nationalgrid

Visual Impact Provision (VIP)

Peak District (East) Project

Options Appraisal 2019

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1 Introduction

1.1 Ofgem has agreed a set of price controls and incentives for the period from April 2013 to March 2021. This includes a provision of £500 million for electricity transmission owners to mitigate the visual impact of existing electricity infrastructure in nationally protected landscapes in Great Britain. For National Grid, which is the transmission owner in England and Wales, this means considering the effects of existing infrastructure on the visual amenity and landscapes of National Parks and Areas of Outstanding Natural Beauty (AONBs). National Grid has referred to this as the Visual Impact Provision (VIP).

1.2 National Grid has 571km of overhead line (OHL) which passes through AONBs and National Parks (approximately 7% of the network). This infrastructure mainly comprises existing high voltage (400,000 and 275,000 Volt) OHL.

1.3 In identifying the current VIP projects National Grid has gone through a detailed landscape assessment and site selection process to deliver projects that will achieve the maximum benefits from the financial provision. The project's national Stakeholder Advisory Group (see below) was established in April 2014 to advise National Grid on the evaluation and ultimate selection of potential projects. Schemes prioritised for further development have also benefited from the guidance of local technical Stakeholder Reference Groups. The stages of project identification included:

1) Identification of eligible infrastructure within and affecting the setting of AONBs and National Parks.

2) Assessment of the landscape and visual impacts of all eligible infrastructure.

3) Identification of mitigation options.

4) Prioritisation of selected sections of overhead line for further project development in conjunction with the Stakeholder Advisory Group.

5) Detailed project development by National Grid, guided by national and local stakeholders including technical Stakeholder Reference Groups and feedback from the public.

Stakeholder Advisory Group

1.4 A national Stakeholder Advisory Group (SAG) was set up by National Grid in April 2014 and comprises organisations dedicated to conserving the landscape and countryside throughout England and Wales. Representatives from a range of organisations form the group including Historic England, Natural England, Natural Resources Wales, the Landscape Institute, National Trust, CPRE, CPRW, the Ramblers Association, National Parks Wales and National Parks England. This group was established to help National Grid to identify and select those projects which use the provision in the most efficient way and deliver maximum benefit in terms of enhancing the landscape. The SAG helps National Grid to make decisions according to the guiding principles set out in the VIP policy document (which was confirmed as fit for purpose by Ofgem in March 2014 and again after being updated in April 2018). The guiding principles are to prioritise potential projects which:

- Result in greatest landscape enhancement benefits.
- Result in greatest opportunities to conserve and enhance natural beauty, wildlife and cultural heritage whilst avoiding unacceptable impacts on the natural and historic environment.
- Result in greatest opportunities to encourage public understanding and enjoyment of the protected landscapes, including positive socio-economic impacts.
- Are technically feasible in the context of the wider transmission system.
- Are economical and efficient.

1.5 This approach ensured fairness and balance in decision making to help select projects to prioritise for further development.

1.6 National Grid research indicated that the majority of consumers favoured 'undergrounding' to mitigate visual impact, followed by screening with trees, use of an alternative 'T-pylon' and re-routeing.

Assessment of Landscape and Visual Impacts in Priority Areas

1.7 To assist in determining the VIP projects to be taken forward, National Grid appointed expert landscape consultants to carry out landscape assessments of its overhead line in English and Welsh AONBs and National Parks.

1.8 Following the results of the landscape and visual impact assessment (National Grid Visual Impact Provision Landscape and Visual Impact Assessment of Existing Electricity Transmission Infrastructure in Nationally Protect Landscapes in England and Wales – Technical Report 2014[1]), covering all 571km of OHL within the scope of the VIP project, those sections of OHL which had the greatest visual impact on the surrounding landscape were identified.

1.9 The SAG reviewed the report and endorsed its findings, shortlisting 12 sections of OHL in eight AONBs and National Parks as having the most significant landscape and visual impact. Each of the short-listed AONBs and National Parks were studied to examine their ecology, archaeology, land ownership, geology and a range of other important factors including views obtained during stakeholder engagement.

1.10 Stakeholder Reference Groups (SRG)[2] were formed in the eight shortlisted areas to provide additional technical guidance and local insight on the potential projects.

Options Appraisal and Final Selection

1.11 An initial Options Appraisal (OA) report was prepared (May to July 2015) for each of the 12 shortlisted areas to consider all available options. A further shortlist of the projects was prioritised for further detailed work by the SAG. The SAG considered a wide range of factors and in September 2015 recommended that the following four projects be taken forward for potential engineering work:

- Dorset Area of Outstanding Natural Beauty (AONB)
- New Forest National Park
- Peak District East National Park 4ZO.2
- Snowdonia National Park

1.12 The section of OHL prioritised by the SAG within the Peak District National Park (Peak District East 4ZO.2) runs from a sealing end compound (SEC) near the eastern entrance of the Woodhead Tunnel at Dunford Bridge in the west, along the National Park boundary and then eastwards through the Upper Don Valley towards Castle Hill. The total section of line initially considered in this section was approximately 2.37km in length, and is shown in the context of the National Park in Figure 1.1 taken from the 2015 Options Appraisal report for the Peak District East Project[3]. It was identified by an independent landscape study as having some of the greatest impacts on landscape and visual amenity.

[1] National Grid Visual Impact Provision Landscape and Visual Impact Assessment of Existing Electricity Transmission Infrastructure in Nationally Protect Landscapes in England and Wales. (https://www.nationalgridet.com/document/84141/download)

[2] To guide the project at a local level, an independent Stakeholder Reference Group (SRG) was established to create open dialogues with local stakeholders, benefit from local knowledge of the area, keep them informed about the project and establish their priorities for using the Visual Impact Provision funding.

[3] Visual Impact Provision – Peak District National Park Eastern Section Options Appraisal Study (http://peakdistricteast.nationalgrid.co.uk/wp-content/uploads/2016/06/150821-Peak-District-East-DOR-for-SAG.pdf)

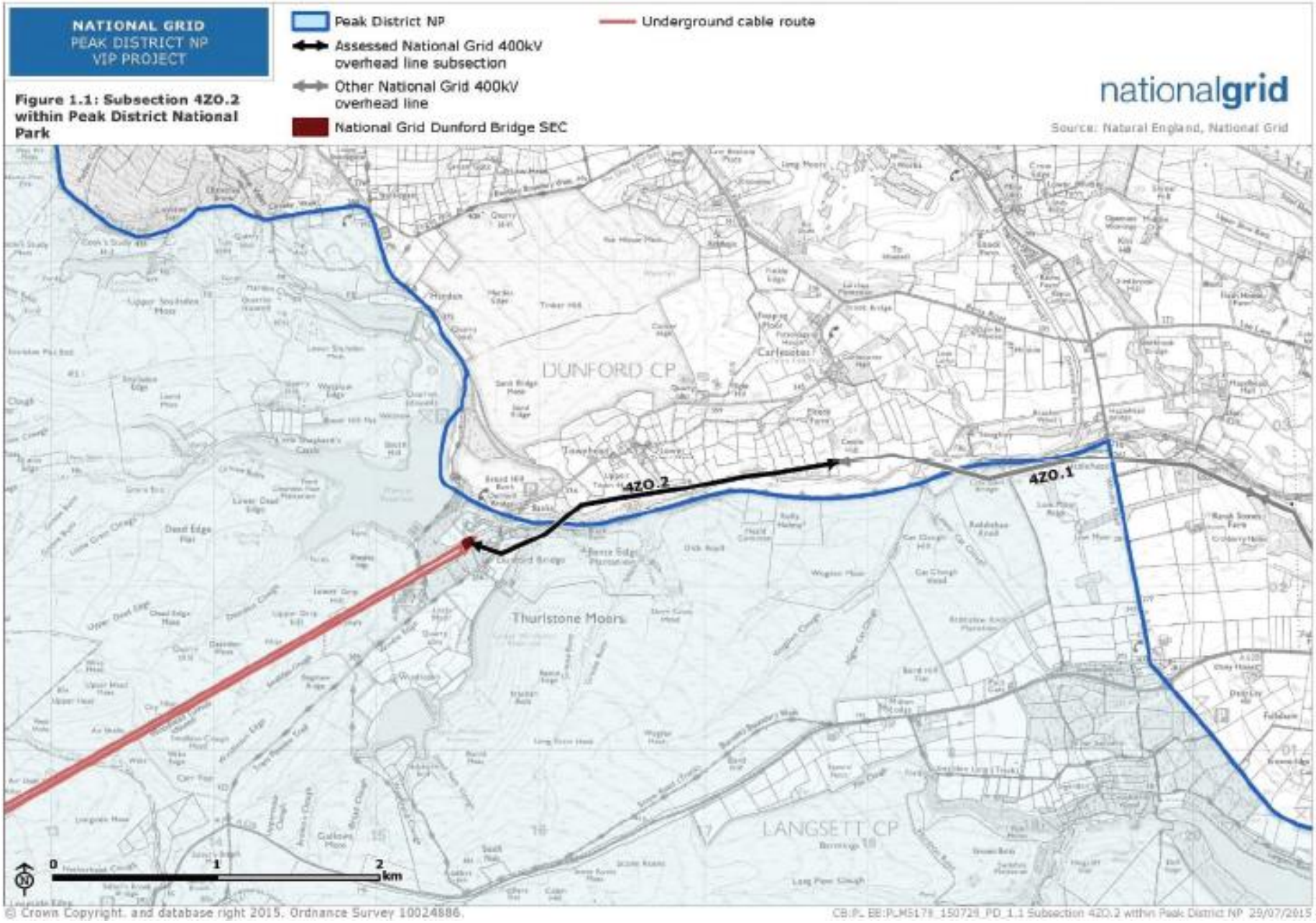


Figure 1.1: Subsection 4ZO.2 within Peak District National Park

OHL 4ZO.2 (Peak District (East) National Park)

1.13 The 4ZO.2 section of OHL is part of the 400kV electricity route connecting Stalybridge, Stocksbridge and Thorpe Marsh 400kV substations. The OHL was constructed between 1966 and 1967 with L6 standard lattice pylon design. There is a high voltage cable section installed in the Woodhead Tunnel between Dunford Bridge and Woodhead connecting the eastern and western section of the OHL. The substations at Stalybridge serve as a connection point for the local distribution network for the Manchester area.

1.14 The most notable visual impact of this section on the landscape is associated with the western part of the OHL, in particular the SEC at Dunford Bridge and first few pylons. These are situated in elevated locations above and around the village and the car park for the Trans Pennine Trail, which are highly visible on the local skyline. The pylons are also highly visible at the Dunford Bridge car park, which many visitors use when coming to walk and enjoy the scenery along the easily-accessible Trans Pennine Trail, including people using nearby National Cycle Routes and those participating in watersports at Winscar Reservoir.

1.15 The information in the 2015 Options Appraisal Study was consulted on with the Peak East SRG prior to this being shortlisted as one of the prioritised projects to be taken forward for further development by the SAG. The SRG at that time consisted of attendees from: Peak District National Park Authority, Barnsley Metropolitan Borough Council, Natural England, the Trans Pennine Trail Office and Dunford Parish Council.

1.16 The 2015 Option Appraisal Study considered three potential mitigation solutions. These were:

- **Option 1: Alternative Pylon Design** (comparison of conventional lattice pylon, low height lattice pylon and T-pylon). The alternative pylon design was rejected in the study as it would not offer sufficient benefits. In order to maintain the current route alignment, the existing line would have to be temporarily diverted during construction work. This temporary diversion would require the construction of a new OHL route which would in turn require consent. Discussion of this option with the project team, together with the feedback from the stakeholder engagement, indicated that this option would not sufficiently mitigate the landscape and visual impacts of the OHL in, and adjacent to, the National Park. Lower, alternative structures would still be highly visible in the landscape and would not negate the need for the SEC at Dunford Bridge which has some of the greatest impacts on visual receptors. The development of alternative pylon designs was therefore considered not to offer sufficient mitigation of the landscape and visual effects, particularly in relation to Dunford Bridge. This option was not investigated further.

- **Option 2: OHL on Alternative Route Alignment** (either using conventional lattice or alternative pylon design). The greatest impact of 4ZO.2 is associated with the SEC and the pylons around Dunford Bridge so the likely landscape and visual effects of a new line on an alternative alignment would therefore remain significant. An alternative route alignment would not remove the need for the SEC and would also have to negotiate around Dunford Bridge. Additionally, as the existing route is relativity straight, any re-routeing of the line could involve an increase in the number of pylons. This option was not investigated further.

- **Option 3: Underground Cable- Direct Burial/ Cable Troughs**. Undergrounding was the preferred option of both the report (Peak East Options Appraisal Study 2015), the SAG and the SRG. Stakeholders agreed that the best way to reduce impacts would be to remove a section of this OHL and replace it with electricity cables buried underground. It was felt that screening or camouflaging pylons would not have sufficient benefit. The cable route would start where existing cables emerge from the eastern end of the Woodhead Tunnel. The existing SEC would be removed, and a new SEC would need be located at the other end of the cable route, to achieve the transition from an OHL to an underground cable. A terminal pylon would form the end of the OHL, with a fenced SEC approximately 80m by 40m. Two indicative options were initially identified for an underground cable connection both of which had the potential to mitigate the impacts on the National Park sufficiently to be investigated further as follows:

    - ***Option 3a*** sought to mitigate the highest impacts of subsection 4ZO.2 which are experienced in and immediately around Dunford Bridge. This corridor option runs from the existing SEC to an area south of Townhead and encompassed a relatively wide corridor to allow for exploration of routes to the north and south of the Upper Don River; and

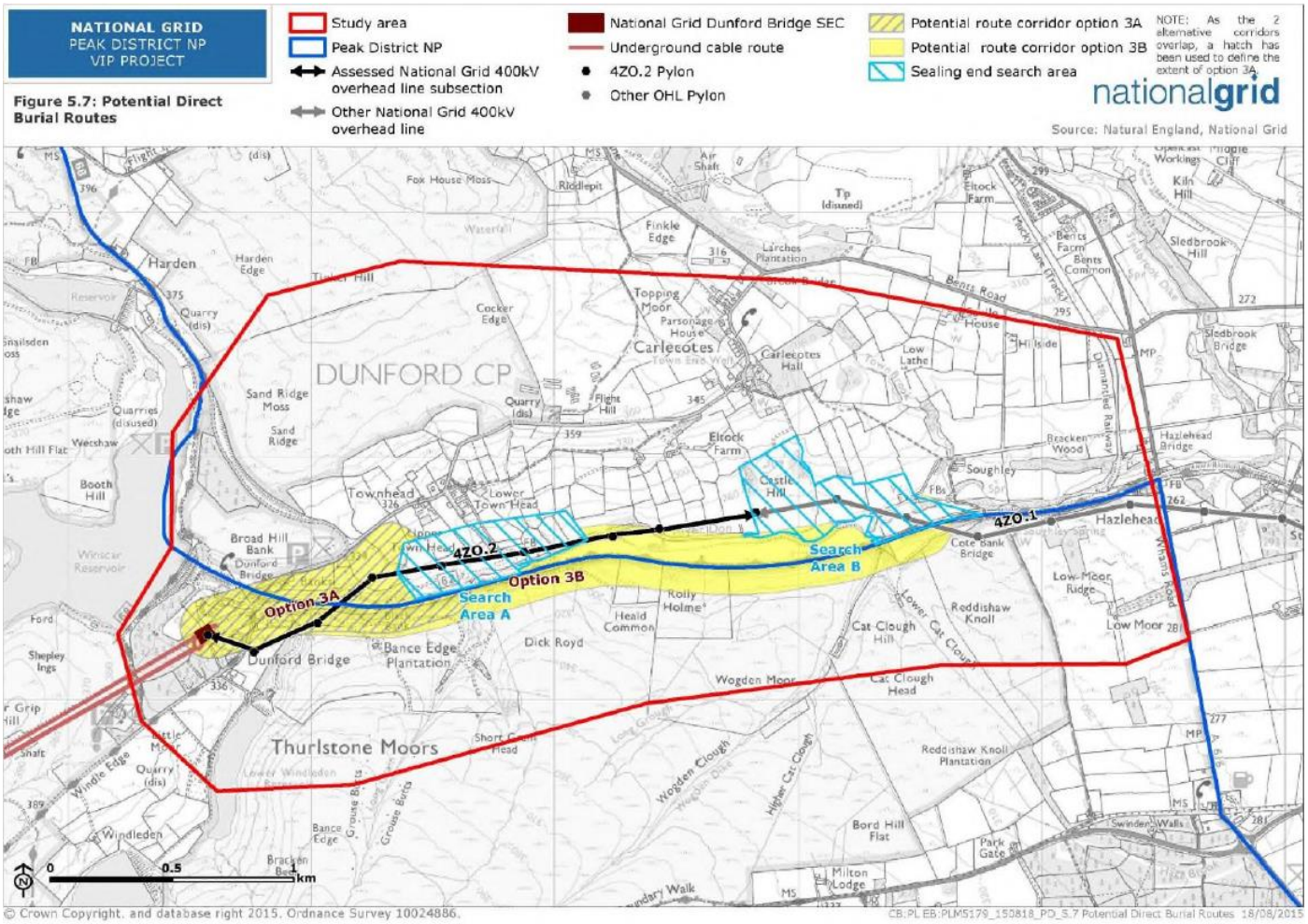
    - ***Option 3b*** was a longer option which sought to mitigate the full length of subsection 4ZO.2.

1.17 Two Search Areas for SECs were also identified in relation to the above as follows:

- Search Area A identified for Option 3a located to the south of Townhead; and
- Search Area B identified for Option 3b located to the south of Castle Hill.

1.18 Option 3b had the potential to be approximately three times longer than Option 3a. Although this longer option would remove the entire length of the subsection it was not considered by the stakeholders to provide proportionately more mitigation benefits than Option 3a. The greatest landscape and visual impacts occur in the west around Dunford Bridge and these impacts could be mitigated by Option 3a. As Option 3a is much shorter it was also anticipated to be preferable on economic and efficiency grounds, in particular due to the fact that Option 3b provides only marginally more landscape and visual benefits. The SRG also discounted the Castle Hill SEC option as it would have been difficult to accommodate a SEC in this more open area, which could make the visual impact of the infrastructure in the area potentially worse.

The proposed project prioritised to be taken forward by the SAG for further detailed work in September 2015 was Option 3A with a SEC in the area of Search Area A. The SEC Search Areas described in the 2015 Options Appraisal report are shown on Figure 5.7 below.



