

Habitats Regulations Assessment

Rush Wall Solar Park

November 2021

A report by

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Report details

Site name: Rush Wall Solar Park
Site address: Redwick, Newport
Grid reference: ST 416 853
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Declaration of compliance

BS 42020:2013

This study has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of Practice for Planning and Development.

Code of Professional Conduct

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of survey data and report

The findings of this report are valid for 24 months from the date of surveys on which it is based. If work has not commenced within this period, updated surveys by a suitably qualified ecologist may be required.

Revisions

Date	Report no:	Comment
29 th July 2020	WOR-526.HRA	Original report
2 nd November 2021	WOR-526.HRA.2	Updated following consultee comments

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1. Introduction

1.1. Background

This report is in response to comments within ‘Other Matters’ of the scoping direction given by the Planning Inspectorate that stated:

Habitats Regulation Assessment

The Conservation of Habitats and Species Regulations 2017 require competent authorities, before granting consent for a plan or project, to carry out an appropriate assessment (AA) in circumstances where 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). The competent authority in respect of a DNS application is the relevant Welsh Minister who makes the final decision. It is the Applicant’s responsibility to provide sufficient information to the competent authority to enable them to carry out an AA or determine whether an AA is required.

When considering whether or not significant effects are likely, applicants should ensure that their rationale is consistent with the CJEU¹ finding that mitigation measures (referred to in the judgment as measures which are intended to avoid or reduce effects) should be assessed within the framework of an AA and that it is not permissible to take account of measures intended to avoid or reduce the harmful effects of the plan or project on a European site when determining whether an AA is required (“screening”). The screening stage must be undertaken on a precautionary basis without regard to any proposed integrated or additional avoidance or reduction measures. Where the likelihood of significant effects cannot be excluded on the basis of objective information, the competent authority must proceed to carry out an AA to establish whether the plan or project will affect the integrity of the European site, which can include at that stage consideration of the effectiveness of the proposed avoidance or reduction measures.

Where it is effective to cross refer to sections of the ES in the HRA, a clear and consistent approach should be adopted. The Planning Inspectorate’s guidance for Nationally Significant Infrastructure Projects – Advice Note 10: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects may prove useful when considering what information to provide to allow the Welsh Ministers to undertake AA.

In addition, Natural Resources Wales (NRW) stated:

A HRA should be undertaken for the potential impacts on the Severn Estuary European site in line with The Conservation of Habitats and Species Regulations 2017. Therefore, the ES should include the following to inform the assessment:

¹ Reference for a preliminary ruling from the High Court (Ireland) made on 30 May 2017 — People Over Wind, Peter Sweetman v Coillte Teoranta (Case C-323/17) (2017/C 277/38)

- *an assessment of potential impacts on the flight lines and resting areas of birds of the Severn Estuary and loss of grassland habitat;*
- *an assessment of potential impacts on the migration of the Common Eel *Anguilla anguilla*, (a feature of the Severn Estuary Ramsar and SSSI) through the watercourses of the Gwent Levels. During the construction and operation of the site there should be no barriers to the eel migration.*

Unfortunately, NRW have not been available to provide further consultation on this HRA, or the likely impacts of the proposed development on the Natura 2000 sites.

1.2. Approach to the Habitats Regulations Assessments

A Habitats Regulations Assessment (HRA) is required under EC Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (the 'Habitats Directive') (Article 6(3)) wherever a plan or project that is not directly connected to, or necessary to the management of a Natura 2000 site has the potential to have a significant effect on the qualifying species populations or habitats within the site.

From this, the relevant plan-making body shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the designated site concerned, unless in certain exceptional circumstances.

Guidance on undertaking assessment of plans or projects that may impact upon designated European sites recommends a staged approach to the assessment process:

- Screening - Identifying potentially relevant European sites and the likely impacts of a project upon the designated features of a European site, either alone or in combination with other plans and projects, and considering whether the impacts are likely to be significant.
- Appropriate Assessment - The consideration of the impacts on the integrity of the European site, either alone or in combination with other plans and projects, with regard to the site's structure and function and its conservation objectives. Where there are adverse impacts, an assessment of mitigation options is carried out to determine adverse effect on the integrity of the site. If these mitigation options cannot avoid adverse effects, then development consent can only be given if the following two tests can be passed.
- Test 1 - Assessment of Alternative Solutions - Examining alternative ways of achieving the objectives of the project, to establish whether there are solutions that would avoid or have a lesser effect on European sites.
- Test 2 - Imperative Reasons of Overriding Public Interest - This is the assessment where no alternative solution exists and where adverse impacts remain. It is the process to assess whether the development is necessary for IROPI and, if so, the identification of any necessary compensatory measures needed to maintain the overall coherence of the site or integrity of the European site network.

These four stages are referred to as a Habitats Regulations Assessment (HRA).

A 'likely' effect is one that cannot be ruled out on the basis of objective information, and it should be noted that the test is a 'likelihood' of effects rather than a 'certainty' of effects.

Determining whether there will be a LSE does not imply that there will be such an effect, or even that an effect is more likely than not. The LSE test should be used to filter out effects that are clearly trivial or inconsequential.

