Curtis Hall Ltd

Cardiff Park and Ride East, Llanrumney

Information to Inform Habitats Regulations Assessment

UK0041515-HRA
December 2025

Public

Curtis Hall Ltd

Cardiff Park and Ride East, Llanrumney

Information to Inform Habitats Regulations Assessment

Type of document (version) Public

Project no. UK0041515

Our Ref. No. UK0041515-HRA

Date: December 2025

WSP

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

Phone: +44 2920 769 200

WSP.com

Quality control

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	For issue			
Date	December 2025			
Prepared by	Manasvi Singh			
Signature	Manasvi.Singh@wsp.com Digitally signed by Manasvi.Singh@wsp.com DN: cn=Manasvi.Singh@wsp.com Reason: I am the author of this document Date: 2025.12.01 09:23:36			
Checked by	Gabrielle Horup			
Signature	Digitally signed by Kate.Fisher@wsp.com DN: cn=Kate.Fisher@wsp.com Reason: I am signing this document on behalf of Gabrielle Horup Date: 2025.12.01 09:31:05 Kate.Fisher@wsp.com			
Authorised by	Katharine Fisher			
Signature	Digitally signed by Kate.Fisher@wsp.com DN: cn=Kate.Fisher@wsp.com Reason: I am approving this document Date: 2025.12.01 09:31:27 Kate.Fisher@wsp.com			
Project number	UK0041515			
Report number	UK0041515-HRA			
File reference	\\uk.wspgroup.com\central data\Projects\70121xxx\70121803 - Cardiff East Park and Ride\03 WIP\3d - Reporting\HRA			

Contents

Figures

Appendices

Executive Summary

WSP UK Ltd. was commissioned by Curtis Hall Ltd to provide information to inform a Habitats Regulations Assessment (HRA), to support a hybrid planning application for redevelopment at Cardiff East Park & Ride, west of Llanrumney in Cardiff, Wales (central National Grid Reference: ST 21265 80953) (the 'Proposed Development').

The application seeks:

- outline planning permission with all matters reserved except for access for the development of a data centre campus (Use Class B8) including site preparation, new buildings, an energy centre, substations and internal accesses, infrastructure, spaces, facilities, landscaping, surface water drainage features and other works that will be needed to construct and serve the campus; and
- full planning permission for amendments to the existing access road, including the provision of a roundabout, the provision of a bridge across the Rhymney River, site wide landscaping and associated works.

Outline elements of the application will be confirmed via a future reserved matters application.

Under the requirements of the European Council Directives 92/43/EEC 'Habitats Directive' and 2009/147/EC 'Birds Directive' it is necessary to consider whether the proposed project may have significant effects upon areas of nature conservation importance designated/classified under the Directives. This requirement is translated into UK law through the Conservation of Habitats and Species Regulations 2017 (as amended) 'The Habitats Regulations'. The UK government has set out the step wise approach which should be followed to enable Competent Authorities to discharge their duties under The Habitats Regulations. The Habitats Regulations Assessment (HRA) process is usually summarised in four distinct stages of assessment, and this report presents information to enable the assessment required as part of Stage 1 and Stage 2 of that process. The scope of this report is therefore to establish whether the project will hav`e Likely Significant Effects (LSE) upon sites of European importance[1] and Ramsar sites, which are, for the purpose of this assessment, collectively referred to as the 'Habitats Sites'. Ramsar sites are treated as if they were European Sites by virtue of government policy.

The Proposed Development is hydrologically connected to the Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA), and Ramsar site. The Proposed Development is also located within 30km of three bat SACs: Mendip Limestone Grasslands SAC, North Somerset and Mendip Bats SAC, and Wye Valley and Forest of Dean Bat Sites SAC.

This HRA concluded that no LSEs are anticipated on any Habitats Sites from the Proposed Development as a result of changes in water quality during construction, the spread of Invasive Non-Native Plant Species (INNS), impact on fish qualifying features due to increased shading, or impact on the bat qualifying features from any of the bat SACs during construction, with no residual effects or potential for in-combination impacts. However, potential LSE has been identified as a result of

[1] Sites of European importance include Special Areas of Conservation (SAC), Special Protection Areas (SPA), candidate SACs and potential SPAs. It is also a matter of government policy that Ramsar sites and potential SACs and SPAs are given the same protection as other European Sites in the HRA process, as described in para 6.4.30 of the Planning Policy Wales (PPW). In that context, Ramsar sites have also been considered in this report where applicable.

noise and vibrational disturbance to fish qualifying features of the Severn Estuary Ramsar during construction.

In accordance with case law, People Over Wind and Sweetman v Coillte Teoranta (Case-323/17), mitigation measures cannot be considered when screening for LSE. In the absence of details for the fire-water management, an outline element of the application, including containment, treatment, and discharge system, a precautionary LSE is identified. As a result, the Proposed Development has proceeded to Stage 2: Appropriate Assessment to assess its effect on the integrity of the Severn Estuary SAC, SPA and Ramsar.

In Stage 2, mitigation measures have been recommended to address the LSE, including seasonal and time restrictions on piling activities to avoid effects on salmon *Salmo salar*, sea trout *S. trutta* and eel *Anguilla anguilla* of Severn Estuary Ramsar, as well as measures for the management of fire-water runoff. As detailed design of the fire-water containment, treatment and discharge system is not yet available, the HRA has assessed a reasonable worst-case scenario and identified functional performance standards necessary to ensure protection of the designated sites. These standards require full capture, containment and treatment of fire-water, with discharge restricted to quality-verified flows that avoid hydraulic disturbance.

On the basis that these mitigation measures and performance standards will be delivered, it has been concluded that there will be no adverse effects upon the integrity of the Severn Estuary SAC, SPA and Ramsar resulting from the Proposed Development.

It is understood that the bridge design remains unchanged from the extant planning permission, and the assessment has been completed on that basis. Details of the proposed fire-water runoff management system is currently unavailable. In the absence of these details, the assessment has been based on the functional performance standards that the final system will need to achieve, reflecting recognised best industry practice and relevant pollution-prevention principles.

1 Introduction

1.1.1. WSP UK Ltd was commissioned by Curtis Hall Ltd to provide information to inform a Habitats Regulations Assessment (HRA), to support a hybrid planning application for redevelopment at Cardiff East Park & Ride, west of Llanrumney in Cardiff, Wales (central National Grid Reference: ST 21287 80932) (the 'Proposed Development'). The 'Site', as referred to within this report, is shown by both, the red line boundary and the off-site mitigation / compensation area together in **Figure 1**.

1.1.2. The application seeks:

- outline planning permission with all matters reserved except for access for the development of a data centre campus (Use Class B8) including site preparation, new buildings, an energy centre, substations and internal accesses, infrastructure, spaces, facilities, landscaping, surface water drainage features and other works that will be needed to construct and serve the campus; and
- full planning permission for amendments to the existing access road, including the provision of a roundabout, the provision of a bridge across the Rhymney River, site wide landscaping and associated works.

1.1.3. The Proposed Development follows the same principles and ecological mitigation framework as the extant planning permission (Ref. 22/02673/FUL) previously granted for the Cardiff East Park and Ride. The Proposed Development has evolved through extensive pre-application consultation with the Council and other key stakeholders. The Proposed Development provides the opportunity to provide for critical national digital and economic infrastructure and related employment. The Proposed Development would also facilitate a new bridge connecting the Site with Llanrumney.

1.1.4. Under the requirements of the European Council Directive 92/43/EEC 'Habitats Directive' and the Council Directive 2009/147/EC 'Birds Directive' it is necessary to consider whether the Proposed Development may have significant effects upon areas of nature conservation importance designated/classified under the Directives. This requirement is translated into UK law through the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations').

1.1.5. The Habitats Regulations place a duty upon 'Competent Authorities' (potentially Cardiff Council in this instance) to consider Likely Significant Effects (LSE) upon sites of European importance[2] prior to granting consent for projects or plans. Should LSE be identified by the initial screening process, it is necessary to further consider the effects by way of an 'Appropriate Assessment' including consideration of avoidance and mitigation measures that may be required. Any plan or project that would lead to Adverse Effects on Integrity (AEoI) of these sites cannot be permitted without meeting strict additional tests. Overall, this process of assessment is known as Habitats Regulations Assessment (HRA). Further details of the applicable legislative context are summarised within **Section 1.2**, and a summary of the overall HRA process is provided in **Section 1.3**.

1.1.6. For the purpose of this assessment, Special Areas of Conservation (SAC), Special Protection Areas (SPA), and Ramsar site will be hereafter collectively referred to as the 'Habitats Sites'.

[2] Sites of European importance include Special Areas of Conservation (SAC), Special Protection Areas (SPA), candidate SACs and potential SPAs. It is also a matter of government policy that Ramsar sites and potential SACs and SPAs are given the same protection as other European Sites in the HRA process, as described in para 6.4.30 of the Planning Policy Wales (PPW). In that context, Ramsar sites have also been considered in this report where applicable.

1.1.7. This document provides information to enable the Competent Authority to both screen the Proposed Development for LSEs and undertake an Appropriate Assessment of any LSEs identified, including whether mitigation can be used to avoid or reduce the significance of any AEoI. It will also determine whether further HRA stages need to be applied to achieve compliance with legislation. It covers the following elements:

- determining whether the project is directly connected with or necessary for the management of the Habitats Sites;
- describing the project that may lead to LSEs on Habitats Sites;
- undertaking an initial scoping for potential direct and indirect impacts upon Habitats Sites;
- assessing the LSEs identified as resulting from these impacts, both alone and in-combination with other plans and projects;
- excluding sites where it can be objectively concluded that there will be no likely significant effects;
- undertaking a detailed assessment to determine if LSEs would result in AEoI of the Habitats Sites and require mitigation; and
- determine whether residual effects would remain following the application of mitigation and whether further HRA stages are required.

1.1.8. A description of the designated sites identified are provided within **Section 3**. Consideration of potential effects of the Proposed Development upon the designated sites and whether these are likely to be significant is provided within **Section 5**, including an assessment of potential in-combination effects.

1.2 Habitats Regulations Assessment Context

Legislative Context

1.2.1. The Habitats Directive is translated into UK law through the Habitats Regulations; Regulation 63 (1) states that *'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—*

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of that site,

—must make an Appropriate Assessment of the implications for that site in view of that site's conservation objective.

63 (5) in the light of the conclusions of the assessment, and subject to regulation 64 (considerations of overriding public interest), the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European off shore marine site (as the case may be)'

1.2.2. Like the Habitats Directive, the Habitats Regulations also make allowance for projects or plans to be completed if they satisfy '*imperative reasons of overriding public interest (IROPI)*'[3]. Regulations 64 and 68 relate to such situations.

[3] '*(a) reasons relating to human health, public safety or beneficial consequences of primary importance to the environment; or . (b) any other reasons which the competent authority, having due regard to the opinion of the European Commission, consider to be imperative reasons of overriding public interest.*'

1.2.3. Following the UK's departure from the European Union, the UK Government has issued guidance (Defra, 2021) on the implementation of these regulations, providing detailed instructions on implementing the regulations and conducting assessments, to ensure continuity in habitat protection despite the departure from the EU. This guidance clarifies that:

"*SACs and Special Protection Areas (SPAs) in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes:*

- *existing SACs and SPAs*
- *new SACs and SPAs designated under these Regulations*.

Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.
Maintaining a coherent network of protected sites with overarching conservation objectives is still required in order to:

- *fulfil the commitment made by government to maintain environmental protections; and*
- *continue to meet our international legal obligations, such as the Bern Convention, the Oslo and Paris Conventions (OSPAR), Bonn and Ramsar Conventions".*

Policy Context

1.2.4. Planning Policy Wales (PPW) Edition 12 (Welsh Government, 2024), provides the overarching national planning policy framework for Wales. PPW policies guide the planning process and HRAs are a specific assessment that must be carried out when plans or projects could affect European sites.

1.2.5. It is a matter of Welsh Government policy (PPW - paragraphs 6.4.29 and 6.4.30) that sites designated under the 1971 Ramsar Convention for their internationally important wetlands (commonly known as Ramsar sites), and proposed SACs (pSAC) and proposed SPAs (pSPA) are also considered in the same way as SACs and SPAs.

Case Law Context

1.2.6. In HRA, case law plays a crucial role in defining how the regulations should be interpreted and applied. It outline the legal standards and procedural requirements that must be followed during the assessment process.

1.2.7. For example, the People Over Wind case (C-323/17) (People Over Wind, Peter Sweetman v Coillte Teoranta, 2018) clarified an important point in the HRA process: mitigation measures cannot be considered during the initial screening stage. This means that when determining whether a project or plan is likely to have a significant effect on a Habitats Site, one must assess the potential impacts without factoring in any measures that might be taken to reduce those impacts.

1.3 Stages of Habitats Regulations Assessment

1.3.1. Guidance on the Habitats Directive (European Commission, n.d.) sets out the step wise approach which should be followed to enable Competent Authorities to discharge their duties under the Habitats Directive and provides further clarity on the interpretation of Articles 6 (3) and 6 (4). The

process used is usually summarised in four distinct stages of assessment. These stages are outlined as follows:

- **Screening (Stage 1)**: the process to identify the likely effects of a plan or project upon the qualifying features and conservation objectives of a Natura 2000 site, either alone or in combination with other plans or projects and consider whether there will be an LSE.
- **Appropriate Assessment (Stage 2)**: detailed consideration of LSEs and whether they would lead to significant AEoI of the Natura 2000 site, either alone or in combination with other plans and projects. Where there are adverse effects, mitigation is considered to avoid or offset them. If these mitigation options cannot avoid adverse effects, then development consent can only be given if Stages 3 and 4 are followed.
- **Assessment of Alternative Solutions (Stage 3)**: the process which examines alternative ways of achieving the objectives of the plan or project that avoid or have lesser AEoI of the Natura 2000 site.
- **Imperative Reasons of Overriding Public Interest (IROPI) (Stage 4)**: the assessment where no alternative solutions exist and where adverse effects remain: an assessment of whether the development is necessary for IROPI and, if so, of the compensatory measures needed to maintain the overall coherence of the site or integrity of the Natura 2000 site.

1.4 Habitats Regulations Assessment Methodology

1.4.1. The precautionary principle is applied at all stages of the HRA process. In relation to screening (Stage 1) this means that projects or plans where effects are considered likely and those where uncertainty exists as to whether effects are likely to be significant must subject to further stages in HRA process. The screening process is wide-ranging and takes into consideration the sensitivity and mobility of Habitats Sites' Qualifying Features, e.g. marine mammal and bat species, as well as the nature of the proposed works and working methods.

1.4.2. Appropriate Assessment (Stage 2) follows screening and is the subject of this report. LSEs identified within Stage 1 are subject to detailed examination to determine whether they would have AEoI of Habitats Sites, either alone or in combination with other plans or projects, in view of the Habitats Site's conservation objectives.

Integrity

1.4.3. The currently applied definition of integrity in relation to Habitats Sites comes from Office of the Deputy Prime Minister Circular (OPDM, 2005) which states: 'the coherence of the site's ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or populations of species for which the site has been designated. In addition, European Commission guidance (European Commission, n.d.) on managing Habitats Sites emphasises that site integrity involves its ecological structure, function and ecological processes and that the assessment of adverse effects should focus on, and be limited to, the site's conservation objectives.

Adverse effects

1.4.4. An AEoI is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation. In addition, an adverse effect would be one which caused a detectable reduction of the features for which a site was designated, at the scale of the site rather than at the scale of the location of the impact.

1.4.5. Guidance defines the conservation status of species as ‘favourable’ when:

- Population dynamics of the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is predicted to maintained for the foreseeable future; and
- There is, and will probably continue to be, a sufficient habitat to maintain its populations on a long-term basis.

1.4.6. ‘Favourable’ conservation status of habitats is defined in guidance as occurring when:

- Its natural range and areas it covers within that range are stable or increasing; and
- The species structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.

1.4.7. European Commission guidance also recommends that, when considering the ‘integrity of the site’, it is important to take account of the possibility that effects can manifest over the short, medium or long-term.

1.4.8. Where examination reveals adverse effects would arise as a result of the Proposed Development, mitigation options are considered that would avoid or offset effects and maintain the integrity of the Habitats Site and its Qualifying Features.

1.5 Further HRA Stages (Stage 3 and 4)

1.5.1. These are outside of the purpose of this report, but the findings of the Appropriate Assessment would define the scope of any assessment of alternative solutions to the Proposed Development (Stage 3) that would be undertaken, and also inform arguments at Stage 4. If mitigation options identified at Stage 2 cannot avoid or offset adverse effects, then development consent can only be given if Stages 3 and 4 are followed.

1.6 Consultation

1.6.1. The Council’s Ecologist was consulted on the overall scheme, including the HRA. Their review confirmed that the embedded measures for the Proposed Development, reflecting recognised industry best practices for the prevention of water pollution, were sufficient to conclude that there would be no LSE on Habitats Sites in terms of change in water quality during construction, consistent with the findings of the previous HRA undertaken for the extant application. However, a reassessment needs to be undertaken to ensure that any new considerations were appropriately addressed, particularly in relation to the potential effects of climate change and the storage of fuels and chemicals associated with the data centre, including the risk of contaminants entering the river in the event of a fire or similar incident. No formal consultation with other key engagement groups (NRW or Welsh Government) has been undertaken in respect to the Proposed Development as part of the HRA at the time of writing.

2 Project Description

2.1 Site Description

2.1.1. The Site comprises approximately 23.4ha of land at the existing Cardiff Park and Ride East and 4.76ha of off-site area within the administrative boundary of Cardiff City Council. The existing Park and Ride contains a hard-surfaced area of 4.9ha with approximately 900 car parking spaces, as well bus drop-off and pick-up points, an office/amenity building and various compounds. The off-site mitigation / compensation area comprises predominantly regularly maintained amenity grassland, primarily utilised as sports pitches. To the south of these pitches, adjacent to the River Rhymney, there is an area of poor semi-improved grassland that is subject to less management. In the southern section of the off-site area, scattered hawthorn and naturally regenerated oak saplings are present. The Site is accessed from the A48, Eastern Avenue.

2.1.2. In addition to the park and ride, the Site features areas of woodland and scrub land with public rights of way and informal footpaths. The total developed site area would comprise 7.4ha (including the park and ride). The Rhymney River runs along the southern boundary of the Site, with the Rhymney Trail running parallel to the river. The Rhymney Trail crosses the river via an existing footbridge to the south of the Site.

2.1.3. The Site is not shown on the Council's adopted proposals map to be allocated for any specific use. However, in terms of other planning designations, the Site features an area of ancient woodland to the north and a small area of ancient woodland to the south, in addition to a number of Tree Preservation Order (TPO) trees. The north of the Site and a corridor along the Rhymney River lies in an area of high flood risk and the rest of the Site lies in a low flood risk area. The Site lies within the Rhymney River corridor.

2.1.4. Immediately to the north-west lies the dual carriageway (A48) which extends to the south towards Cardiff City centre. Beyond this lies the residential area of Pentwyn, while to the east lies the residential area of Llanrumney. To the south, on the opposing side of the river, planning permission for a residential scheme of 98 residential units was permitted under application ref:18/02594/MJR. Construction on that site has been largely completed.

2.2 Work Details including Method of Works (see Appendix A: Outstanding Information)

2.2.1. While outline elements of the detailed design, remain to be confirmed through future reserved matters applications, a worst-case scenario assessment has been conducted in accordance with the precautionary principle under the Habitats Regulations. This approach is deemed appropriate and sufficient to meet the requirements of this report.

Bridge Construction

2.2.2. It is envisaged that the construction of the bridge will involve three piers on the Proposed Development side which will have localised foundations created using tracked machinery. The Pier on the east (last one before the river) is to be set back from the river bank by approximately 10m. The pre-cast concrete beams (~21m) for the three spans on the Proposed Development side will be swung into place via a crane. A temporary works design has facilitated that the crane will then relocate to the first span and swing into place the second span beams and so on with the third span.

2.2.3. The concrete abutment and head wall to the Rhymney side is set back from the back by some 7.5m and will be accessed and constructed through the 'Wates development'. The main precast beams (29.6m) for the river span will be lifted into place from the Rhymney side of the river.

Fire-water runoff management

2.2.4. For the purposes of this HRA, the assessment of the lagoon system and fire-water management is based on the functional requirements and performance standards. For further details and limitations regarding these elements, please see **Appendix B**.

3 Identifying Relevant Habitats Sites

3.1 Study Area

3.1.1. This defines the geographic limits from the Proposed Development used to identify Habitats Sites to be considered within the HRA process and be screened for LSEs. The study area reflects the high sensitivity of qualifying features of Habitats Sites and the fact they often support species that are mobile and widely ranging, such as bats, birds and fish. The Habitats Sites are therefore within the Zone of Influence (ZoI) of the Proposed Development, meaning they could potentially be affected by the activities included in the Proposed Development.

3.1.2. The study area was defined as a buffer of 10km surrounding the Proposed Development, consideration was also given to any Habitats Sites that might be hydrologically connected and located beyond 10km. This distance was extended to 30km for any SAC where bat species are a qualifying interest feature, given their wider foraging ranges.

3.2 Sites Identified

3.2.1. Four Habitats Sites within 10km of this study area were identified, three of which are downstream (following the course of the River Rhymney) from the Proposed Development, and three Habitats Site having bat species as qualifying interest feature was identified within 30km of the Proposed Development. Identified Habitat Sites are:

- Severn Estuary/ Môr Hafren SAC (3.1km south at its nearest point & 5.07km for hydrological connection);
- Severn Estuary SPA (3.1km south at its nearest point & 5.07km for hydrological connection);
- Severn Estuary Ramsar (3.1km south at its nearest point & 5.07km for hydrological connection);
- Cardiff Beech Woods SAC (6.82km north-west);
- Mendip Limestone Grasslands SAC (21.4km south-east);
- North Somerset and Mendip Bats SAC (26.9km south-east); and
- Wye Valley and Forest of Dean Bat Sites SAC (29.8km north-west).

