

SUPPLEMENTARY ENVIRONMENTAL INFORMATION

**LONDON ARRAY LIMITED
ONSHORE SUBSTATION UPDATED DESIGN**

November 2006

Prepared by RPS Group Plc

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1. Introduction

- 1.1 This Supplementary Environmental Information ("SEI") is supplemental to the Environmental Statement Volume 2: Onshore Works (London Array Limited) June 2005 which accompanied a planning application by London Array Limited dated 6 June 2005 to Swale Borough Council ("SBC") for a substation at Cleve Hill, Graveney, Faversham, Kent and associated construction facilities; associated earthworks; an access road; and laying up to six cables from the substation to the limit of SBC's jurisdiction in the Swale. The planning application is one of a number of applications submitted by London Array Limited to different regulatory authorities for the construction of a 1,000MW offshore wind farm in the Outer Thames Estuary and for the diversion of an overhead power line into the onshore substation.
- 1.2 In addition to the various drawings, the planning application was also accompanied by a Substation Design Brief with indicative design drawings, which showed an initial, indicative design for the Substation ("the Initial Design"). It made clear that the final design of the Substation should be approved by SBC following the tender process. The Design Brief contained similar drawings to those accompanying the planning application together with elevations of the National Grid Switchgear Building, transformers, shunt reactor and 132kV compact switchgear, auxiliary services building, fire deluge pump house and tank, and gates and pallisade fencing. The Design Brief expressly noted that it was intended that there should be a coordinated approach to the appropriate colour schemes and designs of buildings, the details of which would be agreed with SBC. Similarly, the landscape master plan was illustrative of proposed bunds, new contours and planting.
- 1.3 Following the submission of the planning application the design of the substation buildings was the subject of detailed discussions with SBC Officers. In order to achieve a suitable design which could be approved by SBC, and incorporated by means of a condition, London Array was asked to set out a process by which the design of the substation could be further developed and clarified, if planning permission were to be granted.
- 1.4 In May 2006 London Array agreed with SBC Officers to pursue a further design process for the substation, facilitated by Kent Architecture Centre. The intention was that, if the planning committee resolved to approve the application in principle on 5 June 2006, the application should be reported back to SBC committee in September 2006 with an updated design.

- 1.5 Despite the SBC Planning Committee decision on 5 June 2006 to refuse the planning application, the further design process continued, and on 28 July 2006 RMJM, a leading UK based international architectural practice, was selected by a panel including Kent Architecture Centre and Kent County Council, witnessed by SBC Officers, to develop an updated design within the overall design envelope contained in the planning application and assessed in the ES. London Array and RMJM have jointly developed an Updated Substation Design Brief to provide an updated set of design principles, description of the components of the onshore substation and indicative build drawings.
- 1.6 In their Grounds of Appeal, London Array submitted the Updated Design Brief and indicated that, if the updated indicative design for the Substation (“the Updated Design”) as shown in the Updated Design Brief were to be preferred to the Initial Design, it too could be incorporated as part of the approved scheme by means of a condition requiring further details to be approved by SBC, such details to be in accordance with the principles identified for that Updated Design. However, it also remains the view of London Array that the Initial Design was and is an acceptable solution. The Updated Design has been optimized as explained in Section 2 of this SEI. Both the Initial Design and the Updated Design (as Optimized) remain indicative and are now each before the Secretary of State for consideration as part of the present appeal process under the Town and Country Planning Act 1990.
- 1.7 RPS was requested by London Array to review the impacts of the Updated Design (as Optimized). This SEI document includes a summary of that design in Section 2 and the assessment of impacts in Section 3. The SEI considers the Updated Design (as Optimized) in terms of landscape and visual impact and also updates matters in respect of that design so far as concerns noise, ecology/nature conservation, ornithology, flood risk and coastal defences, and water quality and drainage.
- 1.8 The assessment concludes that:
- Whilst there have been amendments to the site layout and proximity of the substation to receptors, the effect of noise will be unchanged since it will be controlled through the application of feasible and readily available mitigation and enforced through the application of planning conditions.
 - Beneficial changes in the assessment of ecology and nature conservation result from the Updated Design (as Optimized).

- There are changes to the assessment of operational effects on landscape character as a result of the design of the various elements of the substation itself and site treatment, but no changes to the assessment of operational effects on visual resources.
- The cumulative effect of changes to the assessments of these EIA topics show that environmental impacts differ in some respects to those set out in the ES.
- In all other respects the impacts are as assessed in the ES.

