REVISED

Didcot Garden Town HIF 1 Scheme

Environmental Statement

Volume III

Appendix 4.2: Outline Environmental Management Plan (OEMP)

Oxfordshire County Council

April 2023

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1. Introduction

1.1 Purpose of the OEMP

1.1.1 This document is the Outline Environmental Management Plan (OEMP) for the Housing Infrastructure Fund (HIF 1) Scheme (hereafter referred to as the 'Scheme'), which is being promoted by Oxfordshire County Council (OCC).

1.1.2 An Environmental Impact Assessment (EIA) has been undertaken for the Scheme and an Environmental Statement (ES) has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (hereafter referred to as the 'EIA Regulations'). In accordance with the requirements of the EIA Regulations, the ES contains the assessment of the potential significant effects on the environment that may be caused during construction, operation and maintenance of the Scheme and describes proposed mitigation measures. Cross reference to the ES Glossary (Appendix 1.2) is advised when reviewing this OEMP.

1.1.3 This OEMP is based on the Scheme design and has been prepared in accordance with the Design Manual for Roads and Bridges (DMRB) LA 120: Environmental Management Plans (Ref 1.1).

1.1.4 This OEMP will be developed into a more detailed Construction Environmental Management Plan (CEMP) by the Principal Contractor (PC) once they have been appointed. It is expected that the production of the CEMP will be conditioned and that it will need to be signed off by OCC prior to approval.

1.1.5 The purpose of this OEMP is:

- To satisfy the DMRB's requirement to define mitigation measures which are proposed to be included during Scheme construction, operation and maintenance, including all of those considered in the ES;
- Provide the "blueprint" for the more detailed CEMP to be prepared by the PC; and
- To enable the relevant planning authority to identify mitigation measures proposed by the Scheme which are secured within this OEMP.

1.1.6 The OEMP has been prepared using an iterative process and in parallel with the development of the Scheme design, proposed construction methodologies and the EIA. Measures within this OEMP include proposed design, construction and operational mitigation measures, which have been defined by the requirements which arise from the technical assessments presented within the ES.

1.1.7 The construction of the Scheme will be subject to measures and procedures defined within a CEMP to be prepared by the PC. The CEMP will be based on and incorporate the requirements of this. It will also include the implementation of appropriate industry standard practices and control measures for environmental impacts arising during the Scheme works.

1.1.8 The measures defined in the CEMP will be applied by the PC as stipulated in the relevant parts of the OEMP, throughout the duration of their contract to provide planning, management and control during the construction of the Scheme with the

aim of controlling potential impacts upon the natural and historic environment, people and businesses.

1.1.9 All contractors will be required to comply with applicable environmental legislation.

1.1.10 The measures to be implemented, such as soil handling and dust management, are set out in relation to each environmental discipline of the ES within the Register of Environmental Actions and Commitments (REAC) tables included in Section 3 of this OEMP.

1.1.11 For the purposes of the OEMP, the following definitions apply:

- The Local Planning Authority (LPA) is OCC[1]. The LPA, in consultation with the relevant stakeholders, will determine whether to accept the CEMP, management plans, method statements and variations to these and other matters as stated within this OEMP, prior to, their final approval by the body responsible for approving the relevant document as set out in the OEMP;
- The PC means any contractor appointed by the applicant to deliver the construction works (and includes any sub-contractors appointed by the PC to carry out any part of the construction works); and
- The maintenance authority is a body tasked with the maintenance of the Scheme, once the Scheme is operational. Once the Scheme is complete in its entirety, this will be the highways department of OCC. Prior to full completion this will be the PC.

1.1.12 The CEMP (and any other documents that form part of it) will be a live document that will be maintained by the PC throughout the construction of the Scheme. As a minimum, the CEMP will be reviewed every six months to ensure that it is up to date.

1.1.13 Towards the end of the construction period the PC will develop the CEMP into a Handover Environmental Management Plan (HEMP) for the operational phase of the Scheme, which will be subject to approval of the LPA. The indicative contents of the HEMP are set out in the DMRB GG 182: Enabling Handover into Operation and Maintenance (Ref 1.2). This HEMP will then be implemented by the maintenance authority responsible for the maintenance of the Scheme during the operational phase.

1.1.14 The relationship between the OEMP, CEMP and HEMP is shown in Figure 1.1.

[1] Note that OCC is also the promoter for the Scheme. OCC's planning department are the LPA.

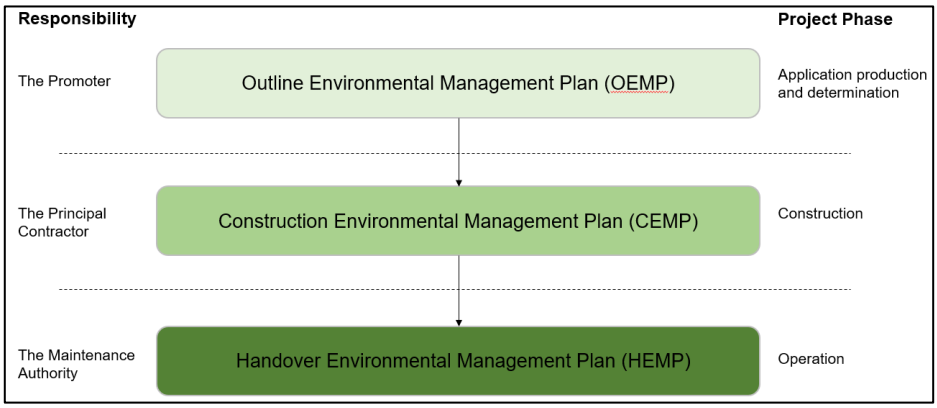

Figure 1.1: The relationship between the OEMP, CEMP and HEMP

1.2 Structure of the OEMP

1.2.1 The OEMP comprises the following Chapters:

- Chapter 2 describes the project team including the roles and responsibilities of those on site;
- Chapter 3 describes the environmental objectives and targets and the measures that will be adopted during the construction of the Scheme in accordance with the ES. The environmental measures will be implemented to avoid, reduce or compensate for effects on receptors identified in the following environmental topics: air quality; biodiversity; cultural heritage; landscape and visual impact; noise and vibration; geology and soils; material assets and waste; population and human health; climate; road drainage and the water environment; and transport. This chapter also provides a table outlining the management plans/ strategies required prior to the start of construction of the Scheme;
- Chapter 4 describes the consents and permissions that will be applicable for the Scheme;
- Chapter 5 describes the environmental data and as built drawings as required for the Scheme;
- Chapter 6 describes the requirements for environmental maintenance and monitoring activities; and
- Chapter 7 describes the Induction and training and briefing procedure for staff.

1.3 The Scheme

Scheme location

1.3.1 The Scheme consists of four separate but interdependent highway schemes, namely: i) the A4130 Widening; ii) Didcot Science Bridge; iii) Didcot to Culham River Crossing; and iv) Clifton Hampden Bypass. The location of the Scheme is illustrated in ES Chapter 1: Introduction, Figure 1.1. The area of land over which the Scheme will occupy, during construction and operation, is referred to as the 'Site'.

Overview of the Scheme

1.3.2 From south to the north the Scheme includes:

- A4130 Widening – The proposed improvement to the A4130 includes dualling widening between Milton Gate eastwards to the proposed Didcot Science

Bridge. The proposal also includes the provision of new and improved pedestrian and cycling facilities;

- Didcot Science Bridge – A new road bridge link from the proposed A4130 Widening scheme, over the A4130, Great Western Railway and Milton Road connecting back to the A4130 north of Purchas Road roundabout, including pedestrian and cycling infrastructure;
- Didcot to Culham River Crossing – a new road between Culham near the Science Centre to Didcot's A4130 perimeter road, including pedestrian and cycling infrastructure. This will include two new bridges, one crossing Hanson's private railway sidings the other crossing the River Thames; and
- Clifton Hampden Bypass – a new road between the A415 Abingdon Road, at the Culham Science Centre (CSC) and the B4015 Oxford Road, north of Clifton Hampden village. Pedestrian and cycling infrastructure will also be included.

Programme

1.3.3 Subject to securing planning permission, construction work will begin in February 2023. Key milestones[2] relevant to the OEMP are defined in Table 1.1.

Table 1.1: Key Scheme delivery milestones

Milestone	Target Dates
Submission of planning application	**September 2021**
OCC planning decision	**July 2023**
Start of construction	**July 2024 TBC**
The Scheme is open to traffic	**End of 2026 TBC**

1.3.4 The target dates suggest that the activities pertinent to the milestones will be undertaken sequentially, however, they may overlap.

[2] Those dates shown in the future are expected.

2. Project team roles and responsibilities

2.1 Site roles and responsibilities

2.1.1 The roles identified in Table 2.1 define the responsibilities associated with the construction works that the PC must establish and maintain. The responsibilities defined in Table 2.1 include those relating directly to the development and implementation of the CEMP, final management plans and the wider environmental responsibilities. The PC will be required to delegate responsibilities to onsite personnel within key areas of the site and compounds. The delegation of responsibility will be clearly identified within relevant documents and site files.

2.1.2 Individual names and contact details will need to be confirmed by the PC once appointed or confirmed. The PC will establish a management structure that includes an organisational chart encompassing all staff responsible for delivery of environmental mitigation measures and shall include this chart within the CEMP. The chart will set out the respective roles and responsibilities with regards to the environment (refer to Table 3.2C - G3).

2.1.3 It is anticipated that prior to the commencement of each element of the construction programme, individuals will be identified to fulfil the relevant roles.

Table 2.1: Roles and responsibilities

Role	Responsibilities
Local Planning Authority (LPA)	**CEMP responsibilities:** • Approval of the CEMP and management plans, and any detailed schemes required by this OEMP. **Note that the LPA in this instance refers to Oxfordshire County Council as the authority responsible for the determination of the planning application.**
Maintenance Authority (MA)	**Overall environmental responsibilities:** • Responsible for the approval of HEMP and the maintenance of the Scheme during operation, in accordance with the requirements set out within the OEMP and CEMP.
Principal Contractor (PC)	**CEMP responsibilities:** • Approval of the CEMP prepared for the relevant element of the works. • Ensure that all controls specified within the CEMP and associated management plans are implemented by employees and sub-contractors. **Overall environmental responsibilities:** • **Responsible for the construction of the Scheme**. Has overall responsibility for the environmental performance of the Scheme and **all staff as identified below**. • Ensure environmental and waste requirements are included on requisitions and in subcontracts. • Ensure that all required consents and licences are in place. • Log and monitor incidents and non-compliances. Report incidents and non-compliances to the LPA at the earliest possible opportunity. • Ensure that the LPA is informed of all environmental complaints. • Provide an initial point of contact for members of the public and local community who have queries regarding the works. • Ensure employees and sub-contractors receive Induction Training (including environmental) and toolbox talks, as appropriate. • Verify actions resulting from non-compliances and observations raised during audits are completed by the deadlines set. • Undertake inspections alongside the EM to ensure that the environmental controls as set out within the CEMP are in place and working effectively. • Ensure all records are retained and readily available on site.
Environment Manager (EM)	**CEMP responsibilities:** • Preparing the CEMP and management plans based on the OEMP.

Role	Responsibilities
	• Undertake site inspections to monitor compliance with the environmental licences and consents for the works and the measures within the CEMP. • Prepare any changes to the CEMP in consultation with the PC. • Maintaining and updating the CEMP on an ongoing basis as required. • Managing the delivery of the various management plans defined within the appendices of the CEMP, using appropriate technical expertise as required. • Managing the delivery of the monitoring required under the CEMP, alongside relevant specialists, and reporting to relevant stakeholders at a frequency to be defined in the CEMP. **Overall responsibilities:** Responsible for ensuring that the Scheme complies with all environmental legislation, consents, objectives, targets and other environmental commitments, including those arising from the ES. The EM will be required to: • Provide toolbox talks and environmental inductions to all staff involved in the Scheme. • Deal with queries and correspondence on environmental issues. • Ensure that the environmental elements of the Scheme have been created and maintained in accordance with the OEMP and CEMP to the appropriate standard. The EM should review and approve this by way of sign off. • Implement follow-up corrective actions to ensure compliance with UK regulations and legislation. • Keep record of all activities on site, environmental problems identified, transgressions noted, and a schedule of all tasks undertaken. • Provide appropriate professional and practical advice to contractors, consultants and project team members associated with environmental and ecological issues and where appropriate resolve issues in a practical and efficient way.
Ecological Clerk of Works (ECoW)	**CEMP responsibilities:** • Review of relevant sections of the CEMP. • Responsible for ensuring compliance of all ecological elements of the CEMP. • Preparing a Landscape and Biodiversity Management Plan (LBMP), together with the Landscape Specialist. • Prepare ecological method statements and other applicable ecological management plans as identified by the OEMP e.g. Biosecurity Management Plan. **Overall responsibilities:** Responsible for ensuring that the Scheme complies with all ecological legislation and consents, including those arising from the ES. The ECoW will be required to: • Identify any new ecological constraints on site and appropriate mitigation measures for them.

Role	Responsibilities
	• Undertake watching briefs during site clearance activities, to ensure that any unanticipated discoveries of notable flora and fauna are appropriately dealt with. • Undertake watching briefs, where appropriate, where works will be in close to known locations of protected species. • Approve by way of sign off, that the ecological elements of the Scheme have been created and maintained in accordance with the CEMP to the appropriate standard. • Monitor works during construction at sensitive sites for example, wildlife habitats and corridors, and non-statutory designated sites. • Monitor and provide guidance in respect of the LBMP during the creation of ecological habitats. • Give Toolbox Talks, where required, to inform all site personnel of the ecological constraints on site.
Archaeological Clerk of Works (ACoW)	The ACoW will be responsible for the following: • Review of relevant sections of the CEMP, when prepared by the EM. • Responsible for ensuring that all archaeological elements of the CEMP are complied with during construction. • To prepare an Archaeological Mitigation Strategy (AMS) and an accompanying Overarching Written Scheme of Investigation (OWSI), plus Site Specific Written Scheme(s) of Investigation (SSWSI). • Monitor and ensure compliance with the AMS. • Give toolbox talks, where required, to inform all site personnel of the archaeological and historic environment constraints on site, the protection measures that are required and ensuring that these are put in place and complied with. • Monitor construction works to ensure that the CEMP, the AMS, OWSI and SSWSIs are carried out. • Monitor protection measures and procedures for preservation in situ to ensure these are in place and maintained appropriately throughout the construction period in compliance with the AMS. • Liaise and consult closely with The Authority on an ongoing basis throughout the construction works and the handover to the operation phase to ensure compliance with all measures set out in the CEMP, AMS, OWSI and the SSWSIs.
Landscape Specialist (LS)	**CEMP responsibilities:** • Review of relevant sections of the CEMP, when prepared by the EM. • Responsible for ensuring that landscape elements of the CEMP are complied with during construction. • Prepare the LBMP together with the ECoW. **Overall responsibilities:** • Monitor and provide guidance in respect of the LBMP during the creation of the habitats. • Approve by way of sign off, that the landscape elements of the Scheme have been created and maintained, in accordance with the OEMP and CEMP, to the appropriate standard.

Role	Responsibilities
Arboricultural Specialist (AS)	**CEMP responsibilities:** • Review of relevant sections of the CEMP, when prepared by the EM. • Responsible for ensuring that the elements of the CEMP related to tree works are complied with during construction. • Prepares the Arboricultural Method Statement Strategy for the works. **Overall responsibilities:** • Monitor and provide guidance in respect of the LBMP during the creation of habitats, with specific reference to tree establishment. • Approve, by way of sign off, that the areas of tree and scrub planting have been established and maintained, in accordance with the OEMP and CEMP, to the appropriate standard.
Site Materials and Waste Manager (SMWM)	**CEMP responsibilities:** • Review of relevant sections of the CEMP, when prepared by the EM. • Responsible for ensuring that all materials and waste elements of the CEMP are complied with during construction. • Prepare the Site Waste Management Plan (SWMP), using the Outline Site Waste Management Plan (OSWMP) as a template (see Appendix 12.2 of the ES). • Responsible for ensuring that a Materials Management Plan (MMP) is prepared. **Overall responsibilities:** • Responsible for implementing the SWMP throughout the Scheme construction phase and to ensure that waste is disposed of economically and safely in line with the SWMP and MMP.
Hydrogeomorphologist	The Scheme involves the construction of new road crossings of watercourses and other structures that have the potential to adversely impact the hydromorphology of water bodies along the route of the Scheme. The construction of the bridge over the River Thames, is perhaps the most sensitive activity of the entire construction works. A suitably qualified hydromorphologist should be appointed to oversee through a watching brief the construction of the River Thames crossing and all other works with the potential to adversely impact the hydromorphology of water bodies along the route of the Scheme. The role of the Hydro-morphologist will be to: • Ensure the correct implementation and interpretation of design drawings in accordance with hydromorphological principles and the provision of mitigation measures as set out in the CEMP. • To provide specialist technical advice to the Contractor during the construction of the bridge, restoration and the creation of new habitats, and other works affecting water bodies as required. • To carry out a hydromorphological Watching Brief during construction works. • To organise and manage ongoing stakeholder engagement with the Environment Agency and Natural England including the provision of progress updates, attendance at meetings, and / or accompanied site walkovers during the works.

Role	Responsibilities
	• Work closely and support the ECoW and EM to understand and implement environmental requirements in relation to works affecting water bodies. Monitor records, registers and other environmental documentation related to works affecting water bodies as required.
All Site Staff	**CEMP responsibilities:** • Ensure adherence to all environmental policies, procedures and rules as set out in the CEMP and any supporting management plans. • Organise work to be carried out to the required standard with the aim of minimum risk to the environment. All site personnel to receive instructions on their responsibilities to ensure correct environmental practice in line with the CEMP. **Overall responsibilities:** To receive general environmental awareness training and undertake work in accordance with all works method statements and toolbox talks. Only trained personnel are to manage particular tasks such as refuelling plant and equipment, managing the stores, water quality monitoring and supervising the segregation and collection of waste. The responsibilities of all staff on site throughout the construction of the works will include the following: • All staff are to be appropriately trained to carry out their respective tasks. • Adhere to legislation and where appropriate codes of practice and guidance notes relevant to their work.
Community Relations Manager	Communications with the public, stakeholders and other interested parties, outreach and education, where appropriate. The role will include the following responsibilities: • Responding to any concerns or complaints raised by the public in relation to the works. • Liaising with the Project Manager and EM on landowner and community concerns relating to the works and act as the main interface with these stakeholders, alongside any Authority presence that is required. • Maintain a log of complaints relating to the environment. • Ensure that the Project Manager and the EM are informed of any complaints relating to the environment. • Keeping the public informed of project progress and any construction activities that may cause inconvenience to local communities. • Engage with local schools and colleges to inform pupils and students about the Scheme, advise on careers within the construction industry and point out the dangers of trespassing on construction sites. • Ensure that the needs of groups with protected characteristics as identified within the Equality Act 2010 are considered during the construction process.
Managing Contractor (Oxfordshire County Council)	The role of the Managing Contractor will take full effect post- construction of the Scheme. The responsibility of the Managing Contractor is to provide integrated network management, maintenance, improvement, incident management, severe weather services, event management and contingency planning across the strategic road network. The Managing Contractor will also be responsible for post construction environmental monitoring and maintenance that may be required. Should monitoring results indicate that any mitigation is not meeting its target, the managing contractor is responsible for design and implementation of corrective measures.

3. Register of Environmental Actions and Commitments (REAC)

3.1 Introduction

3.1.1 The REAC, contained in Table 3.2 and Table 3.3, identifies the environmental commitments proposed to address the potential environmental effects of the construction and confirms the key Scheme design elements.

3.1.2 The REAC tables should be updated by the PC when the contractor prepares the CEMP relevant to their scope of works and then, as required, as the Scheme progresses with each CEMP or update prepared in accordance with the principles of the original OEMP and requiring approval from the local authority (see Table 3.2 C-G1, and Table 3.3 C-G1 and C-11).