3.2.2. The Severn Estuary is the largest example of a coastal plain estuary in the United Kingdom and one of the largest estuaries in Europe. Roughly two thirds of the total area is composed of subtidal habitats (stable sandbanks and shifting sediments of gravel, sand and mud) and one third is composed of intertidal habitats (tide washed mud and sand, saltmarshes and rocky shores). The estuary supports a wide array of habitats and species of international importance for nature conservation. Sediment flows and fluxes affecting the estuary are of particular importance for estuarine processes and ecology and the morphology of the estuary is constantly changing due to the complex hydrodynamics. Sediment deposits provide essential material to maintain the mudflats, sandflats and saltmarsh (NE and CCW, 2009).

3.2.3. Cardiff Beech Woods SAC represents an area of semi-natural broadleaved woodland dominated by beech *Fagus sylvatica*. Cardiff Beech Woods is considered to be one of the best areas in the United Kingdom for *Asperulo-Fagetum* beech forests. The site contains one of the largest concentrations of *Asperulo-Fagetum* in Wales, and represents the habitat close to the western limit of its past native range in both UK and Europe. The SAC is well connected to other woodland and to some extent other semi-natural habitat. It sits within a significant functional woodland network, extending onto the

coalfield, although this becomes more fragmented in the countryside south and south-west of the SAC (NRW, 2014).

3.2.4. Mendip Limestone Grasslands SAC comprises coastal and inland sections of the Carboniferous Limestone outcrops of the Mendips. It contains a wide range of habitats including ancient and secondary semi-natural broadleaved woodland, unimproved calcareous grassland and a complex mosaic of calcareous grassland and acidic dry dwarf-shrub heath. The coastal headland and inland hills support the largest area of sheep's-fescue – carline-thistle (*Festuca ovina – Carlina vulgaris*) grassland in England, including two sub-types (the dwarf sedge *Carex humilis* and honewort *Trinia glauca* sub-communities) known from no other site in the UK. Areas of short-turf sheep's-fescue – meadow oat-grass *Helictotrichon pratense* grassland also occur inland. The site is exceptional in that it supports a number of rare and scarce vascular plants typical of the oceanic southern temperate and Mediterranean elements of the British flora (English Nature, 2005a).

3.2.5. North Somerset and Mendip Bats SAC has the Cheddar complex and Wookey Hole areas that support a wide range of habitats which provide feeding grounds for bats. These include semi-natural dry grasslands of which the principal community present is sheep's-fescue – meadow oat-grass grassland which occurs on rock ledges and on steep slopes with shallow limestone soil, especially in the dry valleys and gorges and on the south-facing scarp of the Mendips. King's Wood and Urchin Wood have developed over limestone which outcrops in parts of the site and forms a steep scarp to the south-east. There is mostly oak *Quercus robur* and ash *Fraxinus excelsior* woodland, though some areas are dominated by small-leaved lime *Tilia cordata* with both maiden and coppice trees. Other canopy trees include yew *Taxus baccata*, cherry *Prunus avium* and wild service tree *Sorbus torminalis*. There is a rich ground flora including many ferns and mosses. The limestone caves and mines of the Mendips and the north Somerset hills provide a range of important breeding and hibernation sites for lesser horseshoe bat *Rhinolophus hipposideros* and greater horseshoe bat *Rhinolophus ferrumequinum* (English Nature, 2005b).

3.2.6. The Wye Valley and Forest of Dean Bat SAC is a cross border site, straddling the Welsh/English Border. It is made up of thirteen component SSSIs, of which four are in Wales: Llangovan Church, Mwyngloddfa Mynydd-bach, Newton Court Stable Block and Wye Valley Lesser Horseshoe Bats SSSIs. Wye Valley Lesser Horseshoe Bats SSSI is actually four separate summer bat roosts, consisting of Penallt Old Church, The Priory at Llandogo, Itton Court Stud and Tregeiriog Farm. During the summer it is possible to see large numbers of bats coming and going from the roosts at dusk and dawn. Species numbers will vary slightly from year to year, but Penallt Old Church supports at least 250 adult lesser horseshoe bats; The Priory, Llandogo supports at least 350 adult lesser horseshoe bats; Itton Court Stud supports at least 80 adult lesser horseshoe bats; and Tregeiriog Farm supports at least 80 adult lesser horseshoe bats. Newton Court Stable Block should support a summer population of greater horseshoe bats of at least 55 adult bats and 30 juveniles. Mwyngloddfa Mynydd-bach continues to support a hibernation roost, with at least 60 adult lesser horseshoe bats (NRW, 2008).

3.2.7. All seven Habitats Sites are detailed in **Table 3-1** and shown on **Figure 2.**

3.2.8. With regard to the qualifying features listed in **Table 3-1**, the conservation objectives for the Severn Estuary SAC and SPA (NE and CCW, 2009), Cardiff Beech Woods SAC (NRW, 2014), and The Wye Valley and Forest of Dean Bat SAC (NRW, 2008) are as follows:

Favourable conservation status as defined in Article 1 of the Habitats Directive.

Conservation status of a natural habitat *means the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory referred to in Article 2.*

The conservative [sic] status of a natural habitat will be taken as 'favourable' when:

- *its natural range and the areas it covers within that range are stable or increasing, and*
- *the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and*
- *conservation status of typical species is favourable as defined in [Article] 1(i).*

Conservation status of a species *means the sum of the influences acting on the species concerned that may affect the long-term natural distribution and abundance of its populations within the territory referred to in Article 2;*

The conservation status of a species will be taken as 'favourable' when:

- *population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and*
- *the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*
- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*

3.2.9. With regard to the qualifying features listed in **Table 3-1**, the conservation objectives for the Mendip Limestone Grasslands SAC (NE, 2018a), and North Somerset and Mendip Bats SAC (NE, 2018b) are as follows:

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- *The extent and distribution of qualifying natural habitats and habitats of qualifying species*
- *The structure and function (including typical species) of qualifying natural habitats*
- *The structure and function of the habitats of qualifying species*
- *The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely*
- *The populations of qualifying species, and,*
- *The distribution of qualifying species within the site.*

3.2.10. Ramsar sites do not have conservation objectives. Since the Ramsar criteria of the Severn Estuary Ramsar is largely similar to those of the Severn Estuary SAC and SPA, the SAC and SPA's conservation objectives are considered broadly applicable and useful for the assessment of the Severn Estuary Ramsar site.

Table 3-1 - Relevant Habitats Sites

Site Name	Site Size (ha)	Reasons for designation summarised	Factor which may cause deterioration or disturbance / Threat or Pressure	Activities with greatest effect upon the sites, as listen on Natura 2000 standard data form
Severn Estuary SAC (UK0013030)	73,714.11	The Severn Estuary has been designated a SAC on the basis that it supports occurrences of habitat types and species listed in **Annexes I** and **II** respectively of the Nature Directives. The site qualifies for the following habitats listed in **Annex I** (NE and CCW, 2009): ■ Estuaries ■ Sandbanks which are slightly covered by sea water all the time (Subtidal sandbanks) ■ Mudflats and sandflats not covered by seawater at low tide (Intertidal mudflats and sandflats) ■ Atlantic salt meadows *Glauco-Puccinellietalia maritimae* ■ Reefs The site qualifies for the following species listed in **Annex II**: ■ Sea lamprey *Petromyzon marinus* ■ River lamprey *Lampetra fluviatilis* ■ Twaite shad *Alosa fallax*	Factors (NE and CCW, 2009): ■ Physical loss ■ Physical damage ■ Toxic contamination ■ Non-toxic contamination ■ Biological disturbance ■ Non-physical disturbance	Activities with greatest effect upon the site, as listed on Natura 2000 standard data (JNCC, 2015a) form are: Negative Impacts ■ *A02* - Modification of cultivation practices ■ *E06* - Other urbanisation, industrial and similar activities ■ *G01* - Outdoor sports and leisure activities, recreational activities ■ *J02* - Human induced changes in hydraulic conditions ■ *M01* - Changes in abiotic conditions Positive Impacts ■ *A02* - Modification of cultivation practices ■ *A04* – Grazing ■ *D05* - Improved access to site ■ *G03* - Interpretative centres

Site Name	Site Size (ha)	Reasons for designation summarised	Factor which may cause deterioration or disturbance / Threat or Pressure	Activities with greatest effect upon the sites, as listen on Natura 2000 standard data form
Severn Estuary SPA (UK9015022)	24,487.91	The Severn Estuary SPA is designated on the basis that it supports populations of species that are of importance under the Directive (2009/27/EC). The Severn Estuary SPA qualifies for internationally important populations of regularly occurring species as mentioned below (NE and CCW, 2009): ■ Bewick's swan *Cygnus columbianus bewickii* ■ Common redshank *Tringa totanus* ■ Common shelduck *Tadorna tadorna* ■ Dunlin *Calidris alpina alpina* ■ Gadwall *Anas strepera* ■ European white-fronted goose *Anser albifrons albifrons* ■ Internationally important assemblage of waterfowl (wildfowl & waders) - in addition to the above, the area supports assemblage of various species of waterbirds including wigeon *Anas Penelo*pe, teal *Anas crecca*, pintail *Anas acute*, pochard *Aythya farina*, tufted duck *Aythya fuligula*, ringed plover *Charadrius hiaticula*, grey plover *Pluvialis squatarola*, curlew *Numenius aquata* and whimbrel *Numenius phaeopus*.	Factors (NE and CCW, 2009): ■ Physical loss ■ Physical damage ■ Toxic contamination ■ Non-toxic contamination ■ Biological disturbance ■ Non-physical disturbance	Activities with greatest effect upon the site, as listed on Natura 2000 standard data (JNCC, 2015b) form are: <u>Negative Impacts</u> ■ *A02* - Modification of cultivation practices ■ *E06* - Other urbanisation, industrial and similar activities ■ *G01* - Outdoor sports and leisure activities, recreational activities ■ *J02* - Human induced changes in hydraulic conditions ■ *M01* - Changes in abiotic conditions <u>Positive Impacts</u> ■ *A02* - Modification of cultivation practices ■ *A04* – Grazing ■ *D05* - Improved access to site ■ *G03* - Interpretative centre
Severn Estuary Ramsar	24,701	The Severn Estuary Ramsar is designated on the basis that it supports habitats and populations of species, especially waterbird habitats, that are of importance under the Ramsar Convention on	As the Severn Estuary Ramsar coincides with the Severn Estuary SPA, the operations which may affect the Severn	From the Severn Estuary RIS (JNCC, 2008), factors (past, present or potential) adversely affecting the site's ecological

Site Name	Site Size (ha)	Reasons for designation summarised	Factor which may cause deterioration or disturbance / Threat or Pressure	Activities with greatest effect upon the sites, as listen on Natura 2000 standard data form
(UK11081)		Wetlands of International Importance. From the Severn Estuary Ramsar Information Sheet (RIS) (JNCC, 2008), the criteria applied to the designation of the Severn Estuary Ramsar are: ▪ **Ramsar criterion 1** - Due to the immense tidal range (second largest in world), this affects both the physical environment and biological communities. Habitats Directive **Annex I** features include: • H1110 Sandbanks which are slightly covered by sea water all the time • H1130 Estuaries • H1140 Mudflats and sandflats not covered by seawater at low tide • H1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) ▪ **Ramsar criterion 3** - Due to unusual estuarine communities, reduced diversity and high productivity. ▪ **Ramsar criterion 4** - This site is important for the run of migratory fish between sea and river via estuary. Species include: • Salmon *Salmo salar* • Sea trout *S. trutta* • Sea lamprey • River lamprey • Allis shad *Alosa alosa* • Twaite shad • Eel *Anguilla anguilla*.	Estuary SPA would also have some relevance for the Severn Estuary Ramsar. Hence, the threats to both the designations are considered similar.	character, including changes in land (including water) use and development projects are: ▪ Dredging ▪ Erosion ▪ Recreational/tourism disturbance

