

ENVIRONMENTAL PERMIT HABITAT REGULATION ASSESSMENT

USKMOUTH POWER STATION

ECO00952
Environmental Permit HRA
1
05 December 2019

REPORT

Quality Management

Version	Status	Authored by	Reviewed by	Approved by	Review date
1	Draft	Nick Betson	Tim Oliver		
1	Final	Nick Betson	Tim Oliver	Tim Oliver	05/12/2019

Approval for issue

Tim Oliver

5 December 2019

File/Model Location

Document location: ECO00952_Uskmouth Permit HRA_1_191205_Report

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1 INTRODUCTION

1.1 Legislative Context

- 1.1.1 The EU Habitats Directive (92/43/EEC), on the conservation of natural habitats and of wild fauna and flora together with the Wild Birds Directive (2009/147/EC) aim to protect and improve Europe's most important habitats and species. These Directives are transposed currently into English law by the Habitats Regulations. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are protected under the Habitats Regulations.
- 1.1.2 In addition to sites designated under European legislation, UK Government policy (ODPM Circular 06/2005) states that Internationally-important wetlands designated under the Ramsar Convention 1971 (Ramsar sites) should be offered the same protection. As a matter of policy, the UK Government also affords sites going through the formal designation process i.e. potential SPAs (pSPAs), candidate and potential cSACs and pSACs, Sites of Community Importance (SCIs) and potential Ramsar sites the same level of protection. Commonly, such sites are labelled as European sites.

1.2 The Process

- 1.2.1 Regulation 63 of the Habitats Regulations 2017 require that a competent authority, before deciding to authorise a plan or project, must consider whether the plan or project is likely to have a significant effect on a European site, either alone, or in combination with other plans or projects. If it is considered that such an effect is likely, then a competent authority must then undertake an appropriate assessment of the implications of the plan or project for the site, in view of the site's conservation objectives.
- 1.2.2 Regulation 61 further makes clear that in light of the conclusions of such an appropriate assessment, the Competent Authority may agree to the plan or project only after it has determined that it will not adversely affect the integrity of the European site. If an appropriate assessment, however, concludes that the development will adversely affect the integrity of the site (despite any proposed avoidance or mitigation measures or if uncertainty remains), Regulation 62 makes clear that agreement can only then be given if there are no alternative solutions and that the project must be carried out for Imperative Reasons of Overriding Public Interest (IROPI). Agreement under these circumstances must be accompanied by the securing of necessary compensatory measures to ensure that the overall coherence of the network of European sites is protected.
- 1.2.3 Regulation 61 further makes it clear that the person applying for the authorisation of the plan or project must provide such information that allows regard for the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which it proposes to enable the competent authority to determine whether an appropriate assessment is required by considering whether a plan or project will adversely affect the integrity of the site.
- 1.2.4 This report provides information on the methodology and conclusions of the HRA for the Uskmouth Power Station Proposals on European sites. It is made specifically to support the application for an Environmental Permit for the re-purposing and extension of Uskmouth Power Station.

1.3 Proposals

- 1.3.1 The Environmental Permit includes the use of the existing plant and conveyors and the addition of a lorry unloading facility, extension of the existing rail unloading facility and addition of further conveyors with associated storage.

2 ASSESSMENT METHOD

2.1.1 Whilst it is the responsibility of the competent authority to determine whether it can be concluded there is no adverse effect, it is the responsibility of applicants to submit sufficient information to enable such a determination to be made. The process has four distinct stages:

- Step 1 . Qualifying interest features
- Step 2 . Likely Significant Effect
- Step 3 . Appropriate Assessment
- Step 4 . In-combination

2.2 Step 1: Qualifying Interest Features

2.2.1 Prior to undertaking the screening exercise, qualifying interest features for the assessment were identified for European sites.

2.2.2 Once designated sites were identified, the conservation objectives and qualifying interest features for each site were identified, through review of the citations with which identified sites were designated. In addition, subsequent reviews undertaken by the UK Joint Nature Conservation Committee (JNCC) were also considered to ensure that suitable assessment was undertaken.

2.3 Step 2: Likely Significant Effect

2.3.1 The screening assessment looks to identify whether the project could potentially cause significant effect to the features and/or conservation objectives of the identified designated sites.

2.3.2 Activities from the Proposals were identified that could impact on site features and conservation objectives by assessing the magnitude of each impact pathway on the features of the designated site. Direct disturbance, discharges, and emissions from the Proposals were considered.

