

Rampion 2 Wind Farm

Category 7: Other Documents

Rampion 2 Outline construction method statement (tracked changes)

Date: July 2024

Revision B

Document Reference: 7.23

Pursuant to: APFP Regulation 5 (2) (q)

Ecodoc number: 004879312-02



Document revisions

Revision	Date	Status/reason for issue	Author	Checked by	Approved by
A	04/08/2023	Final for DCO Application	WSP	RED	RED
B	09/07/2024	Final for Deadline 5	WSP	RED	RED

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Executive Summary

This Outline Construction Method Statement (CMS) has been prepared to describe the methods of construction which will be implemented during construction of the onshore elements of the Proposed Development. This is part of a suite of documents supporting onshore construction works for Rampion 2.

The Outline CMS includes the general construction management requirements and construction methods specific to the construction activities required for the onshore cable elements of the Proposed Development. This includes information on methods of construction that are identified as embedded environmental measures and have informed the Environmental Impact Assessment process.

Stage specific CMSs will be produced by the appointed Contractor(s) following the grant of the Development Consent Order (DCO) and prior to the relevant stage of construction. This will provide further information from detailed design and will be in accordance with this Outline CMS for approval of the relevant planning authority, prior to the commencement of that stage of works.



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1. Introduction

1.1 Overview of the Proposed Development

- 1.1.1 Rampion Extension Development Limited (hereafter referred to as 'RED') (the Applicant) is developing the Rampion 2 Offshore Wind Farm Project (Rampion 2) located adjacent to the existing Rampion Offshore Wind Farm Project ('Rampion 1') in the English Channel.
- 1.1.2 Rampion 2 will be located between 13km and 26km from the Sussex Coast in the English Channel and the offshore array area will occupy an area of approximately 160km².
- 1.1.3 The key offshore elements of the Proposed Development will be as follows:
- up to 90 offshore wind turbine generators (WTGs) and associated foundations;
 - blade tip of the WTGs will be up to 325m above Lowest Astronomical Tide (LAT) and will have a 22m minimum air gap above Mean High Water Springs (MHWS);
 - inter-array cables connecting the WTGs to up to three offshore substations;
 - up to two offshore interconnector export cables between the offshore substations; and
 - up to four offshore export cables each in its own trench, will be buried under the seabed within the final cable corridor;
 - the export cable circuits will be High Voltage Alternating Current (HVAC), with a voltage of up to 275kV.
- 1.1.4 The key onshore elements of the Proposed Development will be as follows:
- a single landfall site near Climping, Arun District, connecting offshore and onshore cables using Horizontal Directional Drilling (HDD) installation techniques;
 - buried onshore cables in a single corridor for the maximum route length of up to 38.8km using:
 - ▶ trenching and backfilling installation techniques; and
 - ▶ trenchless and open cut crossings.
 - a new onshore substation, proposed near Cowfold, Horsham District, that will connect to an extension to the existing National Grid Bolney substation, Mid Sussex, via buried onshore cables; and
 - extension to and additional infrastructure at the existing National Grid Bolney substation, Mid Sussex District to connect Rampion 2 to the national grid electrical network.

- 1.1.5 A full description of the Proposed Development is provided in **Chapter 4: The Proposed Development, Volume 2** of the ES (Document Reference: 6.2.4).

1.2 Purpose

- 1.2.1 This Outline Construction Method Statement (CMS) sets out the key elements for which final detail will be provided and secured in the stage specific CMS. The stage specific CMS will describe the construction works as relevant to each stage. This will be required to be submitted for approval as a requirement of the DCO.
- 1.2.2 This Outline CMS sets out the construction methods which will be implemented during the construction and should be read in conjunction with the Outline CoCP and its supporting appendices.
- 1.2.3 This Outline CMS relates to the onshore elements only and covers:
- The onshore cable corridor;
 - Onshore substation at Oakendene;
 - National Grid Bolney substation extension works;
 - Compounds and accesses associated with the construction works.

2. General Construction Management

2.1 Introduction

2.1.1 This section addresses construction methods which are common to, or shared by, some or all of the component elements of the proposed onshore works.

2.2 Landowner Liaison

2.2.1 General disruption impacts will be mitigated early in the construction planning process where possible by allowing a sufficient time period between the serving of notice for entry and the commencement of on-site activities. This will allow farmers and landowners time to adapt their working practices in anticipation of the works. Further information on agricultural liaison is provided within 2.6 of the **Outline Code of Construction Practice [REP4-043]** and **Outline Soils Management Plan [REP3-027]**.