Site Name	Site Size (ha)	Reasons for designation summarised	Factor which may cause deterioration or disturbance / Threat or Pressure	Activities with greatest effect upon the sites, as listen on Natura 2000 standard data form
		It is also of particular importance for migratory birds during spring and autumn. ■ **Ramsar criterion 5 –** Assemblage of international importance (water birds). ■ **Ramsar criterion 6 –** Qualifying species/populations occurring at levels of international importance including: • Bewick's swan • European white-fronted goose • Common shelduck • Gadwall • Dunlin • Common redshank ■ **Ramsar criterion 8** – The fish of the whole estuarine and river system are one of the most diverse in Britain, with over 110 species recorded including salmon, sea trout, sea lamprey, river lamprey, allis shad, twaite shad and eel, which use the Severn Estuary as a key migration route to their spawning grounds in the many tributaries which flow in the Severn Estuary.		
Cardiff Beech Woods SAC (UK0030109)	115.62	The Cardiff Beech Woods have been designated a SAC on the basis that it supports occurrences of the following habitat types listed in **Annex I**: ■ *Asperulo-Fagetum* beech forests ■ *Tilio-Acerion* forests of slopes, screes and ravines	Factors (NRW, 2014): ■ Recreation ■ Grazing/browsing ■ Air pollution	Activities with greatest effect upon the site, as listed on Natura 2000 standard data (JNCC, 2015c) form are: <u>Negative Impacts</u>

Site Name	Site Size (ha)	Reasons for designation summarised	Factor which may cause deterioration or disturbance / Threat or Pressure	Activities with greatest effect upon the sites, as listen on Natura 2000 standard data form
				▪ *G01* - Outdoor sports and leisure activities, recreational activities ▪ *I02* - Invasive non-native species ▪ *K01* - Interspecific floral relations <u>Positive Impacts</u> ▪ *K02* - Biocenotic evolution, succession
Mendip Limestone Grasslands SAC (UK0030203)	415.24	The Mendip Limestone Grasslands has been designated a SAC on the basis that it supports occurrences of habitat types and species listed in **Annexes I** and **II** respectively of the Nature Directives. The site qualifies for the following habitats listed in **Annex I**: ▪ Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); ▪ European dry heaths ▪ Caves not open to the public ▪ *Tilio-Acerion* forests of slopes, screes and ravines;	Factors (NE, 2015a): ▪ Inappropriate scrub control ▪ Change in land management ▪ Disease ▪ Air Pollution: Impact of atmospheric nitrogen deposition	Activities with greatest effect upon the site, as listed on Natura 2000 standard data (JNCC, 2015d) form are: <u>Negative Impacts</u> ▪ *A02* – Modification of cultivation practices ▪ *H04* – Air pollution, air-borne pollutants ▪ *K02* – Biocenotic evolution, succession ▪ *K04* – Interspecific floral relations <u>Positive Impacts</u>

Site Name	Site Size (ha)	Reasons for designation summarised	Factor which may cause deterioration or disturbance / Threat or Pressure	Activities with greatest effect upon the sites, as listen on Natura 2000 standard data form
		The site qualifies for the following species listed in **Annex II**: ▪ Greater horseshoe bat		▪ *A02* – Modification of cultivation practices ▪ *A04* – Grazing ▪ *B02* – Forest and Plantation management & use
North Somerset and Mendip Bats SAC (UK0030052)	555.93	The North Somerset and Mendip Bats has been designated a SAC on the basis that it supports occurrences of habitat types and species listed in **Annexes I** and **II** respectively of the Nature Directives. The site qualifies for the following habitats listed in **Annex I**: ▪ Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); ▪ *Tilio-Acerion* forests of slopes, screes, and ravines;(Mixed woodland on base-rich soils associated with rocky slopes) ▪ Caves do not open to the public The site qualifies for the following species listed in **Annex II**: ▪ Lesser horseshoe bat ▪ Greater horseshoe bat	Factors (NE, 2015b): ▪ Under grazing ▪ Planning Permission: general ▪ Change to site conditions ▪ Forestry and woodland management ▪ Disease ▪ Air Pollution: impact of atmospheric nitrogen deposition	Activities with greatest effect upon the site, as listed on Natura 2000 standard data (JNCC, 2015e) form are: <u>Negative Impacts</u> ▪ *A04 – Grazing* ▪ *B02 – Forest and Plantation management & use* ▪ *E06 – Other urbanisation, industrial and similar activities* ▪ *K04 – Interspecific floral relations* ▪ *U – Unknown threat or pressure* <u>Positive Impacts</u> ▪ *A02 – Modification of cultivation practices* ▪ *A04 – Grazing*

Site Name	Site Size (ha)	Reasons for designation summarised	Factor which may cause deterioration or disturbance / Threat or Pressure	Activities with greatest effect upon the sites, as listen on Natura 2000 standard data form
				▪ *B02 – Forest and Plantation management & use*
Wye Valley and Forest of Dean Bat Sites SAC (UK0014794)	144.82	This complex of sites are on the border between England and Wales and contain, at the time of listing, by far the greatest concentration of lesser horseshoe bat Rhinolophus hipposideros in the UK, totalling about 26% of the national population. In addition, the site also supports large numbers of greater horseshoe bats Rhinolophus ferrumequinum. The entire site supports an exceptional breeding population of both species as the majority of sites within the complex are maternity roosts. The site also includes several disused mines which are used as hibernation roosts. The North Somerset and Mendip Bats has been designated a SAC on the basis that it supports lesser horseshoe bat and greater horseshoe bat, which are listed in **Annex II** of the Nature Directives.	Factors (NRW, 2008): ▪ Structure Condition ▪ Habitat Management ▪ Disturbance ▪ Interruption to flight lines ▪ Mortality from predation or vehicle collision	Activities with greatest effect upon the site, as listed on Natura 2000 standard data (JNCC, 2015f) form are: <u>Negative Impacts:</u> ▪ *G01* – Outdoor sports and leisure activities, recreational activities ▪ *J02* – Human induced changes in hydraulic conditions ▪ *J03* – Other ecosystem modifications <u>Positive Impacts:</u> ▪ *A02* – Modification of cultivation practices ▪ *D05* – Improved access to site ▪ *E04* – Structures, buildings in the landscape

4 Impact Pathways and Zones of Influence

4.1 Overview

4.1.1. This section of the report discusses the impact pathways through which the Proposed Development could lead to 'a conceivable risk of harm' (David Tyldesley Associates, 2025) to the Habitats Sites. A range of work-related impact pathways have been identified for consideration. These pathways are set out below to inform the assessment:

- the specific impact pathways associated with the Proposed Development that could potentially result in adverse effects on the Habitats Site(s); and
- the spatial extent over which these impact pathways may have a material effect on the qualifying interests (i.e. reasons for designation) of the Habitats Site(s).

4.2 Identification of Impact Pathways

4.2.1. Work-related impact pathways that have been identified and could be relevant to Habitats Sites in relation to the Proposed Development include:

Demolition and Construction

- Changes in water quality – although the Severn Estuary lies approximately 5.07km downstream from the closest point of the Proposed Development and 6.41km from the furthest point, changes in water quality resulting from the potential riverbank damage and/or accidental spillage during construction may affect fish interest features that use Rhymney River for migration or spawning. Such impacts could also have downstream consequences for bird and habitat interest features of the Severn Estuary SAC, SPA and Ramsar.
- Spread of Invasive Non-Native Plant Species (INNS) – this can potentially arise from vegetation clearance, excavation works, via runoff or wind dispersal, which could alter aquatic habitats and indirectly affect fish, bird, and habitat interest features of the Severn Estuary SAC, SPA and Ramsar downstream.
- Increased noise, vibrational and lighting disturbance for qualifying fish species – construction activities for the bridge crossing, such as piling, may lead to in-channel levels of noise and vibration that could affect the SAC qualifying interest fish species, delaying or disrupting normal fish behaviour and migration. There may also be nighttime works, so there is a potential of disturbance to fish species of interest due to artificial lighting.
- Increased noise, vibrational and lighting disturbance for qualifying bat species – the use of machinery for demolition, vegetation clearance, and construction could cause disturbance to roosting bats forming part of the SAC populations, if present.
- Loss or alteration of habitats within Functionally Linked Land4 (FLL) might impact species of interest commuting and/or foraging within the Site. This includes both temporary and permanent changes to FLL, such as physical habitat loss and air quality related degradation.
- Direct killing or injury of qualifying bat species – demolition and/or vegetation clearance activities might result in killing of or injury to qualifying interest features that might be commuting and foraging within the Site.

[4] Functionally linked land refers to areas outside a Habitats Site that support key ecological functions of the site's qualifying features – for example, feeding, roosting, or commuting habitat used by species for which the site is designated.

Operation

- Changes in water quality – there is potential for an impact on water quality of Rhymney River during operation due to fire-water runoff in an emergency event.
- Increased lighting disturbance for qualifying bat species – the use of security lighting could cause disturbance to roosting bats forming part of the SAC populations, if present.
- Increased shading – permanent shading beneath the bridge could alter local light conditions and vegetation, potentially affecting fish migration or foraging.

4.2.2. A number of other potential pathways have been assessed and determined as irrelevant to any of the Habitats Sites. These are outlined below, together with the justification for their exclusion:

- Habitat loss or damage – since all the construction and operation works are more than 5km from any Habitats Site, they would not directly impact habitats within the Habitats Sites. Hence, this impact pathway can be screened out.
- Changes to air quality – the Institute for Air Quality Management (IAQM, 2024) identifies a ZoI of 50m for dust dispersal, which may occur during the construction of a Proposed Development. The Proposed Development does not trigger the traffic scoping criteria requiring assessment as per LA105 guidance from Design Manual for Roads and Bridges (DMRB, 2024). The Severn Estuary SAC, SPA and Ramsar, and Cardiff Beech Woods SAC are not within 200m of affected road network to be affected by construction and operation traffic. This impact pathway is therefore screened out.
- Increased visual disturbance for fish qualifying features – no visual impact is applicable to the qualifying fish features of the Severn Estuary SAC, SPA and Ramsar using the FLL nearby the Proposed Development. Given the ecology and sensory limitations of these species, visual disturbance from personnel or machinery nearby the riverbank is highly unlikely to result in significant disturbance. As such, this impact pathway can be screened out.
- Direct injury, mortality or entrapment of fish – no in-channel works, coffer-dams or flow diversions are proposed, and all permanent and temporary structures (including piling rigs and crane platforms) will be located on dry land at least 7-10m landward of the riverbank. There will be no dewatering, impoundment or isolation of river section during the Proposed Development, and no requirement for fish rescue or relocation. As such, there is no plausible impact pathway by which fish qualifying features of the Severn Estuary SAC, SPA and Ramsar could be physically injured or killed through collision with machinery, entrapment within temporary works or stranding. As such, the potential for direct physical harm to fish qualifying species has been scoped out from further assessment as a potential impact pathway.
- Increased noise, vibrational, visual and lighting disturbance for qualifying bird species – the Severn Estuary SPA and Ramsar are over 3km (in a straight line) from the Site and the habitats on the Site, broadleaved woodland, dense/continuous scrub, scattered scrub, broadleaved parkland/scattered trees, and poor semi-improved grassland, are considered unsuitable for the bird qualifying species interest of the SPA and Ramsar. Although parkland and semi-improved grassland could potentially be used by some species, these areas are largely overgrown with scrub, making foraging or grazing highly unlikely. The nearest intertidal mudflats are approximately 3.2km downstream (NRW, 2019) from the Proposed Development. Hence, these impact pathways can be screened out.
- Cardiff Beech Woods SAC is situated inland, over 5km from the Proposed Development, and has no hydrological connections with the Proposed Development. As such, there is no risk of

spreading INNS in the Cardiff Beech Woods SAC, and no risk of spread of pollution due to accidental spillage or any other construction or operation from the Proposed Development.