To suggest LSE there must be a link between the proposal's effects and a European site's qualifying features, and it must be reasonable to suggest that the effect is likely. Having established this, only where the effects are obviously trivial or inconsequential and this judgement can be clearly and easily justified, should no LSE be concluded.

The aim of the LSE test is therefore to determine whether the plan either alone, or in combination with other plans and projects and activities, is likely to result in a significant effect on a European site. Given the need for a high level of certainty to meet Habitats Regulations requirements, there is a presumption in favour of 'screening issues in' at this stage, following the precautionary approach. When considering the relevant screening methods to determine LSE, it is therefore understood that there needs to be a presumption in favour of including, rather than excluding, qualifying features and designated sites in the HRA process at this stage.

This report therefore provides an assessment of LSE to enable the Planning Inspectorate to undertake an HRA screening of the potential for the development to impact qualifying features of Severn Estuary Special Area of Conservation (SAC), Severn Estuary Special Protection Area (SPA) and Severn Estuary Ramsar.

An HRA screening matrix is included as Chapter 7 of this report.

2. Identification of Natura 2000 site and characterisation

2.1. The site

The proposed solar farm comprises an area of agricultural land (Map 1). The Severn Estuary, 1.2km to the south, is also subject to the following International designations:

- Severn Estuary Special Area of Conservation (SAC)
- Severn Estuary Special Protection Area (SPA)
- Severn Estuary Ramsar Site

2.2. Severn Estuary SAC

Annex I habitats that are a primary reason for selection of this site

1130 Estuaries

1140 Mudflats and sandflats not covered by seawater at low tide

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

1110 Sandbanks which are slightly covered by sea water all the time

1170 Reefs

Annex II species that are a primary reason for selection of this site

1095 Sea lamprey *Petromyzon marinus*

1099 River lamprey *Lampetra fluviatilis*

1103 Twaite shad *Alosa fallax*

Annex II species present as a qualifying feature, but not a primary reason for site selection
Not applicable

It should also be noted that Migratory Fish (Including salmon, eel, sea trout and allis shad) are 'part of notable species sub-feature of estuarine feature', whilst the following are 'notable species sub-feature of estuarine feature';

- Assemblage of fish species
- Internationally important populations of migratory bird species
- Internationally important populations of wintering bird species
- Assemblage of nationally important populations of waterfowl
- Hard substrate habitats (rocky shore)

Detailed conservation objectives of this SAC are provided within '*The Severn Estuary/Mor Hafren European Marine Site. Natural England & the Countryside Council for Wales' advice given under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended. June 2009*'.

2.3. Severn Estuary SPA

This area has been designated a SPA due to its importance during the spring and autumn migration periods for waders moving up the west coast of Britain, as well as in winter for large numbers of waterbirds, especially swans, ducks and waders. This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

Over winter:

Bewick's Swan *Cygnus columbianus ssp. bewickii*, 280 individuals representing at least 4.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

On passage:

Ringed Plover *Charadrius hiaticula*, 655 individuals representing at least 1.3% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)

Over winter:

Curlew *Numenius arquata*, 3,903 individuals representing at least 1.1% of the wintering Europe - breeding population (5 year peak mean 1991/2 - 1995/6)

Dunlin *Calidris alpina alpina*, 44,624 individuals representing at least 3.2% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6)

Pintail *Anas acuta*, 599 individuals representing at least 1.0% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)

Redshank *Tringa totanus*, 2,330 individuals representing at least 1.6% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)

Shelduck *Tadorna tadorna*, 3,330 individuals representing at least 1.1% of the wintering North-western Europe population (5 year peak mean 1991/2 - 1995/6)

Assemblage qualification: A wetland of international importance.

The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.

Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Gadwall *Anas strepera*, Shelduck *Tadorna tadorna*, Pintail *Anas acuta*, Dunlin *Calidris alpina alpina*, Curlew *Numenius arquata*, Redshank *Tringa totanus*, Bewick's Swan *Cygnus columbianus ssp. bewickii*, Wigeon *Anas penelope*, Lapwing *Vanellus vanellus*, Teal *Anas crecca*, Mallard *Anas platyrhynchos*, Shoveler *Anas clypeata*, Pochard *Aythya ferina*, Tufted Duck *Aythya fuligula*, Grey Plover *Pluvialis squatarola*, White-fronted Goose *Anser albifrons albifrons*, Whimbrel *Numenius phaeopus*.

It should be noted that the following are supported habitats for designated bird interest features of this SPA:

- Estuary
- Subtidal sandbanks
- Intertidal mud and sand
- Atlantic salt meadow/salt marshes
- Hard substrate habitats
- Freshwater grazing marsh/neutral grassland

Detailed conservation objectives of this SPA are provided within 'The Severn Estuary/Mor Hafren European Marine Site. Natural England & the Countryside Council for Wales' advice given under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended. June 2009'.