2.2.2 RED will acquire no greater land, or acquire new rights or impose restrictive covenants over no greater land, than appears to RED to be reasonably required following the detailed design of the project.

2.2.3 The stage specific CoCPs (Requirement 22 of the **Draft Development Consent Order [REP4-004]**) and construction method statements – (Requirement 23 of the **Draft Development Consent Order [REP4-004]**) for works other than onshore site preparation works will include the cable routing and descriptions of any required works outside of the standard working corridor width of 40m. For the connection from the onshore substation at Oakendene to the National Grid Bolney substation, where two cables are required, open cut sections of the corridor will not exceed 30m in width.

2.2.4 The detailed design will take into account any commitments made by the Applicant and secured through requirements in the [REP4-004] updated at Deadline 5. DCO and any commitments given in voluntary land agreements which have been entered into with affected parties. In preparing the stage specific CMS, RED will comply with the Agricultural Liaison section of the CoCP (Paragraph 2.6 of the **Outline Code of Construction Practice [REP4-043]**). “The ALLO will work with landowners and occupiers to enable the construction project to be conducted in a manner that respects and accommodates the needs of the agricultural and landowner community while meeting project objectives and DCO requirements. Liaison will take place with the landowner community prior to the finalisation of the Construction Method Statement and where practicable and subject to engineering and environmental requirements, Rampion 2 will take into consideration farming impacts and considerations prior to that finalisation and submission to discharge authorities.” The stage specific Construction Method Statement (CMS), which is required to be approved by the relevant planning authority for the relevant stage of the works pursuant to Requirement 23(f) of the **Draft Development Consent Order [REP4-004]**, will include the final location and width of the cable construction corridor for the relevant stage. A plan will be included in this

document showing the working corridor and any wider areas required for trenchless crossings, together with the location and extent of the associated trenchless crossing compounds. The final layout and spatial extent of the laid cables within the 40m corridor will be determined during detailed design. Flexibility within the 40m construction corridor is however still required due to the potential for obstacles and ground conditions that are revealed during the ground investigation works and during construction works.

2.2.5 Further to the completion of construction, the land will be restored in accordance with DCO requirement 23 (2) (h) (see section 2.15 below) and the stage specific Soil Management Plan (SMP) and CMS. The final placing of the cables will be communicated to the landowner by the Agricultural & Land Liaison Officer (ALLO). Final plans for the permanent easement will be provided by the Applicant to the landowner further to construction. The Applicant will also provide details to the landowners of any areas of land which were used for temporary works only, and which are no longer required by the Applicant following completion of construction.

2.2.6 In the event that more land is acquired permanently than necessary, RED will have regard to the provisions for the disposal of surplus land in the Crichel Down Rules (see the Guidance on Compulsory Purchase Process and the Crichel Down Rules issued by the Ministry of Housing, Communities & Local Government).

2.2.2.2.7 In the event that new rights are acquired or restrictive covenants are imposed over more land than is necessary, or they are no longer required for the Proposed Development, RED will use reasonable endeavours to liaise with the landowner to seek to agree an appropriate mechanism for the variation and/or release of the surplus new rights or restrictive covenants. In doing so the Applicant shall have regard to the following guiding principles:

- the requirement to maintain and protect the safe, economic and efficient operation of the authorised development;
- the need to comply with planning and environmental requirements in relation to the land;
- the terms of any existing agreements with or commitments to landowners;
- the purposes and terms of the surplus rights or restrictive covenants, and the means by which the compulsory acquisition powers have been exercised and/or the rights or restrictive covenants have been acquired.

2.2.3.2.8 These proposed commitments to landowners will be in addition to those already secured by Requirements 22, 23 and 24 of the **Draft Development Consent Order [REP4-004]**.

2.3 Emergency Contacts

2.3.1 Emergency contact details and an emergency incident response plan will be provided in the Emergency Response Plan (ERP).

2.4 Construction Working Hours

- 2.4.1 The working hours for the project are explained in detail within the [Outline CoCP](#) (Document Reference: 7.2).