Proposed Project Options Appraisal (2015 – 2019)

1.19 This Options Appraisal Report (2019) summarises the options considered during further project development of the selected subsection of 4ZO.2 taken forward by the SAG - Option 3A. It follows on from the previous reports referenced including the National Grid Visual Impact Provision Peak District Eastern Section Options Appraisal Study (2015) and National Grid Visual Impact Provision Landscape and Visual Impact Assessment of Existing Electricity Transmission Infrastructure in Nationally Protect Landscapes in England and Wales – Technical Report (2014) and National Grid Visual Impact Provision Policy Document (2013, reviewed 2017).

1.20 The contents of this report are structured as follows:

- Section 2 - Methodology – sets out the methodology adopted for the more detailed options appraisal;
- Section 3 – Baseline Environment
- Section 4 – Routing and Siting Options
- Section 5 – Preferred Option
- Section 6 – Options for Temporary Working Areas
- Section 7 - Summary and Conclusions

2 Methodology

2.1 This appraisal follows the general principles set out in National Grid's document 'Our approach to Options Appraisal' (2012). Options appraisal provides a framework against which technical, socio-economic, environmental and cost topics can be considered in selecting project options. The topics and subtopics set out in 'Our approach to Options Appraisal' are presented in Table 2.1.

Table 2.1: Option Appraisal Topics and their constituent sub-topics for consideration as relevant

Topics	Subtopics
Environmental	Landscape and Visual Amenity; Ecology; Historic Environment; Local Air Quality; Noise and Vibration; Soils and Geology; Water
Socio- Economic	Economic Activity; Traffic and Transport; Aviation and Defence
Technical	Technical Complexity; Construction/Project delivery (including resource use and waste); Suitability of Technology; Network Capacity; Network efficiency /benefits (which includes energy efficiency)
Cost	Capital Cost, Lifetime Cost

2.2 Only the subtopics that are able to help differentiate between the options are considered. Information from the baseline surveys, desk-based research and engagement with stakeholders was used to inform the options appraisal process.

2.3 Cost was not covered as a topic for the options appraisal work undertaken. While cost is an important factor to consider for the project, the highly constrained nature of the site resulted in the technical feasibility and environmental/socio-economic considerations being the overriding factors in terms of decision making. Therefore the final decision for the preferred option was heavily influenced by the technical and environmental assessments and input from stakeholders.

2.4 The options appraisal was initially based on a conventional XLPE 2 cable per phase solution. During the course of project development further confirmation on the required ratings resulted in a single cable per phase solution being feasible. This did not result in any changes to the outcome of the options appraisal. Where technical differences for a single cable per phase solution occurred these are identified on the Options Figures at Appendix 2. A narrower swathe required for one cable per phase could result in reduced environmental effects with less land take required.

2.5 National Grid aims to be a leader in the development and operation of safe, reliable and sustainable energy infrastructure. One of the cornerstones of its strategy is to stimulate innovation and promote new ideas to work more efficiently and effectively. From the start of the project, the SAG has also challenged National Grid to explore innovative ways of delivering the VIP projects.

2.6 National Grid has looked at a number of innovative technological solutions alongside conventional XLPE cable for all of the VIP projects. Therefore although the Options Appraisal work was initially undertaken based on the use of XLPE cable technology, as the project has progressed Gas Insulated Line (GIL) technology has also been considered as an alternative method of electricity transmission for the project.

2.7 The options appraisal work undertaken was reviewed and updated for GIL technology in 2018, but this did not result in any significant changes to the available options or the conclusion on the preferred option taken

forward. The review concluded that the same engineering challenges and constraints largely applied for GIL as for traditional XLPE cable. In addition for the options that involved the use of a Horizontal Directional Drill these were not considered technically feasible with GIL technology due to the HDD construction technique.

2.8 Where differences for GIL occurred these are identified on the Option Figures at Appendix 2.

3 Baseline Environment

3.1 An overview of the baseline environment within the Search Area is provided in this section.

SEC Search Area

3.2 Following on from the initial areas identified in the 2015 Options Appraisal Study the site boundary evolved into the 'Search Area for Permanent Development' for inclusion in the Scoping Report in July 2016. This Boundary included the SEC search area south of Townhead, which comprised land on the lower slopes of the Upper Don Valley north of the river, and land south of the river within and adjacent to Wogden Foot Local Wildlife Site (LWS). This was to enable options south of the River Don to be considered should a river crossing to a SEC north of the river pose significant engineering or environmental constraints. Due to its location, a SEC south of the river could also have the added benefit of removing a further two pylons providing additional landscape and visual benefit.

Search Area for Permanent and Temporary Works

3.3 A 'Search Area for Permanent and Temporary Works' which encompassed the 'SEC Search area' evolved as the design of the project progressed. The 'Search Area for Permanent and Temporary Works' (hereafter referred to as the 'Search Area') was initially established to assist with screening the Project under the Town and Country Planning Environmental Impact Assessment (EIA) Regulations, scoping the content of the Environmental Assessment Report and to identify Study Area's for baseline data collection purposes. The Search Area used for environmental assessment purposes is shown in Appendix 1 (drawing Fig 3.1). This overall Search Area (which encompassed the SEC search area) was drawn to take account of potential route alignment options, construction compounds, on site lay down areas and temporary access routes. An overview of the baseline environment within the Search Area is provided in this section.

Planning Policy

3.4 The Search Area lies within the administrative boundary of Barnsley Metropolitan Borough Council and the Peak District National Park Authority. In determining the planning application, Barnsley Metropolitan Borough Council and the Peak District National Park Authority will take into account the following development plan documents:

- Barnsley Local Plan (BMBC, Adopted 2019);
- Barnsley Trees and Hedgerows (SPG) (BMBC, 2012); and
- Barnsley Walls and Fences (SPG) (BMBC, 2003).
- Peak District Local Development Framework Core Strategy Development Plan Document (PDNPA, 2011); and
- Peak District National Park Authority Development Management Policies: Part 2 of the Local Plan (2019).

3.5 For further information as to how the Proposed Project has considered the planning policy rationale associated with the Proposed Project, and the extent to which the Proposed Project complies with relevant planning policy please refer to the Planning Statement produced to accompany the planning application.

Landscape and Visual

3.6 Key landscape and visual considerations are as follows:

- The Peak District National Park runs to the South and West of the Search Area.
- The Majority of the Search Area is divided between two National Landscape Character Areas (NCA); 51: Dark Peak in the west and 37: Yorkshire Southern Pennine Fringe in the east.

- The Search Area sits at the junction of three separate regional landscape character assessments, the Peak District National Park Authority Landscape Strategy and Action Plan 2009 – 2019 (2009) , the Barnsley Borough Landscape Character Assessment, (2002) and the Kirklees District Landscape Character Assessment (2015).
- Within the Search Area there are numerous opportunities for recreational activities such as walking, horse riding, cycling, water sports and bird watching. Parts of the Trans Pennine Trail, National Cycle Route 62, the Upper Don Valley Trail and the Kinder Loop long distance bridleway follow the route of the former rail line between Hazlehead and Dunford Bridge. The area is popular with walkers.
- Views within the Search Area are experienced by surrounding local communities (Dunford Bridge, Townhead, Carlecotes), recreational users of the PRoWs and trails which run through the Search Area, users of local leisure facilities (Thurlmoor Camping and Caravan Site, Pennine sailing club, car parks and picnic areas), and those using transport routes.
- Visual amenity is generally open with long distance views gained from elevated locations within the Search Area, although views from the from the valley floor tend to be contained by localised variations in topography and by the woodland concentrated along the Upper River Don corridor and Trans Pennine Trail.

Ecology

3.7 There are three statutory designated sites; Peak District Moors (South Pennine Moors Phase 1) Special Protection Area (SPA), South Pennine Moors Special Area of Conservation (SAC) and Dark Peak Site of Special Scientific Interest (SSSI) within a 2km radius of the Search Area. These sites are designated for their important heathland and grassland habitats (SAC and SSSI) and as a SPA based upon their importance for birds. It is not proposed that any part of the works would be located within the designated site boundaries.

3.8 Two non-statutory designated sites; Wogden Foot Local Wildlife Site (LWS) and Western Moors LWS are located entirely or partially within the Search Area. Western Moor LWS forms the majority of the land located to the south of the Trans Pennine Trail. Wogden Foot LWS comprises of former railway sidings land located between the Trans Pennine Trail and the River Don. Both sites are predominantly designated for their botanical/habitat interest.

3.9 The Search Area consists of a variety of habitats including woodland (coniferous plantation, mixed plantation and broadleaved), scrub, grassland (improved, poor semi-improved, semi-improved and unimproved), arable, dry heath/acid grassland mosaic, bracken stands, amenity grassland, standing water and running water although, generally the most botanically diverse habitat types present within the Survey Area are those associated with Wogden Foot LWS. Three distinct grassland communities were identified within Wogden Foot LWS; two mesotrophic neutral grassland communities and an acidic grassland community. Most of the grassland present was neutral unimproved grassland attributable to NVC MG5 community.

3.10 Beyond habitats within Wogden Foot there are other areas of moderate botanical interest including small areas of species rich grassland that support a high cover of herbs and a number of common orchid species along the Trans Pennine Trail.

3.11 Following ecological surveys, the Search Area is known to be used by the following protected species:

- Bats in terms of general commuting and foraging activity, and the presence of one small, non-breeding bat roost site within one of the culverts located beneath the Trans Pennine Trail;
- Breeding Birds including willow tit;
- Wintering Birds;
- Invertebrates;
- Reptiles (small population of common lizard); and
- Riparian Species (Water Vole and Otter suitable habitats).

Historic Environment

3.12 Key archaeological and cultural heritage considerations are as follows:

- There are no scheduled monuments, conservation areas, registered battlefields, registered parks and gardens or world heritage sites within the Search Area.
- Within the Search Area there are 7 Grade II listed buildings (Dick Royd Farmhouse and attached barn, the Barn to Upper Town Head Farm, the barn at Softley (Soughley) Farm, Carlecotes Hall, Church of St

Anne and barn adjoining The Green at Carlecotes, old milestone approximately 100m south of the junction with Bents Road).

- There are 7 non-designated heritage assets recorded within the Search Area on the NRHE, SMR and HBSMR databases (Post-Medieval Toll Bar Cottage, Sheffield Ashton Under Lyne and Manchester Railway, Woodhead Tunnel, Dunford Bridge Station, Hazelhead Railway Station House, Savile House Post-Medieval Laithe House, Disused Mineral Railway- Dunford).
- Further investigations will be carried out which may identify unknown additional heritage assets within the working area. These investigations are covered in detail in the archaeological written scheme of investigation.

Local Air Quality

3.13 The Search Area is not located within an Air Quality Management Area, with the nearest located approximately 4km away in the village of Langsett due to exceedances of the annual mean Air Quality Strategy (AQS) objective for nitrogen dioxide (NO_2). A review of the Barnsley Metropolitan Borough Council 2016 Air Quality Status Report has indicated that the nearest monitoring sites are located within Langsett. Due to the distance between the Search Area and the monitoring locations, similar air quality concentrations are not anticipated and this source of data has not been considered further. Defra has published air pollution background maps across the UK. A review of the Barnsley maps has indicated that the average concentration for 2016 is predicted to be 14.4µgm^3 for NO_2 and 14.2µgm^3 for $PM_{10.}$ These concentrations are well below the Air quality Strategy Objective (ASO) objective of 40 µgm^3 for both NO_2 and PM_{10}.

Noise and Vibration

3.14 The Search Area is largely rural with few noise and vibration sensitive receptors. However, there are some isolated receptors within, and close to, the Search Area which have the potential to be affected by noise from construction and decommissioning works dependent on the separation distance to construction works.

3.15 A baseline noise survey was undertaken in April 2017, at locations agreed with Barnsley Metropolitan Borough Council. The baseline noise data has been rounded off to the nearest 5dB and compared against the threshold values as follows:

Table 3.1: Noise Monitoring Locations

Location	LAeq	Nearest 5 dB	Category
LT1 Don View	47.9	50	Category A
ST1 Windle Edge	54.8	55	Category A
ST2 Brook Hill	47.4	40	Category A
ST3 Eltock Farm	48.0	50	Category A
ST4 Hillside	51.5	50	Category A
ST5 Pennine View	51.3	50	Category A

3.16 The noise survey indicated that the area is typically quiet, with road traffic the most prominent noise source, in accordance with the ABC method in BS 5228 this identifies that the Proposed Project must therefore be designed to work within the more stringent Category A noise limits.

Land Use, Agriculture, Soils and Geology

3.17 Key considerations are as follows:

- The majority of the land within the Search Area comprises pastoral farmland. The land is generally of poor quality, with topography and soil characteristics limiting its productivity.
- Within the Survey Area there are areas of Open Access Land (Thurlstone Moor, North of Windle Edge (Road)) and Common Land (North of Windle Edge (Road)).

- Soil types within the Search Area are comprised of blanket bog peat soils in the western portion of the Search Area as well as the southern and eastern slopes. The lower slopes consist of very acid loamy upland soils with a wet peaty surface. In the low-lying areas within the valley slowly permeable, seasonally wet acid loamy and clayey soils are present. These soil types have very low natural fertility.
- Areas of Made Ground and potentially infilled land were identified across the Survey Area, during ground investigations made ground varied significantly across the Search Area which was expected given historical development within the Search Area.
- The land in the Search Area is defined as a 'Less Favoured Area' for agriculture, falling under ALC Grade 5 land. This is an EC Designation which provides special measures to assist farming in the areas designated (mainly upland) areas where the natural characteristics make it difficult for farmers to compete. The land is described as very poor quality agricultural land with very severe limitations which restrict its use to permanent pasture or rough grazing.

Water

3.18 Key considerations are as follows:

- The River Don passes through the Search Area, flowing west to east from Winscar reservoir. At this location, the River Don is classed as an ordinary watercourse.
- A number of small tributaries flow into the River Don, mainly from the south. These include Smallden Clough, Clough Beck, Long Grain including its tributary Short Grain, and Wogden Foot. These streams, with the exception of Smallden Clough, are culverted under the Trans Pennine Trail before flowing into the Upper Don. Smallden Clough is culverted under Dunford Bridge. Town Brook flows from the north into the River Don.
- Many drains (small streams), plus 'issues' and 'grains' (i.e. natural channels or fissures in a peat moor), flow in a northerly direction into the River Don, from Thurlstone Moors. These streams are culverted under the Trans Pennine Trail.
- The bedrock beneath the Search Area has been classified as a Secondary A Aquifer.
- No groundwater Source Protection Zones (SPZs) or designated sites for geological protection have been identified within the Search Area.
- There are 11 ponds within the Search Area that have been assessed by ecologists.
- There is one licensed surface water abstraction (2/27/05/026), and no licensed groundwater abstractions within the Search Area.
- Flood Zones 2 and 3 are present along the River Don.
- Potential for flooding exists from rainfall, failure of local reservoirs and groundwater sources.

Traffic and Transport

3.19 The highway network immediately around Dunford Bridge predominantly comprises lanes and unclassified roads which link the scattered settlements and individual farmsteads and properties. Windle Edge, an unclassified road, runs southwest from Dunford Bridge to the A628 and north-east to the B6106 Holmfirth to Penistone road. The A628, which forms part of Highways England's Strategic Road Network (SRN), is a key Trans Pennine route that links the site with destinations to the west and east.

4 Routing and Siting Options

4.1 This section of the report summarises the constraints to undergrounding the 400kV OHL using various routing options and locations to site the proposed SEC. The main constraints in the vicinity of the Proposed Project include:

- steep gradients/topography. The existing OHL runs through a valley with steep slopes in the surrounding farmland, and cloughs to the south of the Trans Pennine Trail;
- the River Don dissects the valley and would require crossing for any potential cable route/SEC options north of the river;
- space constraints within the valley, taking into account the existing OHL, Yorkshire Water facilities, the Trans Pennine Trail visitor car park, the River Don and its associated steep banks, the need to minimise

tree loss to maintain a wildlife corridor along the River Don corridor and equipment within the existing National Grid Dunford Bridge SEC;
- insufficient space to install an underground route in the most efficient way;
- proximity of residential properties to the proposed project within Dunford Bridge and the surrounding area;
- the Trans Pennine Trail and its users, which if affected is to be reinstated as per its current alignment to the same or an improved standard. Maintaining a suitable alternative diversion for the Trans Pennine Trail during construction if affected;
- designated ecological sites, protected species and mature trees. Wogden Foot LWS falls within the Search Area for permanent development and the SEC Search Area. Western Moors LWS falls immediately to the south of the Trans Pennine Trail. There are also a number of national/international designations (SPA, SSSI and SAC) in the surrounding elevated moorlands;
- archaeological assets, notably Listed Buildings; and
- permanent accesses.

4.2 The main options for undergrounding the OHL considered were:

- **Option 1A:** Cable bridge from Dunford Bridge Car Park with a cable route and SEC to the north of the River Don (note the cable route proposed is further south than that suggested in Option 1B below)
    - Emerges from the Woodhead Tunnel
    - Potentially requires the use of a cable jointing building within the existing National Grid compound if two cable-per-phase arrangement was taken forward (should GIL technology or one cable per phase be the preferred option the cable jointing building would not be required)
    - Crosses the Dunford Bridge car park that services users of the Trans Pennine Trail
    - Route travels east on an existing farm track to connect into a new SEC on the northern side of the River Don (requirement for a cable bridge, likely to be a 12m wide concrete bridge with security fencing).

- **Option 1B:** Cable bridge from Dunford Bridge Car Park with a cable route and SEC to the north of the River Don (note the cable route proposed is further north than that suggested in Option 1A above)
    - Emerges from the Woodhead Tunnel
    - Potentially requires the use of a cable jointing building within the existing National Grid compound if two cable-per-phase arrangement was taken forward (should GIL technology or one cable per phase be the preferred option the cable jointing building would not be required)
    - crosses the Dunford Bridge car park that services users of the Trans Pennine Trail (requirement for a cable bridge over the River Don east of the car park area, likely to be a 12m wide concrete bridge with security fencing).
    - Routes via higher ground around the perimeter of a band of woodland crossing it at its narrowest point. It then routes south to join an existing farm track to connect into a new SEC on the northern side of the River Don.