2.3.3 Through the assessment of each impact pathway project activities or features of each site were screened out accordingly if it was identified there would unlikely be a significant effect from the activity or the feature would not be significantly affected. At this step, in line with recent case-law, assessments are made without consideration of mitigation/avoidance measures.

2.3.4 The assessment was based on sound reasoning and on the various ways in which development of the nature proposed could impact on the interest features of the relevant European sites. If it could not be concluded with confidence that adverse effects are unlikely, then under the precautionary principle, it was assumed that the issue required more detailed consideration and was progressed to the Appropriate Assessment Step.

2.4 Step 3: Appropriate Assessment

2.4.1 For impact pathways that were not screened out as part of Step 2, further assessment was undertaken. The information provided for this stage of the HRA included undertaking specialist studies and provision of additional data to determine whether there would ultimately be an adverse effect to the identified European or Ramsar sites from the Proposals.

2.4.2 The assessment was undertaken using specialist knowledge of the impact pathways and understanding of the sensitivities of the features of the designated sites that could be affected by the Proposals. Using scientific published information to assess the tolerance of site features to the identified impact, a recommendation as to the overall effect has been provided.

2.4.3 Following assessment of each impact a judgement was undertaken to determine whether the conservation objectives for each qualifying feature was maintained in a favourable condition. At this step, assessments are made with consideration of mitigation/avoidance measures.

2.5 Step 4: In-combination

2.5.1 The Habitats Regulations require that a decision to grant permission can only be made once the Competent Authority is satisfied that no adverse effects on the integrity of the Natura 2000 sites in question are likely both alone and in-combination with other plans and projects. Therefore, Step 4 of the HRA process requires the identification of other plans and projects that might affect the interest features of the relevant Natura 2000 sites in combination with the outline planning application and decide whether there any adverse effects that might occur in-combination that did not occur when considered alone.

2.6 Professional Judgement

2.6.1 Professional judgement was used in the carrying out of this work where specific guidance was not available, and in the interpretation of results. Where there was insufficient information regarding the likelihood of qualifying interests being present, or of the risk of impacts, the assessment used the precautionary principle to inform the judgement. The precautionary principle has been applied to ensure that any assessment errs on the side of caution, without being overly cautious. This principle means that the conservation objectives should prevail where there is uncertainty or that harmful effects will be assumed in the absence of evidence to the contrary.

3 STEP 1: QUALIFYING INTEREST FEATURES

3.1 Introduction

3.1.1 Based on the nature of the proposed development, the following four Natura 2000/Ramsar sites require consideration as to whether they could be affected:

- River Usk/Afon Wysg SAC;
- Severn Estuary/Môr Hafren SAC;
- Severn Estuary/Môr Hafren SPA; and
- Severn Estuary/Môr Hafren Ramsar site.

3.2 River Usk/Afon Wysg SAC

Site Description

- 3.2.1 The River Usk/Afon Wysg SAC boundary adjoins the north-western boundary of the power station site and lies adjacent to the application site
- 3.2.2 The River Usk/Afon Wysg SAC extends from the source of the River Usk located in the west of the Brecon Beacons flowing east and then south before entering the River Severn Estuary at Newport. The catchment is characterised by a narrow valley with underlying geology consisting of Devonian red sandstone which allows river waters to be generally well buffered against acidity and produces low levels of nutrients which are consequently influenced by catchment land uses. Land uses within the catchment are predominantly pastoral with some woodland and commercial forestry. The ecological structure and functions of the site are dependent on hydrological and geomorphological processes described, as well as the quality of riparian habitats and connectivity of habitats.

SAC Qualifying Features

- 3.2.3 The SAC has been divided into management units to inform on the features, objectives and management. The management units have been devised based on artificial barriers, major impacts, tidal limit and River Basin Management Plan water bodies.
- 3.2.4 The Proposals are located within Management Unit 1 of the SAC. Within this management unit the following key features from the Habitats Directive Annex II species list have been identified:
- Sea lamprey (*Petromyzon marinus*);
 - Twaite shad (*Alosa fallax*); and
 - European otter (*Lutra lutra*).
- 3.2.5 The following Habitats Directive Annex II species have also been identified as features of the SAC Management Unit 1 that are of importance in the unit but are not the main focus of management or monitoring. These features will benefit from management for the key feature(s) identified in the unit:
- River lamprey (*Lampetra fluviatilis*);
 - Allis shad (*Alosa alosa*); and
 - Atlantic salmon (*Salmo salar*).
- 3.2.6 The river lamprey, sea lamprey, twaite shad, allis shad and Atlantic salmon are diadromous species. Diadromous species are either anadromous (adults of anadromous species migrate from coastal marine areas to freshwaters to spawn but most growth occurs at sea), or catadromous

(adults migrate from freshwaters to marine waters to spawn, but most growth occurs within freshwaters). All five featured migratory fish species are anadromous.

