SUP 132 kV Cable Installation

Screening and Scoping Report

for Simec Uskmouth Power

December 2020

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Revision History	Reason	Date
00	First draft for client approval	18th December 2020
01	Minor amendments	6th January 2021

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1 Introduction

1.1 Background

Simec Atlantis Energy Ltd ("Atlantis") is in the process of converting the coal-fired Uskmouth Power Station to burn waste-derived fuel pellets. The power station is located on the east bank of the River Usk, close to the river mouth. The conversion project consists of two elements: firstly, changes and additions to the fuel storage and material handling infrastructure to be constructed external to the existing power station building; and secondly, fuel combustion equipment conversion and plant life extension to be conducted inside the existing power station buildings. Both of these elements are in progress having been previously consented. The converted power station will be operated by Simec Uskmouth Power Ltd ("SUP").

A number of high energy-use businesses, potential customers for the electricity which will be generated by the converted power station, are located in Imperial Park, across the River Usk to the west. SUP, therefore, now proposes to install a 132 kV buried cable to deliver electricity from Uskmouth Power Station to customers in Imperial Park.

1.2 The proposed development

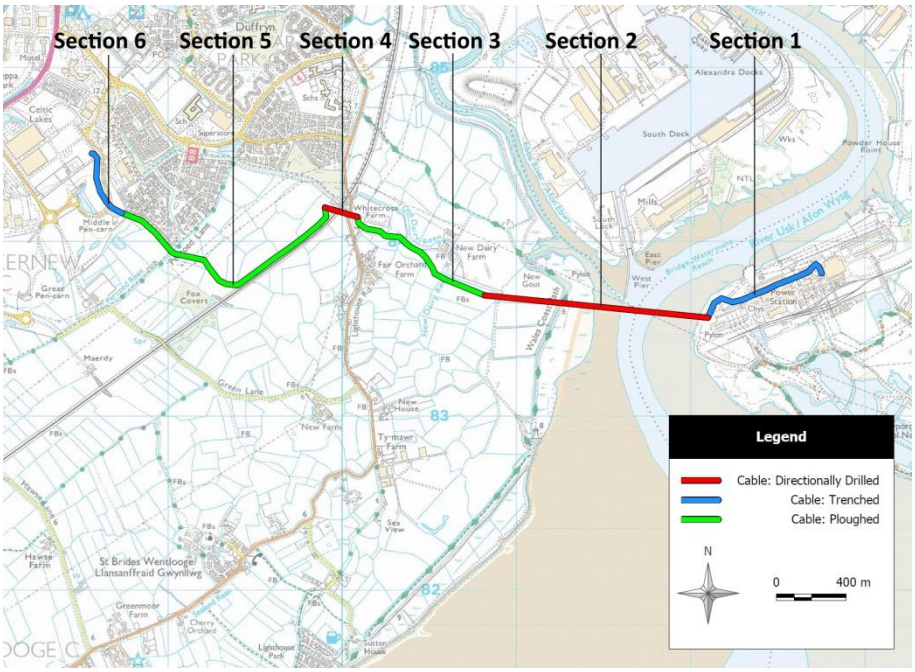

Figure 1.1 Overview of the proposed scheme

The proposal is to install a buried cable which would cross under the River Usk and continue across mainly agricultural land to the industrial sites to the west. The cable would be installed using three methods: conventional trenching along existing roads, using an excavator to dig a trench into which the cable is placed (blue lines in the map above); horizontal directional drilling (HDD) under the river and the railway and lighthouse road, where specialist machinery is used to bore a hole in the desired direction (red lines); and cable ploughing across the fields, where the cable is installed by a machine which makes a single pass over the ground, cutting a slot, installing the cable, and closing the slot in a single operation (green lines). Further information is provided below.

1.2.1 The relevant planning authority

In early discussions, Stephen Williams, West Area Development Manager at Newport City Council (NCC), confirmed that the project would fall under the jurisdiction of the Council for planning purposes, and would not be regarded as a Development of National Significance (DNS).

(Previous discussions with NCC regarding this project had included a proposed new Data Centre (DC) at Imperial Park as the end-user of the generated electricity, and therefore the termination point of the cable. The DC would have been subject to a separate planning application to be submitted by the developer of that project. The DC may have been considered to be a DNS due to the requirement for a substantial array of backup diesel generators. The proposed new DC, and its diesel backup, are no longer part of the proposed scheme, and the intention now is to supply electricity to existing industry on the Imperial Park.)

1.3 Environmental screening

1.3.1 Purpose of screening

Environmental screening is the process of determining whether an application for a proposed development should be subjected to formal Environmental Impact Assessment (EIA). After receiving a valid request, a local planning authority should produce a "screening opinion" on whether EIA is required within 21 days of receipt of the request.

1.3.2 The EIA regulations

EIA is required in certain development cases, which are listed in Schedules 1 (EIA always required) and 2 (EIA sometimes required) of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017, as amended. Schedule 1[1] of the Regulations includes item 2(a) "Thermal power stations and other combustion installations with a heat output of 300 megawatts [MW] or more". The installed capacity of Uskmouth Power Station will be 220MW when the conversion is complete, and therefore the power station itself would not be regarded as a Schedule 1 development.

Schedule 2[2] includes paragraph 3(a) "industrial installations for the production of electricity, steam and hot water (unless included in Schedule 1)", where "the area of the development exceeds 0.5 hectare". Uskmouth Power Station (as converted) would therefore be classed as a Schedule 2 project. Paragraph 13(b) in Schedule 2 is "any change to or extension of development of a description listed in paragraphs 1 to 12 [therefore including the above-mentioned paragraph 3(a)] ... where that development is already authorised, executed or in the process of being executed", and where "(a) the thresholds and criteria ... are met or exceeded; and (b) in such a case the development as changed or extended may have *significant adverse effects* on the environment".

It appears, therefore, that Paragraph 13(b) of Schedule 2 applies so far as condition (a) is concerned, since the development (Uskmouth Power Station), as extended by the new cable, would exceed 0.5 hectares. The purpose of this Screening and Scoping Report is to provide planning officers with the information they need to determine whether condition (b) also applies: in other words, whether the scheme would cause a significant adverse effect.

[1] https://www.legislation.gov.uk/wsi/2017/567/schedule/1/made, accessed 2nd December 2020.

[2] https://www.legislation.gov.uk/wsi/2017/567/schedule/2/made, accessed 2nd December 2020.

1.3.3 Significant adverse effect

In general, significance of effects in EIA is determined according to two factors: the *sensitivity* of the receiving environment, to impacts of the type which may be caused by the sort of development proposed; and the *magnitude* of the effect.

The cable would interact with a range of environmental, and in particular nature conservation, designations, including, at the European level, a Special Area of Conservation (SAC), a Special Protection Area (SPA) and a Ramsar wetlands site. At the national level of protection the cable would pass through a Site of Special Scientific Interest (SSSI), and a National Nature Reserve (NNR) of which parts are also designated at SSSI. At the local policy level the cable would pass through land designated as Archaeologically Sensitive Area (including the existing Uskmouth Power Station), a "Green Wedge" and a Special Landscape Area. For land use policy purposes most of the cable route is designated as "Countryside", except for the westernmost 470m which runs through land designated for "employment", and the easternmost 805m which runs through the existing Uskmouth Power Station site. Much of the route, apart from the power station, is designated as "Undeveloped Coastal Zone". Finally, the cable would pass underneath the All Wales Coast Path. Please see the Natural Resources Wales (NRW) nature conservation designations, and the extract from the Proposals Map of the Newport City Council Local Development Plan 2011 - 2026, in Figure 1.2 and Figure 1.3 below.

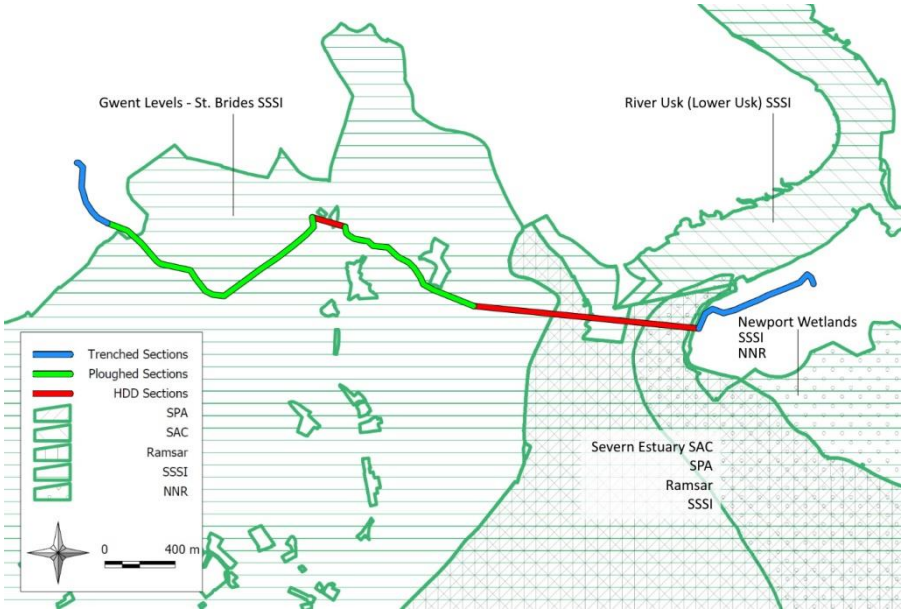

Figure 1.2 Nature conservation designations, with the base map omitted for clarity. Source: NRW[3]

[3] Natural Resources Wales, Lle Geoportal. https://lle.gov.wales/home, accessed 3rd December 2020.

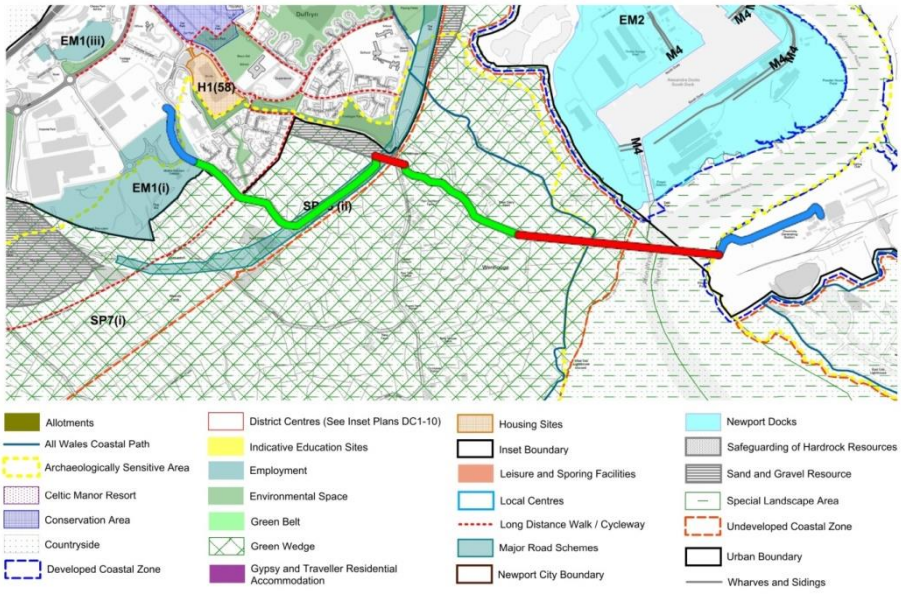

Figure 1.3 Newport City Council Proposals Map, with the proposed scheme superimposed.

The site is therefore a "sensitive site". Given this, the remainder of this document aims to provide planning officers with the information they need to determine whether the magnitude of the effects that the scheme is likely to cause would be *likely* to be so great as to cause a *significant effect*.

M4 Motorway Relief Road

Apart from environmental designations, the proposed cable route also crosses under, and follows for about 650m, the formerly sterilised route of the proposed M4 motorway relief road. This scheme was scrapped in June 2019.

1.4 Environmental scoping

Environmental scoping is the process of deciding which environmental topics should be included in an EIA, where the screening process has determined that EIA is required. However, specific environmental reports are often requested by planners even when screening has determined that formal EIA is not required. In this instance, the applicant intends to provide a number of such reports, regardless of the outcome of screening. This document therefore also describes the types of reports which will be submitted, the topics they will cover, and the reasons for their inclusion.

1.4.1 Maps and plans in this report

Maps and plans in this report are generally not prepared at any particular scale except where stated, but are designed to illustrate as clearly as possible the issue in hand. Plans based on Ordnance Survey data are subject to the following copyright statement: Ordnance Survey © Crown Copyright 2020. All rights reserved. Licence number 10002243.

2 Development Description

2.1 Introduction

Formal pre-application discussions between SUP and NCC started in late November 2020. SUP (Jayson Drummond) submitted a detailed scheme description to NCC at that time. To avoid any possibility of confusion, that scheme description is attached to this report at Appendix 1, and that is the authoritative version. (Minor corrections have been made to the document at Appendix 1, but there are no changes to the proposed scheme.) What follows in this chapter is an informal discussion of the scheme from an environmental point of view, to flesh out the technical description and provide some insights into the likely environmental effects.

For scheme Section numbers please refer to Figure 1.1.

2.2 Section 1: At Uskmouth Power Station

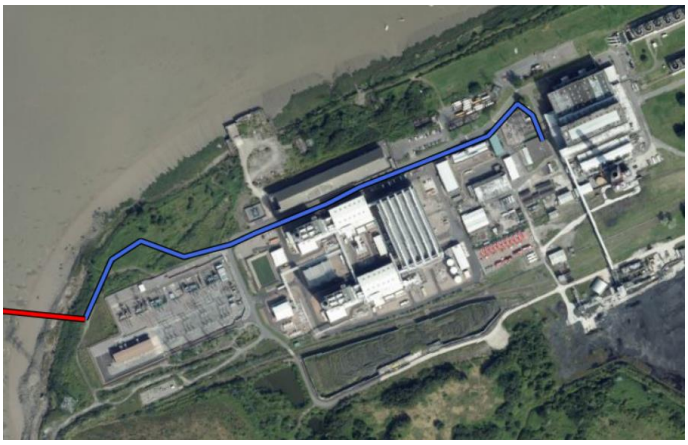

Figure 2.1 Uskmouth Power Station. Air photo source: Bing Maps (not to scale).

The existing SUP power station is located towards the eastern end of the Uskmouth power station site; the western part of the site is occupied by a gas-fired power station which we understand is currently inactive. The cable would start at the substation adjacent to the SUP site as indicated in Figure 2.1. It would follow the line of an existing internal distributor road, being buried under the road in the conventional way: an excavator would dig a trench, it would be lined with granular fill, the cable and any communications links would be laid on the fill and more fill placed above it, safety warning tapes would be added, the trench backfilled and the tarmac reinstated.

2.3 Section 2: The River Usk

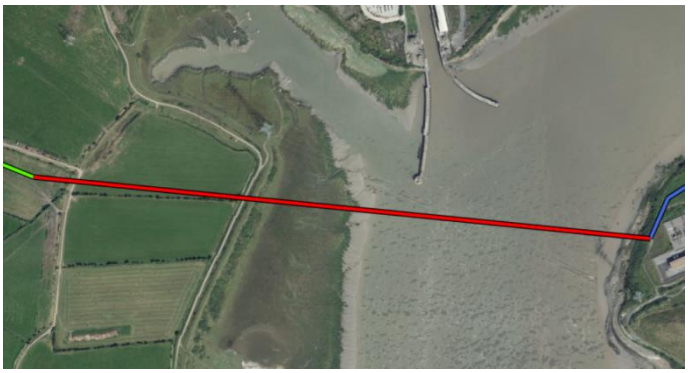

Figure 2.2 The River Usk crossing.

The cable would cross under the River Usk. A borehole between 650mm and 800mm in diameter would be drilled from a temporary drilling platform on the east bank, adjacent to the power station site. The borehole would slope downwards towards the river, until it was about 30m below the river bed level. It would then continue westwards at that depth before beginning to rise again under the west bank. The borehole would emerge from the ground surface in open pasture about 630m west of the Mean High Water Springs line, which is about 435m west (on the landward side) of the flood bank.

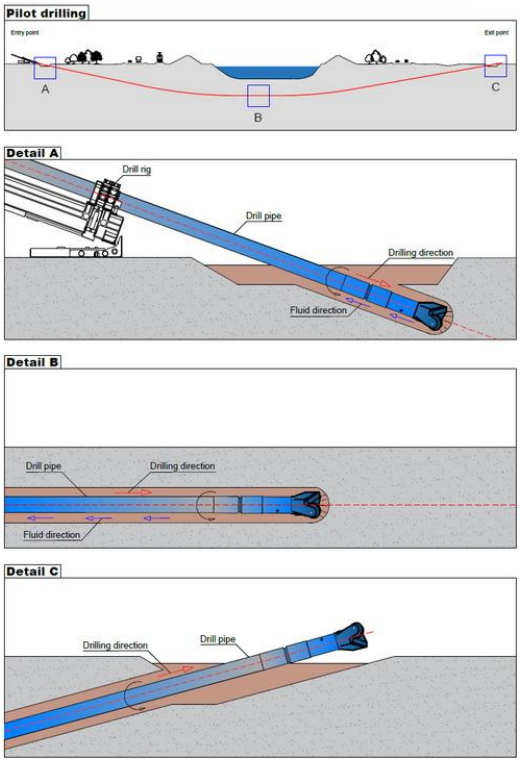

Figure 2.3 HDD technique.

Having drilled the borehole, HDPE (high density polyethylene) ducting would then be pulled back through from west to east, to line the borehole ready to accept the cable. The ducting would arrive on site in 12m lengths, and would be laid down and welded into a single "string" on site in the fields to the west of the exit point, before being pulled into the borehole. The 132kV cable, and any necessary communication cables, would then be pulled through the ducting in turn.

The drilling operation would be carried out by specialist contractors. A similar method was successfully used to install an existing gas pipeline to the Uskmouth gas-fired power station in about 2009. The equipment would be similar to that shown in Figure 2.4. The inclined drilling rig feeds the drill head into the ground, controlling its direction and position as it goes.

The machine would work from a temporary platform which would be formed before the machine arrived. The turf and soil would be stripped and stored to one side before the platform, roughly 40m x 40m, was constructed using hardcore and timber decking.

Figure 2.4 HDD rig.

Apart from the drilling machine, the site would also accommodate tanks and pumps for the injection and recovery of drilling fluid, laydown areas for the drilling pipes and heads, and welfare facilities for the operators.

On the west bank, at the exit point, another temporary platform would be constructed to accommodate the machinery required for handling the emerging drilling heads and drilling fluid, handling and welding the HDPE ducting sections, and welfare facilities as before.

The drilling fluid would be a water-based mud consisting of a suspension of water and bentonite clays. Its functions are to cool the drill head, lubricate the working face, carry away the rock cuttings, suspend the rock cuttings during breaks in the drilling process (for example when adding drilling rods to the rig), and prevent formation fluids (fluids which are naturally present in the rock) from entering the borehole. Settlement ponds would be required to allow the rock cuttings to fall out of suspension before the drilling fluid is re-used; the rock cuttings would then be removed for use as structural fill in the substation at Imperial Park. Much of the drilling fluid would remain in the borehole and protect the ducting and cable, while the remainder would be removed off site.

At the end of the operation the machines and their working platforms would be removed, and the soil and turf reinstated. Settlement ponds would be emptied, their contents carted away, the ponds filled in and the ground

surface reinstated. The cables would be jointed with their neighbouring sections in buried chambers. There would be no visible sign of the buried cable, its borehole or the construction works, on the surface after the ground surface had recovered.

2.4 Section 3: The Gwent Levels

Figure 2.5 The Gwent Levels (east section).

Cabling

From the western end of the HDD Section 2, to the east side of the railway, the cable would be ploughed directly into the ground. Cable ploughing is a fast and effective method of installing a cable in suitable ground. It is particularly useful in relatively soft, boulder-free conditions such as exist on the Gwent Levels.

Specialist contractors would be employed. Their equipment consists of two or three vehicles, which are illustrated in Appendix 2.1:

- The plough vehicle itself, which tows a special plough along the laying route. The "plough" is in fact a vertical steel blade which cuts a single narrow slot in the ground to the required depth, in this case about 1.2m, well below the working depth of agricultural ploughs. As it moves forward, the cable plough simultaneously pays out the cable and a hazard warning tape into the bottom of the slot behind the plough blade, and closes the slot again directly behind the cable. Therefore there is no excavation, no mixing of topsoil and subsoil, minimal disturbance at ground level and below ground, and all the work is done in a single pass.

- The plough vehicle is towed along in sections of 100-150m by a winch vehicle, which anchors itself to the ground ahead of the plough. Using a winch provides greater control of the plough, and means that the plough vehicle can "freewheel" across the ground surface and would not churn the soil with spinning driving wheels. In some cases, for example on soft ground, the plough vehicle may be mounted on skids, which reduces still further the ground surface disturbance.

- In some cases, depending on the specification and length of the cable, a third vehicle may be required to follow the plough, carrying the cable spool paying out cable to the plough vehicle ahead.

In the right circumstances cable ploughing is much faster and less disruptive to the environment than trenching, and is capable of installing up to half a kilometre of cable in a single day in ideal conditions. In this instance a laying rate of 200m per day is predicted for this proposal.

Reen crossings

Eight reens in total (small, historic, artificial open water channels) would have to be crossed in Sections 3 and 5. The reens are central to the operation of drainage control across the water meadows, are important semi-natural habitats, and are valuable historical features in themselves. The reens define the field pattern, with almost every field bounded by a reen and associated vegetation; hedges in some cases, low scrub in others. For agricultural operations the reens are generally crossed by means of culverted bridges.