2.4. Severn Estuary RAMSAR

The Severn Estuary is one of the largest estuaries in Britain and it has the second largest tidal range in the world. Its classic funnel shape and southwest orientation makes it susceptible to extreme weather conditions in the east Atlantic. There are large urban developments on the estuary. The high tidal range leads to strong tidal stream and high turbidity, producing communities characteristic of the extreme physical conditions of liquid mud and tide-swept sand and rock. The site is particularly important for the run of migratory fish between the sea and rivers via the estuary. Species using the estuary include *Salmo salar*, *S. trutta*, *Petromyzon marinus*, *Lamprreta fluviatilis*, *Alosa alosa*, *A. fallax* and *Anguilla anguilla*.

The estuary is also important for migratory birds during spring and autumn migrations. During the five year period 1987/88 to 1991/92, the estuary supported nationally important numbers of Common Ringed Plover *Charadrius hiaticula*, Dunlin *Calidris alpina*, Whimbrel *Numenius phaeopus*, and Common Redshank *Tringa totanus*. The site also regularly supports more than 20,000 waterfowl. In the five year period 1988/89 to 1992/93 the average peak count was 68,026 waterfowl, comprising 17,502 wildfowl and 50,524 waders. These included internationally important numbers of Greater White-fronted Goose *Anser albifrons albifrons* (3,002), Shelduck *Tadorna tadorna* (2,892), Gadwall *Anas strepera* (330), Dunlin *Calidris alpina* (41,683) and Common Redshank *Tringa totanus* (2,013). Several other species occur in nationally important numbers, including Lesser Black-backed Gulls.

2.5. Proposed development

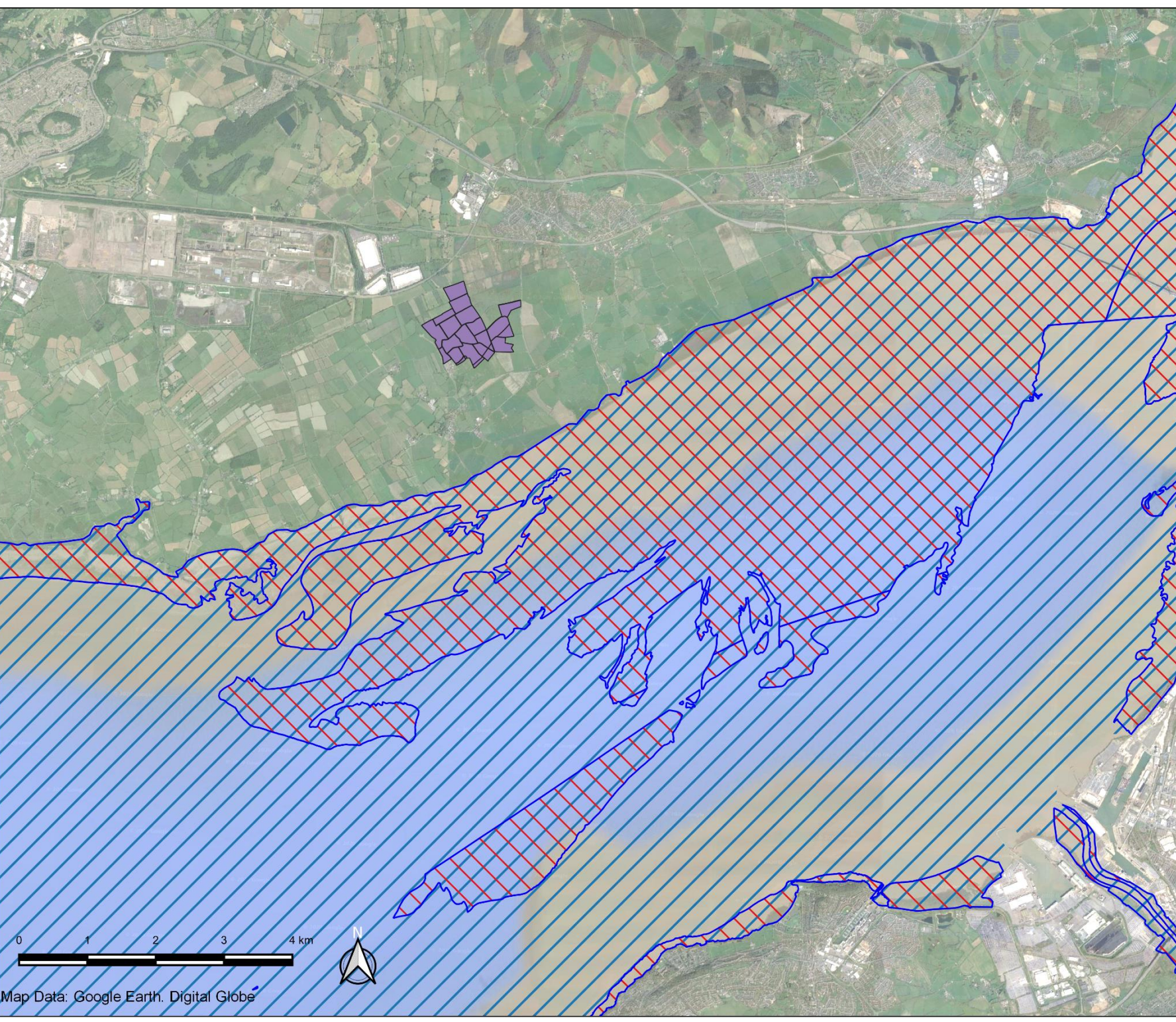
The proposed development is a ground mounted Photo Voltaic (PV) solar farm development. Detailed project description is provided in Chapter 2 of the Environmental Statement.