- 3.2.7 Adult river lamprey generally enter UK rivers in late autumn and peaks in the abundance of juvenile river lamprey migrating downstream have been recorded between October and January (Claridge *et al.*, 1986). Sea lamprey migrate upstream and enter rivers such as the Usk in early spring. Sea lamprey are mainly restricted to the lower reaches of the River Usk catchment. Being poor swimmers, migrating lamprey generally move in shallow waters, along the edges of the main stream, particularly when the river current is strong (Kelly and King, 2001).
- 3.2.8 The upstream migration of allis and twaite shad to spawning areas in the River Usk occurs between March and June, reaching a peak in May. Spawning is dependent on temperature but usually occurs between May and July for twaite shad (Aprahamian *et al.*, 1998). The fish remain in fresh and/or estuarine waters during the summer, juveniles colonise the Severn Estuary from July, before migrating seaward in autumn.
- 3.2.9 Adult Atlantic salmon migrate upstream primarily between July and September, but also in earlier months of the year (EDF, 2011). Atlantic salmon smolts migrate downstream towards marine feeding grounds between April and June; evidence suggests that this migration occurs largely during night time hours within surface layers of the water column (Moore *et al.*, 1998).
- 3.2.10 Otter were considered widespread throughout the UK up until the 1950s when they underwent a rapid decline through to the 1970s. This was considered largely to have been the result of the use of organochlorine pesticides, exacerbated by hunting and habitat fragmentation. There has since been a significant recovery in the number and range of otter in England and Wales and environmental improvements attributed to this recovery have included a ban on adverse pesticides and improvements in pollution control and water quality, which benefitted fish prey.
- 3.2.11 The Third Report by the UK under Article 17 on the implementation of the Habitats Directive from January 2007 to December 2012 reported the UK wide population size to be an estimated maximum of 13,314 individuals.
- 3.2.12 In 2003, the European Standard Data Form for the River Usk SAC reported the estimated size of the resident otter population to be between 11 and 50, or up to 0.34% of the 2012 UK population.
- 3.2.13 The otter survey of Wales completed between 2009 and 2010 as part of the national otter survey (Strachan, 2015) covered a total of 62 survey sites along the River Usk and confirmed the presence of otters at 88.7% of the sites, an increase of 8.7% since 2002.
- 3.2.14 Currently there is no method of estimating the density of an otter population based on the density of otter field signs (Strachan, 2015) and, therefore, an increase in the number of sites where otter signs were recorded in Wales between 2009 and 2010 may not necessarily mean an increase in otter numbers.
- 3.2.15 Otter populations are now known to utilise the Rivers Usk, Ebbw and Rhymney as well as the reens of the Gwent Levels Site of Special Scientific Interest (SSSI) and the Monmouthshire-Brecon Canal (Newport Biodiversity Partnership, 2015).
- 3.2.16 Under the precautionary principle it is assumed that otters could utilise any suitable habitat within the power station landholding and immediate surroundings. Surveys at the site confirmed the presence of a frequently used otter path on the north-western boundary of the power station connecting Julian's Pill and Julian's Reen where the culverted section of watercourse is grilled and not accessible.
- 3.2.17 The camera trap recorded at least two otters moving up the bank of Julian's Pill and onto the otter on four occasions, with four individuals recorded on one occasion. All the camera trap path were in the period before sunrise when otters would be returning to holts and resting places.
- 3.2.18 The surveys have confirmed that otters are moving across a relatively short area of open ground on the boundary of the landholding. Julian's Reen continues in an easterly direction through land

within the Welsh Water sewage treatment works with two smaller drainage channels on the south-eastern boundary of the power station.

- 3.2.19 The survey findings indicate the likely presence of a holt (possible breeding holt) in the vicinity of Julian's Pill. Locations where watercourses flow into estuaries can be important for otters which need to regularly wash in fresh water. The dense continuous scrub present along Julian's Reen, in the Newport Wetlands and in localised areas on the south-eastern boundary of the power station provide dense cover and the holt could be located in any of these areas.