4.2.3. Given the above, there is no requirement for the **Annex I** habitats (Directive 92/43/EEC) of interest of Cardiff Beech Woods SAC to be considered further in this report due to lack of impact pathways.

4.2.4. Climate Change – as identified in the Chapter 10: Climate Chapter of Environmental Statement (Iceni, 2025), the main driver of climate change for the Proposed Development is electricity consumption and associated greenhouse gas emissions. This demand will be reduced through adoption of the Royal Institute of British Architects' '2030 Climate Change[5]' benchmarks (RIBA, 2021). A 'fabric first[6]' approach (Eyre et al., 2023) will be employed to reduce energy demand, including low u-value, high air tightness and minimised thermal bridging. Highly efficient all electric systems, integration of renewable and low-carbon technologies will further reduce emissions. These factors are recognised as drivers of global climate change, but they do not constitute a site-specific pathway to Habitats Sites and are included here for contextual awareness only.

4.3 Zones of Influence of Impact Pathways

4.3.1. The maximum ZoI of the relevant impact pathways are considered to be as follows:

Demolition and Construction

- Changes to water quality – 10km;
- Spread of INNS – 10km;
- Increased noise, vibrational and lighting disturbance for qualifying fish species – 200m.
- Increased noise, vibrational and lighting disturbance for qualifying bat species within FLL – approximately 200m on precautionary basis.
- Loss or disruption of habitats within FLL – within the Site.
- Direct killing / injury – within the Site.

Operation

- Changes to water quality – 10km.
- Increased lighting disturbance for qualifying bat species within FLL – approximately 200m on precautionary basis.
- Increased shading – immediately below and/or next to the bridge.

[5] The benchmarks set be RIBA requiring new buildings to minimise energy demand and associate greenhouse gas emissions.

[6] A design strategy that priorities improving the buildings envelope (floors, roof, walls, windows) to reduce energy demand for heating and cooling.

5 Stage 1: Screening of Potential Effects

5.1 Overview

5.1.1. This section of the report sets out the findings of the Stage 1. LSE (or the absence of them) are considered in light of the impact pathways and their ZoI, as set out above. Consideration is also given to the ecology of the qualifying interests of the Habitats Sites and how the identified impacts arising from the Proposed Development may therefore affect them. Where potential effects are identified, these are considered against the conservation objectives for the relevant qualifying interest feature(s).

5.1.2. The Proposed Development is not directly connected with or necessary for the management of any of the Habitats Sites mentioned above. It has not been conceived solely to further the conservation of the site(s) and nor is it essential to the management of the site(s). Therefore, further consideration of the Proposed Development within the HRA process is required.

5.2 Consideration of Effects Alone

5.2.1. The Proposed Development has been screened to identify whether potential impact pathways are likely to result in significant effects upon the Habitats Sites, see **Table 5-1** below.

Table 5-1 - High Level Assessment of LSE for Severn Estuary SAC, SPA and Ramsar

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
Demolition and Construction Phase			
Severn Estuary SAC	N	Changes to water quality	Silt could be introduced into the Rhymney River due to earthworks. Sediments, in excess amount, can fill habitat refugia, and have potential to suffocate the fish species using the Rhymney River as FLL, given the potential migration pathways between the Site and the SAC. Given the distance from the Habitats Sites, nature and scope of works, along with the resilience of habitat features of interest, significant effects on these habitats are highly unlikely: any impacts will be short-lived and would quickly become indiscernible from background levels due to the existing heavy silt load of the Severn Estuary. However, silt can still have effect on FLL, which is the Rhymney River, being potentially used by qualifying fish species. In addition to silt, the proximity of the Site to the Rhymney River increases the likelihood of other pollutants from accidental spillage of chemical, fuels or other harmful substances being carried downstream, leading to potentially significant degradation of the Severn Estuary SAC habitats. Some habitats of the Severn Estuary are sensitive to pollution, particularly from contaminants that can reduce water quality. Other aquatic life could also be affected, including prey of qualifying interest fish species, and habitats of the protected species which are downstream of the Proposed Development. However, the Proposed Development includes embedded design measures, outlined in Construction Environmental Management Plan (CEMP) (Curtis Hall, 2025), to prevent pollution and protect water quality regardless of connectivity to Habitats Sites. As these measures are integral to the Proposed Development and are not explicitly brought forward as protective measures for Habitats Sites, they are therefore not considered to constitute mitigation in the context of this HRA. **Fuel, Oil and Chemical Storage** The measures outlined in the CEMP include storage of fuels, oils and chemicals in appropriate containers within secure bunded compounds constructed of an

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
			impermeable hard standing in accordance with good site practices and Environment Agency guidelines. Subcontractor storage areas must be agreed with Site Management prior to delivery and any accidental contamination of the ground or surface water will be cleaned-up in accordance with appropriate Environment Agency guidelines and removed off-site by a licensed waste contractor. No storage of these materials will be allowed within 10m of surface water drains on the Site. **Silt and Sediment Control** Notwithstanding that effects from silt and sediment are considered to be short lived, silt and sediment control will nonetheless be implemented, including the use of settlement systems, monitoring site drainage, cut-off trenches, silt fences, geotextile-material filters and regular inspection of watercourses. Earthworks, topsoil, subsoil and stockpiled materials will be managed to prevent runoff into watercourses, including maintaining buffers from watercourse, fencing or matting stockpiles and applying stone capping or vegetation cover where appropriate. **Surface Water and Drainage Management** Sustainable Drainage Systems are included in the design to manage surface water runoff and treat lightly contaminated water, including retention basins, infiltration trenches and swales. **Pollution Prevention** All construction works will follow established best practice and Pollution Prevention Plans to prevent silting or pollution of the river, including avoidance of refuelling near water bodies, use of spill kits and proper cleaning of tools. **Flood Risk Management** Flood risk is addressed through the placement of high-risk activities above the design flood level, storage of chemicals and fuels for easy relocation, and implementation of a flood action plan with reference to Met Office and NRW Flood Warning services. Given the comprehensive measures for storage, runoff, sediment, earthworks, and flood risk, and adherence to best practice throughout the demolition and construction phases, no LSEs on water quality are anticipated.

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
			As such, **LSE can be ruled out** alone and there would be no 'residual' non-significant effects that could act in-combination.
Severn Estuary SAC	N	Spread of INNS	The risk of introducing or spreading INNS could arise during vegetation clearance, potentially facilitating their spread into the Rhymney River and the Severn Estuary SAC habitats. INNS The Proposed Development includes embedded design measures to prevent spread of INNS regardless of connectivity to Habitats Sites. As these measures are integral to the Proposed Development and are not explicitly brought forward as protective measures for Habitats Sites, they are therefore not considered to constitute mitigation in the context of this HRA. The CEMP includes measures for the control and eradication of INNS on Site. Japanese knotweed *Reynoutria japonica* and Himalayan balsam *Impatiens glandulifera* will be managed according to the twenty-five year Woodland Management Plan (Curtis Hall Ltd., 2025). Japanese knotweed areas will be plotted using GPS and specialist contractors will likely apply glyphosate treatment in areas away from the water course and, excavation and removal from site will be required with the aim to achieve eradication within first five years. Himalayan balsam will be primarily controlled through hand-pulling and cutting, with ongoing monitoring and treatment to prevent flowering and seed formation. Other non-native species and garden escapes will be removed from ancient woodland areas as part of routine maintenance. All works will be carried out with the oversight of the ecological consultant, following detailed Method Statements approved by the Local Planning Authority, and staff will be briefed via toolbox talks on appropriate control methods. Given these measures, no likely significant effects from INNS are anticipated during demolition and construction. INNS protocols, such as wheel washing, will be implemented during the works. These measures will be carried out in a designated area away from the Rhymney River and any drainage features, to prevent potential runoff and ensure no risk of spreading INNS, in line with best practice for biosecurity management. This forms part of standard legal responsibilities relating to species listed under Schedule 9 of the Wildlife and

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
			Countryside Act (as amended) (HMSO, 1981), rather than being a measure required specifically for this HRA. As such, **LSE can be ruled out** alone and there would be no 'residual' non-significant effects that could act in-combination.
Severn Estuary SAC	N	Increased noise, vibrational and lighting disturbance for qualifying fish species	Construction works for the bridge crossing, such as piling and temporary lighting, have the potential to impact the qualifying fish species that are sensitive to noise, vibration and artificial light, which can cause behavioural changes. Behavioural disturbance can lead to avoidance of migratory routes and temporary displacement. High intensity impulsive sound and vibration may cause physical injury or mortality. Vibration may also displace the buried lamprey larvae or abandoning of spawning site. Artificial lighting may disrupt behavioural patterns and nocturnal movements. The proposed bridge construction will be undertaken entirely from the terrestrial bank, with abutments set back approximately 7.5m from the Rhymney River and there will be no in-channel works. Continuous Flight Auger (CFA) piling (screw piling) may be technically feasible and is incorporated into the design of the Proposed Development as the preferred piling method, as it produces minimal vibration and airborne noise. However, due to the proximity of the Rhymney River and the potential for high groundwater pressures, CFA piling may not be practicable across all locations. In locations where CFA piling is not practicable, limited driven piling may be required to achieve engineering stability. At the bridge location, the Rhymney River is around 12m wide, with depths of roughly 0.4m along the right-hand bank and just over 1m in the centre. The bed consists mainly of cobble with patches of silt, algae and occasional gravel (WSP, 2025b). CFA piling generates very low levels of ground-borne vibration and does not produce impulsive underwater noise. Accordingly, if CFA piling is feasible throughout, no plausible pathway exists for vibration or noise-related effects on qualifying fish species, and **LSE can be ruled out**. However, if driven piling is required, vibration could transmit through the substrate into the river margin, potentially disturbing qualifying fish species.