SUP proposes to install the cable over each reen, above the maximum water level, in a duct fixed under a new steel-framed Land-Rover bridge, with a timber deck and parapets. The detailed design would be specific to each reen, but with common features: the crossings would all be made perpendicular to the reen to minimise the size of the crossing and the area of ground required; the bridges would all be mounted on concrete abutments; the abutments would come no closer than 5m to the reen bank, or to the edge of the agriculturally worked area, whichever is closer; the bridge deck would fly over the reen bank between the abutment and the water edge, as well as over the water, and the reen bank would be protected during construction; and the cable would rise from its normal depth of 1.2m as it approached the bridge, to run through the abutments and enter the duct under the bridge deck. See Figure 2.6 below.

The plough machinery is capable of following a circuitous route, within reasonable limits. In most cases it would be possible to select a crossing location where the reenside vegetation is either absent or consists of a low or narrow strip, rather than mature standing scrub or hedgerow. The crossing locations would be selected well in advance in consultation with the plough operators, the scheme designers, the landowners and the ecologists, with a view to minimising disturbance to vegetation and breeding birds.

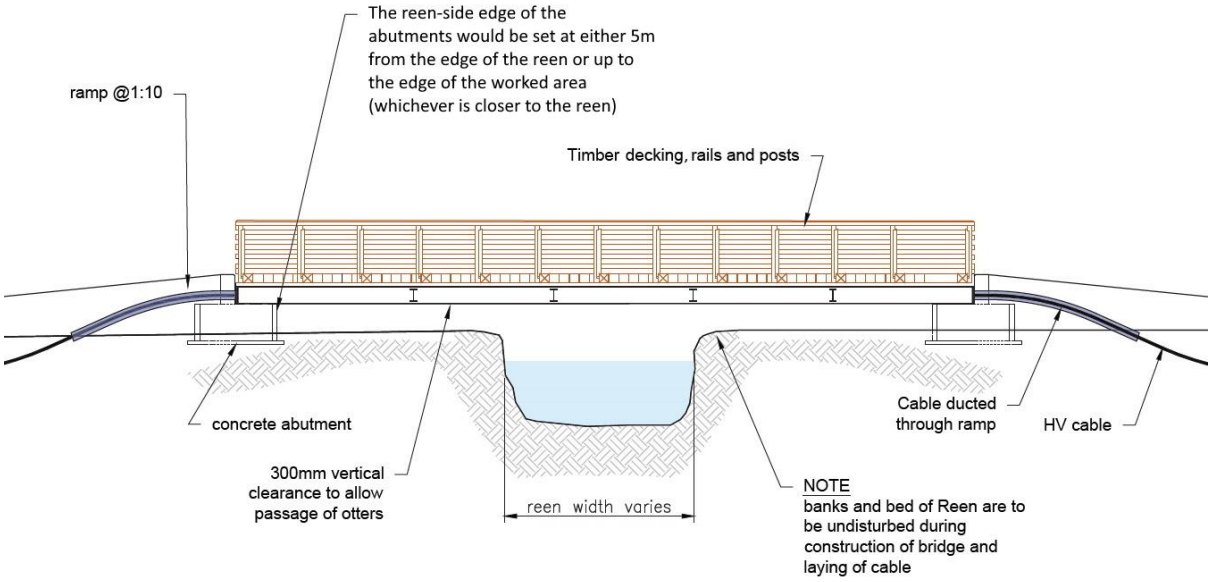

Figure 2.6 Reen crossing arrangement.

The construction process would be as follows:

- The cable route would be designed in detail, targeting the most suitable reen crossing points from a nature conservation point of view, within a desired corridor.
- Any vegetation clearance would be carried out in winter, outside bird breeding season, to avoid any later harm to breeding birds, their nests or their eggs.
- During the mobilisation phase Bailey bridges would be laid adjacent to the reen crossing locations for use by plant and machinery, including the cable plough.
- The concrete abutments of the bridges would be built, with the edge of the abutments closest to the reen being aligned with the edge of the existing cultivated area, or no less than 5m from the watercourse where the semi-natural vegetation extends further than this from the watercourse.
- A duct would be laid between the abutments, over the reen, to accept the cable.

- The cable plough would approach the bridge, allowing the cable to rise from 1.2m deep to the surface as it enters the abutment ramp. The plough would then cross the reen using the Bailey bridge while the cable is laid in the duct, and the plough would continue with the next section.
- Finally, the bridge deck and parapets would be installed over the cable as the contractors demobilise and leave the site.

2.5 Section 4: The railway line

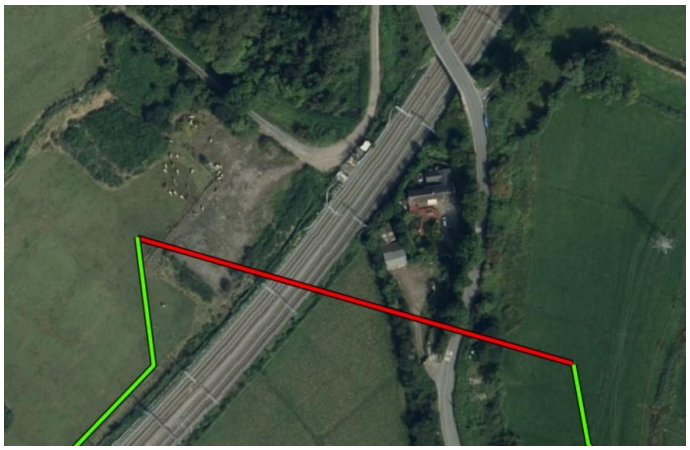

Figure 2.7 Section 4: The railway line.

The cable would pass under the railway line, and Lighthouse Road, immediately south of Whitecross Farm. The method would be HDD as in Section 2, although with lighter machinery appropriate to the much shorter bore. The drilling rig would be set up on the west side of the railway line and would drill eastwards, emerging in the meadow immediately to the east of Lighthouse Road. The HDPE ducting would then be pulled back to the west; this means that the HDPE delivery, laydown, handling and welding can all be done in the same area as the same operations for Section 2.

The depth of the dig would depend on the result of discussions with Network Rail.

2.6 Section 5: Percoed Reen

Figure 2.8 Section 5: Percoed Reen.

The cable would be ploughed into the ground through this section in the same way as Section 3, and reens would be crossed using similar bridges. North-west of Percoed Reen the route departs from farmland and enters an area of fenced-off vegetated brownfield land, before entering Imperial Park at South Lake Drive.

2.7 Section 6: Imperial Park

Figure 2.9 Imperial Park (indicative only: the route and final destination are yet to be decided).

The cable would complete its journey to the substation in Imperial Park (whose location is yet to be decided) by means of conventional trenching, similar to that used in Section 1. The roads here are public roads, so appropriate public safety measures would be taken.

The current planning application does not include the substation at which the cable would terminate.

3 Construction programme

If consented, the scheme would be constructed in the summer of 2022. The programme is designed to avoid impacts on the nature conservation interests, in particular the various species of wintering birds which are protected under the Natura 2000 designations and their associated SSSIs. Advanced hedge clearance work, in limited sections where required, would be carried out in the winter of 2021-22, between the bird breeding seasons.

Table 3.1 Indicative construction programme

2022	February	March	April	May	June	July	August
Sections 3 and 5 (cable plough): advanced works. Hedgerow removal in specific and very limited locations, timed to avoid harm to nesting birds.							
Sections 2 and 4 (HDD) and Section 3 (cable plough): enabling works. Temporary access roads, Bailey bridges, temporary work platform construction.							
Section 2 (HDD): drilling, duct delivery and welding, duct insertion, cable insertion, testing							
Section 4 (HDD): drilling, duct delivery and welding, duct insertion, cable insertion, testing							
Section 6 (trenching): trenching and reinstatement.							
Section 5 (cable plough): enabling works. Temporary access roads, Bailey bridges.							
Section 4 (HDD): demobilisation							
Section 3 and 5 (cable plough): ploughing							
Sections 3 and 5 (cable plough): construct permanent bridges and demobilise.							
Section 2 (HDD): demobilisation							

4 Environmental aspects

4.1 Ornithology

4.1.1 Key receptors

The River Usk and the Severn Estuary are heavily protected for their ornithological interest. In descending order of importance, the protection is provided by the following designations, illustrated in Figure 1.2 on page 3, and described in more detail in Appendix 2, the Ornithology HRA Screening Report by Mabbett:

Severn Estuary (Wales) SPA

The Severn Estuary is designated in respect of breeding, feeding, wintering, and migrating rare and vulnerable bird species. The key features are a number of species of wildfowl and wading birds: Bewick's swan, greater white-fronted goose, common shelduck, gadwall, dunlin, common redshank and other wintering waterfowl.

The HDD in Section 2 of the proposed cable would pass under the designated area. The drilling rig, on the east bank, would be about 24m outside the SPA boundary, on level ground at the top of the river banks: the SPA boundary runs near to the bottom of the bank, about 25m inland of mean high water as depicted on the OS Explorer map. The exit point, on the west bank, would be about 450m outside the SPA boundary, which runs along the flood bank roughly 175m inland from the line of mean high water. The cable would be about 30m below the riverbed in the middle of the river beneath the SPA, rising at each end.

Severn Estuary (Wales) Ramsar site

The Ramsar site shares the same boundaries as the SPA (at least in the study area), and its designation documents overlap in terms of the reasons for designation. The site's key ecological features are mainly wildfowl and waders: Bewick's swan, European white-fronted goose, dunlin, redshank, shelduck and gadwall; and an internationally important assemblage of wintering and migrating waterfowl. It is also designated in respect of estuary habitats and an assemblage of migratory fish.

As the Ramsar and the SPA share boundaries, the scheme would interact with the two designations over the same geographical area.

Severn Estuary (Wales) SSSI

This SSSI also shares mostly the same boundaries as the SPA and the Ramsar, other than a minor difference in the middle of the River Usk channel. The site covers the estuary and many of its floodplain Levels, and is designated in respect of habitats, fish, plants and wintering waders, including dunlin, Bewick's swan, white-fronted goose, wigeon, shoveller, gadwall and pochard.

Since the SSSI, the Ramsar and the SPA share most boundaries, the scheme would interact with all these designations over much the same geographical area.

Severn Estuary (Wales) SAC

In addition to the above designations which have specific relevance to ornithology, the same boundaries also encompass the Severn Estuary (Wales) SAC. The SAC designation does not specifically list bird species amongst its key ecological features, but clearly its habitats support the bird life listed in the other designations.

River Usk SSSI

The River Usk SSSI is a very large site, designated in respect of a number of river and riparian habitats and species, as well as breeding birds including kingfisher and grey wagtail.

The proposed cable would cross the River Usk mouth about 66m south of the closest part of the River Usk SSSI, at which point the cable would be about 30m below river bed level. The trenched section of the cable route inside the Uskmouth Power Station site would be about 110m from the SSSI at its closest point.

Gwent Levels - St. Brides SSSI

The Gwent Levels - St. Brides SSSI comprises a large area, over 1,300 hectares, of reclaimed wet pasture on the coastal levels south of Newport, west of the River Usk. It is designated mainly for its reen and ditch habitats and the aquatic plants they support, and also for two species of meadow plants. A number of invertebrate species are also listed.

Nearly 3km of the cable, more than half of its length, would cross the Gwent Levels - St. Brides SSSI, from the flood bank in the east to nearly the boundary of the industrial park in the west. Almost all of the cable would be buried in cultivated agricultural ground, but along the way it would also cross eight reens on new bridges as described in section 2.4.

NRW publishes a list of "operations requiring consultation with the Countryside Council for Wales (CCW)" (CCW was the predecessor of NRW).[4] The document includes item 23 "erection of permanent or temporary structures or the undertaking of engineering works, including the laying, maintenance or removal of pipelines and cables."

Newport wetlands NNR and SSSI

The Newport Wetlands are designated as a National Nature Reserve for their national importance to wintering and breeding birds, and the habitats (including wetland flora and invertebrates) upon which they depend. Almost the whole of the NNR is also SSSI: the landward sections in the Newport Wetlands SSSI, the salt marsh and mudflat sections in the Severn Estuary SSSI.

The scheme would not cross the Newport Wetlands SSSI, whose nearest border is 350m to the south-east of the Uskmouth Power Station. The cable would, however, pass under the tidal mudflats of the River Usk on the east side of the river, which are part of the NNR.

4.1.2 Potential effects (not including mitigation)

The potential effects of the proposed scheme include disturbance of wintering birds by construction activity, in particular the HDD rigs close to the boundary of the SPA and in the Gwent Levels; and disturbance, injury or death of breeding birds in vegetation on the Gwent Levels, in particular in hedgerows and scrub along the reen banks.

4.1.3 Mitigation

In respect of birds, the following mitigation measures are proposed:

[4] https://naturalresources.wales/media/640938/SSSI_0341_PDO_EN0012245.pdf, accessed 15th December 2020.

- A walkover survey will be conducted by ecologists within the Gwent Levels - St. Brides SSSI, which will identify any sensitive habitats, in particular vegetation in and associated with the reens, which would be avoided as far as possible in the final layout design.

- The walkover survey would identify the best route for the cable plough to follow, considering in particular the habitats along the field boundaries and reens, and hedgerows and other vegetation which could be used by nesting birds.

- The survey would also include the vegetated brownfield area outside the SSSI to the north-west, within the Imperial Park boundary, which is currently undeveloped and occupied by scrub and shrub vegetation. The cable would cross this area in Section 6, so breeding bird interests need to be accounted for even though it is outside the SSSI.

- Any sections of hedgerow needing to be removed to allow for the cable plough would be taken away before the start of the 2022 bird nesting season, to avoid harming nesting birds, their nests and their eggs. The work would be carried out under the supervision of an Environmental Clerk of Works. Vegetation netting would not be used. Short, specific lengths of reen-side hedgerows and other semi-natural vegetation, including within the Imperial Park section, may need to be removed to allow space for the reen crossing bridges and cable ducts.

- All construction work, other than the advanced removal of short sections of hedgerow described above, would be undertaken between 1st April and 31st August 2022. This measure would eliminate all effects on the wintering bird interests, except possibly very small numbers of stragglers.

- The final design would avoid sensitive areas as far as possible, for example by crossing reens at locations where the semi-natural vegetation is low or narrow and can be crossed without significant disturbance. The best possible cable route through the brownfield section will be identified with regard to nature conservation interests.

- Where hedgerows have been breached, and no permanent gap is required, the gap would be closed with new species-rich mix of locally appropriate native species, with a view to improving (not merely re-establishing) local biodiversity.

4.1.4 Enhancement

- Nearby, existing hedgerow gaps (not only those gaps which result from scheme construction) would be re-planted if appropriate, again to improve the local biodiversity and landscape, up to a ratio of 10 metres of new planting for every metre removed.

4.1.5 Habitats Regulations Appraisal

Guidance for the assessment of proposals in Natura 2000 sites (SACs, SPAs and Ramsar sites) is given in Planning Policy Wales, Edition 10, of December 2018[5]. It is supported by a number of Technical Advice Notes (TANs) including TAN 5, Nature Conservation and Planning, of September 2009[6]. TAN 5 refers to the "Waddenzee Judgement" which established that

[5] https://gov.wales/sites/default/files/publications/2019-02/planning-policy-wales-edition-10.pdf, accessed 16th December 2020.

[6] https://gov.wales/sites/default/files/publications/2018-09/tan5-nature-conservation.pdf, accessed 16th December 2020.

> *"any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects".*

Local planning authorities are advised that they should

> *"consider whether the effect of the proposal on the site, either individually or in combination with other proposals, is likely to be significant in terms of the ecological objectives for which the site was designated".*

An HRA Screening Report, presented here as Appendix 4.1, was prepared by Mabbett and Associates Ltd, ecological consultants, in April 2020, before the scheme details were finalised. It found that

> *"some aspects of the proposal have the potential to impact SPA qualifying features as construction activities could result in disturbance to these species",*

going on to suggest that mitigation measures needed to be identified, including seasonal constraints. SUP has now drafted the construction programme, summarised in Table 3.1, which schedules all of the drilling and ploughing works for May, June and July 2022. Enabling works would begin in April, while only the advanced removal of short stretches of hedges would take place during the winter months. In the event of such mitigation measures being put in place, Mabbetts' final sentence was that

> *"the conclusions of an Appropriate Assessment would therefore likely be that the conservation objectives for the Severn Estuary SPA would not be adversely affected."*

4.1.6 Summary

To be clear, the proposed cable would have no direct impact on any protected nature conservation site (including Natura 2000 sites) which is designated in respect of birds. This is because the cable would pass underneath the SPA, SAC, Ramsar and NNR areas, as well as the Severn Estuary (Wales) SSSI which underpins the Natura sites. The construction work would be scheduled so as to avoid the times of year when migrating and wintering birds are likely to be present near to the construction site, including parts which are outside the designated areas.

The cable would be buried through the Gwent Levels - St. Brides SSSI, most of which is farmland. Impacts on birds would be restricted to foraging birds in the reens and on the pastures, and nesting birds in hedgerows at some, but not all, of the reen crossing points. All wild birds, their eggs and nests are protected under the Wildlife and Countryside Act 1981 (as amended). Species likely to be nesting in the Gwent Levels hedgerows are not listed in the designations of either the SPA or the SSSI, although they may include Cetti's warbler, a Schedule 1 species. To ensure nesting birds would not be affected, any short lengths of hedgerow which need to be removed would be taken in advance following ornithological advice. Hedgerows would be reinstated at a rate of 10m of hedgerow re-planted for every metre lost.

The ground over the ploughed-in cable would recover very quickly and would return to its previous condition; migrating and wintering birds which graze on this land in the following seasons would not be affected. The reens themselves, which are used by some wintering waterbirds, would not be touched or affected in any way.

4.2 Non-avian ecology

4.2.1 Key receptors

Key receptors are the Severn Estuary (Wales) SPA, the Gwent Levels - St. Brides SSSI and the River Usk SSSI as described in 4.1.1 above in relation to ornithology. The sensitive terrestrial habitats are on the west bank, those designated in the Gwent Levels - St. Brides SSSI for the reen habitats and their associated botanical and invertebrate communities.

In addition to these, there is also the:

River Usk SAC

The River Usk SAC, which is underpinned by the River Usk SSSI, is designated in respect of otter and a number of fish species: sea, brook and river lamprey, twaite shad, Atlantic salmon, bullhead and allis shad.

The boundaries of the River Usk SAC are similar, but not identical, to those of the River Usk SSSI. The proposed cable would cross the River Usk mouth about 108m south of the closest part of the River Usk SAC, at which point the cable would be about 30m below river bed level. The trenched section of the cable route inside the Uskmouth Power Station site would be about 110m from the SAC (and the SSSI) at its closest point.

4.2.2 Potential effects (not including mitigation)

The potential effects of the proposed scheme include damage or destruction of valuable reen habitats, either through construction activities or through the long-term effects of scheme infrastructure:

- Physical damage to the reen structures due to careless use of plant and equipment.
- Pollution or siltation of the watercourses due to uncontrolled surface water drainage from the construction site, escape of drilling fluid, or pollution by diesel, oil, release agents, cement or other chemicals used on the site.
- Injury or death of animals, and destruction of plant communities, by moving machinery.
- Introduction of new drainage pathways by excavations.
- Shading of bankside vegetation by new bridge decks.
- Behavioural changes to migratory fish caused by electro-magnetic fields (EMF) originating at the cable below the riverbed under their migration routes.

4.2.3 Mitigation

The potential effects of the scheme have been considered in the development phase, and mitigation is built into the design. If further issues become apparent during further survey work or detailed design work they would be taken into account, and the mitigation measures would be adjusted accordingly.

- An extended Phase 1 Habitat Survey will be carried out to identify any nature conservation interests which are not currently recorded. Details of the proposals for desktop and field survey work are provided in Appendix 4.2.
- The use of the cable plough in a relatively homogeneous substrate allows much flexibility in the choice of route. The final alignment would explicitly target reen crossing places where the vegetation is

sparse or low, and the semi-natural waterside strip narrow: the reens, and their bankside vegetation, are diverse in this respect. The route choice would be informed by the habitat survey. Finding the best practical route for the cable, from a nature conservation point of view, is one of the explicit reasons for that survey.

- The cable plough would not plough the cable across the reens. The bridge abutments would be built first, set back 5m from the water channel or at the edge of the cultivated area, whichever is the shortest distance. The plough would bring the cable up to ground level at the abutment. The cable would then be laid in a duct between the abutments, above the semi-natural vegetation on the bank and the water level in the reen; the plough would move into the next pasture via a temporary Bailey bridge, and pick up the cable on the far side before moving forward. Machinery or plant would never have to touch the semi-natural reen banks or the water channels themselves.

- The use of the cable plough removes the need for extensive excavations and trenching for installing the cable. The plough simply cuts a slot in the ground and feeds the cable into it; no material is excavated or stored on the surface from where it could be washed into a watercourse. The cable plough slots would stop short of the reens, as explained above, and the cable would cross the reens above ground and water level under the new bridge decks. No preferential drainage pathway would be formed which could direct polluted or silt-carrying water into the reens.

- Temporary tracks would be needed to facilitate the HDD works and the transportation of cable drums to the required locations. Heavy duty ground protection matting will be used, similar to that shown below:

Figure 4.1 Heavy duty ground protection matting.

- The HDD drilling platforms and exit points would include settlement lagoons for the excess drilling fluid and rock cuttings. The settlement lagoons would be over-sized for the amount of fluid which would be used, and would be sited at least 100m from the nearest reens. A similar method was used with success in drilling the bore for the gas pipeline in about 2009; the gas pipeline runs only about 290m south of the proposed cable route, and crosses a large part of the Gwent Levels - St. Brides SSSI.

- Best construction practice would be followed, including appropriate rules for the storage and use of fuel, oil, lubricants and chemicals on site, the use of drip trays under running machinery, availability of pollution spill kits, location of refuelling points well away from watercourses, use of double-bunded fuel bowsers etc. Details would be provided and committed to in the planning application.