Conservation Objectives

- 3.2.20 Conservation objectives were required to be established for European Sites by the 1992 Habitats Directive (92/43/EEC). The aim of the Habitats Directive is the maintenance, or where appropriate the restoration of the favourable conservation status of habitats and species features for which SACs and SPAs are designated.
- 3.2.21 The conservation objectives for the SAC (CCW, 2008), are to maintain the water course habitats at near natural levels, as determined by predominantly unmodified ecological and hydromorphological processes and characteristics.
- 3.2.22 For identified featured fish species and European otter the following objectives apply:
- The conservation objectives for the River Usk watercourse must be met. This includes the sufficiency of the ecological status of the water environment to maintain a stable or increasing population of each feature/species, with elements of water quantity, quality, physical habitat and community composition and structure;
 - The population of the features in the SAC is stable or increasing over the long term;
 - The natural range of the feature in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches where predominantly suitable habitat for each life stage exists over the long term. Suitable habitat is defined in terms of near-natural hydrological and geomorphological processes and forms;
 - With regard to otter, the natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding territories. The whole area of the River Usk SAC is considered to form potentially suitable breeding habitat for otter. No otter breeding site should be subject to a level of disturbance that could have an adverse effect on breeding success. Where necessary, potentially harmful levels of disturbance must be managed; and
 - There is, and will probably continue to be, a sufficiently large habitat to maintain the feature's population in the SAC on a long-term basis.

3.3 Severn Estuary/Môr Hafren SAC, SPA and Ramsar

Site Description

- 3.3.1 The boundary to the Severn Estuary SAC, SPA and Ramsar site lies some 439 m to the west of the Proposals footprint at their closest point.
- 3.3.2 The Severn Estuary is located on the south west coast of Britain at the mouth of four major river systems (Severn, Wye, Usk and Avon). The extreme tidal range encountered within the estuary and unique funnel shape are considered rare. The tidal range of the estuary creates strong tidal currents and high turbidity, producing communities which are characteristic of the extreme physical conditions of liquid mud and tide-swept sand and rock. The estuary has a diverse geological setting and a wide range of geo-morphological features, especially sediment deposits.

- 3.3.3 The Severn Estuary includes a wide range of habitats, many of them listed as Annex I habitats in the Habitats Directive. The intertidal zone of mudflats, sand banks, rocky platforms and saltmarsh is one of the largest and most important in Britain.
- 3.3.4 The estuary also experiences fluctuating salinity and highly mobile sediments causing high turbidity that restricts the soft sediment infauna communities to relatively few species. Those which are tolerant of such conditions occur in very high densities on the more stable mudflats. Beds of eel-grass *Zostera* spp. also occur in these areas. Higher invertebrate diversity is generally recorded on the intertidal rock platforms, with rock pools and a relatively high cover of seaweeds.
- 3.3.5 The estuary fringes have large areas of saltmarsh. A range of saltmarsh types is present, with both gradual and stepped transitions between bare mudflat and upper marsh.

SAC Qualifying Features

- 3.3.6 The site is designated as an SAC under Article 4(4) of the Directive (92/43/EEC) as hosts the following habitats listed in Annex I:
- 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*); and
 - Reefs.
- 3.3.7 The site is designated under Article 4(4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:
- Sea lamprey (*Petromyzon marinus*);
 - River lamprey (*Lampetra fluviatilis*); and
 - Twaite shad (*Alosa fallax*).
- 3.3.8 The habitats found within the Severn Estuary SAC near to the south boundary of the Proposals comprise a mixture of saltmarsh, intertidal sandflats and mudflats. Saltmarsh is found within the upper intertidal zones with intertidal mud in lower zones, occasionally interspersed with intertidal sand patches (Countryside Council for Wales (CCW) Phase 1 Intertidal surveys 1996-2005).
- 3.3.9 Adult river lamprey generally enter UK rivers in late autumn and peaks in the abundance of juvenile river lamprey migrating downstream have been recorded between October and January (Claridge *et al.*, 1986). Sea lamprey migrate upstream and enter rivers such as the Severn in early spring. Being poor swimmers, migrating lamprey generally move in shallow waters, along the edges of the main stream, particularly when the river current is strong (Kelly and King, 2001).
- 3.3.10 The upstream migration of twaite shad to spawning areas in the River Severn, occurs between March and June, reaching a peak in May. Spawning is dependent on temperature but usually occurs between May and July for twaite shad (Arahamian *et al.*, 1998). The fish remain in fresh and/or estuarine waters during the summer, juveniles colonise the Severn Estuary from July, before migrating seaward in autumn.

