown within Appendix G.

4.2.9.1 General Mitigation

- Any areas where Indian balsam is present and within 7m from the works area, then the Indian balsam should be fenced off with contaminated zone signage to prevent access by plant equipment and personnel, this distance may require extending for areas that might have elevation discrepancies, typically subject to strong winds, etc. which could cause the seeds to travel further;
- Scheme control measures should be made clear to all contractors working on the Scheme via induction meetings and method statements;
- Wheel and boot washing facilities for all vehicles and personnel entering and leaving the Scheme should be provided when working in zones of contamination;
- Any machinery entering the Scheme from elsewhere should be checked to make sure no material is brought in from elsewhere; and
- Any machinery working within areas or 7m of strands of Indian balsam should either remain in these areas or washed off prior to leaving the area and working elsewhere to prevent further spread within the Scheme.

4.2.9.2 Earth Works within 7m North of the River Dearne

- Where possible, the general Scheme measures (Section 4.2.9.1) should apply;
- An ECoW should undertake a pre-commencement check along the north of the River Dearne should the works commence between July-October to check the extent of Indian balsam; and
- There is a risk of Indian balsam being present within the topsoil seedbank being 7m from the known stands along the River Dearne (See buffer in Appendix G). Therefore, the top soil within this area should be subjected to a 'surface scrape' with the spoil being stored in a

designated and controlled location within the Scheme. This should be clearly marked, and not be used elsewhere within the Scheme. The material could then be subjected to an herbicidal treatment in-situ and following completion of the work can be placed back within the area it came from making sure that it cannot runoff into any drains or adjacent watercourses. If this is not possible then the spoil may need to be disposed of as contaminated waste and taken away by a licenced provider.

4.2.9.3 Outfall and Proposed Pumping Station Construction Area

- Where possible, the general Scheme measures (Section 4.2.9.1) should apply;
- Works should take place outside of the period where Indian balsam is seeding. In general, this is between July – October, where this is not possible it is recommended that the Indian balsam on site is subjected to a herbicidal treatment prior to the works by a reputable invasive vegetation specialist;
- An ECoW should undertake a pre-commencement check around the outfall and proposed pumping station construction areas if the works are to commence between July - October to check the extent of Indian balsam;
- If Indian balsam is present within the work areas. The stands should be removed by hand prior to seeding. The plant material should be placed where other patches of Indian balsam already exist within the area. If this is not possible prior to seeding, then the seedheads should be removed by hand using a plastic bag so that no seeds are dispersed when removed; and
- There is a risk of Indian balsam being present within the topsoil seedbank being 7m from the known strands (See buffer in Appendix G). Therefore the top soil within this area should be subjected to a 'surface scrape' with the spoil being stored in a designated and controlled location within the Scheme. This should be clearly marked, and not be used elsewhere within the Scheme. The material could then be subjected to a herbicidal treatment in-situ and following completion of the work can be placed back within the area it came from making sure that it cannot runoff into any drains or adjacent watercourses. If this is not possible then the spoil may need to be disposed of as contaminated waste and taken away by a licenced provider.

4.2.10 Damage and Disturbance to Bretton Park LWS and HPI deciduous woodland

Dust dampening of ground during dry weather and the installation of dust netting along the eastern boundary of the Scheme should be installed to protect the LWS and HPI from dust pollution from the works. Night working should be avoided, and lighting directed away from the eastern boundary, to minimise the impact to any species residing within LWS and the HPI that may be disturbed by an increase in noise or light pollution during the construction and operation phases of the works.

4.2.11 Damage to Habitats within the Scheme

The Scheme retained habitats such as hedgerows and trees should be protected from direct damage from construction works through erecting temporary barriers around these habitats.

Dust dampening of ground during dry weather and the installation of dust netting along the River Dearne, hedgerow and tree habitats should be installed to protect them from dust pollution from the works.

Good practice pollution prevention methods should be implemented such as 'CIRIA Control of Water Pollution from Construction Sites: Guidance for Consultant and Contractors (C532)' to prevent sediment run off into watercourses.

4.3 Environmental Mitigation Measures

4.3.1 Arboriculture

An Arboricultural Survey Report (YW.202043.02-MMB-WWT-WWT-RP-Z-0001) has been prepared for the Scheme, a breakdown of the findings of the report are summarised below.

The following trees and hedges are to be removed as part of the Scheme (see Appendix C):

- Tree 11 and 2 trees within group G1 are in direct conflict with the haul road and required for removal;
- Trees 31 – 35;
- Tree 42;
- Group G7; and
- Hedges H7 - H11

The following hedges are to be partially removed as part of the Scheme:

- H1 and H2, this equates to approximately 23m; and H12 and H14 this equates to approximately 30m.

Tree 47 is category U, but has high ecological value, therefore where feasible this tree would be retained. It is recommended that it is reduced in height creating a singular stem of up to 5m, this would enable retention of some of the ecological features.

Temporary protective barriers are to be erected for the following trees:

- Trees 1, 7, 8, 9, 12, 13, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28, 36, 37, 38, 40, 41, 43, 48, 49, 50, 51 and 52;
- Groups G1, G2, G3, G4, G5 and G6; and
- Hedges H2, H4, H12, H13 and H14.

The Scheme compound cabins, welfare facilities, temporary haulage road and storage areas would be situated outside of the root protection areas for trees 1, 11, 17, 19, 21, 22, 26, 37, 51 groups G2, G4, G5 and G6 and hedge H2.

Tree pruning is required for trees 16 and 17 to facilitate the movement of vehicles along the temporary haul road. Hedge H1 would also require pruning to improve the line of sight when accessing and egressing from site.

A tree preservation order (TPO) (ID: DD2/51/w54) is located along Wakefield Road junction into Litherop Lane. This is located outside of the redline boundary however sits upon the access route to the Scheme. It is deemed the junction is sufficient for all access activities as defined by Construction Traffic Management Plan (CTMP) and does not require highways alterations. Should overhanging branches or vegetation be identified as vulnerable to construction traffic impact, the applicant will seek TPO consent. It is assumed that the local authority maintains the safety of the highway to ensure the TPO is not limiting visibility splays.

A 5m clearance is required for the installation of the precast outfall, outside of the root protection area (RPA) for trees 41 and 43. However, should this change, and the works fall within the RPA then a protective barrier should be installed to cover as much of the RPA as possible whilst still allowing construction. To facilitate the installation of the precast outfall, tree 42 would be removed.

The raising of earthworks required for the wetland area construction encroaches into the RPA of Tree 30. Arboricultural supervision will be needed to determine if the tree can be retained or whether too much of the root system will be impacted by the works, in which case the tree will need to be felled.

The permanent PRow diversion would use protective barriers during the wetland construction phase to separate pedestrians using the walking route from the Scheme. Where this occurs tree protection barriers would not be viable due to a lack of space, in this instance ground protection would be installed.

Access roads along the edges of the proposed development are to be retained and access would be kept at least 1m away from the base of hedgerows, this applies to hedgerows H4-H6.

Tree pruning is required where the PRow is being diverted to allow a maximum 3m vertical clearance, this applies to trees 44 and 45, groups G8, G10, G11, G12, G13, G16, G17, G18 and G19. G11 has a large crack and has fallen over the existing fence, this would also need to be cut back.

It is recommended that arboricultural supervision is required for works within RPAs of tree 30, 41 and 43 and for the installation of the precast outfall including the required 5m clearance which includes. It should be noted that arboricultural supervision is not a guarantee for retention and there is still the potential for trees to be lost in these areas.

In summary, protective measures would be implemented to ensure that trees located within the Scheme boundary are protected during the construction and operation phases. 8 trees are recommended for removal to facilitate the Scheme, this includes trees 11, 31-35, 42, two trees within in G1 and G7. To mitigate the removal of these trees, all trees would be replaced with new trees at a ratio of 1:1 in accordance with the Landscape Mitigation Planting Plan.

