



Appendix 24-PD-2: Preliminary Outline Construction Environmental Management Plan

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Appendix 24-PD-2: Preliminary Outline Construction Environmental Management Plan

1. Introduction

1.1 Foreword

- 1.1.1 This appendix to the Preliminary Environmental Information (PEI) Report presents the Preliminary Outline Construction Environmental Management Plan (Preliminary Outline CEMP) for Grand Union Canal Transfer project (hereafter referred to as 'the Proposed Development'). A final Outline CEMP will be prepared to accompany the Development Consent Order (DCO) application. The Proposed Development will transfer highly treated, recycled water from Severn Trent's (ST) supply area in the Midlands to areas of forecast water deficit in Affinity Water's (AfW) supply area in the South East.

1.2 Purpose of the document

- 1.2.1 The purpose of the Outline CEMP is to provide a clear and consistent approach to the control of construction activities to avoid or minimise impacts on the environment. The Outline CEMP will be developed into a detailed CEMP prior to construction as a requirement of the DCO. The appointed contractor(s) will be responsible for working in accordance with the environmental controls documented in the CEMP. The overall responsibility for implementation of the CEMP will lie with the appointed contractor(s) as a contractual responsibility to the Applicants, as the Applicants are ultimately responsible for compliance with the requirements of the DCO.
- 1.2.2 An Environmental Impact Assessment (EIA) is being undertaken for the Proposed Development, and a Preliminary Environmental Information (PEI) Report has been prepared in accordance with The Infrastructure Planning (EIA) Regulations 2017 (the 'EIA Regulations') (Ref. 1). The PEI Report contains the preliminary assessment of the likely significant effects on the environment that may be caused during the construction of the Proposed Development and describes a range of 'industry standard' or best practice mitigation measures.
- 1.2.3 This Preliminary Outline CEMP is primarily concerned with setting out standard good practice measures which can be identified at this stage of project development. As the design is further developed and as the EIA progresses, the Outline CEMP will be supplemented with additional mitigation measures to manage specific potentially significant environmental effects. These measures will be set out in the Outline CEMP to be submitted

alongside the DCO application and refined further in a detailed CEMP post consent, to be submitted by the contractor for acceptance before works can commence.

1.3 Topic Specific Management Plans

- 1.3.1 It is anticipated that the CEMP will require the preparation of detailed topic specific management plans developed by the contractor for the control of matters including for example:
- a. A Construction Noise and Vibration Management Plan for the management of noise and vibration;
 - b. A Dust Management Plan for the management of air quality and dust;
 - c. An Odour Management Plan to manage potential odour impacts if identified.
 - d. A Carbon Management Plan (CMP) setting out how the Proposed Development will minimise its carbon impact during construction;
 - e. A Construction Traffic Management Plan (CTMP) setting out temporary traffic management measures during construction to provide safe access to worksites and to reduce the impact of construction traffic on the local community;
 - f. A Construction Workforce Travel Plan (CWTP) identifying measures to reduce the impact of the Proposed Development's construction workforce on the road network as a result of travel to and from worksites;
 - g. A Site Waste Management Plan (SWMP) setting out measures for the management of waste during the construction phase. Measures would include waste characterisation and segregation;
 - h. A Materials Management Plan (MMP) setting out the approach for handling construction materials and waste. It would provide for handling of excavated materials and reuse of soils;
 - i. A Soil Management Plan to ensure proper handling, storage and restoration of soils during construction;
 - j. A Biosecurity Management Plan (BMP) setting out the approach to identify, prevent, manage, and respond to biosecurity risks. Its purpose is to provide a structured framework that ensures biological threats are controlled in a consistent and effective manner;
 - k. A Water Management Plan (WMP) that will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction. This will include a Pollution Prevention and Emergency Response Plan that outlines

the necessary measures to prevent pollution and provides a plan for responding to any emergencies that may arise during construction; and

- I. A Stakeholder Management Plan to maintain effective community and stakeholder engagement throughout the construction phase.

1.3.2 Some of these will be submitted in outline with the DCO application to provide assurance regarding the anticipated final form of the proposals, enabling stakeholders to review and consider them during the application process. The final plans will be required to remain in general accordance with these outline plans.

1.4 Progression of this Preliminary Outline CEMP

1.4.1 This Preliminary Outline CEMP will be developed into an Outline CEMP, which will be appended to the ES and submitted with the DCO application.

1.4.2 If granted, the DCO will include a requirement that a detailed CEMP is prepared and approved by the relevant discharging authority(ies) prior to the commencement of the relevant phase of the authorised development. Due to the nature of the Proposed Development (comprising new water treatment plants, transfer pipelines and new canal infrastructure) it is likely that a number of specialist contractors will be appointed and that a number of CEMPs will be prepared that are specific to the type of construction works to be undertaken. Therefore, the DCO will allow for relevant requirements to be discharged in part/or phased.

2. Construction Principles

2.1 Roles and Responsibilities

2.1.1 This section of the Preliminary Outline CEMP sets out the key contractor roles and responsibilities of parties involved in the construction of the Proposed Development. The CEMP will be prepared prior to construction and will confirm exact roles and responsibilities and include contact details for key members of staff.

2.1.2 The contractor will provide suitably qualified and experienced personnel for the following key environmental management functions, which are likely to include:

- a. A Project Manager to be responsible for ensuring systems are in place to ensure compliance with environmental legislation and consents; to maintain, update and implement the CEMP; for monitoring compliance during construction, including the carrying out of regular monitoring

and inspections of construction work activities; and for induction courses on environmental issues;

- b. An Environmental Manager to have primary responsibility for managing environmental issues during construction and for obtaining any relevant licences and consents not secured when construction commences and to maintain, update and implement the CEMP; and
- c. An Ecological Clerk of Works (ECoW) to oversee the implementation of ecology mitigation and ensure that construction works are carried out in accordance with the requirements of protected species licences.