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Legend

-  Rush Wall Solar Park (approximate)
-  Severn Estuary Ramsar
-  Severn Estuary SAC
-  Severn Estuary SPA



Title: Map 1. Development site and nearby Natura 2000 sites

Project: Rush Wall Solar Farm

Checked by: CDH Version: 01
Date: 27 July 2020

3. Identification of likely impacts and screening

The proposed development is not connected with, or necessary to, the management of the international sites.

3.1. Severn Estuary SAC

Annex 1 habitats

The primary pathway of effect on Annex 1 habitats within Severn Estuary SAC from an unmitigated development such as this relate to:

- Land take
- Increased airborne pollutants
- Increased waterborne pollutants

The proposed development is wholly contained within an area 1.3km from this SAC and will not result in land take within the SAC.

During construction work, there is potential for a limited amount of airborne pollutants and dusts to be created for a brief period of time. Predominant winds in this area are from the south west such that any pollutants would be carried away from this SAC, whilst dilution over the intervening distance would negate any effect. It not expected that airborne pollutants will be emitted during the operational phase of the development.

Reens enclosing the site drain into the Severn Estuary SAC. However, construction and operation of the proposed development is unlikely to create water borne pollutants whilst dilution would be significant. Waterborne pollutants associated with the proposed development would be extremely unlikely impact this SAC or supporting habitats.

It is certain that the proposed solar farm would have no LSE on Annex 1 habitats associated with the Severn Estuary SAC.

Annex II species

The Severn Estuary SAC has been selected for the Annex II species Sea lamprey, River lamprey and Twaite shad. These are all species associated with open waters and rivers and would be unlikely to be present in reens at this site.

Eel are 'part of notable species sub-feature' of estuarine feature and are known to be present in reens, and to a lesser degree ditches, across the proposed solar farm footprint.

The primary pathway of effect on Eel would be through impacts to reens and ditches, such as direct habitat loss and damage, and changes in water quality and water levels which could impact European Eel populations. There is also potential for direct harm or injury, and the creation of barriers to their movement.

LSE on European Eel and migratory fish, an interest features of the Severn Estuary SAC, cannot be ruled out at this stage of the HRA process.

3.2. Severn Estuary SPA

The proposed development is located 1.3km to the north of the Severn Estuary SPA which is of International value for its wintering and passage birds. Of these interest features Lapwing, Mallard, Snipe, Lesser Black-backed Gull, Shelduck, Pochard, Teal, Bewick's Swan, Curlew and Wigeon were recorded during the 32 site visits between October 2018 and March 2020.

The primary pathway of effect during the construction phase would be temporary habitat loss to construction activities and disturbance during the wintering season affecting birds that also active within this SPA.

The primary pathway of effect during the operational phase would be permanent loss of habitat used by interest features species of this SPA.

The development site supports less than 1% of the population of species listed as interest features of this SPA².

A formal assessment of the impacts on this SPA has been made within Chapter 6 of the ES (Ornithology) and is informed by two years of wintering and passage bird surveys.

Mitigation is recommended for wintering birds and detailed within the Landscape and Ecology Management Plan (Appendix 2.3). This does not include wintering European White-fronted Goose, wintering Dunlin, wintering Curlew, winter Pintail, wintering Redshank, wintering Shelduck or wintering Gadwall. The mitigation relates to Lapwing which is part of the wintering waterfowl assemblage feature of this SPA.

In line with CJEU ruling, mitigation cannot be taken into account when screening for LSE.

Consequently, LSE on wintering birds, an interest feature of the Severn Estuary SPA, cannot be ruled out at this stage of the HRA process.

3.3. Severn Estuary Ramsar

The proposed development is located 1.3km to the north of the Severn Estuary Ramsar which is of International value for its wintering and passage birds, migratory fish, and European Eel.

The primary pathway of effect on would be through impacts to reens and ditches, such as direct habitat loss and damage, and changes in water quality and water levels which could impact European Eel populations. There is also potential for direct harm or injury, and the creation of barriers to their movement.

² Taken from WeBs data annual peak (5-year average) within the Severn Estuary. See Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2020. *Waterbirds in the UK 2018/19: The Wetland Bird Survey*. BTO/RSPB/JNCC. Thetford.

LSE on European Eel and migratory fish, an interest features of the Severn Estuary Ramsar, cannot be ruled out at this stage of the HRA process.

The primary pathway of effect during the construction phase for wintering and passage birds would be temporary habitat loss to construction activities and disturbance during the wintering season affecting birds that also active within this Ramsar.

The primary pathway of effect during the operational phase for wintering and passage birds would be permanent loss of habitat used by interest features species of this Ramsar. A formal assessment of the impacts on this Ramsar has been made within Chapter 6 of the ES (Ornithology) and is informed by two years of wintering and passage bird surveys. Mitigation is recommended for wintering waterfowl and detailed within the Landscape and Ecology Management Plan (Appendix 2.3).