These key differences are summarised in Table 1 below.

Table 1

EIA Topic	Significance of Impact of Initial Design	Significance of Impact of Updated Design (as Optimized)	Aspects of Updated Design (as Optimized) which have resulted in a change
Landscape <ul style="list-style-type: none"> • Landscape Character (Operational Effects) • Visual Resources (Operational Effects) 	N/A to Moderate Adverse Neutral to Moderate Adverse	Neutral to Moderate Adverse Neutral to Moderate Adverse	Design of substation elements and layout as illustrated in Figures 1 to 9 and Figures 10 and 11 (Photomontages)
Noise	Not significant (design includes noise mitigation)	Not significant (with application of noise mitigation)	Changes to layout & closer proximity to receptors
Ecology & Nature Conservation <ul style="list-style-type: none"> • Standing Water (Operational Effects) 	Negligible	Low-Beneficial	Inclusion of pond

- 1.9 In order that members of the public should have the opportunity to consider and comment on the Updated Design (as Optimized) and its likely impacts, London Array has decided voluntarily to adopt the procedures set out in Regulation 19 of the Town & Country Planning (Environmental Impact Assessment) Regulations 1999 for the purpose of bringing this Supplementary Environmental Information to the attention of both the consultees on the original planning application and members of the public generally.

1.10 Two further matters should be noted:

1.10.1 Since the Environmental Statement was published in June 2005 additional botanical survey work has been conducted on the foreshore. This was undertaken in October 2005 to establish the full extent of the vegetated shingle habitat on the foreshore. Further to the Phase 1 Habitat survey, a 30 m tape was used to measure precisely its extent. No vegetated shingle habitat was recorded at the location where the cables cross the foreshore and this was confirmed in a report to Kent Wildlife Trust dated October 2005. Updates to this effect have been made for the purposes of the SEI. In addition, the great crested newt survey, which was commenced in July 2005, prior to the publication of the ES, has been completed. This has not resulted in any changes to the assessment in the ES. Copies of both survey reports are included in Appendix 1. The other ecological baseline surveys, which were conducted between August 2004 and Spring 2005, remain valid.

1.10.2 As recorded in Section 5.8.7 of the Environmental Statement Volume 2: Onshore Works and the Substation Design Brief, the dimensions of the switchgear and ancillary equipment building in the Initial Design are proposed to be 40m by 20m by 12m in height. Figure 5.9 of the Environmental Statement which was repeated in Figure 4 of the Substation Design Brief includes a dimension which incorrectly indicates that this building will be 50m long. This is an error. As quoted in the text 40m is the maximum length of the building.

2. Updated Substation Design

2.1 Introduction

2.1.1 As described in Section 1, although the components and major features of the substation remain the same for both designs, the Updated Substation Design Brief presents an alternative design concept to that presented as the Initial Design.

2.1.2 The concept enhances the architectural design of certain aspects of the development that will be visible from the Saxon Shore Way, while maintaining the effectiveness of the landscaping screen to the south. It proposes a clear and distinct treatment for each of the major individual substation elements that can be flexibly adapted to address both technical and planning issues that may arise during the procurement of the substation.

2.1.3 This alternative concept is supported by Kent County Council, Kent Architecture Centre, SBC and, it is understood, the SBC Planning Committee on the basis that it is considered to present an improvement in terms of the design. With regard to the key principles of the Updated Design, RPS has, at London Array's request, reviewed and optimised the layout in order to ensure that the overall Environmental Impact is no greater than for the original design.

2.2 The Updated Design as Optimized

2.2.1 By addressing the locations of the reactor pods, the alignment of the access road, the landscaping and planting proposals and the location of the retention pond the Updated Design has been optimized to maintain residual impacts no greater than for the Initial Design. The specific changes are described in this Section and the Updated Design (as Optimized) is presented in Figures 1 – 9 of Appendix 2.

2.2.2 Section 3 summarises the EIA of the optimized design. Where the results of that assessment differ from those presented in the Environmental Statement for the Initial Design details of any key differences and the significance of those impacts are discussed.

2.2.3 The design remains consistent with the concept presented in the Updated Design Brief. The application of that concept is described in the sections below.