- **Option 2:** Horizontal Directional Drill (HDD) under the River Don from Dunford Bridge Car Park with a cable route and SEC to the north of the River Don.
    - Emerges from the Woodhead Tunnel
    - Potentially requires the use of a cable jointing building within the existing National Grid compound if two cable-per-phase arrangement was taken forward (should one cable per phase be the preferred option the cable jointing building would not be required)
    - The HDD launch area would occupy the car park which services users of the Trans Pennine Trail
    - The HDD would drill beneath the River Don with a receiver area on the north of the River. The cable route would connect into a SEC on the northern side of the River Don using direct burial and cable troughs due to the steep gradient of the ground.
    - It should be noted that it is not technically feasible to use a GIL technology for this option due to the use of HDD construction technique

- **Option 3:** HDD under the River Don from the Trans Pennine Trail with a cable route and SEC to the north of the River Don
    - Emerges from the Woodhead Tunnel
    - Potentially requires the use of a cable jointing building within the existing National Grid compound if two cable-per-phase arrangement is taken forward (should one cable per phase be the preferred option the cable jointing building would not be required)
    - The HDD launch area would encroach into a local wildlife site, the National Park and utilise a large area along the Trans Pennine Trail

    - A combination of direct burial and cable troughs would be used along the Trans Pennine Trail to the launch area. Following this the HDD would drill beneath the River Don to connect into a SEC on the Northern side of the River Don. The HDD launch area would occupy land on the north and south of the River Don
    - It should be noted that it is not technically feasible to use a GIL technology for this option due to the use of the HDD construction technique.

- **Option 4:** Cable route along the Trans Pennine Trail with cable bridge to a SEC on the northern side of the River Don.
    - Emerges from the Woodhead Tunnel
    - Potentially requires the use of a cable jointing building within the existing National Grid compound if two cable-per-phase arrangement was taken forward (should GIL technology or one cable per phase be the preferred option the cable jointing building would not be required)
    - Combination of direct bury and cable trough within a stretch of the Trans Pennine Trail (on the southern side of the River Don) with a cable bridge crossing over the River Don to connect into a new SEC on the northern side of the River Don.

- **Option 5:** Cable route along the Trans Pennine Trail with SEC on the southern side of the River Don.
    - Emerges from the Woodhead Tunnel
    - Potentially requires the use of a cable jointing building within the existing National Grid compound if two cable-per-phase arrangement was taken forward (should GIL technology or one cable per phase be the preferred option the cable jointing building would not be required)
    - Combination of direct bury and cable trough along the Trans Pennine Trail connecting to a new SEC on the southern side of the River Don at Wogden Foot Local.

- **Option 6:** Cable route in moorland south of the Trans Pennine Trail with SEC on the southern side of the River Don.
    - Emerges from the Woodhead Tunnel possibly via the tunnel shaft
    - Potentially requires the use of a cable jointing building within the existing National Grid compound if two cable-per-phase arrangement was taken forward (should GIL technology or one cable per phase be the preferred option the cable jointing building would not be required)
    - Direct buried option running from Dunford Bridge SEC through moorland in the Peak District National Park south of the Trans Pennine Trail

- **Option 7:** The do nothing option. The 'do nothing' option relates to the predicted future environmental conditions which would exist if the proposed project did not materialise. Should the proposed project not go ahead a period of maintenance or replacement would be required at the end of the life of the existing OHL to ensure the security of the electricity supply.

4.3 Further details on of these options are shown on mapping within Appendix 2 and are appraised on technical and environmental grounds in Table 4.1 below.

Table 4.1: Main options for undergrounding the OHL

Option	Key Considerations	Conclusion
1A	**Technical:** Cable bridges were referenced as a possibility in the initial Options Appraisal Report (2015) and discussed at stakeholder meetings. However their use poses increased safety and system security risks and they can become a target for anti-social activity such as vandalism, particularly in publicly accessible areas. National Grid will seek to design out such risks if viable alternatives are available and therefore cable bridge options were not investigated further. There is insufficient width along the area of the existing track to construct a cable route or permanent access road, which would necessitate significant civil engineering work to the adjacent bank including a permanent retaining wall. **Environmental:** Direct effects on Trans Pennine Trail users would be restricted to the car park area during construction. The cable bridge being a large concrete structure would give rise to permanent landscape and visual impacts during operation. The major civils work required to facilitate the cable route and installation of a large cable bridge structure across the River Don would give rise to additional landscape and visual impacts as well as potential effects on hydrology and ecology during construction. Additional visual impact of a SEC north of the river and retaining wall. Waste and traffic movements associated with removal of material from the excavated bank. Disturbance to farming activities. Avoids construction in Wogden Foot LWS other than for OHL removal. The overall landscape and visual benefits could be perceived as less than for a SEC south of the river as it may be more difficult to screen in the short to medium term. This option would remove fewer pylons, rather than for a SEC to the south of the river. There is potential for greater effects on the setting of a listed building and nearby residential properties from a SEC north of the river and permanent access road.	**Rejected** Technical –(safety and system security) and environmental.
1B	**Technical:** Cable bridges were referenced as a possibility in the initial Options Appraisal Report (2015) and discussed at stakeholder meetings. However their use poses increased safety and system security risks and they can become a target for anti-social activity such as vandalism, particularly in publicly accessible areas. National Grid will seek to design out such risks if viable alternatives are available and therefore cable bridge options were not investigated further. There is insufficient width along an area of the existing track to construct a permanent access road, which would necessitate significant civil engineering work to the adjacent bank including a permanent retaining wall. A permanent access road from the north would involve major civil engineering work and would have additional permanent landscape and visual effects.	**Rejected** Technical – (safety and system security) and environmental.

Option	Key Considerations	Conclusion
	This option takes a higher cable route than option 1B and involves steep gradients of 1:2 and 1:3 which would make construction extremely difficult with the need for terracing. Significant civil engineering work to level the ground/ terracing (two permanent retaining walls (up to 3.5m high) would be required). **Environmental:** Direct effects on Trans Pennine Trail users would be restricted to the car park area during construction. The cable bridge being a large concrete structure would give rise to permanent landscape impacts during operation. The bridge and associated security fencing would be likely to be visible from users of the TPT. The installation of a large cable bridge structure across the River Don and the terracing/ground levelling required on the north of the river would give rise to additional landscape and visual impacts as well as potential effects on hydrology and ecology during construction. Additional visual impacts of a SEC north of the river and retaining walls. Waste and traffic movements associated with removal of material from the excavated bank. Disturbance to farming activities. Avoids construction in Wogden Foot LWS other than for OHL removal. The overall landscape and visual benefits could be perceived as less than for a SEC south of the river as it may be more difficult to screen in the short to medium term. This option would remove fewer pylons, rather than for a SEC to the south of the river. There is potential for greater effects on the setting of a listed building and nearby residential properties from a SEC north of the river and permanent access road.	
2	**Technical:** HDD was referenced as a possibility in the feasibility report and discussed at several stakeholder meetings, however following a more detailed site specific study there were a number of technical complexities involved with HDD. This option required: large launch and receptor sites with the latter taking up the car park at Dunford Bridge for approximately 4.5 years, significant landscaping and reprofiling requiring removal of approximately 465,000m^3 of materials, Windle Edge road would be permanently removed during the HDD pre-construction works and a replacement road would need to be constructed along with potential impacts on some houses, limited working space near to the bridge, risk of interference with an existing culvert, a temporary diversion of the OHL, cable routes would need to follow steep gradients, a permanent access road from the north would be likely to be required, due to insufficient width along an area of the existing track without significant civil engineering work to the adjacent bank. It should be noted that it is not technically feasible to use a GIL technology for this option due to the use of HDD construction technique. **Environmental:** Increased disturbance to local infrastructure from lengthy local road closures and modifications, potential impacts on some houses and significant permanent changes to local landscape from the reprofiling works and temporary impacts during construction over a period of approximately 10 years. The permanent re-profiling would be highly visible as a landscape change from Dunford Bridge and the TPT. Avoids construction in Wogden Foot	**Rejected** Technical – number of complexities and environmental and socio-economic – disruption/effects, including road closures and likely impacts on houses.

Option	Key Considerations	Conclusion
	LWS. The overall landscape and visual benefits would be perceived as less than for a SEC south of the river as it may be more difficult to screen in the short to medium term in agricultural land compared to a SEC in Wogden Foot. This option would remove fewer pylons, rather than for a SEC to the south of the river. A significant number of transport movements would be required for large volumes of material removal. Disturbance to farming activities. The HDD receptor area would occupy the car park which services users of the Trans Pennine Trail and a local bus service for approximately 4.5 years, a temporary diversion of the Trans Pennine Trail would be required, with limited options due to scale/location of works. Potential for greater effects on the setting of a listed building and nearby residential property to the north east from a SEC north of the river.	
3	**Technical:** HDD was referenced as a possibility in the feasibility report and discussed at several stakeholder meetings, however there were a number of technical complexities involved with HDD. Space is very constrained along the Trans Pennine Trail and the standard working area required would have to be reduced significantly with activities reprogrammed to allow construction in a very limited working area. A permanent access road from the North would be required, as there is insufficient width along the area of the existing track without significant re-profiling which would involve steep gradients and a retaining wall. The large launch area required would be likely to encroach onto a local wildlife site and land within the National Park. It would require significant landscaping and reprofiling requiring removal of approximately 368,000m^3 of material, which would result in a reduction of the land level of an average of 12-15m on both sides of the River Don, with potential flood implications. The Trans Pennine Trail would need to be gradually graded over a significant distance to ensure Equality Act (formerly Disability Discrimination Act) compliance in the completed level which cannot be confirmed as possible in advance of detailed design It should be noted that it is not technically feasible to use a GIL technology for this option due to the use of HDD construction technique. **Environmental:** Avoids construction of a SEC in Wogden Foot LWS. The large launch area required would be likely to encroach onto a local wildlife site and Section 3 moorland within the National Park. A temporary diversion of the Trans Pennine Trail would be required. There would be permanent and significant changes to landscape on and around the Trans Pennine Trail which would present a notable change in the landscape for TPT users. This would be likely to have other associated environmental effects including on ecology, flood risk and hydrology, with further landscape and visual effects from the permanent access road. A significant number of transport movements would be required for large volumes of material removal. The overall landscape and visual benefits could be perceived as less than for a SEC south of the river as it may be more difficult to screen in the short to medium term in agricultural land compared to a SEC in Wogden Foot. This option would remove fewer pylons, compared to a SEC to the south	**Rejected** Technical – number of complexities, environment and socio-economic – permanent significant landscape change along the TPT.

Option	Key Considerations	Conclusion
	of the river. There is potential for greater effects on the setting of a listed building and nearby residential property to the north east from a SEC north of the river.	
4	**Technical:** Cable bridges were referenced as a possibility in the initial Options Appraisal Report (2015) and discussed at stakeholder meetings. However their use poses increased safety and system security safety risks and they can become a target for anti-social activity such as vandalism, particularly in publicly accessible areas. National Grid will seek to design out such risks if viable alternatives are available and therefore cable bridge options were not investigated further. A combination of direct burial and cable trough could be used along the Trans Pennine Trail. Space is very constrained and the standard working width would have to be reduced significantly and activities reprogrammed to allow construction in very limited working area. A permanent access road from the North would be required, as there is insufficient width along the area of the existing track without significant re-profiling which would involve steep gradients and a retaining wall. Temporary diversion of Trans Pennine Trail likely to require two new bridges. **Environmental:** Avoids construction in Wogden Foot LWS. A temporary diversion of the Trans Pennine Trail would be required. The cable bridge being a large concrete structure would give rise to permanent landscape and visual impacts during operation. The bridge and associated security fencing would be highly visible from users of the TPT. The installation of a large cable bridge structure across the River Don and the groundworks required would give rise to additional landscape and visual impacts as well as potential effects on hydrology and ecology during construction. Additional visual impacts of a SEC, permanent access road and possibly a retaining wall. The overall landscape and visual benefits could be perceived as less than for a SEC south of the river as the SEC may be more difficult to screen in the short to medium term in open agricultural land compared to a SEC in Wogden Foot. This option would involve some tree removal along the Trans Pennine Trail corridor. This option would remove fewer pylons, rather than for a SEC to the south of the river. There is potential for greater effects on the setting of a listed building and nearby residential properties from a SEC north of the river and a permanent access road in fields to the north.	**Rejected** Technical (safety and system security) and environmental.)
5	**Technical:** A combination of direct burial and cable trough could be used along the Trans Pennine Trail. Space is very constrained and the standard working width would have to be reduced significantly and activities reprogrammed to allow construction in a very limited working area. In addition space/options for laydown areas at the eastern end south of the river are very limited. Avoids the need to cross the River Don with the cable and the significant reprofiling associated with HDD. Requires a temporary diversion of the Trans Pennine Trail which could be wholly on the northern side of the River Don and would require two new bridges. The permanent access for SEC maintenance could be along the Trans Pennine Trail on completion of the works which means a permanent access road is not required. Land for a SEC in this location would not require re-profiling.	**Preferred option**

Option	Key Considerations	Conclusion
	Environmental: Requires permanent and temporary land take in Wogden Foot LWS with restricted space options for laydown areas at the eastern end. This option would involve some tree removal along the Trans Pennine Trail corridor and in Wogden Foot. There would be opportunities for enhancement of the LWS and along the Trans Pennine Trail as part of the mitigation. The overall landscape and visual benefits could be perceived as greater than for a SEC north of the River Don, as this option removes more pylons than for other options with a SEC to North of River Don. The SEC could be screened more easily from the majority of views from the north in the short to medium term compared to a SEC in open farmland, but would be partially visible from a limited area along the TPT. The cable route would be more screened along the Trans Pennine Trail during construction. Requires temporary diversion of the Trans Pennine Trail, and potential use prior to the diversion for very short and infrequent durations to enable plant and equipment deliveries to be made to construct the TPT diversion bridges. Opportunity to improve the Trans Pennine Trail surface with FlexiPave during reinstatement.	
6	**Technical:** Direct buried option running from Dunford Bridge SEC in moorland south of the Trans Pennine Trail. Avoids the need to cross the River Don with the cable, but would require a crossing of the Windle Edge road and the TPT. The topography is steep and undulating with southern slopes deeply incised by drainage channels, significant engineering works would be required to cross Windle Beck and Grain Brook with potential access issues south of Dunford Bridge. Significant civil engineering required to form the construction swathe for direct burial through steep gradients. A permanent access could be along the Trans Pennine Trail on completion of the works to gain access for maintenance to the SEC. This means a permanent access road is not required. Land for a SEC in this location would not require re-profiling. **Environmental:** Avoids the need to route beneath the Trans Pennine Trail and would only require a short/ localised diversion south of the River Don. Requires permanent and temporary land take in Wogden Foot LWS with restricted space options for laydown areas at the eastern end. There would be opportunities for enhancement of the LWS and along the Trans Pennine Trail as part of the mitigation. The overall landscape and visual benefits could be perceived as greater than for a SEC north of the River Don, this option removes more pylons than for SEC to North of River Don. The SEC could be screened more easily in the short to medium term from views from the north compared to a SEC in open farmland but would be partially visible from a limited area along the TPT. The route predominantly runs through the Peak District National Park and Western Moors LWS so two LWS's would be directly affected. There would be greater ecological impacts anticipated than for other options particularly in relation to birds associated with nearby SPA. The heathland is likely to support a number of ground nesting birds that may represent a seasonal constraint to construction during the optimum construction season. The cable route would also run through Section 3 Natural Land and is therefore statutorily defined as an area that in the opinion of the National Park Authority is particularly important to conserve. Considerable consenting implications would be	**Rejected** Technical – civil engineering challenges due to topography and access - and environmental – route predominantly in national park, Section 3 natural land, would impact 2 wildlife sites, and likely consenting implications.

Option	Key Considerations	Conclusion
	anticipated due to environmental designations, likely impacts and sensitivities. Planning permission may be difficult to obtain as development is only acceptable in exceptional circumstances and must be deemed to be essential. The cable route would be more visible than a route along the TPT during construction and would be highly challenging to successfully reinstate as the swathe would be through previously undisturbed heathland/moorland in the Peak District National Park. Please see Main Laydown Options Appraisal Report for more updated and detailed information on this area which was also considered for a laydown and rejected by the Stakeholder Reference Group.	
7	**Technical:** The 'do nothing' option relates to the predicted future environmental conditions which would exist if the proposed project did not materialise. Should the proposed project not go ahead a period of maintenance or replacement would be required at the end of the life of the electrical equipment to ensure the security of the electricity supply. **Environmental:** There are no known wider development proposals or local factors which are expected to cause the character of the search area to change in the absence of the Proposed Scheme. As a result, it is assumed that under the do nothing scenario, and with the continued land management as current, the character of the search area would largely remain the same as it is today. The purpose of the VIP project is to counter the negative effects of existing infrastructure on the visual amenity and landscapes in and adjacent to the National Park. In the absence of the project the existing overhead line, SEC and terminal pylon around Dunford Bridge would continue to have a strong influence on the landscape with notable adverse visual effects on the local community and recreational receptors. The baseline habitats and associated species interest present across the Search Area are likely to remain similar should the project not go ahead. The land to the north of the River Don, being predominantly farmed/ grazed is unlikely to significantly change should the pylons continue to remain, unless there was a significant shift in agricultural policy and land ownership. Similarly to the south of the TPT, the wider landscape of Western Moors (and beyond) would continue to be managed in a similar way and retained as open moorland habitat. The tree and scrub cover present along the TPT corridor is likely to continue to mature and become denser without significant management, with a potential detriment to the small areas of species rich grassland. This would still remain a valuable habitat corridor for fauna such as bats and birds, however species and structural diversity of the habitats would likely reduce which could affect other faunal groups such as invertebrates. Wogden Foot LWS, in the absence of any significant change to management practices, is likely to continue to be subject to ongoing scrub and tree succession with areas of grassland becoming less frequent and botanically diverse	

Option	Key Considerations	Conclusion
	over the next 5-10 years. There is potential for further loss of botanical diversity as a result of the ongoing grazing regime. Whilst the increased tree and scrub cover would retain interest to be used by nesting birds, including willow tit subject to the local and regional status and grazing regime, it is likely to lose the characteristics for which is was primarily designated – i.e. the mosaic of early successional habitats derived from the former use of the site.	

5 Preferred Option

5.1 Option 5 was taken forward as the preferred option with the installation of the cable using direct burial and cable trough techniques (either an XLPE cable or GIL) from the Woodhead Tunnel along the Trans Pennine Trail to a SEC located within Wogden Foot LWS. A diversion of the Trans Pennine Trail will be required on the northern side of the River Don. This option was considered the only practical and feasible engineering solution for the Proposed Project that is in line with the VIP guiding principles, would not increase safety and system security risk and would not have led to other major significant environmental or socio-economic effects.

5.2 The preferred option would facilitate the removal of eight pylons (one to be replaced) and 2km of OHL, providing the maximum landscape and visual benefit of all options considered.

