Light Valley Solar

Environmental Statement Volume 3

Appendix 2.1: Cable Route Method Statement

Document Reference: EN0110012/APP/LVS/06.03.02.01

February 2026

Planning Inspectorate Reference: EN0110012
APFP Regulation 5(2)(a)

Light Valley Solar

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning
(Applications: Prescribed Forms and Procedure) Regulations 2009

Light Valley Solar

DCO Submission

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Regulation Reference	APFP Regulation 5(2)(a)
Planning Inspectorate Case Reference	EN0110012
Application Document Reference	EN0110012/APP/LVS/06.03.02.01
Author	Light Valley Solar Limited

Version	Date	Status of Version
1.0	February 2026	DCO Submission

Contents

1 Cable Route Method Statement

1.1 Purpose

1.1.1 The purpose of this Construction Method Statement (CMS) is to provide details of how the Cable Route Corridor is to be constructed to inform the assessment for the Environmental Statement (ES).

1.1.2 The components described comprise:

1) Interconnecting Cables and Grid Connection Cables;
2) Modifications to Existing National Grid Monk Fryston Substation; and
3) Access points and haul routes.

1.2 Interconnecting Cables and Grid Connection Cables

1.2.1 The electricity generated by the Proposed Development will be exported to the National Grid via a 275 kV circuit comprised of three buried cables (the Grid Connection Cables) to the Existing National Grid Monk Fryston Substation within the Cable Route Corridor. Interconnecting cables between the conversion units and sub-stations and between Solar Development Sites would be 33kV or 275kV, depending on the electrical design for the relevant part of the Proposed Development.

1.2.2 The Order Limits width is typically 50 m with the width increasing in places (such as road and rail crossings) up to approximately 450 m to allow flexibility for final crossing design alignment and to allow space for temporary compounds. The actual construction working width (i.e. the area of land fenced off and utilised during construction) within the Order Limit is anticipated to be 25m.

1.2.3 The Cable Route Corridor crosses a range of existing infrastructure such as roads (A63 and A19), minor roads and tracks, Public Rights of Way (PRoW), existing and/or buried underground utilities, railway lines, field drains and main drains.

1.3 Avoidance Areas

1.3.1 The start and end points of the different construction methods (being open trench and trenchless technologies) for the entirety of the cable routes will not be confirmed until the detailed design stage. Therefore, the approach to the EIA is: 1) to commit to 'Avoidance Areas' (as shown on Figure 2.5: Avoidance Areas [**EN0110012/APP/LVS/06.02.02.05**]) where the cable installation method will use trenchless technologies rather than open cut trenches; and 2) assess a reasonable 'worst case scenario' (as relevant for each topic) in non Avoidance Areas. Trenchless solutions, for example horizontal directional drilling (HDD) is proposed for the crossing of the River Ouse, main rivers, IDB watercourses, and WER water body line watercourses (unless an existing culvert crossing can be utilised). Trenchless solutions will also be utilised when/if crossing ditches that lead to the following designated sites: Common Wood SINC, Nightingale Wood SINC, Burr Closes SSSI, and Barber Rain SINC. Trenchless solutions will also be employed to pass beneath Ouse Bank-Westfield-Ricall Ings SINC that flanks the river Ouse, which will avoid direct impacts to the designated site. Trenchless solutions would also be used for railway crossings. Road crossings will be a combination of trenchless and open cut crossings. When trenchless solutions are used the cable may be placed at greater depths. The Crossings Schedule [**EN110012/APP/LVS/07.01**] and Figure 2.5: Avoidance Areas [**EN0110012/APP/LVS/06.02.02.05**] illustrate the areas where trenchless crossings have been committed to.

1.3.2 Other crossings will be via trenchless solutions or open cut depending on the detailed design, however, for the purposes of the ES, open cut has been assumed. The detailed CEMP will confirm the crossing technique that is proposed for the non-Avoidance Areas and confirm that no materially new or materially different effects to those reported in the ES will arise from the chosen technology. To demonstrate that such a test is likely to be able to be passed if trenchless (in this case HDD) techniques were to be used in these areas, the ES has, as a sensitivity, considered a number of non-Avoidance Area locations with HDD technology being utilised and reported on the effects that would arise if that was the chosen technology. These locations are shown on Figure 2.8: HDD Sensitivity Testing [**EN0110012/APP/LVS/06.02.02.08**].