2.5 Construction Compounds

- 2.5.1 Where a [main](#) construction compound is to be constructed the following provisions will apply.
- 2.5.2 The ~~temporary construction~~ compound base area will be constructed by removing the topsoil and setting aside for reuse, laying a geotextile membrane or similar separation membrane directly on top of the subsoil, over which layers of granular stone will be spread or alternatively use of protective matting. Any existing services in the area will be crossed in a manner agreed with the services owner. If arrangements cannot be agreed the compulsory acquisition powers provides a fall. Protective provisions for statutory undertakers in relation to protection for their assets is provided in the DCO. All temporary services necessary for the activities of onshore works within a temporary construction compound will be ducted through the temporary haul road under the membrane and the location will be identified for future reference. Where an impermeable surface is used, suitable surface water drainage measures will be used.
- 2.5.3 Once the compound has been constructed, foundations for site cabins where, required, will be installed. Once this work is completed, the cabins will be delivered and placed.
- 2.5.4 Requirements for lighting used within the temporary construction compounds for the project are detailed within the [Outline CoCP](#) (Document Reference: 7.2).
- 2.5.5 Material and non-static plant for the installation of the onshore cable will be stored at each compound and transported out to the appropriate cable installation sites.
- 2.5.6 All materials, plant and equipment shall be stored within the site boundaries, within designated securely fenced construction compounds and laydown areas.
- 2.5.7 For the duration of the construction period an area will be set aside within the site compound to accommodate road vehicles for the construction work force and site visitors. Parking will not be permitted in any other areas, on or off site.
- 2.5.8 At the end of the working day all plant will be parked in a safe and secure area with appropriate security equipment fitted to the plant to minimise vandalism and unwanted attention from members of the public. This is likely to be at the [main](#) construction compound.
- 2.5.9 Each compound will be removed at the end of construction activities and the land reinstated to its former condition as far as reasonably practicable unless otherwise agreed between the landowner and the local planning authority.

2.6 Vehicle Movements

- 2.6.1 The site speed limit shall be 15 mph on all site access roads and must be adhered to at all times. For access roads that are shared with PRowS reduced speed limits

are to be considered on a case by case basis. Appropriate speed limits within the temporary construction compounds will be set. Speed limit signs shall be installed on all haul roads and site access roads.

- 2.6.2 Vehicles on site shall be fitted with visual and audible warning devices using broadband or 'white noise' for reversing where appropriate.
- 2.6.3 Banksmen will be used, if required, when reversing in the compounds and on the temporary haul road.
- 2.6.4 Arrangements for deliveries are detailed in the [Outline Construction Traffic Management Plan](#) (Document Reference: 7.6).

2.7 Fuel, Chemical and Waste

- 2.7.1 All fuels, chemicals and wastes shall be handled and stored in accordance with the Pollution Prevention Plan.
- 2.7.2 The measures required to manage waste during the construction phase for the onshore elements are detailed in [Outline Site Waste Management Plan](#) (Document Reference: 7.3).

2.8 Existing Drainage

- 2.8.1 Where any works are carried out in connection with existing drains adequate precautions shall be taken to ensure that nothing, except water, is introduced into the drains. Existing drains are to be inspected prior to commencing work. Any existing contamination, blockage or damage shall be recorded and reported to the party responsible for the drain.
- 2.8.2 Surface water is to be prevented from entering foul water sewers. Foul sewage is to be prevented from leaking or overflowing into surface water drains, adjacent to sewers or elsewhere.
- 2.8.3 On completion of any works, the affected drains, sewers or chambers are to be inspected to ensure that no contamination, blockage or damage has occurred to the drain, sewer or chamber as a consequence of the said works. Any such contamination, blockage or damage shall be made good by the Contractor(s).

2.9 Utilities

- 2.9.1 All utility providers that are potentially affected will be contacted and the location of existing services accurately identified on the ground prior to construction or intrusive ground investigations.
- 2.9.2 The position, depth and condition of exposed services shall be recorded. All agreed measures for protection will be implemented before any works associated with the utility crossings commence.
- 2.9.3 All utility crossings will be undertaken in accordance with standards agreed with the utility owner/operator.