2.1.3 The Environmental Manager will be supported by other specialists as necessary which may include air quality, geo-environmental, noise and vibration, landscape, ecological, arboricultural and archaeological specialists.

2.2 Environmental Management System

2.2.1 The contractor will develop and implement an Environmental Management System (EMS) accredited to British Standard EN ISO 14001: Environmental Management (British Standards Institution (BSI), 2024) (Ref. 2) to ensure and demonstrate that all relevant legislation, standards, regulations and consents are being met. The EMS will set out:

- a. The contractor's environmental policy;
- b. The procedures to be implemented to deliver and monitor compliance with environmental legislation;
- c. Staff competence and awareness requirements and how these are achieved and maintained; and
- d. The procedures to be implemented to deliver and monitor compliance with the environmental provisions in the CEMP.

2.3 Construction Programme

2.3.1 Construction and commissioning are estimated to require approximately 4 years. It is likely that the construction of the various parts of the Proposed Development will be undertaken largely in parallel rather than sequentially. A more detailed construction programme will be provided with the Outline CEMP.

2.4 Working Hours

2.4.1 The core working hours are proposed to be:

- a. Monday to Friday 08:00 to 18:00;

- b. Saturday 08:00 to 13:00; and
 - c. No Sunday or Bank Holiday working unless crucial to construction (e.g. delivery of large plant and trenchless installation of pipeline) or in an emergency.
- 2.4.2 It is likely that workers will arrive to and depart from construction sites within each hour either side of the hours stated above.
- 2.4.3 Emergency working may extend beyond the times quoted above.
- 2.4.4 Trenchless pipeline installation will require continuous 24-hour working (which is likely to be over a number of days – dependent upon the length and complexity of crossing) and some highway works may need to be undertaken overnight or at weekends for traffic management reasons.
- 2.4.5 If a section of the canal needs to be closed for a period, this will be in line with the Trust's winter works and stoppage protocols. The winter period is generally when the Trust undertakes works that require navigations to be restricted or closed, this is because fewer boats are using the waterways in the winter. Any closures required outside the winter period may be agreed by the Trust in exceptional circumstances.

2.5 Responding to Environmental Incidents and Emergencies

- 2.5.1 Prior to construction, the contractor will develop a Pollution Prevention and Emergency Response Plan in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service, as well as the Environment Agency in relation to responding to flood warnings and events.
- 2.5.2 The plan will detail the procedures for responding to incidents (such as spills, leaks or generation of silt laden runoff so as to prevent pollution) and emergencies (such as flooding) on site, and any reporting.

2.6 Considerate Constructors Scheme

- 2.6.1 The contractor will sign up to and adhere to the Considerate Constructors Scheme. The Considerate Constructors Scheme is a national scheme that promotes good practice on construction sites through its codes of considerate practice (Ref. 3). These commit registered sites to be considerate and good neighbours, as well as being respectful, environmentally conscious, responsible and accountable.

2.7 Public Communication and Liaison

- 2.7.1 Prior to commencing works on site, the contractor will develop and implement a Stakeholder Management Plan that will set out how the contractor will engage with communities in proximity of the works and will provide details of a complaints procedure. In line with the Stakeholder Management Plan, a display board will be installed on-site, and a website will be set up. These will include contact details for the Site Manager or alternative public interface with whom nuisance or complaints can be lodged, and the head or regional office contact information. A logbook of complaints will be prepared and managed by the Site Manager or nominated representative.
- 2.7.2 Any environmental complaints received will be investigated, with appropriate action taken and recorded, so that a full audit trail is available should the complainant raise the issue(s) with the local authority.
- 2.7.3 A Community Liaison Group will also be set up prior to construction, and a Community Liaison Officer (or alternative) will be appointed to lead discussions with local communities during construction.

3. Mitigation and Management Measures

- 3.1.1 The following sections set out the standard mitigation and management measures included in the preliminary assessments reported in the PEI Report. These predominantly comprise standard good practice measures that can be identified at this preliminary assessment stage. It is likely that these will be supplemented with additional mitigation and management measures identified through ongoing assessment and reported in the ES.

3.2 Air Quality and Odour

- 3.2.1 Suitable control measures for plant and motorised equipment will be recommended based on advice prescribed in Institute of Air Quality Management Guidance (2024) (Ref. 4). This will include the requirement for the contractor to prepare and implement a Dust Management Plan (an Outline Dust Management Plan will be submitted with the DCO application). Measures set out within the Dust Management Plan are likely to include:
 - a. Providing screening for dust generating activities and covering any material stockpiles;
 - b. Use of effective water suppression during construction activities;
 - c. Implementation of a wheel washing system for vehicles entering/leaving the construction sites;

- d. Recording all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- e. Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make an inspection log available to the local authority when asked;
- f. Ensuring all vehicles switch off engines when stationary - no idling vehicles; and
- g. Planned maintenance and repair of vehicles.

3.2.2 Any potential odour impacts would be managed through an Odour Management Plan. This could include the following measures:

- a. Regular review (at least once per year) of the effectiveness of odour controls - including the Odour Management Plan itself – taking account of complaints, monitoring results, inspections, surveys and other information and feedback received. This interval may be shorter if there have been complaints or relevant changes to the operations or infrastructure; and
- b. Keeping records of all activities and actions relating to odour and the Odour Management Plan.

3.2.3 Where construction works are anticipated to disturb landfill where there is risk of disturbing odorous material, the potential for odour impacts will be considered in line with the guidance published by IAQM (Ref. 5). The guidance sets out the criteria to establish the need for an odour assessment for any sources of odour as causing an effect that is greater than 'Slight Adverse' in the context of the relative odour exposure and the sensitivity of the receptors.