1.3.3 The launch and reception pits associated with trenchless technology will be located outside of Avoidance Areas to minimise impacts in these locations.

1.3.4 Whilst there will be no open cut trenches or launch/exit pits in the Avoidance Areas, parts of the haul road will cross a number of Avoidance Areas. The haul road approach is further discussed below.

1.3.5 Avoidance Areas have been identified throughout the iterative EIA process, through detailed design and consultation and have informed the ES.

1.4 Open cut trenching

1.4.1 For the open cut sections of the Cable Route Corridor, the Proposed Development allows for necessary spatial flexibility in the routing of the Grid Connection Cables and Interconnecting Cables. The working width for installation of the cable is anticipated to be 25 m. This may be widened in places and narrowed in others, for example to minimise removal of hedgerows or at open cut watercourse crossings but will remain within the Order Limits. The 25 m working width will include a haul road along which vehicles and plant will be located as well as an area for temporary storage of excavated spoil.

1.4.2 For the Interconnecting Cables, the open cut cable trench would be up to approximately 7 m wide. This includes separation distances where multiple cables are running in parallel. Trench depth would be approximately 2 m subject to design and ground conditions.

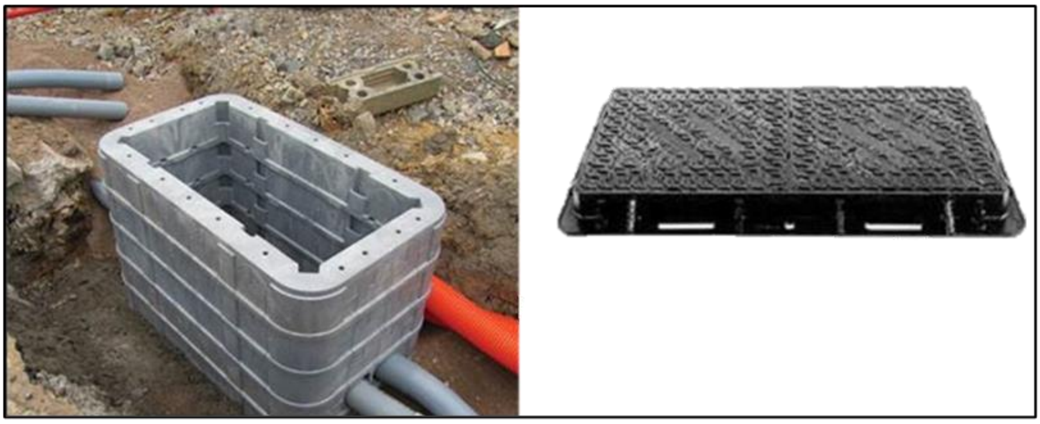
1.4.3 For the Grid Connection Cables, the working area will include a single trench within which the 275 kV connection cables will be installed. The trench will be approximately 2 m wide and 2 m deep, subject to design and ground conditions. A cross section of a typical 275 kV cable trench is shown in Annex A.

1.5 Joint bays

1.5.1 Joint bays will link sections of underground cables. These will be a minimum of 250 m to a maximum of 2 km apart. The dimensions of these are determined by how many electrical circuits will be in the jointing bay. A joint bay for six cables / joints would be approximately 20 m long and 6 m wide and approximately 3 m deep. The base of the joint bay would be level and a concrete pad installed (approximately 150 mm thick with light reinforcement) as a dry working surface. The sides of the excavation are shored to prevent collapse.

1.5.2 Fibre communications chambers will be required and are likely to be provided every 500 to 750 m, but could be every 2 km apart if required, along the cable route. These will be located in hard surface or at edges of fields with the final location to be determined at detailed design. The excavation for this type of chamber would be approximately 1.5 m length, 1 m wide and 1.5 m deep. An example of a fibre chamber is provided in Plate 1 below. These would as standard sit flush to ordinary ground level (OGL).

Plate 1 Example fibre chambers (construction and external appearance)



1.5.3 To construct the joint bays:

1) Joint bay locations would be re-measured to verify their position before excavation commences;
2) Joint bay excavation would be coordinated with the jointing and testing programme to ensure that jointing bays are not left open for longer than necessary.