SAC Conservation Objectives

- 3.3.11 The conservation objectives for the benthic habitat features for this site are listed below. These are taken from the Severn Estuary European Marine Site Regulation 33 Advice (NE, 2009).

For subtidal sandbanks:

- The total extent of the subtidal sandbanks within the site is maintained;

- The extent and distribution of the individual subtidal sandbank communities within the site is maintained;
- The community composition of the subtidal sandbank feature within the site is maintained;
- The variety and distribution of sediment types across the subtidal sandbank feature is maintained; and
- The gross morphology (depth, distribution and profile) of the subtidal sandbank feature within the site is maintained.

For intertidal mudflats and sandflats:

- The total extent of the intertidal mudflats and sandflats feature is maintained;
- The variety and extent of individual mudflats and sandflats communities within the site is maintained;
- The distribution of individual mudflats and sandflats communities within the site is maintained;
- The community composition of the mudflats and sandflats feature within the site is maintained; and
- The topography of the intertidal flats and the morphology (dynamic processes of sediment movement and channel migration across the flats) are maintained.

For Atlantic salt meadow:

- The total extent of Atlantic salt meadow and associated transitional vegetation communities within the site is maintained;
- The extent and distribution of the individual Atlantic salt meadow and associated transitional vegetation communities within the site is maintained;
- The zonation of Atlantic salt meadow vegetation communities and their associated transitions to other estuary habitats is maintained;
- The relative abundance of the typical species of the Atlantic salt meadow and associated transitional vegetation communities is maintained;
- The abundance of the notable species of the Atlantic salt meadow and associated transitional vegetation communities is maintained;
- The structural variation of the saltmarsh sward (resulting from grazing) is maintained within limits sufficient to satisfy the requirements of previous two conditions above and the requirements of the Ramsar and SPA features;
- The characteristic stepped morphology of the saltmarshes and associated creeks, pills, drainage ditches and pans, and the estuarine processes that enable their development, is maintained; and
- Any areas of *Spartina anglica* saltmarsh (SM6) are capable of developing naturally into other saltmarsh communities.

3.3.12 The conservation objectives for general estuarine features are typically similar to those presented for each individual habitat type but are presented in a more general manner.

3.3.13 The conservation objective for the featured three migratory fish species of the Severn Estuary SAC is to maintain the features in a favourable condition, as defined below:

- The migratory passage of both adult and juveniles through the Severn Estuary between the Bristol Channel and any of their spawning rivers is not obstructed or impeded by physical barriers, changes in flows, or poor water quality;

- The size of the featured populations in the Severn Estuary and the rivers which drain into it, is at least maintained as is at a level that is sustainable in the long term;
- The abundance of prey species forming the featured species food resource within the estuary, is maintained; and
- Toxic contaminants in the water column and sediment are below levels which would pose a risk to the ecological objectives described above.

SPA Qualifying Features

- 3.3.14 The site is also designated an SPA under Article 4.1 of the Birds Directive as it regularly supports an internationally important wintering population of Bewick's swan (*Cygnus columbianus bewickii*) listed as an Annex I species.
- 3.3.15 The SPA also qualifies under Article 4.2 as a wetland of international importance by regularly supporting over 20,000 waterfowl with 68,026 individuals recorded between 1988/89 to 1992/93 and by regularly supporting the following internationally important migratory species:
- European white-fronted goose (*Anser Albifrons albifron*);
 - Shelduck (*Tadorna tadona*);
 - Gadwall (*Anas strepera*);
 - Dunlin (*Calidris alpina*); and
 - Redshank (*Tringa tetanus*).
- 3.3.16 The Severn Estuary also supports an internationally important assemblage of waterfowl, consisting of all species mentioned above, in addition to nationally-important overwintering populations of the following species:
- Wigeon (*Anas penelope*);
 - Teal (*Anas crecca*);
 - Pintail (*Anas acuta*);
 - Pochard (*Aythya farina*);
 - Tufted duck (*Aythya fuligula*);
 - Ringed plover (*Charadrius hiaticula*);
 - Grey plover (*Pluvialis squatarola*);
 - Curlew (*Numenius arquata*);
 - Whimbrel (*Numenius phaeopus*);
 - Spotted redshank (*Tringa erythropus*);
 - Lapwing (*Vanellus vanellus*);
 - Mallard (*Anas platyrhynchos*); and
 - Shoveler (*Anas clypeata*).

SPA Conservation Objectives

- 3.3.17 The conservation objectives for this site are listed below. These are taken from the Severn Estuary SPA Marine Site Regulation 33 Advice (NE, 2009).