3.3 Carbon

3.3.1 The CEMP will require the preparation of a Carbon Management Plan that will include measures such as:

- a. Efficient routeing and siting of infrastructure and temporary works to minimise material requirements, reduce construction activities, and thereby lower associated carbon emissions;
- b. Incorporating low carbon asphalt and pavement materials for access and service roads to reduce embodied emissions;
- c. Adopting low emission transport solutions, optimising construction sequencing to reduce transport demand, and prioritise local sourcing of materials and labour to lower associated emissions;

- d. Using Renewable Energy Guarantees of Origin (REGO) backed electricity and transition to electric tools, equipment, and low emission generators powered by hydrogen;
- e. Reducing construction waste through efficient material use, reuse, and recycling, supported by landfill diversion targets. Limiting off-site disposal of materials by applying suitable treatment and recovery techniques; supported by landfill diversion targets;
- f. Promoting efficient resource management by repurposing excavated materials where feasible and identifying synergies with nearby projects;
- g. Investigating low carbon steel options, including electric arc furnaces with higher scrap content and emerging hydrogen-based production methods to reduce embodied emissions;
- h. Prioritising steel procurement from UK or European manufacturers with verified low carbon processes by specifying steel with higher recycled content and sourcing from suppliers certified for low carbon intensity;
- i. Adopting low carbon concrete solutions by incorporating supplementary cementitious materials (e.g. limestone or calcium sulphoaluminate cements) to reduce reliance on energy-intensive clinker, using blends with reduced or zero Ordinary Portland Cement (OPC) content, and exploring alternative reinforcement materials such as fibre or basalt systems;
- j. Applying recognised benchmarking frameworks, such as the Institution of Civil Engineers' Low Carbon Concrete Group (LCCG), and explore innovative concrete technologies (e.g. bio-cements and performance-enhancing admixtures) to promote lower carbon specifications, enhance durability, and reduce material demand; and
- k. Expanding the use of alternative composite materials, such as glass reinforced plastic (GRP) and fibre-reinforced plastic (FRP), where technically feasible, to reduce reliance on traditional steel and concrete components.

3.4 Cultural Heritage

- 3.4.1 Details for the avoidance and preservation of archaeological areas will be set out in an Archaeological Mitigation Strategy (AMS) which will be secured separately from the CEMP through a requirement of the DCO. The AMS is likely to require an Overarching Written Scheme of Investigation (Overarching WSI) setting out how the requirements for archaeological control measures at each stage of construction will be implemented. This document will establish the objectives for the historic environment works and

set out the mechanisms for the appointed archaeological contractor to design the investigation, undertake excavation as required, data and artefact analysis, reporting and deposit the archive prior to construction. Site specific WSIs will then be prepared by the archaeological contractor.

- 3.4.2 Where designated heritage assets are present in close proximity to work sites, the contractor will implement protection measures, such as speed limits, cones and signage, to reduce the risk of accidental damage. Specific assets may be subject to monitoring to ensure that they will not be affected by noise or vibration.
- 3.4.3 A protocol for unexpected archaeological discoveries will be implemented to allow for archaeological remains outside of identified areas of specific mitigation to be appropriately investigated and recorded if they are encountered during construction activities.

3.5 Ecology

- 3.5.1 A Precautionary Working Method Statement(s) (PWMS) will set out a detailed step-by-step plan to avoid or minimise any impacts on ecological receptors during construction. It will also outline personnel and responsibilities, obligations for monitoring and recording of works, legislation and emergency procedures for unexpected finds. The PWMS(s) will be implemented in areas of non-licensable work. Where licensable impacts to a receptor will occur, these will be managed under the relevant licensing and additional mitigation, compensation and enhancement is likely to be required.
- 3.5.2 General measures applied to the majority of species within the PWMS(s) include the following actions:
 - a. Avoidance of impacts, where possible, through relocating the works area and/or adapting the timing of works relevant to the receptors found within the works area;
 - b. Provision of an appropriate buffer around retained receptors to avoid and/or reduce impacts during works;
 - c. Finger-tip searches for protected and notable species prior to works commencing in each area;
 - d. Sensitive lighting to avoid impacts on nocturnal species, such as badgers, bats, hazel dormouse and otters, with lighting kept to the minimum required for health and safety, and directed away from retained habitat with suitability for protected and notable species, including woodland, mature trees, hedgerows, riparian habitats and watercourses;

- e. Appropriate materials/waste storage procedures to avoid accidental creation of suitable habitat for herptiles and other protected and notable species; and
- f. Cap off exposed pipe systems/culverts and cover high-risk excavations at night, where possible, or provide ramps for escape to avoid protected and notable species becoming trapped.

3.5.3 Species specific precautionary working methods are set out in **Table 1**.

Table 1: Species specific precautionary working methods

Ecological Receptor	Measures
Habitats	- Habitats will be reinstated following completion of temporary works, such as within the access tracks and compounds. - Root protection zones implemented for retained hedgerows and trees. - Felled trees to be retained, where possible, for use as standing deadwood or log pile habitats.
Breeding birds	- Avoidance of nesting bird habitat removal in the nesting bird season (March to end-September, inclusive, although it should be noted that some species nest all-year round). - Provision of buffer zones (if bird nests identified) and works ceased until nest is confirmed as vacant by ECoW.
Herpetofauna	- Appropriate weather conditions for clearance works in suitable herptile habitat. - Phased vegetation cut for clearance works in suitable terrestrial herptile habitat, where possible to enable displacement into adjacent areas of suitable habitat.
Badger	- Avoidance of badger setts in design, where possible. - Implementation of sensitive working methods within a 30 m buffer of retained setts to minimise potential for disturbance through noise, vibration and lighting. - Use of badger appropriate fencing surrounding works areas that may be attractive to sett building, such as earth mounds and temporary works areas, to prevent badgers entering whilst ensuring sett access is not blocked off from foraging habitats. - In addition to the use of suitable lighting during construction, the lighting will be directed to avoid light spillage on any retained setts, artificial setts and connecting habitat between setts and foraging area.