5.3 Although this option requires the SEC to be located within Wogden Foot LWS, this would provide better options for screening from views from the north rather than a SEC in open farmland on the northern side of the River Don. The overall landscape and visual benefits are anticipated to be greater than the other options considered.

SEC location for the Preferred Option

5.4 Discussions regarding the location of the SEC within the search area for Option 5 were undertaken with the SRG in 2016. Space within the SEC search area south of the river is very constrained, and at that time fell within Wogden Foot LWS and land immediately adjacent outside of the designation boundary. National Grid initially identified a potential location that fell outside the LWS designation. The LWS boundary was subsequently amended in 2017 resulting in this location also falling within the LWS.

5.5 The location of the proposed SEC at Wogden Foot was largely guided by the views of stakeholders, although due to the space constraints mainly entailed micro-siting indicative layouts and orientations. The stakeholders requested that the proposed SEC be moved slightly east from the area initially identified to avoid permanent land take within a particular area of grassland.

5.6 In addition a layout closer to the River Don in the north east of the SEC search area avoided permanent land take in the area of grassland further west, but also minimised the total area of permanent land take and infrastructure within the LWS. This is because a new tension tower could be located on the northern side of the River Don (in place of tower 157), rather than a new additional terminal tower within the SEC. This location also maximised distance from the TPT, offered benefits in terms of screening and allowed movement of grazing sheep around the SEC to avoid dissecting the site.

6 Options for Temporary Working Areas

6.1 National Grid identified the need to have a main laydown area on site close to Wogden Foot, and undertook an options appraisal of several potential locations for the proposed laydown area (identified with the SRG) to avoid significant environmental impacts from the outset. Details of this options appraisal are provided within the Main On Site Laydown Area Options Appraisal Report which accompanies this report (Appendix 3)

6.2 In summary an initial ecological and engineering appraisal in 2017 concluded that area WF-B or WF-C would be the preferred locations for laydown within Wogden Foot. Additional detail was requested by the Stakeholder Reference Group (SRG) in 2018 who following discussion agreed that laydown area WF-B should be taken forward.

6.3 National Grid also considered a range of options for an access road to the eastern end of the project taking into account landowner considerations, access points off the highway, environmental constraints and the steep gradients for construction on the northern slopes which provided a constraint. The northern access road proposed from Brook Hill Lane minimises environmental effects whilst maximising the use of the lowest gradients down to the River Don.

7 Summary and Conclusion

7.1 This Options Appraisal follows on from the selection of subsection 4ZO.2 in the Peak District National Park to be prioritised for further detailed work by the SAG in 2015. It provides detail of the options appraisal work undertaken between 2015 and 2019 in developing the various options for the Proposed Project.

7.2 As outlined above Option 5 - the cable route along the Trans Pennine Trail with a SEC on the southern side of the River Don was chosen as the preferred routing and siting option. Option 5 was considered to be the only practical and feasible engineering solution for the Proposed Project that is in line with the VIP guiding principles, would not increase safety and system security risk and would not have led to other major significant environmental or socio-economic effects, i.e. avoids the use of a cable bridge and the significant reprofiling works associated with a HDD option.

7.3 The SEC location was micro-sited through discussion with the SRG with the proposed location avoiding permanent land take in an area of grassland to the west, minimising the total area of permanent land take within the LWS, maximising distance from the TPT, and offering benefits in terms of screening.

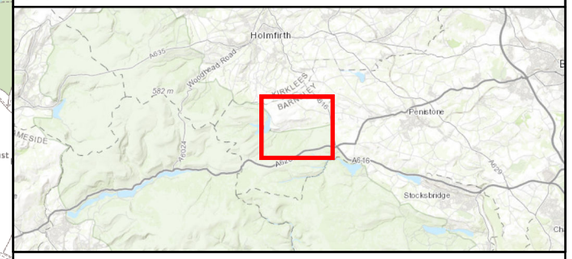
7.4 Potential laydown areas have been appraised in the Main On Site Laydown Area Options Appraisal Report. The preferred option was determined to be laydown area WF-B.

Appendix 1: Search Area (Figure 3.1)

415000 416000 417000 418000 419000

404000 403000 402000 401000

Overview



Legend

Area of Search for Permanent and Temporary Works

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Rev	Description	Cre'd	Chk'd	App'd	Date
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Master Scheme No:	Sub-Scheme No:	Site:
-	-	Peak District

Scheme Name: Visual Impact Provision (VIP) Peak District (East) Project.

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Figure 3.1: Area of Search for Permanent and Temporary Works

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Appendix 2: Engineering Options Drawings

OPTION 1A: CABLE BRIDGE FROM CAR PARK WITH CABLE ROUTE NORTH OF THE RIVER DON

LOWER CABLE ROUTE – Along the farmer's track past the Yorkshire Water works (this would require a cable bridge replacing the existing bridge over the River Don beyond the Trans Pennine Trail (TPT) car park)

Impact on TPT

The potential direct effects on TPT users would be restricted to the car park area.

Temporary diversion of the TPT would be required to enable the direct buried cable to be installed where the route crosses the car park.

System security

- System security and safety risks increased with a cable bridge
- National Grid will design out risk if alternatives are available

Major civils work

Insufficient width along an area of the existing track to construct a cable route and permanent access road, which would necessitate significant civil engineering work to the adjacent bank and the removal of approximately 15,000m³ of material. This would generate approximately 30 HGV movements per day over a period of 40 days to remove excavated material.

It would require construction of a substantial permanent retaining wall of significant height in this area.

Access required during the works by Yorkshire Water.

Landowners

Increased disturbance to farming activities along the cable route compared with options south of the River Don.

Landscape and visual impact

The overall landscape and visual benefits could be perceived as less (than for a Sealing End Compound (SEC) south of the River Don). The SEC may be more difficult to screen in agricultural land compared to a SEC in Wogden Foot.

This option would remove fewer pylons than for a SEC south of the River Don.

Additional permanent landscape and visual impacts of a concrete cable bridge (approximately 12m wide) with associated security fencing.

Updated comments following Gas Insulated Line (GIL) review

- Cable jointing building would not be required for GIL technology.
- Insufficient width along the existing track north of the River Don to construct a GIL route and permanent access route. This would necessitate significant civil engineering work to the adjacent bank and would require approximately 10,000m³ of material removing, generating approximately 20 HGV movements per day and the construction of a substantial permanent retaining wall of significant height.

Updated comments following reduction in required ratings

- Cable jointing building would not be required.
- Major civil works still required, material to be removed likely to be similar to GIL.

Permanent access

A permanent access road would be required to the SEC from the north. This would involve major civil engineering work with the steep gradients and would have additional permanent landscape and visual effects. The preferred option includes a temporary access road required for the construction works only.

Impact on Wogden Foot Local Wildlife Site (LWS)

Avoids construction in Wogden Foot LWS. Limited access required for OHL works on pylon situated within Wogden Foot.

Key:

- Existing National Grid line proposed for removal
- Existing National Grid overhead line (retained)
- Existing National Grid pylon
- Proposed cable route search area
- Proposed SEC search area
- Cable jointing building to be located in this area
- Proposed route option

Kilometers
0 0.4 0.8

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OPTION 1B: CABLE BRIDGE FROM CAR PARK WITH CABLE ROUTE NORTH OF THE RIVER DON

HIGHER CABLE ROUTE – This would require a cable bridge across the River Don adjacent to the Trans Pennine Trail (TPT) car park

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System security

- System security and safety risks increased with a cable bridge
- National Grid will design out risk if alternatives are available

Steep gradient

Steep gradients of 1:2 and 1:3 would make construction extremely difficult with the need for terracing. Substantial ground levelling also required.

This would require construction of two permanent retaining walls of up to 3.5m in height in a terraced arrangement.

Landowners

Increased disturbance to farming activities along the cable route compared with options south of the River Don.

Permanent access/major civils work

A permanent access road would be required to the Sealing End Compound (SEC) from the north. This would involve major civil engineering work with the steep gradients and would have additional permanent landscape and visual effects. The preferred option includes a temporary access road required for the construction works only.

Insufficient width along an area of the existing track to construct a permanent access road, which would necessitate significant civil engineering work to the adjacent bank (removal of approximately 4,500m^3 of material). This would generate approximately 30 HGV movements per day over a period of 12 days to remove excavated material.

A retaining wall may also be required.

Additional maintenance of the permanent access road to SEC site, as this will be separate to the cable route.

Updated comments following Gas Insulated Line (GIL) review

- Cable jointing building would not be required for GIL technology.

Updated comments following reduction in required ratings

- Cable jointing building would not be required.

Impact on TPT

The potential direct effects on TPT users would be restricted to the car park area. Temporary diversion of the TPT would be required to enable the direct buried cable to be installed where the route crosses the car park.

Impact on Wogden Foot Local Wildlife Site (LWS)

Avoids construction in Wogden Foot LWS. Limited access required for OHL works on pylon situated within Wogden Foot.

Landscape and visual impact

The overall landscape and visual benefits could be perceived as less (than for a SEC south of the River Don). The SEC may be more difficult to screen in agricultural land compared to a SEC in Wogden Foot.

This option would remove fewer pylons than for a SEC south of the River Don.

Additional permanent landscape and visual impacts of a concrete cable bridge (approximately 12m wide) with associated security fencing. Visual receptors would include TPT/public car park users.

Key:

- Existing National Grid line proposed for removal
- Existing National Grid overhead line (retained)
- Existing National Grid pylon
- Proposed cable route search area
- Proposed SEC search area
- Cable jointing building to be located in this area
- Proposed route option

Kilometers
0 0.4 0.8

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OPTION 2: HORIZONTAL DIRECTIONAL DRILL (HDD) FROM CAR PARK WITH CABLE ROUTE NORTH OF THE RIVER DON

ROUTE – HDD under the River Don to a Sealing End Compound (SEC) north of the River Don

nationalgrid

HDD requirements

Technical complexities involved with the HDD:

- A launch area of approximately 7,500 - 12,000m^2 would be required for a 100m drill width.
- A reception site within Dunford Bridge car park and its surrounds would be required of approximately 7,200m^2 with a width of 156m.
- Approximately 300m of ground would need to be levelled on the northern side of the River Don for the working area for the drill launch pit.
- Landscaping and re-profiling will require removal of approximately 465,000m^3 of materials to achieve the required cable rating. This would generate approximately 121,000 HGV movements, resulting in 84 per day over four years to remove the excavated material.
- The existing Windle Edge road between Dunford Bridge and Dunford Road would be permanently lost during the pre-construction works and some houses along the road would likely need to be removed.
  A new access route would need to be constructed or alternatively the road would likely need to be closed for four years and reinstated at a lower level by up to 18m
- The drill exit point would be very close to the bridge with very limited working space.
- There is a significant risk of the drill interfering with a culvert.

Landowners

Increased disturbance to the local infrastructure, from road closures/ alternative road requirements.

Steep gradients

The cable route would need to follow steep gradients down to a SEC which may require the use of cable troughs as well as direct burial.

Landscape and visual impact

The overall landscape and visual benefits could be perceived as less (than for a SEC south of the River Don). The SEC may be more difficult to screen in agricultural land compared to a SEC in Wogden Foot.

This option would remove fewer pylons than for a SEC south of the River Don.

There would be permanent changes to local landscape and reductions in land levels from the re-profiling works to be carried out over four years, and temporary landscape and visual impacts during the construction works over a period of 10 years.

Updated comments following Gas Insulated Line (GIL) review

- Cable jointing building would not be required for GIL technology.
- This option is not technically feasible for GIL due to difficulties associated with the rotational forces that would be applied to the enclosure tube during pulling through of the pipe (back through HDD).

Updated comments following reduction in required ratings

- Cable jointing building would not be required.
- HDD requirements would be less for lower ratings. A reduction of materials to be removed is anticipated when compared to the original option, however major civil works would still be required. A smaller but still significant launch area (between approximately 5,000 and 7,500m^2) would be required.

Impact on Wogden Foot Local Wildlife Site (LWS)

Avoids construction in Wogden Foot LWS. Limited access required for overhead line (OHL) works on pylon situated within Wogden Foot.

Impact on TPT

Significant impact on the Dunford Bridge car park which would require closure for approximately 4.5 years, due to location of HDD reception site. A temporary diversion of the Trans Pennine Trail (TPT) would be required, with limited options due to the scale/location of works.

Temporary pylon

A temporary diversion of the overhead line may be required to carry out the HDD, subject to detailed design work. Establishing a route for a temporary diversion would be difficult.

Permanent access/major civils work

A permanent access road would be required to the SEC from the north. This would involve major civil engineering work with the steep gradients and would have additional permanent landscape and visual effects. The preferred option includes for a temporary access road required for the construction works only.

Insufficient width along an area of the existing track to construct a permanent access road, which would necessitate significant civil engineering work to the adjacent bank (removal of approximately 4,500m^3 of material). This would generate approximately 30 HGV movements per day over a period of 12 days to remove excavated material.

A retaining wall may also be required.

Additional maintenance of the permanent access road to SEC site, as this will be separate to the cable route.

Key:

- Existing National Grid line proposed for removal
- Existing National Grid overhead line (retained)
- Existing National Grid pylon
- Proposed cable route search area
- Proposed SEC search area
- Cable jointing building to be located in this area
- Proposed HDD launch area
- Proposed route option

Kilometers
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OPTION 3: HORIZONTAL DIRECTIONAL DRILL (HDD) FROM TRANS PENNINE TRAIL (TPT) WITH SEALING END COMPOUND (SEC) NORTH OF THE RIVER DON

ROUTE – HDD under the River Don to a SEC north of the River Don

nationalgrid

Constrained worksite

A combination of direct bury and cable trough would be used along the TPT. Space is very constrained and the standard working width would have to be reduced significantly with activities reprogrammed to allow construction in very limited working area.

Permanent access/major civils work

A permanent access road would be required to the SEC from the north. This would involve major civil engineering work with the steep gradients and would have additional permanent landscape and visual effects. The preferred option includes for a temporary access road required for the construction works only.

Insufficient width along an area of the existing track to construct a permanent access road, which would necessitate significant civil engineering work to the adjacent bank (removal of approximately 4,500m^3 of material). This would generate approximately 30 HGV movements per day over a period of 12 days to remove excavated material.

A retaining wall may also be required.

Additional maintenance of the permanent access road to SEC site, as this will be separate to the cable route.

HDD requirements

Technical complexities involved with the HDD:

- A launch area of approximately 2,500m^2 would be required for a 100m drill width. This would encroach into a Local Wildlife Site (LWS) and moorland in the National Park.
- Permanent removal of approximately 368,500m^3 would be required across both sides of the River Don to achieve the necessary cable rating. This would generate approximately 30 HGV movements per day over a period of 964 days to remove the excavated material.
- This would equate to a reduction in the land level of an average of between 12–15m on both sides of the River Don including the TPT. The potential flood risk implications are unknown at this stage for a reduction in overall levels of the permanent TPT.

Updated comments following Gas Insulated Line (GIL) review

- Cable jointing building would not be required for GIL technology.
- This option is not technically feasible for GIL due to difficulties associated with the rotational forces that would be applied to the enclosure tube during pulling through of the pipe (back through HDD).

Updated comments following reduction in required ratings

- Cable jointing building would not be required.
- HDD requirements would be less for lower ratings. A reduction of materials to be removed is anticipated when compared to the original option, however major civil works would still be required.

Impact on TPT

Temporary diversion of the TPT would require landowner agreement.

Launch site needed for the HDD north of the River Don, will create the need for a temporary diversion of the TPT – likely have to be in fields north of the River Don. Two new bridges required for TPT diversion (one temporary and one permanent).

Landscape and visual impact

The overall landscape and visual benefits could be perceived as less (than for a SEC south of the River Don). The SEC may be more difficult to screen in agricultural land compared to a SEC in Wogden Foot.

This option would remove fewer pylons than for a SEC south of the River Don.

Permanent change to landscape on and around the TPT due to a significant reduction in the land level.

Impact on Wogden Foot Local Wildlife Site (LWS)

Avoids construction in Wogden Foot LWS. Limited access required for overhead line (OHL) works on pylon situated within Wogden Foot.

Equality Act 2010 Compliance / Environmental

The TPT would need to be gradually graded over a very significant distance requiring major civil engineering work. The design may not be able to fully confirm that the proposed works would be compliant with the relevant gradient/completed level requirements of the Equality Act 2010 (formerly covered under the Disability Discrimination Act). This could only be confirmed during detailed designs.

Permanent change to landscape on and around TPT may be a flood risk with associated environmental effects (landscape, visual, hydrological and ecological).

Key:

- Existing National Grid line proposed for removal
- Existing National Grid overhead line (retained)
- Existing National Grid pylon
- Proposed cable route search area
- Proposed SEC search area
- Cable jointing building to be located in this area
- Proposed HDD launch area
- Proposed route option

Kilometers
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OPTION 4: CABLE ROUTE ALONG THE TRANS PENNINE TRAIL (TPT) WITH CABLE BRIDGE TO A NORTHERN SEALING END COMPOUND (SEC)

ROUTE – Cable bridge midway along the TPT to a SEC north of the River Don

Permanent access/major civils work

A permanent access road would be required to the SEC from the north. This would involve major civil engineering work with the steep gradients and would have additional permanent landscape and visual effects. The preferred option includes for a temporary access road required for the construction works only.

Insufficient width along an area of the existing track to construct a permanent access road, which would necessitate significant civil engineering work to the adjacent bank (removal of approximately 4,500m^3 of material). This would generate approximately 30 HGV movements per day over a period of 12 days to remove excavated material.

A retaining wall may also be required.

Additional maintenance of the permanent access road to SEC site, as this will be separate to the cable route.

Impact on TPT

Temporary diversion of the TPT would require landowner agreement.

A temporary diversion would likely have to be in fields north of the River Don. Two new bridges required for TPT diversion (one permanent and one temporary).

Landscape and visual impact

The overall landscape and visual benefits could be perceived as less (than for a SEC south of the River Don). The SEC may be more difficult to screen in agricultural land compared to a SEC in Wogden Foot.

This option would remove fewer pylons than for a SEC south of the River Don

Permanent effects of cable bridge in addition to SEC.

This option would rerquire tree removal along the TPT.

Additional permanent landscape and visual impacts of a concrete cable bridge (approximately 12m wide) with associated security fencing. Visual receptors would include TPT users.

Impact on Wogden Foot Local Wildlife Site (LWS)

Avoids construction in Wogden Foot LWS. Limited access required for overhead line (OHL) works on pylon situated within Wogden Foot.

Updated comments following Gas Insulated Line (GIL) review

- Cable jointing building would not be required for GIL technology.

Updated comments following reduction in required ratings

- Cable jointing building would not be required.