1.5.4 Following installation of the cables the construction working area for the cable trenches would be fully reinstated back to its original condition.

1.6 Trenchless technologies

1.6.1 Where the need for trenchless technologies is identified at crossing points or Avoidance Areas, feasibility studies will be carried out at the detailed design stage to identify the appropriate technology. Trenchless technologies may include tunnelling, HDD, Pipe Jacking and Horizontal Auger Boring.

1.6.2 Of the trenchless technologies which could be selected, HDD is considered to represent the worst-case scenario in terms of likely environmental effects because it requires the largest area of land to undertake and the most equipment to conduct the works and this has been accounted for in the ES and is described below.

Horizontal Directional Drilling

1.6.3 The sections of the cables that will be installed via HDD require launch and reception pits. Launch and reception pits will be sited outside the Avoidance Areas. An illustrative example of a 25 m x 25 m launch pit working area and layout for a 275 kV connection is included within Annex C.

1.6.4 Activities within the working areas are listed in the sections below. The majority of the preparation for HDD will be undertaken within normal working hours, however continuous working (typically 1-2 days) may be required for drilling as this requires continuous works to complete the operation.

1.6.5 The following methodology activities, subject to final design, would be required for HDD:

1) Site preparation and appropriate surveys.
2) Launch and reception pits would be excavated using a suitable excavator, with any required shoring or battering installed with a temporary works design. Plant and spoil would be placed a safe distance away from the edge of the excavation so as to minimise the risk of the trench sides collapsing.
3) Once the launch pit has been excavated, work would then commence on the initial drill (the 'pilot bore').
4) Upon completion of the pilot bore connecting the launch and reception pits the drill head would be removed from the drill string and reamer would be attached. Reamers would be used to widen the bore until it is of an acceptable size to accept the duct.
5) Once the bore is enlarged to the required size the product pipe would then be connected to the reamer via a swivel for installation.

1.6.6 If field conditions are not suitable to track plant and equipment to the launch and reception pits, 'trackway' or similar ground protection mats would be employed to facilitate access and egress. An area of approximately 25 m by 25 m would be required at the launch pit and the reception pit.

1.6.7 It is anticipated that water-based drilling and bentonite would be utilised. During drilling operations, the fluids pumped through the drill string would be closely monitored by checking volume of returns flowing back to the launch pit. Visual checks would also be carried out across the drill line. If a leak of drilling fluid is identified, the pumping activities would be stopped, and appropriate control measures will be actioned. The Contractor will produce a Bentonite Breakout Plan which will consider potential leakages, their effects and proposed mitigation as outlined within the oCEMP [**EN0110012/APP/LVS/07.02**].

1.6.8 An illustrative HDD cross section is included within Annex B.

Method Statement for HDD

1.6.9 Any works relating to HDD activities will be undertaken in line with a Method Statement. This commitment is secured via the oCEMP [**EN110012/APP/LVS/07.02**]. Strict adherence to the Method Statement will be required when undertaking HDD with any changes requiring approval from the Contractors Project Manager and documented risk assessments. The Method Statement will cover project details, equipment setup, drilling procedures, and the handling of drilling fluids, emphasizing adherence to safety measures and risk assessments. The document will also include details on emergency response procedures, environmental protection strategies, and the use of personal protective equipment. It will also stress the importance of training, supervision, and communication among all personnel involved to ensure the successful and safe completion of the works.

1.7 Worst-case scenario

1.7.1 The ES assesses the reasonable worst-case scenario of effects to account for matters of design detail that are yet to be confirmed. This scenario will vary depending on the discipline. Each discipline defines the worst-case scenario for their respective chapter and assesses it. The worst-case scenario includes consideration of the maximum potential effects associated with both the HDD and open trench construction options.

1.7.2 The worst-case footprint (or maximum area of disturbance) for open cut trenching comprises:

1) Construction working width for the Grid Connection Cables generally anticipated to be up to 25 m;
2) Up to 2 m deep for the Grid Connection Cables;
3) Up to approximately 7 m wide trenched area (inclusive of separation distances where multiple cables are running in parallel) and trenches up to 2 m deep for the Interconnecting Cables; and
4) Approximately 25 m x 25 m launch and reception pit working areas.