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
			Sea and river lamprey require clean gravels and adjacent sand or silt beds for spawning and larval burrows, while shad typically spawn in deeper gravelly reaches closer to the tidal limit. None of these features are present at the bridge construction location, so this section of the Rhymney River functions primarily as a migration corridor rather than a breeding or nursery area. Lamprey are less sensitive to vibration due to the absence of swim bladders, which are the primary organ though which most fish detect and amplify particle motion. Given this reduced sensitivity, it is unlikely that substrate vibration generated during piling would result in any physiological or behavioural effects. Twaite shad are typically confined to the lower estuarine reaches and are unlikely to occur this far upstream. The nearest intertidal mudflats habitat is approximately 3.2km downstream of the Proposed Development based on Marine Habitats dataset (NRW, 2019), while a review of recent satellite (Google) imagery indicates that silt deposition may begin slightly further upstream, at about 2.2km downstream of the Proposed Development. No such habitats are present at the location of construction of bridge (WSP, 2025b). Given the absence of suitable spawning or foraging habitat, the distance from the tidal influence, and limited likelihood of migratory individuals occurring this far upstream, twaite shad are unlikely to be present in the vicinity of the Proposed Development. It is therefore concluded that there is no realistic potential for noise and vibrational disturbance to impact twaite shad. **LSE can therefore be ruled out** for sea lamprey, river lamprey, and twaite shad under both CFA and driven piling scenarios. Construction lighting will be directional and used only when necessary for safety, with lights switched off when not in use and positioned to avoid spill onto the river. A dark corridor will be maintained along the watercourse to facilitate nocturnal wildlife movement, which will also prevent potential light-related disturbance to migratory fish qualifying features. These measures form part of the embedded design for the Proposed Development and are included regardless of the present of Habitats Sites downstream. As such, **LSE** due to increased noise, vibrational and lighting disturbance for qualifying fish species of the Severn Estuary SAC **can be ruled out** and there would be no ‘residual’ non-significant effects that could act in-combination.

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
Severn Estuary SPA	N	Changes to water quality	A potential pollution event can lead to degradation of the habitats that the qualifying birds rely on for feeding, breeding, and resting. Key invertebrate and aquatic plant species, which serve as food sources for numerous bird species and are essential for their survival, may also be impacted during a pollution event. The assessment as described above for the Severn Estuary SAC is also relevant to the Severn Estuary SPA. As such, **LSE on water quality can be ruled out** and there would be no 'residual' non-significant effects that could act in-combination.
Severn Estuary SPA	N	Spread of INNS	The assessment as described above for the Severn Estuary SAC is also relevant to the Severn Estuary SPA. As such, **LSE due to spread of INNS can be ruled out** and there would be no 'residual' non-significant effects that could act in-combination.
Severn Estuary Ramsar	N	Changes to water quality	The assessment as described above for the Severn Estuary SAC is also relevant to the Severn Estuary Ramsar. As such, **LSE on water quality can be ruled out** and there would be no 'residual' non-significant effects that could act in-combination.
Severn Estuary Ramsar	N	Spread of INNS	The assessment as described above for the Severn Estuary SAC is also relevant to the Severn Estuary Ramsar. As such, **LSE due to spread of INNS can be ruled out** and there would be no 'residual' non-significant effects that could act in-combination.
Severn Estuary Ramsar	Y	Increased noise, vibrational and lighting disturbance for qualifying fish species	The assessment as described above for the Severn Estuary SAC is also relevant to fish qualifying features of the Severn Estuary Ramsar, such as sea lamprey, river lamprey, twaite shad, and also to allis shad, which shares similar ecological preferences with twaite shad. As described for the Severn Estuary SAC, the lighting measures in place will prevent LSE due to lighting disturbance on fish qualifying features of the Severn Estuary Ramsar. However, salmon, sea trout and eel are known to migrate through the Rhymney River as per National Biodiversity Network (NBN) Atlas Wales (NBN, 2025) and Freshwater Fish Surveys dataset (NRW, 2025). These species are listed on the Severn Estuary Ramsar criterion 4.

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
			These species possess swim bladders that make them more responsive to low-frequency vibration and pressure changes. Although the piling activities would take place outside the Rhymney River and vibrations would be substantially dampened before entering the water, salmon, sea trout and eel are known to react to relatively small acoustic or substrate disturbances. Their migrations also occur over a longer period, with repeated movements that could overlap with the piling works. Should driven piling be required, there is a potential for short-term behavioural disturbance during migration periods. Hence, **LSE is predicted for salmon, sea trout and eel qualifying species** due to increased noise and vibrational disturbance.
Mendip Limestone Grasslands SAC; North Somerset and Mendip Bats SAC; and Wye Valley and Forest of Dean Bat Sites SAC	N	Increased noise, vibrational and lighting disturbance for qualifying bat species Loss or disruption of habitats within FLL Direct killing / injury within FLL	The bat report for the Proposed Development (WSP, 2025a) concluded that habitats on Site are not well-used by greater or lesser horseshoe bats. Static bat activity surveys were undertaken between April and October using three static detectors across the Site. Lesser horseshoe bat activity was extremely limited, with only one pass recorded at Static 3 in April. Greater horseshoe bat activity was also low, with nine passes at Static 2 in May and one pass at Static 3 in August. These results indicate that presence of these species is infrequent and incidental, and the Site does not serve as a significant foraging area or commuting corridor. The bat assemblage is considered locally important primarily for other, more active species. The core sustenance zone for greater horseshoe bats is generally within 3 km of a roost, and for lesser horseshoe bats within 2 km (BCT, 2016). The Proposed Development is located approximately 21.4 km from Mendip Limestone Grasslands SAC, 26.9 km from North Somerset and Mendip Bats SAC, both on the opposite side of the estuary, and 29.8 km from Wye Valley and Forest of Dean Bat Sites SAC. The Site therefore has a negligible functional link to these SACs, and the low and incidental bat activity observed on Site indicates negligible use by SAC populations. In addition, the off-site mitigation / compensation area will support foraging and commuting activities for individuals of any bat species listed as Annex II qualifying features. Although construction will result in habitat loss, dust, noise, and vibration, the limited use of the Site by SAC species, combined with distance from roosts and negligible functional connectivity, means there is no credible pathway for the Proposed Development to affect the conservation objectives of the SACs. Habitat retention, management, and compensation measures will be implemented to offset local habitat

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
			loss and impact on other fauna, these measures are not relied upon to avoid LSE on the SACs. CEMP will incorporate controls for dust, noise, lighting, and vibration. These measures are primarily targeted at other bat species and fauna, and are not relied upon to prevent LSE on the greater or lesser horseshoe bat SACs. Given the distance from SACs, low and incidental activity on Site, absence of functional connectivity, and design, any potential disturbance to individual greater or lesser horseshoe bats would be incidental and will not result in a Likely Significant Effect. It is therefore concluded that the **Proposed Development will not result in LSE of greater or lesser horseshoe bat SACs** and no residual effects are anticipated that could act in-combination.
	Operation		
Severn Estuary SAC, SPA, and Ramsar	Y	Changes in water quality	In the event of fire, there is potential for impact on water quality of the Rhymney River during the operational phase. As the Proposed Development will store electronics, batteries and other equipment, a fire could require the use of significant volumes of water or fire suppression agents. This may result in contaminated fire-water runoff containing chemicals, heavy metals or other battery-related pollutants. If not managed properly, such runoff could carry these hazardous substances into the Rhymney River, posing risks to qualifying habitats and species of the Severn Estuary SAC, SPA and Ramsar. Given that detailed lagoon and fire-water treatment designs are not yet confirmed, there is a pathway for LSE. In accordance with People Over Wind, **LSE** on water quality due to fire-water run-off during operation **cannot be ruled** out at this stage.
Severn Estuary SAC, and Ramsar	N	Increased shading	The Proposed Development will result in permanent shading beneath the bridge. The river at this location is approximately 12 m wide, with shallow margins (~0.4 m) and deeper flow in the centre (>1 m). Only a narrow portion of the channel directly beneath the bridge will be affected by reduced light. Salmonids, eels, and lampreys may use the river for migration and foraging. The limited spatial extent of shading, combined with the absence of suitable refuge habitat beneath

Habitats Site	LSE? (Y/N)	Impact Pathway	Likely Significant Effects
			the bridge, means that fish can continue to move freely through the channel without restriction. Shaded areas will not impede access to suitable habitat elsewhere in the river. Vegetation beneath the bridge may shift over time to more shade-tolerant species. However, such changes would be highly localised and are not linked to the key ecological requirements of the qualifying fish species. Fish do not rely on specific plant communities at this location for migration, or foraging, so any change in plant composition will not create a credible pathway for potential effects. Twaite and allis shad are unlikely to occur at this upstream location, and shading would therefore not affect their spawning, migration, or foraging. Consequently, permanent shading from the bridge does not create a credible pathway for potential effects on adult or juvenile fish species, including salmon, sea trout, eels, and lampreys, and **no LSE are anticipated.**
Mendip Limestone Grasslands SAC; North Somerset and Mendip Bats SAC; and Wye Valley and Forest of Dean Bat Sites SAC	N	Increased lighting disturbance for qualifying bat species	The assessment as described above for the Mendip Limestone Grasslands SAC; North Somerset and Mendip Bats SAC; and Wye Valley and Forest of Dean Bat Sites SAC at the construction phase is also relevant to the operational phase. As such, **LSE due to increased lighting disturbance can be ruled out** and there would be no 'residual' non-significant effects that could act in-combination.

5.3 Potential In-Combination Effects

5.3.1. When determining the potential implications of a plan or project in light of the conservation objectives for a Habitats Site (i.e., assessing the potential for LSE and ascertaining the potential for effect on site integrity), it is necessary to consider the potential for in-combination effects with other plans and projects on the designated interest features/conservation on the site. This should include:

- Approved but yet uncompleted plans or projects;
- Permitted on-going activities such as discharge consents of abstraction licences; and
- Plans and projects for which an application has been made and which are currently under consideration but not yet approved by competent authorities.

5.3.2. An in-combination assessment considers the potential for each plan or project to influence the Habitats Site. In order for an in-combination effect to arise, the nature of two effects does not necessarily have to be the same. The in-combination assessment, therefore, focuses on the overall implications for Habitats Site conservation objectives regardless of the type of effect.

5.3.3. As LSE have either been screened out, with no residual impacts or have been screened in, alone, for further assessment, an in-combination assessment is not required at this stage.

5.4 Assessment of LSE / Summary of HRA Screening

5.4.1. On the basis established in Sections 4.2 and 5.2, the risk of LSE on the Habitats Sites is due to:

- the risk of increased noise, and vibrational disturbance for salmon, sea trout, and eel, which are qualifying fish species of the Severn Estuary Ramsar.
- the risk of potential fire-water runoff during an emergency event for qualifying features of Severn Estuary SAC, SPA and Ramsar.

5.4.2. No other LSEs are predicted to arise to the identified Habitats Sites.

6 Stage 2: Information to Inform Appropriate Assessment

6.1.1. This Section provides information to inform an Appropriate Assessment as per Regulation 63 of the Habitats Regulations, should Cardiff Council deem such an assessment is required in their role as Competent Authority.

6.1.2. The 'Appropriate Assessment' information presented here considers the LSE identified at the HRA screening stage in more detail. For each of the identified impact pathways leading to LSE, an assessment is made as to whether they would result in AEoI of the relevant Habitats Site.

6.1.3. The assessment as to whether AEoI would arise is made with consideration to mitigation measures that may be applied to avoid or, reduce the significance of potential effects of the Proposed Development. Such measures, where they are developed to address effects on Habitats Sites, may only be considered at the Appropriate Assessment stage. This follows the 'People Over Wind' ruling (People Over Wind, Peter Sweetman v Coillte Teoranta, 2018), as noted in Section 1.2.6.