- Following demobilisation by the contractors, the hedgerows would be re-planted wherever they had been breached, in places where no permanent route was required. Further, additional gapping-up of the hedges would be carried out using a suitable mix of local native species, with the aim being to improve (not merely reinstate) the condition of the hedge compared with its previous condition. Gapping-up would extend to 10m of new hedgerow for every metre of hedgerow removed.

- No mitigation is proposed in respect of EMF caused by the cable, since this is considered very unlikely to cause any effect. A fuller discussion of this aspect is provided below, in section 4.8.

4.2.4 Summary

The majority of the cable route through the SSSI passes through agricultural land which is currently cultivated, including by ploughing. It is likely that the ecological value of the cultivated land is variable, and this would be confirmed by walkover surveys during the early part of 2021. The ecological sensitivity of the area is likely to be concentrated at the reen crossing points. The crossing method described in paragraph 2.4 above would ensure that the reens need never be touched by the contractors. Temporary bridges would simply be laid down across the reens for plant to cross, and the permanent bridges would fly over not only the water, but also the semi-natural vegetation, as far as the edge of the cultivated area, or 5m, whichever is the smaller. Specialist contractors would operate the HDD using methods successfully used in this area in the recent past. At the end of construction, habitat re-creation, mainly through re-planting of hedgerows, is predicted to leave the reenside vegetation in a better condition than it had been found.

4.3 Landscape character and visual amenity

4.3.1 Key receptors

The proposed cable would run through land which is designated under a number of headings relevant to landscape character and visual amenity.

Special Landscape Areas

Apart from Sections 1 (Uskmouth Power Station) and 6 (Imperial Park) almost all of the proposed cable route is within an area designated for planning policy purposes by Newport City Council as "Special Landscape Area" (see Figure 1.3 on page 4). These are areas "within which proposals will be required to contribute positively to the area through high quality design, materials and management schemes that demonstrate a clear appreciation of the area's special features" (Policy SP8). "The designation of an SLA does not preclude development but any proposals must demonstrate that they have been designed to respect the valued characteristics of the recognised landscape."

Green Wedge

Within the Special Landscape Area, all of the stretch on the west bank is also designated "Green Wedge" for planning purposes. "The prime purpose of Green Wedges is to prevent coalescence between urban areas. The designation is not made necessarily on the basis of the physical quality of the landscape, but rather to maintain their openness. The areas designated tend to have significant importance for their openness and for their role in maintaining the distinct identify of separate communities" (Policy SP7).

People in the area

Apart from effects on landscape character, developments can also affect people's visual amenity. People who could be affected include:

- People who live permanently in the dwellings in the area, in Bronllys Mews, Bronllys Grove and Pennard Close;
- People who live in Whitecross Farm, Fair Orchard Farm and New Dairy Farm;
- Local travellers on Lighthouse Road;
- People walking on Percoed Lane and the Wales Coast Path;
- People working anywhere in the area, particularly in the farmland;
- People travelling through the area on the London - Cardiff railway line.

4.3.2 Potential effects (not including mitigation)

Effects of the proposed scheme could include:

- Adverse effects on landscape character and visual amenity due to construction activity.
- Adverse effects on landscape character due to new structures in the landscape: namely the proposed new reen crossing bridges.
- Adverse effects on landscape character due to weakening of the historic field boundaries.

4.3.3 Mitigation

No specific mitigation is proposed in respect of landscape interests, because the scheme would be almost entirely invisible being mostly underground. Gapping-up of hedgerows, proposed in respect of ornithology and biodiversity interests, would result in a minor strengthening of the field pattern and therefore a negligible beneficial effect on landscape character.

4.3.4 Summary

The construction works, while extensive in length, would be short term (see Table 3.1 on page 11), with the work taking no more than five months from the start of mobilisation to the end of demobilisation - the only exception being the advanced removal of short lengths of hedge, to avoid harming nesting birds. Once complete, the cable route would soon become invisible with no above-ground features, other than the new timber bridges which would cross the reens in eight places spread along about 1.8 km of the cable. The bridges would be agricultural in appearance, always be associated with an existing reen, and usually with an accompanying hedgerow. New gaps may appear in some hedgerows but other gaps would be closed, and the net effect would be to strengthen the field boundary pattern.

4.4 Cultural heritage

4.4.1 Key receptors

The Gwent Levels are a very sensitive area for archaeology, the fen-edge location having attracted settlement activity during the prehistoric and Roman periods. The subsequent flooding and build-up of alluvium both protects and masks this archaeology, and preservation of early archaeological remains in the levels can be particularly good. The later agricultural use of the levels during the medieval and post medieval period, and management and drainage of the levels, has also resulted in an important landscape of archaeological earthwork evidence such as flood banks and reens.

The agricultural pastures in the Levels are actively cultivated, including by ploughing.

Listed Buildings

There is one listed building in the area, namely the former West Usk Lighthouse on the west bank of the Usk, about 780m south of the line of the HDD cable, and about 850m SSE of the nearest section of the surface ploughing. The lighthouse is served by a track from the north, which the HDD cable would pass under about 90m east of the HDD exit point.

Gwent Levels Registered Historic Landscape

The cable would surface in the Registered Historic Landscape and remain in it going westwards as far as the railway, a distance of about 900m. In the words of Cadw[7], *"The levels are a landscape of extraordinarily diverse environmental and archaeological potential. Having been reclaimed from the sea at various times during the historic period, the present land surface is a supreme example of a 'hand-crafted' landscape, artificially created and entirely the work of man, preserving clear evidence of distinctive patterns of settlement, enclosure and drainage systems from successive periods of use. There is also a proven, and possibly quite vast, potential for extensive, buried, waterlogged, archaeological and environmental deposits belonging to earlier landscapes. The levels are therefore an uniquely rich archaeological and historical resource in Wales, and certainly of international importance and significance."*

The same area is marked in Newport City Council's Local Plan Constraints Map as "Landscape of Outstanding Historic Interest". These are areas which have been identified as being "uniquely rich in archaeological and historical resource", and they are tested against policy CE4, Historic Landscapes, Parks, Gardens and Battlefields.

4.4.2 Potential effects (not including mitigation)

Effects of the proposed scheme could include:

- Damage to the reens as cultural heritage features in themselves.
- Weakening of the field pattern defined by the reens.
- Damage to unknown buried archaeological features.

4.4.3 Mitigation

The following measures have been designed into the scheme to mitigate effects on heritage interests:

- A Heritage Assessment has been commissioned from archaeology consultants with experience working in the Gwent Levels. Their scope of work is provided at Appendix 4.3. The assessment, including the field survey, will be carried out in early 2021. Issues raised, if any, will be discussed with the local planning authority and appropriate stakeholders, and mitigation measures agreed as required.
- The cable would be buried through the Gwent Levels using a cable plough, as described in section 2.4 above. The significance of this for buried archaeology is that no trench would be dug by an excavator, no material would be side-cast and then returned to the trench, and there would be no disturbance of the soil horizons. The cable plough simply cuts a narrow slot and feeds the cable into it; the slot then closes above the cable. The ground surface would recover quickly, since the operation is carried out in

[7] https://cadw.gov.wales/advice-support/cof-cymru/search-cadw-records, accessed 16th December 2020.

a single pass. The cable plough would lay the cable at a depth of about 1.2m, below the level disturbed by agriculture, but along a narrow slot, and without turning over the subsoil.

- The reens would not be touched or disturbed in any way. The reen crossing arrangements have been designed so that neither the reens nor their banks would be affected. The bridges under which the cable ducts would be suspended would fly over the water and the banks, from abutments built outside the sensitive areas.

- The field patterns are defined by the reens and by the vegetation (hedges and scrub) which follows them. Currently the vegetation is gappy and thin in places; the cable route would target places where the vegetation is weak so as to minimise the requirement for pre-construction vegetation clearance, mainly for the purposes of protecting nesting birds. It would also minimise impacts on the historic field patterns. However, after construction the hedgerows would be re-planted in existing and new gaps (where the gaps are not required for access) with a mix of locally appropriate native species, the aim being to reinforce the field boundaries and improve them, not merely to replace that which had been removed. This is mainly for nature conservation reasons, but again, it would strengthen the historic field pattern compared with the existing condition.

4.4.4 Summary

The Gwent Levels is a valued protected landscape unusual in its historic origins and management. The cable would pass through the landscape with a light touch. The use of a cable plough would significantly reduce any disturbance of buried archaeology compared with trenching the cable. The reens and their banks would not be affected by the scheme. Generally, the reens would be crossed at places where the associated hedgerows were low or gappy, but where this is not possible some lengths of hedgerow would be removed in advance of construction. The gaps in the hedgerows would be replanted after construction had finished, including enhancement planting of additional weak sections of hedgerow which had not been affected by the scheme, leading to a reinforcement of the field boundary pattern in the longer term. The work will be informed by a Heritage Assessment which will be carried out in early 2021.

4.5 Geology, soil and water

4.5.1 Key receptors

The key receptors of impacts in this category would be

- The underlying geology supporting the surface processes and landforms.

- The agricultural soils in the Gwent Levels.

- The water quality and drainage characteristics of the Levels as defined by the reen network.

4.5.2 Potential effects (not including mitigation)

The HDD would pass through the underlying rock at a depth of up to 30m below the bed of the River Usk. The rock is generally competent[8] mudstone and not at risk of collapse, as demonstrated by the nearby gas pipeline borehole. No effects of the borehole are likely to be visible at the surface.

[8] In the geological sense, rock in which an unsupported opening can be made.

Disturbance to soil in the Gwent Levels would be minimal due to the use of a cable plough, which inserts the cable into the ground without excavations. There is therefore no risk of mixing topsoil and subsoil. The work would be done in a single pass and therefore the risk of pollution is very low, and compaction of the soil would be no more than that which is caused by agricultural machinery. The construction compounds would be formed by first removing the turf and topsoil, and creating a platform of crushed stone or similar. The turf and soil would be stored to one side while the work progressed, and would be replaced at the end of construction, after the temporary surface had been removed.

The reen habitats are vulnerable to pollution and siltation. The proposed scheme has been designed to avoid any contact with the reens, by the crossing method described in paragraph 2.4 above. Nevertheless, it cannot be ruled out that pollutants could escape unseen into the reens during construction, for example by falling from a machine crossing a temporary bridge. Creation of new drainage pathways is very unlikely given the proposed method of construction, but again it cannot definitely be ruled out.

4.5.3 Mitigation

No specific mitigation is proposed in respect of impacts on geology and soil, other than measures built into the scheme design.

In respect of the reens, SUP undertakes to carry out water quality monitoring during construction, immediately after construction, and annually thereafter for a period of five years. The purpose is the early detection of any contaminants or pollution, or unusual flows which could affect the operation of the reens in relation to their drainage function, or the ecological balance or value of the reen habitats.

4.5.4 Summary

Adverse effects on geology and soil are unlikely.

Adverse effects on water quality and the reen habitats cannot be completely ruled out, though the method proposed for crossing the cable over the reens minimises the possibility. SUP proposes to monitor water quality and drainage during construction and thereafter for five years, to provide early warning if any adverse effects emerge.

4.6 Noise and vibration

4.6.1 Key receptors

Key receptors of noise and vibration effects are people in the area, in particular people who live in dwellings close to the construction area; and animals and birds which may be disturbed by construction noise. The drilling works would likely be audible (and visible) to people using the Wales Coast Path.

As the cable would be entirely buried it would generate no noise during the operational period. Only construction activities are likely to cause any noise.

4.6.2 Potential effects (not including mitigation)

Noisy construction sites are capable of damaging the amenity of people who live close by. Night-time noise in particular can have adverse effects on people's quality of life, with attendant impacts on health and well-being. In this instance the only activity which may cause a significant effect is the HDD activity. The drill head would of course be well underground in both Section 2 and Section 4, but machinery on the surface would include pumps, generators and materials handling equipment which would generate noise capable of causing a nuisance.

The trenching and cable plough operations would create less impact because the machinery used would be of a similar character to the agricultural machinery which is in daily use in the area. These works would also be mobile and of shorter duration, and would be unlikely to cause any significant effect.

Animals and, in particular, birds, can be disturbed by unusual noise. The birds which winter in the Severn Estuary (Wales) SPA could be disturbed to the extent that they may be deterred from using their preferred feeding grounds. The effect of this could be such that they may be unable to recruit sufficient energy resources during the overwintering period to migrate to their breeding grounds, or successfully raise chicks during the following breeding season.

4.6.3 Mitigation

A noise assessment has been commissioned and will be carried out in accordance with the scope of works provided in Appendix 4.4. The findings of the assessment will be incorporated in the final design of the scheme, in particular in considering the locations of the HDD drilling rigs and exit points in relation to human and natural environment receptors.

The work has been scheduled to take place entirely during the summer, when there would be no wintering birds present. There would be no effect on the conservation interests of the SPA. Nevertheless, the ornithology consultant will be consulted to ensure that all possible noise effects are considered, including on those species likely to be present in the summer.

No work would take place outside normal working hours.

4.6.4 Summary

Noise impacts would not occur during the operational period, or during the construction period except due to the HDD activities. Wintering birds in the SPA would not be affected in any case, due to the timing of the works. The final locations of the HDD drilling rigs and exit points would be determined following receipt of the noise assessment, taking account of nearby noise sensitive receptors. Effects on breeding birds would also be considered in consultation with the ornithology consultant.

4.6.5 Method of assessment

The noise assessment would be carried out in accordance with the method described at Appendix 4.4.

4.7 Access and recreation

The HDD section of cable in Section 2, under the River Usk, would cross under the Wales Coast Path which runs along the flood bank on the west bank of the river. The cable would have no direct effect on people using the path, although drilling work would likely be both audible and visible.

Another publicly-used footpath runs along Percoed Lane, which follows the north-west bank of Percoed Reen towards the western end of Section 5. The cable would cross Percoed Reen on a new bridge as described previously. Public access would be maintained throughout the construction period.

The scheme would therefore cause no disruption to public access or recreation in the area.

4.8 Electro-magnetic fields

4.8.1 Effects on migratory fish

The HDD section of cable in Section 2, under the River Usk, would pass about 66m south of the nearest part of the River Usk (Lower Usk) SSSI, and 108m south of the nearest part of the River Usk SAC. Various species of fish, some of them migratory, are named in the designation documents, and clearly these fish would pass over the HDD cable on their way to and from the sea.

Research suggests that certain species of fish may be sensitive to electromagnetic fields, which may cause behavioural changes including an inability to navigate effectively. Atlantic salmon, for example, possess magnetite particles in their lateral line sense organs. In some salmon species these particles have been shown to be arranged in chains and to be linked to neural connections. It is thought that this may allow them to use the earth's magnetic field to aid orientation during long distance migrations, but this remains unproven. Combined with other directional information, such as stellar cues, a magnetic sense would potentially assist migrating salmonids to identify particular coastal or oceanic regions. In effect, the unique magnetic signatures of an area might, in principle, be used to identify a natal region.

This may permit salmon to identify particular coastal regions during initial, long-distance phase of natal homing migrations. There is good evidence, however, that the second phase of homing, once in the appropriate coastal region, is dependent largely on olfactory cues.

There is, therefore, at least a theoretical possibility that artificial electrical and magnetic fields could disturb the migratory movements of fish in the River Usk.

4.8.2 Submarine Cable EMF Considerations

Electromagnetic fields are generated by both AC and DC submarine cables, and can be quantified in three distinct forms.

Electric Fields

Electric fields are generated around an energised cable and will exist whether the cable is supplying power to a load or not. The field strength is directly proportional to the voltage that energises the cable. The strength of an electric field diminishes rapidly with distance from the cable but the field can be contained within the cable by applying a conducting screen over the insulation of each of the three phase cores of the cable. Providing the conducting screens are effectively earthed at one end of the cable the electric field outside the cable can be eliminated.

Magnetic Fields

Magnetic fields are also generated by submarine cables and are directly proportional to the magnitude of the electric current flowing within the cable. Magnetic fields have the ability to pass through most materials but their effects can be significantly reduced by shielding with ferromagnetic materials. Burying the cable in the seabed, as at Uskmouth, will not reduce the magnetic field around the cable unless the seabed is composed of a magnetic material. The benefit in burial is a result of the very rapid reduction in magnetic field strength measurements as the distance from the cable increases. Burying the cable places a physical barrier between the cable and marine organisms which may be affected by magnetic fields. Although it is understood that some species are able to detect magnetic fields there is no evidence to suggest their behaviour is affected by the strengths of magnetic fields which surround subsea cables, for example those which serve offshore wind farms, whether these are laid directly on the seabed or buried within it.

Induced Electric Fields

Where a magnetic field exists around a cable an electric field will be induced in sea water or any marine organisms which move through the magnetic field. The induced electric field will be proportional to the strength of the magnetic field.

Reduction of magnetic fields with distance

Magnetic fields around a cable decline very rapidly with distance. Figure 4.2 provides data on electromagnetic field strength for various cables obtained by both calculations and measurements. It may be seen that magnetic field strength (measured in micro-Teslas, µT) declines very rapidly over small distances from all types of cable listed here. A value of 50 µT for typical marine ambient conditions is provided; none of the cables listed would approach this value any more than 6m from the cable. In the proposed scheme, the cable would pass about 30m below the river bed.

Impacts of submarine cables on the marine environment - A literature review

Tab. 8 Data on electromagnetic field strength for various cables obtained by both calculations and *measurements.

Cable type	Capacity	Electric field strength	Magnetic field strength	Reference
Monopolar DC	500 A		2000 µT at the surface of the cable 20 µT at 5 m distance 5 µT at 20 m distance	ACRES (2006)
	1200 A (312 MW at 260 kV; 370 MW at 280 kV)		5000 µT at the surface of the cable 50 µT at 5 m distance	ACRES (2006)
	max. 1335 A, 450 kV, 600 MW (Baltic cable)	100 µV*m^{-1} at 10 km distance from the cable	250 µT above the cable 50 µT at 6 m distance	MATTHÄUS (1995)
	1500 A	10^6 µV*m^{-1} at 10 cm from the cathode $7*10^4$ µV*m^{-1} at 1 m from the cathode 1-50 µV*m^{-1} far from the cathode	300 µT above the cable 50 µT at 5 m distance 13 µT at 200 m distance	KOOPS (2000)
AC (3-phase)	11 kV, 60 A, 50 Hz	17.5 µV m^{-1} at a distance of 0 m 12.5 µV m^{-1} at 5 m 6.2 µV m^{-1} at 20 m	*~57 µT above the cable *50 µT at 2 m distance *45 µT at 5 m distance *20 µT at 15 m distance	CMACS (2003)
	33 kV, 50 A, 50 Hz	15 µV m^{-1} at a distance of 0 m 4 µV m^{-1} at 5 m 1 µV m^{-1} at 20 m *>70 µV m^{-1} at >1 km distance	*50 µT above the cable *20 µT at 2 m distance *10 µT at 5 m distance	CMACS (2003)
	33 kV, 641 A		1.7 µT at 0 m 0.61 µT at 2.5 m	CMACS (2003)
	33 kV, 400 A	1000 µV m^{-1} at a distance of 0 m about 300 µV m^{-1} at a distance of 4 m 25 µV m-1 at >30 m		GILL & TAYLOR (2001)
	132 kV (with perfect shielding)	No directly generated electric field, but induced electric fields: 91.25 µV m^{-1} at 0 m distance, 10 µV m^{-1} at 8 m (sea water), 1-2 µV m^{-1} at 8 m (sediment)	*56 nT in the surrounding water 1.6 µT within mm around the cable	CMACS (2003)
	132 kV, 600 A (Nysted offshore wind farm)		5 µT at 1 m	HVIDT (2004)
	150 kV, 600 A	1000 µV m^{-1} at a distance of 0 m 1000 µV m^{-1} at a distance of 4 m 25 µV m^{-1} at >30 m		GILL & TAYLOR (2001)
Natural ambient conditions (marine)		**25 µV m^{-1}**	**50 µT**	**after different authors**

Figure 4.2 Extract from Meisner *et al* (2006).[9]

4.8.3 Conclusion

It is extremely unlikely that EMF around the cable would be detectable, or have any effect on, fish swimming in the water column which would begin 30m above the buried cable. Electrical fields would be contained within the cable. Magnetic fields would be propagated around the cable but would reduce to negligible levels within

[9] Meisner, K., Schabelon, H., Bellebaum, J. & Sordyl, H. 2006. Impacts of submarine cables on the marine environment – a literature review. Institute of Applied Ecology. Report to Federal Agency of Nature Conservation.

the bedrock. With no significant magnetic fields reaching the water, it follows that no induced electrical fields would be present in the water column.

5 Summary and conclusion

5.1 Summary and conclusion

5.1.1 Ornithology

The mouth of the River Usk and the coastal margins in the area are heavily protected, at the European level, for their bird interest. The proposed cable would have no direct impact on any of the designated sites. Indirect impacts, which may be caused by noise, movement, vibration etc. due to construction activities, would be eliminated by scheduling the works for the summer months when the wintering birds, which are the principal reason for the designations, would not be present, even outside the designated areas.

The cable would pass through the Gwent Levels - St. Brides SSSI, parts of which are used by foraging and nesting birds, possibly including the Cetti's warbler, a Schedule 1 species. To ensure nesting birds would not be affected, short lengths of hedgerow may be removed in advance, only where necessary and following ornithological advice. Hedgerows would be reinstated at a rate of 10m of hedgerow re-planted for every metre lost. A breeding bird survey will be carried out during the 2021 breeding season to ensure that all effects on birds were minimised.

The ground over the ploughed-in cable would recover very quickly and would return to its previous condition; wintering birds which graze on this land in the following seasons would not be affected. The reens themselves, which are used by some wintering waterbirds, would not be touched or affected in any way.