3.2 Guide to REAC Tables

3.2.1 The tables do not define general legislative requirements. It is required that in addition to compliance with the measures in these tables, that all activities will comply with applicable legislation.

3.2.2 Table 3.1 provides a summary of the scope of each column within the REAC tables.

Table 3.1: Guide to REAC tables

Column	Explanation
Reference (Ref.)	A unique identifier defined within these REAC tables to enable simple reference to individual measures.
Source reference (Source Ref.)	An identifier which is directly relevant to the action or commitment, for example a source such as a mitigation reference in the ES.
Action/ commitment (including specific location and any monitoring required)	Where no source reference is given, the measure is normally one which is relevant across a range of technical areas and is a broader control measure (e.g. working hours).
Objective	The outcome which the defined action is designed to achieve.
Assumption on which the action is based	Any assumption which is relevant to the defined action – this could include absence of suitable data or that plans and strategies already in place.
Achievement criteria and reporting requirements (if applicable)	The criteria which define the successful implementation of the action, such as a document approval or an audit which confirms the action has been undertaken.
How the action is to be implemented	The contractual or other relationship between the relevant parties, which ensure that the action will be delivered.
Responsible person(s)	The person or body responsible for delivery of the action; this will often be the PC.

3.2.3 In order to provide for future flexibility and unless otherwise stated, the REAC tables do not typically define how the action is to be implemented or achieved, other than beyond a contractual obligation, and do not consider the risk management of individual items, unless these elements are implicit within the action.

3.2.4 The REAC tables do not include a column to define the 'source of the action' (e.g. the ES), since this is generally clear from the Source Reference. However, in preparing a CEMP, the PC shall include a new column for this and include within it any confirmation of commitments agreed with stakeholders. When preparing the CEMP, the PC shall include a new column for approval of actions.

3.2.5 The references to guidance documents within the REAC tables are not intended to be exhaustive and in preparing the CEMP and related topic specific plans, the PC shall have due regard to any relevant technical guidance in individual subject areas and draw upon and reference these as appropriate.

3.2.6 The REAC tables are presented in two parts and defined further in the sub- sections that follow:

- Table 3.2: Scheme construction (C); and
- Table 3.3: Scheme design (D).

Table 3.2: Scheme construction

3.2.7 Table 3.2 includes actions to be incorporated into the construction, and where relevant, the maintenance of the Scheme by the PC to mitigate construction effects.

3.2.8 In preparing a CEMP for the construction works, the PC shall update the REAC table for the Scheme construction, Table 3.2. Where actions are modified, this should be justified as consistent with the principles of the OEMP to the satisfaction of the local authority. The CEMP should be approved by the local authority.

Table 3.3: Scheme design

3.2.9 This table includes those essential and embedded mitigation measures incorporated into the Scheme design to mitigate the environmental effects as identified and described in the ES.

3.2.10 The PC will deliver each mitigation measure and commitment, unless the contractor is able to define an alternative measure, or measures, which will achieve the same environmental effects at the relevant location. In each such case, the PC will secure the written approval of the LPA prior to implementing any alternative measures. It must be demonstrated, to the LPA, that the use of the alternative measures will not lead to any materially new or different adverse environmental effects compared to those set out in the ES.

3.2.11 The CEMP should include Table 3.3 or an update thereof, taking account of any changes to Scheme design.

3.3 Construction REAC table

Table 3.2: Scheme construction (C) REAC table

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
General provisions								
C-G1	n/a	**CEMP preparation:** The PC shall prepare a CEMP, in accordance with this OEMP, prior to the commencement of construction. In preparing the CEMP, the PC shall consult with relevant local authorities and the statutory consultees, such as the Environment Agency. In preparing the CEMP, the PC shall pay regard to the actions needed to minimise the risks of potential cumulative impacts.	No.	To ensure the CEMP is appropriate for the construction works being delivered by the PC.	n/a	The LPA approval of CEMP.	Contractual requirement between the LPA and the PC.	PC.
C-G2	n/a	**Single point of contact:** The PC shall identify a person within their CEMP who will be the single point of contact for the regulatory authorities. The PC shall provide the regulatory authorities with relevant contact details prior to the commencement of construction and document this in the CEMP.	No.	To provide a single line of communication between the PC and the regulatory bodies.	n/a	The LPA approval of CEMP.	Contractual requirement between the LPA and the PC.	PC.
C-G3	n/a	**Management structure:** The PC shall establish a management structure that includes an organisational chart encompassing all staff responsible for delivery of environmental mitigation measures and shall include this chart within the CEMP. The chart will set out the respective roles and responsibilities with regard to the environment and identify the nominated EM, the ECoW, and other relevant roles (see Table 2.1 for roles). In this structure, the PC shall identify a person at each construction site who will be the single point of contact for the regulatory authorities. The PC shall provide the regulatory authorities with relevant contact details prior to the commencement of construction and document this in the CEMP.	No.	To provide a clear framework for environmental responsibilities on site including a single line of communication between the PC and the regulatory bodies.	n/a	LPA approval of CEMP.	Contractual requirement between the LPA and the PC.	LPA approval of CEMP.
C-G4	n/a	**Core working hours:** The PC shall adhere to the following core working hours, except in certain cases and in others, because of an emergency (see below): • 07:30 – 18:00 Monday to Friday; and • 08:00 – 13:00 Saturday with no working on Sundays and Bank Holidays. Exception to this will include, evening, night and weekend working where works take place close to, or over existing railway lines. This will include works to the Didcot Science Bridge and the Appleford Rail Sidings Bridge. This is related to a requirement to take 'possession' of the railway, which is often undertaken at night or on weekends when there will be less train journeys scheduled, thereby, reducing	No.	To ensure working hours for surface construction works are defined, but with an opportunity to vary these with the agreement of the LPA.	These working hours are as set within the ES.	n/a	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		the risk of injury or death to construction workers who will be working in immediate proximity of a railway line. To maximise productivity, a period of up to one hour before and up to one hour after normal working hours will be used for start-up and close down of activities, excepting Saturday afternoons where all works will cease at 13.00. This will include, but not be limited to, deliveries, movement to place of work, unloading, maintenance and general preparation works. These periods will not be considered an extension of core working hours. Some activities with limited durations will be undertaken outside of the core working hours, for example: • Didcot Science Bridge works. • Works to the Moor Ditch crossing. • Appleford private railway sidings bridge works. • River Thames bridge works. • Highways tie-in works. • Overnight traffic management measures as agreed with the highway authority in advance. • Any emergency works. • Works associated with traffic management and signal changes. Work carried out outside the core working hours, or any extension of the core hours, may be possible with the prior agreement of the LPA.						
C– G5	n/a	**Abnormal Deliveries:** The PC shall seek approval from the LPA for delivery of abnormal loads or those that require a police escort if these are to be delivered outside core working hours.	No.	To ensure staff with appropriate qualifications and experience are present to supervise works and monitor the implementation of mitigation measures.	n/a	n/a	Contractual requirement between the LPA and the PC.	PC.
C- G6	n/a	**Risk Assessments & Method Statements:** The PC shall set out the procedures to address health and wellbeing, safety, site security and environmental issues in method statements prepared as part of their works. The method statements shall define any specific environmental control measures, to be implemented to meet the requirements of their CEMP. The PC shall submit the method statements and risk assessments to the LPA.	No.	To ensure working methods take into account health and wellbeing, safety, site security and environmental issues and are of an appropriate standard.	n/a	The14epress approval of method statements.	Contractual requirement between the LPA and the PC.	PC.
C– G7	n/a	**Management Plans:** The PC shall prepare management plans for certain environmental topic areas, to include at least the following plans: • Biosecurity and Invasive Non-Native Species Management Plan. • Site Waste Management Plan (SWMP).	n/a – see relevant sections.	To provide more targeted environmental management plans applicable to the relevant topic area.	Plans can be submitted individually for approval rather than in aggregate. The ES is based on the assumption that the appropriate	LPA approval of plans.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		• Emergency Preparedness and Response Plan. • Landscape and Biodiversity Management Plan (LBMP). • Noise and Vibration Management Plan (NVMP). • Soil Management Plan (Including a Soil Resource Plan and Soil Handling Strategy). • Materials Management Plan (MMP). • Asbestos Management Plan. • Water Management Plan (Outline Water Management Plan included in Appendix C). • Construction Traffic Management Plan (Including a Site Access Plan, Site Travel Plan, and Construction Workforce Travel Plan). These plans shall be appended to the CEMP as appropriate. The plans can be submitted and approved individually and no direct inter-dependency between these plans and the CEMP should be inferred in the approval process.			management plans are in place.			
C– G8	n/a	**Piling Risk Assessments:** The contractor shall undertake environmental risk assessments for piling activities which shall include consideration of the environmental constraints, including the potential for groundwater pollution.	Yes	To avoid adverse environmental impacts.	n/a	The LPA or representative approval of risk assessment.	Contractual requirement between the LPA and the PC.	PC.
C– G9	n/a	**Handover Environmental Management Plan (HEMP):** During the later stages of the construction phase of the Scheme (or separate construction phase), as relevant the PC shall prepare a HEMP in consultation with the LPA. This will then be implemented by the body responsible for the long-term management of the operational Scheme. The HEMP shall be based on the CEMP and the LBMP at the time and will provide the relevant information on existing and future environmental commitments and objectives that will need to be honoured and define on-going actions and risks that need to be managed. The HEMP will include as built information and other details in a form that can be utilised by the body responsible for long term management and maintenance so that body can prepare environmental management plans for the maintenance of the Scheme for the operational phase – this includes the long-term maintenance and management of landscaping, ecological and environmental mitigation features. Once construction is complete, the PC shall produce a consolidated HEMP, which will then be the main document containing essential environmental information passed to the LPA and the highway maintenance authority.	No.	To ensure that any relevant commitments and objectives defined during preceding project phases are clearly defined for the subsequent operation of the Scheme and to secure approval for these measures.	A separate EMP is required for the operational Scheme, given the environmental control measures and management requirements are very different from construction.	The LPA approval of HEMPs.	Contractual requirement between the LPA and the PC.	PC.

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C– G10	n/a	**Revision of the CEMP:** The PC shall notify the relevant local authorities and the Environment Agency if the CEMP is to be updated or revised.	No.	To discuss any changes to the approved CEMP with stakeholders and to then secure Authority approval.	n/a	LPA approval of proposed revisions.	Contractual requirement between the LPA and the PC.	PC.
General provisions – site management								
C– G11	n/a	**Site hoardings around construction compounds:** The PC shall define within the CEMP the proposed approach to hoardings around construction compounds, giving consideration to environmental constraints, including but not limited to: • Maintenance of adequate hoardings to an acceptable condition to prevent unwanted access to the construction compounds. • Painting the side of sustainably sourced or recycled, solid hoardings facing away from the site, and to keep them free of graffiti and posters. • Providing site information boards. • Displaying notices on site boundaries to warn of hazards on site. • Providing signage to indicate re-routed pedestrian/ cycle paths. • Retaining existing walls, fences, hedges and earth banks for the purpose of screening as far as reasonably practicable and ensure fencing and hoarding is located such that it does not damage sensitive habitats, trees or hedgerows. • Providing hoardings around retained habitats to prevent access to retained important habitat, protect habitat, avoid accidental damage, and avoid species mortality (including areas to which species have been temporarily displaced). Consultation with the ECoW should be undertaken. To minimise landscape impacts of the compounds, the PC shall follow the below measures in relation to construction compounds: • Buffer zones shall be created between the compounds and construction works and existing retained vegetation through construction exclusion zones and suitable perimeter fencing. • Any temporary earth bunds, created from excavated soil, shall be located around the perimeter of the compounds. • All buildings within compounds shall be restricted to one storey in height and rendered/ painted in suitable colours to aid in their integration within the landscape. • Solid, sustainably sourced or recycled hoarding shall be installed around the perimeter of the compounds, stained in suitable approved colours, to aid in its integration within the landscape.	No.	To prevent unauthorised access to the site, provide appropriate signage and ensure hoarding is appropriate to the site context.	n/a	LPA approval of CEMP.	Contractual requirement between the LPA and the PC.	PC.

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		• Construction compounds and satellite compounds shall be well-managed and kept tidy. • Ensuring that materials are delivered to site on an "just in time" basis to minimise unnecessary stockpiles. • When Stockpiles are required these will be approximately 3 m to 4 m in height and may be sown with grass seed to reduce their visual impact should they be present for extended periods of time. • Lighting to be kept at a minimum luminosity necessary and make use of low energy consumption fittings. Where appropriate, lighting will be activated by motion sensors to prevent unnecessary usage. Lighting shall be directional, and positioned sympathetically, to minimise light spill and disturbance for sensitive receptors. Where footways are required, the PC shall provide footways of adequate width to facilitate pedestrian flows with signs provided to facilitate safe access around the site boundary and provide adequate lighting near hoardings to illuminate these footways. The PC shall ensure that hoarding and fencing in areas at risk of flooding, will be permeable to floodwater, unless otherwise agreed with the Environment Agency, to ensure that the fluvial floodplain and areas liable to other sources of flooding continue to function effectively for storage and conveyance of floodwater.						
C– G12	n/a	**Site lighting:** The PC shall define within the CEMP the proposed approach to site lighting around construction compounds and elsewhere along the route alignment, giving consideration to environmental constraints. Lighting should be at the minimum luminosity necessary and use low energy consumption fittings and should avoid light spillage. Lighting should also be designed, positioned, and directed so as not to unnecessarily intrude on adjacent buildings, ecological receptors, structures used by protected species and other land uses to prevent unnecessary disturbance, interference with local residents, or passing motorists. This provision will apply particularly to sites where night working will be required.	No.	To provide safe working areas and safe walking routes, whilst minimising light spill to minimise impacts to the people and wildlife.	n/a	LPA approval of CEMP.	Contractual requirement between the LPA and the PC.	LPA approval of CEMP.
C– G13	n/a	**Clearance and re-instatement of sites on completion:** The PC shall ensure that on completion of construction works, plant, materials, equipment, temporary buildings and vehicles not required during subsequent activities are removed from the site and that land is restored to its former use or in accordance with the design as appropriate.	Yes – by way of inspection by the EM.	To ensure the order limits are restored to the current condition, unless otherwise used as part of the hard or soft estate within the final design.	n/a	LPA approval of CEMP.	Contractual requirement between the LPA and the PC.	LPA approval of CEMP.

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General provision – community engagement and co-ordination								
C– G14	n/a	**Community Engagement:** The PC shall take reasonable steps to engage with local residents. The PC shall use the following materials to engage with residents and other stakeholders: • **Online**: the PC shall provide materials to update OCC's website. The site shall be updated to reflect the status of the Scheme, including the latest information on the progress of the construction works, areas affected by construction, mitigation in place to reduce adverse effects of construction, information regarding planned construction works, road closures, works recently completed and an enquiry procedure. • **Meeting:** the PC shall provide regular updates to the appropriate Parish Councils and provide information on the progress of construction including upcoming activities. • **Works Notices**: the PC shall notify occupiers of nearby or affected properties, businesses and adjacent or affected parish councils, at least two weeks in advance, of the nature and anticipated duration of planned construction works. Information included in the notifications will include, as appropriate: – The location of the planned works. – The activities to be carried out. – The duration of the planned works and the periods within which works will be undertaken (i.e. whether during normal working hours, during the evening or overnight). – The anticipated effects of the planned works. The measures to be implemented in line with the CEMP to mitigate the impact of the planned works.	No.	To understand the concerns of residents. To keep residents informed of forthcoming construction works.	Communities and places of business close to the Scheme.	Approval of approach by LPA.	Contractual requirement between the LPA and the PC.	PC.
C– G15	n/a	**Coordination:** The PC shall co-ordinate activities outside of any individual (sub-) contractor's site boundaries, so far as is reasonably practicable, notably in respect of: • **Community liaison:** communicating upcoming activity to affected communities and responding to questions/ concerns raised, using the role of Community Relations Manager (see Table 2.1) and other support staff as relevant. • **Emergency response:** maintaining communication with emergency services and ensuring that emergency response plans do not conflict.	No.	To reduce the risk of conflict and to maximise opportunities for reducing overall impact on surrounding communities and the environment.	n/a	Approval of approach by LPA.	Contractual requirement between the LPA and the PC.	PC.

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		• **Traffic management:** working collaboratively with the aim of avoiding potential conflict in arrangements and minimising disruption to road users. • **Access to site:** communication and collaboration in respect of arrangements for site access and abnormal loads with highway authorities and emergency services. • **Construction workforce:** monitoring the impact of the workforce on the community in its travel to and from work. • **Other construction projects:** maintaining communication between the works on the Scheme and those of other construction projects in the vicinity. Environmental interface management between adjacent construction areas: The PC shall put in place measures to manage any issues which are relevant to adjacent construction areas, including the boundaries between areas under the control of different (sub-) contractors or were reasonably practicable other third-party contractors. An aim of the interface management activities shall be the identification, interception and mitigation of potential cumulative effects.						
Air quality								
C- AIR1	ES Chapter 6, Section 6.9.	**Best Practicable Means:** The PC shall manage dust, air pollution and exhaust emission during the construction works in accordance with BPM as set out in a Dust Management Plan (DMP). Specific measures shall be based upon industry good practice, including the measures listed in the Institute of Air Quality Management's (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (Ref 3.1). These measures will be set out in more detail in the CEMP and could include: • Developing and implementing a series of dust management measures and monitoring measures. The level of detail will include as a minimum the measures set out in this table. • Undertaking periodic on-site inspections, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority etc. when asked. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. • Keep site fencing, barriers and scaffolding clean using wet methods where there is the risk of dust accumulation.	Yes – see actions and commitments.	To ensure air quality is managed appropriately across the Scheme.	Assessment within the ES assumes BPM will be incorporated throughout the construction phase to mitigate effects on sensitive receptors.	Implementation of BPM and DMP.	Contractual requirement between the LPA and the PC.	PC.

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		• Remove materials that have the potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. • Cover, seed or fence stockpiles to prevent wind whipping where practicable. • Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided). • Ensure all vehicles (HGVs and mobile plant – non-road mobile machinery (NRMM)) switch off engines when stationary or not in use - no idling vehicles. • All construction plant will use fuel equivalent to ultra-low sulphur diesel (ULSD). • Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. • Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses when attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. • No explosive blasting will be undertaken, manual or mechanical alternatives will be used. • Comply with measures set out in any Asbestos Management Plan if one is required. • Surfacing equipment (e.g. planer) only to be operated with any manufacturers dust abatement measures in place. • Avoid scabbling (roughening of concrete surfaces) if possible. • Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. • Use water-assisted dust sweeper(s) on access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Record all inspections of haul routes and any subsequent action in a site logbook. • Implement a wheel washing system.						

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		• No bonfires or burning of waste materials. • Soft strip inside buildings before demolition.						
C– AIR2	n/a	All high-risk site works close to sensitive receptors are to employ further best practice mitigation measures, which should include: • Display the name and contact details of person(s) accountable for air quality and dust issues on the construction site boundaries. This may be the EM/ engineer or the site manager. • Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority etc. as soon as reasonably practicable. • Record any exceptional incidents that cause dust or air emissions, either onsite or offsite, and the action taken to resolve the situation in the logbook. • If applicable, hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. In particular, it is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes. • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Erect solid screens or barriers around particularly dusty activities or the site boundary that are at least as high as any stockpiles on site for higher risk areas. • Avoid site runoff of water or mud. • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable. • Where stationary generators are required ensure these are sited as far from sensitive receptors as possible. • Operate stationary generators within manufacturer guidelines, under optimum load for periods of operation and regularly service equipment to maintain efficient operation. • Manage the sustainable delivery of goods and materials through careful programming of delivery.	No.	To ensure air quality is managed appropriately across the Scheme.	Assessment within the ES assumes BPM will be incorporated throughout the construction phase to mitigate effects on sensitive receptors.	Implementation of BPM. Regular inspections to monitor dust, record inspect results and make the log available to the relevant local authority upon request.	Contractual requirement between the LPA and the PC.	PC.