2.10 Ecological Management

- 2.10.1 ~~Works will be undertaken in line with the stage specific CoCP including an Biodiversity Management Plan (BMP), that will be submitted to the relevant planning authority for approval. Further information on ecological management is provided in Section 5.6 of the **Outline CoCP** (Document Reference: 7.2) and **the Outline Vegetation Retention and Removal Plan** (Document Reference: 8.87). Habitat reinstatement, monitoring and management is addressed in the **Outline Landscape and Ecology Management Plan (LEMP)** (Document Reference: 7.10) including reinstatement requirements and Stage-stage specific LEMPs will be provided for the works. Works will be undertaken in line with the stage specific plans that will be submitted to the relevant planning authority for approval.~~
- 2.10.2 ~~The relevant stage specific CMS will provide details of how the following commitments restricting access to ecologically sensitive sites (including Climping Beach SSSI, Littlehampton Golf Course and Atherington Beach Local Wildlife Site (LWS), Sullington Hill LWS and Ancient Woodland crossings including Michelgrove) are to be implemented.~~
- ~~• C-112 - No ground-breaking activity or use of wheeled or tracked vehicles will take place south of the seawall (above mean high water springs) within Climping Beach Site of Special Scientific Interest (SSSI). Within Littlehampton Golf Course and Atherington Beach Local Wildlife Site (LWS) vehicular access will be restricted to a low pressure rig for ground investigation purposes only during the site preparation works. Should remedial action be required in the unlikely event of a drilling fluid breakout access would be taken immediately to ensure drilling fluid can be contained and removed. Reinstatement and compensation measures would then be discussed and agreed with Natural England. This approach will be detailed in the Pollution Incident Response Plan secured through Requirement 22(4)(j) that will be agreed with the relevant planning authority in consultation with the Environment Agency and the statutory nature conservation body.~~
 - ~~• C-114 - No ground-breaking activity or use of wheeled or tracked vehicles will take place during the construction phase within Sullington Hill LWS unless remedial action is required. Any predicted activity will be restricted to foot access for the purpose of surveying and monitoring of the progress of the horizontal directional drill (HDD). The existing farm tracks through Sullington Hill LWS may be used by light vehicles (e.g. 4 x 4, light van) for access purposes during the operation and maintenance phase.~~
 - ~~• C-216 - All ancient woodland will be retained. A stand-off of a minimum of 25m from any surface construction works will be maintained in all locations from cable installation works. Construction traffic may operate within 25m of an ancient woodland on existing tracks, with any track maintenance works being restricted to the current width. Works to provide safe access from the highway are required in three locations within 25m of ancient woodland, being accesses A-42, A-56 and A-57. At these locations specific measures including dust control shall be detailed in the stage specific Code of Construction Practice that will manage any potential indirect effects on ancient woodland. Where ancient woodland is crossed via trenchless crossing a depth of at least 6m below~~

ground will be maintained to avoid root damage and drill launch and retrieval pits will be at least 25m from the woodland edge.

2.11 Ground Investigations

- 2.11.1 Ground investigation for geotechnical and or environmental purposes would be undertaken pre-construction at key points including at the onshore substation, Bolney extension, all trenchless crossing locations and at intervals along the entire cable route. Those investigations will inform the detailed design and the final CMS submitted for each stage of the onshore works.

2.12 Invasive Species

- 2.12.1 Measures contained in relevant Department of the Environment, Food and Rural Affairs (DEFRA) best practice guidance on the control and removal of invasive weed species will be implemented. Details are to be provided in the BMP as per the **Outline CoCP** (Document Reference: 7.2), **Section 5.6**.

2.13 Surface Water Drainage

- 2.13.1 Construction along the cable route will require temporary management of surface water. Where required, temporary drainage will be installed either side to ensure existing land drainage flow is maintained. The requirements are detailed in Section 5.10 of the **Outline CoCP** (Document Reference: 7.2). Stage specific Construction Phase Drainage Plans will be developed during detailed design and provided for approval as part of the detailed stage specific CoCP by the relevant planning authority prior to construction.

2.14 Flood Risk

- 2.14.1 Excavated soil will not be stored on the floodplain. Soil excavated in floodplains will be temporarily stored in the areas identified along the cable route.
- 2.14.2 Construction activity will not be undertaken without appropriate mitigation during very extreme wet weather where erosion of sediments and risk from flooding may increase.
- 2.14.3 The construction site access roads will be designed to minimise land take and to avoid, where possible, impacts on existing drainage networks and features. Specific details will be included in the detailed CoCP as part of the Construction Phase Drainage Plan.
- 2.14.4 The Emergency Response Plan, to be produced by the Principal Contractor and appended to the CoCP, will include emergency flood evacuation procedures, setting out actions in the event of flooding or a flood warning during construction works. This would include a procedure for evacuation of personnel and the securing or relocating plant or materials.