4.3.2 Air Quality

The following general principles would also be applied to minimise dust pollution and subsequently the impact on air quality:

- Regular inspections would be carried out. The frequency of Scheme inspections would be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions;
- All vehicle operators would be instructed to switch off engines when stationary to ensure no idling vehicles;
- Cutting, grinding or sawing equipment would be fitted, or used in conjunction with, suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems;
- Enclosed skips would be used;
- Equipment would be made readily available on the Scheme to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods;
- Haul routes within the Scheme would be inspected for integrity and necessary repairs to the surface implemented as soon as reasonably practicable;
- Where practicable, hard surfaced haul routes would be installed, which are regularly dampened down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- Fit dust extractors, filters or scrubbers to equipment likely to emit excessive dust emission;
- Dust generating activities will be located away from sensitive receptors (human and ecological receptors);
- Adequate supplies of water, sourced by the Principal Contractor, will be available at all times for the dust suppression units that will be operated at times of dust nuisance;
- Stockpiles of dust prone materials will be sprayed in periods of dry weather;

- Hand operated or vehicle mounted spray equipment will be used to spray stockpiles of materials, overburden, access tracks and other sources of dust as required;
- Dust suppression techniques will be used expediently, a fine spray will be used to avoid runoff and over-spraying will be avoided;
- Spraying units will be available and in good working order at all times;
- Standby bowsers will be available to be used will the main units be out of service, and as supplementary units in periods of dry weather;
- A 10mph Scheme speed restriction will be observed at all times;
- Material drop heights will be minimised;
- Wheel wash facilities will be located within the Scheme, within the construction compound, to be utilised;
- Dust monitoring will be undertaken by the Principal Contractor's Environmental Advisor to evaluate the effectiveness of dust suppression measures and to aid the improvement of dust management within the Scheme;
- Should dust suppression measures prove inadequate, operations will cease until additional mitigation measures are taken or conditions improve; and
- The measures outlined within 'Environment guidance EG05: Managing Site Nuisance', should be followed to control dust. Dust monitoring can be expensive and the results may not be immediate. Monitoring equipment should be located as near to sensitive receptors as practicable. Simple visual assessments of dust within the Scheme, should record conditions and activities as well as methods of dust suppression employed can be a good method of dust monitoring.

The mitigation in place shows that the proposed development would not lead to an unacceptable impact on air quality of the area.

4.3.3 Heritage and Archaeology

A Historic Environment Desk-Based Assessment (YW202043 STA WTN WWT EV J 0001) has been undertaken as part of the Scheme. This assessment confirmed there are seven designated heritage assets within the 1km study area. Two heritage assets are located directly adjacent to the Scheme. The first is a Grade II Listed Building, a milepost (Historic England entry number: 1135308), located immediately north of the Scheme approximately 180m south of Litherop Lane junction along Huddersfield Road (A636). The second, Bretton Hall Registered Park and Garden (Historic England entry number: 1001217) is located immediately east of Litherop Lane.

However, the report concludes that there are "*no overriding historic environment constraints that would prohibit or substantially impact the Proposed Scheme*".

A Geophysical Survey Report has been prepared, by Dunelm Geotechnical and Environmental Ltd, following a geophysical survey that was conducted between the 6th and 7th of November 2023. This report provides a detailed account of the survey findings, confirming that based on the methodology provided, any probe works associated with the ground investigation and soil sampling for the Scheme should not require archaeological monitoring, however, this should be confirmed by the Lead Heritage Consultant (LHC) undertaking consultation with Kirklees Council and the West Yorkshire Archaeological Service (WYAS).

Excavating activities may need archaeological monitoring. Further consultation with the local archaeological advisor from WYAS is required to confirm construction methodologies and any required archaeological monitoring. No construction activities are to be completed within the ICW area until agreement is obtained from Kirklees Council and WYAS. If it is deemed necessary by Kirklees Council and WYAS, that archaeological monitoring under a written

scheme of investigation (WSI) is required, an archaeological contractor and LHC will be commissioned by the Principal Contractor then they will have a number of responsibilities as outlined in Section 2.3.5.

The staff undertaking the archaeological investigations must be suitably qualified and as a minimum have ClfA Membership to associate level or equivalent fieldwork experience for their role. The Archaeological Contractors Project Manager must be MCIfA level accredited.

It will be the responsibility of the Principal Contractor to ensure that sufficient time is included in the construction programme to undertake the archaeological works and deal with any unexpected or significant archaeological remains (if present) in accordance with the strategy outlined in the Risk Assessment Method Statements.

4.3.4 Surface water run-off, groundwater and silt

All operations within the Scheme will be carried out in a manner to minimise the production and discharge of silty waters. The management of surface water run-off will be defined within the operation specific method statement and risk assessment to ensure the right solution is implemented for each works activity.

All works will be undertaken in accordance with CIRIA Report C532 (Control of water pollution from construction site: Guidance for consultants and contractors).

As the works are situated directly adjacent to the River Dearne there is potential for water contamination. Protection measures, specified in the above CIRIA Report, will be implemented prior to the construction phase to ensure that the river and waterways are protected prior to works starting. Best practice guidance such as the Environment Agency Pollution Prevention Guidelines will be consulted and followed for construction, this includes:

- Drain covers on existing drainage network;
- Use of absorbent booms on watercourses;
- All fuels and oils shall be stored in compliance with the Control of Pollution (Oil Storage) Regulations 2001;
- Fuel shall be stored in dedicated bunded, impervious storage areas at least 10m away from drains and watercourses;
- Fuel tanks shall be stored within a bund capable of holding 110% of their capacity;
- Small mobile plant shall be stored on drip trays;
- Refuelling shall be carried out only by competent persons and in line with refuelling procedures;
- Suitable spill kits will be stored close to areas of highest risk for spillage, including:
 - Hydrocarbon spill kits will be stored in the Scheme compound store and in vans and mobile plant on the Scheme, and will be re-stocked following use;
 - Hydrocarbon spill kit of a suitable capacity will be located close to and readily accessible from the fuel storage area; and
 - A chemical spill kit will be stored in the Scheme compound store.
- Spill response training will be carried out for Scheme operatives including toolbox talks / Scheme briefings, and hands on demonstration of the use of spill kits;
- Any herbicides used to control species shall be used in accordance with Environment Agency guidelines;
- Personnel carrying out weed treatment will be suitably qualified and experienced; and
- Principal Contractors Project Manager will monitor the condition of the plant and equipment.

As the works are situated directly adjacent to the River Dearne, there is potential for water contamination from silt run off. This particular risk arises from the potential exposure of soils which could enter the river during rainfall events unless adequate controls are put in place. To limit this risk, the methodology listed below will be followed:

- In the interim, a silt fence will be installed at any point where run-off could enter the river; and
- Daily visual checks will be undertaken of the silt protection measures to ensure they are in place and working.

4.3.5 Flooding

A flood risk assessment (DR1UMP-WSP-XX-RP-D-000002), has been undertaken for the Scheme. It summarises that the Scheme is located in Flood Zone 1¹, 2² and 3³ (see Appendix D) The Scheme compound area is situated solely within Flood Zone 1, whereas the ICW area is situated partly in Flood Zones 2 and 3, which is limited to the extents of the River Dearne and the existing watercourse running west to east. In addition to this, available baseline information indicates that there are areas which are at high risk of surface water flooding within the Scheme. As a result, the probability of flooding is assessed can be assessed as medium in the areas of the Scheme.

Due to the probability of flooding on the Scheme, flood evacuation plan techniques are to be established by the contractor, and will include the following:

- The contractor to subscribe to the EA Flood Warning System. If there is a risk of flooding, works will cease and all equipment and plant will be moved away from the river banks;
- No materials or equipment will be stored in the ICW area of the Scheme where surface water is known to attenuate along the hedgerow that runs west to east;
- Checks will be undertaken to ensure all loose material is secured or moved away from the river banks at the end of each shift;
- The river levels and weather upstream of the works will be monitored daily;
- Temporary works will be reviewed and approved by the contractor's temporary works department prior to installation and checked regularly on the Scheme;
- The relevant toolbox talks will be delivered to the Scheme team as part of the Scheme induction; and
- Finally, as the Scheme is located within the flood plain of the River Dearne, consent from the EA in the form of a Flood Risk Activity Permit (FRAP) are required prior to any works being undertaken, more detail on FRAPs are outlined in Section 5.1.9.

4.3.6 Fuel, oil, and chemical spillage

All fuel, oil and chemical deliveries will be supervised by a responsible person who will be trained to deal with any spillage to prevent a pollution problem occurring.

¹ Flood Zone 1 refers to land assessed as having a less than 1 in 1,000 annual probability of river flooding (<0.1%) – lowest risk.

² Flood Zone 2 refers to land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1%– 0.1%) – medium risk.

³ Flood Zone 3 refers to land assessed as having more than 1 in 100 annual probability of river flooding (1% of greater) – Highest risk.

Storage tank levels will be checked before delivery to prevent overfilling and to ensure that the product is delivered to the correct tank.

The storage of materials in the main compound and ICW will be controlled in a such a manner to ensure that materials are not damaged prior to use either through vehicles or people movement or through exposure to the elements.

All fuel, oil and chemicals will be stored on an impervious base within a bunded area and secured. The bund shall have a capacity of 110% of the volume of the products stored within it. All tanks and containers will be kept in a secure compound, be protected from vandalism and will be clearly marked with their contents. Stores shall be located at least 10m from any watercourse in accordance with Building Regulations in Brief, eighth edition; H2 1.27. However, it is recommended that potential pollution sources are located as far from watercourses as possible.

The Scheme Agent selects the most appropriate oil storage and refuelling arrangements for the project, office or depot considering the options and guidance provided in any environment guidance on oil storage and refuelling arrangements. In all cases, the Scheme Agent ensures that containers used for oil / fuel storage (including waste oils) are:

- Compliant with the oil storage regulations (OFST100/T200 standard);
- Structurally sound and strong enough to prevent leakage;
- Labelled with the contents and volume clearly displayed;
- Stored in an upright position within a secondary containment area; and
- Locked and secured when not in use.