Constrained worksite

A combination of direct bury and cable trough would be used along the TPT. Space is very constrained and the standard working width would have to be reduced significantly with activities reprogrammed to allow construction in very limited working area.

System security

- System security and safety risks increased with a cable bridge
- National Grid will design out risk if alternatives are available

Key:

- Existing National Grid line proposed for removal
- Existing National Grid overhead line (retained)
- Existing National Grid pylon
- Proposed cable route search area
- Cable jointing building to be located in this area
- Proposed SEC area
- Proposed route option

Kilometers: 0 — 0.4 — 0.8

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OPTION 5: CABLE ROUTE ALONG THE TRANS PENNINE TRAIL (TPT) WITH SEALING END COMPOUND (SEC) SOUTH OF THE RIVER DON (Preferred option taken forward using Gas Insulated Lines)

ROUTE – Route follows the TPT with SEC in Wogden Foot Local Wildlife Site (LWS)

nationalgrid

Constrained worksite

A combination of direct bury and trough could be used along the TPT. Space is very constrained and the standard working width would have to be reduced significantly with activities reprogrammed to allow construction in very limited working area.

Restricted space/options for laydown areas at the eastern end.

Impact on TPT

Requires diversion of the TPT which could be wholly north of the River Don.

Temporary diversion of the TPT would require landowner agreement.

Opportunity to improve TPT surface using FlexiPave.

Two new bridges required for TPT diversion (one permanent and one temporary).

Permanent access would be required along the TPT on completion of the works to gain interaction access to the SEC.

Potential closures for very short durations along the TPT to enable plant and equipment to be delivered to site.

Landowners

The majority of the cable construction swathe involves one landowner, although there are additional landowners over the TPT diversion route.

Impact on Wogden Foot Local Wildlife Site (LWS)

Requires temporary and permanent construction works/permanent land take in Wogden Foot LWS.

Opportunities for enhancement within Wogden Foot LWS and along the TPT.

Updated comments following Gas Insulated Line (GIL) review

- Cable jointing building would not be required for GIL technology.
- The civil engineering work required in the TPT and at Wogden Foot LWS may require less removal of material, resulting in fewer HGV movements.

Updated comments following reduction in required ratings

- Cable jointing building would not be required.

Civils work

This option avoids the need to cross the River Don with the cable and significant reprofiling associated with the Horizontal Directional Drill (HDD) options.

Landscape and visual impact

The overall landscape and visual benefits could be perceived as greater than for a SEC north of the River Don. This option would remove more pylons than for a SEC north of the River Don. The SEC site could be screened more easily in views from the north compared to a SEC in open farmland. This option would require tree removal along the TPT corridor.

Key:

- Existing National Grid line proposed for removal
- Existing National Grid overhead line (retained)
- Existing National Grid pylon
- Proposed cable route search area
- Proposed SEC search area
- Cable jointing building to be located in this area
- Proposed route option

Kilometers
0 0.4 0.8

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OPTION 6: CABLE ROUTE IN MOORLAND SOUTH OF THE TRANS PENNINE TRAIL (TPT) WITH SEALING END COMPOUND (SEC) SOUTH OF THE RIVER DON

ROUTE – Route runs from the existing Dunford Bridge SEC, across moorland south of the TPT to a new SEC in Wogden Foot Local Wildlife Site (LWS)

Landowners

The majority of the construction swathe involves one landowner, although there are additional landowners over the TPT diversion route.

Landscape and visual impact

The overall landscape and visual benefits could be perceived as greater than for a SEC north of the River Don. This option would remove more pylons than for a SEC north of the River Don. The SEC site could be screened more easily in views from the north compared to a SEC in open farmland. This option would require tree removal along the TPT corridor.

The cable route would be more visible than a route along the TPT during construction and is likely to be highly challenging to reinstate successfully. It would require a construction swathe through undisturbed heathland/moorland in the Peak District National Park.

Impact on Wogden Foot Local Wildlife Site (LWS)

Requires temporary and permanent construction works/permanent land take in Wogden Foot LWS.

Opportunities for enhancement within Wogden Foot LWS and along the TPT.

Impact on Western Moors Local Wildlife Site (LWS) / Section 3 Land

The route would predominantly run through the Peak District National Park and Western Moor LWS, so two LWS sites would be directly impacted. Greater ecological impacts anticipated than for other options including disturbance to birds associated with the nearby designated Special Protection Area. The heathland is likely to support a number of ground nesting birds that may represent a seasonal constraint to construction.

The route would run through Section 3 (Natural Zone) land designated under Section 43 (3) of the Wildlife and Countryside (Amendment) Act 1985. This is statutorily defined as areas that in the opinion of the National Park Authorities are particularly important to conserve. Considered that planning permission would be unobtainable as development is acceptable only in exceptional circumstances and must be deemed to be essential. Where permission is granted it is limited to a temporary period.

Updated and more detailed information on land south of the Trans Pennine Trail in Western Moors LWS and Section 3 Land is provided in the Laydown Options Appraisal Report

Updated comments following Gas Insulated Line (GIL) review

- Cable jointing building would not be required for GIL technology.

Updated comments following reduction in required ratings

- Cable jointing building would not be required.

Impact on TPT

This would avoid the need to underground the main route beneath the TPT. Requires a short and localised temporary diversion of the TPT, south of the River Don. This would require landowner agreement and would be within and adjacent to Wogden Foot LWS. Permanent access would be required along the TPT on completion of the works to gain access to the SEC.

Major civils work

This option avoids the need to cross the River Don with the cable. Steep and undulating topography with the southern slopes deeply incised by drainage channels. Significant civil engineering works required to cross Windleden Beck and Grain Brook. Potential access difficulties south of Dunford Bridge on the western side of Windle Edge.

Cable burial requirements

Significant civil engineering works required to form construction haul road and construction swathe to install an underground cable that crosses over the steep gradients and terrain through this area. Additional equipment may be required at the existing SEC.

Key:

- Existing National Grid line proposed for removal
- Existing National Grid overhead line (retained)
- Existing National Grid pylon
- Proposed SEC search area
- Cable jointing building to be located in this area
- Proposed route option

Kilometers: 0 — 0.4 — 0.8

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Appendix 3: Main On Site Laydown Area Options Appraisal Report



National Grid

Visual Impact Provision (VIP) Peak District (East) Project

Main On Site Laydown Area Options Appraisal Report

660952

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JANUARY 2019

RSK GENERAL NOTES

Project No.: 660952

Title: Visual Impact Provision (VIP) Peak District (East) Project
Main On Site Laydown Area Options Appraisal Report

Client: National Grid

Date: 14th January 2019

Office: Helsby

Status: Final (Rev06)

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Date:	14/01/2019

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Environment Ltd.

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1. INTRODUCTION

1.1 Project Background

1.1.1 The Visual Impact Provision (VIP) Project represents a major opportunity to conserve and enhance the natural beauty, wildlife and environmental heritage within our most protected landscapes by relocating above ground electrical infrastructure such as overhead lines (OHL), underground. The VIP Project will make use of a £500m allocation by Ofgem to carry out work to help reduce the impact of existing transmission lines in English and Welsh Areas of Outstanding Natural Beauty (AONB) and National Parks.

1.1.2 National Grid is proposing to underground a section of the existing OHL within the Peak District National Park (the VIP, Peak District (East) Project, here on referred to as the Proposed Project). The Proposed Project includes a section of the 4ZO OHL which runs eastwards from a Sealing End Compound (SEC) near the entrance of the Woodhead Tunnel at Dunford Bridge, crossing the Peak District National Park boundary, and continuing north over the Upper Don River and the Trans Pennine Trail, south of the hamlet of Townhead towards Castle Hill. The Proposed Project will remove the existing SEC at Dunford Bridge (including the pylon within), the OHL and seven further pylons; and will be replaced with an underground cable , a new SEC to be located within Wogden Foot Local Wildlife Site (LWS) and a replacement tension tower north east of the SEC. In order to facilitate the construction of the Proposed Project a temporary construction laydown area of approximately 10,000m^2 will be required to store and process materials, store and operate plant, provide construction staff parking, and to house welfare facilities. Construction working areas associated with the construction of the new SEC and the removal of Pylon 4ZO158 within Wogden Foot LWS are not considered as part of this options appraisal as the location of these working areas are determined by these parts of the Proposed Project.

1.2 Options Appraisal Report

1.2.1 National Grid commissioned RSK to undertake an options appraisal of five proposed areas which were pre-selected by National Grid following a meeting with the Stakeholder Reference Group (SRG). The options appraisal process comprises a decision-making tool designed to avoid significant environmental impacts from the ‘outset’ and provide a detailed insight into the consideration of alternatives.

1.2.2 This appraisal followed on from an initial options review/stakeholder workshop of three of the five proposed areas (WF-A, WF-B and WF-C) in January 2017, which concluded at that time that either area WF-B or WF-C would be the preferred location. As the project developed further information was requested by the SRG in summer 2018 resulting in this more detailed appraisal being developed and widened out to include two new areas - WF-D and WF-E.

1.2.3 Each proposed laydown area was appraised against key engineering, environmental and planning constraints that may be considered to preclude its use as a laydown area. An initial conclusion was drawn (Section 8.1) as to whether one proposed area was deemed more suitable than others for use as a temporary laydown area, the findings of the options

appraisal were shared with the SRG and discussed at a meeting in July 2018. At the meeting it was agreed that further information would be provided by both National Grid and the SRG to assist in a decision as summarised in Section 8.2.

1.2.4 The structure of this report is as follows:

- Chapter 2: The Study Methodology;
- Chapter 3 - 7: Discussion of environmental and engineering constraints at each of the proposed laydown areas;
- Chapter 8: Concluding comments and recommendations including feedback from the SRG and further information provided.

1.2.5 RSK Environment Ltd has prepared this Options Appraisal Report with input from AECOM (ecological constraints), Gillespies (landscape and visual) and WSP (FEED).

1.3 Proposed Laydown Areas

1.3.1 Five proposed laydown areas have been identified by National Grid and the SRG for temporary use during the construction phase of the Proposed Project and are of a size considered large enough to accommodate the required laydown area (approximately 10,000m^2). The proposed laydown areas are as follows (see Appendix 1):

- WF-A: South of the Trans Pennine Trail;
- WF-B: West of the Proposed SEC;
- WF-C: East of the Proposed SEC;
- WF-D: North of the River Don close to Bridge 2; and
- WF-E: Off Brook Hill Lane surrounding the bellmouth of the Northern Access Route (AP7).

2. STUDY METHODOLOGY

2.1 Data Collection

2.1.1 Information held in the public domain concerning the natural, physical and built environment was initially collated and reviewed for a defined Study Area for each of the proposed laydown areas. Sites and features that are considered a potential constraint were identified and plotted onto constraints mapping (see Figures 1- 5 in Appendix 1). Key sources of information to obtain baseline data have included:

- Natural England – Nature on the Map (MAGIC) (http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx);
- Environment Agency – What's in your backyard? (http://apps.environment-agency.gov.uk/wiyby/default.aspx);
- Sustrans – National Cycle Network (https://www.sustrans.org.uk/ncn/map);
- Barnsley Metropolitan Borough Council interactive planning explorer map (https://www.barnsley.gov.uk/barnsley-maps/planning-explorer/) and planning policy documents (https://www.barnsley.gov.uk/services/planning-and-buildings/local-planning-and-development/our-new-local-plan/barnsleys-local-plan/);
- Peak District National Park Authority planning policies (http://www.peakdistrict.gov.uk/planning/how-we-work/policies-and-guides);
- Google Earth, OS Mapping and Bing Maps for aerial photography.

2.1.2 Where information was not accessible online, information requests were submitted to the relevant authorities to obtain that data for use in this options appraisal.

2.2 Study Area

2.2.1 The nature of the required laydown area meant that it was not necessary to define a large Study Area. For the purposes of this Options Appraisal Report, information was collected for a 500m Study Area centred on each of the proposed laydown areas as detailed in Sections 3 - 7 below.

2.3 Ecological Survey

2.3.1 An ecological desk study has been completed for each of the proposed laydown areas, as part of the wider Proposed Project. In addition, ecological surveys have been carried out over a wider study area since inception of the VIP Project since late 2015. Initially an Extended Phase 1 habitat survey was undertaken across a wide survey area, which then informed the scope of detailed habitat and protected species surveys. The scope of ecological survey work has been agreed with the relevant ecological stakeholders via the means of the initial Scoping Report and subsequent consultation meetings. A summary of the surveys conducted within each of the proposed laydown areas is provided in the subsequent sections below. The aim of the ecological desk study and ecological surveys has been to establish the ecological baseline conditions; the habitats present and their (potential) value to protected or notable species in order to inform the overall project wide ecological assessment and mitigation requirements.

3. LAYDOWN AREA WF-A

3.1 Land Use & Planning

3.1.1 Laydown Area WF-A is located to the south of the Trans Pennine Trail and comprises of an area of undeveloped moorland. The location of Laydown Area WF-A and the identified environmental constraints are shown on Figure 2 in Appendix 1.

Planning Application Search

3.1.2 Laydown Area WF-A lies within the planning jurisdiction of the Peak District National Park Authority.

3.1.3 There are no recent major planning applications (within the last 5 years) within the Study Area of Laydown Area WF-A. The only recent planning application within the Study Area relates to the replacement of a single storey extension of a listed building at Dick Royd Farm (Application ref: 2015/0339) approximately 450m north of the Laydown Area WF-A.

Planning Policy

3.1.4 Planning policy for the Peak District National Park Authority is made up of:

- The Local Development Framework Core Strategy (adopted October 2011);
- A number of policies in the Local Plan 2001 that are still valid; and,
- Emerging Development Management Policies document (when adopted will replace the Local Plan 2001).

3.1.5 Barnsley Metropolitan Borough Council are currently preparing a Local Plan which will replace the Core Strategy (2011) and the saved policies of the Unitary Development Plan (2000). The final draft of the Local Plan has been submitted to the Secretary of State for review and is estimated to be adopted in spring 2019. Table 3.1 details the relevant policies associated with Laydown Area WF-A.

Table 3.1: Planning policies associated with Laydown Area WF-A

Peak District National Park Authority- The Local Development Framework Core Strategy and the Emerging Development Management Policies	
Planning Policy	**Relevance to Potential Laydown area**
Natural Zone which is covered by policy L1 and DMC2 respectively. Policy L1 states that "*Development must conserve and enhance valued landscape character, as identified in the Landscape Strategy and Action Plan, and other valued characteristics. Other than in exceptional circumstances, proposals for development in the Natural Zone will not be permitted*."	At the data gathering stage it was assumed that a laydown area adjoining the development (the new SEC) would be permitted development under Schedule 2, Part 4A of the General Permitted Development Order, therefore planning permission would not be required. Confirmation of the planning
Policy DMC2 states that "*the exceptional circumstances in which development is*	

permissible in the Natural Zone are those in which a suitable, more acceptable location cannot be found elsewhere and the development is essential" and that "development that would serve only to make land management or access easier will be not regarded as essential."	requirements in relation to the Section 3 land was sought from the National Park Authority and a response received during further consultation as detailed at Section 8.2.12 noting that "*Laydown Area A is designated 'Section 3 Natural Zone' where polices have a necessarily high bar for development proposals to pass in order to be exceptionally allowed where formal consent is required. In this case Laydown Area A would technically be classed as permitted development but consideration of the impacts of the development would mean that it would be likely to have significant impacts on the environment and therefore be EIA development requiring full planning permission".* The area designated as a Natural Zone under the Local Development Framework Core Strategy and the emerging Development Management Policies document is the result of a requirement under Section 43(3) of the Wildlife and Countryside (Amendment) Act 1985. This requires local authorities whose area is partially or wholly within a National Park to map areas of mountain, moor, heath, woodland, down, cliff or foreshore whose natural beauty it is, in the opinion of the authority, particularly important to conserve (Section 3 Land).
Policy L2 of the Local Development Framework Core Strategy requires development to conserve and enhance sites, features or species of biodiversity importance and where appropriate their setting, and that development will only be permitted in exceptional circumstances.	Laydown Area WF-A is located within the Western Moors Local Wildlife Site (LWS).
Barnsley Metropolitan Borough Council- Local Plan Publication Draft (2016) and Unitary Development Plan (2000) Saved Policies	
T2 Safeguarding of Former Railway Lines "We will safeguard land within and adjacent to existing and historical rail alignments to accommodate the potential reinstatement of former strategic railway lines."	Laydown Area WF-A is located directly south of a former railway line.
GS2 Green Ways and Public Rights of Way "Where development affects an existing Green Way or Public Right of Way it must:	Laydown Area WF-A is located directly south of the Trans-Pennine Trail.

• Protect the existing route within the development; or • Include an equally convenient and attractive alternative route. Where new development is close to a Green Way or Public Right of Way it may be required to: • Provide a link to the existing route; and/or • Improve an existing route; and/or Contribute to a new route."	
WR15/1 Recreation Routeways: Trans-Pennine Trail "the routeways ... will be protected and developed as part of a safe multi-user recreational network"	Laydown Area WF-A is located directly south of the Trans-Pennine Trail.

Tree Preservation Orders & Conservation Areas

3.1.6 According to the Barnsley Metropolitan Borough Council Tree Preservation Orders map, there are no Tree Preservation Orders (TPO) within the northern half of the Study Area.

3.1.7 TPO data for the area covered by Peak District National Park Authority has been requested, a response has not yet been received.

3.1.8 There are no conservation areas within the Study Area.

3.2 Soils, Geology & Ground Conditions

Soils & Agriculture

3.2.1 Laydown Area WF-A is located within an area of slowly permeable wet very acid upland soils with a peaty surface[1]. Given the likely peaty surface this would need to be stockpiled separately for replacement upon completion, and there is potential for peat to dry and degrade during storage.

3.2.2 Laydown Area WF-A is on land classified on Provisional Agricultural Land Classification (ALC) mapping as either Grade 4 or Grade 5 (poor or very poor) Agricultural Land.

3.2.3 No Nitrate Vulnerable Zones have been identified within the Study Area.

3.2.4 Ground conditions were discussed with the SRG after the initial data gathering stage. Additional information is provided at Section 8.2.12 following further consultation.

Geology & Hydrogeology

3.2.5 Laydown Area WF-A is underlain by bedrock comprising the Marsden Formation – Mudstone and Siltstone. Laydown Area WF-A is underlain by a Secondary A aquifer (permeable layers of bedrock capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers).

[1] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

3.2.6 Laydown Area WF-A is not located within a Groundwater Source Protection Zone.

Ground Conditions

3.2.7 There are no existing or historic landfills within Laydown Area WF-A. No pollution incidents have been recorded by the Environment Agency within the Study Area for Laydown Area WF-A.