5.1.2 Non-avian ecology

The majority of the cable route through the SSSI passes through agricultural land which is currently cultivated, including by ploughing. It is likely that the ecological value of the cultivated land is variable, and this would be confirmed by Phase 1 Habitat Surveys during the early part of 2021. The ecological sensitivity of the area is likely to be concentrated at the reen crossing points. The crossing method would ensure that the reens need never be touched by construction activity. Specialist contractors would operate the HDD using methods successfully used in this area in the recent past. At the end of construction, habitat re-creation, mainly through re-planting of hedgerows, is predicted to leave the reenside vegetation in a better condition than it had been found.

5.1.3 Landscape character and visual amenity

The construction works would be short term, with the work taking no more than five months plus the advanced removal of short lengths of hedge. Once complete, the cable route would soon become invisible with no above-ground features, other than the new timber bridges which would cross the reens in eight places spread along about 1.8 km of the cable. The bridges would be agricultural in appearance, always be associated with an existing reen, and usually with an accompanying hedgerow. New gaps may appear in some hedgerows but other gaps would be closed, and the net effect would be to strengthen the field boundary pattern. No further survey or reporting work is proposed.

5.1.4 Cultural heritage

The Gwent Levels is a valued protected landscape unusual in its historic origins and management. The use of a cable plough would significantly reduce any disturbance of buried archaeology compared with trenching the cable. The reens and their banks would not be affected by the scheme. Generally, the reens would be crossed at places where the associated hedgerows were low or gappy, but where this is not possible some lengths of hedgerow would be removed in advance of construction. The gaps in the hedgerows would be replanted after

construction had finished, including enhancement planting of additional weak sections of hedgerow which had not been affected by the scheme, leading to a reinforcement of the field boundary pattern in the longer term. The work will be informed by a Heritage Assessment which will be carried out in early 2021.

5.1.5 Geology, soil and water

Adverse effects on geology and soil are unlikely due to the depth of the bedrock through which the cable would pass, and use of the cable plough through the Gwent Levels. Adverse effects on water quality and the reen habitats cannot be completely ruled out, though the method proposed for crossing the cable over the reens minimises the possibility. SUP proposes to monitor water quality and drainage during construction and thereafter for five years, to provide early warning if any adverse effects emerge.

5.1.6 Noise and vibration

Noise impacts would not occur during the operational period. The only significant noise during construction would be due to the HDD activities. Wintering birds in the SPA would not be affected due to the timing of works. The final locations of the HDD drilling rigs and exit points would be determined following receipt of the noise assessment. Effects on breeding birds would also be considered, in consultation with the ornithology consultant.

5.1.7 Access and recreation

The proposed cable would pass under two well-used paths: the Wales Coast Path and the path along Percoed Reen. People on the coast path would be undisturbed by the HDD drill passing several metres below it, although drilling operations would be audible and visible from a short length of the path. Public access would be maintained at all times on both the Wales Coast Path and Percoed Reen.

5.1.8 Electro-magnetic fields

Electro-magnetic fields are thought to affect the migratory behaviour of some species of migratory fish, although the effects remain uncertain. However, the cable in its HDD bore would pass about 30m beneath the bed of the River Usk, at which distance EMF due to the cable would decline to a negligible level, unlikely to be detectable within the natural ambient levels.

5.2 Conclusion

This report has described the proposed 132 kV Simec Uskmouth Power cable and how it would be installed. A planning application is likely to follow in early 2021, supported by a number of further environmental studies: a Heritage Assessment, an Extended Phase 1 Habitat Survey and an Environmental Noise Assessment. A Breeding Bird Survey would also be carried out in the spring of 2021 to inform detailed scheme design (in particular the alignment of the cable plough route) and later construction activities, should the scheme be consented.

A range of measures has been proposed which would reduce the potential for adverse environmental effects to be caused by the scheme. The most important of these is timing the entire construction phase to avoid the winter months when wintering birds may be present on the Gwent Levels and the River Usk mudflats. In addition, the scheme has been designed so that effects on the reens, and the vegetation on their banks, would be minimised, and the hedgerows along the field boundaries would be strengthened by enhancement planting of locally appropriate native hedgerow species at a ratio of 10m of new hedgerow planted to every metre of hedgerow removed.

In accordance with the relevant Regulations, SUP now requests that an ***environmental screening opinion*** should be provided by Newport City Council within three weeks of receipt of this document, stating whether EIA is required.

Eden Environment does ***not*** consider that the proposed scheme, as presented and described, including the mitigation measures which are proposed and which would be integral to the scheme as put forward in the planning application, would be ***likely*** to cause a ***significant adverse effect*** on any environmental receptor.

In the event that EIA is required, SUP requests that a ***scoping opinion*** be provided within eight weeks of adopting the screening opinion, highlighting any additional studies which would be required beyond those described in this report.

Appendix 2.1

Scheme Description

Green Highland
Unlocking Hydro Energy

SIMEC Uskmouth Powerstation

Development of a private 132kV network

Pre-application Enquiry

Project Description

January 2021

Report Title:	SUP Private Network – Pre-application Enquiry Project Description
Client:	SIMEC Uskmouth Powerstation
Report Reference:	20117_Pre-app_PD_GHR_20201127
Principal Author:	Jayson Drummond
Reviewed By:	Alex Reading
Issue Date:	27 November 2020

Version Number	Reason	Date
1	Issue for QC	24/11/2020
2	Issue for final QC	27/11/2020
3	Final	27/11/2020
4	Minor amendments for Screening Report	09/12/2020

Contents

1. Introduction

1.1. The proposed development

SIMEC Uskmouth Powerstation (SUP) is currently going through the planning process to finalise the design and consenting phase of the conversion from a coal-fired powerstation to a waste-to-energy powerstation. This converted powerstation would have an installed capacity of 220MW. In a typical scenario, all of this power would be exported to the national grid via the transmission network with the generator receiving payment from an offtaker.

As part of the conversion project, SUP has been investigating ways in which the power generated can be used locally without exporting to the national grid. Finding a local end-user would provide the following benefits:

- Ideally an end-user would have a high base-load requirement. This is beneficial for the operation of the turbines at SUP as it limits the amount of throttling potentially required, maximising the efficiency of the powerstation.
- The end-user and SUP would be able to enter into a formal long-standing agreement in the form of a negotiated Power Purchase Agreement (the mechanism through which the power is sold to the user). Being able to do this provides an element of certainty over the longer term, isolating the plant from the volatile electricity market. This benefits both parties.
- It would allow SUP to design, construct, and operate the required electrical network, providing an element of control over the capital expenditure.
- For the end-user, it provides a robust, reliable source of constant power without having to rely on the national grid (although there would be a backup supply from the grid to provide power should SUP be offline for whatever reason)

On the west side of the River Usk, in the nearby Imperial Park industrial area, there are a number of likely end-users which SUP is in discussions with.

1.2. Current land use

Land use in the area can be broadly summarised into three categories (refer to figure 1):

1. Industrial – sections 1 and 6
    i. On the east side of the River Usk sits SUP and
    ii. The western end of the cable passes across Imperial Park, a built-up area home to DCs, factories, and offices
2. Agricultural – most of sections 3 and 5
    i. Dairy farming occupies the vast majority of this ground
3. Rough ground/future development areas – western end of section 5
    i. The area on the north side of Percoed Reen has been fenced off and identified as Green Wedge

There are also several transport links, including public and private roads, and the Newport to Cardiff railway line as well as the River Usk.

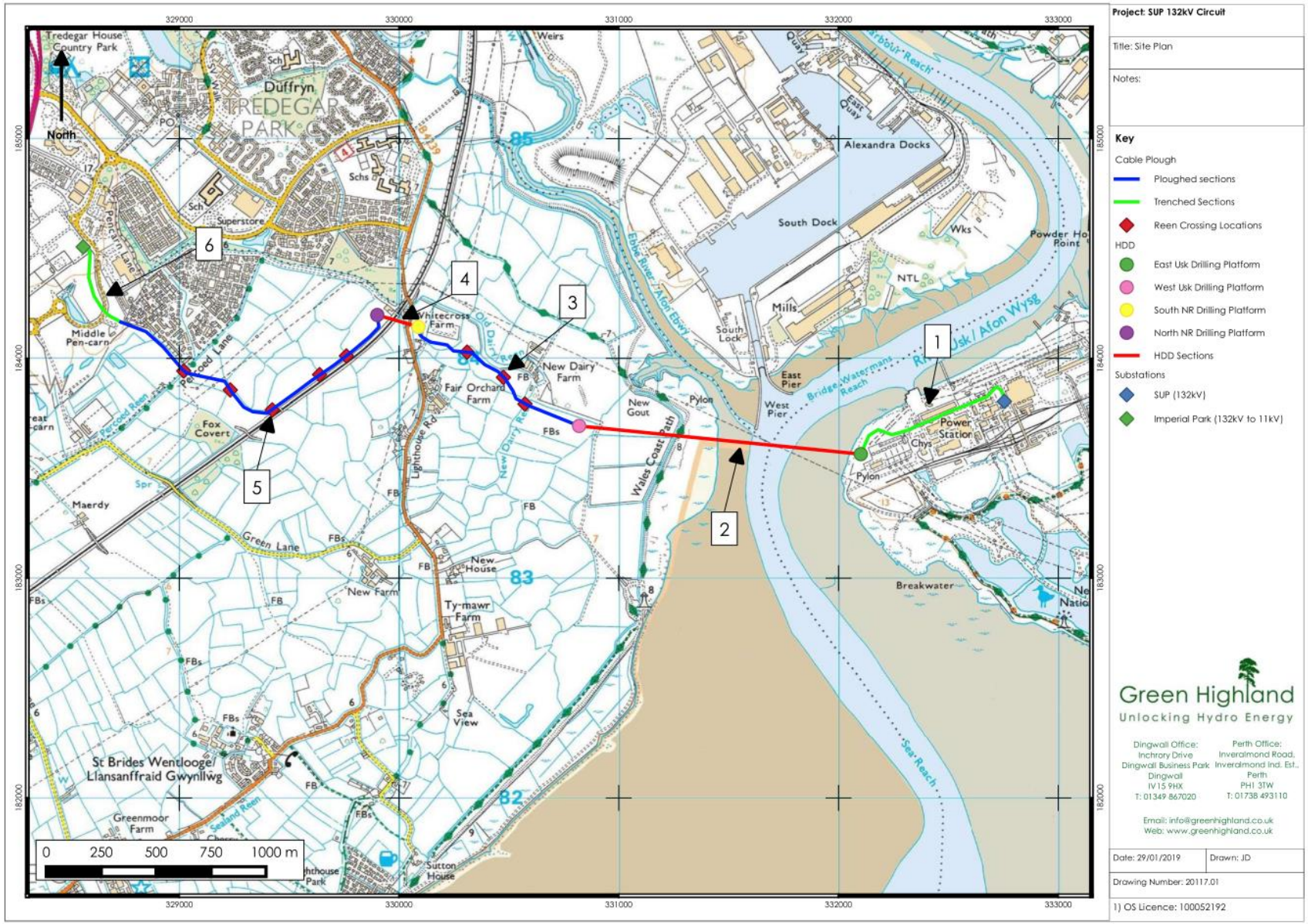

Figure 1 – Development Site Plan

2. Development description

The proposed development consists of a private buried 132kV cable and would extend from the existing substation at SUP to Imperial Park. The route presented in this report is dependent upon a number of factors such as detailed design, environmental studies, and landowner requirements and should be considered indicative only. There would be a combination of temporary and permanent elements, the former to facilitate construction of the permanent infrastructure. Importantly, other than the small bridges to cross the reens, all new permanent infrastructure would be buried. This section provides an overview of both.

The permanent infrastructure of the proposed development consists of the following elements:

- Some minor works to the existing 132kV substation adjacent to SUP to facilitate the connection. As SUP holds a generation licence it is considered a statutory undertaker under Schedule 16 of the Electricity Act 1989. As such, under Schedule 2, part 17 (Class G) of the GPDO[10], these works are assumed to be authorised as permitted development.
- A new buried 132kV cable from SUP to Imperial Park:
    - The cable would consist of 3 separate cables set in a trefoil (triangular) arrangement as shown in figure 2. Note that the proposed development would not be ducted or have a cover plate as it is not necessary due to the depth of the cable.
    - When crossing agricultural ground, the cable would be buried to a minimum depth of 1200mm to the top of the cable to future-proof against ploughing activities. In other areas the cable would be buried to a depth of 800mm.
    - Crossing the reens is discussed below.
- One fibre-optic comms cable
- Hazard warning tape
- 8 landrover bridges to cross the reens on the west side of the River Usk. This is discussed in more detail in section 2.1.3.

[10] The Town and Country Planning (General Permitted Development) Order 1995

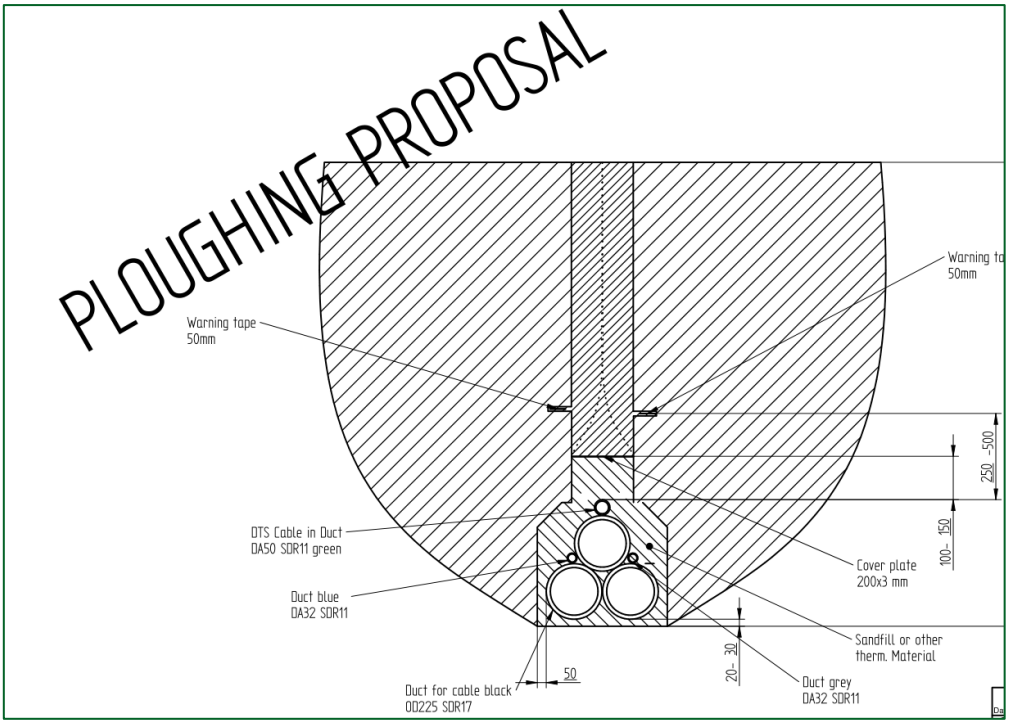

Figure 2 – typical trefoil cable arrangement (indicative arrangement)

Table 1 – 132kV cable sections			
Section	Approximate length (m)	Method of installation	Description
1. SUP Substation to east bank of the River Usk	805	Trenching	Trenched into the middle of an existing tarmac road. Excavated material would be sidecast , the cables installed, then the sidecast material returned to the original excavation in the order it was excavated) in this section.
2. River Usk crossing	1290	Horizontal Directional Drilling (HDD)	A drilling platform would be created on the east side of the River Usk and a borehole would be drilled under the bed of the River Usk to the west side. The borehole would be between 600mm and 800mm in diameter (depending on design). The borehole is likely to be around 30m below the bed of the River Usk[11].

[11] Based on the drilling profile for the recently installed gas main around 200m downstream of the proposed 132kV cable crossing route.

Table 1 – 132kV cable sections			
Section	Approximate length (m)	Method of installation	Description
3. West bank of River Usk to Newport to Cardiff railway line	1000	Cable plough	This section would be installed using a cable plough. The cable would require a single pass of the associated machinery. Figure 3 shows the typical setup of a cable ploughing operation.
4. Newport to Cardiff railway line crossing	195	HDD	Similar to section 2, a borehole would be drilled under the railway line to a depth suitable to Network Rail.
5. Newport to Cardiff railway line to the south side of Imperial Park	1520	Cable plough	This section would follow the railway line as closely as possible for around 650m until heading northwest towards imperial park.
6. South side of Imperial Park to the new 132kV/11kV substation	420	Trenching	Similar to section 1, once the cable route reaches tarmac road it would be trenched in. To cross South Lake Drive, traffic lights would be used to ensure the ongoing safety of the public.

2.1. Horizontal Directional Drilling (HDD)

Sections 2 and 4 would be installed using HDD below the bed of the River Usk and the Newport to Cardiff railway line and lighthouse road respectively. One single borehole would be created in both cases, with the 132kV cable and comms cable contained in the borehole. Due to ground conditions it is likely that the River Usk crossing would be around 30m below the riverbed. This is significant as it ensures there is sufficient distance between the water column and the EMFs (Electro-magnetic Fields) associated with the cable operation to limit the impact on the SAC River Usk. It is highly unlikely that the EMF strength will be above naturally occurring background levels and this will be evidenced in the planning application. More work is required to define the nature of the crossing in section 4.

The drilling process at both sections would broadly follow the procedure as set out below:

- Set up compounds at entry and exit points both approx 40 x 40m. Topsoil stripped and stored on perimeter. Possibly imported material (crushed rock) to provide hard surface for vehicles and plant to travel over.
- Drilling the bores is carried out in 3 stages;
    1. Pilot hole drilling where an initial bore is drilled to about 200mm dia. The pilot hole is guided on a predetermined route and profile.

2. Hole is opened out to final diameter of 600-800mm by drilling the pilot hole with larger diameter drill bits in several passes to reach the final diameter.
3. PE duct is pulled into the open hole.

- Cables are then pulled into the duct.
- Rock cuttings are flushed from the bores by pumping drilling fluid through the drill string and collecting it in reception pits where it is then filtered and cleaned for return to the drill string.
- Reception pits will be lined to prevent any loss of drilling fluid to the environment.
- Rock cuttings will be used as structural fill at the sub-station sites.
- Once the cable has been connected to the ploughed sections and tested the drilling compounds will be cleared and the topsoil reinstated.

2.2. Cable Plough

Ploughing in the cable is a tried and tested method commonly used on windfarms where several parallel 132kV and below lines are installed. GHR has used this technique to install over 30km of cables in the Scottish Highlands over rough, uneven terrain. Sections 3 and 5 are predominantly used for agricultural purposes and are subject to fairly regular ploughing, therefore the ground conditions are perfectly suited for this approach. The cable plough operates as per the following:

- A temporary access track around 4m wide would be laid, made from prefabricated panels. This would avoid the need for any ground disturbance across the farmland. This track is required to transport cable drums, prepare jointing spots, and could provide access for the HDD equipment if necessary.
- Temporary bailey bridges across the reens would be laid (one per reen crossing). These would be prefabricated units to avoid the need for excavations around the reens.
- Starting at the Imperial Park end of section 5, the ploughing equipment would be set up comprising a lead winching vehicle, the wheeled ploughing vehicle and a following vehicle carrying 3 cable drums.
- The lead vehicle would anchor itself 100m to 150m ahead of the plough. A wire tow rope would be attached to the ploughing vehicle.
- A small entry trench would be excavated at start of route to allow the plough to be set to correct depth.
- The lead winching vehicle would then pull the plough vehicle forwards and the 3 cables are fed directly into the ground behind the plough along with warning tape laid above the cables.
- When the plough reaches the lead vehicle the process would stop to allow the lead vehicle to move another 100m to 150m ahead of the plough and the process repeats.
- When the cable drums require to be changed at 500m intervals then a small pit would be excavated to allow a buried joint box chamber to be installed.
- When cable has been connected to the HDD section and tested then the temporary road and bridges would be removed.

The use of a cable plough provides a number of important advantages from an environmental perspective, including:

- The cable plough would only require one pass per cable, not multiple trips back and forth, therefore there is no requirement to construct a temporary access track to facilitate installation.
- There is no trench excavation other than the small joint box chamber, therefore no displacement of turfs and soils/subsoils for any length of time.
- The rate of install can be as high as 500m/day as opposed to around 50m/day for traditional trenching. A conservative estimate of 200m/day is used in section 2.4.

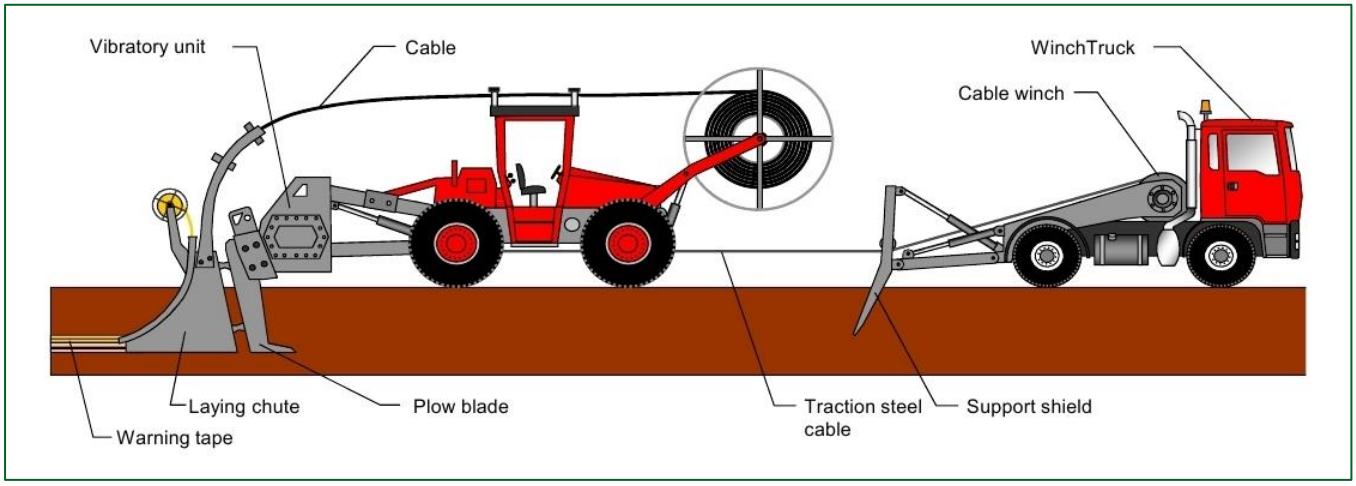

Figure 3 – Typical cable ploughing arrangement. The front vehicle pulls the second vehicle along. The second vehicle, which is likely to be on skids, ploughs the cable, comms cable, and hazard warning tape in. There may be a third vehicle following with the cable drums mounted instead of it being on the front of the second vehicle as shown.