2.3 Design Principles of the Updated Design

2.3.1 The key principles of the Updated Design with which the final design of the substation to be submitted to SBC will comply are set out below. These apply equally to the Updated Design (as Optimized):

- Each of the major individual substation elements, transformers, auxiliary service enclosures (including diesel generators and fire equipment), reactors and switchgear building will receive a modular treatment to break up the apparent mass of the development as seen from the Saxon Shore Way.
- There will be a visual link, for recreational and educational purposes, between the onshore development and the energy being generated by the offshore wind farm.
- The main substation compound will be aligned to place its northern-most face perpendicular to views from the point where the cables will go under the Saxon Shore Way.
- The northern elevation will consist of a line of modules, utilising the concrete transformer "fire walls" to contain the transformer and auxiliary service enclosures.
- The northern elevation will provide the necessary safety and security requirements without the need for an additional fence.
- The reactor compounds will comprise elliptical enclosures arranged flexibly and independently of the main substation compound.
- The National Grid switchgear building will be clad with different metal panels from those used for the auxiliary service enclosure modules.
- The final design of the substation to be approved by the Council (pursuant to an appropriate condition) will present a co-ordinated approach to the modular colour schemes and visual effects.

2.4 Aspects unchanged by the Updated Design

2.4.1 The following aspects of the design have not been changed from the Initial Design:

- Unless otherwise stated, the individual components within the substation compounds remain as described in the Substation Design Brief.

- The overhead line diversion, towers and their locations remain unaltered.
- The development remains within a 7.9 hectare (20 acre) boundary within the application area as described in Figure 1 of the Substation Design Brief.
- Key features of the landscaping plan proposed in the design brief submitted with the planning application remain to ensure that the effectiveness of the landscaped screening to the south of the site is maintained.

Again, this is equally the case in relation to the Updated Design (as Optimized).

2.5 Design Principles as applied to main elements of substation

2.5.1 This section describes how the design principles have been applied to the development as it is presented in either the Updated Design or Updated Design (as Optimized). The figures refer to the Updated Design Brief (as Optimized), since this is the subject of the EIA in Section 3:

- The north facing elevation
- The reactor compounds
- The National Grid switchgear building
- The landscaping proposal

North facing elevation

2.5.2 Figure 2 - "North Elevation" shows the design of the North Facing Elevation. The concept is to create a series of modular elements arranged in a linear formation reminiscent of a line of beach huts on the water's edge. In this figure the modular elements are shown to be composed of the transformers and auxiliary service enclosures (including diesel generators and fire equipment).

2.5.3 The north elevation itself is presented as a light coloured concrete wall 9m high. This wall will extend to enclose the line-landing compound at a height that does not exceed 5m.

2.5.4 The transformer elevations will incorporate pivoting panels that will respond directly to the output of the wind farm. These panels will have a coloured front face and a reflective back face that visually enhances this response. The elevations will be no higher than 10m and the subtle variations in

appearance are designed to have the effect of reducing the scale of the northern elevation when viewed from the Saxon Shore Way.

2.5.5 The auxiliary compounds modules will be clad in fixed metal panels. The contrast in material will act to highlight the different functions of the equipment and also to enhance the modular arrangement of the development along that elevation. These panels will not exceed 10m in height.

2.5.6 As well as incorporating the architectural treatments described, the northern elevation will also be designed to meet the necessary safety and security requirements for the substation. No additional fencing of the form described in the Substation Design Brief will be required along the northern elevation.

Reactor compounds

2.5.7 Figure 2 - "North Elevations" shows how the reactors will be placed in their own individual enclosures outside the main substation building to separate their function from the transformers and other equipment. These enclosures will be elliptical in shape and approximately 4.6m in height. Their specific locations are flexible and will be fixed as part of the final design of the substation. The compounds will be located at a base level of 5.2m AOD, which is lower than the base level for the main compound. These components typically stand on legs 1.2m long, thus keeping them above the 6.4m AOD level considered sufficient to safeguard from flooding.

2.5.8 The perimeter of the enclosure is to be made up of a series of mesh panels that will be mounted on a steel support structure and designed to ensure that the necessary safety and security requirements are satisfied. As well as enhancing the contrast between the compounds and the other aspects of the development, it will be possible to see through the mesh panels so that the working components within the enclosures may be visually appreciated. Access to these compounds for maintenance purposes will be across a porous hard surface, typically a concrete grid that will allow grass to grow within it, giving a landscaped effect. The access will link back to the main substation access road as shown in Figure 4 - "Substation Landscape".