Ecological Receptor	Measures
	• Licensable works, including soft blocking, to only be carried out with a valid licence from Natural England.
Bat	• Further survey work for any structures and trees due to be impacted by the proposed works to confirm whether they offer potential for roosting bats. • Completion of pre-works checks for potential features for roosting bats prior to the start of works. • The requirement for implementation of precautionary working methods will be considered on a case-by-case basis for known roosts within 20 m of work. • Timing of works at known hibernation or maternity roost locations avoid these periods period; this may entail mitigation for bat roosts happening in advance of construction activities commencing in certain locations. • Where possible, night-working to be avoided during the active bat season in the vicinity of key commuting corridors for bats. If night-time working is required, linear connectivity to be maintained across the site through retention of dark corridors in line with best practice. • Hedgerow removal will be kept to the minimum required. • Appropriate mitigation will be incorporated to minimise impact on any important flight lines. • Maintenance of commuting corridors between roosting and foraging habitats, where possible. Installation of acoustic barriers during construction in proximity to any bat roosts or suitable habitat. • Habitat to be reinstated as soon as possible following completion of works.
Hazel Dormouse	• Reducing any hedgerow gaps to the minimum required where dormice are known to be present within the wider area. • Appropriate mitigation will be incorporated to minimise impacts on connectivity. • Use of a two-stage cut where clearance of dormouse suitable habitat is required, including a cut down to ground-level over winter to avoid impacts on breeding/active dormice, and removal of the stumps in summer to avoid impacts on torpid dormice.

Ecological Receptor	Measures
Otter	• Use of appropriate fencing surrounding construction sites to prevent otters entering but not blocking otter access unnecessarily. • Watercourses and their banks will not be blocked or fully fenced overnight, so that otters always have at least one route to pass safely through Preliminary Order Limits where they intersect watercourses. • Prior to commencement of works, all suitable otter habitat within 30 m of the works area will be re-surveyed. • Appropriate buffers to avoid impacts to sensitive receptors, such as resting sites, holts and natal dens.
Water vole	• If water vole are present and burrows cannot be avoided a water vole mitigation licence is likely to be required before work can proceed. Appropriate mitigation will be put in place as a condition of the licence. Mitigation may include displacing water voles from smaller sections of bank by removing vegetation. For larger sections, trapping and translocation of water voles may be necessary. • If less than 50 m of bankside habitat will be impacted, it may be possible to temporarily displace water voles under the conditions of a personal CL31 displacement licence.

3.5.4 The use of pesticides, including herbicides, will be avoided throughout construction except if required to control of Invasive Non-native Species (INNS). In such cases, herbicide must be applied at a frequency and quantify that is as low as is reasonably practical and steps must be taken to avoid pesticide contact with non-target species.

3.5.5 The spread and/or introduction of INNS could occur during construction, e.g. through site activity and/or movement to/from sites. An outline Biosecurity Management Plan (BMP) will be produced for inclusion with the DCO application, which will include (but is not limited to):

- a. biosecurity protocols required to mitigate the risk of spreading INNS (plants and animals) to, around, or from the Proposed Development during the construction phase, including when working in/near terrestrial and aquatic habitats with INNS presence (e.g. demarcation requirements, washdown protocols and Check, Clean and Dry methods (Ref. 6));

- b. details of appropriate methods to either contain, remove, or control INNPS that overlap with the construction footprint, with a focus on minimising waste associated with such activities – where INNS overlap with work areas, supplemental location specific management plans will be recommended; and
 - c. obligations for maintaining records, required to ensure demonstratable compliance with the BMP.
- 3.5.6 The BMP will focus on INNS covered by relevant legislation; however, non-native species, not listed on relevant legislation, but known to act invasively in the UK, may be noted if warranted (e.g. where a specific significant risk has been identified).
- 3.5.7 The mitigation of biosecurity issues associated with disease/pests/parasites will be covered, as required, in the sections specific to affected species/species-groups, including the protocols required to prevent spread, e.g. when undertaking surveys. This includes, but is not limited to:
 - a. diseases of protected/notable species, for example fungal infections in bats and amphibians and crayfish plague in white-clawed crayfish
 - b. parasitic infections of fish; and/or
 - c. virulent tree pathogens, including *Phytophthora ramorum* (affecting oak and other species) and *Hymenoscyphus fraxineus* (affecting ash).
- 3.5.8 Prior to construction, an Arboricultural Impact Assessment and Method Statement will be produced and will include tree protection plans and measures.

3.6 Ground Conditions

- 3.6.1 A Pollution Prevention and Emergency Response Plan will be produced and included as part of the detailed CEMP prior to the commencement of construction. This will outline key pollution mitigation measures to be adopted including a Control of Substances Hazardous to Health (COSHH), fuel inventory and key contacts to be notified in the event of a significant pollution incident, which may subsequently lead to the contamination of controlled waters or soils.
- 3.6.2 A Foundation Works Risk Assessment (FWRA) / piling risk assessment would be carried out subsequent to the detailed design of piling options and completion of the Proposed Development specific ground investigations.
- 3.6.3 Potential impacts specific to construction workers during site preparation and construction works would be controlled and mitigated by the following measures and through working in accordance with CIRIA C811(Ref. 7):
 - a. Measures to minimise dust generation;

- b. Provision of Personal Protective Equipment (PPE), such as gloves, barrier cream, overalls etc. to minimise direct contact with soils;
- c. Provision of adequate hygiene facilities and clean welfare facilities for all construction site workers;
- d. Monitoring of confined spaces for potential ground gas accumulations, restricting access to confined spaces, i.e. to suitably trained personnel only, and use of specialist PPE, where necessary; and
- e. Preparation and adoption of a site and task specific health and safety plan as is required under Health and Safety legislation.