Consequently, LSE on the wintering waterfowl assemblage, an interest features of the Severn Estuary Ramsar, cannot be ruled out at this stage of the HRA process.

4. Statement to inform an Appropriate Assessment

4.1. Introduction

An appropriate assessment is required by Regulation 63 of the Habitats Regulations 2017 implementing Article 6(3) of the Habitats Directive (92/43/EEC) in the event that it is considered a plan or project, not connected with the management of that site, is likely to have a 'significant effect' on any European (Natura) site, i.e. Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites.

The purpose of this statement is to provide the competent authority with the required information to carry out the appropriate assessment. This will ensure that protection of the integrity of European sites is a part of the planning process at a regional and local level. Permission can only be granted if it can be ascertained that the plan or project will not affect the integrity of the European site.

As detailed in screening, two European sites are taken forwards for Appropriate Assessment, the Severn Estuary SPA and Severn Estuary Ramsar, to determine:

- What are the implications of the effects of the proposal on the site's conservation objectives and will it delay or interrupt progress towards achievement of any of the objectives?
- Can it be ascertained that the proposal will not adversely affect the integrity of the site beyond reasonable scientific doubt?

At this stage in the HRA process mitigation against adverse effect can be taken into account.

4.2. Assessment against conservation objectives

Only the objectives of interest features with LSE are considered here.

Severn Estuary SAC

The conservation objectives of the Severn Estuary SAC are:

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

More detail of this is given in Severn Estuary SAC, SPA and Ramsar Site: Regulation 33 Advice from CCW and Natural England, June 2009.

Use of the assessment site by interest features of this SAC

The only interest feature of this SAC considered for LSE here is European Eel which has no species specific conservation objectives.

It is very likely that Eel associated with the SAC are present within reens and may occasionally traverse the site when moving between watercourses.

Construction phase impacts

The primary pathway of effect would be through impacts to reens and ditches, such as direct habitat loss and damage, and changes in water quality and water levels which would impact European Eel populations. There is also potential for direct harm or injury, and the creation of barriers to their movement.

Construction phase mitigation

Protection of boundary habitats, and adoption of the CEMP which details protection of watercourses, surface water management and dust minimisation, will ensure there is negligible potential for an adverse effect on this receptor during the construction phase.

Operational phase impacts

The primary pathway of effect would be through impacts to reens and ditches, such as direct habitat loss and damage, and changes in water quality and water levels which would impact European Eel populations. There is also potential for direct harm or injury, and the creation of barriers to their movement.

Operational phase mitigation

Improved water quality associated with changes in land management combined with protection of boundary habitats and ditch management plan make it near-certain that there will be a negligible effect on this receptor during the operational phase.

Severn Estuary SPA

The conservation objectives of the Severn Estuary SPA are:

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

More detail of this is given in Severn Estuary SAC, SPA and Ramsar Site: Regulation 33 Advice from CCW and Natural England, June 2009.

The SPA assemblage of waterfowl will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

- i. the 5 year peak mean population size for the waterfowl assemblage is no less than 68,026 individuals (ie the 5 year peak mean between 1988/9 - 1992/3);
- ii. the extent of saltmarsh (Appendix 8) and their associated strandlines is maintained;
- iii. the extent of intertidal mudflats and sandflats (Appendix 8) is maintained;
- iv. the extent of hard substrate habitats (Appendix 8) is maintained;
- v. extent of vegetation of <10cm throughout the saltmarsh is maintained;
- vi. the abundance and macroscale distribution of suitable invertebrates³ in intertidal mudflats and sandflats (Appendix 8) is maintained;
- vii. the abundance and macroscale distribution of suitable invertebrates³ in hard substrate habitats (Appendix IV) is maintained;
- viii. greater than 25% cover of suitable soft leaved herbs and grasses⁴ during the winter on saltmarsh areas (Appendix 8) is maintained;
- ix. unrestricted bird sightlines of >500m at feeding and roosting sites are maintained;
- x. waterfowl aggregations at feeding or roosting sites are not subject to significant disturbance.

Key supporting habitats of the waterfowl assemblage are:

- Intertidal mudflats and sandflats
- Saltmarsh
- Hard substrate habitats (rocky shores)
- Freshwater grazing marsh/neutral grassland

In addition, species-specific conservation objectives are set for Bewick's Swan, European White-fronted Goose, Dunlin, Redshank, Shelduck, and Gadwall.

Use of the assessment site by interest features of this SPA

The proposed development is located 1.3km to the north of the Severn Estuary SPA which is of International value for its wintering and passage birds. Of these interest features Lapwing, Mallard, Snipe, Lesser Black-backed Gull, Shelduck, Pochard, Teal, Bewick's Swan, Curlew and Wigeon were recorded during the 32 site visits between October 2018 and March 2020.

Of these species, Wigeon, Teal Pochard, Curlew and Bewick's Swan were only encountered in small numbers on a single visit.

Shelduck were present on five survey visits with a peak count of 5 birds (0.2% SPA population), Lesser Black-backed Gulls were present on five survey visits with a peak count of 77 individuals (20% of estuary population³), Snipe were present on 13 survey visits with a peak count of 43 birds (8.5% of estuary population³), Mallard were present on 24 survey visits with a peak count of 50 birds (2% of estuary population³) and Lapwing were recorded on 21 survey visits with a peak count of 164 birds (1.4% of estuary population³).