2.15 Restoration & Reinstatement

- 2.15.1 The stage specific CMS will set out a protocol for the restoration and reinstatement of land used temporarily for construction during that stage and the timing in accordance with commitment C-103 in the **Commitments Register [REP4-057] (updated at Deadline 5)**. Following completion of construction operations all agricultural land will be restored to its previous condition unless otherwise agreed between the landowner and the local planning authority. This will include the replacement of field boundaries and stock fences. Topsoil will be prepared and seeded using an appropriate seed mix or returned to arable cultivation. These measures are outlined in the **Outline Soils Management Plan** (Document Reference: 7.4) and the stage specific SMP shall provide detail of the measures secured will be implemented as relevant to the stage of works.
- 2.15.2 Reinstatement of landscape and habitats will be undertaken in accordance with the stage specific LEMP to be provided for approval of the relevant planning authority and prepared in accordance with the **Outline LEMP** (Document Reference: 7.10).

3. Cable Construction Management

3.1 Temporary Haul Road & Accesses

- 3.1.1 The temporary haul road which is to be constructed along the cable route, and temporary connecting access tracks from the public highways are to provide access for the construction crew and plant. These will be constructed from a range of different materials depending on ground conditions. All temporary haul roads and access tracks will be suitably engineered to support the axle weight from the construction vehicles and will be periodically inspected and maintained throughout the construction phase.
- 3.1.2 The stone haul road and access tracks will be constructed by placing successive layers of stone compacted on a layer of permeable geo-textile membrane which provides additional ground stability. In certain areas the installation of drainage measures for the haul road may be required which will be determined during detailed design. Where existing tracks are utilised these will be upgraded as required and returned to previous condition unless agreed otherwise with the landowner.
- 3.1.3 Where temporary access tracks interact with the existing public highways temporary bellmouths will be installed as required. Consent of the Street Authority articles 13 to 15 will apply.
- 3.1.4 Depending upon the ground conditions and weather conditions it may not be necessary to construct a haul road for sections of the route. Where the ground is sufficiently firm enough it may be acceptable to drive directly on the sub-soil.
- 3.1.5 Construction work across surface watercourses require measures to ensure that the water quality and flow rates are unaffected.
- 3.1.6 Where the haul road and construction access roads cross smaller watercourses and land drainage, measures will be discussed with relevant stakeholders including the Environment Agency and Lead Local Flood Authority where appropriate. Options could include; culverts, flumes, installation of bailey bridges etc. and developed in accordance with the [Outline CoCP](#) (Document Reference: 7.2), [Sections 5.6 and 5.10](#).
- 3.1.7 At land drain crossings and smaller watercourses the haul road will be installed over a pre-installed culvert pipe of suitable size to accommodate the water volumes and flows necessary. The ditch or watercourse will be lined with a geo-textile separator membrane and the culvert pipe will be installed on, and surrounded by, suitable clean bedding material (e.g. sand). As an alternative, and only where appropriate, diversion of the land drain or watercourse may be used. It is not proposed to pipe larger or deeper watercourses. Where appropriate, another alternative which could be deployed is the use of temporary 'Bailey' bridges (steel framed modular units), or similar, supported on abutments outwith the channel.
- 3.1.8 The construction corridor will be fenced on all sides, with stock-proof fencing used where farming practices require. At designated points along the route identified in

consultation with each landowner, gated crossing points will be provided to facilitate access across the working corridor for both accesses of landowners, Public Rights of Way (PRoW) and livestock.

- 3.1.9 Where the haul road crosses PRoWs the crossings will be in accordance with the Public Rights of Way Management Plan PRoW Plan.
- 3.1.10 The haul roads and temporary watercourse crossing points will be removed at the end of the installation process and the land reinstated to its previous condition, unless otherwise agreed between the landowner and the local planning authority.

3.2 Trenching

- 3.2.1 The trenches will be dug either with trenching machines or mechanical excavators straddling or standing alongside the centreline. The detailed location of the onshore cable corridor will be provided as part of the stage specific CMS.
- 3.2.2 Topsoil and Subsoil will be stored separately either side of the trench to avoid mixing. Within floodplains the excavated material will be stored in designated locations outside the floodplains.
- 3.2.3 The trenches will be sufficient to provide a depth of cover of 1.2m to the top of the ducts. Deeper trenches may be required at specific crossing locations (such as watercourses).