- 3.3.18 Subject to natural change, maintain in favourable condition the habitats for the internationally important population of the regularly occurring Annex I bird species, under the Birds Directive, in particular:
- 5-year peak mean is no less than the designated site citation evidence population count;
 - Maintenance of habitats that are relied upon by the species including saltmarsh, intertidal sand and mudflats;
 - Unrestricted bird sightlines >500m; and
 - Aggregations of species are not subject to significant disturbance.
- 3.3.19 Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of regularly occurring migratory bird species, under the Birds Directive, in particular:
- 5-year peak mean is no less than the designated site citation evidence population count;
 - Maintenance of habitats that are relied upon by the species including saltmarsh, intertidal sand and mudflats;
 - The abundance and macro-distribution of suitable invertebrates is maintained;
 - Unrestricted bird sightlines of varying distances dependent on species; and
 - Aggregations of species are not subject to significant disturbance.
- 3.3.20 Subject to natural change, maintain in favourable condition the habitats for the internationally important assemblage of waterfowl, under the Birds Directive, in particular:
- 5-year peak mean is no less than the designated site citation evidence assemblage count;
 - Maintenance of habitats that are relied upon by the species including hard substrates, saltmarsh, intertidal sand and mudflats;
 - the abundance and macro-distribution of suitable invertebrates is maintained
 - Unrestricted bird sightlines of >500m is maintained; and
 - Aggregations of waterfowl are not subject to significant disturbance.

Ramsar Qualifying Features

- 3.3.21 The qualifying interest features of the Severn Estuary Ramsar Site overlap with those of the Severn Estuary SPA and SAC.
- 3.3.22 The Severn Estuary Ramsar site qualifies under Criteria 1,3, 4, 5, 6 and 8.
- 3.3.23 Under Criterion 1 the estuary qualifies due to the extreme tidal range which affects both the physical environment and biological communities found.
- 3.3.24 Under Criterion 3 the estuary qualifies due to the estuary's unusual estuarine communities reduced diversity and high productivity.
- 3.3.25 The estuary qualifies under Criterion 4 for the migration of fish species: Atlantic salmon, sea trout (*S. trutta*), sea lamprey, river lamprey, allis shad, twaite shad, and eel (*Anguilla anguilla*).
- 3.3.26 The estuary qualifies under Criterion 6 as it regularly supports 1% of the individuals in a population of the following species:
- Bewick's swan;
 - Greater /European white-fronted goose;
 - Dunlin;

- Common redshank;
- Common shelduck;
- Gadwall;
- Ringed plover (spring/autumn);
- Eurasian teal (winter);
- Northern pintail (winter); and
- Lesser black-backed gull (breeding).

3.3.27 The estuary also qualifies under Criterion 8 as the fish assemblage of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded.

Ramsar Conservation Objectives

3.3.28 The conservation objectives of the Ramsar site features for estuarine habitats, migratory fish and bird populations are similar to those objectives identified for the Severn Estuary SAC estuarine habitats, migratory fish and SPA Bird population conservation objectives.

4 STEP 2: SCREENING FOR LIKELY SIGNIFICANT EFFECTS

- 4.1.1 This section deals with the screening of likely significant negative effects on the qualifying features and sub-features of the relevant Natura 2000 and Ramsar sites as a result of the operation of the proposed project.
- 4.1.2 For the purposes of the Environmental Permit application, the environmental pathways that could lead to a significant effect due to the operation of the proposed development may be summarised as:
- Changes to air quality during operation (operational emissions); and
 - Noise-related disturbance during operation.
- 4.1.3 The possibility of a likely significant effect on any of the qualifying features of the designated sites (identified in Section 3) from both of these potential operational impact pathways is discussed.
- 4.1.4 Environmental pathways during the construction phase, and any additional pathways associated with the operation (other than air quality and noise) will be assessed in detail in an updated shadow HRA for submission as part of the planning application alongside the EIA.