2.3. Reen crossings

There are a total of 8 reen crossings along the route of the cable. The preference is to do the minimum amount of work in proximity to the reens in order to preserve the functionality and conservation value of the reens, and the flora and fauna they support. In order to do so, the following would be implemented:

- Each reen would be crossed perpendicularly to minimise disturbance to the watercourse buffer. Existing clearings would be targeted to minimise the disturbance to parallel hedgerows.
- During construction a temporary bailey bridge similar to that used for the Network Rail works would be installed to facilitate the movement of the required vehicles
- On the approach to the reens the cable would rise from a depth of 1200mm to 800mm or above the top water level in the reens (whichever is shallowest). A concrete pad would be formed over the top of the cable to protect it from damage. Waterstops would be installed in the cable trench to prevent it becoming a drainage conduit in either direction.
- To lay the bridge the following would take place:
    - The bridge abutments would be set back from the edge of the reen by either 5m or the closest area of existing disturbance (e.g. ploughed

ground), whichever is the closest. No infrastructure is required in the reens (i.e. no piers are required).

- To create the abutments, a patch of vegetation would be removed with roots intact measuring around 2m x 3m and carefully placed to one side
- Concrete abutments would be formed
- The steel supports and ducts for the cables would be laid
- The timber bridge decking and handrails would be installed
- Soil excavated to form the foundations would be placed on the sides of the foundations
- The vegetation removed would be placed on the exposed soils to protect against erosion and to soften the appearance

- The cables would be pulled through the ducts.

The drawing referenced "Reen Crossing Detail" shows a typical arrangement. Note that this is indicative at this point and subject to change.

This method would ensure that the reen structure remain untouched and unaffected as a result of the proposed development. The retention of a buffer to the edge of the reen and elevation of the bridge structure would also permit the passage of Otters underneath who are known to travel along the watercourses. There may be a benefit to Otters as the underside of bridges are often used as resting places as they provide dry, sheltered locations.

2.4. Construction sequencing

One of the main environmental constraints is the proximity of the SPA Severn Estuary. SUP has worked with Mabbett and Associates (an environmental consultancy) to provide a Habitat Regulations Appraisal report, which includes survey, reporting, and mitigation adoption. As the designated site is largely associated with wintering and migrating species, this has been the key driver in establishing the outline construction sequence. The following timing and sequencing is broadly correct at the time of writing this document, however it is not fixed and can be updated depending on the results of the additional survey work required to support the planning application:

- Enabling works (creation of temporary access tracks and bailey bridges)
  - Commencement Date - 1st April 2022
  - Duration - 8 weeks
  - Completion date - 30th June 2022

  The first phase of enabling works would commence on the east side of section 4 (including the HDD platform on the west side of the railway line) to facilitate the HDD works and would last 4 weeks. Once completed, the second phase of enabling works would commence also lasting 4 weeks. This would cover sections 5 and 6.
- Section 2:
  - Commencement date - 1st May 2022
  - Duration - 4 months
  - Completion date - 31st August 2022

- Section 4:
    - Commencement date - 1st May 2022
    - Duration - 4 months
    - Completion date - 31st August 2022
- Section 6:
    - Commencement date - 1st July 2022
    - Duration[12] - 3 weeks
    - Completion date - 22nd July 2022
- Section 5:
    - Cable laying commencement - 23rd July 2022
    - Duration[13] - 2 weeks
    - Completion date - 6th August 2022

  On completion of section 5, the cable would be pulled through the borehole under the railway line.
- Section 3:
    - Cable laying commencement - 8th August 2022
    - Duration[14] - 1 week
    - Completion date - 15th August 2022

  On completion of section 3, the cable would be pulled through the borehole under the River Usk.
- Section 1:
    - Commencement date - 22nd August 2022
    - Duration[15] - 4 weeks
    - Completion date - 19th September 2022
- Cable commissioning:
    - Commencement date - 3rd October 2022
    - Duration - 5 weeks
    - Completion date - 7th November 2022

Once fully commissioned the temporary access and HDD platforms would be removed and reinstated to their pre-construction state. As the workfront exits from the reen crossings, the permanent bridges would be installed. Overall, this process is likely to take around 5 weeks.

This sequence allows construction activities to avoid the key window with regards to the SPA. It also avoids much of the bird breeding season and enables the bulk of the

[12] Assumes a rate of 30m/day
[13] Assumes a rate of 200m/day
[14] Assumes a rate of 200m/day
[15] Assumes a rate of 30m/day

construction to take place over the drier summer months. As the survey and assessment phase progresses the programme may be adjusted to reflect the results.

2.5. Evolution of design

A full breakdown of the design process would be provided in the report to accompany the application for planning permission. To date, the following options have been considered but ruled out:

- Overhead line – this option provided fairly significant cost advantages however it was ultimately ruled out due to the proximity of the SAC/SPA/SSSI/Ramsar/NNR for wintering and migrating bird species. Although the bulk of the line is out with the designations, there may have been cumulative connectivity impacts on flight patterns given the extent of existing overhead lines in the area and the use of the farmland for foraging by the qualifying species. Additionally, discussions with SUP and the landowners along the route has shown a preference for the cable to be buried to minimise the visual impact of the proposed development. Overhead lines would also require the construction of a track to facilitate the movement of vehicles which would have increased the extent of temporary disturbance.
- Laying the cable along the bed of the River Usk instead of HDD – this option was discounted early on mainly due to the enhanced protection requirements. HDD also allows any faults in the section under the Usk to be fixed without further disruption to the ecology of the river. Whilst the connectivity impacts would still need to be addressed, selecting this option eliminates any work within the boundaries of the SAC, SPA, and the Ramsar site.
- Operating at different voltages – due to the load requirements, anything lower than 132kV would have resulted in multiple cables. 132kV means one single cable, minimising the extent of work required and therefore temporary disturbance to install. Higher voltages than 132kV were not considered as it is unnecessary.
- Reen crossing – two different approaches to the reen crossings were considered:
    - HDD – this was discounted due to the scale of site infrastructure at each crossing location. There would need to be an entry compound housing the drilling equipment, generators, and pollution prevention measures.
    - Isolated open-cut trench – this option seemed to be reasonable based on the approach used to cross minor watercourses. This was discounted in favour of the technically simpler approach described in section 2.1.3, however it does represent a well-practised approach should the bridging option be discarded.

Various routes have been considered to reflect the sensitivities observed, including habitats, landowners preferences, and existing infrastructure. The route presented in this document represents the optimal route at the time of writing, however it should be considered indicative and subject to environmental and design studies.

3. Conclusion

This document is designed to give an overview of the proposed project to facilitate a pre-application enquiry to Newport City Council. It will be followed up by a formal Screening opinion which will provide more details on the likely effects of the project and an overview of

the work conducted to date to demonstrate the limited impact on the environment by the proposed project.

Any comments can be directed to the following address:

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PH1 3TW

Or email to jaysondrummond@greenhighland.co.uk.

Appendix 4.1

Ornithology HRA Screening Report

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Project No: P305211.001

HRA Screening Report

Prepared for:

SIMEC Uskmouth Power Station (SUP) Ltd

Uskmouth Power Station
West Nash Road
Newport
NP18 2BZ

Contents Amendment Record

This report has been issued and amended as follows:

Revision	Description	Date	Signed
4.0	Amended Report	16 April 2020	S Kiel / G Boylan

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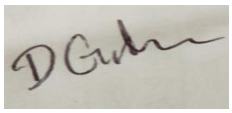
Acknowledgement

This report has been prepared for the sole and exclusive use of SIMEC Uskmouth Power Ltd (SUP) in accordance with the scope of work presented in Mabbett & Associates Ltd (Mabbett) Letter Proposal M305211 SIMEC Newport Ornithology Survey & HRA Mabbett LP 2.1 (M305211.002/LP/SK/pd Rev2.1), dated 23 January 2021. This report is based on information and data collected by Mabbett. Should any of the information be incorrect, incomplete or subject to change, Mabbett may wish to revise the report accordingly.

This report has been prepared by the following Mabbett personnel:

MABBETT & ASSOCIATES LTD



Darren Graham
Environmental Consultant Ecology

This report has been reviewed and approved by the following Mabbett personnel:

MABBETT & ASSOCIATES LTD

Stephanie Kiel MCIEEM
Principal Environmental Consultant Ecology

MABBETT & ASSOCIATES LTD

Geraldine Boylan PCQI, FIEMA, CEnv
Director - Environment

Table of Contents

Introduction

The Proposal

SIMEC Uskmouth Powerstation (SUP) is currently going through the planning process to finalise the design and consenting phase of the conversion of Uskmouth "B" on the east side of the River Usk from a coal-fired powerstation to a waste-to-energy powerstation with a Total Installed Capacity (TIC) of around 220MW. On the west side of the River Usk, around 4km from the riverbank, there are a number of high energy consuming facilities within the Imperial Park industrial zone. It is the intention to supply these facilities with the electricity generated at Uskmouth "B" through the installation of a 132kV underground double-circuit. Two different routes have been identified to inform the surveys described in this report and the plan referenced 20117_Site Plan_GHR_20190129 shows the likely route, pending additional environmental surveys. The two identified cable routes would pass through the Gwent Levels St. Brides Site of Special Scientific Interest (SSSI) and the most easterly section would be in close vicinity of the Severn Estuary SSSI, Special Protection Area (SPA), Special Area of Conservation (SAC) and Ramsar site. Table 1 below provides an outline description of the proposed route as shown on this plan.

Table 1. 132 kV cable sections.

Section	Approximate length (m)	Method of installation	Description
SIMEC Substation to east bank of the River Usk	805	Trenching	Trenched into the middle of an existing tarmac road. Excavated material would be sidecast, the cables installed, then the sidecast material returned to the original excavation in the order it was excavated) in this section.
River Usk crossing	1290	Horizontal Directional Drilling (HDD)	A drilling platform would be created on the west side of the River Usk and two parallel boreholes would be drilled under the bed of the River Usk to the east side. Each borehole would be between 600mm and 800mm (depending on design). The boreholes are likely to be around 30m below the bed of the River Usk [1].
West bank of River Usk to Newport to Cardiff railway line	1000	Cable plough	This section would be installed using a cable plough. Each cable would require a single pass of the associated machinery. Figure 3 shows the typical setup of a cable ploughing operation.
Newport to Cardiff railway line crossing	195	HDD	Similar to section 2, boreholes would be drilled under the railway line to a depth suitable to Network Rail.
Newport to Cardiff railway line to the south side of Imperial Park	1520	Cable plough	This section would follow the railway line as closely as possible for around 650m until heading northwest towards imperial park.
South side of Imperial Park to the new 132kV/11kV substation	420	Trenching	Similar to section 1, once the cable route reaches tarmac road it would be trenched in. To cross South Lake Drive, traffic lights would be used to ensure the ongoing safety of the public.

Direct impacts on the SSSI Gwent Levels-St Brides may be observed as the cable route passes directly through this designation. The most easterly section would be in close proximity to the Severn Estuary SPA, SAC, SSSI, and Ramsar Site. As shown in the attached plan, this section would be HDD and therefore direct impacts within the boundary of the Severn Estuary designations (including direct impacts on the SAC and non-ornithological components of the SSSI and Ramsar sites) can be ruled out. There may, however, be connectivity issues relating to the ornithological components of the SSSI, Ramsar, and of course the SPA sites.

- **Purpose of this Report**

The purpose of this report is to provide details on the designated sites and their designated features along the identified cable route. In detail, the report will consider the ornithological interest of European Protected Sites, i.e. the Severn Estuary Special Protection Areas (SPAs).

The report will present ornithological data on historical use of designated features of European protected sites between 2013 and 2018 as well current survey data which has been gathered since December 2019.

Based on the information available, a screening process will be completed to determine if a Habitats Regulations Appraisal (HRA) may be required should the proposal, i.e. the installation of an underground cable with a temporary construction phase and limited permanent impacts, have a likely significant effect (LSE) on the SPA or its qualifying, ornithological interests.

This report is not an actual HRA and will not complete an Appropriate Assessment.

• Designated Sites and Conservation Objectives

The following designated sites are located within 2km of the proposed buried cable connection between the proposed data centre and existing Uskmouth Power Station. Each section presents an overview of the site and designated features. Designated sites include Special Protection Areas (SPA), Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) and Ramsar sites.

The proposed cable route between the data centre and Uskmouth Power station would be located within the Gwent Levels – St. Brides SSSI.

- **Designated Sites**

Table 1 provides a list of the designated sites within 2km of the proposed development.

Table 1. Designated sites and description of key features.

Site and Description	Key Ecological Features
Severn Estuary (Wales) SPA The Severn Estuary was classified as a Special Protection Area (SPA) in 1995 after being identified as having national and international importance for the breeding, feeding, wintering and migration of rare and vulnerable species of birds, covering nearly 25,000 ha of the Estuary.	**Wildfowl and Wading birds:** ▪ Bewick's swan *Cygnus columbianus bewickii – 289 birds wintering between 1988/89 and 1992/93* ▪ Greater white- fronted goose *Anser albifrons albifrons – 3,002 birds wintering between 1988/89 and 1992/93* ▪ Common shelduck, *Tadorna tadorna – 2,892 birds wintering between 1988/89 and 1992/93* ▪ Gadwall, *Anas strepera – 330 birds wintering between 1988/89 and 1992/93* ▪ Dunlin, *Calidris alpina alpina– 41,683 birds wintering between 1988/89 and 1992/93* ▪ Common redshank, *Tringa totanus – 2,013 birds wintering between 1988/89 and 1992/93* ▪ Wintering waterfowl with average peak count of 68,026 waterfowl (17,502 waterfowl and 50,524 waders) wintering between 1988/89 and 1992/93
Severn Estuary (Wales) SAC The Severn Estuary was designated as a Special Area of Conservation (SAC) in 2009. The Severn Estuary is considered to be one of the best areas in the UK to support a significant number of habitat types and species covering a vast area of nearly 74,000 ha. The Severn Estuary SAC is a multiple interest site which has been selected for the presence of the following	**Habitats** ▪ Estuaries ▪ Subtidal sandbanks ▪ Intertidal mudflats and sandflats ▪ Atlantic salt meadows ▪ Reefs **Fish:** ▪ Sea lamprey *Petromyzon marinus.* ▪ River lamprey *Lampetra fluviatilis* ▪ Twaite shad *Alosa fallax.*

Site and Description	Key Ecological Features
River Usk SAC The River Usk SAC rises in the Black Mountain range in the west of the Brecon Beacons National Park and flows east and then south, to enter the Severn Estuary at Newport. The overall form of the catchment is long and narrow, with short, generally steep tributaries flowing north from the Black Mountain, Forest Fawr and Brecon Beacons, and south from Mynydd Epynt and the Black Mountains.	**Habitats** Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation **Fish** ▪ Sea lamprey *Petromyzon marinus* ▪ Brook lamprey *Lampetra planeri* ▪ River Lamprey *Lampetra fluviatilis* ▪ Twaite shad *Alosa fallax* ▪ Atlantic salmon *Salmo salar* ▪ Bullhead *Cottus gobio* ▪ Allis shad *Alosa alosa* **Mammals** European otter *Lutra lutra*
River USK SSSI The course of the Usk lies on the Powys/Carmarthenshire border west of Trecastle, within the Mynydd Du SSSI. It feeds the Usk Reservoir, below which this SSSI commences. The Usk is soon joined by the Afon Hydfer, an important headwaters tributary, which is also included within this site. The entire length of the river downstream of Usk Reservoir has been designated a site of special scientific interest (SSSI). The designation is in recognition of a number of ecological features.	**Habitats** Woodlands dominated by alder *Alnus glutinosa* and willows *Salix* sp., marshy grassland, stands of tall herb, swamp and fen vegetation. Shingle banks and gravel shoals below Brecon support a variety of species. Back channels contain marshes and pools supporting plant communities not found in the main channel. ▪ Mosses and lichens ▪ Otter ▪ Fish – Atlantic Salmon, sea trout and lamprey. ▪ Breeding birds associated with riverine habitats including Kingfisher *Alcedo atthis*, dipper *Cinclus cinclus* and grey wagtail *Motacilla cinerea.* ▪ Atlantic stream crayfish *Austropotamobius pallipes* and the freshwater pearl mussel *Margaritifera margaritifera*, both of which are threatened in the UK. ▪ Several nationally rare and scarce species of flowering plant occur in the river and on its banks.

Site and Description	Key Ecological Features
Severn Estuary (Wales) Ramsar site The Severn Estuary was designated as a Ramsar site in 1995, covering 16,942 ha of wetland. The site's qualifying interest features overlap with those of the Severn Estuary SPA and SAC. The site is of particular importance for hosting internationally important populations of several species of waterbirds as well as its fish species migrating between the sea and rivers via the Estuary.	**Habitats** ▪ Estuary **Fish** ▪ Assemblage of migratory fish species (sea lamprey, river lamprey, twaite shad, allis shad *Alosa alosa*, salmon *Salmo salar*, sea trout *Salmo trutta*, eel *Anguilla anguilla*). **Wildfowl and Waders:** ▪ Bewick's swan ▪ European white-fronted goose ▪ Dunlin ▪ Redshank ▪ Shelduck ▪ Gadwall ▪ Internationally important assemblage of wintering and migrating waterfowl
Gwent Levels - St Brides SSSI St Brides SSSI constitutes part of the lowlands between Cardiff and Chepstow, designated in 1991. The Gwent levels are drained by a network of drainage ditches and are of one of the most extensive areas of reclaimed wet pasture in Great Britain. The Gwent Levels reens are rich in plant species and communities, many of which are rare or absent in other Levels systems. **Sub features:** Reen and Ditch Habitat.	**Aquatic Plants:** ▪ Hairlike pondweed *Potamogeton trichoides* ▪ Arrowhead *Sagittaria sagittifolia.* ▪ Thread-leaved water-crowfoot *Ranunculus trichophyllus.* ▪ Small pondweed *Potamogeton berchtoldii* **Meadow plants:** ▪ Grass vetchling *Lathyrus nissolia.* ▪ Common meadow-rue *Thalictrum flavum*. **Notable Invertebrates:** ▪ *Haliplus mucronatus.* ▪ *Hydrophilus piceus* ▪ *Physa heterostropha* ▪ *Brachytron pratense* ▪ True fly *Chrysogaster macquarti* ▪ Beetle *Hydaticus transversalis* ▪ *Stenomicra cogani*

Site and Description	Key Ecological Features
Severn Estuary (Wales) SSSI The Severn Estuary and many of the floodplain Levels surrounding it are designated as Sites of Special Scientific Interest (SSSIs). The Association of Severn Estuary Relevant Authorities (ASERA) jurisdiction area has numerous coastal SSSIs that cover a variety of designated features, from flora and fauna to geological formations. The site's qualifying interest features overlap with those of the Severn Estuary SPA, SAC and Ramsar site. The estuary covers approximately 15,000 ha of foreshore and inter-tidal habitat and is of international importance for wintering and wading birds of passage.	**Habitats** ▪ Estuary ▪ Intertidal mud and sand ▪ Atlantic salt meadow **Fish** ▪ This site is important for several species of fish migrating between sea and river via the estuary including common eel and salmon. **Plants** ▪ Small patches of a nationally rare plant *Lythrum hyssopifolia.* **Birds** over 10% of the British wintering population of waders including: ▪ Dunlin ▪ Bewick's Swans ▪ White-fronted geese ▪ Wigeon ▪ Gadwall ▪ Shoveller ▪ Pochard
Newport Wetlands SSSI & NNR The Newport Wetlands Reserve is of national importance for wildlife and is designated as both a Site of Special Scientific Interest (SSSI) and National Nature Reserve due to the birds, invertebrates and wetland flora that occur here. The reserve consists of a range of habitats. In winter the sites attract nationally important numbers of wildfowl and wading species followed by nationally important numbers of other priority species in the breeding season.	**Wintering Birds** ▪ Shoveler *Anas clypeata* ▪ Black-tailed Godwit *Limosa* ▪ Gadwall *Anas strepera* ▪ Wigeon *Anas penelope* ▪ Shelduck ▪ Dunlin ▪ Redshank ▪ Whimbrel *Numenius phaeopus* ▪ Curlew *Numenius arquata* **Breeding birds** ▪ Avocet *Recurvirostra avosetta* ▪ Redshank ▪ Lapwing *Vanellus* ▪ Water Rail *Rallus aquaticus* ▪ Cetti's Warbler *Cettia cetti* ▪ Bearded Tit *Panurus biarmicus*

- **Conservation Objectives**

The conservation objectives of the Severn Estuary SPA are of importance for this screening report to determine if a likely significant effect could occur. The following sections summarise the conservation objectives per species. These have been specified for every single species rather than stating the often-used general objectives of maintenance of a viable population, supporting habitats and processes and no disturbance.