3.3 Hydrology & Flood Risk

3.3.1 The River Don lies approximately 120m north of Laydown Area WF-A, and has areas of both Flood Zone 2 and 3 extending up to 10m out from its banks, however Laydown Area does not lie within Flood Zone 2 or 3.

3.3.2 Several drainage ditches are located to the south of Laydown Area WF-A.

3.3.3 There are no surface water abstraction licences within the Study Area of Laydown Area WF-A.

3.3.4 The location of Laydown Area WF-A on a moorland slope may result in increased volumes of water running off the laydown area and into the River Don.

3.3.5 Due to the topography of the land at WF-A there would be a requirement to level the proposed laydown area. It is likely to be difficult to reinstate the land to the same profile which would change the runoff generating properties of the valley side. It would also be difficult to ensure that the reinstated material had the same hydraulic properties as the existing peat.

3.3.6 This could potentially affect surface water runoff by modifying the surface roughness, soil condition and gradient of the land, and as a result this may affect the amount of surface water entering the River Don. This also has the potential to affect the hydrological function of moorland habitats which rely on the wet conditions provided by peat bogs.

3.3.7 WF-A would require a layer of geotextile and stones to make the surface suitable for use as a laydown area. The stone surface is likely to be more pervious than the existing peat, this gives the potential for modification of the surface water infiltration and soil moisture.

3.3.8 The removal of the top layers of peat have the potential to impact on the water quality through drainage waters from peat extraction containing suspended solids and are acidic – pollution control measures would be required to reduce pollution to nearby watercourses.

3.4 Historic Environment

3.4.1 There are no Scheduled Monuments, World Heritage Sites or Registered Battlefields or Registered Parks and Gardens within the Study Area of Laydown Area WF-A.

3.4.2 There is one Listed Building within the Study Area; the grade II listed Dick Royd farmhouse and attached barn (Grade II), which is located approximately 400m north of Laydown Area WF-A. Laydown Area WF-A has the potential to be visible from the grade II listed Dick Royd farmhouse and attached barn, leading to a temporary visual impact during construction.

3.4.3 Laydown Area WF-A is located within an area of previously undeveloped land. While it is possible that this area is acceptable on archaeological grounds, further investigation (geophysical survey and possible trial trenching) would be required to confirm the likelihood of any potential effects. See further details on archaeology for this area in Section 8.2.

3.5 Landscape & Visual

3.5.1 Laydown Area WF-A is located within the Peak District National Park. There are no Areas of Outstanding Natural Beauty (AONB) within the Study Area. Under the Local Development Framework Core Strategy Laydown Area WF-A is located within an area designated as a Natural Zone (see Section 3.1).

3.5.2 Laydown Area WF-A would be visible in views from the north (local community and people using local rights of way). Temporary access to the laydown area would require removal of existing vegetation which would open up views to the Proposed SEC in the short term until mitigation planting matures to provide screening.

3.5.3 Laydown Area WF-A slopes down towards the River Don, significant levelling is required which may result in a further impact to the landscape (see Section 3.8).

3.6 Recreation

3.6.1 There are no public rights of way (PRoW) within Laydown Area WF-A; however, the Trans Pennine Trail, which is a National Trail, runs along the northern boundary of the laydown area. The Trans Pennine Trail will be diverted north during construction, but will rejoin with the existing Trans Pennine Trail at the eastern end of the northern boundary of the Laydown Area WF-A. The Trans Pennine Trail also incorporates National Cycle Route 62 at this location.

3.6.2 A second PRoW located approximately 430m north of Laydown Area WF-A runs east-west linking to two points along Brook Hill Lane.

3.6.3 Laydown Area WF-A is located within land designated as open access land under the Countryside and Rights of Way Act 2000.

3.6.4 No areas of common land have been identified within the Study Area of Laydown Area WF-A.

3.7 Ecology

Statutory Designated Sites

3.7.1 Laydown Area WF-A does not fall within any Statutory Designated Sites. The nearest statutory designated sites are the Peak District Moors Special Protection Area (SPA), the South Pennine Moors Special Area of Conservation (SAC), and the Dark Peak Site of Special Scientific Interest (SSSI), which are located 1.6km south and 2km west.

Non-Statutory Designated Sites

3.7.2 Laydown Area WF-A is located within the Western Moors Local Wildlife Site (LWS), and directly south of the Wogden Foot LWS.

3.7.3 The Western Moors is a large expanse (~3,400ha) of upland (part of the South Pennines). The range of habitats on the site include large areas of heather (*Calluna vulgaris*) moorland with bilberry (*Vaccinium myrtillus*) and locally abundant cloudberry (*Rubus chamaemorus*), a rare plant in the district. Bilberry is found with purple moor-grass (*Molinia caerulea*) and mat-grass (*Nardus stricta*) over some areas and bracken (*Pteridium aquilinum*) forms monospecific stands in patches on the moorland. The breeding bird assemblage of these moors forms part of the nationally and internationally important South Pennine moorlands. Characteristic and important species are golden plover, curlew (*Numenius arquata*), dunlin, merlin, ring ousel (*Turdus torquatus*), twite (*Carduelis flavirostris*) and short-eared owl and red grouse (*Lagopus lagopus*).

3.7.4 Laydown Area WF-A within the lower section of the two enclosed fields was subject to habitat survey and has been classified as acid grassland, e although it is considered to be more nutrient improved and less typical of the wider surrounding Western Moors moorland. The grassland appears to have been subject to a greater level of grazing and limited heath/ bracken being present as demonstrated in Photograph 1 taken from the northern side of the valley on Brook Hill lane looking southeast.



Photograph 1: Western Moors LWS

Notable Habitats & Protected & Notable Species

3.7.5 The grassland habitats within the site provide suitable habitat for (ground) nesting birds. The 2016 Breeding bird surveys however recorded only minimal use of the specific area closest to the Trans Pennine Trail by species associated with the SPA and those associated with the LWS designation; curlew and golden plover. The site is likely to support common lizard (but to a lesser extent than the reminder of Western Moors LWS) but offer limited value for other protected or notable species.

3.8 Engineering

3.8.1 Laydown Area WF-A is situated south of the Proposed SEC in Wogden Foot LWS. A site entrance would need to be created towards the west side of Laydown Area WF-A to

enable an access to be created for construction traffic into the Laydown Area. This would require extensive construction works in the first instance to remove a section of stone wall and create an opening into the Laydown Area. The topography of the Laydown Area would need to be fully considered whilst undertaking these works to take account of the difference in ground level from the Trans Pennine Trail. Significant ground works will be required to enable construction vehicles to transition from the access route into the proposed laydown area. Ground levelling works would also be required to make the site suitable for use as a laydown area.

3.8.2 Laydown Area WF-A would require the installation of demarcation fencing in the first instance prior to site preparation of the ground conditions to enable the land to be used as a laydown area during the construction phase of the Proposed Project.

3.8.3 The Laydown Area would require removal of existing vegetation and the topsoil prior to the installation of a geogrid type membrane and compacted stone layers to form a sufficient temporary surface that could be utilised for a Laydown Area.

3.8.4 The depth of the stone layer would need to be designed to allow for site constraints; for the purpose of this options appraisal an indicative depth of 500-700mm of stone is assumed to be needed to be installed and compacted to form a surface suitable for the numbers of vehicles that would need to be operated from the laydown area undertaking and progressing numerous different works activities. The depth of stone required is greater than for the other laydown area options due to the peat ground conditions, the increased depth is required to achieve the bearing capacity to drive and operate plant over the area.

3.8.5 The temporary Trans Pennine Trail diversion would need to be extended from the current preliminary design location. The current assumption is that the temporary trail diversion will cross over the temporary bridge in the vicinity of Wogden Foot LWS and re-join the current preliminary design adjacent to the new SEC. Laydown Area WF-A would require the diversion to be extended to allow the new laydown entrance to be formed and created as per the Laydown Area. This would be required to ensure the safety of the public using the Trans Pennine Trail and the Trans Pennine Trail diversion, by avoiding the need for a crossing point between Trans Pennine Trail users and construction vehicles.

3.8.6 Increased drainage systems would need to be installed to capture and divert the high volume of water that would flow from the surrounding area down towards Laydown Area WF-A.

3.8.7 The new site access would result in construction traffic having to cross over the Thurlstone Moor culverts numbers 1 and 2. Extensive works are likely to be required to protect/modify these structures to facilitate use of Laydown Area WF-A.

3.8.8 It is estimated that a significant number of vehicle movements would be required between the laydown area and the cable installation area each day, these works would be carried out as per the sequence of works detailed within the construction programme. The vehicle movements would be segregated from public/TPT users with the construction vehicles transporting materials and equipment from the construction site to the proposed laydown area. Public/TPT users would be segregated at all times, with demarcation fencing installed.

3.8.9 The construction works will need to use the temporary bridge over the River Don to transport certain materials and equipment from the North vehicle access route whilst the public and TPT users are using the temporary diversion, it is currently anticipated that approximately 10 vehicle movements will be required to gain access over the temporary bridge on a daily basis. Traffic management will be installed either side of the temporary bridge to enable the construction vehicles to transport materials and equipment over the bridge. This will be carried out with closing the manned traffic management gates either side of the bridge to restrict access over the bridge to the public /TPT users whilst the construction vehicles pass over the bridge. The manned traffic management will open the bridge to the public/TPT users once the construction have gained access over the bridge.

4. LAYDOWN AREA WF-B

4.1 Land Use & Planning

4.1.1 Laydown Area WF-B is located directly south of Pylon 4ZO158 to the west of the proposed SEC within Wogden Foot LWS and north of the Trans Pennine Trail. Laydown Area WF-B comprises of an area of undeveloped woodland scrub and grassland. The location of Laydown Area WF-B and the identified environmental constraints are shown on Figure 2 in Appendix 1.

Planning Application Search

4.1.2 Laydown Area WF-B and its Study Area are located within the planning jurisdiction of Barnsley Metropolitan Borough Council.

4.1.3 There are no recent major planning applications (within the last 5 years) within the Study Area. The only recent planning application within the Study Area relates to the replacement of a single storey extension of a listed building at Dick Royd Farm (Application ref: 2015/0339) approximately 400m north of the Laydown Area WF-B.

Planning Policy

4.1.4 Barnsley Metropolitan Borough Council are currently preparing a Local Plan which will replace the Core Strategy (2011) and the saved policies of the Unitary Development Plan (2000). The final draft of the Local Plan has been submitted to the Secretary of State for review and is estimated to be adopted in spring 2018. Table 4.1 details the relevant policies associated with Laydown Area WF-B.

Table 4.1: Planning policies associated with Laydown Area WF-B

Local Plan Publication Draft (2016)	
Planning Policy	**Relevance to Potential Laydown area**
T2 Safeguarding of Former Railway Lines "We will safeguard land within and adjacent to existing and historical rail alignments to accommodate the potential reinstatement of former strategic railway lines."	Laydown Area WF-B is located directly north of a former railway line.
GS2 Green Ways and Public Rights of Way "Where development affects an existing Green Way or Public Right of Way it must: • Protect the existing route within the development; or • Include an equally convenient and attractive alternative route. Where new development is close to a Green Way or Public Right of Way it may be required to:	Laydown Area WF-B is located directly north of the Trans-Pennine Trail.

• Provide a link to the existing route; and/or • Improve an existing route; and/or • Contribute to a new route.”	
GB1 Protection of Green Belt “Green Belt will be protected from inappropriate development in accordance with national planning policy.”	Laydown Area WF-B is located within the green belt.
BIO1 Biodiversity and Geodiversity “Development will be expected to conserve and enhance the biodiversity and geological features of the borough by: • protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified via Section 41 of the Natural Environment & Rural Communities Act 2006 (for list of the species and habitats of principal importance) and in the Barnsley Biodiversity Action Plan • maximising biodiversity and geodiversity opportunities in and around new developments • conserving and enhancing the form, local character and distinctiveness of the boroughs natural assets such as the river corridors of the Don, the Dearne and Dove as natural floodplains and important strategic wildlife corridors • development, which may harm a biodiversity or geological feature or habitat, including ancient woodland and aged or veteran trees found outside ancient woodland, will not be permitted unless effective mitigation and/or compensatory measures can be ensured. • development, which adversely effects a European Site, will not be permitted unless there is no alternative option and imperative reasons of overriding public interest (IROPI). Proposals will be expected to have followed the national mitigation hierarchy (avoid, mitigate, compensate) which is used to evaluate the impacts of a development on biodiversity interest.	Laydown Area WF-B is located within Wogden Foot LWS.

• protecting ancient and veteran trees where identified • encouraging provision of biodiversity enhancements"	
Core Strategy (2011)	
CSP 34 Protection of Green Belt "In order to protect the countryside and open land around built up areas the extent of the Green Belt with be safeguarded and remain unchanged."	Laydown Area WF-B is located within the green belt.
Unitary Development Plan (2000) Saved Policies	
WR13/29 Nature Conservation Sites: Wogden Foot "the sites ... will be safeguarded from development which would cause disturbance, pollution and other damage"	Laydown Area WF-B is located within Wogden Foot.
GS6, GS8 and WR10 Green Belt "Within the green belt, the construction of new buildings will not be permitted, except in very special circumstances"	Laydown Area WF-B is located within the green belt.
WR15/1 Recreation Routeways: Trans-Pennine Trail "the routeways ... will be protected and developed as part of a safe multi-user recreational network"	Laydown Area WF-B is located directly north of the Trans-Pennine Trail.

Tree Preservation Orders & Conservation Areas

4.1.5 According to the Barnsley Metropolitan Borough Council Tree Preservation Orders map, there are no TPOs or conservation areas within the Study Area of Laydown Area WF-B.

4.2 Soils, Geology & Ground Conditions

Soils & Agriculture

4.2.1 Laydown Area WF-B is located within an area of slowly permeable wet very acid upland soils with a peaty surface potentially merging into soils described as slowly permeable seasonally wet acid loamy and clayey soils[2]. Given the vegetation present there may be less of an organic surface layer, however the slowly permeable nature may result in soil handling restrictions. As detailed under 'Ground Conditions' below, Laydown Area WF-B also comprises of areas of historically infilled land.

4.2.2 Laydown Area WF-B is on land classified on Provisional Agricultural Land Classification (ALC) mapping as either Grade 4 or Grade 5 (poor or very poor) Agricultural Land.

4.2.3 No Nitrate Vulnerable Zones have been identified within the Study Area.

[2] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

Geology & Hydrogeology

4.2.4 Laydown Area WF-B is underlain by bedrock comprising the Huddersfield White Rock – Sandstone and Marsden Formation – Mudstone and Siltstone. Laydown Area WF-B is underlain by a Secondary A aquifer (permeable layers of bedrock capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers).

4.2.5 Laydown Area WF-B is not located within a Groundwater Source Protection Zone.

Ground Conditions

4.2.6 Laydown Area WF-B comprises areas of historically infilled land associated with the former railway sidings and spoil from the construction of the Woodhead tunnel.

4.2.7 There are no pollution incidents recorded by the Environment Agency within Laydown Area WF-B.

4.3 Hydrology & Flood Risk

4.3.1 The River Don lies approximately 50m north of the WF-B proposed area, and has areas of both Flood Zone 2 and 3 extending up to 10m out from its banks; however, Laydown Area WF-B does not lie within Flood Zone 2 or 3.

4.3.2 Several drainage ditches are located to the south of Laydown Area WF-B.

4.3.3 There are no surface water abstraction licences within the Study Area of Laydown Area WF-B.

4.4 Historic Environment

4.4.1 There are no Scheduled Monuments, World Heritage Sites Registered Battlefields or Registered Parks and Gardens within the Study Area.

4.4.2 There is one Listed Building within the Study Area; the grade II listed Dick Royd farmhouse and attached barn, which is located approximately 375m north of Laydown Area WF-B.

4.4.3 Laydown Area WF-B has the potential to be visible from the grade II listed Dick Royd farmhouse and attached barn, leading to a temporary visual impact during construction.

4.4.4 Laydown Area WF-B comprises areas of former railway sidings and spoil from the construction of the Woodhead tunnel; these are not considered to be sensitive.

4.5 Landscape & Visual

4.5.1 Laydown Area WF-B is located directly north of the boundary of the Peak District National Park. There are no AONBs within the Study Area. There are no local landscape designations within the Study Area.

4.5.2 Under the Unitary Development Plan (2000) the WF-B proposed area is located within an Area of Borough Landscape Value. However, the policy associated with this designation

(Policy GS13) has not been 'saved' as part of the current Local Plan Publication Draft (2016).

4.5.3 Laydown Area WF-B would be screened from views from the north (local community and people using local rights of way) by trees on the south side of the River Don.

4.6 Recreation

4.6.1 There are no PRoW within Laydown Area WF-B; however, the Trans Pennine Trail, which is a National Trail, runs along the southern boundary of the laydown area. The Trans Pennine Trail will be diverted north of the River Don during construction, with the diversion passing north of Laydown Area WF-B and adjacent (east) of the new SEC. The Trans Pennine Trail also incorporates National Cycle Route 62 at this location.

4.6.2 A second PRoW located approximately 375m north of Laydown Area WF-B, runs east-west linking to two points along Brook Hill Lane.

4.6.3 Laydown Area WF-B is not located within land designated as open access land under the Countryside and Rights of Way Act 2000. No areas of common land have been identified within the Study Area.

4.7 Ecology

Nationally Designated Sites

4.7.1 Laydown Area WF-B is not located within any statutory designated sites. The nearest statutory designated sites to Laydown Area WF-B are the Peak District Moors Special Protection Area (SPA), the South Pennine Moors Special Area of Conservation (SAC), and the Dark Peak Site of Special Scientific Interest (SSSI), which are located 1.6km south and 2km west.

Non-Statutory Designated Sites

4.7.2 Laydown Area WF-B is located within Wogden Foot LWS, and directly north of the Western Moors LWS.

4.7.3 The Wogden Foot LWS; approximately 11.79ha, comprises of former railway sidings which have been subject to natural succession over the last 30 to 40 years and now comprise a mosaic of acidic, neutral and calcareous grassland habitats interspersed with scrub and young broadleaved woodland. The grassland composition has been influenced by the addition of limestone ballast (originating from the adjacent dismantled railway) to this naturally acidic environment. This provides an area of botanical diversity, for example species such as cowslip (*Primula veris*), ploughman's spikenard (*Inula conyza*) and wild marjoram (*Origanum vulgare*), that is unusual in the Borough. The LWS also supports breeding bird species of Principal Importance including lesser redpoll (*Carduelis cabaret),* linnet (*Carduelis cannabina*), bullfinch (*Pyrrhula pyrrhula*), willow tit, spotted flycatcher (*Muscicapa striata),* dunnock (*Prunella modularis*) and song thrush (*Turdus philomelos*).The mature scrub within the site supports nesting willow tit.