³ Frost, T.M., Calbrade, N.A., Birtles, G.A., Mellan, H.J., Hall, C., Robinson, A.E., Wotton, S.R., Balmer, D.E. and Austin, G.E. 2020. *Waterbirds in the UK 2018/19: The Wetland Bird Survey*. BTO/RSPB/JNCC. Thetford.

Construction phase impacts

The primary pathway of effect would be temporary habitat loss to construction activities and disturbance during the wintering season affecting interest feature birds that also active within this SPA.

Construction phase mitigation

SPA assemblage species would make use of 22ha wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) within the construction period and it is near certain there will be a negligible effect on this receptor during the construction phase.

Operational phase impacts

The primary pathway of effect would be permanent loss of habitat used by interest feature species of this SPA.

Operational phase mitigation

The provision of 22ha of habitat managed for wintering Lapwing will ensure negligible effect on the interest features of this SPA.

Severn Estuary Ramsar

The conservation objectives for the Severn Estuary Ramsar are to retain its bird interest features in favourable conservation status as defined by the conservation objectives of the Severn Estuary SPA. The wintering waterfowl assemblage of the Ramsar is similar to the SPA and a separate assessment of this interest feature is not required.

For its assemblage of migratory fish, including European Eel, the conservation objectives of the Ramsar are to maintain the features in favourable condition as defined below:

The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

- i. the migratory passage of both adults and juveniles of the assemblage of migratory fish species 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;
- ii. the size of the populations of the assemblage species in the Severn Estuary and the rivers which drain into it, is at least maintained and is at a level that is sustainable in the long term;
- iii. the abundance of prey species forming the principle food resources for the assemblage species within the estuary, is maintained.
- iv. Toxic contaminants in the water column and sediment are below levels which would pose a risk to the ecological objectives described above.

Use of the assessment site by interest features of this Ramsar

Eel are and are known to be present in reens, and to a lesser degree ditches, across the proposed solar farm footprint.

Construction phase impacts

The primary pathway of effect would be through impacts to reens and ditches, such as direct habitat loss and damage, and changes in water quality and water levels which would impact European Eel populations. There is also potential for direct harm or injury, and the creation of barriers to their movement.

Construction phase mitigation

Protection of boundary habitats, and adoption of the CEMP which details protection of watercourses, surface water management and dust minimization, will ensure there is negligible potential for an adverse effect on this Ramsar during the construction phase.

Operational phase impacts

The primary pathway of effect would be through impacts to reens and ditches, such as direct habitat loss and damage, and changes in water quality and water levels which would impact European Eel populations. There is also potential for direct harm or injury, and the creation of barriers to their movement.

Operational phase mitigation

Improved water quality associated with changes in land management combined with protection of boundary habitats and ditch management plan make it near-certain that there will be a negligible effect on this receptor during the operational phase.

5. In-Combination effects

5.1. Background

There is a requirement within the HRA process to consider the in-combination effect of other plans or projects with the site under assessment.

In-combination impacts are those additional changes caused by a proposed development in conjunction with similar developments, or as the combined effect of several developments taken together.

An assessment of the in-combination impact arising from the proposed development at this site requires that relevant information relating to the individual impact of adjacent developments is available.

Ideally adjacent developments should include existing developments, either under construction or operational, approved developments and proposals awaiting determination with sufficient data available within the public domain.

In-combination impacts arising from two or more developments may be:

- Additive - effects are summed
- Antagonistic – the cumulative impacts are less than their summed values
- Synergistic – the cumulative impact is greater than the summed impact.

5.2. Consultation

No consultee has been able to provide specific advice on which projects should be considered within the HRA, although Newport City Council and Monmouthshire County Council have provided advice on which projects to consider within the EIA process and these will be considered here.

5.3. Cumulative assessment

Cumulative impacts are those additional changes caused by a proposed development in conjunction with similar developments, or as the combined effect of several developments taken together.

An assessment of the cumulative impact arising from the solar park development at this site requires that the relevant information relating to the individual impact of adjacent developments is available.

Approved developments that have the potential for a cumulative impact, and with sufficient data available within the public domain, are considered here.

Cumulative impacts arising from two or more developments may be:

- Additive - effects are summed
- Antagonistic – the cumulative impacts are less than their summed values
- Synergistic – the cumulative impact is greater than the summed impact.