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		• Implement a travel plan that supports and encourages sustainable travel (e.g. public transport, cycling, walking, and car-sharing). • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction (e.g. suitable local exhaust ventilation systems). • Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation, using non-potable water where possible and appropriate. • Use enclosed chutes and conveyors and covered skips. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. • Re-vegetate earthworks and exposed areas/ soil stockpiles to stabilise surfaces as soon as practicable. • Use hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. • Where possible, only remove the cover in small areas during work and not all at once. • Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery. • For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust. • For cement batching plants enclose as much of the plant as possible to minimise emissions of dust during preparation and identify measures to minimise emissions at loading points (e.g. pre-mixing). • Maintain and inspect on-site haul routes for integrity and operate a programme of routing maintenance and where necessary carry out repairs to the surface as soon as reasonably practicable. • Install hard surfaced haul routes if possible, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and are regularly cleaned. • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.						

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		• In locations without hard standing it may be necessary to clean the vehicle bodies in addition to wheels. • Access gates to be located at least 10 m from receptors where possible. The details of the further standard best practice mitigation will be outlined in the CEMP produced by the contractor.						
C- AIR3	ES Chapter 6, Section 6.11.	**Air quality monitoring:** For high risk areas, undertake air quality monitoring where necessary and after risk-assessing the activities and sensitivity of receptors. The type of monitoring will be proportionate to the risk but may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections. Pre-construction monitoring of at least 3 months will be undertaken.	Yes.	To ensure air quality is managed appropriately across the Scheme.	Assessment within the ES assumes BPM will be incorporated throughout the construction phase to mitigate effects on sensitive receptors.	Implementation of BPM.	Contractual requirement between the LPA and the PC.	PC.
Cultural Heritage								
C- CH1	ES Chapter 7, Section 11	**Fencing of heritage assets:** The ACoW shall ensure all heritage assets identified in the AMS, where required, for protective fencing are securely fenced during the construction (in conjunction with other mitigation measures). The ACoW shall consult with OCC Cultural Heritage officers to determine the type of fencing to be used. The contractor shall separately prepare a method statement for all fencing works which will include details of appropriate archaeological mitigation measures.	No.	To ensure that heritage assets are appropriately protected in advance of construction works.	Assessment within the ES is based on the protection of identified heritage assets	Consultation on method statements with OCC Cultural Heritage officers and approval from the LPA prior to the start of the work at each location.	Contractual requirement between the LPA and the PC.	PC and ACoW.
C-CH2	ES Chapter 7, Section 11	**Heritage Awareness:** The ACoW shall inform construction workers and operatives as to any control and reporting procedures to be followed, should archaeological deposits be encountered during the works, for example through toolbox talks and regular briefings.	No.	To ensure that heritage assets are appropriately protected during construction works.	Assessment within the ES is based on the protection of identified heritage assets.	Awareness raised and logged by the PC.	Contractual requirement between the LPA and the PC.	PC and ACoW.
C-CH3	ES Chapter 7, Section 11	**Archaeological assets:** Where archaeological assets are impacted by the Scheme these will be subject to archaeological investigation measures set out in the Archaeological Management Strategy, Outline Written Scheme of Investigation and Site Specific Written Schemes of Investigation. The ACoW will prepare and agree the AMS, OWSI and SSWSIs in consultation and agreement with the Cultural Heritage Officer for OCC. The archaeological investigations will be monitored by the ACoW and the Cultural Heritage Officer for OCC. Mitigation measures should be agreed with the Archaeologist for OCC, and could include:	No.	To ensure that archaeological assets are appropriately protected during construction works.	Assessment within the ES is based on the protection of identified archaeological assets.	Consultation on method statements with OCC archaeological officers and approval from the LPA prior to the start of works.	Contractual requirement between the LPA and the PC.	PC and ACoW.

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		• Preservation of archaeological remains in situ; • Protection of archaeological remains using fencing; • Trial trench evaluation; and • A programme of archaeological investigation, recording and publication. The Archaeological Management Strategy should also include an outline for public archaeology and community engagement (PACE).						
Landscape and visual								
C- LAN1	ES Chapter 8 and Didcot Garden Town HIF 1 Scheme Arboricultural Impact Assessment (AECOM 2021).	**Retained vegetation:** Where trees are to be retained within or immediately adjacent to the Site boundary, the PC (all) shall adopt the default position that the root protection area (RPA) and canopy spread will form an effective Construction Exclusion Zone, secured with robust fencing where no access will be permitted (as set out within the Arboricultural Method Statement– see C-LAN5). Works within the RPA of trees will be avoided. However, where some works within the RPA cannot be avoided e.g. for access or stockpiling, the contractor must incorporate measures set out within Appendix E of the Arboricultural Impact Assessment (submitted with the planning application for the Scheme), and a suitably qualified arboriculturist should be consulted and may have to oversee the associated works.	No.	To ensure vegetation is retained and appropriately protected during the construction works.	Retention of certain trees is assumed within the ES assessment.	Consultation with OCC landscape officers and approval from the LPA prior to the start of the work at each location.	Contractual requirement between the LPA and the PC.	PC/ Landscape Specialist & Arboriculture Specialist
C- LAN2	ES Chapter 8, Section 8.6.	**Works in accordance with approved landscaping planting scheme:** The PC will ensure that any landscaping works are carried out in accordance with the approved landscaping scheme..	No.	To mitigate the landscape and visual impacts of the Scheme.	n/a	Works undertaken in accordance with the permitted Scheme.	Contractual requirement between the LPA and the PC.	PC.
C- LAN3	ES Chapter 8, Section 8.9.	**Landscape best practice measures:** The PC (all) shall ensure the best practice measures are employed to minimise potential landscape and visual impacts, which include: • Keeping construction sites and compounds tidy and in good order, for example by keeping stockpiled material to a minimum and arranging goods deliveries on an ‘’just in time’ basis; • Use of hoarding at construction compounds to screen activity, and rendering construction buildings, hoarding, fencing and facilities in tonal colours to reflect the landscape; • Keeping night-time works to a minimum; and • Ensure low level and directional lighting is used to illuminate construction compounds and working areas.	No.	To mitigate the landscape and visual impacts of the Scheme.	The minimisation of landscape and visual impacts.	Implementation of landscape best practice measures.	Contractual requirement between the LPA and the PC.	PC.
C– LAN4	ES Chapter 8, Section 8.6.	**Landscape and Biodiversity Management Plan (LBMP):** The PC shall refine the existing Scheme-wide LBMP, developed in accordance with industry good practice.	No.	To ensure landscape works are undertaken in accordance with good practice and in a	The assessment set out within Chapter 8 of the ES.	LPA approval of LBMP.	Contractual requirement between the LPA and the PC.	PC.

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		This will include information on long-term operational management of the landscape and ecological resource within the Scheme boundary and shall include species mixes for the approved landscape masterplans. The LBMP will ensure that landscape works are undertaken in accordance with good practice and in a consistent basis across the Scheme. The LBMP, and the associated habitat and species-specific management plans that form part of it, will be produced in consultation with the LPA (and their County Ecologist and/or Landscape officer). The implementation and maintenance of the landscape design – including any works to existing or new trees – will be undertaken in accordance with the LBMP and the Arboricultural Method Statement (AMS) (which will be produced prior to construction). The AMS will ensure that the existing trees to be retained and any trees planted early in the construction phase are appropriately protected during the construction works. The appointed contractor will be responsible for undertaking landscape management within the contract period (for up to five years after Scheme opening), after which the longer-term maintenance and management of the soft estate responsibilities will transfer to the MA.		consistent basis across the Scheme.				
C– LAN5	ES Chapter 8 and Didcot Garden Town HIF 1 Scheme Arboricultural Impact Assessment (AECOM 2021).	**Arboricultural Method Statement** The arboricultural specialist shall prepare an Arboricultural Method Statement to protect those trees retained within and immediately adjacent to the Order limits. This shall consider the following standards: • BS 3936-1: Nursery stock. Specification for trees and shrubs (Ref 3.2). • BS 3936-4: Nursery stock. Specification for forest trees, poplars and willows (Ref 3.3). • BS 3882: Specification for topsoil and requirements for use (Ref 3.4). • BS 3998: Tree Work. Recommendations (Ref 3.5). • BS 4428: Code of practice for general landscape operations (excluding hard surfaces) (Ref 3.6). • BS8545: Trees from nursery to independence in the landscape (Ref 3.7). • BS 5837: Trees in relation to design, demolition and construction (Ref 3.8). • BS 6031: Code of practice for earthworks (Ref 3.9). Alternatively, where a British Standard does not exist, works will follow industry good practice, e.g. Natural England's Advice on managing, restoring, and creating grassland. Agreement will be sought from the LPA.	No.	To ensure existing trees to be retained are appropriately protected during the construction works and that newly planted trees are appropriate and successfully established.	The assessment set out within Chapter 8 of the ES.	Approval of the strategy by the LPA.	Contractual requirement between the LPA and the PC.	PC.

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		The Arboricultural Method Statement shall also define: • The RPA and Construction Exclusion Zones (CEZ) of trees to be retained within or immediately adjacent to the order limits and wherever practicable. • The approach for working within RPAs, where this cannot reasonably be avoided required. • The approach to inspecting, maintaining and managing trees and scrub to be retained. The approach for felling where otherwise not identified in the ES.						
C– LAN6	Chapter 8, AECOM. (2021). Outline Landscape and Biodiversity Management Plan.	**Landscape Planting Strategy:** The PC shall ensure that landscaping works are carried out in accordance with the approved landscaping masterplans and Landscape and Biodiversity Management Plan.	No.	To mitigate the landscape and visual impacts of the Scheme.	n/a	Approval of the strategy by the LPA.	Contractual requirement between the LPA and the PC.	PC.
Biodiversity								
C- BIO1	ES Chapter 9, Section 9.9.	**Breeding birds (excluding Schedule 1):** The PC (all) shall undertake vegetation clearance (if required) between September and February inclusive, which is outside of the bird nesting season. If clearance is not possible outside of the bird nesting season, then suitable nesting habitat to be removed shall be checked for nesting birds by the ECoW, immediately prior to its removal. Where active bird nests are present, no works to or in the vicinity (5 m) of the bird nests will be undertaken until the young are no longer considered to be dependent on the nest.	No.	To avoid damage or destruction of an active nest.	n/a	No damage to nests of breeding birds.	Contractual requirement between the LPA and the PC.	PC.
C- BIO2	ES Chapter 9, Section 9.9.	**Schedule 1 breeding birds:** If works are carried out at a time or location that has the potential to disturb Schedule 1 breeding birds, works should only commence within these areas once suitable mitigation is in place and has been agreed with the relevant statutory consultees. Such measures may include appropriate working buffer zones (until young have fledged) and suitable siting of alternative nesting sites (where applicable). Monitoring and reporting arrangements will be made in consultation with Natural England and approved by the LPA (if applicable).	Yes (if applicable). See Action/ commitment column.	To avoid disturbance of any species listed on Schedule 1 of the WCA 1981, while it is nest building or at a nest containing eggs or young, or to disturb the dependent young of such a bird.	The update surveys will inform the mitigation requirements.	Completion/ return of licences. Monitoring and reporting arrangements will be made in consultation with Natural England and approved by the LPA (if applicable).	Contractual requirement between the LPA and the PC.	PC.
C-BIO3	ES Chapter 9, Section 9.9.	**Badgers:** The PC (ecology) will apply for a Natural England badger sett closure licence. Two artificial setts are currently required as two main setts will have to be closed and these will be delivered within existing territories of these Badger clans, although locations	Yes	To avoid disturbing badgers within their setts during construction.	Two main setts, identified within the ES, will require permanent closure.	Natural England licence application and return.	Contractual requirement between the LPA and the PC. Works undertaken under a Natural England	PC.

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		are not specifically provided due to confidentiality surrounding badger sett locations. The PC (ecology) will be responsible for updating/ amending the licence as required. The licence will include provision for the removal of setts, where required, as identified within the ES. This will also include a detailed method statement setting out the measures to be implemented. Once vegetation clearance has been undertaken, the PC (ecology) shall resurvey these areas of the site to confirm the total number and extent of known setts affected by the works. Works within 30 m of any retained badger sett will fall under the provisions of the method statement. Depending on the timings and activity of such works, an appropriate specialist may need to be present or seasonal restrictions may be required and will be defined under the conditions of the licence. The PC shall follow best practice to avoid harm to these species using the local area during construction. This should include: • Covering of or provision of suitable egress for all excavations overnight; and • Secure storage of chemicals. **Monitoring:** Monitoring surveys will be carried out at and around any retained setts to identify any recently dug badger setts or entrances that may be affected by ongoing or planned works.						badger sett closure licence.	
C-BIO4	ES Chapter 9, Section 9.9.	**Bat roosts:** None of the surveyed bat roosts will be directly impacted (lost) by the Scheme. Pre-construction surveys must be undertaken by the PC (ecology) to ascertain if new bat roosts exist within the Scheme boundary. The PC (ecology) will be responsible for the application of a Natural England European Protected Species Mitigation Licence (EPSML) in order to facilitate the works. Any bat roosts identified or trees not previously assessed for survey will be subject to preconstruction surveys and included in the licence (where applicable). The PC (ecology) (named licensee) will be responsible for ensuring that all works detailed within the licence are carried out in accordance with the method statements. The named ecologist on the ESPML to advise the licensee and supervise any works. Any works affecting bat roosts, or structure or tree hosting such roost, will follow detailed methods and precautions outlined in the EPSML Method Statement and licence conditions and under direction and supervision of the named licensed ecologist in the EPSML.	Yes	To update information for confirmed roosts and identify any other bat roosts present within the Scheme boundary. To prevent disturbance to bats within retained roosts. To ensure roosts are closed under a Natural England EPSML, to ensure legal compliance.	The updated surveys will be suitable to inform a Natural England EPSML. Trees which remain as negligible or low suitability for bat roosts require no further survey	Application and return of Natural England EPSML (if necessary).	Contractual requirement between The Authority and the PC. Natural England EPSML obtained.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		Where bat roosts are being retained within 50 m of the Scheme boundary, and in respect of replacement, modified, translocated or new roosts, the following methods should be incorporated: a) Exclusion zones to be established and maintained. b) Any works within 20 m of a confirmed roost shall be carried out under the supervision of, or following the advice of, an appropriate specialist. c) Measures shall be applied to maintain dark conditions within 20 m of identified roosts, including measures to avoid light spill from construction lighting and avoiding night-time working. d) Works affecting bat roosts shall only commence on receipt of suitable method statements, licences, permits or other relevant approvals. Works involving felling or maintenance of trees with potential for bat roosts will follow best practise methods to protect bats and their roosts. This shall include the following: a) Any works within 20 m of a confirmed bat roost in a tree will follow precautions listed above. b) All trees within 20 m of the works area will be inspected by a Natural England licenced bat ecologist from the ground and categorised for their potential to support bat roosts, in accordance with the current best practice. c) Trees which have no, or low suitability, can be section felled. d) Trees which are moderate or high suitability will be re-inspected by a Natural England bat licensed ecologist, in line with current best practice guidance, and further surveys may be required. e) Any confirmed roosts will require a Natural England EPSML to be obtained prior to felling. Works affecting bat roosts shall only commence on receipt of suitable method statements, licences, permits or other relevant approvals.						
C – BIO5	ES Chapter 9, Section 9.9.	**Non Native Invasive Species and Biosecurity** The PC shall prepare a Non Native Invasive Species & Biosecurity Management Plan and implement measures to promote biosecurity and avoid the risk that invasive non-native species (INNS – terrestrial, riparian and aquatic) and diseases are spread as a consequence of the Scheme. This includes, toolbox talks, exclusion zones and method statements on the cleaning of equipment (including boots) and vehicles on and off site and between sites. INNS were identified at a number of sites during site surveys: **River Thames** • Nuttall's waterweed • Himalayan balsam	No	To prevent the spread of invasive species (INNS) and diseases.	Adequate biosecurity protection measures will be employed throughout the construction period.	Implementation of the identified actions as per Non Native and Invasive Species Biosecurity Management Plan. No recorded spread of invasive species and high standards of biosecurity maintained.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		• Asian clam Corbicula *fluminea* • Demon shrimp *Dikerogammarus haemobaphes* • Flatworm *Dugesia tigrine* • Caspian mud shrimp *Corophium curvispinum* **Moor Ditch** • Signal crayfish • Himalayan balsam **WB07** • New Zealand *pigmyweed* • Nuttall's waterweed **WB16** • New Zealand *pigmyweed* • Nuttall's waterweed **WB32** • Curly pondweed *Lagarosiphon major* • Signal Crayfish (remains)						
C – BIO6	ES Chapter 9, Section 9.9.	**Fish and other aquatic fauna:** Fish passage and longitudinal connectivity along watercourses shall be maintained, for example during temporary damming or over-pumping of watercourses, in particular Moor Ditch and tributaries. Works in watercourses and water bodies shall only commence upon receipt of necessary consents and permits from the Environment Agency or other regulatory authority and shall be informed by a working method statement. Works in watercourses shall avoid the key spawning periods of fish species known to be present in Moor Ditch and tributaries – European Eel, bullhead and brown trout – January to June. It should be noted that the European Eel found in WB07 and WB37 are adult wandering Eels. Usually, Eels spawn in the ocean and the glass Eels (juvenile Eels) migrate up rivers where they grow and mature then return to sea to spawn and die. Therefore, the Eels in these waterbody's, for example at WB07, have not migrated to the pond, they have travelled there during periods of flooding as they can travel over land when the conditions are wet enough. During a future flood event the Eels will likely find their way back into the River Thames. Works in or near water shall follow the Pollution Prevention measures detailed in section C – WAT1. Where de-watering is required, fish rescue may be required to relocate fish outside the works areas.	No.	To prevent damage or disturbance to fish habitats and species protected under the Salmon and Freshwater Fisheries Act 1975. To avoid disruption to fish migration and spawning, and to maintain longitudinal connectivity along watercourses.	The scheme and drainage design will accommodate continued longitudinal connectivity along watercourses, e.g. by appropriate culvert design. Works in or near water shall follow best practice Pollution Prevention guidance.	No damage to fish habitat, fish migration or spawning activity. Report to EA on fish capture and translocation (if required).	Contractual requirement between the LPA and the PC. Obtaining of the appropriate consents from EA and other regulatory bodies, as required.	PC.
C – BIO7	ES Chapter 9, Section 9.9.	**Aquatic Macroinvertebrates and Macrophytes** The PC shall allow the continued suitability of habitats for aquatic macroinvertebrates and macrophytes, most notably in the water bodies in the location of former gravel extraction areas in line with	Yes – refer to surface water monitoring in C-WAT1.	To prevent the deterioration of aquatic habitats for regionally notable macroinvertebrate and macrophyte species.	The scheme and drainage design will avoid direct impacts to water bodies where possible and impacts to water quality shall be	The scheme supports the continued development of the River Field Lakes Revised Restoration Scheme for aquatic	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		the Hanson Aggregates Revised Restoration Scheme (Sutton Courtenay: River Field Lakes). The connectivity of water bodies were crossed by the Scheme shall be maintained to allow continued ecological connectivity and species dispersal. Sustainable Drainage System (SuDS) features such as swales or retention ponds shall be installed and surface water from the road shall not drain directly into water bodies including the River Thames, Moor Ditch and the River Field Lakes. This will reduce the impact of sedimentation and prevent adverse impacts to water quality and aquatic flora and fauna (refer to C– WAT1). Where required, advanced ecological mitigation shall be implemented by the PC to maintain aquatic habitat areas in the Hanson Finger Lakes, in line with the Hanson Aggregates Revised Restoration Scheme (Sutton Courtenay: River Field Lakes).			avoided by the implementation of best practice Pollution Prevention guidance.	habitats, and species of aquatic macroinvertebrates and macrophytes.		
C – BIO8	ES Chapter 9, Section 9.9.	**Water vole and otter:** Pre-construction surveys for Otter and Water Vole will be undertaken to check if baseline conditions remain the same as currently recorded and whether there have been any changes to the distribution of these species. In the event that water voles and otters will be impacted by the Scheme, over and above the impact previously determined, a license from Natural England may be required and mitigation measures will be updated accordingly. Mitigation to prevent injury to riparian mammals during construction works will include the provision of ramps into any open excavations to allow any riparian mammals that have fallen in to escape.	No	To update information pertaining to water vole and otter within the Scheme boundary. To aviod disturbing water vole and otter.	The update surveys will inform the mitigation requirements.	No damage to water voles and otters and their holts and den's, respectively.	Contractual requirement between the LPA and the PC.	PC
C – BIO9	ES Chapter 9, Section 9.9.	**Other notable species:** <u>Reptiles:</u> Vegetation removal in areas where reptiles were identified (areas of grassland) will be removed when reptiles are inactive (between November and February), concordant with the requirements for breeding birds. Any hibernacula present will be removed in advance of November, to reduce the potential for reptiles to be present in areas to be cleared of vegetation. Relocation of reptiles will not be necessary.						
Noise and vibration								
C– NOI1	ES Chapter 10, Section 10.9.	**Best Practicable Means (BPM):** The PC shall minimise noise and vibration during the construction works by employing BPM, as defined under Section 72 of the Control of Pollution Act 1974 (Ref 3.10) and Section 79 of the Environmental Protection Act 1990 (Ref 3.11), at all times. BPM shall consider the recommendations of BS 5228: 2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites	No.	To ensure construction noise and vibration is managed appropriately.	Assessment within the ES assumes BPM will be incorporated throughout the construction phase.	Implementation of BPM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		Parts 1 and 2 (BSI, 2014) (Ref 3.12) and BS 7385-2: 1993 Evaluation and Measurement for Vibration in Buildings – Part 2 Guide to Damage Levels from groundborne vibration (BSI, 1993) (Ref 3.13). The PC shall detail the application of BPM within a Noise and Vibration Management Plan (see C-NOI3). BPM should be included in the following order: • Control of noise and vibration at source - such as through the selection of working methods and plant, the provision of acoustic enclosures and the use of less intrusive alarms and the screening of equipment/ activities e.g. using site hoarding. Should the application of BPM at source not prove effective and noise exposure exceeds the relevant trigger level and durations (as defined in BS 5228-1, Table E.2), the contractor may offer noise insulation, or if that is not sufficient, temporary re-housing.						
C– NOI2	ES Chapter 10, Section 10.2 and 10.3.	**Section 61 Consents:** Except in the case of an emergency, before any works are undertaken outside of core working hours and which comprise noise generating activities, the relevant PC shall consider submission of an application to the LPA (in a format as agreed) for prior consent under Section 61 of the Control of Pollution Act 1974 (Ref 3.10). In the event that works for which a Section 61 consent has been applied for have to be rescheduled or modified, e.g. method or working hours, for reasons not envisaged at the time of the Section 61 consent submission, the contractor shall apply for a dispensation or variation from the LPA, in advance of the start of those works.	No.	To ensure noise and vibration is managed appropriately at sensitive locations.	Section 61 consents could be used in relation to the Scheme.	Agreement of Sections 61s with the LPA (if required).	Contractual requirement between the LPA and the PC.	PC.
C– NOI3	ES Chapter 10, Section 10.9.	**Noise and Vibration Management Plan:** The PC shall prepare a Noise and Vibration Management Plan (NVMP), detailing the management and monitoring processes to be introduced across all construction sites and compounds. The plan shall include, but is not limited to, the following: a) Integration of noise control measures into the preparation of all method statements for the works. b) Details and locations of all site hoardings, screens or bunds that will provide acoustic screening during construction. c) Procedures for the installation of noise insulation (if deemed to be required) or provision of temporary re-housing (if deemed required) and to ensure such measures are in place as early as reasonably practicable. d) Noise and vibration monitoring protocols including monitoring locations, stages during construction at which monitoring will be	No.	To ensure that the effects of noise and vibration are controlled, and that BPM are planned and employed during construction period.	The PC's activities are likely to generate noise and vibration which require management.	Approval of Noise and Vibration Management Plan by the LPA.	Contractual requirement between the LPA and the PC.	PC.