3.3 Duct Installation & Backfilling

- 3.3.1 The onshore export cables will be installed in a flat or trefoil formation. In addition to the onshore power cables, fibre optic cables will be installed within each formation.
- 3.3.2 Cement Bound Sand (CBS) will be used to backfill around each set of cable ducts during installation to aid heat dissipation during operation. CBS will be delivered from the temporary construction compounds by lorry during duct installation.
- 3.3.3 Subsoil and then topsoil will be used to complete the backfill of the trenches.
- 3.3.4 Cable protection tiles will be fitted above the cables in each trench, featuring indented lettering warning of the danger of electricity below. Between the protection tiles and the ground surface will be underground plastic warning tape containing a warning text to warn future excavators of the danger of the cable below.
- 3.3.5 Where open cut trenches are used for the excavation of the cable route, the following measures will be implemented:
 - Excavations may require de-watering. Water removed from excavations would be passed through a silt separator tank or equivalent, and discharged to ground or surface water. An environmental permit would be sought prior to undertaking such operations.
 - Extended excavations would be arranged so as not to create preferential drainage pathways with the potential to cause flooding of lower land.

3.4 Trenchless Crossings

- 3.4.1 The **Outline CoCP** (Document Reference: 7.2) provides a copy of the Crossing Schedule which provides detail on the obstructions along the cable route and the crossing methodology (open cut or trenchless). Each crossing will be designed during detailed design. The Crossing Schedule is based on the available information at the time of the DCO Application. Should an unexpected obstacle or constraint be encountered that requires an additional trenchless crossing, this would be confirmed in the crossing schedule accompanying the stage specific detailed CoCP for approval by the relevant planning authority. This will include confirmation that there are no new or materially different environmental effects arising compared to those assessed in the Environmental Statement (ES).
- 3.4.2 For trenchless crossings, HDD has been assessed in the DCO Application as this is the likely preferred option based on their reduced complexity and relatively low cost compared to other techniques. The detailed design including location and methodology for the trenchless crossing will be determined following site investigation and confirmed within stage specific Onshore Construction Method Statements.
- 3.4.3 Road and rail crossings will be undertaken in line with Network Rail and Highways England specifications and requirements.
- 3.4.4 The HDDs will be installed in line with construction design drawings based on ground topography, geotechnical data and cable design depth / spacing etc. The cross sections of the trenchless crossings are to include target depths.
- 3.4.5 Appropriate geotechnical surveys to be undertaken along the HDD alignment in advance of the detailed design stage to inform the design of the crossings.
- 3.4.6 Details of proposed drilling fluids, including safety data sheets, are to be developed in detailed design.
- 3.4.7 An environmental risk register is to be developed to demonstrate how the risks (for instance drilling fluid breakout) will be mitigated and managed.
- 3.4.8 The following measures are to be undertaken to minimise the potential for inadvertent release of drilling fluid to the surface during drilling operations, and to manage the clean-up of drilling fluid from the affected area in the event of an incident.
- Completion of appropriate geotechnical investigations along the HDD alignment;
 - Design the HDD profile to pass at an appropriate depth below the surface;
 - Design the HDD profile to pass through competent soil layers identified by geotechnical investigations;
 - Completion of drilling fluid hydrofracture analyses for each drilling operation and maintaining downhole pressures within the recommended limits;
 - Use of appropriate downhole pressure monitoring equipment;
 - Selection of a drilling fluid appropriate for the anticipated ground conditions;

- Appropriate monitoring of drilling fluid parameters during drilling;
- Regular monitoring of the surface above the HDD alignment;
- The use of experienced drillers;
- Installation of casing pipe when appropriate to contain drilling fluid; and
- Drilling fluid containment, clean-up, and disposal measures are to be in place and on site available for rapid deployment.

3.4.9 Noise mitigation measures will be implemented to manage noise and vibration levels during the construction period in accordance with the **Outline CoCP** (Document Reference: 7.2) and as detailed in the Noise and Vibration Management Plan (NVMP) to be provided as part of the stage specific detailed CoCP for approval of the relevant planning authority.