All mobile plant will be refuelled in a designated area, within the compound, on an impermeable surface and away from drains. In case of any spillages there will be a spill response kit available at each refuelling point and within each machine working within the highway corridor. Where it is impractical to refuel within a bunded area, a drip tray will be available to catch any spills caused by over fuelling.

4.3.7 Concrete / mortar washout

There will be a designated area for the washout of concrete wagons, shoots and mortar bins within the Scheme in a designated area away from any watercourses or drainage. This will be a pit lined with an impervious membrane to prevent the escape of the alkaline and silty waters entering the groundwater or surface water.

Excess concrete remaining in the delivery wagon at the end of a pour will be returned to a designated collection area. Once works are completed any solid concrete in the washout area will be broken out and used either as suitable fill or disposed of to a licensed waste facility.

4.3.8 Material storage

Stockpiles, within the compound, should be positioned as far away from environmental receptors listed throughout Section 4. Suitable measures are to be implemented to prevent run-off and dispersion if left for any length of time. Any powders should be stored in sealed bags or silos prior to use. All deliveries of dry powders should be undertaken in a manner such as wrapped in a cellophane wrap to minimise dust emissions.

4.3.9 Prevention of mud being deposited on highway

As the compound and construction area is located on agricultural land it is anticipated that there will be large amounts of mud deposits. Where possible and practicable, the contractor will prevent mud being deposited onto the local road network by avoiding the requirement for road

vehicles to travel off the any temporary hard standing areas. The Scheme construction team will make sure that residual materials around the delivery or loading areas are maintained clear and clean. If the collection of mud on the wheels of road vehicles cannot be avoided, wheel washes will be established to clear mud prior to them returning onto the local highway. This requirement would be reviewed on a case-by-case basis but is expected to be likely. A road sweeper will be used if any residue mud is present within the Scheme including Litherop Lane.

For all the designated Scheme access and egress points all deliveries and collections by road vehicle will be made with these vehicles sited on the existing hardstanding areas which are predominantly concrete slabs or tarmacadam surfacing. Preventing any mud going onto the highway will be mitigated by the use of a wheel wash where required.

4.3.10 Measure for the control and reduction of noise from construction works

Noise monitoring shall be carried out as outlined in the contractor's guidance for environmental noise monitoring. Environmental noise monitoring is generally carried out to ensure compliance with Section 61 consent limits or to meet contractual requirements.

Several measures will be used to control occupational noise, these include:

- Keep works within the Scheme operating hours;
- Use sound barriers for noise producing equipment such as generators;
- Turn off plant when not in use;
- Make sure pedestrian routes are routed away from the source of the noise;
- Rotate the task to avoid prolonged exposure to the individual undertaking the task;
- Ensure regular maintenance of plant and equipment;
- Consult with the Local Authority Environmental Health Officer (EHO) proactively about project activities and mitigation measures. Establish a good relationship, irrespective of whether a Section 61 licence is required or not. Provide the EHO with a list of key activities to be carried out and forewarn them of works outside of normal hours;
- Where practicable, avoid operations that are likely to create noise (e.g., select methods to avoid cutting back concrete or scabbling, use shop made steel components to avoid the need to burn and grind within the Scheme);
- Consider alternative methods of work (e.g., silent sheet piling techniques);
- Select plant appropriate to the operation and, where practicable, use silenced plant;
- Consider haulage routes for Scheme deliveries and if possible, divert traffic away from residential areas. Pay particular attention to reversing sirens, deliveries and radios;
- Where possible, plan noisy works for less sensitive times (e.g., during 'normal' working hours);
- When works must be carried out during nights or weekends, ensure the local authority and local community are made aware;
- Select the location of noisy plant and activities to reduce the impact upon Scheme neighbours (e.g., locate batching plant away from pedestrian walking routes, etc) and orientate plant so that directional noise is away from sensitive areas;
- Maintain plant and equipment with adequate lubrication to reduce squeaks and tightening of nuts and bolts to prevent rattling;
- Ensure compressor, generator and engine compartment doors are kept closed and plant turned off when not in use;
- Screen equipment and operations with acoustic barriers or acoustic blankets. Make use of existing buildings, stockpiles or topography as noise barriers;
- Communicate to the workforce the need to keep noise to a minimum at all times; and

- Ask a third party (e.g., Environmental advisor) to monitor activities and identify potential sources of nuisance during Scheme operations. Examples include the installation of foam baffles on scaffold gates to reduce banging on work zone entrance / exit.

5 Management, Monitoring and Reporting

5.1.1 Emergency response planning

An Emergency response plan document will be prepared by the Environmental Advisor prior to construction and communicated to all members of the project team including sub-contractors and emergency services.

The plan will detail the following controls:

- Scheme drainage controls;
- Fuel handling procedures;
- Incident notification;
- Pollution control equipment measures;
- Procedures for the control of dust and mud; and
- Measures to protect watercourses and wildlife from chemical spills or sediment laden run-off.

Responsible staff will be trained in emergency procedures to form an emergency team, so that these procedures can be implemented swiftly and effectively.

5.1.2 Materials Management Plan

A detailed Materials Management Plan (MMP) will be developed by the Principal Contractor to ensure safe use, storage and recycle, reuse or disposal of the excavated material generated by the Scheme. This may involve further sampling and validation testing to ensure suitability for use within the Scheme. The MMP will be produced in accordance with the CL:AIRE Code of Practice⁴. The purpose of the MMP will be to maximise the reuse of suitable Scheme-won material from excavation activities, while minimising waste generated for disposal away from the scheme and the need for importation of virgin materials to the Scheme.

Additional good practices measures that would also be considered in the Scheme are listed below:

- Materials would be delivered on an 'as required' basis to avoid damage or contamination and therefore limit the likelihood of waste and due to unavailability of storage space on the Scheme;
- Temporary stockpiling of fill materials prior to incorporation in the Scheme would be avoided where possible, to ensure double handling and damage is minimised and therefore avoidance of waste. However, where required, materials would be stockpiled in accordance with best practice and managed appropriate to limit the likelihood of damage or contamination;
- Materials will be stored in the compound area. Stockpiles will be positioned as far away from the watercourses as possible and suitable measures implemented to prevent run-off and dispersion if left for any length of time;
- Any powders should be stored in sealed bags or silos prior to use to avoid. All deliveries of dry powders should be undertaken in a manner such as wrapped in a cellophane wrap to minimise dust emissions and avoid contaminating the ground;

⁴ CL:AIRE Definition of Waste: Development Industry Code of Practice, March 2011

- Where appropriate, materials will be kept damp to reduce the risk of drying out. Materials will be kept away from the River Dearne to minimise risk of polluting the waterway. Material storage locations will be reviewed regularly by the Scheme foreman;
- Precast elements would be used where practicable to ensure efficient use of materials and avoid the generation of waste arisings from off-cuts;
- All contaminated waste (including soil) will be identified for proper management and transfer / disposal to an adequate waste management facility;
- All compounds will have steel skips or plastic containers provided for non-recyclable and recyclable waste deposit / collection. When it is not possible, waste will be brought back to the Scheme Office and recyclable waste will be separated within the scheme area.;
- An INNS Management Plan must be produced and implemented as invasive species are known to be present in the area (see Section 4.2.9);
- Where technically appropriate and economically feasible, considerations will be undertaken for the reuse of materials to avoid generation of waste;
- Materials used for the temporary road and car parks within the compounds will be recycled, where feasible.; and
- Principal Contractor to produce an Outline Spoil / Soil Management Strategy (SMS), which will set out how soil is to be managed in accordance with Defra's Code of Practice. This will ensure that the quality of the soil resources, won from the Scheme's area, is maintained and do not become contaminated and remain suitable for reuse where feasible to do.

5.1.3 Topsoil Management

Topsoil will be stockpiled on level ground and away from water courses to prevent any runoff from entering water courses, ditches, and drains. Additionally, topsoil stockpiled on exposed ground must be prevented from generating dust or water runoff. Excavated topsoil will be managed in line with the guidance provided within the SMS.

It is assumed that a topsoil strip of 150mm will be undertaken. The resultant arisings are assumed to be classified as class A/B topsoil and is to be banded and stored within the Scheme. Stored topsoil shall then be reused for landscaping purposes prior to completion of the Scheme. Excess topsoil shall be delivered to local farmers for recycling. The Principal Contractor shall assist all farmers accepting exported topsoil with acquiring an Upper Tier Waste Carrier License.

5.1.4 Site Waste Management Plan

A Site Waste Management Plan (SWMP) would be developed by the Principal Contractor. The SWMP aims to ensure that waste is managed in a structured and auditable manner to minimise the generation of waste and maximise the reuse of materials. In addition, it ensures that the waste produced during the construction phase is dealt with in accordance with the relevant requirements of UK legislation, as well as any other requirements specified by the relevant regulatory authorities.