Notable Habitats, and Protected and Notable Species

4.7.4 As detailed above Wogden Foot LWS supports nesting birds including willow tit. Within Laydown Area WF-B, a single willow tit territory was recorded in 2017. A second territory was also identified within the area within which the SEC is proposed. Laydown Area WF-B supports a diverse assemblage of macro invertebrates. Whilst reptile surveys conducted within the LWS did not identify any individuals, the LWS has potential to support a low population of common lizard, although given the density of the scrub/ woodland this would be less so in the western part of the LWS than in the eastern extent of the LWS. A number of bats species have been recorded foraging within Laydown Area WF-B but no evidence of roosting bats has been identified within Wogden Foot LWS.

4.8 Engineering

4.8.1 Laydown Area WF-B is situated west of the proposed SEC. A combined site entrance would need to be created to enable Laydown Area WF-B to be connected to the construction area to construct the proposed SEC (inclusive of the area required to form the excavation trenches associated with the cable Corridor, demarcation of works areas, materials stores, parking requirements for vehicles, the TPT diversion and Bridge 2.

4.8.2 Laydown Area WF-B would require demarcation prior to the construction of a laydown area and would need to take consideration of the existing overhead line and the subsequent site constraints whilst operating vehicles within proximity of the overhead line. Installation of protective fencing, height restriction barriers and lock out devices on the mechanical excavators would need to be established and used whilst working in proximity of the overhead line. A horizontal safety demarcation distance of 7m would need to be established with the installation of a safety barrier system from the overhead line prior to commencement of the laydown construction works and subsequent works within the laydown area.

4.8.3 The works would require removal of trees and shrubs in places prior to the creation of Laydown Area WF-B, with a line of trees retained around the area where feasible to provide screening. The top surface layer would need to be removed (where this is in accordance with ecological mitigation objectives) prior to the installation of a terram membrane and compacted stone layers to form a sufficient temporary surface to be utilised as a laydown area during the construction phase.

4.8.4 The depth of the stone would need to be designed to allow for the site constraints; for the purpose of this appraisal an indicative depth of 300-500mm of stone is assumed to be needed to be installed and compacted to form a top layer suitable for the numbers of vehicles that would need to be operated from the laydown area undertaking and progressing numerous different works activities.

4.8.5 It is estimated that a significant number of vehicle movements would be required between the laydown area and the cable installation area each day, these works would be carried out as per the sequence of works detailed within the construction programme. The vehicle movements would be segregated from public/TPT users with the construction vehicles transporting materials and equipment from the construction site to the proposed laydown area. Public/TPT users would be segregated at all times, with demarcation fencing installed.

4.8.6 The construction works will need to use the temporary bridge over the River Don to transport certain materials and equipment from the North vehicle access route whilst the public and TPT users are using the temporary diversion, it is currently anticipated that approximately 10 vehicle movements will be required to gain access over the temporary bridge on a daily basis. Traffic management will be installed either side of the temporary bridge to enable the construction vehicles to transport materials and equipment over the bridge. This will be carried out with closing the manned traffic management gates either side of the bridge to restrict access over the bridge to the public /TPT users whilst the construction vehicles pass over the bridge. The manned traffic management will open the bridge to the public/TPT users once the construction have gained access over the bridge.

5. LAYDOWN AREA– WF-C

5.1 Land Use & Planning

5.1.1 Laydown Area WF-C is located to the eastern side of the proposed SEC within Wogden Foot LWS and north of the Trans Pennine Trail and comprises an area of undeveloped woodland with a single pond located in the centre. The location of Laydown Area WF-C and the identified environmental constraints are shown on Figure 3 in Appendix 1.

Planning Application Search

5.1.2 Laydown Area WF-C and its Study Area is located within the planning jurisdiction of Barnsley Metropolitan Borough Council.

5.1.3 There are no recent major planning applications (within the last 5 years) within the Study Area. The only recent planning application within the Study Area relates to the replacement of a single storey extension of a listed building at Dick Royd Farm (Application ref: 2015/0339) approximately 430m north of the Laydown Area WF-C.

Planning Policy

5.1.4 Barnsley Metropolitan Borough Council are currently preparing a Local Plan which will replace the Core Strategy (2011) and the saved policies of the Unitary Development Plan (2000). The final draft of the Local Plan has been submitted to the Secretary of State for review and is estimated to be adopted in spring 2018. Table 5.1 details the relevant policies associated with Laydown Area WF-C.

Table 5.1: Planning policies associated with Laydown Area WF-C

Local Plan Publication Draft (2016)	
Planning Policy	**Relevance to Potential Laydown area**
T2 Safeguarding of Former Railway Lines "We will safeguard land within and adjacent to existing and historical rail alignments to accommodate the potential reinstatement of former strategic railway lines."	Laydown Area WF-C is located directly north of a former railway line.
GS2 Green Ways and Public Rights of Way "Where development affects an existing Green Way or Public Right of Way it must: • Protect the existing route within the development; or • Include an equally convenient and attractive alternative route. Where new development is close to a Green Way or Public Right of Way it may be required to: • Provide a link to the existing route; and/or • Improve an existing route; and/or	Laydown Area WF-C is located directly north of the Trans-Pennine Trail.

• Contribute to a new route.”	
GB1 Protection of Green Belt “Green Belt will be protected from inappropriate development in accordance with national planning policy.”	Laydown Area WF-C is located within the green belt.
BIO1 Biodiversity and Geodiversity “Development will be expected to conserve and enhance the biodiversity and geological features of the borough by: • protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified via Section 41 of the Natural Environment & Rural Communities Act 2006 (for list of the species and habitats of principal importance) and in the Barnsley Biodiversity Action Plan • maximising biodiversity and geodiversity opportunities in and around new developments • conserving and enhancing the form, local character and distinctiveness of the boroughs natural assets such as the river corridors of the Don, the Dearne and Dove as natural floodplains and important strategic wildlife corridors • development, which may harm a biodiversity or geological feature or habitat, including ancient woodland and aged or veteran trees found outside ancient woodland, will not be permitted unless effective mitigation and/or compensatory measures can be ensured. • development, which adversely effects a European Site, will not be permitted unless there is no alternative option and imperative reasons of overriding public interest (IROPI). Proposals will be expected to have followed the national mitigation hierarchy (avoid, mitigate, compensate) which is used to evaluate the impacts of a development on biodiversity interest. • protecting ancient and veteran trees where identified • encouraging provision of biodiversity enhancements”	Laydown Area WF-C is located within Wogden Foot LWS.

Core Strategy (2011)	
CSP 34 Protection of Green Belt "In order to protect the countryside and open land around built up areas the extent of the Green Belt with be safeguarded and remain unchanged."	Laydown Area WF-C is located within the green belt.
Unitary Development Plan (2000) Saved Policies	
WR13/29 Nature Conservation Sites: Wogden Foot "the sites ... will be safeguarded from development which would cause disturbance, pollution and other damage"	Laydown Area WF-C is located within Wogden Foot LWS.
GS6, GS8 and WR10 Green Belt "Within the green belt, the construction of new buildings will not be permitted, except in very special circumstances"	Laydown Area WF-C is located within the green belt.
WR15/1 Recreation Routeways: Trans-Pennine Trail "the routeways ... will be protected and developed as part of a safe multi-user recreational network"	Laydown Area WF-C is located directly north of the Trans-Pennine Trail.

Tree Preservation Orders & Conservation Areas

5.1.5 According to the Barnsley Metropolitan Borough Council Tree Preservation Orders map, there are no TPOs or conservation areas within the Study Area.

5.2 Soils, Geology & Ground Conditions

5.2.1 Laydown Area WF-C is located within an area of slowly permeable wet very acid upland soils with a peaty surface potentially merging into soils described as slowly permeable seasonally wet acid loamy and clayey soils[3]. Given the vegetation present there may be less of an organic surface layer, however the slowly permeable nature may result in soil handling restrictions. As detailed under 'Ground Conditions' below, Laydown Area WF-C also comprises of areas of historically infilled land.

5.2.2 Laydown Area WF-C is on land classified on Provisional Agricultural Land Classification (ALC) mapping as either Grade 4 or Grade 5 (poor or very poor) Agricultural Land.

5.2.3 No Nitrate Vulnerable Zones have been identified within the Study Area.

Geology & Hydrogeology

5.2.4 Laydown Area WF-C is underlain by bedrock comprising the Huddersfield White Rock – Sandstone. Laydown Area WF-C is underlain by a Secondary A aquifer (permeable layers of bedrock capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers).

[3] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

5.2.5 Laydown Area WF-C is not located within a Groundwater Source Protection Zone.

Ground Conditions

5.2.6 The site comprises areas of historically infilled land associated with the former railway sidings and spoil from the construction of the Woodhead tunnel.

5.2.7 There are no pollution incidents recorded by the Environment Agency within Laydown Area WF-C.

5.3 Hydrology & Flood Risk

5.3.1 The River Don lies approximately 50m north of Laydown Area WF-C, and has areas of both Flood Zone 2 and 3 extending up to 10m out from its banks; however, Laydown Area WF-C does not lie within Flood Zone 2 or 3.

5.3.2 Several drainage ditches are located to the south of Laydown Area WF-C within the Study Area. A pond is located within Laydown Area WF-C.

5.3.3 There are no surface water abstraction licences within the Study Area.

5.4 Historic Environment

5.4.1 There are no Scheduled Monuments, World Heritage Sites and Registered Battlefields or Registered Parks and Gardens within the Study Area of Laydown Area WF-C.

5.4.2 There is one Listed Building within the Study Area; the grade II listed Dick Royd farmhouse and attached barn (Grade II), which is located approximately 375m north of Laydown Area WF-C.

5.4.3 Laydown Area WF-C has the potential to be visible from the grade II listed Dick Royd farmhouse and attached barn, leading to a temporary visual impact during construction.

5.4.4 Laydown Area WF-C comprises areas of former railway sidings and spoil from the construction of the Woodhead tunnel; these are not considered to be sensitive.

5.5 Landscape & Visual

5.5.1 Laydown Area WF-C is located directly north of the boundary of the Peak District National Park. There are no AONBs within the Study Area.

5.5.2 There are no local landscape designations within the Study Area.

5.5.3 Under the Unitary Development Plan (2000) the WF-C proposed area is located within an Area of Borough Landscape Value. However, the policy associated with this designation (Policy GS13) has not been ‘saved’ as part of the current Local Plan Publication Draft (2016).

5.5.4 Views from the north (local community and people using local rights of way) would be screened by existing trees along the southern side of the River Don.

5.6 Recreation

5.6.1 There are no PRoW within Laydown Area WF-C; however, the Trans Pennine Trail, which is a National Trail, runs along the southern boundary of the laydown area. The Trans Pennine Trail diversion will need to be extended by approximately 200m around Laydown Area WF-C in order to avoid interactions between construction vehicles and workers during construction. The Trans Pennine Trail also incorporates National Cycle Route 62 at this location.

5.6.2 A second PRoW located approximately 430m north of Laydown Area WF-C, runs east-west linking to two points along Brook Hill Lane.

5.6.3 Laydown Area WF-C is not located within land designated as open access land under the Countryside and Rights of Way Act 2000. No areas of common land have been identified within the Study Area.

5.7 Ecology

Nationally Designated Sites

5.7.1 Laydown Area WF-C is not located within a statutory designated site. The nearest statutory designated sites to Laydown Area WF-C are the Peak District Moors Special Protection Area (SPA), the South Pennine Moors Special Area of Conservation (SAC), and the Dark Peak Site of Special Scientific Interest (SSSI), which are located 1.6km south and 2km west.

Non-Statutory Designated Sites

5.7.2 Laydown Area WF-C is located within Wogden Foot LWS, and directly north of the Western Moors LWS.

5.7.3 Wogden Foot LWS; which comprises of approximately 11.79ha in total, consists of a mosaic of acidic, neutral and calcareous grassland habitats interspersed with scrub and young broadleaved woodland. The grassland composition has been influenced by the addition of limestone ballast (originating from the adjacent dismantled railway) to this naturally acidic environment. This provides an area of botanical diversity, for example species such as cowslip (*Primula veris*), ploughman's spikenard (*Inula conyza*) and wild marjoram (*Origanum vulgare*), that is unusual in the Borough. The LWS also supports breeding bird species of Principal Importance including lesser redpoll (*Carduelis cabaret),* linnet (*Carduelis cannabina*), bullfinch (*Pyrrhula pyrrhula*), willow tit, spotted flycatcher (*Muscicapa striata),* dunnock (*Prunella modularis*) and song thrush (*Turdus philomelos*).The mature scrub within the site supports nesting willow tit.

5.7.4 Laydown Area WF-C contains an artificial pond, which may require filling in, in order for this Laydown Area to be used. The pond was surveyed for great crested newt with no presence being identified.

Notable Habitats, and Protected and Notable Species

5.7.5 As detailed above, Wogden Foot LWS supports scrub and tree nesting birds including willow tit. Within Laydown Area WF-C a single willow tit territory was recorded in 2017 in the area of more mature scrub which borders the northern boundary of the LWS alongside

the embankment of the River Don. A second territory was also identified within the area within which the SEC is proposed. The site supports a diverse assemblage of macro invertebrates particularly associated with the vegetated mounds present within this area. Whilst reptile surveys conducted within the LWS did not identify any individuals, the LWS has potential to support a low population of common lizard. A number of bats species have been recorded foraging within the site but no evidence of roosting bats has been identified within Wogden Foot LWS.

5.8 Engineering

5.8.1 Laydown Area WF-C is situated East of the proposed SEC. A combined site entrance would be created to enable Laydown Area WF-C to be connected to the site area required to construct the proposed SEC (inclusive of the area required to form the excavation trenches associated with the Cable Corridor, demarcation of works areas, materials stores and parking requirements, the TPT diversion and Bridge 2 construction).

5.8.2 The Trans Pennine Trail diversion would need to be extended by approximately 200m to enable segregation of Trans Pennine Trail users from the construction works. This extension to the Trans Pennine Trail diversion would need to be installed and subsequently removed and reinstated within an area east of the proposed SEC, with the Trans Pennine Trail diversion re-joining the existing Trans Pennine Trail in the eastern area of Wogden Foot LWS.

5.8.3 The works would require removal of trees and shrubs prior to the creation of both the Trans Pennine Trail diversion and the laydown area; where possible vegetation would be retained for screening. The top soil/ surface layer would need to be removed prior to the installation of a geogrid type membrane and compacted stone layers to form a sufficient temporary surface to be utilised as both the Trans Pennine Trail diversion and laydown areas during the construction phase.

5.8.4 The depth of the stone would need to be designed to allow for the site constraints; for the purpose of this options appraisal an indicative depth of 300-500mm of stone is assumed to be needed to be installed and compacted to form a surface suitable for the extensive numbers of vehicles that would need to be operated from the laydown area undertaking and progressing numerous different works activities.

5.8.5 It is estimated that a significant number of vehicle movements would be required between the laydown area and the cable installation area each day, these works would be carried out as per the sequence of works detailed within the construction programme. The vehicle movements would be segregated from public/TPT users with the construction vehicles transporting materials and equipment from the construction site to the proposed laydown area. Public/TPT users would be segregated at all times, with demarcation fencing installed.

5.8.6 The construction works will need to use the temporary bridge over the River Don to transport certain materials and equipment from the North vehicle access route whilst the public and TPT users are using the temporary diversion, it is currently anticipated that approximately 10 vehicle movements will be required to gain access over the temporary bridge on a daily basis. Traffic management will be installed either side of the temporary bridge to enable the construction vehicles to transport materials and equipment over the bridge. This will be carried out with closing the manned traffic management gates either

side of the bridge to restrict access over the bridge to the public /TPT users whilst the construction vehicles pass over the bridge. The manned traffic management will open the bridge to the public/TPT users once the construction have gained access over the bridge.

6. LAYDOWN AREA – WF-D

6.1 Land Use & Planning

6.1.1 Laydown Area WF-D is located on the north side of the River Don opposite Wogden Foot LWS (north west of Pylon 4ZO158 and the proposed SEC). Laydown Area WF-D is located within an area of steeply sloped agricultural land. The location of Laydown Area WF-D and the identified environmental constraints are shown on Figure 4 in Appendix 1.

Planning Application Search

6.1.2 Laydown Area WF-D and its Study Area lies wholly within the planning jurisdiction of Barnsley Metropolitan Borough Council.

6.1.3 There are no recent major planning applications (within the last 5 years) within the Study Area. The only recent planning application within the Study Area relates to the replacement of a single storey extension of a listed building at Dick Royd Farm (Application ref: 2015/0339).

Planning Policy

6.1.4 Barnsley Metropolitan Borough Council are currently preparing a Local Plan which will replace the Core Strategy (2011) and the saved policies of the Unitary Development Plan (2000). The final draft of the Local Plan has been submitted to the Secretary of State for review and is estimated to be adopted in spring 2019. Table 6.1 details the relevant policies associated with Laydown Area WF-D.

Table 6.1: Planning policies associated with Laydown Area WF-D

Local Plan Publication Draft (2016)	
Planning Policy	**Relevance to Potential Laydown area**
GB1 Protection of Green Belt “Green Belt will be protected from inappropriate development in accordance with national planning policy.”	Laydown Area WF-D is located within the green belt.
Core Strategy (2011)	
CSP 34 Protection of Green Belt “In order to protect the countryside and open land around built up areas the extent of the Green Belt with be safeguarded and remain unchanged.”	Laydown Area WF-D is located within the green belt.
Unitary Development Plan (2000) Saved Policies	
GS6, GS8 and WR10 Green Belt “Within the green belt, the construction of new buildings will not be permitted, except in very special circumstances”	Laydown Area WF-D is located within the green belt.

Tree Preservation Orders & Conservation Areas

6.1.5 According to the Barnsley Metropolitan Borough Council Tree Preservation Orders map, there are no TPOs or conservation areas within the Study Area.

6.2 Soils, Geology & Ground Conditions

Soils & Agriculture

6.2.1 Laydown Area WF-D is located within an area of slowly permeable seasonally wet acid loamy and clayey soils[4]. Laydown Area WF-D is on land classified on Provisional Agricultural Land Classification (ALC) mapping as Grade 4 (poor) Agricultural Land.