4.2 Air Quality During Operation

- 4.2.1 Levels of understanding of air quality effects on semi-natural habitats and qualifying interest species of Natura 2000 sites are relatively in their infancy. The Air Pollution Information System (APIS) is a publicly-available support tool for UK conservation and regulatory agencies, industry and local authorities to help assess the potential effects of air pollutants on habitats and species. It aims to enable a consistent approach to air pollution assessment across the UK. This specifically includes informing assessments required under the Habitats Regulations. Consequently, reference has been made to the information contained within the APIS website.
- 4.2.2 The air quality assessment undertaken in support of the permit application (RPS 2019a) provides details of the output of modelling of the emissions to air from the proposed development and the associated process contributions (PCs) at the designated sites considered here. Details of the existing background concentrations/deposition rates (to calculate the Predicted Environmental Concentrations, PEC) and relevant Environmental Quality Standards (EQS) are taken from the Site-Relevant Critical Load Tool on APIS and, where such data were not available, from the location-specific search tool.
- 4.2.3 The PCs and PECs have been compared against the relevant critical level/load for the relevant habitat type/interest feature. Based on current Environment Agency guidelines (EA 2019) and the Institute of Air Quality Management *A guide to the assessment of air quality impacts on designated nature conservation sites* (IAQM 2019).
- 4.2.4 The following criteria have been used to determine if the impacts are potentially significant:
- If the PC does not exceed 1% of relevant critical level/load the emission is considered not significant; and
 - If the PC exceeds 1% but the resulting PEC is below 100% of the relevant critical level/load, the emission is not considered significant.
- 4.2.5 For all receptors at all sites, either the PC does not exceed 1% of the relevant EQS or the PEC is less than 100%. As such, no likely significant effect is predicted on any designated site as a result of emissions to air from the proposed development.

4.3 Noise-Related Disturbance

Fish Interest Features

- 4.3.1 There will be no increase in underwater noise as a result of the development (all works are on-shore with no associated ship movements). As such, no disturbance of migratory fish species within the River Usk SAC (or more widely within the Seven Estuary) is anticipated and this issue can therefore be screened out from further assessment in relation to all fish interest features.

Bird Interest Features

- 4.3.2 Noise disturbance is typified by regular responses to stimuli with birds moving away from the source to areas which are less disturbed. Most birds will show a degree of response to noise stimuli. Birds that remain in the affected area may not forage efficiently and if there are additional pressures on the birds then this may impact upon the survival of individual birds or their ability to breed (Cutts *et al.*, 2013).
- 4.3.3 For auditory disturbance to qualify as a high level, it must constitute a sudden noise event of over 60 dB at the bird or a more prolonged noise of over 72 dB. Moderate noise disturbance is typified as high-level noise which has occurred over long periods so that birds become habituated to it or lower level noise which causes some disturbance to birds. This encompasses occasional noise events above 55 dB, regular noise 60-72 dB and long-term regular noise above 72 dB, where birds have become habituated. Low level noise is classed as that which is unlikely to cause a response in birds using a fronting intertidal area. As such, noises of less than 55 dB at the bird are included in this category. These effects are likely to be masked by background inputs in all but the least disturbed areas and thus would not disturb the birds close by. Noise between 55-72 dB in some highly disturbed areas e.g. industrial or urban areas and adjacent to roads, may be categorised as a low level of disturbance provided the noise level was regular, as birds will often habituate to a constant noise level.
- 4.3.4 Airborne noise emitted during operational activities are judged to be unlikely to result in effects on SPA and Ramsar site qualifying bird species using nearby intertidal areas. During operation, all loading / unloading onto conveyors is to be in buildings / enclosures. No impulsive/sudden sounds that would be readily audible off-site are anticipated from the activities within buildings with only low level background noise in the external environment.
- 4.3.5 Noise emissions from the proposed development during operation have been modelled as part of the Environmental Permit application (RPS 2019b). Although ecology noise sensitive receptors were not included explicitly, Figures 2 and 3 of that report provide noise contours of predicted day and night time noise levels, respectively.
- 4.3.6 These show that maximum average noise levels at the boundary between the power station landholding and intertidal areas will be below 38 dB $L_{aeq, T}$ during the day and less than 35dB $L_{aeq, T}$ during the night. Noise modelling on the closest boundary of Julian's Pill will also be below 39dB $L_{aeq, T}$. The modelled noise levels at the western end of the Newport Wetlands SSSI would be slightly higher but below a maximum average of 45dB $L_{aeq, T}$. The noise levels on the boundary of the Severn Estuary, 440m to the west, will be significantly lower.
- 4.3.7 The predicted noise levels to the east of the site (Lowlands and Moorcroft Farm) not change by more than 3 dB (based on the average residual sound levels from Table 3.1 in RPS 2019b).
- 4.3.8 It should also be considered that the birds present in area are somewhat habituated to noise through their use of a range of disturbed habitats across the wider River Usk, River Ebbw, and Severn Estuary area. All of these factors mean that significant disturbance impacts through operational noise are not considered to be possible, and therefore there is no potential likely significant effect on qualifying bird species from operational noise. This aspect has therefore been screened out from any further assessment.