6.1.4. The mitigation measures that have been put in place to avoid or reduce the effect pathways identified at Stage 1 Screening are set out below.

6.2 Potential for Adverse Effects on Integrity Pre-Mitigation

6.2.1. The potential for LSE in relation to increased noise and vibrational disturbance has been identified for salmon, sea trout and eel species only, which are a qualifying feature of the Severn Estuary Ramsar, and the potential for LSE in relation to fire-water runoff has been identified for all qualifying features of Severn Estuary SAC, SPA, and Ramsar.

6.2.2. The Appropriate Assessment focuses on driven piling, which represents the only construction method capable of generating impulsive vibration or notable airborne noise. Works would be undertaken from a terrestrial platform approximately 7.5m from the riverbank, with piles installed into unsaturated ground. Under these conditions, vibration energy may propagate through the substrate and into the adjacent river margin. Although attenuation due to distance from piling and the intervening ground means that vibration levels reaching the main channel are expected to be minimal, this may result in temporary, localised behavioural responses in migratory fish during active piling. Adult salmon and sea trout migrate upstream between October and March, with downstream smolt migration occurring from April to June. Eels migrate primarily at night, adult eels (silver stage) descending between August and November and juvenile elvers ascending between May and August. In the absence of mitigation, there remains potential for piling during these periods to cause avoidance behaviour or short-term delay to migration. Consequently, an AEoI cannot be ruled out, in the absence of mitigation.

6.2.3. In the absence of detailed design information for the proposed fire-water runoff containment, treatment and discharge system, and applying a reasonable worst-case scenario, the potential exists for contaminated fire-water generated during an emergency incident to reach the adjacent hydrological network. Fire-water has the potential to mobilise pollutants associated with the Proposed Development (including hydrocarbons, oils, battery electrolytes, suspended solids and combustion residues), and could also be generated in volumes sufficient to exceed the receiving environment's capacity to dilute or assimilate contaminants if discharged in an uncontrolled manner. Without appropriate control, these contaminants could enter the river and threaten the ecological features and species for which the Severn Estuary SAC, SPA and Ramsar are designated.

6.3 Mitigation Measures

6.3.1. Mitigation will be implemented only if driven piling is required. The following measures will be secured through the CEMP –

- Seasonal restrictions: Driven piling will, be undertaken outside the main salmonid migration period (October to March) to avoid disturbance to adult upstream movement.
- Eel and smolts protection: Silver eels migrate during hours of darkness, September to November, while juvenile elvers ascend between May and August. Salmonid smolts undertake downstream migration primarily during low-light conditions, mostly at night, in spring (April and May). To prevent potential disturbance to these qualifying fish species, driven piling activities, if required, will be restricted to daylight hours for April to November. Limited marginal cover was observed at the bridge location, which is not considered to provide suitable refuge habitat. Daytime working will therefore effectively avoid periods of peak migratory activity, ensuring that no direct or indirect disturbance arises to smolts or eels. However, there remains a potential for disturbance within precautionary 300m buffer around the works, in line with BS 5228 (BSI, 2018), and the following mitigation measures have been implemented:
    - Vibration management: Piling operations will comply with BS 5228-2 (BSI, 2018), and hammer energy and duration will be limited to the minimum required for engineering stability.
    - Soft-start procedure: As a precaution, each piling session will begin at a reduced hammer energy to allow fish to move away before full-power operation.
    - Supervision: An Ecological Clerk of Works (ECoW) will be present during the key activities of the piling programme to monitor for any signs of fish distress or unusual behaviour. Should such effects be observed, piling will temporarily cease and further advice will be sought from the ECoW before resuming.

6.3.2. The Proposed Development incorporates a series of measures to avoid adverse effects on the Severn Estuary SAC, SPA and Ramsar arising from the generation, containment, treatment of fire-water and its controlled discharge, formed as performance standards and functional requirements that the final design must achieve. These measures are intended to ensure that fire-water is fully captured, contained, treated and discharged in a manner that protects the qualifying features of the Severn Estuary SAC, SPA and Ramsar, even under the worst-case conditions.

Containment and Storage

- 100% capture of all fire-water runoff arising from the maximum credible emergency event.
- Provision of sufficient lagoon capacity to accommodate the combined volumes of:
    - fire-water generation during a suppression event, and
    - a 1-in-100-year rainfall event plus appropriate climate change uplift.
- No uncontrolled release to surface waters, soils or groundwater.

Treatment Requirements

- Treatment processes capable of achieving concentrations compliant with relevant environmental quality standards or site-specific thresholds protective of the Habitats Sites.
- Treatment must address pollutants including hydrocarbons, suspended solids, battery-related contaminants, nitrogen compounds, chemical oxygen demand, metals and any combustion by-products.

- Sufficient retention time within the lagoon/treatment system to ensure performance under peak contamination scenarios.

Controlled Discharge Requirements

- Any discharge must occur only following verification that water quality meets the agreed protective thresholds.
- Discharge flow rates must be restricted ("throttled") to a level demonstrated to avoid hydraulic disturbance of the receiving waterbody during low-flow conditions.
- The system must enable staged or intermittent discharge where required to avoid peak-flow impacts.
- Continuous monitoring and fail-safe mechanisms must ensure that discharge cannot occur if water quality is non-compliant.

6.4 Potential for Adverse Effects on Integrity Post-Mitigation, both Alone and In-combination

6.4.1. Subject to the full implementation of the above mitigation measures, the pathways identified in the pre-mitigation assessment would be effectively removed. Seasonal and nighttime restrictions, vibration management, soft-start piling, supervision by ECoW, full capture and controlled, quality-verified discharge at restricted flow rates would avoid contamination, hydraulic disruption and any deterioration of water quality relevant to the SAC, SPA and Ramsar site qualifying features.

6.4.2. Accordingly, and conditional on all of the above mitigation requirements being met, the Appropriate Assessment concludes that the Proposed Development would not result in AEoI of the Habitats Sites, either alone or in-combination.

6.4.3. Detailed design at reserved matters will adhere to all of the functional requirements specified above to conclude that no AEoI of the Severn Estuary SAC, SPA and Ramsar due to the Proposed Development alone and there would be no 'residual' non-significant effects that could act in-combination and adversely affect the integrity of the Severn Estuary SAC, SPA and Ramsar. However, if the Proposed Scheme, at reserved matters, is not able to demonstrate compliance with the functional requirements specified above, then the fire-water would, although still be collected, but will be taken for off-site disposal by third party contractors, removing any potential of adverse effect on the integrity of the Severn Estuary SAC, SPA and Ramsar.

6.5 Appropriate Assessment Conclusion

6.5.1. The HRA screening presented earlier in this report the identified LSE as set out in Section 5.4.

6.5.2. Mitigation measures are set out in Section 6.3 to address the identified LSE. Based on the mitigation measures, notably the seasonal timing of construction, and functional requirements and performance standards for management of fire-water management, it has been concluded there would be no AEoI of the Severn Estuary Ramsar.

6.5.3. This conclusion is based on the functional performance standards that the final lagoon and treatment system must achieve, covering water quality, discharge rate limits, flow-control requirements and hydraulic compatibility with the receiving environment.

7 Discussion and Conclusion

7.1.1. The Proposed Development is adjacent to the Rhymney River, which is a tributary of the Severn Estuary and hence is directly connected to the Severn Estuary SAC, SPA and Ramsar. Notably, the fish qualifying features of the Severn Estuary SAC and Ramsar potentially use the Rhymney River as FLL.

7.1.2. The screening stage identified the potential for short term LSE upon the salmon, sea trout and eel fish features of the Severn Estuary Ramsar, resulting from increased noise and vibrational disturbance. During construction, the primary risk identified was the impact from vibration disturbance from piling to these sensitive fish species using the Rhymney River as FLL adjacent to the bridge construction location. While it is understood that vibration attenuation will reduce its impact over distance, there is still potential that it could impact behaviour and migration pattern of the fish species of interest. During operation, an LSE due to firewater runoff has been identified due to absence of detailed design, which will be confirmed at reserved matters.

7.1.3. Mitigation measures are outlined in the Appropriate Assessment section to avoid AEoI of the qualifying features of the Severn Estuary SAC, SPA and Ramsar. On the basis that all measures are tried-and-tested and will be implemented, notably the seasonal timing of piling and firewater runoff management, it is concluded that the Proposed Development on its own or in combination with other plans and projects, will have not have AEoI of the Severn Estuary SAC, SPA and Ramsar.

7.1.4. Given that no adverse effects upon the integrity of Habitats Sites are anticipated further assessment under Stage 3 and 4 of HRA is not necessary.

7.1.5. This HRA has been carried out based on the functional requirements and performance standards established for the lagoon system and fire-water management associated with the Proposed Development. These standards form the basis of the assessment and are designed to avoid any AEoI of the Severn Estuary SAC, SPA and Ramsar, both alone and in-combination with other plans or projects.

7.1.6. At this stage, the detailed design of the lagoon system and treatment processes will be confirmed at the reserved matters stage. The Competent Authority will need to confirm at the reserved-matters stage that the detailed design and operational controls meet these functional standards as set out in this HRA. In worst case if the final design cannot meet the necessary water-quality or flow-control requirements, then the firewater would be taken for offsite disposal by third party contractor. This information is provided for transparency and does not affect the conclusion of this HRA: when the functional requirements and performance standards are implemented, no AEoI of the Severn Estuary SAC, SPA and Ramsar is predicted.