National Grid switchgear building

2.5.9 The switchgear building is shown in Figure 3 - "400kV GIS Building Elevations" Due to recent changes in the suppliers market of high voltage electrical equipment National Grid is now able to specify a maximum building height for the 400kV switch house building, without prejudicing any particular

manufacturer. The height of the building has therefore been reduced to 11m, a reduction of 1m compared to the height specified in the Substation Design Brief.

- 2.5.10 The switchgear building will be clad with different metal panels to those used for the auxiliary service modules, to create a separate identity for the building within the north-facing elevation. Unless prevented by construction issues or safety concerns, the building will also incorporate a screen, behind which the GIS bus bars will turn into the building and which will be removable for maintenance purposes. This screen will incorporate features that will respond directly to the output of the wind farm and be visible to walkers along the Saxon Shore Way in the daytime. Consideration is being given to the use of polycarbonate panels behind which soft-glow LED lighting will give a fluctuating day-time effect in response to the output of the wind farm.

Landscaping

- 2.5.11 The landscaping proposal is shown in Figure 4 - "Substation Landscape". The landscaping bund to the south of the site and the landscaping along the access road has been retained. The landscaping bund will extend to a height of 16m AOD.
- 2.5.12 Woodland planting is proposed on and around the bunds to provide further screening. The bunds will be created in year one of the construction programme, as spoil becomes available from site levelling. At the edges of the woodland areas a shrub mix is proposed. Suitable wildflower mixes will be used on all other areas within the Application Site. Proposed planting will comprise locally native species mixes. It is anticipated that details of planting will be subject to approval by SBC.
- 2.5.13 Planting will commence in the first planting season after the bunds have been formed. Wildflower seeding will take place in either April or September after completion of the ground remodelling. All planting will be maintained throughout the period of the substation operation. The mitigation measures principally agreed with Natural England and Kent Wildlife Trust are not prejudiced by the Updated Design.

2.6 Optimisation of the Design – Summary of Design Refinements

- 2.6.1 The following list summarises the steps taken to date to optimize the Updated Design. These refinements are consistent with Figures 1 – 9 included in Appendix 2 of this document.
- Repositioning of the shunt reactors to the west inside the access road;
 - Adjustment eastwards of the access road;

- Refinement of the land remodelling to the north of the substation (with replacement of ditches) and of the bunding to the east and south of the substation;
- Adjustment of the pond to the west of the switch house and of the access track to the farm buildings (to accord with the position in the ES);
- Increase in the planting belt to the south of the substation, inclusion of planting belt to the east and some reduction in planting along the access road;
- Area of the temporary site compound to be reinstated to existing levels after construction.

Note that the remainder of this SEI focuses on the EIA changes relative to the Updated Design (as Optimized).

3 EIA Aspects

3.1 Introduction

3.1.1 The extent to which the various EIA topics considered in the Environmental Statement (ES) of June 2005 require review for the Updated Design (as Optimized) is identified in Table 2. For topics where the review has shown that the design refinements do not change the assessment provided in the ES for the Initial Design, no additional information is provided in this SEI. For the remaining topics a review of the effects of the Updated Design (as Optimized) has been undertaken and details of the review and the significance of impacts are provided under the relevant topic headings.

3.1.2 These assessments have been undertaken using the same methodology as the ES.

Table 2 : Summary of EIA topics

EIA Topic	Relevance to Updated Design (as Optimized) Assessment	Comments
Historic Environment	Yes	No change
Landscape	Yes	See section 3.2
Noise	Operation – Yes Construction - No	See section 3.3
Ecology & Nature Conservation	Yes	See section 3.4
Ornithology	Yes	No Change
Traffic	Yes	No Change
Shell Fisheries	No	
Soils	No	
Flood Risk & Coastal Defences	Yes	See section 3.5
Water Quality & Drainage	Yes	See section 3.6

3.2 Landscape

3.2.1 The general concept of the Updated Design (as Optimized) is that the buildings should be visible and read as a series of objects that sit in the landscape. As a result the Updated Design (as Optimized) would be more visible than the Initial Design from some view points. This concept is quite deliberate and exploits what may be considered a better design quality of the build elements of the substation

to mitigate the effect on the view. Figures 10 and 11 (Appendix 3) are photomontages of the proposed scheme.