3.4.10 The landfall cable construction and installation under the intertidal areas via trenchless methods will be designed and constructed to a target depth of at least 5m below surface / seabed level other than in the entry / exit pit areas of the trenchless crossing. The entry / exit pit area includes the graduation from 5m depth up to the surface area. The trenchless crossing design and construction will be guided by site investigation data and other studies including a 'Coastal Erosion and Future Beach Profile Estimation Assessment' to minimise any risk to cables from coastal erosion. The relevant stage specific construction method statement will be approved by the relevant planning authority following consultation with the statutory nature conservation body and Marine Management Organisation.

3.5 Open Cut Crossings

3.5.1 The depth of each cable at every watercourse crossing will be determined in consultation and agreement with the relevant authority on a case-by-case basis in collaboration with the respective owner / operator to ensure that routine maintenance, repairs and any engineering works to adapt to climate change can be undertaken in the future.

3.5.2 Ducts may be installed under smaller watercourses or ditches using open-cut techniques. Such smaller watercourses or ditches may be temporarily flumed, dammed-up and over-pumped or diverted to allow installation to take place. Trench support may be required to temporarily hold open the excavated trenches either side of the ditch. Trench support would be removed prior to reinstatement, including reinstatement of the watercourse or ditch.

3.6 Jointing Bays

3.6.1 The jointing equipment will be assembled on the concrete foundation base pad (max 4m x 14m), constructed within the joint bay to support the cable joint. A container and small welfare facilities will be delivered to the location of the joint bay to provide a clean room for storage and some of the jointing operations.

3.6.2 During the jointing operation the joint bay is completely enclosed under a temporary jointing shelter.

- 3.6.3 On completion of jointing works the joint pit is backfilled in line with the normal trench backfilling method. The link boxes will remain accessible from the surface via manholes. Joint bays and link chambers will be resilient to flooding.

3.7 Cable Installation

- 3.7.1 The onshore cables will be delivered by road to the temporary construction compounds and stored until required.
- 3.7.2 Specialist Low Loader lorries will deliver the loaded cable drums and remove empty drums from the compound. Loaded cable drums will be transported from the compound to each cable installation site by the means of a specially designed cable trailer pulled by a suitable vehicle.
- 3.7.3 Cable pulling activities shall be undertaken once duct installation has finished along the entire onshore route.

4. Substation and Bolney Extension Construction Management

4.1 Preliminary Works

4.1.1 Preliminary site works will be required before construction can commence. These may include:

- Site clearance
- Fencing;
- Installation of new access (A-63) from A272 for the onshore substation at Oakendene;
- Upgrade and extension of the existing access [A-68] at the Bolney extension work for construction access.
- Utility diversions and installation of temporary site drainage where required;
- Archaeological and ecological surveys and mitigation works as necessary;
- Vegetation clearance and mitigation planting for early establishment; and
- Establishment of temporary construction compound, offices, welfare facilities, security, wheel wash, lighting and signage.

4.1.2 The first operation will be to strip the topsoil from the site of the substation and temporary construction compound.

4.1.3 The pre-earthworks drainage will be installed prior to cut and fill works to level the substation and temporary construction compound areas. Details will be provided in the Construction Phase Drainage Plan (CPDP).

4.2 Roads & Stone

4.2.1 Roads and bellmouths within the onshore substation and Bolney extension will be laid to the specifications and requirements derived during detailed design.

4.2.2 Stone will be laid across the onshore substation and Bolney extension sites. This will consist typically of a 225mm layer of DOT Type 1 and 75mm of the stone chippings/pebbles.

4.3 Foundations

4.3.1 Foundations for the substation may require piling. It is anticipated that the majority of piling, if not all, can take place using methods of piling such as Continuous Flight Auger (CFA) or rotary displacement that are quieter than percussive piling methods. Details of specific piling requirements are not yet known for the project

and will be confirmed following detailed design and further geotechnical investigations.

- 4.3.2 CFA piling involves boring a hole using an auger drill, with concrete injected as the drill is removed, allowing a pile to be installed without leaving an open hole. Reinforcements may be added to the wet concrete once the drill is removed.
- 4.3.3 Structural steel is secured to the foundations.
- 4.3.4 The permanent steel fencing is secured to the foundations around the outside of the permanent substation footprint.