Otter Interest Feature

- 4.3.9 With respect to noise disturbance during operation on the otter interest feature of the River Usk SAC, European otter can tolerate considerable levels of human disturbance within their home range. They have been recorded in cities and towns throughout the UK; in Shetland, otter have reportedly bred regularly under the islands ferry terminals and jetties of one of Europe's largest oil terminals at Sullom Voe, (Green and Green, 1997: cited in Chanin, 2003). However, the features used by resting otter in relatively disturbed areas tend to be located where they are at minimal risk of direct physical disturbance or damage (Chanin, 2003).
- 4.3.10 Up to 4 individuals have been recorded on static cameras moving up the bank of Julian's Pill towards on the northern boundary of the power station at dawn when otters would be returning to holts and resting places.
- 4.3.11 At this location the reen/watercourse is culverted beneath a track and site railway line with a grille across the channel blocking access for otters. Otter paths are visible through vegetation on either side of track/railway line confirming that otters are moving across a relatively short area of open ground where the reen is culverted. The main watercourse, Julian's Reen, continues in an easterly direction through land within the Welsh Water sewage treatment works while there are two other drainage channels on the south-eastern boundary of the power station.
- 4.3.12 The survey findings indicate the likely presence of a holt (likely breeding holt) in the vicinity of Julian's Pill and locations where watercourses (or reens) flow into estuaries can be important for otters which need to regularly wash in fresh water. Continuous scrub along Julians Reen, in the Newport Wetlands and in localised areas on the south-eastern boundary of the power station provide dense cover and the holt could be located in any of these areas.
- 4.3.13 Due to the level of tolerance otter typically exhibit to airborne noise (Chanin, 2003; NE and CCW 2007; Highways Agency 2001), the extent of any potential displacement impacts for foraging animals would be limited (e.g. NE and CCW and 2007, Highways Agency 2001) with elevated noise during night only associated with the buildings, surrounding hard standing and current coal stocking area. A minor increase in decibel levels in along the north-western site boundary would not have any effect on otter activity in the intertidal habitats located below the sea wall or activity in the River Usk.
- 4.3.14 Proposals would not prevent otter from accessing the River Usk from Julian's Pill, Julian's Reen or the boundary drains adjoining the Proposed Development, or from travelling along the River Usk to access their full home range.
- 4.3.15 During the daytime, operational noise will be higher with dense scrub to the south of the power station (on the boundary of the Newport Wetlands) subject to modelled noise levels of between 40 and 45dB with further areas of scrub to the north-east, east and south subject to modelled noise levels of 35-40dB. With a documented tolerance to noise, these decibel level would have a minimal risk of disturbance to otter behaviour. Noise levels in any below ground resting places would be very significantly insulated from airborne noise. Decibel levels of 40 to 45dB at any laying up resting places would have a minor risk of disturbance of individuals. Should an otter be displaced, it would be a temporary effect that would have an impact over a relatively short distance only (e.g. 30 m: NE and CCW, 2007; Highways Agency, 2001) and would not prevent an otter from accessing remaining parts of the home range along the River Usk.
- 4.3.16 Therefore, potential effects on otter from operational noise can be screened out as unlikely to have a significant effect.

5 STEP 4: IN-COMBINATION

- 5.1.1 Although no likely significant effects were identified at Step 2 of the HRA meaning no Step 3: Appropriate Assessment is necessary when considering the operation of the Proposed Development by itself, Regulation 63 of the Habitats Regulations 2017 also require the assessment of potential effects in combination with other plans or projects.
- 5.1.2 Given the very low noise levels predicted from the operation of the Proposed Development, in combination effects from disturbance are considered very unlikely. Sound pressure levels are measured on a logarithmic scale meaning, while they do act cumulatively, it requires very significant increases to raise a low background level (such as that experienced due to the Proposed Development) to a level at which disturbance of interest feature species might occur.
- 5.1.3 With respect to changes in operational air quality, while no specific modelling of cumulative process contributions has been undertaken, data from APIS (presented in RPS 2019a) show that the PEC at all sites considered here is <60% of the relevant EQS. This means there is substantial headroom before the EQS is reached and, as such, any cumulative effects are considered unlikely to be significant.

6 CONCLUSIONS

- 6.1.1 It has been concluded that there are no potential likely significant effects on any interest features within the River Usk SAC, Severn Estuary SAC, SPA and Ramsar sites during the operational phase of the Proposed Development either alone or in combination.

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