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		undertaken, and methods of publishing the results. e) Details of inspection and maintenance schedules to be undertaken. f) Processes to ensure ongoing compliance with all controls and consent for the works. g) Process for implementing corrective actions that may be required to avoid or address a potential non-compliance.						
C– NOI4	ES Chapter 10, Section 10.9.	**Vibration:** The PC shall take into account the following guidance when establishing criteria, controls and working methods for vibration management: • BS 5228: 2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites Part 2 Vibration (Ref 3.12); • ISO 4866: 2010 Mechanical vibration and shock. Vibration of fixed structures. Guidelines for the measurement of vibrations and evaluation of their effects on structures (Ref 3.16); and • BS 7385 – 2 1993 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration (Ref 3.15). **Protection of building occupants from disturbance:** No start-up or shut down of large (approx. 13 tonnes) vibratory plant e.g. rollers or compactors, within 50 m of receptors and 15 m for small vibratory plant (approx. 3.5 tonnes). The PC shall refer to BS 5228-2 for guidance levels in terms of Peak Particle Velocity (PPV). If predicted vibration levels exceed 1 mms^{-1} component PPV at occupied residential buildings based on the prediction methodology in BS 5228-2 (Ref 3.12), those potentially affected will be notified as soon as practicably possible in advance of the works. The notification will describe the nature and duration of the works and any associated proposals for vibration monitoring. **Protection of buildings from damage:** The PC shall use BPM to control vibration levels so that the PPV, as measured in accordance with BS 7385-2 Evaluation and measurement for vibration in buildings – Part 2 (Ref 3.15): Guide to damage levels from groundborne vibration, are generally not exceeded. The PC shall carry out a scoping vibration appraisal to determine whether the trigger level of 6 mms^{-1} is likely to be exceeded. Activities requiring an appraisal will include vibratory compaction and pilling. The PC shall notify and consult the LPA regarding any works predicted to generate a PPV above 6 mms^{-1}. Where it is determined that there is no	No.	To ensure that BPM are being employed at all times, that they are sufficiently mitigating noise and vibration impacts, and to provide the opportunity to implement alternative actions should their objectives be achieved.	Monitoring will be required to ensure BPM are effectively reducing noise and vibration impacts.	Inclusion of monitoring proposal with the Noise and Vibration Management Plan. Adhering to the specified monitoring regime throughout the construction period.	Contractual requirement between the LPA and the PC.	PC.

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		reasonable or practicable means to reduce predicted or measured vibration then the contractor shall: • Carry out a condition survey before and after the relevant works; • Agree and consult with the LPA regarding monitoring for vibration during the works; and • Consult occupiers of properties about the surveys to be carried out and any consequent actions; and any additional reasonable and practicable mitigation to be provided for occupants. The PC shall identify any buildings that may be unusually vulnerable to vibration, that are located within 50 m of any activities that may give rise to significant vibration. Where the predicted vibration at the foundations of such buildings exceeds 3 mms^{-1} PPV then the PC shall undertake an initial structural survey of the building. Based on the survey, the level of vibration above which condition surveys and vibration monitoring are required will be confirmed with the building owner and the LPA.						
C– NOI5	ES Chapter 10, Section 10.9 and 10.11.	**Noise and vibration monitoring (construction):** The PC shall undertake and report noise and vibration monitoring as to ensure and demonstrate compliance with all noise and vibration commitments and the requirements of the Noise and Vibration Management Plan. The CEMP shall define noise and vibration monitoring requirements, including proposals for survey locations. The PC shall undertake regular onsite observation monitoring and checks/ audits to ensure that BPM is being employed at all times. The site reviews will be logged, and any remedial actions recorded. Such checks will include: a) Compliance with hours of working. b) Presence of mitigation measures e.g. engines doors closed, airlines not leaking, and site hording in place. c) Number and type of plant. d) Compliance with agreed working methods. e) Compliance with any specific requirements of the Noise and Vibration Management Plan. The monitoring and compliance assurance process shall be set out in the Noise and Vibration Management Plan, as part of the CEMP, including proposals for monitoring locations.	Yes.	To ensure that BPM are being employed at all times, that they are sufficiently mitigating noise and vibration impacts, and to provide the opportunity to implement alternative actions should their objectives be achieved.	Monitoring will be required to ensure BPM are effectively reducing noise and vibration impacts.	Inclusion of monitoring proposals within the Noise and Vibration Management Plan. Adhering to the specified monitoring regime throughout the construction period.	Contractual requirement between the LPA and the PC.	PC.
C– NOI6	ES Chapter 10, Section 10.9.	**Noise insulation and temporary re-housing:** The PC shall have a Noise Insulation and Temporary Rehousing Policy for the Scheme. The policy will set out all roles, responsibilities and actions required in respect of these measures. Notwithstanding the measures set out in this OEMP and any agreements with the LPA, noise insulation	No.	To ensure that additional protection for residents is in place in the event that it is not practicable to mitigate airborne noise to tolerable levels during the construction works	Insulation and temporary re-housing may be required to protect residents form significant effect.	Implementation and adherence to the policy.	Contractual requirement between the LPA and the PC.	PC.

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		and/or temporary re-housing will be offered to qualifying parties when: • Noise levels are predicted or measured by the PC to exceed the relevant trigger level (as defined in BS 5228- 1, Table E.2) for at least 10 days out of any period of fifteen consecutive days or alternatively 40 days in any six-month period at affected properties. • The property complies with all other requirements of the Noise Insulation (Amendment) Regulations 1988. • The property is lawfully occupied as a permanent dwelling. • Noise insulation does not already exist that is of an equivalent standard to that which will be allowed for under the Noise Insulation (Amendment) Regulations 1988. The PC shall consider all applications supported by evidence for noise insulation or temporary rehousing from occupiers who may have special circumstances. Special circumstances could include night workers; those working in home occupations; local businesses or buildings that provide community facilities requiring a particularly quiet environment; those with a medical condition, which will be seriously aggravated by construction noise; and provide noise insulation or temporary re-housing where it is demonstrated that this is necessary.						
C– NOI7	ES Chapter 10, Section 10.9.	**Early installation of noise barriers:** All noise barriers included as essential operational traffic noise mitigation should be installed as soon as is reasonably practicable.	No.	To reduce noise impacts upon nearby receptors.	-	Implementation of noise barriers, as per the specifications listed in the ES. Figure 10.3 to 10.6.	Contractual requirement between the LPA and the PC.	PC.
C– NOI8	ES Chapter 10, Section 10.4.	**Piling methods:** Non-impact piling methods will be employed during the works where practicable.	No.	To minimise construction noise and vibration impacts upon nearby receptors.	Assessment within the ES assumes only augured piling and sheet piling using a vibratory piling rig required.	Implementation of requirement.	Contractual requirement between the LPA and the PC.	PC.
Geology and Soils								
C-GEO1	ES Chapter 11, Section 11.9.	**Ground Investigations (GI)** The PC (GI) shall undertake ground investigations within the site boundary prior to construction. All GI works will be undertaken in accordance with UK best practice, including BS 5930:2015 Code of Practice for ground investigations (Ref 3.17) and BS 10175:2011 + A2:2017 Investigation of potentially contaminated sites Code of Practice (Ref 3.18). The assessment of contaminated land should be risk-based and in accordance with Land Contamination Risk Management (2020) (Ref 3.19).	No.	To mitigate for any unexpected contamination.	Unexpected contamination may exist in areas not previously identified.	Completion of appropriate GI works and Remediation Strategy.	Contractual requirement between the Authority and the PC.	PC.

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C-GEO2	ES Chapter 11, Section 11.11.	**Monitoring** A monitoring programme will be carried out in accordance with the recommendations of the remediation strategy. The monitoring will be focused around the historical landfill areas and will continue until agreement with the relevant stakeholders that no further monitoring is necessary. The monitoring results will be used to assess potential risks related to landfill gas and contaminated groundwater and to identify any additional mitigation measures required to prevent environmental impact related to the Scheme.	Yes.	To ensure protection of human health, controlled waters, infrastructure and the wider environment.	Ground gases have been identified on-site including Made Ground and Alluvium deposits, infilled features including swimming pool and ground workings (a pond and cuttings) and contamination. Low level groundwater contaminants present at locations along route.	Monitoring Report.	Contractual requirement between the Authority and the PC.	PC.
C– GEO2	ES Chapter 11, Section 11.9.	**Unexpected contamination:** In the event that unexpected soil or groundwater contamination is encountered during construction, the PC is to quantify the extent of the potential risk from the contamination and follow a risk-based approach in accordance with Environment Agency guidance Land Contamination: Risk Management (Ref 3.20). Where significant risks from soil or groundwater contamination are identified, appropriate mitigation (remediation) to reduce to acceptable levels the potential short and long-term health and safety and environmental risks to sensitive receptors will be identified and implemented. Any required additional GI will be undertaken in accordance with UK good practice, including BS 5930:2015 Code of Practice for ground investigations (Ref 3.17) and BS 10175:2011 + A2:2017 Investigation of Potentially Contaminated Sites Code of Practice (Ref 3.18).	No.	To prevent contamination related to construction of the Scheme and maintain compliance with national legislation and regulations.	n/a	The LPA and EA approval of CEMP, Method Statements (including measures to protect construction workers), and audit finds implementation meets objectives.	Contractual requirement between the LPA and the PC.	PC.
C– GEO3	ES Chapter 11, Section 11.9.	**Soil Management Strategy:** The PC shall produce a detailed Soil Management Strategy. The management strategy will identify the nature and types of soil that will be affected, including the methods that will be employed for stripping soil and the restoration of agricultural land to its existing agricultural land classification where the end use of the land allows (e.g. returned to agricultural use or used for woodland planting). The PC shall follow the guidance in the Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref 3.21) when handling agricultural soils. The Soil Management Strategy will be produced in consultation with Natural England.	No.	To limit the Scheme impact on soils and agricultural land.	The ES assessment assumes the protection of agricultural soils and successful return of land to agriculture where applicable.	Production of the Soil Management Strategy.	Contractual requirement between the LPA and the PC.	PC.
C– GEO4	ES Chapter 11, Section 11.9.	**Excavated materials management:** To form part of the Soil Management Strategy, the PC shall develop a: • Soils handling strategy with reference Defra Construction Code of Practice for the Sustainable Use of Soils on Construction Site (Ref 3.21),	No.	To ensure that high standards of soil handling and material management are employed during construction.	Assessment within the ES assumes that appropriate soils and material handling will be incorporated throughout the construction phase	Development of the Soil Management Strategy and adherence to these documents.	Contractual requirement between The Authority and the PC.	PC.

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		BS3882: 2015 Specification for Topsoil (Ref 3.22) and MAFF, Good practice guide for handling soils (Ref 3.23). • Soil Resource Plan which will confirm the soil types, the most appropriate re-use for the different types of soils and proposed methods for handling, storing and replacing soils on-site. A soil resource survey shall be carried out on the site at the earliest convenience by a suitably qualified and experienced soil scientist or practitioner. The PC shall assess excavated soils for any potential risks posed to health and the environment from the reuse of such soils as engineering fill. This will include mitigation of the effects on soils and the spread of contamination to ensure that those soils identified as contaminated are not mixed with uncontaminated soil. All excavated materials proposed for re-use will be required to meet risk-based acceptability criteria. The PC shall ensure soils will be protected from accidental contamination during storage and transit. The PC shall endeavour to return topsoil stripped during the construction of the Scheme as close to its source of origin as possible during restoration. Soils should be reused as soon as is practicable and stored in such a way as to minimise structural damage (so far as reasonably practicable). Additionally, the creation of bare areas of permanently exposed soil that will be vulnerable to erosion processes will be avoided. Should soils need to be stored for longer than a few weeks, topsoils and subsoils will be stored separately in mounds of typically 3-4 m in height, in an area with good drainage to ensure soils remain dry. Soil mounds should be of a single soil type and soils of different types as characterised by the soil resource plan (part of the Soil Management Strategy) should not be mixed. Topsoil will be removed to store subsoil, and topsoil will be stored on similar topsoil. Where soils are to be stockpiled for more than six months, the surface of stockpiles will be seeded with a grass/clover mix to minimise soil erosion and to help reduce infestation by weeds. Further details of topsoil and subsoil storage will be set out in greater detail within the Soils Management Strategy. Topsoil may need to be removed during construction in order to prevent permanent burial beneath other earthworks. Such soils will be stockpiled and re-used, subject to acceptability (to be determined by soil scientist), in the general earthworks such as landscaping and bunds. The re-use of excavated materials shall be governed by a Materials Management Plan (C-MAT2) developed by the PC in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice (Ref 3.24).			to mitigate significant effects. ES assumes as a minimum, that land taken temporarily for construction will be restored to its existing agricultural land classification.			