- 3.2.2 Some aspects of the original assessment have changed with the design. The section below reviews the effect that the Updated Design (as Optimized) has on the landscape character of the site and surrounding area and the existing visual resources. Only those changes from the original (ES) assessment have been noted.

Effects

- 3.2.3 The effects during both construction and operation have been considered.
- 3.2.4 The plans for the overhead line diversion remain unchanged and the assessment of the effects resulting from the diversions remains as set out in the ES.

Landscape Effects During Construction

- 3.2.5 There is no change to the significance of effects on landscape character with the Updated Design (as Optimized) over and above those noted in the ES.

Visual Effects During Construction

- 3.2.6 For the Updated Design (as Optimized) the vehicles would be working closer to Graveney Hill Farm as the footprint and the alignment of the substation have been refined.
- 3.2.7 Some of the work on the substation itself would be screened in views to the west of Cleve Hill. As with the Initial Design it is likely that the vehicles working on the switch house and land modelling to the north of Cleve Hill would be visible from most close views to the west.
- 3.2.8 Although there will be some changes in the views experienced by visual receptors with the Updated Design (as Optimized) there would be no change in the significance of effects on visual receptors during the construction phase.

Landscape Effects during Operation

- 3.2.9 As with the Initial Design there would be a loss of some 7.9 hectares of arable land to accommodate the substation. The Updated Design (as Optimized) has necessitated adjustment to sections of three ditches to the north of the hill but there would be no net loss in the length of the ditches in the area.
- 3.2.10 The Graveney Grazing Lands, Historic Landscape character Area 17 and Historic Landscape Character Area 28 are affected by the Updated Design (as Optimized). However, the significance of effect of these changes to these character areas is assessed as neutral.

Visual Effects during the Operational Phase

- 3.2.11 Other than those properties located on Cleve Hill itself, the views from Footpath ZR488, the Seasalter Road and the Saxon Shore Way (ZR484) are the closest. Views from footpath ZR488 (over Cleve Hill) would be views along the access road to the shunt reactor compounds with the 'end-on' view of the transformer bays situated behind these. The proposed earth modelling and planting, including that parallel to the access road, would partly screen views from this footpath.
- 3.2.12 The views from the Saxon Shore Way would be across an open landscape. As with the Initial Design the substation would be cut into Cleve Hill to reduce the impact from the south, and to a lesser extent the west and east too. However, the views from the north would be kept deliberately open. Trees on the bund to the south of the substation would help to soften the line of the building when seen from this direction and, as in the Initial Design, when the planting matures the trees would be seen as a back drop to the roof line of the switch house.
- 3.2.13 Views from the Seasalter Road are similar to those from the Saxon Shore Way, motorists having more fleeting views than walkers. However, walkers travelling south along the road would have closer views than those along the coast path.
- 3.2.14 From Footpath ZR485, Nagden Marshes and the Shipwrights' Inn the switch house gantries and the shunt reactor compounds would be visible to the north of Cleve Hill. The land modelling to the north of the switch house would also be seen from this direction. These elements of the substation would be seen as part of a wider panorama, and would diminish with distance from Cleve Hill.
- 3.2.15 From the Isle of Sheppey the switch houses, shunt reactor compounds and the transformer bays would be visible, seen in the context of the existing, substantial, farm buildings, with the backdrop of the land modelling on Cleve Hill and the high land to the south beyond that.
- 3.2.16 The significance of the effects on views is determined by the visibility of the proposals, their relationship with the landscape (topography, pattern, scale, etc) and the design quality of the structures. The Updated Design has been developed and supported by Kent Architecture Centre , KCC and in conjunction with SBC Officers.
- 3.2.17 Although there will be changes in the views experienced from local footpaths, there would be no change in the significance of effects on visual receptors during the operation phase.

Summary

- 3.2.18 This assessment considers any additional changes that would result as a consequence of the proposed Updated Design (as Optimized).

3.2.19 The assessment of landscape character and visual resources has not identified any changes to the significance of effect during construction or operation, barring those changes to the Graveney Grazing Lands, Historic Landscape character Area 17 and Historic Landscape Character Area 28.

3.3 Noise

3.3.1 As the layout of the Updated Design (as Optimized) has resulted in a reduced distance between aspects of the development and the closest receptors further mitigation which is feasible and readily available will be implemented as necessary to maintain the commitment to noise levels at the nearest sensitive receptors as set out in the ES. On this basis there will be no change to the noise levels at those receptors compared with the Initial Design. Noise enforcement will be through the application of planning conditions.