- 3.6.4 The CEMP will set out procedures for dealing with unexpected soil or groundwater contamination that may be encountered. This would typically require affected works to stop to enable appropriate people to be notified, and further characterisation and risk assessment to be undertaken before remediation or mitigation proposals are agreed with all stakeholders. In the event that unacceptable risks are identified, or encountered during construction, and routeing through these areas is unavoidable, specific mitigation measures may be required in the form of treating / remediating contamination e.g. contamination that may be associated with potentially contaminative sites identified as part of the assessment, notably the areas of the Order Limits in proximity to nearby landfilling activities, Made Ground and industrial areas.
- 3.6.5 There is potential for asbestos to be present in any Made Ground within the Preliminary Order Limits. Any Made Ground found to be contaminated with asbestos will require suitable management if it is to be retained on-site or removed (in line with the CL:AIRE, CAR-SOIL 2012 (Ref. 8)). Asbestos management will be included within the detailed CEMP and the Site Waste Management Plan (SWMP).
- 3.6.6 Re-use of excavated materials during construction of the Proposed Development will be governed by either a Materials Management Plan (MMP) developed in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP) 2011 (Ref. 9), Waste Framework Directive¹ (Ref. 10), an environmental permit or a relevant exemption.
- 3.6.7 In order to manage and monitor waste, including any waste spoil generated on-site, an Outline SWMP will be developed and submitted as part of the Outline CEMP, setting out how waste streams would need to be estimated and monitored and goals set with regards to the waste produced. The contractor's detailed CEMP would be required to incorporate the principles of the SWMP as appropriate.

¹ This guidance was withdrawn on the 30th of March 2023.

- 3.6.8 Where there is a requirement to dispose of surplus excavated materials off-site as waste, the material will be characterised to determine firstly whether it is hazardous or non-hazardous waste in accordance with the Environment Agency's Technical Guidance WM3 (Ref. 11). Once this is established, the appropriate disposal facility will be determined and Waste Acceptance Criteria (WAC) analysis undertaken, if required, and managed in line with Duty of Care principles.

3.7 Landscape and Visual Amenity

- 3.7.1 A Landscape and Ecology Management Plan (LEMP) will be produced detailing how landscape and ecology mitigation and management will be delivered. An Outline LEMP will be submitted with the DCO application. This is likely to include the following measures:

- a. All land used temporarily will be restored and returned to an appropriate condition relevant to its previous use wherever reasonably practicable and appropriate.
- b. Soil stockpile heights would be as set out in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref. 12) and would be kept as low as reasonably practicable unless there is a screening benefit.
- c. Where it would be necessary to remove vegetation within temporary works areas, such as construction compounds, access roads and areas allocated for the stockpiling of materials, this will be replaced on completion of construction using the same or similar species to that removed where reasonably practicable subject to planting over and around easements and utilities, and consideration of species with regards to climate change, and resilience to pests and disease, and landowner agreement.
- d. Where it is necessary to remove trees subject to TPOs or within Conservation Areas, they will be replaced on completion of construction using the same or similar species to that removed as close to the location of the original.
- e. The supply, storage, handling, planting and maintenance of proposed planting will be undertaken in accordance with relevant British Standards, including BS 4428:1989 Code of Practice for General Landscape Operations (Excluding Hard Surfaces) (Ref. 13).
- f. A five-year aftercare period will be adopted for all soft environmental features of the Proposed Development with monitoring of condition and replacement planting of vegetation that has died or failed to establish.

- 3.7.2 The CEMP will also include the following standard measures:

- a. Construction compounds to be enclosed by suitable fencing to reduce visual clutter, with temporary fencing and compounds removed as soon as practicable following completion of construction activities;
- b. Employing standard good practice construction techniques, such as minimising vegetation clearance, installing tree protection measures around retained trees and hedgerows, separation and storage of subsoil and topsoil to ensure no degradation in quality, and reinstatement undertaken as soon as possible after completion of construction of each section/ area of works; and
- c. Temporary lighting to be designed so that excessive glare is minimised outside of the construction as far as reasonably practicable.

3.8 Waste Management

- 3.8.1 The Proposed Development will prioritise waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy.
- 3.8.2 The following mitigation measures will be considered and implemented where applicable:
 - a. Design for reuse and recovery: identifying, securing and using materials that already exist on-site, or can be sourced from other projects;
 - b. Design for materials optimisation: simplifying layout and form to minimise material use, using standard design parameters, balancing cut and fill, maximising the use of renewable materials and materials with recycled content;
 - c. Design for off-site construction: maximising the use of pre-fabricated structure and components, encouraging a process of assembly rather than construction;
 - d. Design for the future (deconstruction and flexibility): identify how materials can be designed to be more easily adapted over an asset lifetime and how deconstructability and demountability of elements can be maximised at end of first life;
 - e. Design for waste and material asset efficient procurement: identify and specify materials that can be acquired responsibly, in accordance with a recognised industry standard; and
 - f. Engineering plan configurations and layouts that show how the most effective use of materials and arisings can be achieved.
- 3.8.3 An Outline Site Waste Management Plan (Outline SWMP) will accompany the DCO application. This will set out how waste would be managed during

construction, and opportunities to prevent, reuse and recycle waste would be explored in accordance with the waste hierarchy. This will be developed into a detailed SWMP and included in the detailed CEMP. The contents of the SWMP will be agreed with the relevant consenting authority prior to commencing the construction works.

- 3.8.4 Where required, a Materials Management Plan (MMP) will be developed by the contractor under the 'CL:AIRE Definition of Waste: Development Industry Code of Practice' (Ref. 8) and agreed with the relevant consenting authority prior to commencing the construction works. It will support the reuse of excavated materials, minimise off-site disposal; and to demonstrate the necessary lines of evidence to support the proper reuse/off-site disposal of materials and ensure compliance with regulatory guidance.