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		Should off-site disposal to landfill be required, in relation to excavated soil, 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 3.25). The appropriate disposal facility will, where required, be determined through Waste Acceptance Criteria (WAC) analysis, as required.						
C– GEO5	n/a	**Hazardous substances:** The contactor shall control all potentially contaminative materials in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations. All potentially contaminative materials will be properly isolated and bunded. Bunds and trays will be regularly checked and maintained. All surface water or other contaminated water, which accumulates in the bund, will be removed by manually controlled positive lift pumps and not by means of a gravity drain. This water will be discharged in an off-site public sewer in consultation with the relevant water companies.	No.	To prevent contamination related to construction of the Scheme.	Assessment within the ES assumes that preventative controls will be implemented to avoid contamination.	Agreement with water companies for the disposal of contaminated water.	Contractual requirement between the LPA and the PC.	PC.
C-GEO6	n/a	**Remediation Work:** The PC will carry out any required remediation works and will comply with any other relevant mitigation measures identified in the remediation strategy and asbestos management plan. This will include measures to ensure that any disturbance of the historical landfill does not create new pathways (either temporary or permanent) for migration of contamination to controlled waters; migration of ground gas or disturbance and mobilisation in air of asbestos fibres that could impact human receptors and building infrastructure.	No.	To mitigate the presence of potentially contaminated materials and of unexpected contaminated land (if any) encountered during construction within the Order Limits.	Potentially contaminated land has been identified ES Chapter 11 Section 11.7 Baseline conditions.	Validation report, Asbestos Management Plan.	Contractual requirement between The Authority and the PC.	PC.
C– GEO7	ES Chapter 11, Section 11.9.	**Asbestos:** The PC shall prepare and implement an Asbestos Management Plan to ensure asbestos can be identified, removed and disposed of in a legally compliant manner.	No	To mitigate for any asbestos encountered.	Assessment within the ES assumes that an Asbestos Management Plan will be in place.	Development of an Asbestos Management Plan.	Contractual requirement between the LPA and the PC.	PC.
C– GEO8	n/a	**Construction on or adjacent to land affected by contamination:** The PC shall implement control measures for construction activities on or adjacent to the land identified as being affected by contamination. This will include the following, as appropriate: • Wheel and boot wash facilities. • Redundant services near potentially contaminated areas will be either removed or cut off and sealed. • Material known or suspected to be contaminated will be stockpiled (depending on the source of the material and the nature of the contamination) and tested prior to reuse or disposal. Stockpiles will be placed on a low permeability liner, suitably protected from damage by earthmoving plant.	No.	To prevent the spread of contaminated materials and risks to health of residents/workers of adjacent properties, controlled waters and the wider environment.	Assessment within the ES assumes that land to be restored to agriculture will be suitable for purpose and that the Scheme can be built safely.	Implementation and audit of the monitoring procedures.	Contractual requirement between the LPA and the PC.	To prevent the spread of contaminated materials and risks to health of residents/workers of adjacent properties, controlled waters and the wider environment.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		Known or suspected contamination stockpile areas will be tested adequately prior to and after use to ensure that no cross-contamination has occurred. • Prior to reuse of site-won materials, pre-classification testing of soils will be undertaken. • Imported fill materials will be required to meet soil and leachate acceptance criteria to be produced prior to construction. • Piled foundations and ground improvement works located within 50 m of potential or known areas of land contamination or with potential to impact Source Protections Zones will require a site-specific environmental risk assessment, and will be identified within the relevant management plans. • The PC will adhere to appropriate guidance, including the Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention. • Within areas of known or suspected contamination, measures will be introduced to ensure that buried services will be protected from the ingress of mobile and aggressive contaminants. In the case of drainage runs, the infiltration of surface water into the underlying contaminated ground will be prevented and clean or lined service corridors will be installed to provide a suitable barrier to migrating ground gases adjacent to known/potential sources. • Materials used for the Scheme will be proven 'suitable for use' by adoption of acceptance criteria and will be deposited under either environmental permitting regulations or the Definition of Waste: Development Industry Code of Practice (Ref 3.24). • Construction activities will follow good practice guidelines to avoid contamination from leaks, spillages and inappropriate storage of materials on site. Appropriate control measures will be identified and implemented through the CEMP. Measures to prevent the dispersal of asbestos fibres will be taken in accordance with the CEMP and the Asbestos Management Plan.						
C– GEO9	ES Chapter 11, Section 11.9 and ES Chapter 13, Section 13.9.	**Restoration of agricultural land and aftercare:** Where land is to be restored to agriculture the PC shall liaise with the landowner/ tenant and set out the detail for restoration on each specific area of farmland. The land will be restored to its existing agricultural land classification. Restoration will proceed with full consultation between the landowner/ tenant and the PC including inspection of works where applicable and in accordance with requisite site health and safety procedures.	Yes	To limit the Scheme impact on soils and agricultural land. To ensure reinstated agricultural land has been restored to its original condition or agreed condition.	The ES assessment assumes the protection of agricultural soils and that land to be restored to agriculture will be suitable for purpose.	The production of the Soil Resource Plan and adherence to measures within. Restoration as defined.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		Those areas of agricultural land which are not returned to agricultural use will be maintained or restored to its existing agricultural land classification where possible, this is dependent on the end use of the land. Monitoring: Land restored to agriculture will be subject to an aftercare period following completion of construction during which responsibility for the condition of the reinstated soil will remain with the PC. A Scheme of management will be prepared as a supplementary document.						
C– GEO10	Chapter 11, Section 11.11.	**Underground gas monitoring:** The PC will prepare and implement a gas monitoring procedure, as appropriate, based on the potential for presence of underground gases. Gas monitoring will be undertaken in accordance with BS8576:2013 Guidance on investigations for ground gas (Ref 3.26). The PC will undertake monitoring of the atmosphere within excavations for concentrations of oxygen, carbon dioxide, methane and hydrogen sulphide to assess the development of any potentially explosive and / or asphyxiant conditions.	Yes.	To ensure the safety of construction personnel during confined space activities.	Underground gasses may be present within excavations.	Implementation and audit of the monitoring procedures.	Contractual requirement between the LPA and the PC.	PC.
C– GEO11	n/a	**Contamination Risks:** The PC shall implement measures on site, in accordance with CIRIA C741 4th Edition Environmental Good Practice (Ref 3.27), to assess and control risks to humans, e.g. construction workers, site visitors and nearby residents, resulting from the disturbance of contaminated land.	No.	To minimise the risks to construction workers and others.	n/a	The LPA approval of CEMP, Method Statements (including measures to protect construction workers), and audit finds implementation meets objectives.	Contractual requirement between the LPA and the PC.	PC.
Material assets and waste								
C– MAT1	ES Chapter 12, Section 12.9.	**Site Waste Management Plan (SWMP):** The PC shall, in accordance with industry good practice, develop and implement a SWMP which will set out a recording process for the management of waste, including the storage and transport of waste on-site and a recording mechanism for required waste documentation such as Waste Transfer or Consignment Notes (dependent on the waste stream) in order to confirm the assessment of the waste impact and to implement the embedded mitigation measures. The SWMP will include procedures for monitoring the overall construction waste recovery rate and the proportion of secondary and recycled aggregate used in the Scheme, in order to confirm the assessment of materials impacts. The SWMP will: • Identify and record the types, quantities and destination of waste arisings from the Scheme in the SWMP;	No.	To ensure suitable management of waste arising from the construction of the Scheme.	A SWMP will be needed to effectively control and manage waste arisings.	LPA approval of SWMP.	Contractual requirement between the LPA and the PC.	PC.

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		• Report this information to the LPA on a periodic basis and update the SWMP as appropriate; and • define measures in the SWMP to minimise waste arisings from the Scheme and to recover waste materials in accordance with the principles of the waste hierarchy.						
C–MAT2	ES Chapter 12, Section 12.9.	**Materials Management Plan (MMP):** The PC shall prepare a MMP in accordance with the CL:AIRE Definition of Waste: Code of Practice (Ref 3.24). The MMP will detail the procedures and measures that will be taken to classify, track, store, reuse and dispose of all excavated materials that will be encountered during the construction phase.	No.	To reduce effects on the availability and use of secondary and recycled construction materials. To reduce effects that on-site generated materials (e.g. soils) and waste arisings have on the existing capacity of waste management facilities.	Waste will be generated and managed during construction.	LPA approval of MMP.	Contractual requirement between the LPA and the PC.	PC.
C–MAT3	ES Chapter 12, Section 12.9.	**Recovery target:** The PC shall seek to achieve a minimum recovery rate of 70% by weight for non-hazardous construction and demolition waste in accordance with the Waste Directive (excluding uncontaminated excavated soil and stones, European Waste Catalogue (EWC) code 17 05 04).	No.	To reduce effects on the availability and use of secondary and recycled construction materials. To reduce effects that on-site generated materials (e.g. soils) and waste arisings have on the existing capacity of waste management facilities.	Waste will be generated and managed during construction.	Recovery of 70% by weight of non-hazardous construction and demolition waste.	Contractual requirement between the LPA and the PC.	PC.
C–MAT4	ES Chapter 12, Section 12.9.	**Waste storage on site:** The PC shall provide suitable containers for reception and temporary storage of waste on site, and shall arrange for waste to be periodically collected and transported to a suitably licensed facility for treatment or disposal. The PC shall be responsible for obtaining any necessary permits or exemptions for on-site management of waste.	No.	To reduce effects on the availability and use of secondary and recycled construction materials. To reduce effects that on-site generated materials (e.g. soils) and waste arisings have on the existing capacity of waste management facilities.	Waste will be generated and managed during construction.	Provision of storage containers as described.	Contractual requirement between the LPA and the PC.	PC.
C–MAT5	ES Chapter 12, Section 12.9.	**Secondary and recycled aggregates target:** The PC shall seek to achieve a rate of 26% use of secondary and recycled aggregates, for those applications for which substitution of primary aggregates is technically and economically feasible.	No.	To reduce effects on the availability and use of secondary and recycled construction materials. To reduce effects that on-site generated materials (e.g. soils) and waste arisings have on the existing capacity of waste management facilities.	Waste will be generated and managed during construction.	26% use of use of secondary and recycled aggregates.	Contractual requirement between the LPA and the PC.	PC.
C–MAT6	ES Chapter 12 Section 12.10, 12.11 and the OSWMP (see Appendix	**Waste and material monitoring:** <u>Waste:</u> The PC shall undertake regular audits and inspection of waste management activities to ensure compliance with the requirements of the approved SWMP, statutory controls and other Scheme policies	Yes.	To reduce effects on the availability and use of secondary and recycled construction materials. To reduce effects that on-site generated materials (e.g. soils) and waste arisings have on the	Waste will be generated and managed during construction.	Implementation of the SWMP and monitoring requirements.	Contractual requirement between the LPA and the PC.	PC.

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	12.2 of the ES).	and procedures relevant to the management of surplus excavated material and waste. <u>Materials:</u> • The PC will record the quantities of aggregates used in the Scheme by type and source. The record will include the following details: • Whether the aggregates are recycled/secondary aggregate or primary aggregates; • Type of primary aggregate e.g. crushed rock or sand and gravel; and Source e.g. site-won, within Oxfordshire or outside of Oxfordshire.		existing capacity of waste management facilities.				
Population and human health								
C– POH1	ES Chapter 13, Section 13.9.	**Notification of works:** The PC shall liaise with landowners, occupiers and agents, as appropriate, and agree the programme of works and access routes to be used by both the construction traffic and landowners and occupiers.	No.	To reduce impacts on landowners affected by the Scheme.	Assessment within the ES assumes that appropriate measures will be incorporated to reduce effects on landowners.	Appropriate communication methods with landowners/ occupiers/ agents to be agreed with the LPA.	Contractual requirement between the LPA and the PC.	PC.
C– POH2	ES Chapter 13, Section 13.9.	**Liaison with farm holdings:** The PC shall liaise with farm holdings, occupiers and agents, as appropriate, to establish: • Measures to be implemented to protect and maintain livestock water supplies which may be affected due to construction works. • The protection of agricultural land adjacent to the construction site both during and post-construction, including the provision and maintenance of appropriate stock-proof fencing. • Arrangements for the maintenance of farm and field accesses affected by construction.	No.	To reduce impacts on farm holdings affected by the Scheme.	Assessment within the ES assumes that appropriate measures will be incorporated to reduce effects on farm holdings.	Appropriate communication methods with landowners/ occupiers/ agents to be agreed with the LPA.	Contractual requirement between the LPA and the PC.	PC.
C– POH3	ES Chapter 13, Section 13.9.	**Footpath, bridleways and advisory cycle routes:** The PC shall plan the Scheme construction works to minimise the need to close and divert Public Rights of Way (PRoW) and advisory cycle routes; and minimise closures and diversion durations. Where the closure of PRoW and advisory cycle routes will be required, safe and appropriate alternative means of access shall be provided to ensure access will be maintained at all times in order to minimise temporary severance. The PC shall agree temporary diversion routes in advance with the LPA. Appropriate signage for all closures and diversion of PRoW and advisory cycle routes shall be used to inform pedestrians, equestrians and cyclists, with sufficient notice of such closures and diversions being provided.	No.	To minimise disruption to pedestrians, equestrians and cyclists.	Assessment within the ES assumes appropriate provisions are put in place to minimise disruption to pedestrians, equestrians and cyclists.	Agreement of actions with the LPA as applicable.	Contractual requirement between the LPA and the PC.	PC.
C– POH4	ES Chapter 13, Section 13.9.	**Restoration of land and aftercare:** Where land is temporarily required for construction and is to be restored to its former condition, the PC shall liaise with the landowner/ tenant and set out the detail for restoration on each specific area. The land	Yes – by way of sign off by the EM.	To reduce impacts on landowners affected by the Scheme.	Assessment within the ES assumes that appropriate measures will be incorporated to	Effective communication with landowners/ tenants and the production of the Soil Resource Plan	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		restoration will proceed with full consultation between with the landowner/ tenant and the PC including inspection of works where applicable and in accordance with requisite site health and safety procedures. **Monitoring of restored land:** The PC shall undertake further inspections of restored land with the landowner/tenant and the EM to assess the progress of the restoration. These will be carried out with timing appropriate to any perceived issues or concerns. Concerns will be assessed by all parties and appropriate remedial actions or compensation agreed within the parameters of the compensation code or any previous agreements made at the time of acceptance of the initial restoration works and handover to the landowner/tenant.			reduce impacts on landowners.	and adherence to measures within.		
Road drainage and the water environment								
C– WAT1	ES Chapter 14, Section 14.9.	**Pollution control:** The PC shall develop and implement appropriate measures within the CEMP, including a Water Management Plan, for their works to control the risk of pollution due to construction works, materials and extreme weather events, including change to flow, flood storage volume, water levels and quality. This will be completed having regard to industry guidance. The Water Management Plan should be produced in accordance with best practice guidance presented in the Guidance on Pollution Prevention documents, Environment Agency and CIRIA guidance. The Water Management Plan will include details of actions to be taken in the event of a serious spillage.	Yes.	To ensure the protection of the water environment.	Assessment within the ES assumes adequate protection measures will be employed throughout construction.	The LPA approval of the CEMP.	Contractual requirement between The Authority and the PC.	PC.
C-WAT2	ES Chapter 14, Section 14.9.	**Surface Water Monitoring:** The PC shall develop and implement appropriate pre-, during and post-construction surface water monitoring programmes in the form of a Surface Water Monitoring Plan to be included in the Water Management Plan. This is to ensure that during construction water quality is not polluted and does not deteriorate post-construction. The monitoring programme should include all waterbodies that may be affected by the works (but that are not being entirely lost to the scheme). Monitoring should include at least six pre-construction visits preferably over 6 months and taking in a range of different flow conditions. It should include visual and olfactory observations, in situ water quality monitoring, and the collection of samples for laboratory analysis. The frequency of observational and in situ monitoring will be greater during works close to or affecting water bodies and following periods of wet weather.	Yes	To ensure the protection of the water environment.	Comparison with baseline data and observations to see any water quality changes	LPA approval of the Water Management Plan.	Development pre-construction, and then throughout construction works.	PC.
C-WAT3	ES Chapter 14, Section 14.9.	**Groundwater Control Measures:** A scheme of groundwater control measures will be implemented to ensure water levels in adjacent water	Yes	To ensure water levels in the adjacent water bodies are maintained and any	Comparison with baseline data and observations to see any	LPA approval of the Water Management Plan.	Development pre-construction, and then	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		bodies are maintained and any discharge is of a suitable quality.		discharge is of a suitable quality.	water quality and level changes.		throughout construction works.	
C–WAT1	ES Chapter 14, Section 14.9.	**Water Management Plan:** The PC shall produce a Water Management Plan to include identification of all surface and ground waterbodies (e.g. watercourses and aquifers), and taking into account the guidance contained within the relevant information on pollution prevention provided by the Environment Agency, the Guidance for Pollution Prevention (GPPs) available on the NetRegs website (Ref 3.28) and other Construction Industry Research and Information Association (CIRIA) documents. Specific receptors in the water environment will be listed in the plan. Where appropriate, integrated aquatic ecology and water quality plans shall be developed. The Emergency Preparedness and Response Plan described in C-G7 will also include effects on water resources. Environment Agency guidance on pollution incident response planning will be reflected in the emergency response procedures described in the Water Management Plan. The Water Management Plan will include measures to: • Managing the risk of pollution to surface waters and groundwater. • Measures to control the storage, handling and disposal of potentially polluting substances during construction. • The management of activities within floodplains in the area of Watercourse 5 (i.e. kept to a minimum) with temporary land take required for construction to be located out of the floodplain as far as reasonably practicable or allowances made for floodplain control measures and contingency actions. • Management of water removed from cuttings for construction dewatering activities. • 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. Pollution prevention and emergency response procedures.	No.	To ensure the protection of the water environment.	Construction activities are likely to generate effects on the water environment which will need to be managed.	Production of the Water Management Plan and the overarching Emergency Preparedness Plan.	Contractual requirement between the LPA and the PC.	PC.
C–WAT2	ES Chapter 14, Section 14.9.	**Site drainage:** The PC shall utilise sustainable methods for construction discharges including site drainage, surface runoff, and dewatering discharges. This includes discharge to water courses subject to water quality, rate of discharge and scour assessments. For discharges to mains foul or combined sewers relevant permissions will be obtained from the	No.	To ensure the protection of the water environment.	Assessment within the ES assumes adequate site drainage methods are employed throughout the construction period.	Granting of any permits/ consents. Adherence to the most current standards.	Contractual requirement between the LPA and the PC.	PC.

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		statutory undertaker. Discharge to watercourses shall, insofar as not dealt with in the planning application, only be permitted where permits or other relevant approval has been obtained if required. Sufficient time will be made for the Environment Agency or the Lead Local Flood Agency (LLFA) to issue permits in accordance with relevant legislation. The PC shall ensure that site drainage meets the effluent and flood risk standards required by the sewerage undertaker and the Environment Agency, as appropriate, in accordance with the relevant permit, and will provide and maintain holding or settling tanks, separators and other measures as may be required to meet those standards. The PC shall ensure that access is provided to the undertaker and Environment Agency so that samples of discharge can be obtained and analysed, and the flows verified as required. The PC shall incorporate the following measures during the construction works: • All temporary land-take will include adequate areas of land set aside for robust control measures, for example sustainable drainage control. • Water flows from sites will be limited during construction to existing runoff rates, unless otherwise agreed with the Environment Agency or LLFA in accordance with relevant legislation. • The relevant sections of BS 6031: Code of Practice for Earthworks (Ref 3.9) for the general control of site drainage will be followed. • Site clearance and areas of bare earth will be kept to a minimum and reseeded as soon as practically possible. • A 10 m buffer strip will be maintained around all watercourses using appropriate temporary exclusion fencing other than where specific works are required closer to the channel. • When undertaking earth moving works periods of wet weather will be avoided, if possible, to minimise the risk of generating runoff contaminated with fine particulates. However, it is assumed some wet weather periods may be unavoidable, in which case other deployed mitigation measures (see below) will be implemented to control fine sediment laden runoff. • A temporary drainage system will be developed to prevent runoff contaminated with fine particulates from entering surface water drains without treatment. Measures will include drain covers, sand bags, earth bunds, geotextile silt fences, straw bales, or proprietary treatment (e.g. lamella clarifiers). The temporary drainage system shall also be designed to ensure that construction site runoff is adequately attenuated and does not						

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		result in an increase in flood risk downstream (i.e. adequate temporary storage will be provided). • Topsoil/subsoil will be stored away from watercourses and preferably on flat lying land (minimum 20 m on flat land, with increasing distance on steeper topography subject to risk assessment and appropriate controls). Where this is not possible and it is to be stockpiled for longer than a two week period, the material will, as soon as possible either be covered with geotextile mats, seeded to promote vegetation growth, or drainage provided to a suitable settlement area. • Appropriately sized runoff storage areas for the settlement of excessive fine particulates in runoff will be provided. • Mud deposits will be controlled at entry and exits to the Site using wheel washing facilities and / or road sweepers operating during earthworks or other times as considered necessary. • Tools and plant to be washed out and cleaned in designated areas within the Site compound where runoff can be isolated for treatment before discharge to surface water drainage under appropriate consent and/ or agreement with Environment Agency and/ or Thames Water, or otherwise removed from site for appropriate disposal at a licenced waste facility. • Debris and other material will be prevented from entering surface water drainage, through maintenance of a clean and tidy site, provision of clearly labelled waste receptacles, grid covers and the presence of site security fencing. • During the construction process any surface water land drains or existing road gullies present on the site will be identified and covered up to ensure construction site runoff or any accidental spillages cannot enter the drainage system without appropriate treatment. These should be removed once construction is complete. Where water will need to be removed from excavations, it will be suitably treated (e.g. settlement to remove suspended solids) and transported the minimum practical distance before discharge to a suitable water body or sewer under the appropriate consents or otherwise pumped to a tanker for offsite disposal at an appropriate licenced waste facility. Where dewatering will be required, for example, in areas of cuttings or the installation of culverts a Construction Dewatering Strategy should be prepared by the PC and included in the CEMP.						
C-WAT3	ES Chapter 14, Section 14.9.	**Accidental spillages:** The PC will implement the following measures to manage the risk of accidental spillages on site and potential conveyance to nearby waterbodies via surface runoff or land drains. The measures relating	No.	To ensure the protection of the water environment.	Assessment within the ES assumes adequate site drainage methods are employed	Granting of any permits/ consents. Adherence to the most current standards.	Contractual requirement between the LPA and the PC.	PC.