5.1.4.1 Types and predicted volumes of waste

The main activities that will lead to waste being generated are:

- Wastes arising from excavation works;
- Wastes arising from construction and replacement of assets; and
- Wastes arising from plant maintenance.

5.1.4.2 Waste Storage

All waste materials will be handled and disposed of in compliance with waste management legislation. All storage of waste will be established, implemented, and maintained according to best practice as set out in current Guidance for Pollution Prevention (GPPs)⁵ with regard to containment at source.

Any special (hazardous) wastes requiring remediation or removal will be kept separate from other construction waste materials in order to avoid further contamination and will be classified in accordance with the Hazardous Waste (England and Wales) Regulations 2005 (as amended). They will be stored in separate containers that are appropriately labelled. In accordance with the Waste Framework Directive (2008/98/EC) mixing inert, non-hazardous and special wastes will not be permitted.

Scheme offices and canteens will also generate waste, much of which are recyclable. Separate waste bins will be available in the Scheme offices to facilitate collection of recyclables such as paper, cardboard, aluminium cans and plastic bottles. Scheme Operatives will be regularly reminded of the office / canteen waste recycling procedures and bins will be labelled to assist in their correct usage.

Any other waste storage requirements will be agreed with the Principal Contractor's Environmental Advisor.

5.1.4.3 Waste Control and Handling

Transfers of non-hazardous waste will be accompanied by a waste transfer note (WTN). The Principal Contractor's Environmental Advisor will ensure these are checked and include the necessary information e.g., a written description of the waste and appropriate EWC code(s), in line with Duty of Care responsibility as correct coding on its own is not sufficient to adequately describe the waste. A clear written description is also necessary to ensure safe onward management of the waste. The Principal Contractor's Environmental Advisor will ensure the WTN includes the information listed in Table 5.1.

Table 5.1: Information required on a WTN

Section	Information required
Waste producer	Name and address
	A description of the waste
	EWC code for the waste
	How the waste is contained or packaged
	The quantity of waste
	Standard Industry Code (SIC)
	Signature of producer
Waste carrier	Name of carrier
	Address of carrier
	Registered waste carrier number
	Date and time of collection
	Signature of driver
Disposal site	Name of site
	Address of site
	Permit number

⁵ Including GPP1, GPP2, GPP3, GPP5, GPP6, GPP8, GPP13, GPP21, GPP22 and GPP26

Section	Information required
	Date and time of acceptance
	Signature of receiving site

Source: Environment Agency, 2021⁶

Only registered carriers of waste will be employed for transport purposes and copies of all waste management permits, licences, and exemptions will be obtained and held within the Scheme prior to any movement of waste taking place. For all waste transfers, the Principal Contractor will obtain a copy of the receipt, or a copy of the invoice, from the authorised disposal site as proof that the waste reached the proposed destination.

All controlled WTN will be filed within the Scheme for a minimum of two years and hazardous waste consignment transfer notes for a minimum of three years. Each consignment of waste taken from the Scheme will be subject to documentation to ensure full traceability of the material to its final destination.

5.1.4.4 Waste exemptions and licencing

The Principal Contractor will ensure that the Waste (England and Wales) Regulations 2011, as amended, and the Environmental Protection Act 1990, as amended, will be followed in line with Environment Agency regulatory and duty of care requirements. Appropriate and permitted construction and demolition waste management sites, or with an Environment Agency environmental permitted exemption will be used to manage waste generated within the Scheme. This information will be sought from all waste carriers and if relevant any subcontractors.

5.1.4.5 Waste monitoring and reporting

The Principal Contractor's Environmental Advisor will record all waste removed from the Scheme using an appropriate management tool and the following information will be provided:

- The identity of the person removing the waste;
- The waste carrier registration number of the waste carrier;
- A copy of, or reference to, the written description of the waste;
- The site that the waste is being taken to; and
- Whether it is a permitted or exempt site must also be recorded.

5.1.5 Environmental incidents

An environmental incident is typically defined in the Integrated Pollution and Prevention Control and Waste licenses as:

- An emergency;
- Any emission which does not comply with the requirements of the licence;
- Any exceedance of the daily duty capacity of the waste handling equipment;
- Any trigger level specified in the licence which is attained or exceeded; and
- Any indication that environmental pollution has, or may have, taken place.

All incidents shall be reported and managed in accordance with the Construction Contractor's Accident and Incident Reporting Procedure.

⁶ Environment Agency (2021) Form – Duty of care waste transfer note form [online]. Available at: <https://www.gov.uk/government/publications/duty-of-care-waste-transfer-note-template>. Accessed January 2024.

5.1.6 Reporting Environmental incidents

A reporting process has been set up by the Construction Scheme Manager in order to report any incidents that may occur. These will be managed according to the Principal Contractor's PM's Environmental Management Systems processes.

Incidents that have had or that could have had an environmental impact should be immediately reported to EA using the hotline number 0800 80 70 60, as well as through the internal reporting procedure.

Incidents include spillages (oils and chemicals), contaminated run-off flooding, and damage to underground services, damage to habitats, poor waste disposal and storage.

The Environmental Advisor will give toolbox talks to all staff members working on the Scheme to ensure they understand the emergency procedures.

5.1.7 Environmental Reporting

5.1.7.1 Key Performance Indicators and Objectives

The Principal Contractor will set Environmental Performance Indicators in order to continuously improve environmental performance across the Scheme. They will be based on each environmental topic considered within the CEMP and will be reviewed, and revised, if necessary, on a monthly basis. Procedures, monitoring requirements and key performance indicators will be measured against achievable targets and will include objectives to:

- Ensure construction activities are carried out in accordance with any Mitigation Measures, any Licences / Consents and the additional measures detailed within the CEMP;
- Provision of mandatory environmental inductions, toolbox talks and awareness to all Scheme personnel ensuring that all staff involved in the Proposed Development are made aware of the potential impact to the environment;
- Reduce, re-use and recycle materials and reducing the amount of material sent to landfill in accordance with the Scheme Waste Management Plan; and
- Reduce energy consumption e.g., by switching off all unnecessary equipment and using energy efficient equipment where possible (lighting).

5.1.7.2 Reporting

The Principal Contractor will prepare environmental reports summarising progress made during construction and the findings of inspections, audits and other regular monitoring as set out in Table 5.2.

Table 5.2: Environmental Reporting

Activity	Frequency	Responsibility
Key Environmental Issues	Monthly	Principal Contractor's Environmental Advisor
Summary of progress made during construction		
Findings of inspections		
Findings of audit		
Findings of regular monitoring		
Review of CEMP	Monthly	Principal Contractor's Environmental Advisor / Project Manager

Activity	Frequency	Responsibility
Results of the internal monitoring environmental audit		
Non-conformance audits		
Achievements of environmental audits		
Records of complaints and concerns of relevant external agencies and parties		
Means for improving performance		

Mott MacDonald, 2024

5.1.7.3 CEMP Review

The Principal Contractor's Project Manager and Principal Contractor's Environmental Advisor will review the CEMP every month following commencement of the construction activities, and should the need arise, regarding:

- Results of the internal monitoring / environmental audits;
- Non-conformance audits;
- Achievements of environmental audits;
- Records of complaints and concerns of relevant external agencies and parties; and
- Means for improving performance.

Any changes / revisions to the CEMP shall be communicated to relevant members of the Scheme team to ensure agreed changes are implemented on the Scheme.

5.1.8 Ecological Emergency Reporting

Should the proposed works result in the injury or death of any species during construction activities, then this should be reported to the ECoW immediately as an ecological incident. Animals should be left in-situ, unless in danger of more harm, before a ECoW can identify what species it is and assess any necessary action to take. Details of the location and activities taking place at the time of the ecological incident should be reported on and a review should take place to prevent further injury or death to other species from the works. If deemed required by the ECoW, the incident may need to be reported to Natural England and licences applied for.

5.1.9 Consents and Permits

The Scheme is located within the flood plain of the River Dearne, designated as a main river by the EA. As a result of the Scheme's location and activities, a Flood Risk Activity Permit (FRAP) under the Environmental Permitting (England and Wales) Regulations 2010 from the Environment Agency will be required for works directly impacting the main river. Activities within the floodplain can be completed under statutory undertakings. Obtaining the FRAP is separate and in addition to any planning permission granted. Further consultation with the EA will confirm the proposed approach for development and submission of the FRAP application. No work activities requiring a permit will commence until formal approval of the FRAP has been received.

WSP have submitted, 15th November 2023, a FRAP application along with the following consents:

EA Consents – Submission to the Environment Agency for three activities near the River Dearne (FRAP):

- wetland ponds - works within 8m or within the flood zone of the River Dearne;

- new outfall structure to the River Dearne; and
- rising main crossing under River Dearne.

Local Authority Consent – land drainage consent submissions have been sent to the Local Authority, Kirklees Council, this is for works at or near to the ordinary watercourse which are listed below:

- Permanent works within 8m of ordinary watercourse;
- Permanent crossing of ordinary watercourse to allow livestock to be moved;
- Permanent new outfall structure for surface water runoff from wetland Scheme roads; and
- Enabling works two temporary construction access crossings of ordinary watercourse.