3.3.2 The significance of the noise impact is thus the same for the Initial and the Updated Design (as Optimized).

3.4 Ecology & Nature Conservation

3.4.1 This section describes how the construction and operational activities relating to the Updated Design (as Optimized) would affect each of the ecological features identified on and around the site (see ES Table 6.4.6).

Designated Sites

The Swale SPA and Ramsar Site

3.4.2 Whilst the Updated Design (as Optimized) involves a larger area of landscaping outside the SPA and Ramsar Site there is no change to the significance of construction effects, operational effects, effects on birds from construction within or outside the SPA, or effects from operations on birds within or outside the SPA.

The Swale SSSI

3.4.3 Whilst the Updated Design (as Optimized) involves a larger area of landscaping there is no change to the significance of construction effects or operational effects within or outside the SSSI.

South Swale LNR

3.4.4 No change to the assessment of construction effects or operational effects.

Habitats

Coastal Flood Plain Grazing Marsh

3.4.5 No change to the assessment of construction effects or operational effects.

Eelgrass Beds

3.4.6 No change to the assessment of construction effects or operational effects.

Ditch

Permanent Land-take

3.4.7 No Change

Construction effects

3.4.8 Sections of dry ditch would be lost immediately north of the proposed substation location. In its place two sections of new ditch would be created abutting an area of proposed regrading to the north of the proposed substation location to replace that lost. Vegetation from the existing ditch would be replanted in the new ditches to aid re-establishment of the new habitats. There would be no change in the significance of effects.

Operational Effects

3.4.9 Vegetation in the new sections of ditch would re-establish during the operational period. There would be no change in overall level of effects from operations.

Vegetated Shingle

3.4.10 Having ascertained that the cable route would not impact vegetated shingle, it can be confirmed that the effect of the Initial Design on this habitat would be negligible. The Updated Design (as Optimized) would not change the assessment of construction or operational effects.

Standing Water

3.4.11 No change to the assessment of permanent land-take or construction effects

Operational Effects

- 3.4.12 The inclusion of the pond east of the proposed substation in the landscaping scheme and the opportunity to manage it would benefit wildlife, including, potentially, great crested newts. The level of effects is predicted as Beneficial and the significance is assessed as Minor. The overall significance of effect with the Updated Design (as Optimized) would change from Negligible to Low-Beneficial.

Estuaries

- 3.4.13 No change to the assessment of construction effects or operational effects

Arable Land

Permanent Land-take

- 3.4.14 An additional small area of arable land would be permanently lost at the location of the sub-station and the access road but this would not result in a change to the assessment of significance.

- 3.4.15 No change to the assessment of construction or operational effects

Mussel Beds

- 3.4.16 No change to the assessment of construction or operational effects

Semi-improved/unimproved Grassland

- 3.4.17 No change to the assessment of construction or operational effects

Flora

Botanical Interests on the Concrete Wave Platform

- 3.4.18 No change to the assessment of construction or operational effects

Nationally Scarce Plant Species

- 3.4.19 No change to the assessment of construction or operational effects

Fauna

Terrestrial Invertebrates

- 3.4.20 No change to the assessment of construction or operational effects

Newts and other Amphibians

- 3.4.21 The great crested newt survey, which was concluded after the publication of the ES, does not affect the assessment of effects set out in the ES, as outlined below.

Construction Effects

- 3.4.22 The working area in the Updated Design (as Optimized) has been extended and so may encroach slightly further on common amphibian habitat, although the temporary loss of a dry ditch is unlikely to unduly affect smooth newts or common frogs. This does not change the assessment.

Operation Effects

- 3.4.23 The Updated Design (as Optimized) scheme involves a greater area of landscaping and the inclusion of the isolated pond in the scheme. This would benefit common amphibians and has some potential for benefit to great crested newts if the pond is cleared of encroaching vegetation and managed. However, the overall level of effects would remain the same.

Reptiles

Construction effects

- 3.4.24 No change

Operational Effects

- 3.4.25 The Updated Design (as Optimized) has a greater landscaped area than the original scheme and therefore would be proportionally more beneficial to reptiles, although this would not change the assessment.