Table 1. Assessment of cumulative effects

Application	Description	Comments	In-combination effect?
DNS application DNS/3213968 on land on the Caldicot Levels, to the south of the Llanwern Steelworks Site, Newport	Erection of a renewable energy hub with a net installed generation capacity and maximum export to grid of 49.9MW comprising of up to 245,000 ground mounted solar panels, battery storage container units (up to 200 units), underground cabling, grid connection hub, associated infrastructure, landscaping and environmental enhancements.	Llanwern Solar Ecological Impact Assessment determined that after mitigation there was no significant adverse effects, although positive effects significant at the local level were recorded for watercourses, aquatic invertebrate assemblages and Coastal and Floodplain Grazing Marsh. Llanwern Solar Ornithological Impact Assessment determined that after mitigation there was no significant adverse effects on ornithological receptors. Cumulative effects as a result of the Llanwern Solar development is unlikely.	Near certain positive effect Unlikely
NCC application 18/0408 on land adjacent to and south of Rush Wall, Redwick, Newport	Installation of single wind turbine of maximum tip height 130m and associated switch gear housing units, temporary access track, underground cabling and temporary crane hard-standing.	The impact assessment for the single wind turbine concluded no adverse effect on valued receptors.	Unlikely
NCC application 12/1001 Land To The North Of Little Longlands Longlands Lane Magor Caldicot	Erection of 1no. Wind turbine (with generating capacity of up to 1.5mw), with a maximum height to tip of 100m, together with ancillary development including electrical sub station kiosk and electrical transformer kiosk, underground cabling, onsite access tracks, access to the public highway, crane hardstandings, temporary construction compound and site signage.	The ES Statement concluded: <i>Following the implementation of measures to off-set site clearance impacts upon reptiles and amphibians, and disturbance impacts on nesting birds, no significant residual effects to these species would be expected.</i>	Unlikely
NCC application 18/1109 Land Adjacent And North Of Branch Railway Line Seven Stiles Avenue Newport	construction of 1.6km of rail formation in connection with the stabling of trains including associated engineering and landscape works.	No long-term impacts were predicted for designated sites. Impact was predicted for reptiles and great crested newt species, species which do not disperse over large distances during their lifecycle. Due to separation distances of greater than 5km, cumulative effect can be discounted.	Negligible potential

NCC application 18/0756 Castle Farm Bishton Road Bishton Newport NP18 2DZ	: proposed free range egg production unit, 3no. Silos and associated work.	Due to its scale and location cumulative effects are unlikely. However, no ecological work is included in the planning portal application and it therefore cannot be objectively taken into account in this assessment.	Unlikely
Monmouthshire County Council application DM/2019/01937 Land At Vinegar Hill Vinegar Hill Undy Monmouthshire	Hybrid planning application - Outline planning application for up to 155 dwellings, associated open space and infrastructure with all matters excluding access reserved, of which full planning permission is sought for 72 dwellings, associated open space and infrastructure.	Following adoption of mitigation, no significant impacts were predicted for statutory nature conservation sites, habitats or species.	Unlikely
Monmouthshire County Council application DC/2016/00883 Rockfield Farm, The Elms, Undy, Caldicot, Monmouthshire, NP26 3EL	Master planned development of 13.8 hectares of land for residential use and employment use; up to 266 Proposed residential units and approximately 5575 square meters of B1 floor space.	No formal assessment of impacts has been made. NRW have made no objection indicating that impacts on protected species and designated sites is unlikely.	Unlikely
Monmouthshire County Council application DM/2018/01606 Rockfield Farm, The Elms, Undy, Caldicot, Monmouthshire, NP26 3EL	Reserved matters application (pursuant to outline application) for the development of 144 dwellings and associated engineering works. Rockfield Farm The Elms Undy Monmouthshire NP26 3EL.	No formal assessment of impacts has been made. NRW have made no objection indicating that impacts on protected species and designated sites is unlikely.	Unlikely
Monmouthshire County Council application DC/2015/00095 Land At Ifton Manor Farm Chestnut Drive Rogiet Monmouthshire	Residential development (12 Units) with associated development	No formal assessment of impacts has been made. NRW initially made objection relating to roosting bats although these were withdrawn during further discussions and conditioned mitigation recommended.	Unlikely
Monmouthshire County Council application DM/2020/00103 Magor Brewery Newport Road Magor Caldicot	Erection of sixteen fermentation vessels, enclosed supporting structure and external stairs; extension of existing high level access walkway; earth works; and temporary works including re-use of existing car park as vessel assembly site, creation of two temporary replacement car parks, temporary site roads and walkways, and associated works.	No formal assessment of impacts has been made and no NRW comments received. This project cannot be objectively taken into account in this assessment.	Unlikely
Monmouthshire	Installation of ground mounted	No formal assessment of	Unlikely

<p>County Council application DC/2015/00573 Magor Motorway Service Area, Magor, Monmouthshire, NP26 3YL</p>	<p>photovoltaic solar arrays to provide circa 5 MW generation capacity together with power inverter systems; transformer stations; internal access track; landscaping; cable trench, security measures, fencing, access gates and associated infrastructure.</p>	<p>impacts has been made. NRW have made no objection.</p>	
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6. Conclusion

In light of the mitigation measures identified within the ornithology EIA and consideration of the implications for the sites conservation objectives, there would be no adverse effect on the integrity of the Severn Estuary SAC, SPA and RAMSAR, alone or in combination with other plans or projects.

7. HRA Integrity Matrix

'X' denotes LSE unlikely or suitable mitigation adopted to minimise impact on a European site feature, with the footnote providing evidence supporting the conclusion.