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		to the control of spillages and leaks will be included in the WMP and OEMP and adopted during the construction works: • Fuel will be stored and used in accordance with the Control of Substances Hazardous to Health Regulations 2002 (Ref 3.29), and the Control of Pollution (Oil Storage) (England) Regulations 2001 (Ref 3.30). Particular care will be taken with the delivery and use of concrete and cement as it is highly corrosive and alkaline. • Fuel and other potentially polluting chemicals will either be in self-bunded leak proof containers or stored in a secure impermeable and bunded area (minimum capacity of 110% of the capacity of the containers). • Any plant, machinery or vehicles will 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 off site if possible or only at designated areas within the Site compound. Only construction equipment and vehicles free of all oil/fuel leaks will be permitted on site. Drip trays will be placed below static mechanical plant. • All washing down of vehicles and equipment will take place in designated areas and wash water will be prevented from passing untreated into watercourses. • All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses, and away from drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling. • As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses. • All fixed plant used on the Site will be self-bunded. • Mobile plant is to be in good working order, kept clean and fitted with plant 'nappies' at all times. • A Pollution Prevention Plan will be prepared and included alongside the CEMP. Spill kits and oil absorbent material will be carried by mobile plant and located at high risk locations across the Site and regularly topped up. All construction workers will receive spill response training and toolbox talks. • The Site will be secure to prevent any vandalism that could lead to a pollution incident. • Construction waste/ debris are to be prevented from entering any surface water drainage or water body. • Surface water drains on roads or within the construction compound will be identified and,			throughout the construction period.			

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		where there is a risk that fine particulates or spillages could enter them, the drains will be protected (e.g. using covers or sandbags). • Suitable facilities for concrete wash water (e.g. geotextile wrapped sealed skip, container or earth bunded area) will be adequately contained, prevented from entering any drain, and removed from the Site for appropriate disposal at a suitably permitted waste facility. • Water quality monitoring of potentially impacted watercourses will be undertaken to ensure that pollution events can be detected against baseline conditions and can be dealt with effectively. In addition, any site welfare facilities will be appropriately managed, and all foul waste disposed of by a licensed contractor to a suitably permitted facility.						
C–WAT4	ES Chapter 14, Section 14.9.	**Spill response – Emergency Response Plan:** The PC shall include within the Water Management Plan an Emergency Response Plan. This will also include cross-reference with the procedures in the Emergency Preparedness and Response Plan, which covers risks to land and air as well as water (refer to C- G7). The Emergency Response Plan is in response to the fact that activities on site could lead to water pollution and pro-active management practices are required to ensure that pollution incidents are avoided where possible, but should they occur, such as a diesel spillage, that they are minimised, controlled, reported to relevant parties and remediated. The plan will define the criteria for implementing the relevant measures. Environment Agency guidance on pollution incident response planning will be reflected in the emergency plan. These procedures shall include the provision of appropriate incident response equipment, e.g. spill kits, will be available next to particularly sensitive activities or areas of a site (such as fuel storage areas). To ensure processes and equipment are in place to deal with oil and chemical spills on site.	No.	To ensure processes and equipment are in place to deal with oil and chemical spills on site.	Assessment within the ES assumes adequate monitoring and emergency measures will be employed throughout the construction period.	Production of the Pollution Incident Control Plan, in consultation with the identified relevant organisations. The LPA approval of the plan.	Contractual requirement between the LPA and the PC.	PC.
C–WAT5	ES Chapter 14, Section 14.9.	**Pollution incident monitoring:** The PC shall have in place effective arrangements to investigate and provide reports on any potential or actual significant pollution incidents, including: • A description of the pollution incident, including its location (and Ordnance Survey (OS) grid reference or What3Words), the type and quantity of contaminant and the likely receptor(s). • Contributory causes. • Adverse effects.	Yes.	To ensure processes are in place to monitor any potential or actual significant pollution incidents.	Assessment within the ES assumes adequate monitoring and emergency measures will be employed throughout the construction period.	The LPA approval of the plan.	Contractual requirement between the LPA and the PC.	PC.

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		• Measures implemented to mitigate adverse effects. Any recommendations to reduce the risk of similar incidents occurring.						
C-WAT6	ES Chapter 14, Section 14.9.	**Management of River Thames navigation during the works**: A number of construction activities that will take place over the River Thames will require navigation rights to be temporarily suspended. As the works on the structure on the river span are unlikely to be continuous, the PC will require daytime closures while a particular activity is completed. There will then be a break while this activity is completed on the viaduct which do not require river closures. These works will take place over a period of up to three weeks during which river closures will be required, but not consecutively. These works will generally be undertaken in weekday day shifts and works will be checked and secured at the end of the shift so the river can be reopened outside of working hours. The planned closures/disruption to river access will be communicated in advance to the local area, and to interested parties, for example local marina owners, operators and hire boats. The outline methodology for the physical closure of the river is as follows: • Temporary mooring buoys or points will be installed in the river on the approach to the proposed closure. • A dory type safety boat will be deployed in the river. When the river is to be closed – strings of buoys will be deployed to clearly mark the closed section of the river. The safety boat will pull these buoys across the full width of the navigation and secure these in place – these will be at least 50 m upstream and downstream of the extent of the worksite. The dory crew will supervise the closure at all times and direct the public to the hold station and temporary mooring points and keep the public informed of when the navigation will reopen. During the river closure, the adjacent riverbanks will also be closed to public access with physical barriers and signs displayed to confirm the closure and warn of the hazards. The Environment Agency will be consulted during further development of the proposed construction methodology. The methodology for the construction of the River Thames bridge and viaduct and associated structures will follow best practice and best practicable methods to minimise the potential for adverse impacts to the River Thames, as well as disruption to navigation rights.	No.	Minimise disruption to navigation on the River Thames.	Assessment within the ES assumes adequate mitigation for potential navigation disruption is employed throughout the construction period.	EA approval of the plan (as navigation authority.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
Climate								
C– C1	ES Chapter 15, Section 15.9.	**Climate change Greenhouse Gases (GHG) mitigation:** The PC shall implement measures to reduce emissions during the construction of the Scheme, for example through specification of recycled or low-carbon materials (i.e. materials that have the lowest GHG emitting life-cycle, compared with alternatives, where there are no overriding technical implications that will have a substantial impact on the timescales and budget for the construction of the Scheme) and the management and minimisation of energy use. The construction contractor shall develop and implement a plan to reduce energy consumption and associated carbon emissions. This could include the consideration of renewable and/ or low or zero carbon energy sources and record percentage of savings implemented. It shall also include consideration of the use of batteries in place of on-site diesel generators for provision of electric power, or a direct connection to mains power for long-term construction compounds, whichever is most feasible in any given location. Measures will be implemented to manage material resource use during construction including: • Using materials with lower embedded GHG emissions and water consumption. • Using sustainably sourced materials. • Using recycled or secondary materials. Energy consumption and materials use will be recorded and reported on an ongoing basis during the construction phase of the Scheme.	No.	To minimise the impacts of the construction of the Scheme on climate change.	n/a	Measures implemented as indicated.	Contractual requirement between the LPA and the PC.	PC.
C– C2	ES Chapter 15, Section 15.9.	**Climate change resilience mitigation:** The PC shall improve the resilience of the Scheme to climate change through a range of design and material specification measures including: the procurement and use of construction materials with superior properties (such as increased tolerance to fluctuating temperatures), and incorporation of current road design standards and future climate change allowances. Due consideration will be given to assessments such as the Flood Risk Assessment.	No.	To improve the resilience of the scheme to future climate change.	n/a	Measures implemented as indicated.	Contractual requirement between the LPA and the PC.	PC.
Traffic Management								
C– TRA1	ES Chapter 16, Section 16.10.	**Construction traffic:** A Construction Traffic Management Plan (CTMP) will be produced and will include measures to manage construction traffic throughout the construction period, such as, identification of routes for construction vehicles to and from the Site, implementation of measures to avoid/ limit and mitigate the deposition of mud and other debris on the highway, and processes for obtaining the	No.	To mitigate the impacts on construction traffic.	The assessment set out within ES Chapter 16, section 16.11.	Measures implemented as indicated.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		formation, layout or alteration of any permanent or temporary means of access to a highways etc. The CTMP should also include a construction traffic access plan. Regarding local traffic that will be impacted during the construction of the Scheme, management such as diversion routes with clear signage should be planned and agreed with the Local Authority prior to the start of construction. This should be included in the CEMP.						