4.4 Equipment

- 4.4.1 Equipment is installed on the foundations and steelwork. Appropriate sized cranes will be used to manoeuvre the equipment into place.
- 4.4.2 At the onshore substation transformers are required. Due to the size and weight of the transformers, these deliveries are classed as Abnormal Indivisible Loads (AILs) detailed in [Appendix 23.1: Abnormal Indivisible Loads assessment](#) of the ES (Document Reference 6.4.23.1). Such loads will require specialist delivery methods to be employed.
- 4.4.3 All other equipment is deliverable using standard vehicles.
- 4.4.4 All equipment and connections will comply with height restrictions as detailed in the [Design and Access Statement](#) (Document Reference: 5.8).

4.5 Buildings

- 4.5.1 At the onshore substation the brick Gas Insulated Substation (GIS) building will be constructed on the foundations. If the GIS option is selected at the Bolney extension a building will also be constructed.
- 4.5.2 The control room at the onshore substation will also be constructed.
- 4.5.3 All buildings will comply with height restrictions as detailed in the [Design and Access Statement](#) (Document Reference: 5.8).

4.6 Permanent Access Road

- 4.6.1 The permanent access road will be designed and constructed to tie in the onshore substation at Oakendene with the existing A272 and to accommodate Abnormal Indivisible Loads (AILs), along with normal traffic movements associated with the construction, maintenance and operation of the substation.

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5. Glossary of terms and abbreviations

Table 5-1 Glossary of terms and abbreviations

Term (acronym)	Definition
AIL	Abnormal Indivisible Loads
BMP	Biodiversity Management Plan
CBS	Cement bound sand
Code of Construction Practice (CoCP)	The code sets out the standards and procedures to which developers and contractors must adhere to when undertaking construction of major projects. This will assist with managing the environmental impacts and will identify the main responsibilities and requirements of developers and contractors in constructing their projects.
CPDP	Construction Phase Drainage Plan
Continuous Flight Auger (CFA) piling	A piling technique which involves boring a hole using an auger drill, with concrete injected as the drill is removed, allowing a pile to be installed without leaving an open hole.
Contractor(s)	Any contractor working on the construction of the Proposed Development.
DCO Application	An application for consent to undertake a Nationally Significant Infrastructure Project made to the Planning Inspectorate who will consider the application and make a recommendation to the Secretary of State, who will decide on whether development consent should be granted for the Proposed Development.
Defra	Department for Environmental, Food and Rural Affairs
Development Consent Order (DCO)	This is the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects, under the Planning Act 2008.
DOT Type 1 stone	A type of stone sub-base, compliant with Department of Transport Specification for Highway Works, clause 803 (SHW 803).
Embedded environmental measures	Equate to 'primary environmental measures' as defined by Institute of Environmental Management and Assessment (2016). They are measures to avoid or reduce

Term (acronym)	Definition
	environmental effects that are directly incorporated into the preferred masterplan for the Proposed Development.
ERP	Emergency Response Plan
Environmental measures	Measures which are proposed to prevent, reduce and where possible offset any significant adverse effects (or to avoid, reduce and if possible, remedy identified effects).
ES	Environmental Statement
ERPs	Emergency Response Plans
Gas Insulated Substation (GIS)	Smaller footprint Substation housed within a building.
Horizontal Directional Drill (HDD)	An engineering technique avoiding open trenches.
kV	Kilovolt
LEMP	Landscape and Ecology Management Plan
MHWS	Mean High-Water Springs
MPH	Miles Per Hour
NMP	Noise and Vibration Management Plan
PPP	Pollution Prevention Plan
Principal Contractor(s)	As defined in the Construction (Design and Management) Regulations 2015 a “ <i>Principal Contractor is the contractor with control over the construction phase of a project involving more than one contractor. They are appointed in writing by the client to plan, manage, monitor and coordinate health and safety during this phase.</i> ”
Proposed Development	The development that is subject to the application for development consent, as described in Chapter 4: The Proposed Development, Volume 2 of the ES (Document Reference: 6.2.4).
PROW	Public Rights of Way
PRoWMP	Public Rights of Way Management Plan
RED	Rampion Extension Development Limited (the Applicant)
SDNPA	South Downs National Park Authority

Term (acronym)	Definition
Secretary of State	The Minister for Department for Energy Security and Net Zero (DESNZ).
SMP	Soil Management Plan
SWMP	Site Waste Management Plan
WSCC	West Sussex County Council
Wind Turbine Generators (WTGs)	The components of a wind turbine, including the tower, nacelle, and rotor.