8 References

- Bat Conservation Trust (BCT) (2016). Core Sustenance Zones: Determining zone size. Available online: https://cdn.bats.org.uk/uploads/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf
- British Standards Institution (BSI). (2018). *BS 5228-2:2018 – Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*. London: BSI Standards Limited.
- Curtis Hall Ltd. (2025). Woodland Management Plan at Cardiff East Park and Ride, Eastern Avenue, Pentwyn.
- Council of the European Union (1992). Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora. Available online: http://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:31992L0043.
- Council of the European Union (2009). Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. Available online: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:ev0024.
- David Tyldesley Associates (2025). The Habitats Regulations Assessment Handbook.
- Defra (2021). Policy paper. Changes to the Habitats Regulations 2017. Available at: https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017
- Design Manual for Roads and Bridges (DMRB) - LA105: Air Quality (vertical barriers) (2024). Standards for Highways, Department for Transport, United Kingdom. Version 0.1.0. Available online: https://www.standardsforhighways.co.uk/tses/attachments/af7f4cda-08f7-4f16-a89f-e30da703f3f4
- English Nature (2005a). Citation. Mendip Limestone Grasslands SAC. Available online: https://publications.naturalengland.org.uk/file/5713972770635776
- English Nature (2005b). Citation. North Somerset and Mendip Bats SAC. Available online: https://publications.naturalengland.org.uk/file/5309740112412672
- European Commission (n.d.). Managing and protecting Natura 2000 sites: Rules and guidance for everyone involved in managing Natura 2000 sites. This includes the legal requirements of national governments, and guidance for local landowners and site managers . Available online here: https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000/managing-and-protecting-natura-2000-sites_en
- Eyre, N., Fawcett, T., Topouzi, M., Killip, G., Oreszczyn, T., Jenkinson, K., & Rosenow, J. (2023). *Fabric first: is it still the right approach?* Buildings and Cities, Volume 4 (Issue 1), 965-972. https://doi.org/10.5334/bc.388
- HMSO (His Majesty's Stationary Office) (1981). Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000). HMSO, Norwich.
- IAQM (2024). Guidance on the assessment of dust from demolition and construction. Version 2.2. Available online: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf
- Iceni (2025). *Chapter 10: Climate Change* (draft). Cardiff Park and Ride East, Pentwyn, Cardiff Environmental Statement.
- JNCC (2008). Information Sheet on Ramsar Wetlands - Severn Estuary Ramsar. Available online at: https://jncc.gov.uk/jncc-assets/RIS/UK11081.pdf

- JNCC (2015a). Severn Estuary/ Môr Hafren SAC (NATURA 2000 - STANDARD DATA FORM). Available online at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0013030.pdf
- JNCC (2015b). Severn Estuary SPA (NATURA 2000 - STANDARD DATA FORM). Available online at: https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9015022.pdf
- JNCC (2015c). Cardiff Beech Woods SAC (NATURA 2000 - STANDARD DATA FORM). Available online at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030109.pdf
- JNCC (2015d). Mendip Limestone Grasslands SAC (NATURA 2000 - STANDARD DATA FORM). Available online at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030203.pdf
- JNCC (2015e). North Somerset and Mendip Bats SAC (NATURA 2000 - STANDARD DATA FORM). Available online at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030052.pdf
- JNCC (2015f). Wye Valley and Forest of Dean Bat Sites SAC (NATURA 2000 - STANDARD DATA FORM). Available online at: https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0014794.pdf
- Curtis Hall Ltd. (2025). Construction Environmental Management Plan.
- National Biodiversity Network (NBN, 2025). Occurrence records. Available online: https://wales-records.nbnatlas.org/search#tab_spatialSearch
- Natural England & the Countryside Council for Wales (NE and CCW) (June, 2009). The Severn Estuary / Môr Hafren European Marine Site. Advice given under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended.
- Natural England (2015a). Site Improvement Plan North Somerset & Mendip Bats SAC. Available at: https://publications.naturalengland.org.uk/file/5172212225015808
- Natural England (2015b). Site Improvement Plan Mendip Limestone Grasslands SAC. Available at: https://publications.naturalengland.org.uk/file/5158748492398592
- Natural England (2018a). European Site Conservation Objectives for Mendip Limestone Grasslands Special Area of Conservation Site Code: UK0030203.
- Natural England (2018b). European Site Conservation Objectives for North Somerset and Mendip Bats Special Area of Conservation Site Code: UK0030052.
- Natural Resources Wales (NRW, 2008). Core Management Plan Including Conservation Objectives For Safleoedd Ystlumod Dyffryn Gwy A Fforest Y Ddena/Wye Valley And Forest Of Dean Bat SAC.
- NRW (2014). Core Management Plan Including Conservation Objectives For Cardiff Beech Woods Special Area Of Conservation.
- NRW (2019). Environment (Wales) Act Section 7 and OSPAR: Marine Habitats. Available online: https://datamap.gov.wales/layergroups/inspire-nrw:MarineBAPOSPARHabitats
- NRW (2025). NRW Freshwater Fish Surveys. Available online: https://datamap.gov.wales/layergroups/geonode:nrw_freshwater_fish_surveys
- ODPM (2005). Circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within The Planning System. Office of the Deputy Prime Minister, London.
- People Over Wind, Peter Sweetman v Coillte Teoranta (2018). CJEU C-323/17. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62017CJ0323
- Royal Institute of British Architects (RIBA, 2021). *2030 Climate Change*.
- Welsh Assembly Government (2009). Planning Policy Wales. Technical Advice Note. 5:Nature Conservation and Planning. Available online: https://www.gov.wales/sites/default/files/publications/2018-09/tan5-nature-conservation.pdf
- Welsh Government (2024). Planning Policy Wales. Edition 12. Available online: https://www.gov.wales/sites/default/files/publications/2024-07/planning-policy-wales-edition-12.pdf

- WSP (2025a). Bat Report. Cardiff East Park and Ride.
- WSP (2025b). River Rhymney Aquatic Habitat Appraisal. Cardiff East Park and Ride.

9 Figures

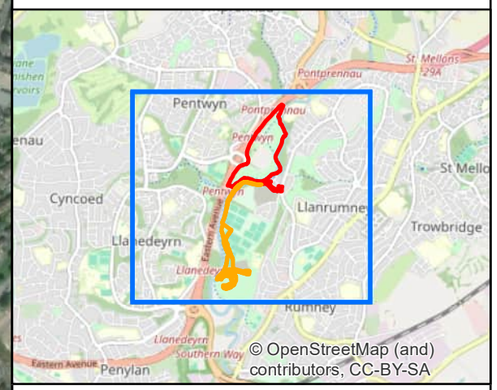
Figure 1 - Site Location Plan

Figure 2 - Relevant Habitats Sites

Date Saved: 18/11/2025 04:43:23

Key

- Red Line Boundary
- Off-site Compensation Area



0 125 250 500

Meters

wsp

Client:

Curtis Hall Ltd.

Project:

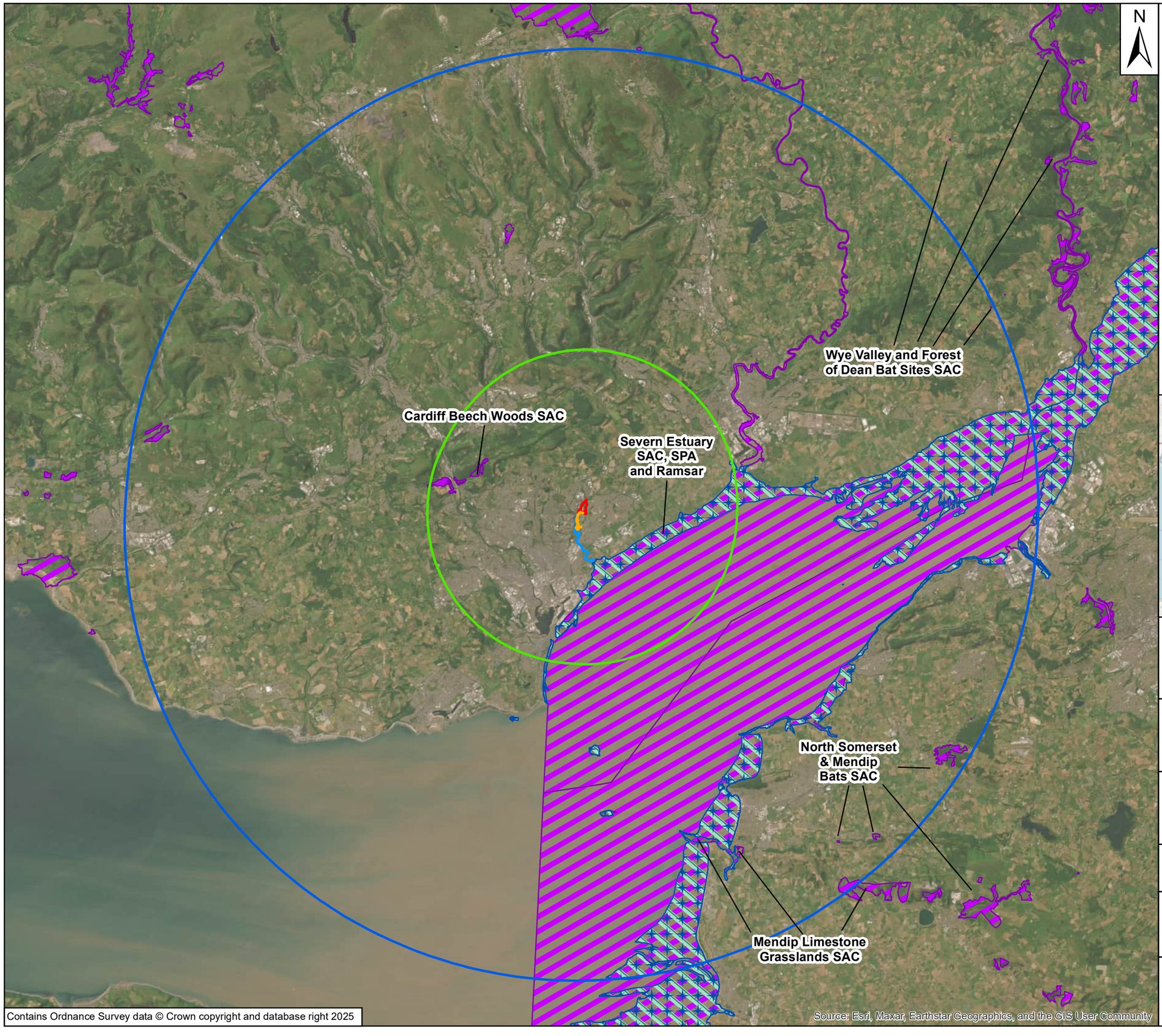
Cardif East Park and Ride (CEPR)

Title:

Figure 1 - Site Location Plan

Drawing No:	UK0041515-HRA-001	Drawn:	MS
Date:	18/11/2025	Checked:	GH
Scale:	8,000 @ A3	Approved:	KF

Date Saved: 18/11/2025 04:34:23



N

Key

- Red Line Boundary
- Off-site Compensation Area
- 10km Study Area
- 30km Study Area
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- Ramsar
- Downstream Connection

0 5 10

Kilometers

wsp

Client: Curtis Hall Ltd.

Project: Cardif East Park and Ride (CEPR)

Title: Figure 2 - Relevant Designated Sites

Drawing No:	UK0041515-HRA-002	Drawn:	MS
Date:	18/11/2025	Checked:	GH
Scale:	242,000 @ A3	Approved:	KF

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Appendix A

Outstanding Information

At the time of assessment, some design and operational details were not available. Consequently, the HRA has been completed based on the information as summarised below.

It is understood that the bridge design remains unchanged from the extant planning permission. Accordingly, key parameters such as span arrangement, abutment set-back, and construction methodology have been drawn from the extant planning permission. The current assessment has therefore been undertaken on the basis of the previously approved design information, and the conclusions are considered to remain valid provided that the final detailed design does not materially alter the construction footprint, working methods, or environmental controls described therein.

Detailed information on the fire-water containment, treatment and controlled-discharge system is not available at this stage of the hybrid application. No outline-level design parameters, engineering specifications or treatment performance information have been provided. As a result, the screening stage cannot rule out LSE, and the matter is taken forward to Appropriate Assessment. In the absence of detailed design, the Appropriate Assessment identifies the functional performance standards that any future fire-water management system must achieve in order to avoid adverse effects on the integrity of the Habitats Sites. These standards include full capture of fire-water runoff, no uncontrolled release, capacity to accommodate a combined incident and extreme rainfall event, treatment to a water-quality standard protective of Habitats Sites' features prior to any controlled discharge, along with release of treated water at specific quality, volume, and flow to avoid harmful contamination or hydrological changes. These requirements apply to all stages of fire-water management, which are, capture, storage, treatment and the discharge process itself.

1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

wsp.com