At the time of writing, an outcome on the consents for the above activities works is unknown, a response from the EA and Kirklees council is anticipated 16 weeks from the original application.

5.1.9.1 Public Rights of Way

A PRoW diversion application for public footpath DEN/15/40 has been submitted 1st September 2023, approval from Kirklees Council is required prior to starting on wetland cells 5A/B, 6A/B and 7. At the time of writing a response from Kirklees Council has not been received.

5.1.9.2 Temporary discharge consent

At the time of writing, the requirement for a temporary discharge consent is being assessed for the discharge of groundwater as a result of the coal mining probing surveys. Dependent on duration and water quality this may be operated under the Environment Agency's Regulatory Position Statement Temporary dewatering from excavations to surface water: RPS 261 for a duration of less than 3 months. Additional groundwater sampling has been scheduled to confirm this is applicable.

A full discharge licence will be required to be obtained by Yorkshire Waters permitting team for final effluent post commissioning. This is the responsibility of the client to obtain.

5.1.9.3 Impoundment Licence

At the time of writing, Yorkshire Water's permitting team are determining if an impoundment licence is required for the Scheme.

5.1.9.4 Tree preservation orders

No works are currently anticipated to the TPO (ID: DD2/51/w54), located along Wakefield Road junction into Litherop Lane outlined in Section 4.3.1. If works are anticipated to this TPO, the principal contractor will seek TPO consent from Kirklees Council.

A. Scheme Overview



- NOTES:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND TOGETHER WITH THE SPECIFICATIONS.
 2. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES (mm), UNLESS NOTED OTHERWISE.
 3. ALL LEVELS ARE SHOWN IN METRES (m) AOD, UNLESS NOTED OTHERWISE.
 4. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.
 5. ALL PIPEWORK IS BURIED UNLESS SPECIFIED OTHERWISE.
 6. ALL NEW STONED ACCESS ROADS THROUGHOUT THE SITE ARE TO BE 4m WIDE, BASED ON AUTOTRACKING A 7m LONG RIGID TANKER.
 7. FOR DETAILS OF PUBLIC RIGHT OF WAY ALTERATIONS PLEASE REFER TO DRAWING YW.202043.02-MMB-WWT-WWT-DR-C-1100 EXISTING AND PROPOSED PROW GENERAL ARRANGEMENT.
 8. A DIVERSION OF THE EXISTING DYKE OVERFLOW (300mm DIA. CONCRETE CULVERT) WHICH TRAVERSES THE FIELD AT A DEPTH OF APPROX 1.5m. IS REQUIRED DUE TO CLASHES WITH THE PROPOSED WETLAND LAYOUT. THE DIVERTED OVERFLOW WILL PASS BELOW THE EXISTING ACCESS TRACK AND DIVERTED PROW PRIOR TO CONNECTING TO THE EXISTING OUTFALL INTO THE RIVER DEARNE.
 9. ACCESS STAIRS TO TOP OF BANKS TO BE INSTALLED FOR ALL WETLAND CELLS, WITH FURTHER STAIRS TO OPEN WATER CHANNELS FROM TOP OF BANK. ALL STAIRCASES TO HAVE SUITABLE HANDRAILING.

 CLAYTON WEST WASTEWATER TREATMENT WORKS

 SITE COMPOUND

 INTEGRATED CONSTRUCTED WETLAND AREA

SITE ADDRESS:
BACK LANE, OFF WAKEFIELD ROAD, CLAYTON WEST, HUDDERSFIELD,
WEST YORKSHIRE, HD8 9QQ.

0 50 100 m
SCALE 1:2000 (A1)
SCALE 1:4000 (A3)

S4_P02	TENDER DESIGN - CER COMMENTS ADDRESSED	MB	JLT	RW	12/12/23
S4_P01	TENDER DESIGN	MB	JLT	RW	28/11/23
Status Rev	Description	Drawn	Check	App'd	Output Date

Construction Date: TBC

Originator / Partner / OEM Ref:

MMB
MOTT MACDONALD BENTLEY

Mott MacDonald Bentley
Bank House
King Street
Leeds
LS1 1HT
www.mottmacbentley.co.uk

YORKSHIRE WATER
ALWAYS CONSIDERS


LIFE SAVING RULES

Client:

 Yorkshire Water Services Ltd
Western House,
Western Way,
Halifax Road,
Bradford,
BD6 2SZ

Framework:	AMP7	Work Stream:	COMPLEX CIVILS
YW Batch ID / Project Code:	YW.202043.02	YW Solution ID:	TBC

Site:	DEARNE REACH 1 UPM
OS Grid Reference:	426669 , 412035
DAZ or DMA Reference:	N/A

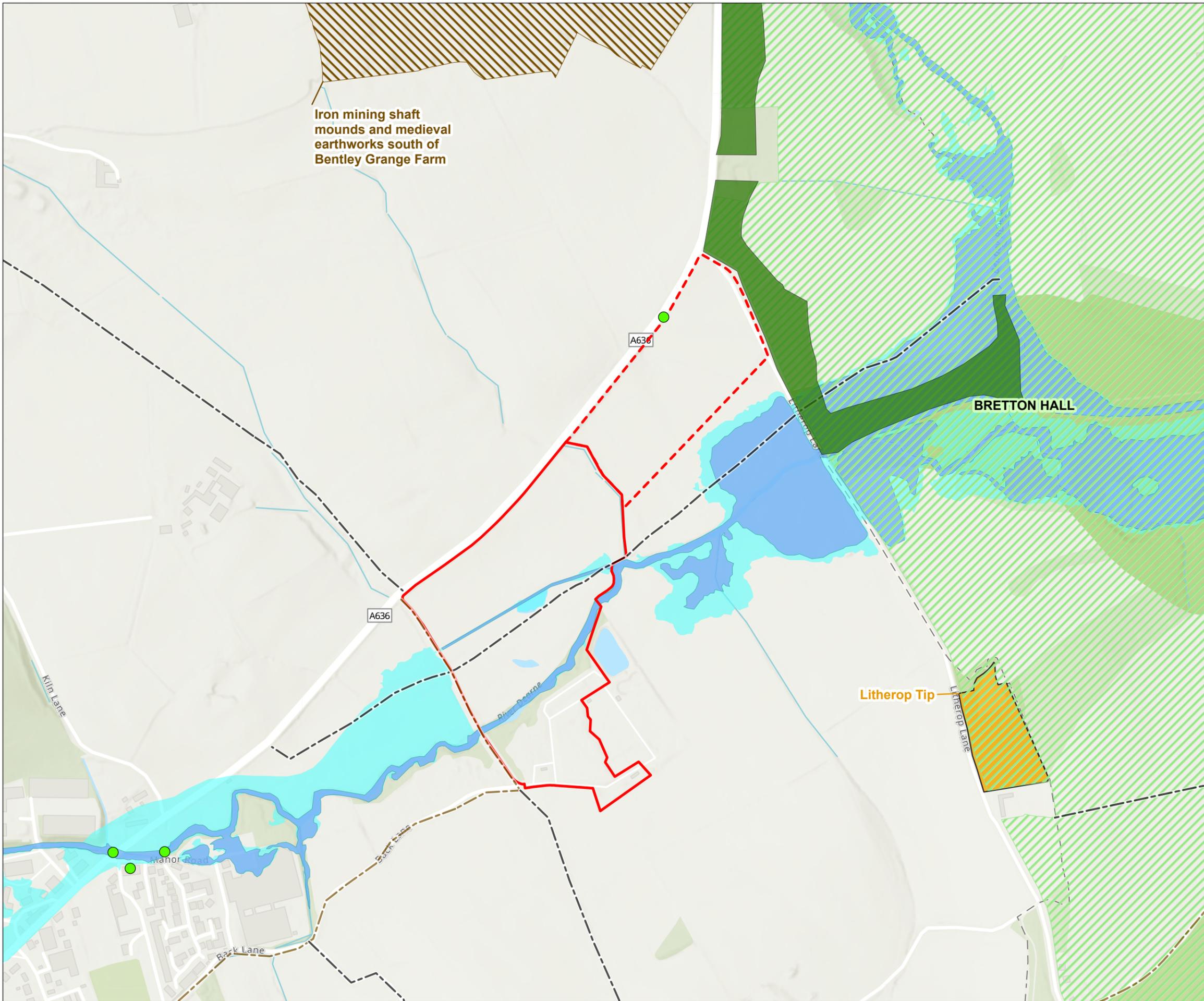
Drawing Title:
**INTEGRATED CONSTRUCTED WETLANDS
SITE BOUNDARIES**

Original Design / OEM Reference:	VX11-MMB-WWT-WWT-DR-Z-0004	Size:	A1	Scale:	1:2000
Status Description:	CER COMMENTS ADDRESSED	Status:	-	Revision:	-