- **Bewick's Swan**

The conservation objective is to maintain the Bewick's swan population and its supporting habitats in favourable condition, as defined below:

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

The five-year peak mean population size for the Bewick's swan population is no less than 289 individuals (i.e. the 5-year peak mean between 1988/9 - 1992/3).
The extent of saltmarsh at the Dumbles is maintained.
The extent of intertidal mudflats and sandflats at Frampton Sands, Waveridge Sands and the Noose is maintained.
The extent of vegetation with an effective field size of >6 ha and with unrestricted bird sightlines > 500m at feeding, roosting and refuge sites are maintained.
Greater than 25% cover of suitable soft leaved herbs and grasses in winter season throughout the transitional saltmarsh at the Dumbles is maintained.
Aggregations of Bewick's swan at feeding, roosting and refuge sites are not subject to significant disturbance.

- **European white-fronted goose**

The conservation objective is to maintain the European white-fronted goose population and its supporting habitats in favourable condition, as defined below.

The interest feature European white-fronted goose will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met:

The five-year peak mean population size for the wintering European white fronted goose population is no less than 3,002 individuals (i.e. the 5-year peak mean between 1988/9-1992/3).
The extent of saltmarsh at the Dumbles is maintained.
The extent of intertidal mudflats and sandflats at Frampton Sands, Waveridge Sands and the Noose is maintained;
Greater than 25% cover of suitable soft-leaved herbs and grasses is maintained during the winter on saltmarsh areas.
Unrestricted bird sightlines of >200m at feeding and roosting sites are maintained.
Aggregations of European white-fronted goose at feeding or roosting sites are not subject to significant disturbance.

- **Dunlin**

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

The five-year peak mean population size for the wintering dunlin population is no less than 41,683 individuals (i.e. the 5-year peak mean between 1988/9 - 1992/3);
The extent of saltmarsh and associated strandlines is maintained.
The extent of intertidal mudflats and sandflats is maintained.
The extent of hard substrate habitats is maintained.
The extent of vegetation with a sward height of <10cm is maintained throughout the saltmarsh.
The abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained;
The abundance and macro-distribution of suitable invertebrates in hard substrate habitats is maintained.
Unrestricted bird sightlines of >200m at feeding and roosting sites are maintained.

Aggregations of dunlin at feeding or roosting sites are not subject to significant disturbance.

- **Redshank**

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

The five-year peak mean population size for the wintering redshank population is no less than 2,013 individuals (i.e. the 5-year peak mean between 1988/9 - 1992/3).
The extent of saltmarsh and associated strandlines is maintained.
The extent of intertidal mudflats and sandflats is maintained.
The extent of hard substrate habitats is maintained.
The extent of vegetation with a sward height of <10cm throughout the saltmarsh is maintained.
The abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained.
The abundance and macro-distribution of suitable invertebrates in hard substrate habitats is maintained.
Unrestricted bird sightlines of >200m at feeding and roosting sites are maintained.
Aggregations of redshank at feeding or roosting sites are not subject to significant disturbance.

- **Shelduck**

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

The five-year peak mean population size for the wintering shelduck population is no less than 2,892 individuals (i.e. the 5-year peak mean between 1988/9 - 1992/3).
The extent of saltmarsh is maintained.
The extent of intertidal mudflats and sandflats is maintained.
The extent of hard substrate habitats is maintained.
The abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained.
Unrestricted bird sightlines of >200m at feeding and roosting sites are maintained.
Aggregations of shelduck at feeding or roosting sites are not subject to significant disturbance.

- **Gadwall**

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

The five-year peak mean population size for the wintering gadwall population is no less than 330 (i.e. the 5-year peak mean between 1988/9 - 1992/3).
The extent of intertidal mudflats and sandflats is maintained.
Unrestricted bird sightlines of >200m at feeding and roosting sites are maintained.
Aggregations of gadwall at feeding or roosting sites are not subject to significant disturbance.

- **Qualifying bird species wintering figures**

Average wintering figures for internationally important populations of regularly occurring Annex 1 bird species using the Severn Estuary SPA at the time of designation are summarised below:

Table 2: SPA populations of qualifying species using the Severn Estuary SPA at the time of designation in 1995.

Species Wintering	Population	5 Year Peak Mean 1988/9 to 1992/3
Bewick's swan	289	4.1% Great Britain 1.7% NW Europe
European white-fronted goose	3,002	50% British, 1% North West Europe

Dunlin	41,683	2.9% East Atlantic flyway
Redshank	2,013	1.3% East Atlantic flyway
Shelduck	2,892	1.2% North West Europe
Gadwall	330	2.8 % NW Europe

A further qualifying SPA feature is the internationally important assemblage of waterfowl (which includes above the species) with the following nationally important populations **Table 3**). The Severn Estuary at the time of designation supported 68,026 individual birds comprising 17,502 wildfowl and 50,524 waders.

Table 3. Nationally Important Bird Species

Species Wintering	Population	5 Year Peak Mean 1988/9 to 1992/3
Wigeon	3,977	1.6% Great Britain
Teal	1,998	2.0% Great Britain
Pintail	523	2.1% Great Britain
Pochard	1686	3.8% Great Britain
Tufted duck	913	1.5% Great Britain
Ringed plover	227	1.0% Great Britain
Grey plover	781	3.7% Great Britain
Curlew	3,096	3.4% Great Britain
Whimbrel	246	4.9% Great Britain
Spotted redshank	3	1.5% Great Britain

• Data Search

- **BTO Core Count Data**

The Wetland Bird Survey (WeBS) monitors non-breeding waterbirds in the UK. One of the principal aims of WeBS is to provide data to facilitate their conservation. WeBS surveyors monitor the UK's internationally important non-breeding waterbirds. Following a tradition begun in 1947, wetland sites are counted once per month, providing data for population and trends in abundance and distribution. The network of sites legally protected for their importance to wintering waterbirds depends fundamentally on the WeBS counts. "Waterbirds" include wildfowl (ducks, geese and swans), waders, rails, divers, grebes, cormorants and herons. Gulls and terns are optionally included.

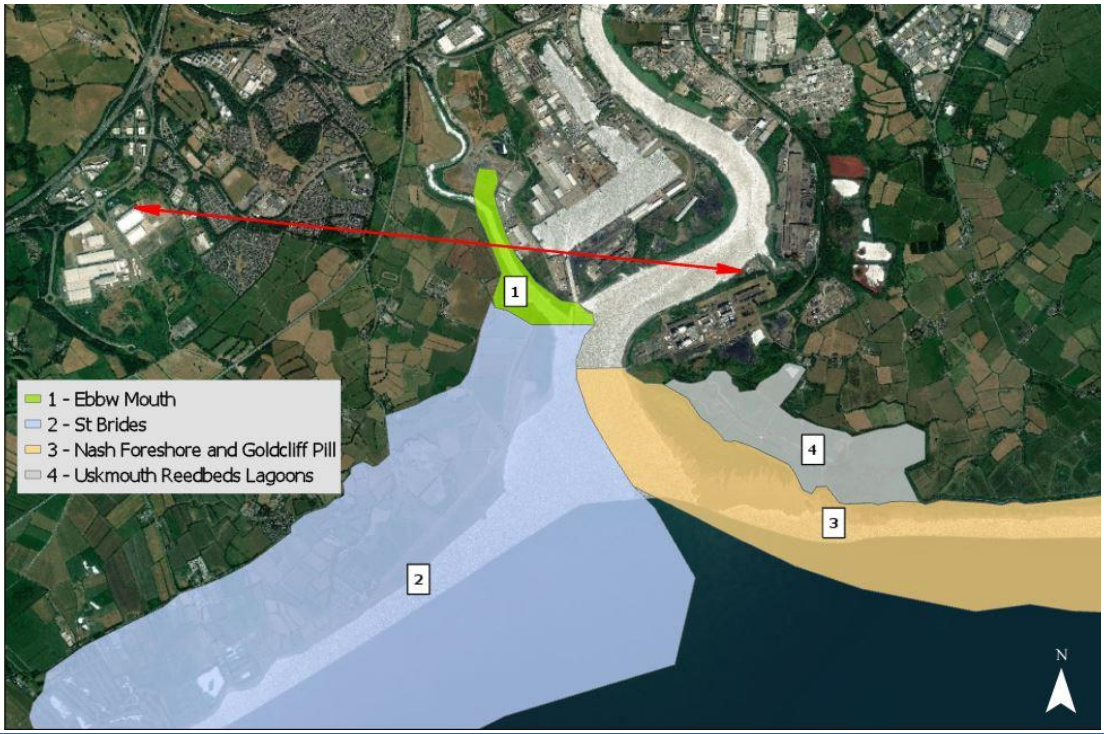
The WeBS Core Counts scheme is the principal scheme of The Wetland Bird Survey. Counts are made annually at around 2,850 wetland sites of all habitats; estuaries and large still waters predominate. Some sites are large and split into separate count sectors. Monthly coordinated counts are made mostly by volunteers, principally from September to March, with fewer observations during summer months.

No direct impacts are expected as a result of the proposed development since the development would not be located within the SPA area. However, there is potential for disturbance of SPA qualifying species utilising the coastal SPA areas and farmland along the construction route.

The Severn Estuary SPA and Ramsar site is the key component of the network of natural heritage designations in the vicinity of the proposed site plans. The most recent core count data from July 2013 to April 2018 was obtained from the BTO on the four count sectors (**Figure 1**) where construction works to install a 4.5km cable network could take place in the vicinity of the SPA (**In red**):

- 1 - Ebbw Mouth
- 2 - St Brides
- 3 - Nash Foreshore and Goldcliff Pill
- 4 - Uskmouth Reedbed Lagoon

Figure 1. BTO Core count areas within the Severn Estuary SPA and indication of Data Centre and Power Station locations



The following sections present historical use of the four core count sectors near the proposed development by SPA designated species presented in Table 1.

- **European white-fronted goose**

No European white-fronted geese were recorded during the BTO Core Counts within the four core count sectors between 2013 and 2018.

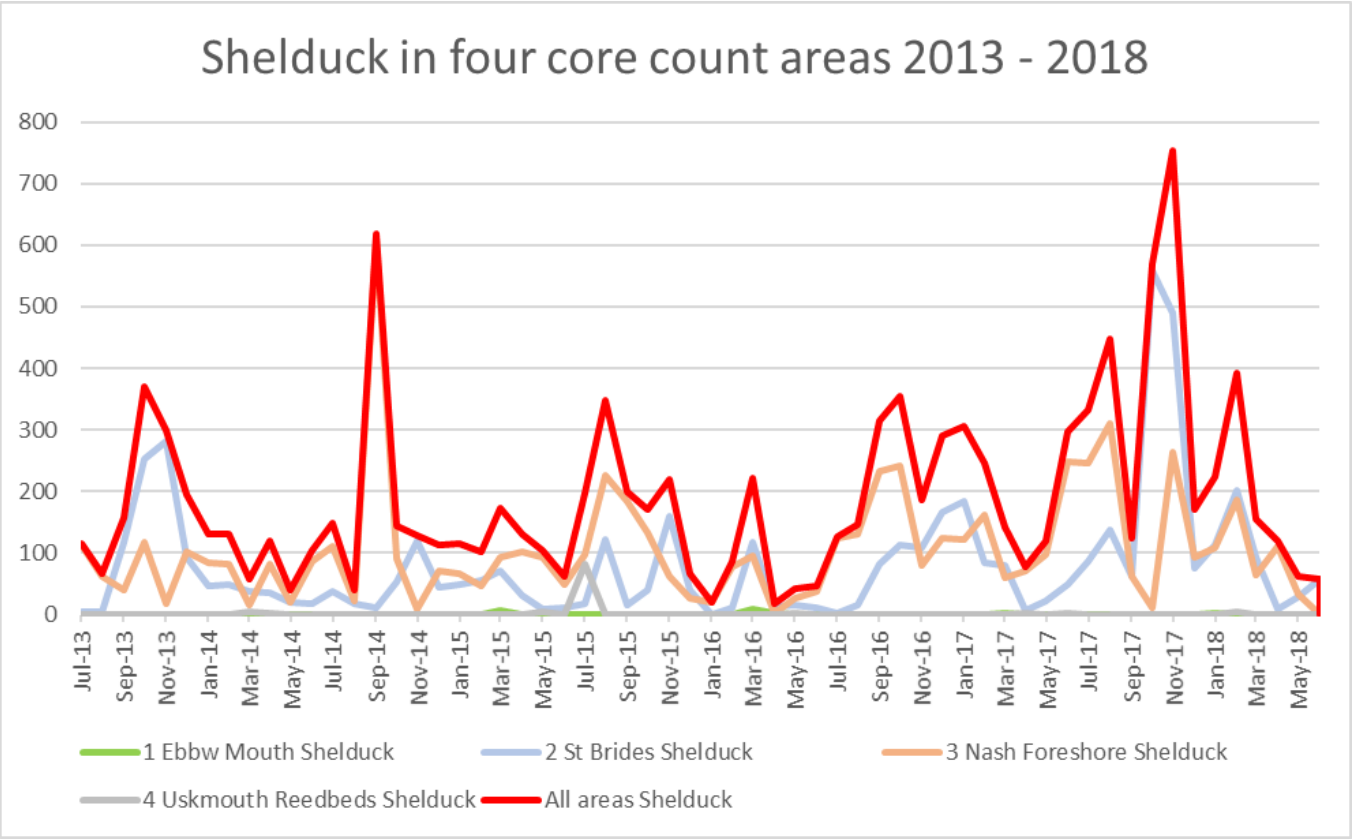
- **Bewick's Swan**

No Bewick's swans were recorded during the BTO Core Counts within the four core count sectors between 2013 and 2018.

- **Shelduck**

The core count data for Shelduck (**Figure 2**) shows that this species is present in the four counting areas throughout the year with peak counts usually recorded in the early autumn and over the winter. Highest numbers were recorded in areas 2 St. Brides and 3 Nash Foreshore. Maximum counts for this species reached over 700 individuals in autumn 2017 and the highest count for a single counting area was just over 600 individuals at Nash Foreshore. Shelduck densities appeared to remain fairly consistent throughout the year however from February to June numbers seemed to be at their lowest densities. In comparison, highest Shelduck densities were usually seen in the winter months particularly from September through to January.

Figure 2. Core count data for Shelduck in four count areas between 2013 and 2018

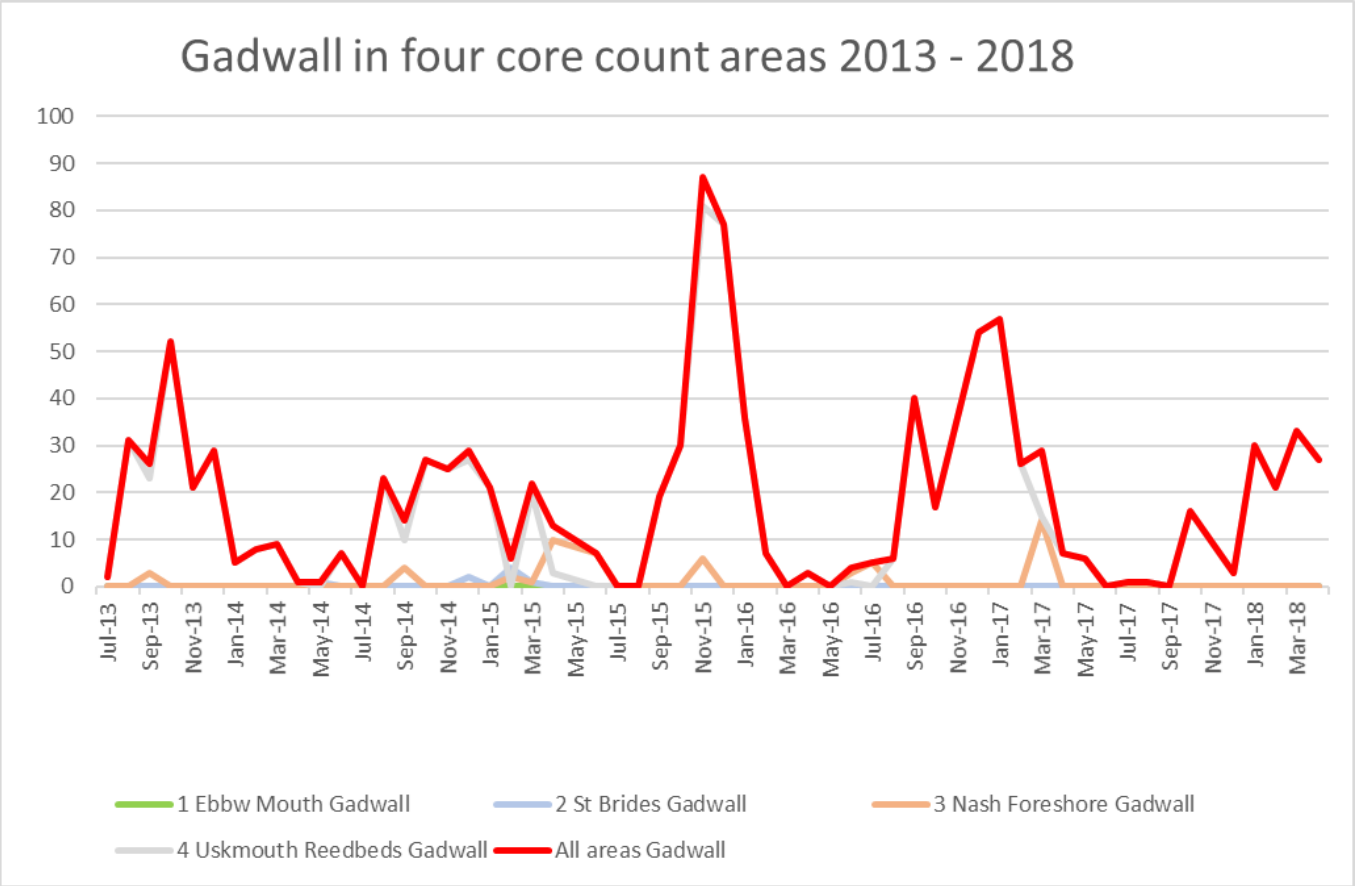


The maximum counts for Common shelduck represented around 24% of the designated SPA population of 2,892 wintering birds.

- **Gadwall**

The core count data for Gadwall (**Figure 3**) shows that this species is present within the all counting areas throughout the year with exception to Ebbw Mouth. Peak counts usually occurred from late summer to spring. Highest numbers were recorded in areas 3 Nash Foreshore and 4 Uskmouth Reedbeds. Maximum counts for Gadwall reached over 80 individuals in late summer and spring in 2015/2016 at Uskmouth this was also the highest count for a single counting area. Overall, Uskmouth was the most frequently used site. Nash Foreshore and St Brides had lower numbers and there were no individuals records at Ebbw Mouth. Gadwall numbers were lower during the months from March to July.

Figure 3. Core count data for Gadwall in for count areas between 2013 and 2018

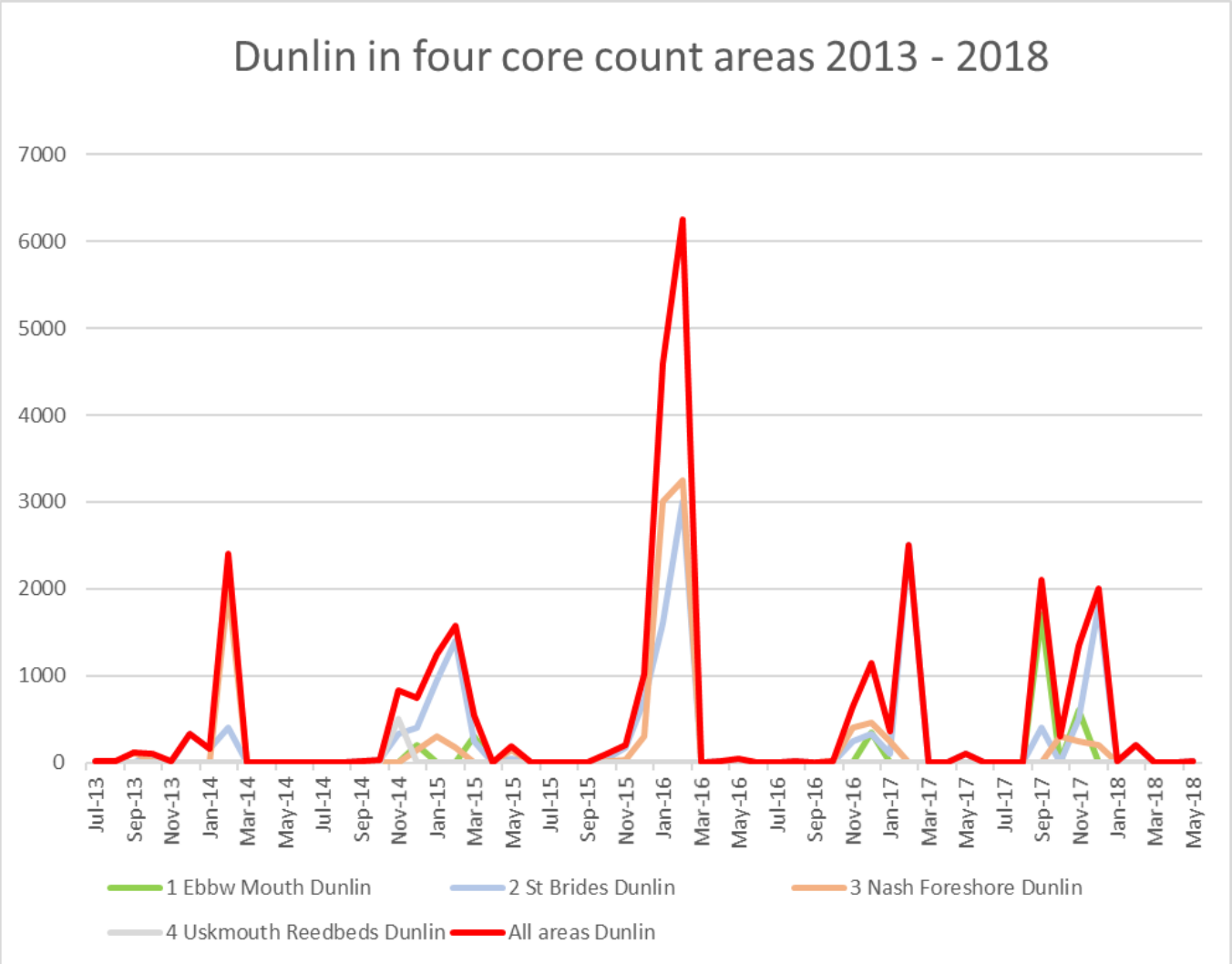


The maximum counts for Gadwall with over 80 birds for the four areas also represented around 24% of the designated SPA population of wintering 330 birds.