3.9 Noise and Vibration

- 3.9.1 Measures to control noise and vibration as defined in Annex B and in Section 8 of BS 5228:2009+A1:2014 Part 1 (Ref. 14) and Part 2 (Ref. 15) will be adopted as far as practicable. These measures represent Best Practicable Means (BPM) (as defined by Section 72 of the Control of Pollution Act 1984 (CoPA) (Ref. 16) to manage noise and vibration emissions from construction and activities. Examples of BPM that may be implemented during construction works include:

- a. Avoiding unnecessary revving of engines and switching off equipment when not required;
- b. Keeping internal haul corridors well maintained and avoiding steep gradients;
- c. Using rubber linings in, for example, chutes and dumpers to reduce impact noise;
- d. Minimising drop heights of materials;
- e. Starting-up plant and vehicles sequentially rather than all together;
- f. Locating plant as far from noise sensitive receptors as practicable;
- g. Working within designated working hours;
- h. Use of broadband audible reversing warnings which have minimal impact;
- i. Selection of quieter equipment and other noise control measures well maintained; and
- j. Use of enclosures or screening where practicable.

- 3.9.2 To manage potential vibration impacts during construction, the CEMP will set out the requirements for a vibration risk management process to be adopted. This would set a vibration limit that would be monitored by the appointed

contractors to ensure that it is not exceeded. This limit may need to be reduced for particularly sensitive buildings structures, including those of heritage value. If a risk of exceedance is identified, then alternative construction methods would be adopted.

3.9.3 The contractor will undertake and record noise and vibration levels where necessary to assure and demonstrate compliance with noise and vibration commitments. This information will be made available to the relevant local planning authority on request, and will:

- a. Satisfy the requirements of consent obtained under CoPA Section 61 (Ref. 16).
- b. Provide confidence in the calculations undertaken to inform the CoPA Section 61 process.
- c. Monitor compliance with agreed noise and vibration limits.
- d. Inform responses to complaints about noise and vibration.
- e. Noise measurements are to be undertaken at regular intervals by suitably qualified and experienced personnel.

Where monitored noise or vibration levels are found to be above the limits set, the following actions will be undertaken:

- a. Review works likely to be causing a breach and consider mitigation;
- b. Confirm monitored noise levels;
- c. Determine exceedance;
- d. Implement reasonably practicable measures; and
- e. Continue monitoring.

3.10 Traffic and Transport

3.10.1 A Construction Traffic Management Plan (CTMP) will be in place during the construction phase to ensure the safe management of traffic in each working area. An Outline CTMP will be submitted with the DCO application and is likely to include the following measures:

- a. All access / egress points that require the creation of a junction bellmouth would be designed based on the relevant standards and in consultation with the relevant highway authority;
- b. Swept path analysis for HGVs to ensure there is knowledge of where routeing is appropriate;
 - i. Appropriate HGV traffic routeing including avoiding canal bridges subject to weight limits, where possible;

- c. Utilising internal (haul) routes within the construction works areas to avoid using the existing road network where practicable;
- d. Managing the areas where traffic may have to use the road network, by providing adequate visibility splays between construction vehicles and other road users, implementing traffic management (e.g. advanced signage to advise other users of the works, as well as manned controls at each crossing point [marshals/banksmen]), with a default priority that construction traffic will give-way to other users.

3.10.2 A Construction Workforce Travel Plan identifying measures to reduce the impact of the Proposed Development's construction workforce on the road network as a result of travel to and from worksites will be prepared and is likely to include the following measures

- a. Construction staff will be directed to take the most direct route to the proposed development using 'higher' order roads, such as A and B classified roads or the Strategic Road Network (SRN);
- b. Encouraging local construction workers to car share to reduce single occupancy car trips. This will promote the benefits of car sharing, such as reduced fuel costs. A car share system will be implemented where practicable to match potential sharers and to help staff identify any colleagues who could potentially be collected along their route to/from the proposed development. Other site-specific sustainable transport measures will be considered as appropriate; and
- c. Providing limited (but sufficient) on-site car and cycle parking to accommodate the expected parking demand of workers for the proposed development.

3.11 Water Environment and Flood Risk

3.11.1 The CEMP will require the preparation of a Water Management Plan (WMP). The WMP will provide greater detail regarding the mitigation to be implemented to protect the water environment from adverse effects during construction. The WMP will also include an outline of responsibilities with regard to water management, required water quality monitoring, pollution prevention measures, training requirements for construction workers with regard to the water environment, an outline of likely relevant permissions and consents required, and a Pollution Prevention and Emergency Response Plan.

3.11.2 The CEMP and WMP will require that the contractor undertakes all works in accordance with good practice guidance and measures. This includes the following relevant Guidance for Pollution Prevention (GPP) documents (Ref. 17):

- a. GPP 1: Understanding your environmental responsibilities – good environmental practices;
- b. GPP 2: Above ground oil storage;
- c. GPP 3: Use and design of oil separators in surface water drainage systems;
- d. GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer;
- e. GPP 5: Works and maintenance in or near water;
- f. GPP 6: Working on construction and demolition sites;
- g. GPP 8: Safe storage and disposal of used oils;
- h. GPP 13: Vehicle washing and cleaning;
- i. GPP 19: Vehicles: Service and Repair;
- j. GPP 20: Dewatering underground ducts and chambers;
- k. GPP 21: Pollution Incident Response Plans;
- l. GPP 22: Dealing with spills;
- m. GPP 26: Safe storage – drums and intermediate bulk containers; and
- n. GPP 27: Installation, decommissioning and removal of underground storage tanks.