Drawing Number:
YW.202043.02 MMB WWT WWT DR Z 0004



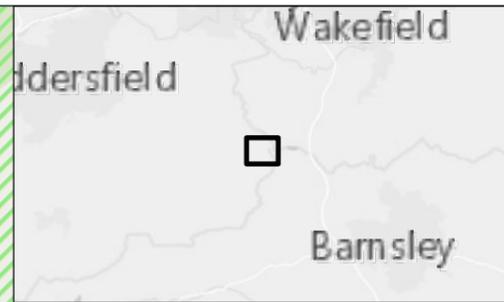
B. Environmental Constraints Map



Iron mining shaft mounds and medieval earthworks south of Bentley Grange Farm

BRETTON HALL

Litherop Tip



- Integrated constructed wetland
- Site compound area
- Grade II Listed Building
- Bridleway (indicative)
- Footpath (indicative)
- Scheduled monument
- Registered Parks and Gardens
- Flood Zone 2
- Flood Zone 3
- Historic landfill sites
- Tree preservation order (indicative)

Coordinate system: British National Grid Datum: OSGB 1936

Data sources: Integrated constructed wetland: Mott MacDonald, 2023. Site compound area: Mott MacDonald, 2023. © Historic England 2022. Contains Ordnance Survey data © Crown copyright and database right 2024 Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, Esri UK, Esri, HERE, Garmin, USGS, Esri, HERE, Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

M

MOTT

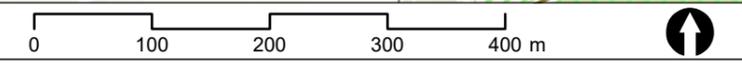
MACDONALD

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**Dearne Reach
Integrated Constructed Wetland
Environmental Constraints Map**

Drawn M Hargest	GIS Checked F Lumb	Checked K Frith	Approved J Shaw
Scale at A3 1:6,000	Status INF	Revision 01	Security STD



C. Tree Protection Plan

C.1 Scheme Compound

YW.202043.02-MMB-WWT-WWT-DR-Z-1006

C.2 ICW and Clayton West WwTW

YW.202043.02-MMB-WWT-WWT-DR-Z-1007



NOTE:
WORKS REQUIRE ADJUSTMENT TO OUTSIDE OF RPAS FOR TREES 1, 17, 19, 21, 22, 26, 37, GROUPS G2, G4, G5 AND G6 AND HEDGE H2. SEE ABRORICULTURAL REPORT DOC REF YW.202043.02-MMB-WWT-WWT-RP-Z-0001 SECTION 4 FOR FULL DETAILS.

NOTE FOR TREE 25:
REDUCE IN HEIGHT CREATING A SINGULAR STEM OF UP TO 5M.

CUTLINE
CUTLINE

- NOTES:
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 4. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.
 5. TO BE READ IN CONJUNCTION WITH DEARNE REACH UPM 1 ARBORICULTURAL SURVEY REPORT (NOVEMBER 2023) REF: YW.202043.02-MMB-WWT-WWT-RP-Z-0001.

KEY

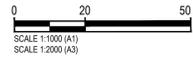
- 2/G4/H2 TREE/TREE GROUP/HEDGE REFERENCE
- APPROXIMATE EXTENT OF CANOPY
- TREE ROOT PROTECTION AREA (RPA)
- TREE TO BE REMOVED
- TREE/TREE GROUP TO BE PRUNED
- PRUNING TO ALLOW FOR SUFFICIENT SIGHT LINES FROM THE JUNCTION OF LITHEROP LANE
- TREE/TREE GROUP ARBORICULTURAL SUPERVISION
- TEMPORARY PROTECTIVE BARRIER

INDIVIDUAL TREES

- NO CATEGORY
- CATEGORY A TREES
- CATEGORY B TREES
- CATEGORY C TREES
- CATEGORY U TREES RECOMMENDED FOR REMOVAL FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT

TREE GROUPS

- ▨ CATEGORY A TREES
- ▨ CATEGORY B TREES
- ▨ CATEGORY C TREES
- PROPOSED DESIGN
- YORKSHIRE WATER LAND BOUNDARY
- PROPOSED TEMPORARY COMPOUND AND HAUL ROADS AREA
- WETLAND CONSTRUCTION AREA
- WATERCOURSE



SZ.P03	PART OF H3 PRUNED	DL	RL	JS	08/11/2023
SZ.P02	DRAWING REVISED	DL	RL	JS	26/10/2023
SZ.P01	FOR INFORMATION	DL	RL	JS	15/09/2023
Status Rev	Description	Drawn	Check	Appr	Output Date

Construction Date: TBC

Originator / Partner / OEM Ref:

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YORKSHIRE WATER
ALWAYS CONSIDERS

LIFE SAVING RULES

Client:

Yorkshire Water Services Ltd
Western House,
Western Way,
Halifax Road,
Bradford,
BD6 2SZ

Framework:	AMP7	Work Stream:	COMPLEX CIVILS
YW Batch ID / Project Code:	YW.202043.02	YW Solution ID:	TBC

Site:	DEARNE REACH 1 UPM
OS Grid Reference:	N/A
DAZ or DMA Reference:	N/A

Drawing Title:
**TREE PROTECTION PLAN
SHEET 1 OF 2**

Original Design / OEM Reference:	VX11-MMB-WWT-WWT-DR-C-1011	Size:	A1	Scale:	1:1000
Status Description:	FOR CONSTRUCTION	Status:	S2	Revision:	P03

Drawing Number:
YW.202043.02 MMB WWT WWT DR Z 1006

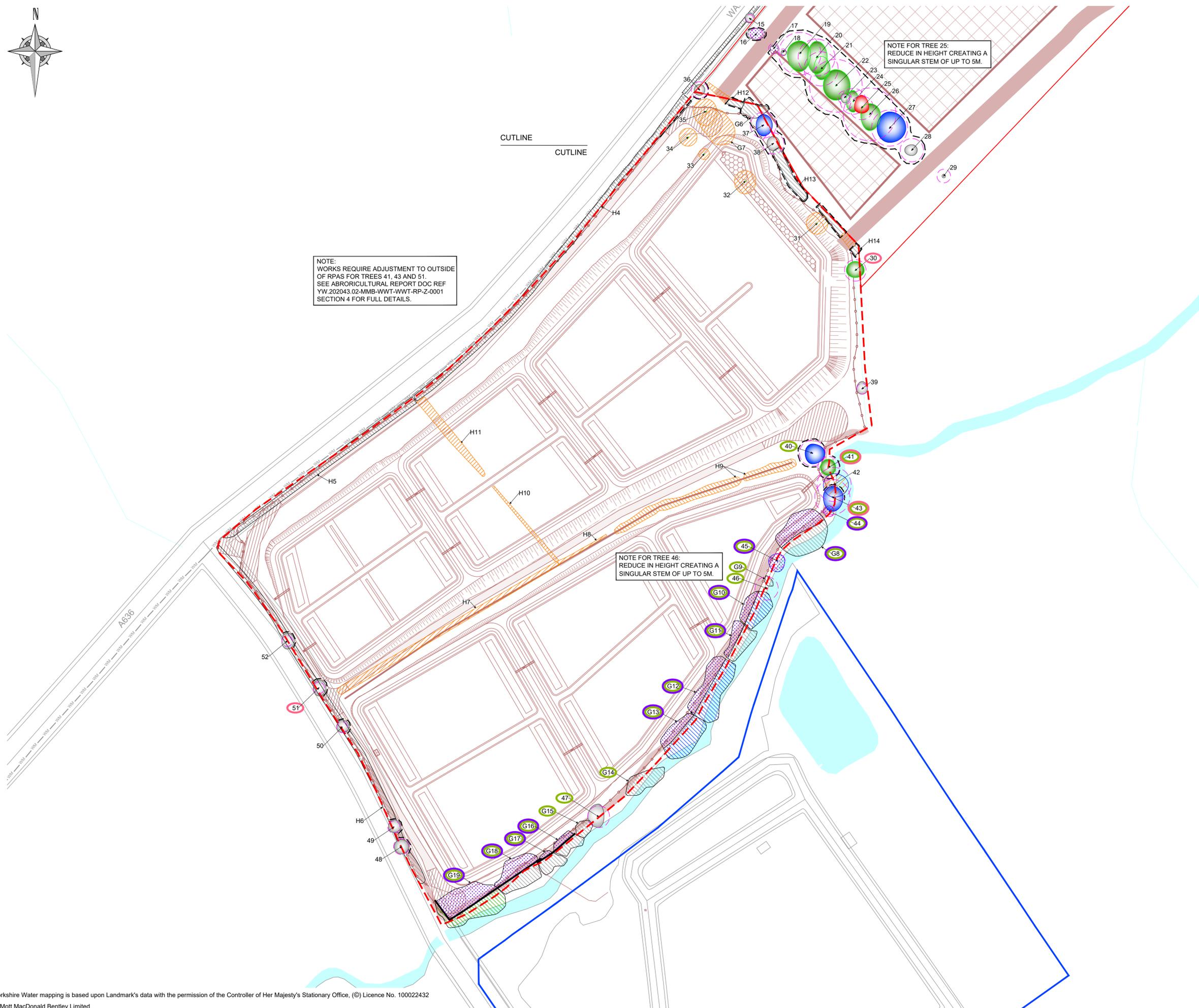
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PLAN
1:1000

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QCE Approval



NOTE:
WORKS REQUIRE ADJUSTMENT TO OUTSIDE
OF RPAS FOR TREES 41, 43 AND 51.
SEE ARBORICULTURAL REPORT DOC REF
YW.202043.02-MMB-WWT-WWT-RP-Z-0001
SECTION 4 FOR FULL DETAILS.