7.1. Severn Estuary SAC

Name of European site and designation: Severn Estuary SAC									
EU Code: UK0013030									
Distance to NSIP 1.3km									
European site features	Adverse effect on integrity								
<i>Effect</i>	<i>Habitat loss within SAC</i>			<i>Displacement from supporting habitats</i>			<i>In combination effects</i>		
<i>Stage of Development</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
1130 Estuaries	X4	X4	X4				NA	NA	NA
1140 Mudflats and sandflats not covered by seawater at low tide	X4	X4	X4				NA	NA	NA
1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	X4	X4	X4				NA	NA	NA
1110 Sandbanks which are slightly covered by sea water all the time	X4	X4	X4				NA	NA	NA
1170 Reefs	X4	X4	X4				NA	NA	NA
1095 Sea lamprey <i>Petromyzon marinus</i>	X4	X4	X4	X5	X5	X5	NA	NA	NA
1099 River lamprey <i>Lampetra fluviatilis</i>	X4	X4	X4	X5	X5	X5	NA	NA	NA
1103 Twait shad <i>Alosa fallax</i>	X4	X4	X4	X5	X5	X5	NA	NA	NA
Eel (secondary feature)	X4	X4	X4	X6	X7	X8	X9	X9	X9

4 The proposed development is wholly contained within an area 1.3km from this SAC and will not result in land take within the SAC.

5 Reens have silt beds and low flow rates and are not suitable for river lamprey, sea lamprey and twait shad. These species would be unlikely to be here.

6 Protection of boundary habitats, and adoption of the CEMP which details protection of watercourses, surface water management and dust minimization, will ensure there is negligible potential for an adverse effect on this receptor during the construction phase.

7 Improved water quality associated with changes in land management combined with protection of boundary habitats and ditch management plan make it near-certain that there will be a negligible effect on this receptor during the operational phase.

8 Decommissioning impacts will be assessed through updated protected species surveys prior to works to allow a proper assessment taking into account future wildlife legislation and guidelines and changes to the site during its operational life.

9 Cumulative impacts are unlikely. See *Cumulative Effects*, Chapter 5 'Ecology' of the ES.

7.2. Severn Estuary SPA

Name of European site and designation: Severn Estuary SPA												
EU Code: UK9015022												
Distance to NSIP 1.3km												
European site features				Adverse effect on integrity								
<i>Effect</i>				<i>Habitat loss within SPA</i>		<i>Displacement from supporting habitats</i>			<i>In combination effects</i>			
<i>Stage of Development</i>				<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
Bewick's Swan <i>Cygnus Columbianus bewickii</i>				X10	X10	X10	X11	X12	X13	X14		
Ringed Plover <i>Charadrius hiaticula</i>				X10	X10	X10	X11	X12	X13	X14		
Curlew <i>Numenius arquata</i>				X10	X10	X10	X11	X12	X13	X14		
Dunlin <i>Calidris alpina alpina</i>				X10	X10	X10	X11	X12	X13	X14		
Pintail <i>Anas acuta</i>				X10	X10	X10	X11	X12	X13	X14		
Redshank <i>Tringa totanus</i>				X10	X10	X10	X11	X12	X13	X14		
Shelduck <i>Tadorna tadorna</i>				X10	X10	X10	X11	X12	X13	X14		
Assemblage qualification: A wetland of international importance				X10	X10	X10	X11	X12	X13	X14		

7.3. Severn Estuary Ramsar

Name of European site and designation: Severn Estuary Ramsar
EU Code: UK11081
Distance to NSIP 1.3km

10 The proposed development is wholly contained within an area 1.3km from this SPA and will not result in land take within the SPA.

11 These species would make use of wintering Lapwing mitigation habitat which will be in place prior to the first wintering season (October to March) within the construction period

12 The provision of long-term wintering Lapwing mitigation will ensure negligible effect during operation on the interest features of this SPA

13 Decommissioning impacts will be assessed through updated protected species surveys prior to works to allow a proper assessment taking into account future wildlife legislation and guidelines and changes to the site during its operational life. The operational phase is unlikely to be important for overwintering birds, therefore it is near-certain that there will be no effect on this receptor during the decommissioning phase.

14 Cumulative impacts are unlikely. See *Cumulative Effects*, Chapter 6 'Ornithology' of the ES.

European site features	Adverse effect on integrity											
Effect	Habitat loss			Changes in water quality/barriers to movement			Displacement from supporting habitats			In combination effects		
Stage of Development	C	O	D	C	O	D	C	O	D	C	O	D
Migratory fish - <i>Salmo salar</i> , <i>S. trutta</i> , <i>Petromyson marinus</i> , <i>Lampreta fluviatilis</i> , <i>Alosa alosa</i> , <i>A. fallax</i>	X15	X15	X15	X15 & X16	X15 & X16	X15 & X16	X16	X16	X16	X15 & X16		
Migratory fish - <i>Anguilla anguilla</i>	X15	X15	X15	X6	X7	X8	X6	X7	X8	X9		
Assemblage qualification: A wetland of international importance	X15	X15	X15	X11	X12	X13	X11	X12	X13	X9		

15 The proposed development is wholly contained within an area 1.3km from this Ramsar and will not result in land take within the Ramsar.

16 Reens have silt beds and low flow rates and are not suitable for migratory fish associated with this Ramsar, with the exception of Eel. These species would be unlikely to be here.