1.8 Access points and haul route

1.8.1 During the construction phase a number of access points will be utilised to facilitate access/egress to all land contained within the Cable Route Corridor. The access points are shown on Figure 14.4: Construction Routing (ES Volume 2) **[EN0110012/APP/LVS/06.02.14.04]** and described further in Appendix 14.1: Transport Assessment (ES Volume 3) **[EN0110012/APP/LVS/06.03.14.01]**.

1.8.2 A temporary haul road will be established throughout the Cable Route Corridor to enable vehicles to access the launch / reception pits and open cut trenches.

1.8.3 The majority of the haul road will be constructed using granular material /hard core. Where ground is identified as requiring additional protection e.g. launch and receptor pits aluminium trackway or alternative protection may be used as an alternative to minimise ground disturbance. There may be additional requirement for the haul road to have a wearing course applied to minimise degradation due to ground conditions and runoff.

1.8.4 The haul road will be designed to avoid drainage ditches and watercourses where practicable based on the surface water flood map for the region. Where watercourses cannot be avoided, a range of solutions will be considered including temporary culverts, with the type of crossing selected being determined based on on-site specific factors. Refer to the Crossings Schedule [**EN0110012/APP/LVS/07.01**] for proposed details of the crossing methodology for each watercourse. Temporary culverts are not proposed for the River Ouse, main rivers, IDB watercourses, and WER water body line watercourses and this is secured through the oCEMP [**EN110012/APP/LVS/07.02**].

1.8.5 Save where commitments are made in respect of Avoidance Areas and where temporary culverts have been committed not to be put in place (as discussed above), the Crossing Schedule is not intended to be secured. As such, temporary culverts for haul roads have been assumed as a worst case in the ES.

1.8.6 The haul road will be removed following installation of the Grid Connection Cables and Interconnecting Cables and the land used for the haul road fully reinstated back to its original use.

1.9 Construction

1.9.1 Construction activities will include the following, carried out in accordance with the detailed management plans approved pursuant to the DCO Application Requirements:

1) Site preparation and appropriate surveys;
2) The establishment of mobilisation areas and haul road;
3) Temporary construction compounds;
4) Stripping of topsoil in sections;
5) Trenching in sections. The trench would be cleared and bottomed out, ensuring there are no hard protrusions;

6) Appropriate storage and capping of soil;
7) Sand bedding would be installed at the bottom of the trench
8) Appropriate construction drainage with pumping where necessary;
9) Sectionalised approach of duct installation;
10) Excavation and installation of jointing pits. Excavation would be undertaken using an appropriately sized tracked excavator, excavation will be carried out in layers;
11) Cable pulling;
12) Cable joint installation. Cable installation would follow behind excavation in the same sequence. However, is it not expected that cable installation would be continuous. Cables would be installed in groups or sections to ensure that works are completed in the most efficient manner possible;
13) Implementation of crossing methodologies for watercourses, infrastructure (including roads and rail), and sensitive habitats (e.g. HDD, cable bridging);
14) Testing and commissioning; and
15) Site reinstatement (including habitats). Cable trench excavations would be managed, backfilled and reinstated in a timely manner

Spoil

1.9.2 During construction of the Cable Route Corridor, spoil will be stored temporarily within designated areas adjacent to the cable route and within temporary laydown areas. The spoil will be utilised to backfill the launch and exit pits, reinstate the temporary construction compounds and any temporary access roads. Should any contaminated spoil be identified during construction, this would be transported off site to a licenced waste facility for treatment. It is anticipated that no other spoil will be removed from the Cable Route Corridor.

1.9.3 Measures to manage soil are set out in the Outline Soil Resources Management Plan **[EN0110012/APP/LVS/7.14].**

Construction Compounds and Lay-Down Areas

1.9.4 There will be a number of temporary Cable Construction Compounds along the Cable Route Corridor. The compound locations are shown on the Works Plans **[EN0110012/APP/LVS/02.03]**.