3.4 Scheme design REAC table

Table 3.3: Scheme design (D) REAC table

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
Landscape and visual								
D-L1	Scheme design – Chapter 8, Section 8.9.	**Overarching design measures:** The overarching design principles for the Scheme include: • Alignment of the Scheme as a principally off-line link road between Didcot and Culham, and as a bypass to Clifton Hampden, to retain the existing local rural roads and reduce traffic through the nearby settlements of Sutton Courtenay, Appleford, Culham, Long Wittenham, Burcotand Clifton Hampden, such that there is an improvement to tranquillity within these settlements; • Provision of a new cycleway and footway along the length of the Scheme, providing a new sustainable recreational route connecting Milton Park and Culham Science Centre, with connections to nearby villages and emerging developments. The intention of the cycleway and footway is to improve connectivity and reduce severance in the landscape, whilst promoting sustainable transport; and • Limiting the height of the proposed lighting of the new cycleway and footway to 5 m, and using low-energy LED (light-emitting diode) lighting that has limited light spill or glare, to reduce the impact of lighting on views and the character of the night sky. • The lighting will be dimmed to 75% output between the hours of 00:00 and 06:00. This method of dimming not only reduces energy consumption but can further mitigate potential light intrusion and the impact of light on bats and the impact of light on bats, where bats have been identified for example in areas of the Didcot to Culham River Crossing and the Clifton Hampden Bypass. See also the Lighting and Electrical Design Report submitted as part of the wider planning application for further detail.	No.	The integration of the Scheme into the landscape.	Impacts on local landscape character and visual amenity.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
D-L2	Scheme design – Chapter 8, Section 8.9.	**A4130 Widening:** The following specific measures have been incorporated into A4130 Widening design: • A fair section of the existing ditch and hedgerow on the south side of the A4130 to the west of Didcot has been retained within the proposed central reservation, with the westbound carriageway constructed off-line to the south to maintain landscape structure, integrate the road, and provide screening of eastbound traffic. For pedestrians and cyclists this also provides separation between the live carriageways; • The proposed landscape planting seeks to integrate the A4130 Widening by re-planting trees and hedgerows alongside the south side of the new westbound carriageway. This will delineate segregation between NMUs and vehicles, restore vegetation patterns and strengthen the landscape structure where practicable; and	No.	The integration of the Scheme into the landscape.	Impacts on local landscape character and visual amenity.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		• The landscape design includes substantial planting of trees and shrubs, which once established will help screen both infrastructure and traffic, particularly around the junctions.						
D-L3	Scheme design – Chapter 8, Section 8.9.	**Didcot Science Bridge** The following specific measures have been incorporated into the Scheme design with regard to the Didcot Science Bridge: • The southern embankment of the Didcot Science Bridge has been designed to allow for new grassland and tree planting at the base of the embankment, that once established will reduce the perceived form of the earthworks and structure in views from Great Western Park to the south, and aid in its integration with the existing landscape features on the south side of the A4130; • Lighting will be avoided across the high point of the Didcot Science Bridge to reduce the visual impact of lighting columns and to avoid train driver glare. Lighting up to, but not over Network Rail land. Lighting is being proposed over the A4130 and Milton Road; • To the south of the Great Western Railway Mainline, vegetation alongside Meadow Brook will be retained as far as practicable, with proposed enhancements to the watercourse; and • The existing hedgerow on the north side of the A4130 Northern Perimeter Road as it passes Southmead Industrial Estate will be largely retained, with the proposed cycleway/footway constructed on the north side of the hedgerow, off-line, to maintain landscape structure and provide screening of traffic.	No.	The integration of the Scheme into the landscape.	Impacts on local landscape character and visual amenity.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
D-L4	Scheme design – Chapter 8, Section 8.9.	**Didcot to Culham River Crossing:** The following specific measures have been incorporated into the Scheme design with regard to the Didcot to Culham River Crossing: • The landscape design seeks to integrate the Scheme by planting trees, woodland and hedgerows alongside the road to restore vegetation patterns and strengthen the landscape structure where practicable; • Substantial areas of proposed planting are proposed on the approaches to the Appleford Railway Sidings Crossing for the purposes of landscape integration and to partially screen the new bridge and embankments; • Small-scale deciduous woodland blocks using locally characteristic species are proposed around the Sutton Courtenay Roundabout to integrate the new infrastructure; • There is a proposed link between the Scheme cycleway/footway and the Thames Path National Trail, enhancing landscape accessibility and recreation opportunities; • Small-scale deciduous woodland blocks using locally characteristic species are proposed to the north bank of the River Thames to reduce the perceived scale of the embankment approach to the viaduct from the A415; • There is small-scale arable reversion to grassland proposed alongside the River Thames and at the flood compensation	No.	The integration of the Scheme into the landscape.	Impacts on local landscape character and visual amenity.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		areas, along with riparian planting to the banks of the River Thames to enhance biodiversity; • The bridge abutment on the north side of the River Thames has been set back from the river bank and the Thames Path National Trail to retain the openness of views along the river bank for footpath users; and • Small-scale deciduous woodland blocks using locally characteristic species are proposed around the Abingdon Roundabout to integrate the new infrastructure. • The parapet of the River Thames bridge will be painted in a colour(s) selected from the North Wessex Downs Area of Outstanding Natural Beauty: Guidance on the selection and use of colour in development. The exact colour palette shall be agreed with the LPA.						
D-L5	Scheme design – Chapter 8, Section 8.9.	**Clifton Hampden Bypass** The following specific measures have been incorporated into the Scheme design with regard to the Clifton Hampden Bypass: • The landscaping seeks to integrate the Scheme by re-planting trees and hedgerows alongside the road to restore vegetation patterns and strengthen the landscape structure where possible, particularly to the north of Clifton Hampden where extensive woodland planting is proposed to reduce a perception of fragmentation of the vegetation patterns; • The potential visual intrusion of the Scheme will be reduced through the substantial planting of trees and shrubs to screen both infrastructure and traffic, particularly around junctions; • The landscape design includes improvements to grassland adjacent to ditches and field margins in the landscape north of Clifton Hampden for biodiversity and landscape integration benefits; • The drainage system utilises green infrastructure in the form of swales and retention basins to convey and store water, which have secondary benefits for nature and biodiversity; • The landscape design to north of Clifton Hampden includes new recreation routes alongside retaining existing public rights of way, to enhance accessibility and recreation; • A wide tree belt is proposed on the north side of the Clifton Hampden Bypass, north of Clifton Hampden to visually screen traffic from the PRoW between the Clifton Hampden Bypass and Nuneham Courtenay to the north; and • The B4015 connection into the north of Clifton Hampden has been moved west to retain a distinctive mature oak tree in the verge of the existing B4015. For details of tree protection and removal refer to the Arboricultural Impact Assessment included within the ES.	No.	The integration of the Scheme into the landscape.	Impacts on local landscape character and visual amenity.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
Biodiversity								
D-B1	Scheme design	**Habitat avoidance, creation and replacement:** The environmental masterplans and preliminary landscape planting measures developed as part of the landscape and visual assessment reported in Chapter 8: Landscape and Visual Effects have been informed by the outcomes of engagement and the	No.	To mitigate for habitat loss.	Impacts on terrestrial habitats.	Implementation and sign off by ECoW.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		biodiversity assessment. The key objective is to identify measures that, wherever possible, provide a combined function of landscape integration and/ or screening, and habitat creation and replacement, to mitigate Scheme effects on biodiversity interests. Habitat planting and reinstatement will replace habitat temporarily damaged, or permanently lost as a result of the Scheme to achieve an overall Biodiversity Net Gain with a particular emphasis for all priority habitats. Habitat creation will include hedgerows, grassland planting, reedbed, wet woodland, wet flower-rich grassland, approximating to MG4/MG5 grassland; and standing water. The Scheme drainage strategy has been developed to manage surface water runoff in accordance with current highway design standards and will reduce the likelihood and severity of potential pollution incidents and flooding affecting watercourses and the local ditch network to reduce or eliminate adverse effects for aquatic and riparian species and habitats. Drainage will be treated by attenuation features such as ponds and existing ditches, and watercourses and other attenuation features will be landscaped to provide optimal water treatment. Lighting for the Scheme will include footway and cycleway lighting utilising 5 m lighting columns. Where lighting is essential, it will conform to best practice guidelines with respect to minimising light spill into adjacent habitats and prevent disturbance to bats and other species. The River Thames crossing the Appleford Sidings Bridge and the Didcot Science Bridge will not be lit, the approaches to these structures will be lit.						
D-B2	Scheme design	**Reptiles and invertebrates:** The Scheme design includes the creation of habitats which will be of value to terrestrial invertebrates and reptiles, such as grassland and scrub. Furthermore, with the provision of log and brash piles, placed in both sunny and shady locations, this variety of habitats will benefit both terrestrial invertebrates and reptiles. Once the vegetation along the Scheme verges has established, these will also provide a wildlife corridor which reptiles can utilise for basking, foraging and shelter.	No.	To mitigate for habitat loss.	Impacts on terrestrial habitats and species.	Implementation and sign off by ECoW.	Contractual requirement between the LPA and the PC.	PC.
D-B3	Scheme design	**Birds:** Some areas of breeding and wintering bird habitat, including hedgerows, scrub, grassland and arable land, will be lost to the Scheme. This loss will be mitigated through habitat creation and replacement measures incorporated throughout the Scheme, which comprise hedgerows, scrub and grassland habitat that have been incorporated into the landscape design of the Scheme. There will be a net loss of arable habitat which will be replaced elsewhere within the Scheme by the inclusion of grassland, woodland and scrub. This will achieve a better habitat balance within the landscape and, along with woodland habitat creation, contribute to a net gain in biodiversity. Any loss of trees and scrub, used by nesting birds, will be mitigated by replacement planting of hedgerows and woodland, together with the installation of approximately 100 bird boxes.	No.	To mitigate for habitat loss.	Impacts on birds	Implementation and sign off by ECoW.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
D-B4	Scheme design	**Bats:** Habitat creation and replacement will provide more foraging habitat within the landscape, and the planting of trees and hedgerows will provide connectivity for bats to commute between foraging grounds. Attenuation ponds will be built as part of the Scheme and these will also provide foraging opportunities for some species of bat. To ensure that the Scheme has a positive contribution towards local bat populations, a minimum of 50 bat boxes to provide roosting opportunities, will be installed within suitable habitats (such as mature trees) adjacent to the Scheme. A permanent 'hop-over' (a crossing for bats) will be implemented to maintain important commuting and foraging routes for bats where the Scheme is likely to cause severance. The purpose of the hop-over is to guide bats across the road at a safe height above traffic, thus reducing the risk of mortality by guiding bats over the road. This mitigation is required to maintain connectivity to the north of Clifton Hampden and along the River Thames, although there will also be sufficient clearance under the new bridge to facilitate safe passage of low flying species. The hop-over will be formed through permanent mature tree planting, designed into the soft landscaping, the height of which will be above the Scheme to encourage bats to fly up and over the Scheme. In addition to this, scrub will be planted alongside the Scheme to discourage bats from crossing the road low down. The design has sought to minimise potential lighting impacts with directed luminaires to reduce spill. The lighting will comprise LED luminaires that will be less attractive to flying insects, so that bats are not attracted to forage on insects that can be attracted to traditional lighting, particularly ultraviolet spectrums. The impact of any noise on foraging and commuting bats will be reduced, through landscaping and planting, which will act as a natural acoustic barrier for bats.	No.	To mitigate for habitat loss.	Impact on bats.	Implementation and sign off by ECoW.	Contractual requirement between the LPA and the PC.	PC.
D-B5	Scheme design	**Badger:** Badgers will be deterred from crossing the Scheme through the installation of Badger fencing in selected areas along the highway, the locations of which will be informed by up-to-date information on Badger activity obtained through survey prior to construction. Currently, this is within the Clifton Hampden Bypass, Didcot Science Bridge and Didcot to Culham River Crossing sections of the Scheme, in the vicinity of Badger setts that were recorded. Where evidence of Badgers crossing any existing infrastructure, or potentially important connecting habitat in the open countryside (used by Badger) has been identified, Badger tunnels will be constructed to allow them safe passage under the carriageway. Whilst it is not possible to guarantee complete exclusion of Badger, the combination of fencing, tunnels and suitable landscaping should discourage their use of highway verges and minimise contact with live traffic.	No.	To aid the safe crossing of the road by badgers and other animals, and to mitigate the risks of increased mortality of wildlife once the road becomes operational and used by traffic.	To mitigate the risks of increased mortality of badgers once the road becomes operational.	Provision of suitable badger fencing to be approved by competent ecologist. Annual checks to monitor state of fencing and check for breaches in the fence. Implementation and sign off by ECoW.	Contractual requirement between the LPA and the PC.	PC.
D-B6	Scheme design	**Riparian mammals and aquatic habitats:** Culverts will be designed appropriately to maintain connectivity along watercourses for aquatic species and riparian mammals, based on the results of the ecological surveys and the suitability	No.	To aid the safe crossing of the road by riparian mammals, and to mitigate the risks of increased mortality of	To mitigate the risks of increased mortality of riparian mammals once	Provision of suitable mammal tunnels to be approved by competent ecologist.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		of watercourses to support particular species. The Moor Ditch culvert for example will include a mammal ledge of 500 mm width to facilitate passage of riparian mammals such as Otters. All culverts to convey watercourses will be set 150 mm below bed level to allow sedimentation and a river bed to form, which will maintain longitudinal connectivity for fish and other aquatic fauna.		wildlife once the road becomes operational and used by traffic.	the road becomes operational.	Implementation and sign off by ECoW.		
Noise and Vibration								
D-N1	Scheme design	The alignment of the A4130 section of the Scheme closely follows the existing road for the majority of its length and is also adjacent to another significant noise source, namely the Great Western Main Line. Closely aligning with existing noise sources reduces the potential increase in noise levels due to the Scheme. The Didcot Science Bridge section of the route is also on the route of the existing A4130, for a short section, and passes through a former power station and now an industrial/commercial area where the surrounding land uses are not sensitive to road traffic noise. The Didcot to Culham River Crossing section of the Scheme has been relocated further west, away from Appleford and Zouch Farm, compared with the originally proposed alignment that was located close to the Oxford-Didcot Railway (Cherwell Valley Line), the intention of which was to locate two linear transport features together. Similarly, in response to public consultation, the eastern end of the Clifton Hampden Bypass section of the Scheme has been relocated slightly further north away from the village and the speed limit reduced from 60 mph to 50 mph. In addition, the originally proposed farm access underpass has been replaced with an at-grade priority junction which allows the alignment of the Scheme to be constructed at a lower ground level, reducing the potential for visual impacts.	No.	To reduce noise impacts from the Scheme.	The assessment set out in ES Chapter 10, Section 10.10.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
D-N2	Scheme design and. Figure 10.1 and 10.3 to 10.6.	**Noise barriers:** The following noise barriers/ solid bridge parapets have been included within the Scheme design to help mitigate noise impacts: • 3.0 m high reflective noise barrier on the east side of the Scheme (Didcot to Culham River Crossing) as it passes close to the southern end of Appleford, including over the rail sidings bridge. Small gap for access track south of Level Crossing Cottage. • 2.5 m high reflective noise barrier on the east side of the Scheme (Didcot to Culham River Crossing) north of the rail sidings bridge to just south of the junction with the B4016 into Appleford. • 1.5 m high reflective solid parapet on the east side of the Didcot to Culham River Crossing bridge. The parapet extends approximately 12 m south at the southern edge of the bridge. • 3.0 m high reflective noise barrier on the south side of Scheme (Clifton Hampden Bypass) as it passes close to Fullamoor Cottages. The barrier extends southwards along the new connection to the A415 to the south. • 3.0 m high reflective noise barrier on the south side of Scheme as it passes close to Clifton Hampden. The barrier extends southwards at each end along the access track at the west end	No.	To reduce noise impacts on sensitive receptors.	The assessment set out in ES Chapter 10, Section 10.10 and Figure 10.3 to 10.6.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		and the realigned B4015 at the east end, and includes a small gap for the public footpath to cross the Scheme, though to minimise the impact of the gap the barrier also extends southwards slightly along each side of the footpath.						
D-N3	Scheme design and Figure 10.1.	**Low noise surfacing:** Low noise surfacing is proposed on the following key sections of the Scheme. • Didcot to Culham River Crossing from approximately 100 m north of the A4130 roundabout to approximately 100 m south of the proposed Sutton Courtenay roundabout i.e. past Hill Farm, Hartwright House and Appleford; • Clifton Hampden Bypass from approximately 100 m east of the new Culham Science Centre roundabout to approximately 55 m east of the centre of the junction with the connection south to the A415 i.e. past Fullamoor Cottages; and • Clifton Hampden Bypass from the farm access track crossing to approximately 150 m east of the centre of the new junction with the B4015 i.e. past the properties on the northern edge of Clifton Hampden to the south of the Scheme and the properties to the north of the Scheme (The Coppice).	No.	To reduce noise impacts on sensitive receptors.	The assessment set out in ES Chapter 10, Section 10.10.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
Materials and waste								
D-MAT1	Scheme design	The design of the Scheme and the planned approach to its construction have been developed with an overarching principle of achieving efficiencies in materials and waste where possible, for example by designing-out and preventing waste arisings where possible, and diverting waste from landfill through on-site and off-site recycling and recovery. Mitigation measures have been integrated (embedded) into the Scheme for the purpose of minimising effects on material assets and waste. In summary these measures comprise the following, which focus on implementing the waste hierarchy through the reuse and recycling of site-won materials on-site where possible to minimise the need to import construction materials to site, and to reduce the quantity of waste to be exported off-site: • Designing the Scheme in a manner that facilitates the reuse of acceptable material arisings, for example those associated with earthworks cuttings and other excavations; • Achieving an earthworks balance (cut and fill material) within the design of the Scheme, where possible, to minimise the need to import and export material; • The inclusion of land within the Scheme boundary for the temporary on-site storage of soils, excavated materials and other materials; • The appropriate sizing of construction compounds to enable the segregation and storage of waste, and to facilitate off-site recovery; • The retention of existing highways infrastructure within the Scheme design where feasible, to minimise the need for the demolition of components and infrastructure and the associated generation of waste material;	No.	To reduce material use and waste creation.	The assessment set out in ES Chapter 12, section 12.10.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		• The reuse of excavated materials and the recycling of demolition and construction materials within the Scheme, where practicable; • The optimisation of bridge, soil abutment and wingwall designs through the incorporation of precast concrete elements to reduce on-site waste arisings; and • Importing alternative (recycled and secondary) aggregate materials during construction, where practicable.						
Population and human health								
D-1	Scheme design	The following design measures have been implemented and help mitigate impacts on the population and human health: • The A4130 widening has been designed south of the existing established hedgerow and drainage ditch. Removal of the hedgerow has been limited to existing and proposed junctions. .Therefore, working mainly offline will reduce impacts on traffic flow during the construction phase. • The Clifton Hampden Bypass has been designed to a lower design speed which has facilitated the road to be realigned north further away from existing properties. This will have reduction on both noise and air quality at sensitive receptors. • The Didcot to Culham River Crossing Scheme section has been designed, where possible, further to the west of Appleford village. This will reduce the potential for both noise and air quality impacts at sensitive residential receptors in Appleford Village and at Zouch Farm. • The Scheme alignment has been designed to maintain or increase the distance between properties and traffic where possible. A key objective of the Scheme is to redistribute traffic away from local villages and sensitive receptors, to mitigate against noise and air quality impacts.	No.	To mitigate impacts on human health and the surrounding population.	The assessment set out in ES Chapter 13, Section 13.10.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
Road drainage and the water environment								
D-WAT1	Scheme design	**River Thames Bridge:** The proposed River Thames bridge and approach viaduct will be 491 m in length and formed of 16 spans of varying lengths. The overall width of the deck will be 17.9 m. The structure will comprise precast prestressed concrete beams composite with a reinforced concrete deck slab made integral with intermediate piers for the first four spans from south to north. The rest of the structure will be formed of a series of three-span continuous decks with weathering steel girders composite with a reinforced concrete deck. The bridge substructure will comprise of reinforced concrete (RC) column type piers and cantilevered RC wall type abutments and wing walls on piled foundations. The following design elements have been included: • The crossing of the main channel is a clear span of approximately 65 m compared with an approximate 40 m banktop channel width. • There are no abutments close to banktop, and the nearest viaduct piers are set back at least 7 m. • The bridge section over the river will have a minimum soffit level of 51.51 mAOD. This level was initially modelled at the 1% AEP +70% climate change flood level giving a freeboard of	No.	To mitigate and avoid impacts on the River Thames.	The assessment set out in Chapter 14, Section 14.10 and Appendix 14.2 and 14.3.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		1.between this flood level and the bridge soffit. However, the Environment Agency have recently revised their climate change allowances. For this Scheme, in this catchment, the upper climate change allowance is 41%. Therefore, the bridge soffit height has been designed in relation to a more conservative climate change allowance. This allows for the navigation requirements of the Environment Agency to be met. • The combination of deck width and height suggests there will be no significant shading to the River Thames. • Runoff from the highway will be treated by SuDS and discharged at greenfield rates. Storage compensation will be provided on the left bank of the river, comprising of approximately 4,000 m^2 lowered to 50.1 m AOD and a further approximately 5,000 m^2 lowered to 49.9 mAOD. At this preliminary design stage, the proposed Scheme and mitigation meets the Environment Agency and DMRB's guidance concerning no increase in floodplain extent, water flows are not impeded, and the flood risk is not increased to vulnerable receptors.						
D-WAT2	Scheme design	**Drainage Strategy:** The preliminary drainage design is based on the following key assumptions: • Attenuation features for highway drainage will be required to store the 1 in 100 year storm event with a 20% allowance for climate change (and checked that the flood water does not endanger property or life when a 40% climate change allowance is made). • Flood Estimation Handbook (FEH) rainfall data has been utilised for the hydraulic design of the drainage systems. The design follows criteria described in the DMRB and OCC Local Standards and Guidance, and ensures no surcharging of the drainage system for the 1 in 1 year return period, and no flooding of the surface of the site for 1 in 30 year return period and flooding only in safe areas for the 1 in 100 year return period. • Surface water runoff from additional impermeable areas will be attenuated and the discharge rate will be restricted to a Qbar flow rate (the mean annual flood flow rate from a rural catchment), with a suitable flow control device to ensure runoff flows and volumes are not more than the existing condition. These will be sized to ensure no flooding in a 1 in 100 year storm event with a 20% allowance for climate change when the discharge is restricted to a Qbar flow rate. • SuDS in the form of swales, dry ponds, wet ponds, ditches and filter drains have been deployed within the various drainage catchments for the Scheme, to treat and attenuate the surface water runoff in accordance with The SuDS Manual which is referred to in DMRB CD532 (Ref 3.31). SuDS also offer ecological habitat creation. • Road runoff is discharged to surface watercourses in all cases, except for four outfalls on the Didcot to Culham River Crossing section where water is discharged to ground via an infiltration basin.	No.	To mitigate impacts on water environment and flood risk.	The assessment set out in Chapter 14, section 14.10 and Appendix 14.2 and 14.3.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		• One outfall from the Clifton Hampden Bypass Scheme will discharge to a surface water sewer. The proposed connection to the sewer has been attenuated to 5 l/s. Consultation is ongoing with the regulator regarding this discharge. It is anticipated that the new drainage systems proposed for the Scheme will be designed to prevent and or minimise the risk of groundwater contamination from contaminated surface runoffs. The ground investigation will determine how high the groundwater levels are. If the groundwater level proves to be high, SuDS features will be lined. Maintenance requirements have been considered for all surface water attenuation features (ponds, swales, ditches) by providing access to features mainly from local roads, and SuDS Maintenance and Management Plans have been produced for each section of the Scheme. These documents set out the principles for the long-term management and maintenance of the proposed SuDS and outlines who will be responsible for the maintenance and management. The documents ensure that the company appointed by OCC to manage and maintain the SuDS is provided with a robust inspection and maintenance programme. Optimum operation of the surface water drainage network is important throughout the lifetime of the Scheme, to ensure no future deterioration of water quality or increase in discharge rates. Maintenance requirements are outlined in accordance with recommendations in CIRIA C753 The SuDS Manual (Ref 3.32). The specific SuDS treatments ('the SuDS treatment train') that have been built into the design of each drainage catchment for the scheme are outlined in Table 14.15 for the A4130 Widening, Table 14.16 for the Science Bridge, Table 14.17 for Didcot to Culham River Crossing and Table 14.18 for Clifton Hampden Bypass, within Chapter 14: Road Drainage and the Water Environment of the ES.						
D-WAT3	Scheme design	**Culverts:** Culverts will be designed appropriately to maintain connectivity along watercourses for aquatic species and riparian mammals, where these are shown to be present. The Moor Ditch culvert for example will include a mammal ledge of 500 mm width to facilitate passage of riparian mammals such as otters. All culverts to convey watercourses will be set 150 mm below bed level to allow sedimentation and a naturalised bed to form, which will maintain longitudinal connectivity for fish and other aquatic fauna. The existing 74.4 m length Moor Ditch culvert will be replaced with a 40 m length culvert with dimensions of 2 m height and 1.5 m width. This will therefore open up 34.4 m of Moor Ditch. Where new culverts are required, length-for-length watercourse enhancements are required to mitigate the impacts, and to ensure compliance against WFD objectives (see Appendix 14.3: WFD Assessment of the ES (April 2023)). Space along Meadow Brook has been reserved in the red line boundary (at the junction of the A4130 widening and the Didcot Science Bridge) for watercourse enhancements to mitigate the hydromorphological and ecological impacts from culverting this watercourse.	No.	To mitigate impacts on water environment and riparian mammals.	The assessment set out in Chapter 14, section 14.10 and Appendix 14.2 and 14.3.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		Refer to Chapter 14: Road Drainage and the Water Environment, Section 14.10, of the ES for further information.						
D-WAT4	Scheme design	**New road drainage outfalls:** There will be a requirement for 50 road outfalls to facilitate road drainage from the Scheme. However, the majority of these are either existing outfalls, or will be to newly created ponds created as part of the drainage network. There will, however, be a new road outfall to existing waterbodies at the following locations: • Meadow Brook at NGR SU 50477 91138; • Cow Brook at NGR SU 49619 90467; • Ditch at Clifton Hampden Bypass at NGRs SU 54017 95502 and SU 53608 95364; • WB03 at NGRs SU 54723 96073 and SU 54637 96151; and • WB07 at NGRs SU 52315 92602, SU 52390 92785 and SU 52228 92789; and • An existing ditch adjacent to WB07 at SU 52195 92894. Where possible, outfall headwalls will be set back from watercourses with green soft ditch connections to the aquatic habitats. The final location, position and orientation of any new outfall will be carefully determined and informed by a hydromorphological survey to minimise any adverse but local impact on river processes. It has been assumed that any outfall (and ditchcourse where they apply) may be located within 20 metres upstream or downstream of the grid references above to allow flexibility in their position, although it is most likely that they will be positioned closer to current proposals. Appropriate micro-siting of the outfall can also minimise loss of bank habitat, the need for bed scour or hard bank protection, and localised flow disturbance or disruption to sediment transport processes. It can also avoid the creation of 'dead' spaces with sedimentation and vegetation blockage risks and to that effect it is not proposed that outfalls are recessed into the bank. Where concrete headwalls are required these will be prefabricated where possible to avoid the need to pour wet concrete into formwork close to a watercourse. The risk of a spillage and pollution event occurring has been considered as a possibility in the construction phase impact assessment. As with culverts, where new headwalls are required, length-for-length watercourse enhancements are required to mitigate the impacts, and to ensure compliance against WFD objectives (see Appendix 14.3: WFD Assessment of the ES). For the purposes of the assessment, the headwall size is assumed to be 2 m as a worst-case scenario.	No.	To mitigate impacts on water environment and flood risk.	The assessment set out in Chapter 14, Section 14.10 and Appendix 14.2 and 14.3.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
D-WAT5	Scheme design	**RWE lagoon 1:** The Scheme requires replacement of RWE Lagoon 1. Pre-construction surveys for fish will be undertaken in the lagoon to establish fish species present and the requirement for fish rescue and translocation during decommissioning and removal of the lagoon. The lagoons currently discharge to Moor Ditch under Environmental Permit EP YP3030LR and subsequent variations. Any variation to the discharge rate or emission limits should only be undertaken following further sampling closer to the time of dewatering to determine water quality immediately prior to	No.	To mitigate impacts on water environment.	The assessment set out in Chapter 14, Section 14.10 and Appendix 14.2 and 14.3.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		dewatering of Lagoon 1 and whether this will threaten water quality in Moor Ditch. Consultation with the Environment Agency will be required to agree the permit variation should discharge rate be increased to facilitate the dewatering.						
D-WAT6	Scheme design	**Flood mitigation:** A new crossing of the River Thames between Didcot and Culham has the potential to increase the risk of flooding upstream. As the Scheme crosses or interacts with the Moor Ditch in several locations particularly along Stert Brook and Meadow Brook there is a risk of flood risk impacts in these areas. The Clifton Hampden Bypass element of the Scheme also has the potential to increase flood risk without mitigation because the proposed Scheme alignment intersects existing flow paths. The Environment Agency has stated that the Scheme needs to include compensatory floodplain storage for any floodplain that may be lost as a result of development or land raising up to the 1% AEP plus climate change (+41%) flood level. To mitigate the effects of raised ground levels within the floodplain resulting from construction of highway embankments, a like-for-like, volume-for-volume floodplain compensatory storage will need to be provided. To achieve this, a length of flood storage compensation is provided on the left bank of the River Thames, upstream of the bridge, to mitigate the impacts of the proposed embankment at the edges of the floodplain. This comprises of approximately 4,000 m^2 lowered to 50.1 mAOD and a further 5,000 m^2 lowered to 49.9 mAOD. A flood storage area of approximately 12,000 m^2 (~500 m x 25 m) will be constructed on the left bank of Stert Brook, adjacent to the proposed A4130 southern carriageway. The proposed route of the Clifton Hampden Bypass element of the Scheme crosses the overland flow route initiated when the capacity of the existing Science Park culvert is exceeded which has the potential to increase flood risk. Therefore, mitigation has been provided for this part of the Scheme through inclusion of a new culvert and flood attenuation area alongside the new road, to the south of the Culham Science Centre (see Appendix 14.2: FRA of the ES). All culverts and flood relief culverts designed for the Scheme will be of sufficient size, determined by hydraulic flood modelling, to ensure no increase in fluvial flood risk.	No.	To mitigate impacts to flood risk.	The assessment set out in Chapter 14, Section 14.10 and Appendix 14.2 and 14.3.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
Climate								
D-C1	Scheme design	**Greenhouse gas emission measures:** The following measures are included in the Scheme design: • Energy efficient road lighting and technology will be implemented to minimise operational energy consumption. • Encouragement of low or carbon neutral forms of transport through the construction of additional cycle and footways.	No.	To mitigate emissions of greenhouse gas emissions resulting from the construction and operation.	The assessment set out in Chapter 15, Section 15.10.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.
D-C2	Scheme design	**Vulnerability to climate change:** The following measures are included in the Scheme design:	No.	To mitigate the vulnerability of the	The assessment set out in Chapter 15, Section 15.10.	Implementation and sign off by the EM.	Contractual requirement between the LPA and the PC.	PC.