NOTE FOR TREE 46:
REDUCE IN HEIGHT CREATING A
SINGULAR STEM OF UP TO 5M.

NOTE FOR TREE 25:
REDUCE IN HEIGHT CREATING A
SINGULAR STEM OF UP TO 5M.

- NOTES:
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND TOGETHER WITH THE SPECIFICATIONS.
 2. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES (mm), UNLESS NOTED OTHERWISE.
 3. ALL LEVELS ARE SHOWN IN METRES (m) AOD, UNLESS NOTED OTHERWISE.
 4. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.
 5. TO BE READ IN CONJUNCTION WITH DEARNE REACH UPM 1 ARBORICULTURAL SURVEY REPORT (OCTOBER 2023) REF YW.202043.02-MMB-WWT-WWT-RP-Z-0001.

KEY

- 2/G4/H2 TREE/TREE GROUP/HEDGE REFERENCE
- APPROXIMATE EXTENT OF CANOPY
- TREE ROOT PROTECTION AREA (RPA)
- TREE TO BE REMOVED
- TREE/TREE GROUP TO BE PRUNED
- TREE TO BE PRUNED, CROWNLIFT TO MAXIMUM VERTICAL CLEARANCE OF 3M
- TREE/TREE GROUP ARBORICULTURAL SUPERVISION
- TREE/TREE GROUP GROUND PROTECTION
- TEMPORARY PROTECTIVE BARRIER

INDIVIDUAL TREES

- NO CATEGORY
- CATEGORY A TREES
- CATEGORY B TREES
- CATEGORY C TREES
- CATEGORY U TREES RECOMMENDED FOR REMOVAL FOR REASONS OF SOUND ARBORICULTURAL MANAGEMENT

TREE GROUPS

- ▨ CATEGORY A TREES
- ▨ CATEGORY B TREES
- ▨ CATEGORY C TREES

- PROPOSED DESIGN
- YORKSHIRE WATER LAND BOUNDARY
- PROPOSED TEMPORARY COMPOUND AND HAUL ROADS AREA
- WETLAND CONSTRUCTION AREA
- WATERCOURSE

0 20 50 m
SCALE 1:1000 (A1)
SCALE 1:2000 (A3)

S2.P02	DRAWING REVISED	DL	RL	JS	26/10/2023
S2.P01	FOR INFORMATION	DL	RL	JS	15/09/2023
Status Rev	Description	Drawn	Check	App'd	Output Date
Construction Date:	TBC				

Originator / Partner / DEM Ref:

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YORKSHIRE WATER
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LIFE SAVING RULES

Client:

YorkshireWater

Yorkshire Water Services Ltd
Western House,
Western Way,
Halifax Road,
Bradford,
BD6 2SZ

Framework:	AMP7	Work Stream:	COMPLEX CIVILS
YW Batch ID / Project Code:	YW.202043.02	YW Solution ID:	TBC
Site:	DEARNE REACH 1 UPM		
OS Grid Reference:	N/A	DAZ or DMA Reference:	N/A

Drawing Title:

**TREE PROTECTION PLAN
SHEET 2 OF 2**

Original Design / OEM Reference:	VX11-MMB-WWT-WWT-DR-C-1011	Size:	A1	Scale:	1:1000
Status Description:	FOR CONSTRUCTION	Status:	S2	Revision:	P02

Drawing Number: YW.202043.02 MMB WWT WWT DR Z 1007

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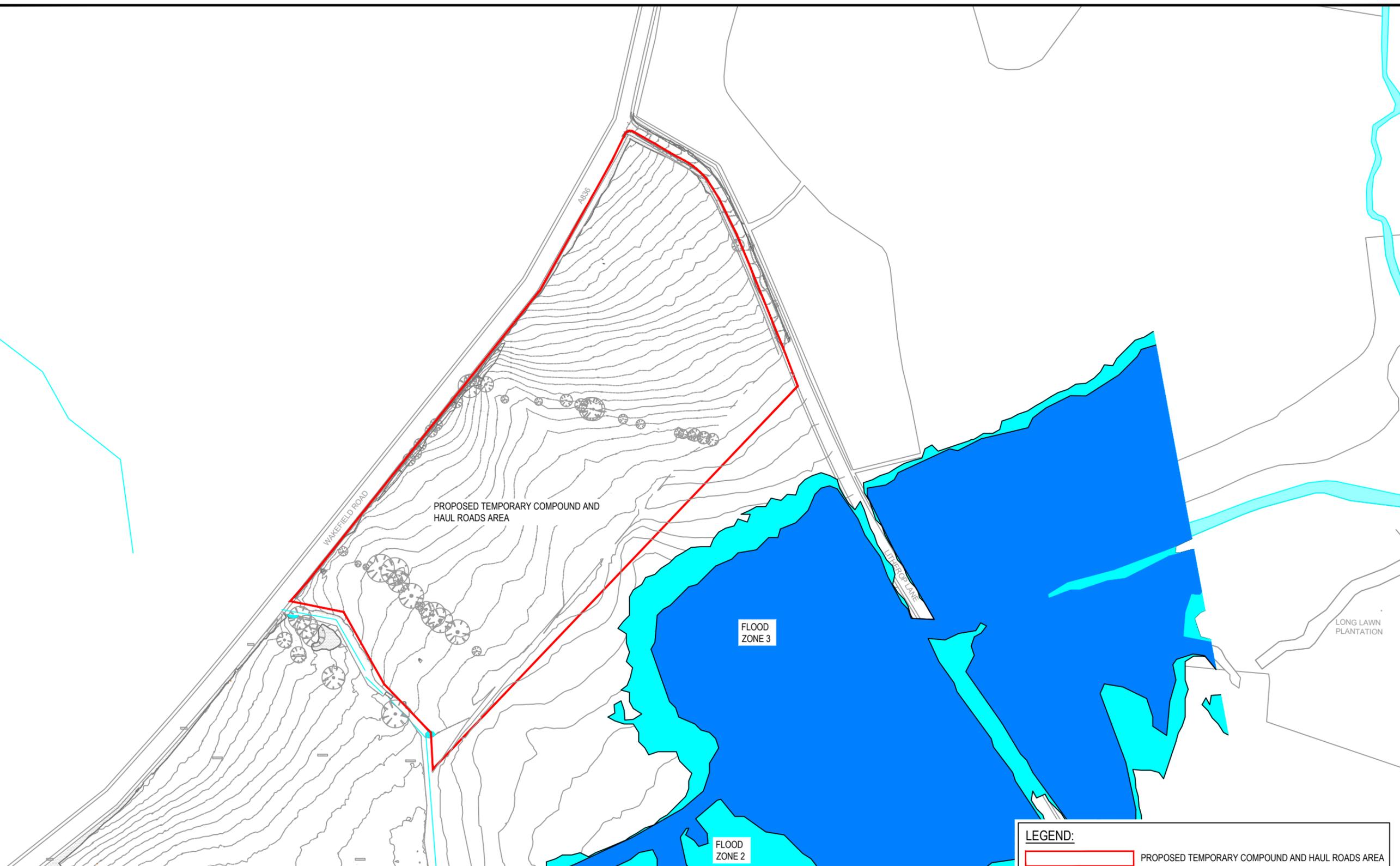
D. Scheme Flood Zones

D.1 Scheme Compound Flood Mapping

YW.202043.02-MMB-WWT-WWT-DR-Z-1003

D.2 ICW and Clayton West WwTW Flood Mapping

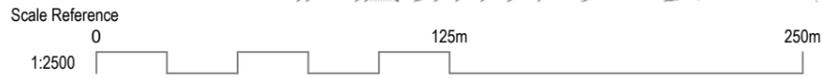
YW.202043.02-MMB-WWT-WWT-DR-C-1016



LEGEND:

- PROPOSED TEMPORARY COMPOUND AND HAUL ROADS AREA
- FLOOD ZONE 2
- FLOOD ZONE 3
- EXISTING TREE

PLAN
1:2500



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 4. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.