3.11.3 Additional good practice guidance for mitigation to protect the water environment can be found in the following sources, which include key Construction Industry Research and Information Association (CIRIA) and British Standards (BS) Institute documents:

- a. Department for Environment, Food & Rural Affairs & Environment Agency (2024) Pollution prevention for businesses (Ref. 18);
- b. C811 (2023) Environmental good practice on site guide (Ref. 7);
- c. C753 (2015) Publication C753 SuDS manual (Ref. 19);
- d. C741 (2023) Environmental Good Practice on Site (Ref. 20);
- e. C648 (2006) Control of Water Pollution from Linear Construction (Ref. 21);
- f. C532 (2001) Control of water pollution from construction sites (Ref. 22);
- g. C609 (2004) Sustainable Drainage Systems, hydraulic, structural and water quality advice (Ref. 23);
- h. C624 (2004) Development and flood risk – Guidance for the construction industry (Ref. 24);

- i. British Standards Institute (2009) BS 6031:2009 Code of Practice for Earth Works (Ref. 25);
- j. British Standards Institute (2013) BS 8582 Code of Practice for Surface Water Management of Development Sites (Ref. 26); and
- k. Canal & River Trust, (2025) Code of Practice for Works Affecting the Canal & River Trust (Ref. 27).

Managing Site Run-off

3.11.4 Mitigation measures to manage site run-off from construction areas are summarised below:

- a. Avoidance of wet weather working where practical, especially site clearance, earthworks and works to water features;
 - i. Appropriate separate storage of topsoil/subsoil and materials, and at least 50 m from water features on flat ground, other than where works are necessary adjacent to water features (taking flooding into account), in which case a site/works-specific risk assessment would be carried out and additional measures added if required;
- b. Any earth bund/ stockpile to be present for longer than two weeks will be either seeded, covered using geotextiles, or other measures provided to ensure it is not a source of excessive fine sediment in runoff to water features;
- c. The implementation of a temporary drainage system and other measures to manage pollution risk during construction (e.g. fabric silt fences, lagoons, bunds, straw bales, sandbags, lamella clarifiers, siltbusters or other technology to manage particularly silty discharges, or other proprietary measures as may be required);
- d. Any dewatering of excavations will include measures where necessary to filter the water prior to discharge to a watercourse or ground (there will be no discharge of any construction site runoff to existing ponds);
- e. The control of mud deposits at entry and exits to the construction site using wheel washing facilities and/ or road sweepers operating during earthworks or other times as considered necessary;
- f. All plant will be kept clean but washed in dedicated areas only where runoff can be captured and appropriately treated prior to discharge from the site to watercourse or ground. Any contaminated water that cannot be treated on site will be collected and disposed of at a suitable licenced wastewater facility; and
- g. The contractor will implement a suitable temporary drainage system, to be maintained throughout the construction phase.

Pollution Prevention

- 3.11.5 To prevent chemicals, fuels / oils and other such substances from entering the water environment, adequate measures to control the storage, handling and disposal of these substances will be put in place prior to and during construction. Mitigation measures to control of spillages and leaks during construction works are summarised below:
- a. Surface water drains on local roads or within the construction site will be identified by the contractor(s) and where there is a risk that fine particulates or chemical spillages could enter them, they would be protected (e.g. covers or sandbags);
 - i. Any containers/tanks of contaminating substances (e.g. fuel) onsite would be leak-proof and kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism. The containers for hazardous materials would be protected by temporary impermeable bunds (or drip trays for small containers) with a capacity of 110% of the maximum stored volume. Areas for transfer of contaminating substances (including refuelling areas) would be similarly protected;
 - ii. Any permanent oil storage tanks and temporary storage of 201 litres or more of oil in drums and mobile bowzers, and ancillary pipe work, valve, filters, sight gauges and equipment will have secondary containment (e.g. bunding and drip trays);
 - iii. No oil/chemical tanks will be stored within 50 m of a water feature and potentially further if ground is angled towards a water body. However, exceptions will be made for fixed/large plant associated with works that must occur close to water features or hand tools that have to be located in that location. Such chemical storage will be on flat, impermeable hard standing, and with an isolated drainage system; and
 - iv. Where possible, re-fuelling will be undertaken in designated areas within main compounds or satellite compounds by mobile fuel bowser. This will not be undertaken within 50 m of a water feature, and only on flat land (or otherwise a greater distance and other measures may be required subject to an on-site/works-specific risk assessment) and with a drip tray/plant nappy. Certain semi-mobile very large plant may need to be located close to watercourses and potentially within 50 m. Due to the difficulties in moving plant such as this they may need to be refuelled in situ with suitable pollution prevention measures in place in accordance with the Pollution Prevention and Emergency Response Plan.

- b. Biodegradable hydraulic oils would be used where possible in all plant used during pre-construction and construction works, and only in plant and equipment working in or over water features;
 - i. Spill kits and oil absorbent material will be available on the site in watertight containers in compounds, areas of works, strategically near water receptors and carried on all mobile plant. They would be regularly checked and topped up, especially after use. Appropriate training would be given to all construction workers in their use and spillage response;
 - ii. A Pollution Prevention and Emergency Response Plan would be prepared and included in the WMP;
- c. Any plant, machinery or vehicles would be regularly inspected and maintained to ensure they are in good working order and clean for use in a sensitive environment. This maintenance is to take place offsite if possible or only at designated areas in the site compounds;
 - i. All fixed plant used on construction sites to have a bund around them;
 - ii. Construction sites are to be secure to prevent any vandalism that could lead to a pollution incident;
- d. Construction site run-off, waste / debris will be prevented from entering any surface water drainage or water feature:
 - i. Where possible, watercourses within temporary compounds will not be affected other than for access purposes and will have a 5 m buffer zone around them.

3.11.6 Protective measures will be employed in areas of excavations to avoid accidental contamination from site activities or movement of contaminants from the excavated materials, including:

- a. The extent of exposed ground will be minimised at all times during construction and any stockpiles outside areas specifically designed for the purpose will be covered to prevent the creation of any contaminated run-off; and
- b. Areas where stockpiles are located will be positively drained through a grit trap where silt will be collected before water is discharged. Wheel-wash down areas will also be drained through a grit trap.