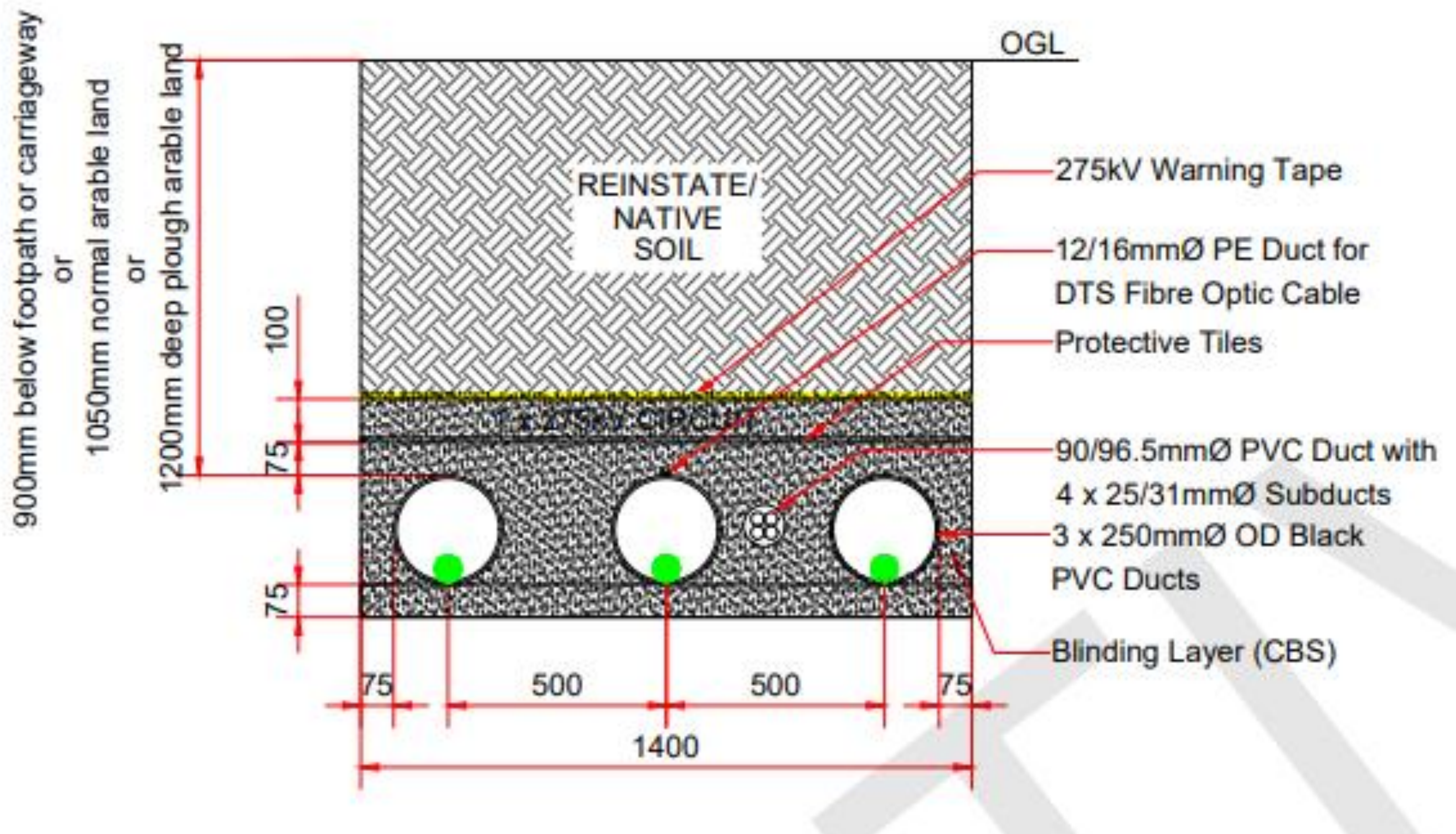
1.9.5 In addition, at each of the Cable Route Corridor access locations, there will be temporary construction laydown areas up to 80 m x 80 m. The laydown areas will allow construction vehicles to turn off the public highway and park safely. Activities at the laydown areas will include receipt of deliveries, unloading, provision of welfare and storage of plant and construction materials. The areas will include portacabins, welfare and power generators and will be secured using heras fencing (or similar) and security cameras. Upon completion of construction, the laydown areas will be removed and the land reinstated.