- **Dunlin**

Core count data for Dunlin (**Figure 4**) shows that this species is present in the four counting areas throughout the year with peak counts usually occurring from late autumn to early spring. Maximum counts for Dunlin reached over 6,000 individuals in winter and spring in 2015/2016 at St Brides and Nash Foreshore. The highest count for a single counting area was for Nash Foreshore with 3,250. Overall, St Brides was the most heavily used site, followed by Nash Foreshore. There were much lower numbers at Ebbw Mouth and Uskmouth Reedbeds. Dunlin presence appeared to be much lower in the months from March to September.

Figure 4. Core count data for Dunlin in for count areas between 2013 and 2018

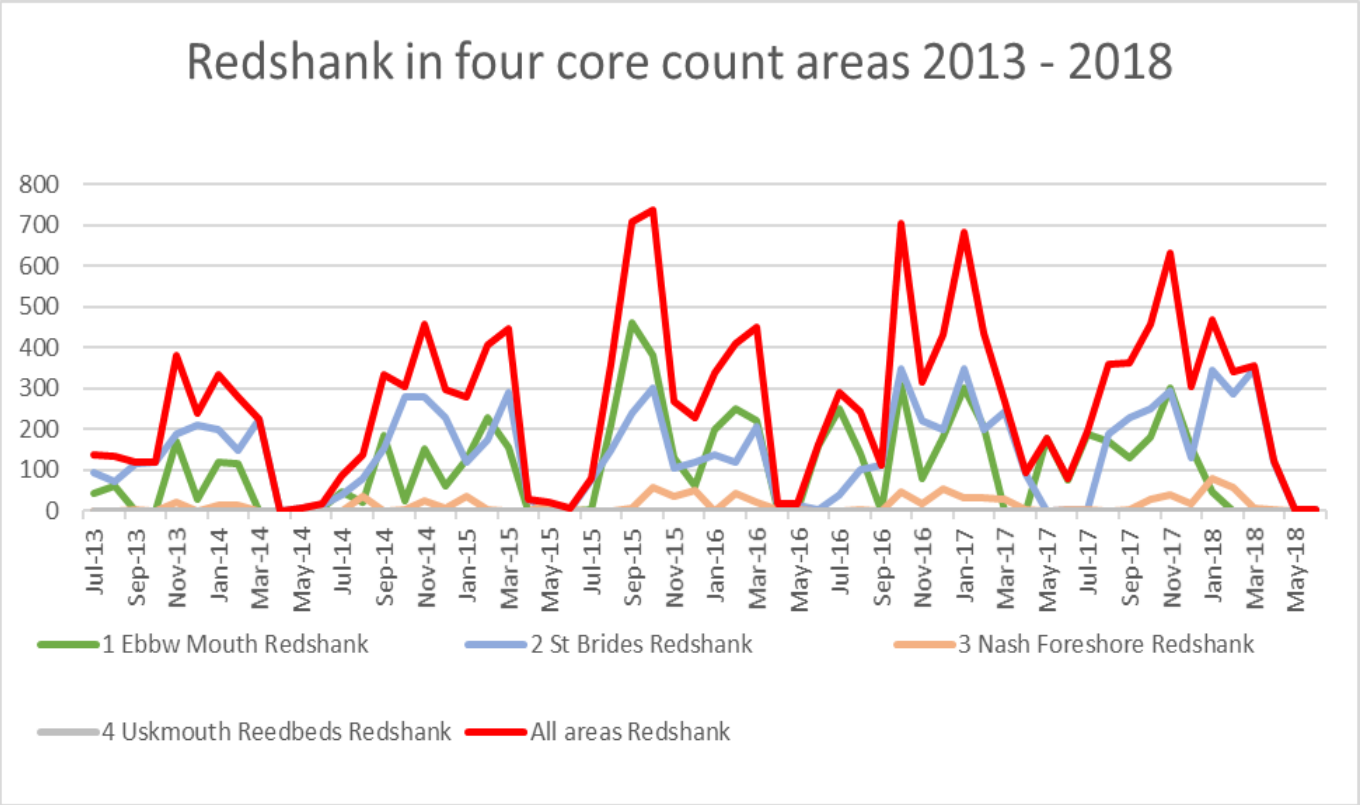


The maximum counts for Dunlin with over 6000 birds for the four areas represented around 14% of the designated SPA population of wintering 41,683 birds.

- **Redshank**

Core count data for Redshank (**Figure 5**) shows that this species was present in three of the counting areas throughout the year with exception to Uskmouth Reedbeds. Peak counts usually occurred from early winter with numbers remaining consistent throughout each month apart from May. Highest numbers of Redshank were recorded in areas 1 Ebbw Mouth and 2 St Brides. Maximum counts reached over 700 individuals in winter 2015 across all sites excluding Uskmouth. Nash Foreshore also showed relatively low numbers of birds, again these were consistent throughout the year apart from May. The highest count for a single counting area was Ebbw Mouth at 462.

Figure 5. Core count data for Redshank in for count areas between 2013 and 2018



The maximum counts for redshank with over 700 birds for the four areas also represented around 34% of the designated SPA population of wintering 2,013 birds.

• 2019/2020 Field Surveys

- **Introduction**

Field surveys were completed starting in December 2019 with an initial reconnaissance visit. To survey for the use of SPA qualifying species, a survey programme using vantage points and a site walkover was utilised. The methods are presented in the following sections.

- **Survey Methods**
- **Reconnaissance Visit**

The purpose of this visit was to identify suitable Vantage Point (VP locations) to survey for flight movements of any SPA qualifying species across the proposed cable routes to allow estimates of potential collision risk as well understand use of the land by qualifying features to understand possible disturbance effects during construction. During the survey, the habitats were surveyed to identify any that would be suitable for foraging or roosting designated species. Any designated species and their numbers using the areas along the proposed buried cable connection were also recorded.

- **VP Surveys**

VP surveys (SNH 2016) were originally developed to assess bird collision risk with wind turbines however they can also be used to examine general site use by roosting or foraging birds to increase understanding as to whether development in this area could have an impact on these species.

VP surveys comprise of a series of watches from a fixed location to quantify the flight activity of birds at a proposed development site. The survey area and design must adequately cover the entire development area, i.e. the largest possible layout, all the alternative layouts and ancillary structures and works. This includes access tracks; borrow pits, electrical substations and buried cables.

Following guidance from Scottish Natural Heritage, a viewing arc of 180 degrees extending up to two kilometres from each VP location are covered by the surveys. Aerial photographs and maps were analysed to determine the best VP locations and their viewing arcs in relation to the proposed work routes. Two VP locations were chosen based on their coverage of a 200m squared area either side of the proposed buried cable routes and public accessibility. SNH recommends that at least 36 hours of survey per VP should be conducted per ‘season’ to enable representative data collection. As two VPs are required to allow full coverage of the routes, 72 hours of survey would be required at the site during the winter month to comply the industry guidance. Careful consideration has been taken of tidal cycles, as well as time of day when planning VP watches to allow for detection of SPA qualifying specie using the areas that could be affected by installation of an underground cable.

- **Winter walkover**

Winter walkover surveys include walking a transect line across the proposed cable routes to identify any foraging or roosting waterfowl or waders on suitable habitats such as pastures or identify droppings of geese or swans which can also indicate the presence of these species on site even if the birds are not directly observed.

- **Survey Findings**
- **Reconnaissance Visit**

A reconnaissance visit was completed by James Garside, an experienced local ornithologist in 20 December 2019. Weather conditions were cool, overcast with light precipitation at the start and light winds.

The walkover survey along the proposed route confirmed habitats including grassland leys and grazed pasture fields which were generally small and separated by hedgerows and ditches. There was no significant open waterbodies and the land is flat. The area of land immediately south-east of the Celtic Lakes Industrial Estate consisted predominately of vegetated brownfield land and scrub.

Bird species recorded during the survey included four curlew *Numenius arquata*, single green sandpiper *Tringa ochropus*, merlin *Falco columbarius* and Cetti's warbler *Cettia cettia*. Curlew is part of the SPA qualifying species assemblage, and merlin, green sandpiper and Cetti's warbler are all Schedule 1 bird species. Merlin, green sandpiper and Cetti's warbler, whilst Schedule 1 species, are not part of the SPA schedule and therefore are not considered further in the context of the HRA.

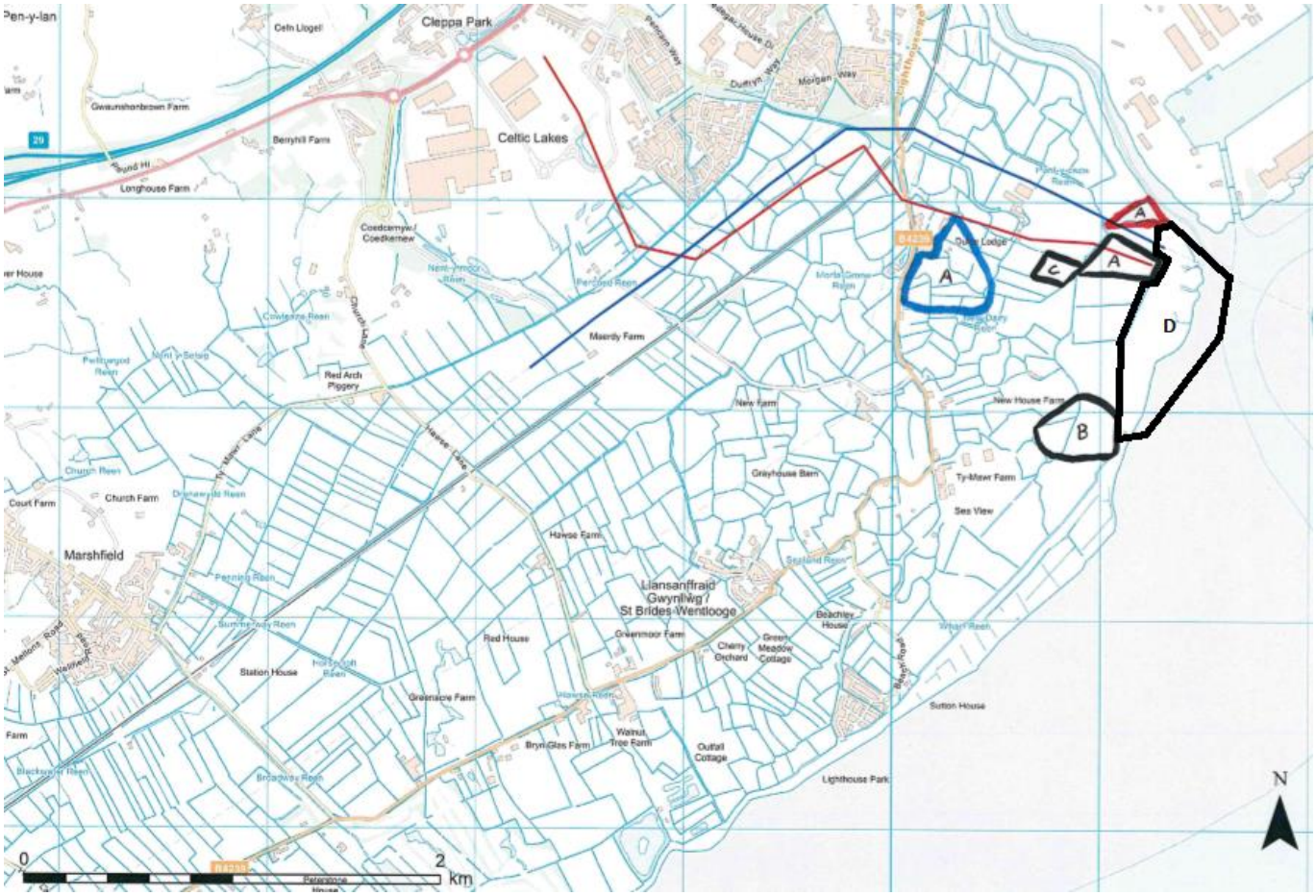
- **VP and Winter Walkover Survey Results**

Preliminary survey results of the VP surveys and winter walkover are summarised in **Table 4** for three SPA qualifying species recorded during these surveys and **Figure 6** illustrates where the birds were observed in relation to the proposed infrastructure.

Table 4 . SPA qualifying species observations

Species (Colour of text corresponds to Figure 6 below)	Area & Numbers Recorded	Average Total
Shelduck	**A** – 3 flights involving groups of 2, 7 and 7 recorded flying to and from this field (and estuary) during a mid-Feb VP, 5 and 8 birds recorded in this field during Feb walkovers **B** – 2 flights involving 1 and 9 birds recorded flying to and from this field (and estuary) during a mid-Feb VP **C** – 1 record of three birds flushed from this field during late Feb walkover **D** – birds frequent and numerous on saltmarsh and estuary	**42**
Teal	**A** – groups of 4, 6 and 15 flushed from ditches during late Jan and early Feb walkovers.	**25**
Redshank	**A** – 2 flocks, involving 10 and 21 birds flushed from Pill during two (of three) walkovers	**31**

Figure 6. SPA qualifying species records in relation to proposed cable routes (red and blue lines).

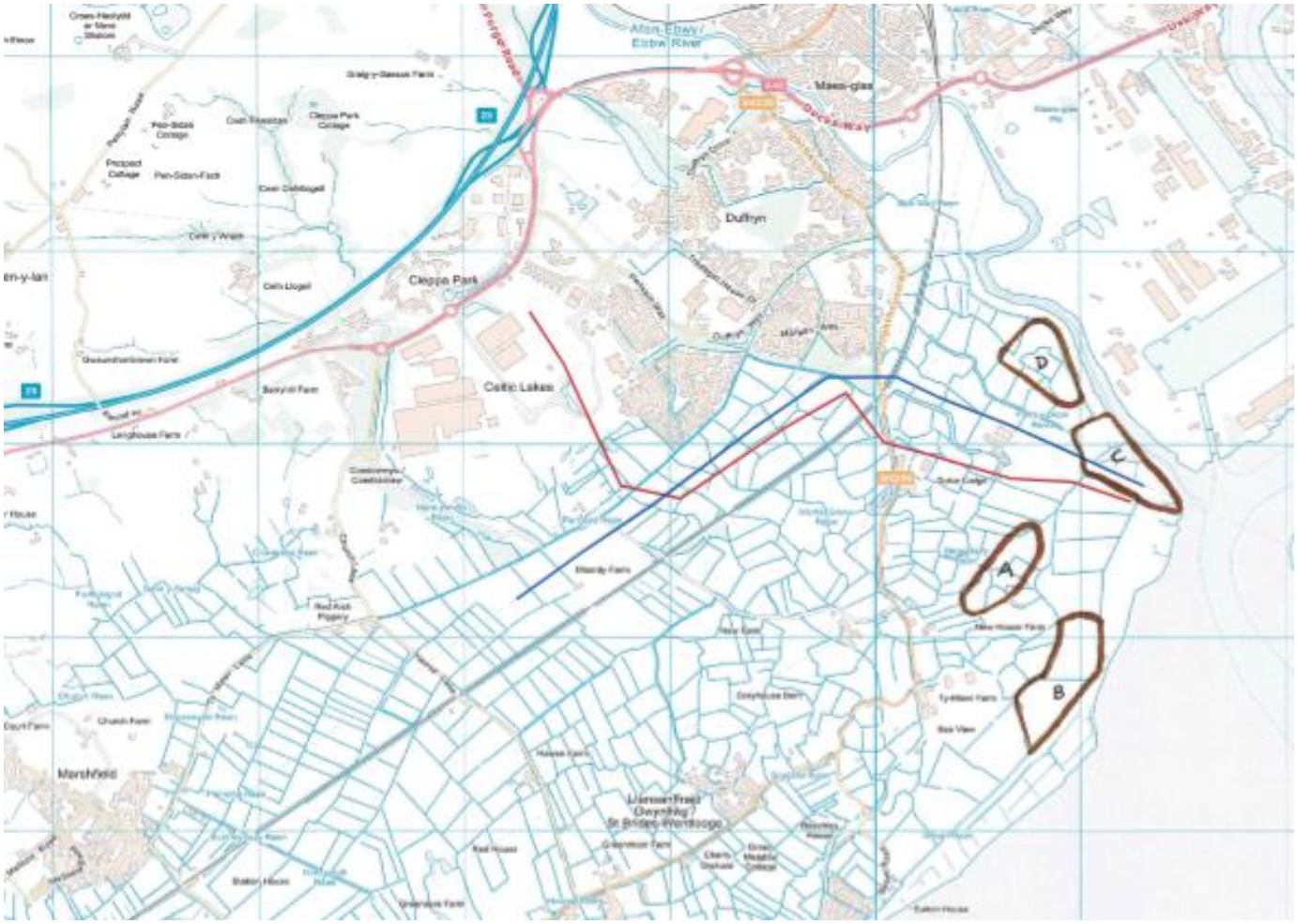


Results for curlew, which is part of the SPA qualifying wintering waterfowl assemblage, was also recorded as detailed in T**able 5** and illustrated in **Figure 7**.

Table 5. SPA qualifying assemblage observations

Species (Colour of text corresponds to Figure 7 below)	Area & Numbers Recorded
Curlew	**A** – 10 flights of individual / small groups of birds to and from fields (and the estuary) during most VP surveys to date, one bird also noted here during late Feb walkover **B** – 1 flight of twelve birds to fields (from the estuary) during VP surveys, and flocks of 14 and 23 birds noted during walkover surveys **C** – 2 flights of birds to and from Pill during VPs, and a group of three flushed from Pill (and flew to D) during most recent walkover **D** – 3 records involving 1, 4 and 3 (flushed from Pill), recorded during the three walkover surveys to date

Figure 7. SPA qualifying assemblage species records in relation to proposed cable routes



- **Conclusion**

The first survey results show that the most eastern sections of the proposed cable routes are used by small numbers of SPA qualifying bird species.

• Conclusions and Recommendations

BTO data from 2013 to 2018 showed that two of the SPA qualifying species, Greenland white-fronted goose and Bewick's swan, were not found to use any of the core count sites near the proposed cable route. However, some of the Severn Estuary SPA qualifying bird species, gadwall, dunlin, common shelduck and common redshank were regularly recorded in the winter months.

The proposed cable route would be in close proximity to the SPA in at least at two locations where the cable would cross the river Usk underground. The data search has shown that the SPA areas here are regularly used by four of the designated SPA species (shelduck, dunlin, gadwall and redshank) in varying numbers, especially during the winter months. Furthermore, field surveys currently being conducted along the cable routes so far reveal that four SPA qualifying species are using the areas closest to the coast. These include shelduck, dunlin, teal, common redshank and curlew.

Effects on the SPA qualifying species are possible or uncertain: some aspects of the proposal have the potential to impact SPA qualifying features as construction activities could result in disturbance to these species. Therefore, the precautionary principle applies, and the conclusion of this screening report is that an Appropriate Assessment (AA) will need to be completed to understand any possible, residual impacts after application of suitable mitigation measures.

Suitable mitigation measures need to be identified to avoid or reduce any potential affects on the qualifying species. These may include the avoidance of any Horizonal Directional Drilling (HDD) works until the wintering bird season is over. Works should not commence until April when the majority of qualifying species have moved away from the area and be completed prior to the species returning during the autumn migration.

The proposed underground cable installation will be short-term with a likely duration of around five month duration, which will be timed to avoid the main migration and winter periods between April and August. Habitat reinstatement can be expected to result in minimal to no loss of supporting habitat loss for any of the SPA qualifying species. Although disturbance to wintering or migrating SPA species cannot be fully excluded, they would be temporary and short term. No long-term and permanent changes are likely to occur.

Due to limited extent of the works in the vicinity of the SPA, only a very small proportion of the SPA population would be affected, if any of the wintering or migrating species were still using the area when works took place. The conclusions of an Appropriate Assessment would therefore likely be that the conservation objectives for the Severn Estuary SPA would not be adversely affected.

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- CDOIF Environmental Risk Tolerability Assessment
- Chemical Management
- COMAH Regulations Compliance support
- Consequence Modelling
- Control of Electromagnetic Fields (EMF)
- DSEAR & Hazardous Area Classification
- Functional Safety
- Health & Safety Compliance & Consultancy
- Hazard Analysis Critical Control Point (HACCP)
- Hazard & Operability Studies (HAZOP)
- Local Exhaust Ventilation (LEV) Examination & Testing
- Occupational Hygiene
- Occupied Building Risk Assessment (OBRA)
- Reliability Engineering
- Risk Analysis Studies
- Risk Assessment & Management

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- Policy Development
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Appendix 4.2

Ecology and Nature Conservation Proposals

i) Ecological Context

Much of the cable route between the point at which it emerges after crossing the Usk and where it terminates at Imperial Park will pass directly through the Gwent Levels (St Brides) Site of Special Scientific Interest (SSSI). The SSSI is notified for its nationally important drain (reen) network. These reens have varied characteristics and support notable botanical and invertebrate communities that feature individual rare species. The pasture fields bounded by the reens are not a reason for notification of the SSSI; they are likely to be variable in terms of their botanical interest.