Groundwater

3.11.7 To manage the impact of any groundwater control activities on water receptors, a Construction Groundwater Control Strategy will be prepared by the contractor. Good practice mitigations measures will be followed to avoid and or minimise impact on groundwater and dependent receptors and will be

included in the Outline CEMP and developed for the detailed CEMP by the contractor.

3.11.8 As a minimum the contractor will adhere to the following mitigation measures in relation to the management of groundwater activities:

- a. Groundwater control would be implemented to ensure water level in adjacent water features are maintained and any discharge is of suitable quality;
- b. A programme of water monitoring of the dewatering discharges would be implemented;
- c. If discharging into a nearby watercourse, the rate of discharge will need to be agreed with the relevant authority to ensure that this will not result in unacceptable increase in flood risk or risk of scour. Any discharge will need to be undertaken with the agreement of the statutory regulator and will need to comply with the pollution prevention requirements set out in the Outline CEMP and appropriate consents or approvals;
- d. Managing the risk from groundwater flooding through appropriate working practices (during excavations) and with adequate plans and equipment in place for de-watering to ensure safe dry working environments;
- e. An approved abstraction licence will be required from the EA if the volume abstracted will be greater than 20 m³ a day; and
- f. A programme of water monitoring may be required. This would be implemented to ensure water levels in adjacent waterbodies are maintained and any discharge is of a suitable quantity and quality.

3.11.9 To minimise the impacts to groundwater quality during drilling activities, mitigation measures to control contamination of groundwater and surface waters for the trenchless crossings are summarised below:

- a. The use of environmentally friendly, biodegradable drilling fluids (primarily water and bentonite clay);
- b. Continuous monitoring of mud pressure, volume and flow rates to prevent build-up and fluid loss;
- c. Where possible implementation of closed-loop or recycling systems to management and reduce fluids, reducing waste; and
- d. Non-recyclable drilling fluids should be collected and disposed of by an appropriate waste provider.

Flood Risk

3.11.10 Construction activities across the Proposed Development are likely to be at risk and have the potential to increase the risk of flooding when: works are taking place within Flood Zone 3 (including defended), channel capacity of ordinary watercourses is reduced as a result of mud/silt/debris entering the land drainage systems or erection of temporary crossings; and temporary works result in an increase in impermeable area increasing run off. Mitigation and good practice measures to manage flood risk are summarised below:

- a. For works that will take place within Flood Zone 3, which is defined as an area that has a high probability of flooding, the detailed CEMP will set out the emergency procedures related to the potential for extreme rainfall and flooding that will be in place during construction. This will allow the use of flood warning and rainfall event warnings to allow compound areas to be evacuated and material in flood risk areas to be moved where possible;
- b. All construction materials and temporary compounds associated with the construction of the Proposed Development will be located in Flood Zone 1, where possible. During the construction phase, the contractor will monitor weather forecasts and plan works accordingly. In addition, the contractor will sign up for EA flood warning alerts and describe the actions it will take in the event of a possible flood event in the Emergency Response Plan. These actions will be hierarchal, where an increase in risk results in the contractor implementing more stringent protection measures. This will ensure all workers and the construction site, and third-party land, property and people are adequately protected from flooding during the construction stage;
- c. Safe egress and exits are to always be maintained when working in excavations. A banksman is to be always present when working in excavations;
- d. To control silt laden runoff, works will comply with CIRIA C648 guidance on 'Control of water pollution from linear construction projects' (Ref. 21). For the remaining infrastructure, works will comply with CIRIA C532 'Control of Water Pollution from Construction Sites' (Ref. 22). Following these will ensure that the potential washout from the construction works is managed and treated and will ensure silt laden runoff does not enter land drainage systems. By adopting a temporary drainage system which complies with CIRIA guidelines it will provide a dual benefit of managing both pollution and flood risk;
- e. The Outline CEMP will include consideration of site drainage, including surface water runoff, within a pollution prevention and incident control

plan, from which it will seek the necessary consents and approvals for disposal of effluents to any watercourse or controlled water;

- f. If water is encountered during excavation works, suitable dewatering methods will be used with reference to a Construction Dewatering Strategy. Any significant groundwater dewatering (i.e. more than 20 m³ per day) will be undertaken in line with the requirements of the Environment Agency (under Water Resources Act 1991 as amended) and Environmental Permitting Regulations (2016) (Ref. 28); and
- g. All 'above ground' crossings of watercourses needed for temporary construction purposes (access roads/working areas) will include a piped culvert, designed to convey flows up to a 1 in 20-year flood event, unless otherwise agreed with the Lead Local Flood Authority (LLFA), Internal Drainage Board (IDB) and Environment Agency.

4. Implementation and Operation

4.1.1 The detailed CEMP will set out all roles, responsibilities and actions required in respect of implementation of the measures described in this Preliminary Outline CEMP, including:

- a. An organogram showing team roles, names and responsibilities;
- b. Training requirements for relevant personnel on environmental topics;
- c. Information on-site briefings and toolbox talks that will be used to equip relevant staff with the necessary level of knowledge to follow environmental control procedures;
- d. Measures to advise employees of changing circumstances as work progresses;
- e. Communication methods;
- f. Document control;
- g. Environmental emergency procedures;
- h. Monitoring and reporting requirements; and
- i. Auditing and assurance procedures.

5. Next Steps

5.1.1 This Preliminary Outline CEMP will be updated to take account of additional mitigation measures identified as the design of the Proposed Development and the environmental assessment work are further progressed, and with regard to feedback from consultation. An updated version of the Outline

CEMP will be made publicly available as part of the DCO application documentation.

6. References

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