1.9.6 Aggregates would be stored within the temporary construction laydown areas, while cables and ducts would be stored at the construction compounds.

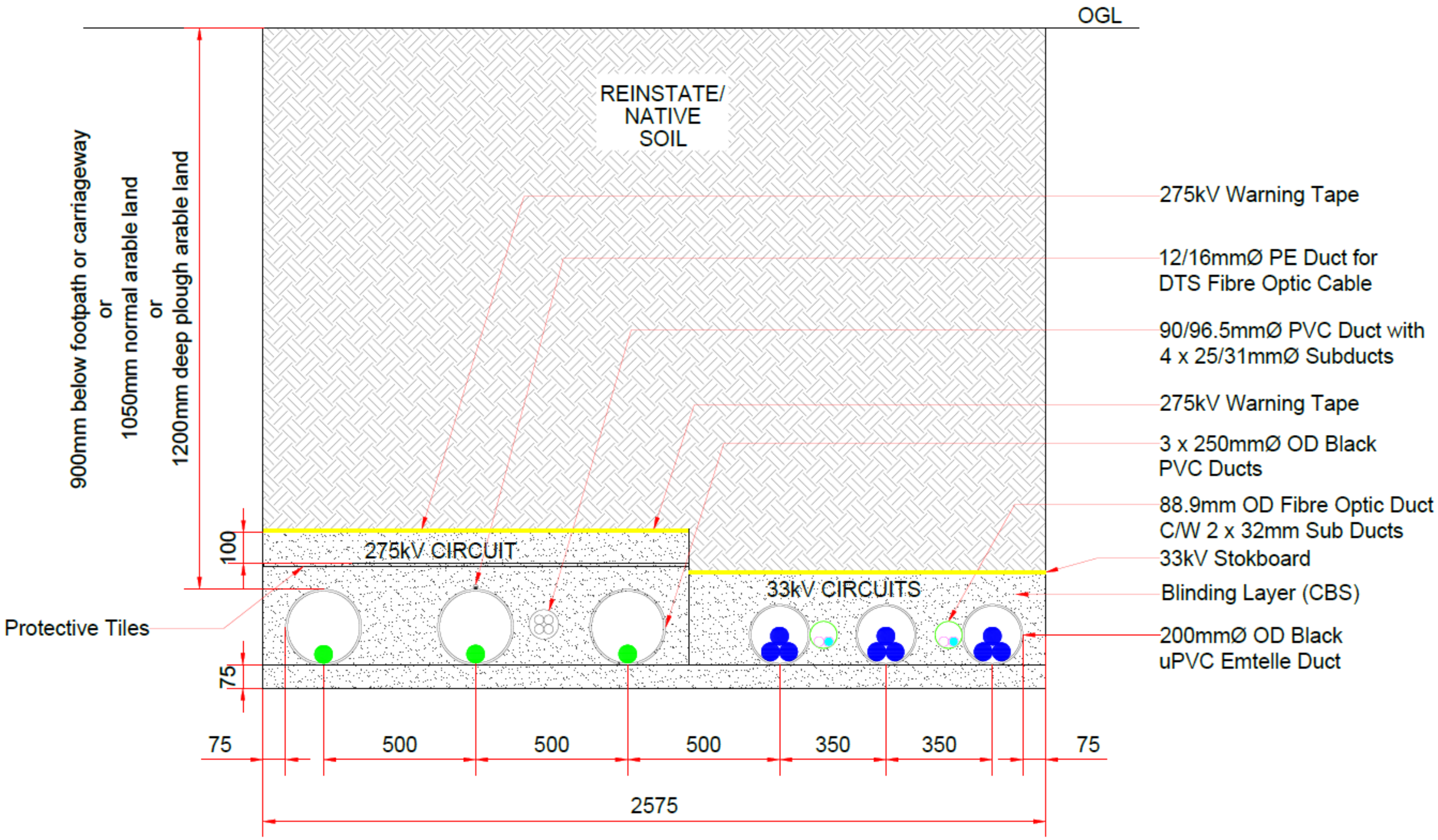
Construction programme

1.9.7 It is anticipated that the construction of the Cable Route Corridor will be undertaken over a 24-month period. Over the anticipated 24-month period, cable installation will follow behind trench excavation / HDD with the cables being installed into the ducts. There will be overlap of up to six weeks between sections as individual joint bays become available and completed bays are backfilled and reinstated.