Brown Hares, Small Mammals, Bats, Seals

- 3.4.26 No change to the assessment of construction effects or operational effects

Birds

- 3.4.27 No change to the assessment of construction effects or operational effects

Effects in Combination

- 3.4.28 No change

3.5 Flood Risk & Coastal Defences

- 3.5.1 All plant and equipment in the Initial Design were fully protected from flooding, with at least 0.30 metres (m) of freeboard, by virtue of the finished site level of 6.4m Above Ordnance Datum (AOD).
- 3.5.2 The same level of protection and finished site level applies to the Updated Design (as Optimized) with the exception of the reactor compounds which will have a base level of 5.20m AOD. In the unlikely event of a breach of flood defences, these lower areas would remain protected from flooding up to the predicted 1:200 flood level for the year 2060 (also 5.20m AOD). Insofar as these parts of the site might be over-topped by wave action in the event of such a flood, the reactors are supported on legs 1.2m high so that they have the same level of protection overall as the main site (at 6.4m).
- 3.5.3 At a flood level of 5.20m, the volume of flood storage occupied by earthworks for the substation site in the Updated Design (as Optimized) is approximately 35,000 m³. For the same reasons as set out in the ES, the effects of the scheme on flood storage are considered to be Negligible.

3.6 Water Quality & Drainage

- 3.6.1 Sections of existing dry ditch would be lost immediately north of the proposed substation. In their place two sections of new ditch would be created abutting an area of proposed regrading to the north of the proposed substation boundary to replace that lost. As described above, vegetation from the existing ditch would be replanted in the new ditches to aid re-establishment of the new habitats. There would be no change in the significance of effects on these ditches.
- 3.6.2 Other water quality and drainage features identified in the Initial Design are retained in the Updated Design (as Optimized) and there would be no change in the assessment of effects, either during construction or operation.

3.7 Differences in the Assessment

- 3.7.1 The key differences in terms of assessment of effects resulting from the Updated Design (as Optimized) on the EIA topics described above are summarized in Table 7.

Table 3: Changes to assessment between Initial and Updated (as Optimized) Designs

EIA Topic	Significance of Impact of Initial Design	Significance of Impact of Updated Design (as Optimized)	Aspects of Updated Design (as Optimized) which have resulted in a change
Landscape <ul style="list-style-type: none"> • Landscape Character (Operational Effects) • Visual Resources (Operational Effects) 	N/A to Moderate Adverse Neutral to Moderate Adverse	Neutral to Moderate Adverse Neutral to Moderate Adverse	Design of substation elements and layout as illustrated in Figures 1 to 9 and Figures 10 and 11 (Photomontages)
Noise	Not significant (design includes noise mitigation)	Not significant (with application of noise mitigation)	Changes to layout & closer proximity to receptors
Ecology & Nature Conservation <ul style="list-style-type: none"> • Standing Water (Operational Effects) 	Negligible	Low-Beneficial	Inclusion of pond

3.8 Assessment Conclusions

3.8.1 Table 7 shows the EIA topics for which there were changes in assessment resulting from the Updated Design (as Optimized), namely landscape, noise and ecology/nature conservation.

3.8.2 The significance for noise has not changed from the ES but refinements in the site layout and the increased proximity of the substation to receptors would require some additional mitigation, which is both feasible and readily available.

3.8.3 A beneficial change in the assessment of ecology and nature conservation results from the Updated Design (as Optimized) in relation to the inclusion of the existing pond within the landscape scheme, which amends the significance of impact for standing water from Negligible in the ES to Low-Beneficial.

3.8.4 In terms of differences in assessment resulting from the Updated Design (as Optimized) in relation to the landscape EIA topic, there are changes to the assessment of operational effects on landscape character. These are a consequence of a combination of factors relating to the layout of the Updated Design (as Optimised). There are no changes to the assessment of operational effects on visual resources.

3.8.5 The cumulative effect of changes to the assessments of these EIA topics resulting from the Updated Design (as Optimized) shows that the environmental impacts differ in some respects from those set out for the Initial Design in the ES.

Appendix 1

Advice to KWT on the Distribution of Vegetated Shingle

Newt Survey Reports

Appendix 2

Figures for the Updated Design as Optimized

- Figure 1 Substation Compound
- Figure 2 North Elevation
- Figure 3 400kV GIS Building Elevations
- Figure 4 Substation Landscape
- Figure 5 Landscape Masterplan
- Figure 6 East Elevation
- Figure 7 Site Sections I
- Figure 8 Site Sections II
- Figure 9 Landscape Masterplan

Appendix 3

Photomontage Figures 10 and 11