The River Usk and adjacent upper shore saltmarsh forms part of the Severn Estuary Special Protection Area (SPA) and SSSI. The SPA is approximately 450 m to the east of the point where the cable emerges (having been directionally drilled under the Usk).

It will be important to demonstrate that impacts on the Gwent Levels SSSI and Severn Estuary SPA and SSSI have been fully considered in the ecological assessment.

ii) Preliminary Ecological Appraisal (PEA)

PEA is the industry standard approach to baseline ecological characterisation of proposed development sites. There are three elements; a desk study, (extended) Phase 1 habitat survey and a report.

Desk Study

The desk study will involve making a request to the South East Wales Biological Records Centre (SEWBReC) for ecological data relating to the cable route and a 1 km corridor either side of it. This is considered a sufficient distance based on the temporary nature of the works and the narrow development corridor.

The results will be reviewed to identify any records of protected / important species and non-statutory designated sites that may be relevant to the scheme.

Extended Phase 1 Survey

A Phase 1 habitat survey will be completed based on industry standard methods. The survey will be carried out by an experienced botanist, and will involve a walkover of the route and a perimeter of 30 m either side of it (to account for micro-siting and to record evidence of protected species such as badger in relation to the route). During the walkover, the botanist will identify, classify and map the on-site habitats and broadly characterise the habitats present. This will provide the basis for determining whether priority habitats (those afforded protection under Section 7 of the Environment Act Wales (2016)) are present.

The Phase 1 survey will be 'extended' to include an assessment of the potential for the habitats on site to support protected or notable species, such as badger, birds, reptiles, otter, water vole and dormouse. Evidence of the presence of non-native invasive species, such as Japanese knotweed, will be noted where apparent.

We plan to complete the Phase 1 survey in January 2021. This is outside the recommended period for Phase 1 habitat survey identified in guidance. Given the fact that the cable route is crossing a

SSSI, and the project will attract consultee comment, it would be more robust if the work was completed in the growing season, when all plant species are likely to be apparent. Our recommendation is therefore to complete a follow up visit in Spring 2021 (following submission) to collect some supplementary data to address any requests for further information from stakeholders.

PEA Report

Following completion of the desk study and site survey, we will prepare a report that will:

- Provide a summary review of the biological records and protected sites information gained during the desk study.
- Describe habitats and features present within the survey area and assess their potential to support protected species.
- Include a Phase 1 habitat survey map.
- Incorporate relevant results of previous bird survey work completed in relation to an Overhead Line option that was previously being considered (data were collected between January 2020 and mid-June 2020 from a combination of vantage-point surveys and walkover survey work).
- Outline legislative and / or policy protected afforded to habitats and species of importance which may be associated with the survey area.
- Identify potential impacts of the scheme on biodiversity and the requirement for further survey.
- Make recommendations on how to achieve biodiversity enhancements within the scheme in line with Environment (Act) Wales 2016.

iii) Design Team Liaison and Ecological Appraisal

Following completion of the PEA we will need to meet with the design team (assumedly via Zoom) to discuss how potential impacts on ecological features can be minimised. This will also provide us with an opportunity to discuss the detail of construction methods and site design, and to identify scope for practical biodiversity enhancement (which is a requirement of the planning process in Wales).

Appendix 4.3

Heritage Assessment Scope of Works

Scope of work for Heritage Impact Assessment

1. Desk-based assessment

To understand and describe the baseline conditions, a detailed desk-based assessment will be undertaken. This will include consultation of the following data sources:

- Cadw – Record of designated historic assets in Wales
- National Monuments Record for Wales
- Glamorgan-Gwent Archaeological Trust historic environment record
- National Museum Archaeology Collection
- Gwent Archive
- Historic mapping
- Local planning data (e.g. conservation area appraisals)
- Local archives

In this case, a study area of 500m is considered to be sufficient to determine any likely significant effects on historic assets.

2. Walk-over survey

A site visit would also be undertaken to determine as far as reasonably possible the value and condition of any known historic assets within the site, as well as the potential for as yet unknown historic assets within the site. Any factors that could affect archaeological potential or the ability to undertake archaeological field work within the site would also be noted.

Where relevant to any parts of the development with permanent above ground structures, a vantage point survey would also be undertaken to determine the value of historic assets within the vicinity of the development site, how and to what extent setting contributes to that value and the degree to which value could be harmed or lost by development within the setting of historic assets within the wider area.

3. Heritage impact assessment

A heritage impact assessment will be provided, that includes a description of the baseline conditions, known historic assets and archaeological potential.

The relative value of historic assets within the site and 500m study area will be determined and described.

An assessment of the predicted effects of the proposed development on the known and potential historic assets will be undertaken. The predicted magnitude of change in

relation to historic assets will be assessed. This will be compared to the heritage value of the known and potential assets to determine an overall significance of effect. Effects include direct impacts leading to partial or total loss of historic assets and affects arising from development within the settings of historic assets, where setting makes a positive contribution to the value of the asset.

The heritage impact assessment will provide conclusions regarding the predicted significance of effect of the proposed development on historic assets, and need for (and if necessary, the scope of) measures to further assess, reduce or mitigate the predicted effects.

The assessment will be undertaken in accordance with the policy provisions and best practice advice provided in the following documents:

- Chapter 6 of Planning Policy Wales (10th Ed), Historic Environment
- Technical Advice Note (TAN) 24: The Historic Environment (2017)
- Conservation Principles for the sustainable management of the historic environment in Wales, Welsh Government/ Cadw, 2011
- Setting of Historic Assets in Wales, Cadw, 2017, and
- Heritage Impact Assessment in Wales, Cadw, 2017.

4. Consultation

Consultation will be undertaken with Glamorgan-Gwent Archaeological Trust planning advisory team.

Appendix 4.4

Environmental Noise Scope of Works

tnei

A specialist energy consultancy

Screening and Scoping Report

HP

13910-001-R0
17 December 2016

PUBLISHED

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APPENDICES

6 INTRODUCTION

6.1 Overview

TNEI Services Ltd (TNEI) have been commissioned to undertake an environmental Noise impact Assessment (NIA) for a proposed 132kV Cable at Uskmouth, Newport in Wales.

Environmental noise is a broad term that encompasses noise emitted from many sources, including road, rail, air traffic, industry, construction, public work and neighbourhood noise. All of these sources potentially contribute adversely to the overall noise environment. It is therefore reasonable to expect communities to be sensitive to any potential deterioration in their acoustic environment as a result of a proposed development.

This report presents the findings of TNEI's initial scoping exercise. It considers both operational and construction noise, describes the assessment methods that will be used within the NIA and identifies the study area.

6.2 Nomenclature

Please note the following terms and definitions, which are used throughout this report;

- **Immission** refers to the sound pressure level received at a specific location from a noise source;
- **SPL** indicates the sound pressure level in decibels (dB); and
- **NSRs** (Noise Sensitive Receptors) are all identified receptors which are sensitive to noise.

Unless otherwise stated, all sound levels refer to free field levels i.e. sound levels without influence from any nearby reflective surfaces.

All grid coordinates refer to the Ordnance Survey grid using Eastings and Northings.

6.3 Development Description

The proposed 132 kV cable will run from the Uskmouth Power Station, on the eastern shore of the River Usk, to Imperial Park, which is located to the west of the river between Coedkernew and Duffryn. The purpose of the proposed development is to export electricity from the Uskmouth Power Station to industrial and business users located within the Park. The cable route will need to cross the mouth of the River Usk and the farmland located between the western shore of the river and Imperial Park. Within this farmland the cable will be required to cross one road (Lighthouse Road) and one railway line. The entire route is proposed to be undergrounded.

There are no plans for the decommissioning of the route. Once installed the cable will be left in-situ.

Figure 1, included as Appendix A, provides details of the proposed cable route.

6.3.1 Operational Noise Sources

Audible noise can be generated from the operation of a 132 kV line due to variations in field strength on the conductor surfaces, and occurs as part of a 'corona discharge'. Two types of noise can occur; dry noise, which is characterised by low level crackling and wet noise, which as well as crackling produces a low level hum. The mechanisms required for both of these noise types to occur include changes in atmospheric or weather conditions. As the cable will be underground for its entire length these conditions cannot occur, therefore, no operational noise is anticipated.

6.3.2 Construction Noise Sources

Typically cables can be laid using either a trenching and backfill method or a cable plough. The proposal for this development is to use a cable plough wherever possible. This method of installation is quick and efficient and involves a tractor or similar vehicle pulling a specialised plough through the land to make a furrow whilst at the same time laying in the cable. There may be a requirement for a second piece of mobile plant to cover over the cable though this can often be done as a complete operation using just the single item of plant. As such, cable plough activities in any one location will be limited in duration and noise levels generated by this activity will be similar to typical agricultural activities that will already occur in the area, through the use of tractors and so on.

A short section at each end of the route will require a trenching and backfill method. This requires a trench to be dug with an excavator. Once the complete trench is dug the cable will be laid and then the trench filled back in by the excavator. A winch may be required for the laying of the cable. Trenching and backfill may generate higher noise levels than using a cable plough but again, activities in any one location will be limited in duration and the amount of plant required is small.

There are two sections of the cable route, however, where Horizontal Directional Drilling (HDD) is required. This is where the cable crosses the River Usk and also where it crosses Lighthouse Road and the railway.

HDD involves the use of multiple items of noise generating plant including the HDD drilling rig, HDD power pack, several pumps and a mud recycling unit. The drilling activities may last several weeks. Accordingly, it will be necessary to consider HDD activities in detail within the NIA.

7 Legislation and Guidance

Technical Advice Note 11 (TAN 11), as amended by CL-01-15 '*Updates to TAN 11 Noise*,' provides guidance for local authorities in Wales on minimising noise impacts from new developments. It outlines the considerations to be taken into account in determining planning applications for both noise-sensitive developments and for noise generating developments. TAN 11 is supported by the '*Noise and Soundscape Action Plan 2018–2023'*, which outlines the Welsh public sector's strategic policy direction in relation to noise and soundscape management.

Construction site noise is regulated through Section 60 of the Control of Pollution Act 1974 (COPA 1974). BS 5228:1997 '*Noise and vibration control on construction and open sites. Code of practice for basic information and procedures for noise and vibration control*' parts 1 to 5 (BSI, 1997) is the approved Code of Practice under COPA74. The Standard was updated in 2009 and amended in 2014 and both the TAN and the Action Plan endorse the use of the newer BS 5228:2009 +A1:2014 as appropriate guidance for noise and vibration control in respect of construction operations. As such BS 5228:2009 +A1:2014 is the most appropriate version of the standard to refer to for any construction noise assessment.

Annex E of the updated BS 5228 provides example assessment methods to determine the likelihood of potentially significant effects. For residential receptors, these are based on the anticipated change in existing noise levels for daytime, weekend, evening and night-time periods. For public open space, the assessment considers the change in noise levels over a longer period, typically no less than one month.

8 Study Area

8.1 Noise Sensitive Receptors

Noise Sensitive Receptors (NSRs) are properties, people or fauna which are sensitive to noise and, therefore, may require protection from nearby noise sources. The area around the cable route is sparsely populated for the majority of its length, although a number of residential properties are located towards the western end of the cable.

Two types of receptors will be considered in the NIA; 1) residential receptors and 2) ornithological receptors.

8.1.1 Residential Receptors

Figure 1 details the nearest identified residential NSRs. All of these properties will be considered in the NIA. Other residential NSRs have been identified at greater distances from the cable route, however it is assumed that if noise levels are acceptable at the closest receptors then it would also be within acceptable levels at properties located further away.

8.1.2 Ornithological receptors.

The entire cable route runs through the Severn Estuary and the Gwent Levels to Saint Brides Site of Special Scientific Interest (SSIS). The Severn Estuary SSSI is noted for its wading bird populations, however, the Gwent Levels to Saint Brides SSSI is designated for or its plant species, aquatic invertebrates, snails and dragonfly, which we would not deem to be noise sensitive.

In addition, the following designations are located close to or surrounding the cable route;

- Newport Wetlands National Nature Reserve, located on the eastern bank of the River Usk;
- Severn Estuary RAMSAR – located within the estuary and mouth of the River Usk and along both banks;
- Severn Estuary Special Area of Conservation (SAC), located as per the Ramsar site; and
- Severn Estuary Special Protection Area (SPA), also located as per the Ramsar site.

The above area designations protect the habitat for wintering birds. Accordingly the NIA will consider the impact of noise on ornithological receptors for the Severn Estuary SSSI and each of the land designations above.

9 Proposed Assessment Method

9.1 Impacts to be Assessed

With due regard to the above, the proposed approach to the NIA will be as follows:

- Operational noise impacts will be scoped out and no further assessment is proposed;
- Decommissioning noise impacts will be scoped out and no further assessment is proposed;
- Construction noise impacts in relation to sections of the cable that will be laid using a cable plough or trenching and backfill will be scoped out and no further assessment is proposed;
- Construction noise impacts in relation to HDD activities will be scoped in and assessed in accordance with the guidance presented in BS 5228-1:2009+A1:2014; and
- Construction noise impacts in relation to construction compounds, site offices etc. will be scoped in and assessed in accordance with the guidance presented in BS 5228-1:2009+A1:2014.

9.2 Assessment Method

Noise level predictions will be undertaken for all HDD operations as well as any noise sources that may be associated with the operation of the construction compounds, for example, portable power generation for site cabins. The assessment will consider weekday daytimes, weekends, evenings and night-time periods as described in BS 5228.

Annex E, part E.3.2 of BS 5228, clearly sets criteria for assessing the significance of construction noise effects and gives examples of acceptable limits for construction noise.

Table E.1 of BS 5228 (represented here as Table 9-1) contains an example of the significance criteria that can be used to assess construction activities.

Table 9-1: Example of Threshold of Potential Significant Effect at Dwellings ($dB_{(A)}$)

Assessment Category and Threshold Value Period	Threshold Value $L_{Aeq,T}$ dB		
	Category $A_{(A)}$	Category $B_{(B)}$	Category $C_{(C)}$
Night-Time (23:00 - 07:00)	45	50	55
Evenings and Weekends	55	60	65
Daytime (07:00 - 19:00) and Saturdays (07:00 to 13:00)	65	70	75

(A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values;

(B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values;

(C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values;

The values can be considered thresholds for the construction noise levels (quantified using the LAeq noise metric). The values in each category are to be used where the existing noise level at each location, rounded to the nearest 5 dB, is below the level given for a particular time of day. BS 5228 provides the following advice regarding the threshold levels:

"Note: 1 A potential significant effect is indicated if the LAeq,T noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

Note 2: If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total LAeq,T noise level for the period increases by more than 3dB due to site noise.

Note 3: Applied to residential receptors only."

Therefore, the assessment of construction noise reflects a specific noise threshold for the locality (set relative to the existing ambient noise levels) for a particular period of the day, rather than an absolute noise level. Consideration may also need to be given to the duration of the activities before a conclusion can be made regarding significance in relation to the EIA regulations.

In order to determine appropriate threshold levels for use in the NIA, baseline noise monitoring will be undertaken at locations proximate to the nearest identified residential NSRs.

The assessment of noise for residential NSRs will be undertaken by comparing the predicted noise levels with the BS5228 threshold levels.

The assessment of noise for ornithological receptors will be undertaken following a staged approach, as follows;

- Stage 1: Where noise levels are predicted to be at least 10 dB below the existing noise levels then there will be no increase in overall noise level and so no impacts on ornithology would occur. This will be presented in the NIA and no further assessment will be required.
- Stage 2: Where noise levels are predicted to be within 10 dB of the existing noise levels then noise contour plots will be produced and these will be provided to the appointed ornithologist for assessment. If it is determined that an EIA is required then the predicted noise levels will be presented within the Noise ES Chapter but the assessment of noise on ornithological receptors will be presented in the Ornithology ES Chapter. Where the development is screened as non-EIA then the ornithologist will be asked to input directly into the NIA report.

The assessment of noise on ornithological receptors will be undertaking considering the context of the site and the time of year when the construction activities are anticipated.

10 Summary

The assessment of noise impacts from the following activities have been scoped out and will not be included in the NIA report or Noise ES Chapter (should an EIA be required);

- Operational noise;
- Decommissioning noise; and
- Construction noise associated with cable laying.

The following items will be scoped in to the assessment;

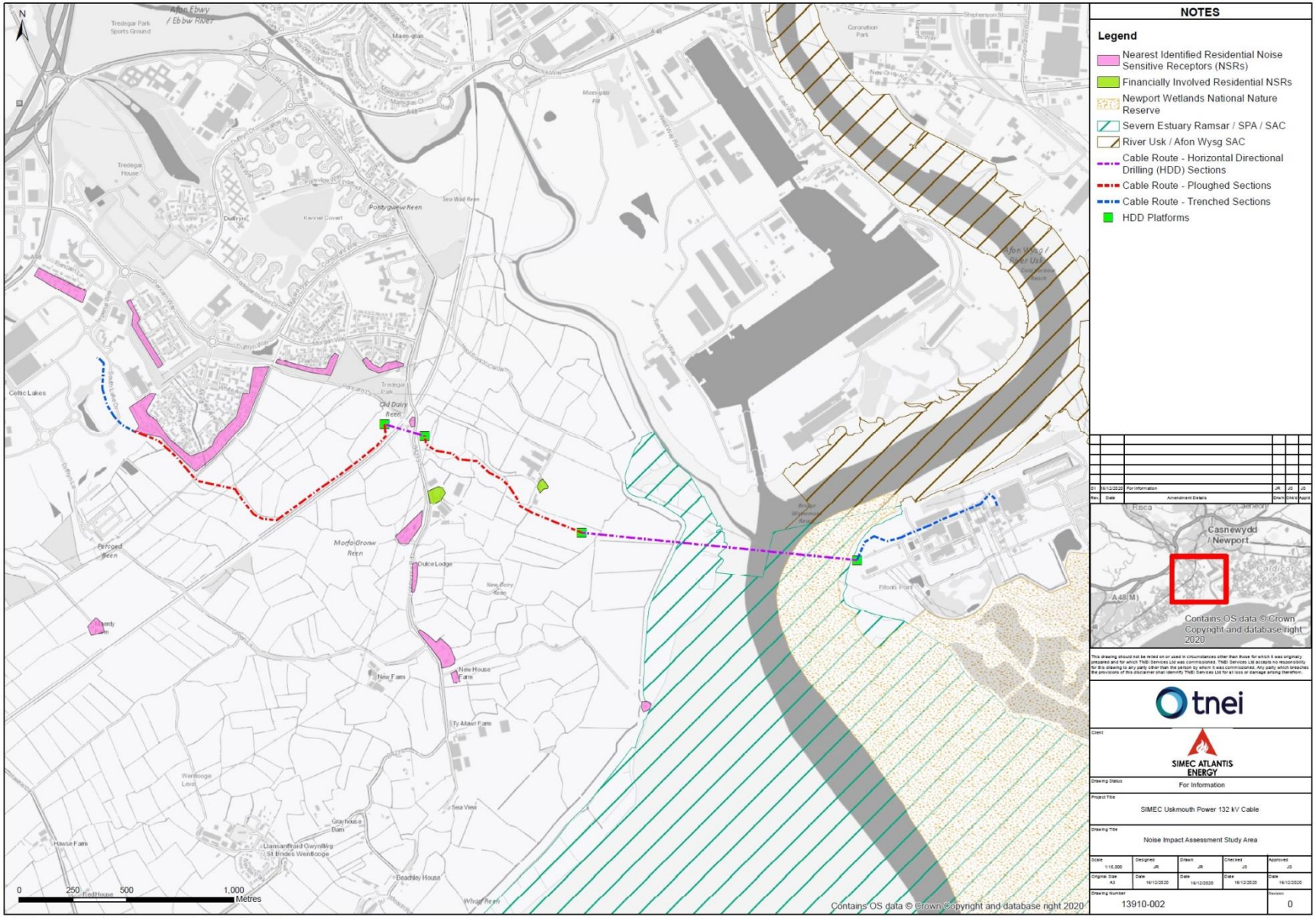
- Construction noise associated with HDD activities; and
- Construction noise associated with any construction compounds (or similar).

The study area will consider the closest residential NSRs as detailed on Figure 1. The study area will also consider the ecological designations identified on Figure 1.

The assessment of noise on residential receptors will be undertaken in accordance with BS 5228-1:2009+A1:2014 with due regard to the threshold levels detailed in Table E.1 of the BS 5228 standard.

The assessment of noise impacts on ornithological receptors will be made with consideration of the existing noise levels in the area, any predicted noise level increases, the sensitivity of valued species and the time of year that increases in noise levels may occur.

Appendix A – Figures



NOTES

Legend

- Nearest Identified Residential Noise Sensitive Receptors (NSRs)
- Financially Involved Residential NSRs
- Newport Wetlands National Nature Reserve
- Severn Estuary Ramsar / SPA / SAC
- River Usk / Afon Wysg SAC
- Cable Route - Horizontal Directional Drilling (HDD) Sections
- Cable Route - Ploughed Sections
- Cable Route - Trenched Sections
- HDD Platforms

Rev.	Date	Amendment Details	Drwn	Chk'd	Apprd
01	16/12/2020	For Information	JR	JG	JG

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Drawing Status: For Information

Project Title: SIMEC Uskmouth Power 132 kV Cable

Drawing Title: Noise Impact Assessment Study Area

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