Annex A Illustrative trench cross-sections



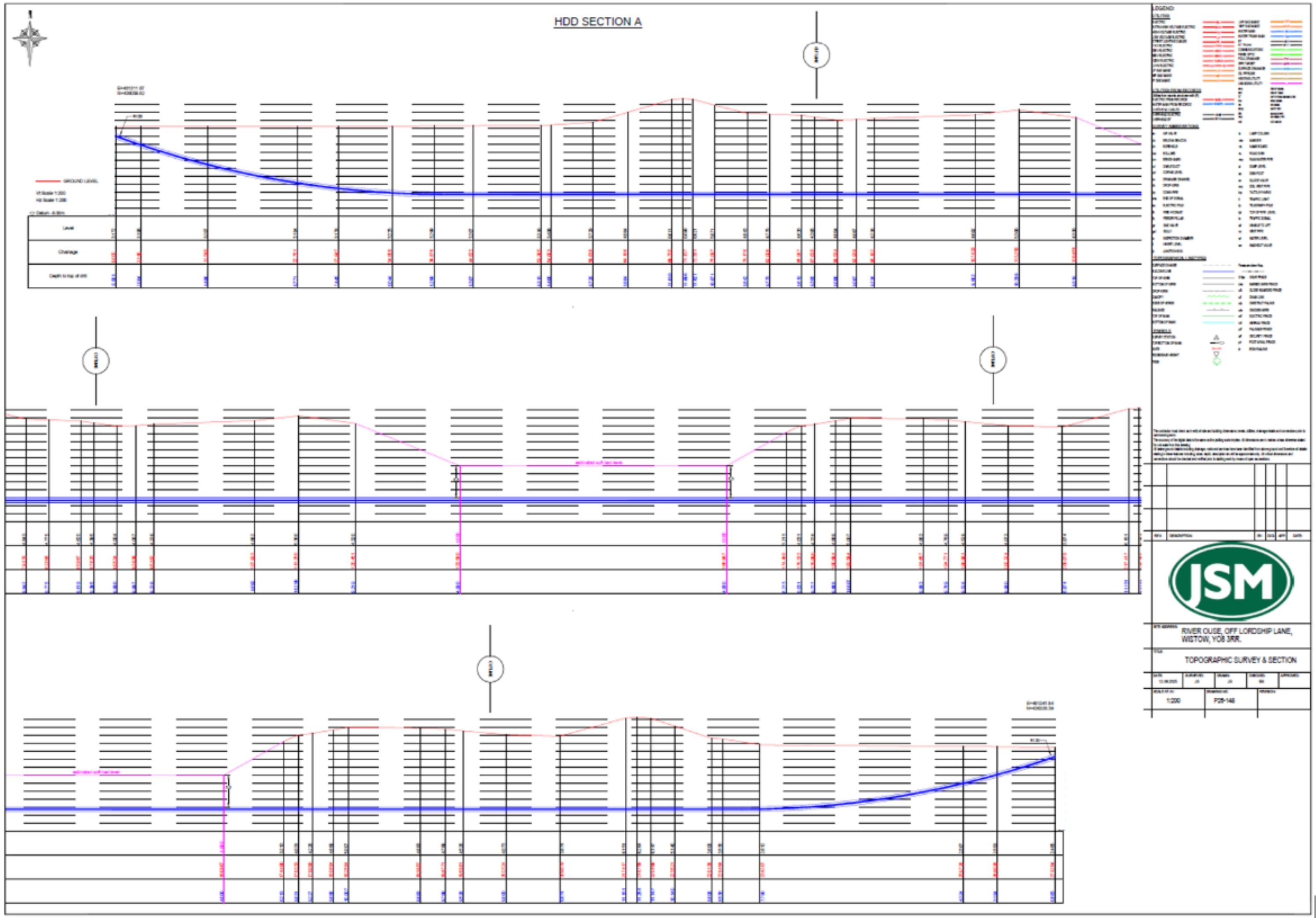
OPENCUT TRENCH
CROSS SECTION
SCALE 1:10



OPENCUT TRENCH CROSS SECTION

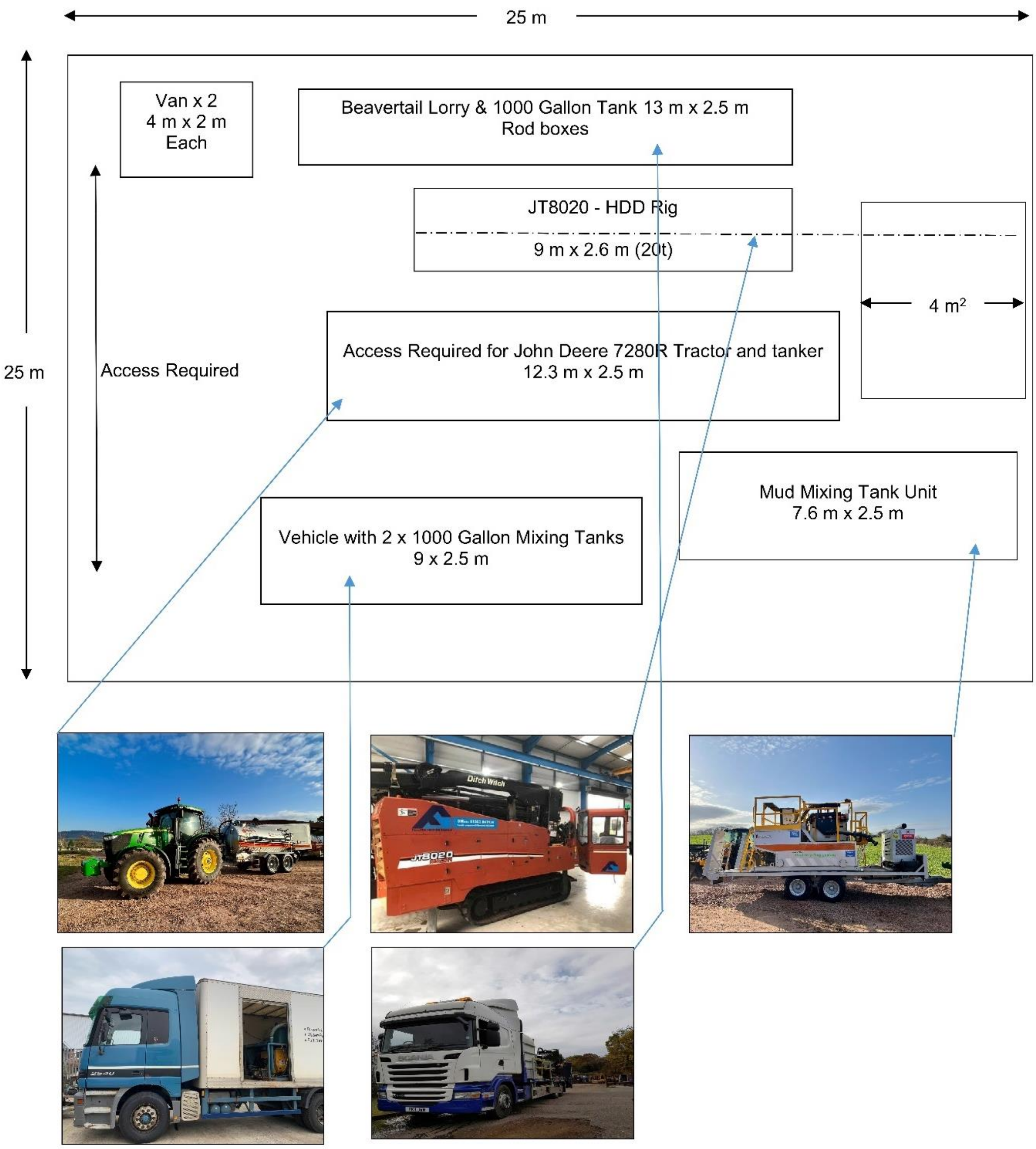
SCALE 1:10

Annex B Illustrative HDD cross sections



Annex C Illustrative 25 m x 25 m HDD launch pit site layout for a 275 kV cable

DRILL SITE LAYOUT SKETCH



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