Ref	Source Ref	Action/ Commitment (including specific location if appropriate)	Is environmental monitoring required? Yes/ No	Objective	Assumption on which the actions is based	Achievement criteria and reporting requirements (if applicable)	How the action is to be implemented	Responsible person(s)
		• All materials used will be Highway Authorities Product Approval Scheme, which takes account of climate change vulnerability. • The Didcot Science Bridge, the Appleford Sidings Bridge and the River Thames Crossing will be designed for the effects of wind loading and thermal movement in accordance with the relevant Eurocodes. • Suitable earthing and bonding design (mitigation against lightning) has also been incorporated in the proposals .		Scheme to climate change.				

3.5 Associated plans

3.5.1 Table 3.4 presents a list of associated management plans and strategies relevant to the CEMP. These plan/ strategies must be prepared by the PC (and sub-contractors) and read in conjunction with the CEMP.

Table 3.4: Management Plans/ Strategies

Plan/ Strategy	Description	Responsible
Safety Health and Environment Plan (SHE)	Details all health, safety and environment information and considerations specific to the Site during construction.	PC
Emergency Plan	Details the incident alerting procedures and the initial action responsibilities for all staff on Site.	PC
Emergency Response	A clear strategy describing actions to be taken in response to incidents and emergencies on Site during construction.	PC
Dust Management	Outlines appropriate management techniques that will reduce the potential for any dust related adverse effect to public health or the environment.	PC
Construction Dewatering Strategy	The Dewatering Strategy (including relevant licences/permits) will provide information on the techniques and precautionary principles for the removal of groundwater and/or surface water from the site before construction work commences.	PC
Construction Traffic Management Plan (CTMP)	The purpose of the CTMP is to ensure that moving vehicles do not present a hazard to people working on, or visiting, the site. It considers keeping people and vehicles apart, minimising vehicle movement, ensure people on site are fit and competent to manage vehicles and machinery on site, install signs and notices for vehicle movement such as turning points and reversing.	PC
Drainage Strategy	A report describing how surface water usually caused by rain, affects a site and the surrounding area. This report also provides advice on the management of surface water runoff.	PC
Pollution Incident Control Plan	A Plan that sets out the procedure for the identification, containment and response to spillages on site.	PC
Site Waste Management Plan	Describes how waste produced during construction should be reduced by setting out how building materials, and any resulting waste, will be managed.	PC
Water Management Plan	Describes the water management principles and procedures throughout the construction period of the Scheme. It details the measures that will be implemented on Site to ensure that water bodies are protected from pollution from construction works. This is in keeping with the requirements of Chapter 14 ‘Road Drainage and the Water Environment’ of the Environmental Statement.	PC

Plan/ Strategy	Description	Responsible
Landscape and Biodiversity Management Plan	Details management approach of the landscape provisions and the habitats created as part of the Scheme.	PC/ECoW
Public Rights of Way Management Plan	A PRoW Management Plan is required to address the interactions between the PRoW and the Scheme for example, it describes where PRoWs will be crossed by the Scheme and how PRoWs will be managed to ensure they remain safe to use, and disruption to the users of the PRoW is minimised.	PC
Archaeological Mitigation Strategy	Proposals for reducing the overall effect of the Scheme on potential archaeological remains within the Site. The strategy will consist of preservation in-situ, modifications to the Scheme's design proposals, excavation and archaeological watching brief and recording.	PC/ACoW
Overarching Archaeological Written Scheme of Investigation	This document sets out the methodology, specifications, and protocol to be adhered to during the completion of the archaeological fieldwork, interim reporting and preparation of fieldwork reports for the Scheme.	PC/ACoW
Site Specific Written Scheme of Investigation	This document sets out the methodology, specifications, and protocol to be adhered to during the completion of the archaeological fieldwork, interim reporting and preparation of fieldwork reports for specific areas of the Site.	PC/ACoW
Arboriculture Method Statement	Ensure trees to be retained are suitably protected and integrated into the Scheme	PC/Arboriculturist
Soil Management Plan	Sets out the general strategy for the management of soil during the construction works for the Scheme and details the arrangements for areas where soil material shall be stripped and stored before being returned to its original location or reused elsewhere on the Scheme.	PC
Material Management Plan	Describes how material will be re-used on site. The Plan should be prepared in accordance with The Code of Practice (DoWCoP). The Materials Management Plan must demonstrate the types of material, quantity, suitability and certainty of use of the material and does not present unacceptable risk of pollution or harm to human health.	PC
Invasive Non-Native Species (INNS) & Biosecurity Management Plan	An assessment of the presence of high-risk INNS on and adjacent to the site, with the aim of identifying potential vectors of introduction in close proximity to the site or evidence of previously abundant INNS. The assessment includes an evaluation of control options, recommendations for optimal and cost-effective control, and a high-level management plan will be provided along with an invasive species distribution map (including optimal no-disturbance buffer zones). The management plan will include risk assessment and recommendations for the mitigation required and the optimal time of year to carry out control work, in the context of the development plans for the Site.	PC/ECoW

Plan/ Strategy	Description	Responsible
Communications Plan	A plan that clearly defines the communication process for the Scheme, for example; what specific information is required, who should prepare the information, who should be given the specific information, when the information should be given and by what channel should the information be given.	PC

4. Consents and Permissions

4.1 Introduction

4.1.1 The Scheme will aim to meet its legal requirements through compliance with any planning, local authority, enforcement agency conditions and to all relevant legislation.

4.2 Purpose

4.2.1 The purpose of this section of the OEMP is to:

- Provide a summary of anticipated consents/ permissions required to deliver the scope of works;
- Record of the relevant consents; and
- Record of permissions from Statutory Bodies.
- if the consents/ permissions alter;
- if the consents/ permissions are no longer relevant; and
- Provide a justification for either of these circumstances.

4.2.2 Table 4.1 records permits, consent and licenses that may be required for the Scheme.

4.2.3 Ecological surveys have highlighted the need for licenses for protected species. The relevant licenses should be sought from the relevant authorities for their removal and transfer.

Table 4.1: Indicative List of Consents and Permissions

Issuing Body	License, Permit or Consent type	Reason for Requirement	Validity
Environment Agency	Water Abstraction/ Transfer/ Impoundment License	Water Resources Act 1991 (as amended) (Ref 4.1)	A licence will be required if an abstraction of more than 20 m^3 of water from a watercourse or ground source or less than 20 m^3 but the abstraction is to last more than 28 consecutive days. An impoundment license is required from the Environment Agency for a structure within inland waters that can permanently or temporarily change the water level of flow. This includes dams, sluices, penstocks and retaining walls. Proposals that are likely to cause sediment movement and deposition to be substantially altered upstream or downstream of a site are also likely to require a permit.
Environment Agency	Environmental Permit for Water Discharge Activity	Environmental Permitting (England and Wales) Regulations 2016 (Ref 4.2)	To discharge unclean water to a Controlled Water[3] during construction. Please note that highways authorities do not require permission from the Environment Agency to discharge runoff from highways to Controlled Waters (i.e. all watercourses, canals, lakes, groundwater etc.) under the Highways Act 1980 providing water pollution does not occur.
Environment Agency	Environmental Permit for Flood Risk Activity	Environmental Permitting (England and Wales) Regulations 2016 (Ref 4.2).	An Environmental Permit (flood risk activity) is required from the Environment Agency if a regulated activity is to be undertaken on or near a Main River, on or near a flood defence structure, or in a flood plain, and exemptions do not apply (e.g. outfalls with a diameter < 300 mm). This includes any activity within 8 m of the bank of a main river, flood defence structure or culvert on a main river, or activities

[3] The Environment Agency has a legal duty under the Water Resources Act 1991 amended by the Water Act 2014 to maintain a main river map for England, this includes updating any changes (variations) to main river.

[2] As defined by Section 104 of the Water Resources Act 1991 (as amended) a Controlled Water includes with relevance to this scheme all inland freshwaters such as a watercourse (including an underground river or watercourse and an artificial river or watercourse; which is neither a public sewer nor a sewer or drain which drains into a public sewer), lake, reservoir or pond (whether it is natural or artificial or above or below ground; and discharges into a relevant river or watercourse or into another lake or pond which is itself a relevant lake or pond) and groundwater. Where a lake, pond or watercourse may be ephemeral, the section or reach that may periodically dry up is also considered a Controlled Water.

Issuing Body	License, Permit or Consent type	Reason for Requirement	Validity
			carried out on the floodplain of a main river, more than 8 m from the river bank, culvert or flood defence structure if you do not have planning permission.
Environment Agency	Section 60 License	Any permanent works, piers, piles, bank protection works, structures etc will require a licence under Section 60 of the Thames Conservancy Act 1932. Further information can be found here: https://www.gov.uk/government/collections/river-thames-accommodation-licence	Licence to be obtained in advance of when needed and all conditions complied with during the subsequent works.
Natural England	European Protected Species Mitigation Licence (EPSML) for bats Natural England disturbance licence for Badger.	All British bats are included on Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (Ref 4.3) as European Protected Species. Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) under Regulation 53 of the Habitats Regulations through the issuing of European Protected Species Mitigation Licences (EPSML).	Licence to be obtained in advance of when needed and all conditions complied with during the subsequent works.
Oxfordshire County Council as the Lead Local Flood Authority (LLFA)	Land Drainage Consent	The Floods and Water Management Act 2010 (Ref 4.4) and The Land Drainage Act 1991 (Ref 4.5).	Land drainage consent will be required from Oxfordshire County Council (LLFA) for certain works that may affect the flow in Ordinary Watercourses (i.e. all other watercourses that are not Main Rivers). This applies to all watercourses excluding the River Thames.
Thames Water	Trade Effluent Discharge Consent	Water Industry Act 1991 (as amended) (Ref 4.6).	To be completed if any discharge is to be made to a Public Foul Sewer. For discharges over 6 months duration full consent will be required. Temporary discharges are generally for groundwater remediation or construction projects and may be authorized by agreement only. For a discharge to be deemed temporary it should be less than 6 months duration. Any discharge must be to the foul sewer and not to the surface water system. Likely to only be required for the temporary discharge of construction site

Issuing Body	License, Permit or Consent type	Reason for Requirement	Validity
			runoff, should the Contractor decide to drain to a public sewer.
Environment Agency	Environmental Permit for Water Discharge Activity	Environmental Permitting (England and Wales) Regulations 2016 Ref (4.2).	To discharge unclean water to a Controlled Water[4] during construction. Please note that highways authorities do not require permission from the Environment Agency to discharge runoff from highways to Controlled Waters (i.e. all watercourses, canals, lakes, groundwater etc.) under the Highways Act 1980 providing water pollution does not occur.
Table 4.1 should be updated as applicable in the CEMP to include any consents, licenses and permits that have been applied for and granted. Information regarding any environmental permit exemptions should also be included.			

[4] As defined by Section 104 of the Water Resources Act 1991 (as amended) a Controlled Water includes with relevance to this proposed scheme all inland freshwaters such as a watercourse (including an underground river or watercourse and an artificial river or watercourse; which is neither a public sewer nor a sewer or drain which drains into a public sewer), lake, reservoir or pond (whether it is natural or artificial or above or below ground; and discharges into a relevant river or watercourse or into another lake or pond which is itself a relevant lake or pond) and groundwater. Where a lake, pond or watercourse may be ephemeral, the section or reach that may periodically dry up is also considered a Controlled Water.

5. Environmental asset data and as built drawings

5.1 Thames Valley Environmental Record Centre (TVERC)

5.1.1 The TVERC is the only organisation in Berkshire and Oxfordshire providing a comprehensive ecological information hub through which critical knowledge can be shared to support scientific research and responsible decision-making.

5.1.2 Specific environmental data is supplied by service providers, local authorities and other bodies which is collated, analysed and stored in a Geographical Information System (GIS) database.

5.1.3 This data is readily available and used to assist in managing the environment, within and surrounding the strategic road network.

5.1.4 The TVERC, enables consistent and accurate recording and retrieving of specific environmental data, improves understanding of the environmental issues and opportunities that must be considered for a development and assist designers and network management agents in the collection of environmental data and use this information to develop specific environmental management programmes and strategies, including Environmental Management Plans (EMPs).

5.1.5 The following species surveys were undertaken by AECOM between 2019 and 2021. This data will be submitted to OCC and TVERC. The reports of the species surveys are as follows:

- Extended Phase 1 Habitat Survey (AECOM, 2019/2020/2021)
- Reptile Survey Report (AECOM, 2020)
- Dormouse Survey Report (AECOM, 2020)
- Bat Roost Potential Survey (AECOM, 2020/2021)
- Badger Survey Report (AECOM, 2020/2021)
- Water Vole and Otter Survey Report (AECOM, 2020/2021)
- Great Crested Newt Survey Report (AECOM 2020)
- Aquatic Ecology Survey Report (AECOM, 2020)
- Breeding Birds Survey Report (AECOM, 2020)
- Wintering Birds Survey Report (AECOM, 2019-20)
- Terrestrial Invertebrate Survey Report (AECOM, 2020)
- Hedgerow and Arable Plant Survey Report (2020)

5.1.6 The following additional documents have been submitted to Oxfordshire County Council to fulfil this requirement:

- Landscape Design (AECOM, 2021)
- Outline Landscape and Biodiversity Management Plan (AECOM, 2021)
- Biodiversity Net Gain Assessment (AECOM, 2021)

- Drainage Strategy (AECOM, 2021)
- Geophysical Survey Report (Phase, 2020)
- Geotechnical Investigation Report (AECOM, 2021)
- Preliminary Water Framework Directive Assessment (AECOM, 2021)
- Flood Risk Assessment (AECOM, 2021)
- Agricultural Land Classification (Reading Agricultural Consultants, 2020)
- Agricultural Circumstances (Reading Agricultural Consultants, 2020)
- Arboricultural Impact Assessment (AECOM, 2021)
- Tree Constraints Plan (AECOM, 2021)
- Archaeological Trenching Report (Wessex Archaeology, 2021)
- Minerals and Waste Safeguarding Preliminary Assessment (AECOM, 2021).

5.1.7 All reports as listed above have been issued to Oxfordshire County Council as part of the Planning Application.

6. Details of Maintenance and OEMP Monitoring Activities

6.1 Introduction

6.1.1 This section lists systems of recording and inspections that will be required to maintain an audit trail of the environmental obligations of the Scheme. This will be managed through the Quality and Safety Management Systems (QMS) and the Environmental Management System (EMS) of the PC, meeting the ISO14001:2015 (Ref 6.1) standards.

6.1.2 The system will include methods for monitoring, recording and implementing environmental management on site, and for responding to any noted areas of non-compliance. This will ensure that a high standard of environmental control is maintained through the construction programme of the Scheme through the corrective action system managed by the PC.

6.2 Monitoring, Auditing and Corrective Action

6.2.1 The EM for the Scheme will be responsible for evaluating the effectiveness of the OEMP and developing a programme to monitor regulatory compliance and the effectiveness of environmental mitigation included in the CEMP.

6.2.2 Monthly internal audits to include a review of the requirements of the EIA and CEMP should be undertaken to identify areas of compliance and non-compliance.

6.2.3 The PC/EM to prepare and implement a non-compliant/non-conformance action tracking plan for investigating cause and identifying corrective actions in response to environmental non-compliances. The audit will report on compliance with the contract specification, environmental best practice and site-specific method statements. This will include the review of the monitoring, recording and reporting procedures being maintained by the PC throughout the Scheme.

6.2.4 Additional training or briefing to be implemented to avoid repetition of non-compliance. All corrective actions to be recorded by EM and reported to the client.

6.2.5 The frequency of monitoring and maintaining the CEMP should be decided by the EM and Contractor; however, regularity should be established and maintained.

6.3 Environmental Management Systems (EMS)

6.3.1 EMS requirements will need to be maintained throughout the Scheme. Contractors are required to be accredited or seeking to be accredited under ISO14001:2015 (Ref 6.1) as this indicates an understanding and implementation of an EMS for recording, monitoring and managing a project.

6.3.2 The level of environmental management will be monitored to assess compliance with the contract and environmental standards through inspections, and audits. Subject to the contract arrangements, the responsibility for maintaining correspondence and day to day records will rest with the individual organisations and their internal systems. This includes original copies of correspondence and record copies of issued documentation together with records of subsequent changes. Copies are to be kept on site and circulated to appropriate personnel for action or information only.

6.4 Reporting

6.4.1 The PC is responsible for regular reporting to the client and statutory authorities with an interest in the Scheme, with regard to any significant modification to the CEMP, environmental incidents, significant changes in the design as a result of environmental constraints and results of environmental monitoring.

6.4.2 A series of key performance indicators will be developed to track performance against the key elements of the CEMP. The PC will prepare reports against the actions and targets within the CEMP each week to be submitted to the Client.

7. Induction, Training and Briefing Procedures for Staff

7.1 Introduction

7.1.1 All individuals employed on the contract are required to have the appropriate training and experience required for the implementation of this OEMP; particularly those members of staff identified as having an environmental role must be suitably experienced and competent to undertake the role.

7.1.2 This section provides an outline of the key requirements regarding training, induction and briefing procedures for staff to ensure compliance to environmental requirements.

7.2 General Training

7.2.1 When carrying out tasks, everyone must give due regard to the natural environment and local community. The Site Manager or PC is responsible for ensuring that all staff are adequately trained and competent to undertake the scope of works in a safe and environmentally friendly manner. The following procedures should be implemented as part of training and induction for the proposed scope of works:

- Site induction, including relevant environmental issues;
- Environmental posters and site notices;
- Method statement and risk assessment briefings;
- Toolbox talks, including instruction on incident response procedures; and
- Key project specific environmental issues briefings.

7.2.2 The site-specific Safety, Health & Environmental Induction will incorporate the pertinent points of this OEMP for all site personnel and visitors. Each induction and briefing will be recorded, and individuals will be required to acknowledge receipt and understanding of the briefing. Records of induction and briefings shall be kept at the site office by the Site Manager.

7.2.3 The PC will also provide additional topic specific toolbox talks to all staff working on site to cover the procedure for dealing with minor and major chemical spillages and emergency response to serious pollution incidents. The PC will provide additional training to staff, such as with regards to the management of construction site runoff containing high quantities of fine sediment.

Environmental competencies

7.2.4 The PC must ensure all personnel conducting environmental tasks are suitably qualified or experienced for the roles and responsibilities that they are employed to undertake.

7.2.5 The PC will monitor and record that all staff have attended the relevant environmental induction and training as listed above (including updated or new training) prior to undertaking any activities on site.

Training and site induction

7.2.6 All site personnel and visitors are to receive Site Safety induction and Environmental Awareness training from the PC before commencing activities on site. The list below is not exclusive but environmental training at Induction will at least include the following:

- Company/Project Environmental Policy
- Site environment
- Fuel containment
- Earthworks and Excavations (Risks of exposing contamination)
- Pollution protocol and measures for example use of spill kits
- Defined Materials Storage area (excavated and imported)
- Defined waste areas - Domestic and construction materials
- Wheel wash – road sweeping
- Dust and emissions control
- Noise control
- Vibration control
- Site traffic protocols and routes in the form of a Construction Traffic Management Plan - haul routes, staff travel to site plan
- Warning signs
- Site Inspection and monitoring forms
- Material procurement
- Toolbox talks where relevant to specific works
- Communication Systems on site – dealing with the public, incident and near miss reporting inclusive of environment
- Site organisation, key personnel responsibilities and contact details
- Emergency Response Plan(s) for addressing Safety and Environmental issues
- Contamination risk management
- Update and maintain site specific toolbox talks, or advisory sheets relevant to the Scheme

Once undertaken, information on Toolbox talks will be posted within common use areas such as welfare units and office reception areas. Key environmental issues linked to the programme will be targeted on the notice board as an aide memoir to all staff on site for example seasonal environmental constraints such as bird nesting seasons.

8. References

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Ref 3.5 British Standards BS3998:2010: Tree work. Recommendations.

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Ref 3.25 Environment Agency, Waste Classification – Guidance on the classification and assessment of waste (1st Edition v1.1) Technical Guidance WM3, 2018.

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Ref 3.29 The Control of Substances Hazardous to Health Regulations 2002. Available at: https://www.legislation.gov.uk/uksi/2002/2677/contents/made.

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