- REFERENCE DRAWINGS**
1. YW.202043.02-MMB-WWT-WWT-DR-Z-1000
 2. YW.202043.02-MMB-WWT-WWT-DR-Z-1001
 3. YW.202043.02-MMB-WWT-WWT-DR-Z-1002
 4. YW.202043.02-MMB-WWT-WWT-DR-Z-1004

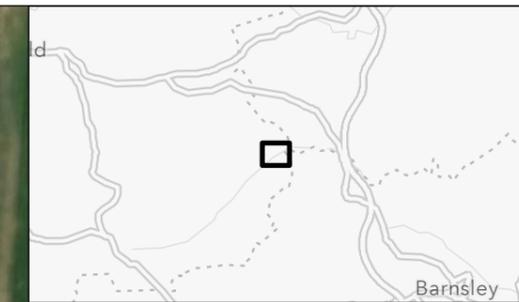
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S2.P02	FOR PLANNING APPROVAL	MB	JLT	RW	10/10/2023
S2.P01	FOR INFORMATION	MB	JLT	AG	30/08/2023

Framework:	AMP7	Work Stream:	COMPLEX CIVILS
YW Batch ID / Project Code:	YW.202043.02	YW Solution ID:	TBC
DEARNE REACH 1 UPM			
Site Address: LAND OFF LITHEROP LANE, NR CLAYTON WEST, HUDDERSFIELD, WEST YORKSHIRE, HD8 9LT.			
OS Grid Reference:	SE 26891 12405	DAZ or DMA Reference:	N/A

Drawing Title: FLOOD RISK PLAN			
Original Design / OEM Reference:	VX11-MMB-WWT-WWT-DR-Z-1003	Size:	A3
Status Description:	FOR PLANNING APPROVAL	Status:	S4
Revision:		Revision:	P03
Drawing Number:	YW.202043.02 MMB WWT WWT DR Z 1003	Scale:	1:2500

Client:
YorkshireWater
 Yorkshire Water Services Ltd
 Western House,
 Western Way,
 Halifax Road,
 Bradford,
 BD6 2SZ

E. Barn Owl Roosting / Nesting Tree Potential Plan



Red line boundary

Barn Owl Potential

- Potential but scoped out
- Potential for roosting
- Potential for roosting/nesting
- Unsuitable

Coordinate system: British National Grid; Datum: OSGB 1936

Data sources: Esri UK, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS, Maxar, Microsoft

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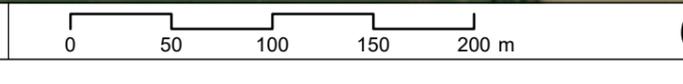
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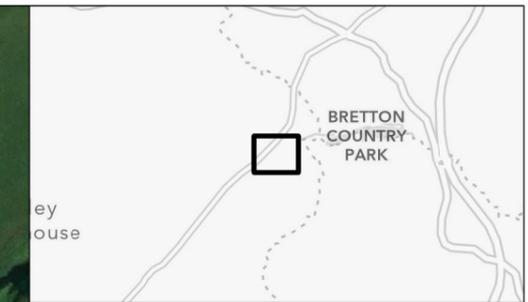


**Dearne Reach
Integrated Constructed Wetland
Barn Owl Roosting / Nesting Potential
Plan**

Drawn G Rhodes	GIS Checked F Lumb	Checked S Smith	Approved B Clarkson
Scale at A3 1:3,500	Status INF	Revision 01	Security STD



F. Otter Post-monitoring Results Plan



- Red line boundary (indicative)
- Red line boundary - compound (indicative)
- Potential resting site
- No longer a resting site
- Artificial otter holt
- + Active badger sett

Scheme data: Mott MacDonald, 2024.
 Coordinate system: British National Grid; Datum: OSGB 1936
 Data sources: Maxar, Microsoft, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

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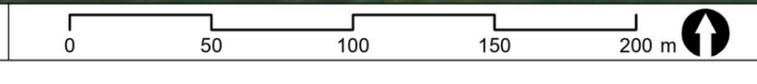
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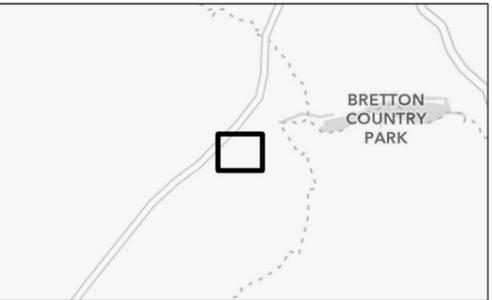
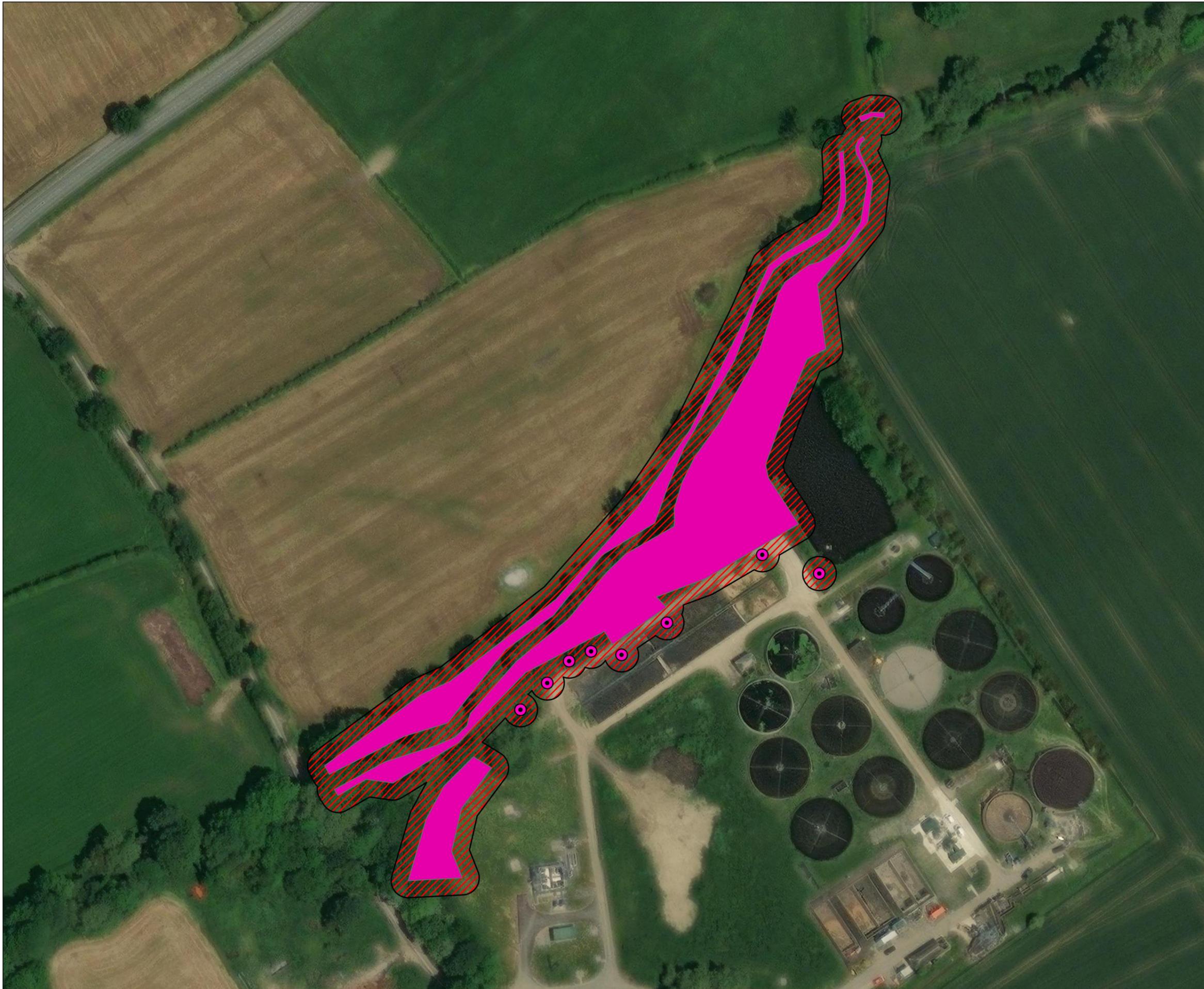


VX11 - Dearne Reach
Dearne Reach Otter, Water Vole, Kingfisher and
White-Clawed Crayfish Protected Species Report
Otter Post-monitoring Results Plan
Appendix E

Drawn C Rennie May	GIS Checked F Lumb	Checked S Smith	Approved B Clarkson
Scale at A3 1:2,500	Status INF	Revision 01	Security STD



G. Invasive Species Management Plan



-  Indian balsam (individual plants)
-  Indian balsam (patches)
-  7m buffer about INNS

Scheme data: Mott MacDonald, 2024.
 Coordinate system: British National Grid; Datum: OSGB 1936
 Data sources: Maxar, Microsoft, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS

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**VX11 - Dearne Reach
 Invasive Species Management Plan
 Extent of Invasive Non-native Species Onsite**

Drawn C Rennie May	GIS Checked F Lumb	Checked S Smith	Approved B Clarkson
Scale at A3 1:1,500	Status INF	Revision 01	Security STD