6.2.2 No Nitrate Vulnerable Zones have been identified within the Study Area.

Geology & Hydrogeology

6.2.3 Laydown Area WF-D is underlain by bedrock comprising the Huddersfield White Rock – Sandstone and Marsden Formation – Mudstone and Siltstone. Laydown Area WF-D is underlain by a Secondary A aquifer (permeable layers of bedrock capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers).

6.2.4 Laydown Area WF-D is not located within a Groundwater Source Protection Zone.

Ground Conditions

6.2.5 There are no existing or historic landfills within Laydown Area WF-D. There are no pollution incidents recorded by the Environment Agency within Laydown Area WF-D.

6.3 Hydrology & Flood Risk

6.3.1 The River Don lies approximately 30m south of Laydown Area WF-D, and has areas of both Flood Zone 2 and 3 extending up to 10m out from its banks; however Laydown Area WF-D does not lie within Flood Zone 2 or 3.

6.3.2 Several drainage ditches are located within the Study Area.

6.3.3 There are no surface water abstraction licences within the Study Area.

6.3.4 Consideration would need to be given to the storage of materials, vehicles and fuels in close proximity to the River Don.

6.4 Historic Environment

6.4.1 There are no Scheduled Monuments, World Heritage Sites, Registered Battlefields or Registered Parks and Gardens within the Study Area of Laydown Area WF-D.

6.4.2 There is one Listed Buildings within the Study Area; the grade II listed Dick Royd farmhouse and attached barn, which is located approximately 275m northeast of Laydown Area WF-D.

[4] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

6.4.3 Due to the steeply sloping terrain it is unlikely that Laydown Area WF-D would be visible from the grade II listed Dick Royd farmhouse and attached barn.

6.4.4 Laydown Area WF-D is located within an area of previously undeveloped land, while it is possible that this site is acceptable on archaeological grounds, further investigation (geophysical survey and possible trial trenching) would be required to confirm this.

6.5 Landscape & Visual

6.5.1 Laydown Area WF-D is located approximately 100m north of the boundary of the Peak District National Park. There are no AONB within the Study Area.

6.5.2 There are no local landscape designations within the Study Area.

6.5.3 Under the Unitary Development Plan (2000) Laydown Area WF-D is located within an Area of Borough Landscape Value. However, the policy associated with this designation (Policy GS13) has not been 'saved' as part of the current Local Plan Publication Draft (2016).

6.5.4 Laydown Area WF-D would be visible in views from the north (local community, drivers and passengers on Brook Hill Lane and people using local rights of way). There would be direct views down the valley as the northern side of the valley has limited tree cover.

6.6 Recreation

6.6.1 There are no PRoW within Laydown Area WF-D. The Trans Pennine Trail, which is a National Trail, is located approximately 100m south of Laydown Area WF-D. The Trans Pennine Trail will be diverted north of the River Don during construction, with the diversion immediately south of Laydown Area WF-D. Both Laydown Area WF-D and the Trans Pennine Trail diversion will make use of a new bridge across the River Don; this may result in regular interactions between users of the Trans Pennine Trail diversion and construction traffic and personnel travelling between Laydown Area WF-D and the proposed SEC construction area (see Section 6.8.1).

6.6.2 The Trans Pennine Trail also incorporates National Cycle Route 62 through the Study Area.

6.6.3 A second PRoW located approximately 250m north of Laydown Area WF-D, runs east-west linking to two points along Brook Hill Lane.

6.6.4 Laydown Area WF-D is not located within land designated as open access land under the Countryside and Rights of Way Act 2000. No areas of common land have been identified within the Study Area.

6.7 Ecology

Nationally Designated Sites

6.7.1 Laydown Area WF-D is not located within a statutory designated site. The nearest statutory designated sites to Laydown Area WF-D are the Peak District Moors Special Protection Area (SPA), the South Pennine Moors Special Area of Conservation (SAC), and the Dark Peak Site of Special Scientific Interest (SSSI), which are located 1.8km south and 1.8km west.

Non-Statutory Designated Sites

6.7.2 Laydown Area WF-D is not located within any local wildlife sites, Wogden Foot LWS is located approximately 30m south and the Western Moors LWS approximately 120m south of Laydown Area WF-D.

Notable Habitats, and Protected and Notable Species

6.7.3 Laydown Area WF-D comprises of improved or poor semi-improved grassland currently sheep grazed and as such is of low botanical diversity is located close to the River Don and associated riparian marginal habitat. The River Don provides moderate value habitat for aquatic macro invertebrates and is suitable to support transient otter (although no features present). The River Don corridor has been confirmed to support a number of foraging and commuting bats species although in low numbers with no evidence of roosting bats identified within Laydown Area WF-D.

6.8 Engineering

6.8.1 Laydown Area WF-D is situated North of the proposed SEC, on the north side of the River Don. The use of Laydown Area WF-D would prohibit Trans Pennine Trail diversion users from using the access over the River Don during construction vehicle movements over the temporary access bridge. The current bridge design is not appropriate in dimensions to be able to install the necessary demarcation features to enable Trans Pennine Trail diversion users and construction vehicles to use the temporary bridge concurrently. The bridge would require regular cleaning to remove debris left by construction vehicles in order to be safely accessible for Trans Pennine Trail diversion users.

6.8.2 It may be possible to install a second bridge that could be used by TPT users alone, but interaction with construction traffic would remain as a crossing between the TPT diversion and the construction access road is unavoidable. Normal practice during construction is to segregate or minimise contact between the public and construction activities, so as to minimise risks to both parties. Although achievable through active management, it is not National Grid's preferred method of working.

6.8.3 It is estimated that a significant number of vehicle movements would be required between the laydown area and the cable installation area each day, depending on the stage of the construction programme.

6.8.4 The width of Laydown Area WF-D is constrained by the top of the flood zone (1:100 year) and the increasing gradient in the land topography. Laydown Area WF-D would effectively be very narrow and impracticable to form an appropriate laydown area with turning areas.

6.8.5 Laydown Area WF-D would need to be installed on a severe gradient area of land on the north side of the River Don. The area would create significant issues to firstly level off the area to create a laydown area and issues with the segregation of vehicles and Trans Pennine Trail diversion users, with construction vehicles operating within close-proximity of the Trans Pennine Trail diversion for an extended length of time.

6.8.6 The depth of the stone would need to be designed to allow for the site constraints, with significant civils works required to be carried out to level the severe gradient to form a laydown area. For the purpose of this options appraisal an indicative depth of 300mm of stone is assumed to be needed to be installed and compacted to form a surface suitable

for the extensive numbers of vehicles that would need to be operated from the laydown area undertaking and progressing numerous different works activities.

7. LAYDOWN AREA – WF-E

7.1 Land Use & Planning

7.1.1 Laydown Area WF-E is located off Brook Hill Lane approximately 600m northwest of the proposed SEC and approximately 50m south of the Northern Access Route (AP7). Laydown Area WF-E is located within an area of undeveloped agricultural land. The location of Laydown Area WF-E and the identified environmental constraints are shown on Figure 5 in Appendix 1.

7.1.2 There is the potential for amenity effects at Laydown Area WF-E as it is located in close proximity to residential properties.

Planning Application Search

7.1.3 Laydown Area WF-E and its Study Area are located within the planning jurisdiction of Barnsley Metropolitan Borough Council.

7.1.4 There are no recent planning applications (within the last 5 years) within the Study Area of Laydown Area WF-E.

Planning Policy

7.1.5 Barnsley Metropolitan Borough Council are currently preparing a Local Plan which will replace the Core Strategy (2011) and the saved policies of the Unitary Development Plan (2000). The final draft of the Local Plan has been submitted to the Secretary of State for review and is estimated to be adopted in spring 2019. Table 7.1 details the relevant policies associated with the WF-E proposed area.

Table 7.1: Planning policies associated with Laydown Area WF-E

Local Plan Publication Draft (2016)	
Planning Policy	**Relevance to Potential Laydown area**
GB1 Protection of Green Belt “Green Belt will be protected from inappropriate development in accordance with national planning policy.”	Laydown Area WF-E is located within the green belt.
BIO1 Biodiversity and Geodiversity “Development will be expected to conserve and enhance the biodiversity and geological features of the borough by: • protecting and improving habitats, species, sites of ecological value and sites of geological value with particular regard to designated wildlife and geological sites of international, national and local significance, ancient woodland and species and habitats of principal importance identified via Section 41 of the Natural Environment & Rural Communities Act 2006 (for list	Laydown Area WF-E is located directly south of the Western Moors LWS.

of the species and habitats of principal importance) and in the Barnsley Biodiversity Action Plan • maximising biodiversity and geodiversity opportunities in and around new developments • conserving and enhancing the form, local character and distinctiveness of the boroughs natural assets such as the river corridors of the Don, the Dearne and Dove as natural floodplains and important strategic wildlife corridors • development, which may harm a biodiversity or geological feature or habitat, including ancient woodland and aged or veteran trees found outside ancient woodland, will not be permitted unless effective mitigation and/or compensatory measures can be ensured. • development, which adversely effects a European Site, will not be permitted unless there is no alternative option and imperative reasons of overriding public interest (IROPI). Proposals will be expected to have followed the national mitigation hierarchy (avoid, mitigate, compensate) which is used to evaluate the impacts of a development on biodiversity interest. • protecting ancient and veteran trees where identified • encouraging provision of biodiversity enhancements"	
Core Strategy (2011)	
CSP 34 Protection of Green Belt "In order to protect the countryside and open land around built up areas the extent of the Green Belt with be safeguarded and remain unchanged."	Laydown Area WF-E is located within the green belt.
Unitary Development Plan (2000) Saved Policies	
WR13/2 Nature Conservation Sites: Western Moors "the sites ... will be safeguarded from development which would cause disturbance, pollution and other damage"	Laydown Area WF-E is located directly south of Western Moors.
GS6, GS8 and WR10 Green Belt "Within the green belt, the construction of new buildings will not be permitted, except in very special circumstances"	Laydown Area WF-E is located within the green belt.

Tree Preservation Orders & Conservation Areas

7.1.6 According to the Barnsley Metropolitan Borough Council Tree Preservation Orders map, there are no TPOs or Conservation Areas within the Study Area of Laydown Area WF-E.

7.2 Soils, Geology & Ground Conditions

Soils & Agriculture

7.2.1 Laydown Area WF-E is located within an area of slowly permeable seasonally wet acid loamy and clayey soils[5].

7.2.2 Laydown Area WF-E is on land classified on Provisional Agricultural Land Classification (ALC) mapping as either Grade 4 or 5 (poor or very poor) Agricultural Land.

7.2.3 No Nitrate Vulnerable Zones have been identified within the Study Area.

Geology & Hydrogeology

7.2.4 Laydown Area WF-E is underlain by bedrock comprising the Rossendale Formation – Mudstone and Siltstone. Laydown Area WF-E is underlain by a Secondary A aquifer (permeable layers of bedrock capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers).

7.2.5 Laydown Area WF-E is not located within a Groundwater Source Protection Zone.

Ground Conditions

7.2.6 There are no existing or historic landfills within Laydown Area WF-E.

7.2.7 There are no pollution incidents recorded by the Environment Agency within Laydown Area WF-E.

7.3 Hydrology & Flood Risk

7.3.1 The River Don lies approximately 400m south of Laydown Area WF-E. Several drainage ditches are located within the Study Area.

7.3.2 Laydown Area WF-E does not lie within Flood Zone 2 or 3.

7.3.3 There are no surface water abstraction licences within the Study Area.

7.4 Historic Environment

7.4.1 There are no Scheduled Monuments, World Heritage Sites, Registered Battlefields or Registered Parks and Gardens within the Study Area.

7.4.2 There is one Listed Building within the Study Area; the grade II listed Barn to Upper Town Head Farm, which is located approximately 230m southwest of Laydown Area WF-E.

[5] http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx

7.4.3 Laydown Area WF-E is located within an area of previously undeveloped land, while it is possible that this site is acceptable on archaeological grounds, further investigation (geophysical survey and possible trial trenching) would be required to confirm this.

7.5 Landscape & Visual

7.5.1 Laydown Area WF-E is located approximately 450m north of the boundary of the Peak District National Park. There are no AONB's within the study area of Laydown Area WF-E.

7.5.2 There are no local landscape designations within the study area of Laydown Area WF-E.

7.5.3 Under the Unitary Development Plan (2000) the Laydown Area WF-E is located within an Area of Borough Landscape Value. However, the policy associated with this designation (Policy GS13) has not been 'saved' as part of the current Local Plan Publication Draft (2016).

7.5.4 Laydown Area WF-E would be visible in views from the immediate surroundings including from the local community of Townsend, Brook Hill Lane and the PRoW to the south. The proximity of the Laydown Area WF-E to the local community and to drivers and passengers on Brook Hill Lane would result in the laydown area forming a large component of views experienced by these receptor groups.

7.6 Recreation

7.6.1 There are no PRoW within Laydown Area WF-E.

7.6.2 The Trans Pennine Trail, which is a National Trail, is located approximately 450m south of Laydown Area WF-E. The Trans Pennine Trail will be diverted north of the River Don during construction, with the diversion being located approximately 400m south of Laydown Area WF-E. Both Laydown Area WF-E and the Trans Pennine Trail diversion will make use of a new bridge across the River Don; this may result in regular interactions between users of the Trans Pennine Trail diversion, and construction traffic and personnel travelling between Laydown Area WF-E and the proposed SEC (see Section 7.8.1).

7.6.3 The Trans Pennine Trail also incorporates National Cycle Route 62 through the study area.

7.6.4 A second PRoW is located adjacent to the proposed Southern boundary of Laydown Area WF-E, which runs east-west linking to two points along Brook Hill Lane. This PRoW is crossed by the construction access track between Brook Hill Lane and the new SEC. The location of Laydown Area WF-E north of this PRoW would result in regular crossings of the PRoW by construction vehicles.

7.6.5 Laydown Area WF-E is not located within land designated as open access land under the Countryside and Rights of Way Act 2000. No areas of common land have been identified within the Study Area.

7.7 Ecology

Nationally Designated Sites

7.7.1 Laydown Area WF-E is not located within a statutory designated site. The nearest statutory designated sites to Laydown Area WF-E are the Peak District Moors Special Protection Area (SPA), the South Pennine Moors Special Area of Conservation (SAC), and the Dark Peak Site of Special Scientific Interest (SSSI), which are located 2.3km south and 1.2km west.

7.7.2 Land located to the north of Laydown Area WF-E (to the north of Brook Hill Lane); Tinker Hill was highlighted during consultation with Natural England as land which may be potentially 'functionally inked' to the South Pennine Moors SPA as land which could support designating SPA species.

Non-Statutory Designated Sites

7.7.3 Laydown Area WF-E is not located within any local wildlife sites; the Western Moors LWS is located directly north of Laydown Area WF-E.

Notable Habitats, and Protected and Notable Species

7.7.4 Laydown Area WF-E comprises of semi-improved or improved neutral grassland encompassed by stone walls and is sheep/horse grazed, with low botanical diversity. Very occasional young broadleaved trees and scrub are present on the field boundaries.

7.7.5 The grassland provides habitat which is suitable to support ground nesting birds, such as lapwing and curlew, although the results of the 2016 breeding bird surveys do not indicate that Laydown Area WF-E supports significant numbers of breeding pairs. No other protected or notable species have been specifically recorded within Laydown Area WF-E.

7.7.6 Laydown Area WF-E is located in a more open/ exposed location at the top of the valley closer to the 'Tinker Hill' habitat. Based upon previous consultation with Natural England the potential noise and visual disturbance effects of a laydown area in this location upon breeding birds, (using this area either for nesting or flying over the valley south to the habitats south of the Trans Pennine Trail) would be raised as a potential concern.

7.8 Engineering

7.8.1 Laydown Area WF-E is situated North of the proposed SEC, on the north side of the River Don. Laydown Area WF-E is approximately 600m along the vehicle access track from the location of the new SEC, adjacent to the new Bellmouth access point (AP7). Traffic movements would be required to transport excavated spoil and returning vehicles back to the different works area. Vehicles would also need to collect the materials and deliver these back to the work area if suitable during the completion of the installation phases of the works. Laydown Area WF-E would prohibit Trans Pennine Trail diversion users from using the access over the River Don during construction vehicle movements over the temporary access bridge. The bridge design is not appropriate in dimensions to be able to install the necessary demarcation features to enable Trans Pennine Trail diversion users and construction vehicles to use the temporary bridge concurrently.

7.8.2 It may be possible to install a second bridge that could be used by TPT users alone, but significant interaction with construction traffic would remain as a crossing between the TPT diversion and the construction access road is unavoidable. Normal practice during construction is to segregate or minimise contact between the public and construction activities, so as to minimise risks to both parties. Although achievable through active management, it is not National Grid's preferred method of working.

7.8.3 It is estimated that a significant number of vehicle movements would be required between the laydown area and the cable installation area each day, depending on the stage of the construction programme.

7.8.4 A second PRoW is located adjacent to the proposed Southern boundary of Laydown Area WF-E, which runs east-west linking to two points along Brook Hill Lane. This PRoW is crossed by the construction access track between Brook Hill Lane and the new SEC. The location of Laydown Area WF-E north of this PRoW would result in regular crossings of the PRoW by construction vehicles.

7.8.5 Laydown Area WF-E is constrained by the 11kV pole line that crosses over the Laydown Area and the large diameter water pipe that crosses within close proximity below ground. The utilities would need to be protected, with established demarcation areas that would also reduce the available area for a laydown area.

7.8.6 Laydown Area WF-E is situated within close-proximity of numerous residential properties. The use of this area would result in increased numbers of construction vehicles operating in close proximity to residential properties.

7.8.7 The steeply sloping gradient of Laydown Area WF-E would require significant ground works to make the site feasible for use as a laydown area.

8. CONCLUSIONS

8.1 Summary of Key Environmental Constraints

8.1.1 Table 8.1 summarises the environmental constraints identified for the five proposed areas.

Table 8.1:Summary of key environmental constraints for WF-A, WF-B, WF-C, WF-D and WF-E

Environmental Constraint	WF-A	WF-B	WF-C	WF-D	WF-E
Land Use & Planning					
Planning Jurisdiction of Proposed area	Peak District National Park Authority	Barnsley Metropolitan Borough Council	Barnsley Metropolitan Borough Council	Barnsley Metropolitan Borough Council	Barnsley Metropolitan Borough Council
Land Use	Located within Western Moors LWS on an area of undeveloped moorland	Located within Wogden Foot LWS on an area of undeveloped woodland	Located within Wogden Foot LWS on an area of undeveloped woodland	Located within an area of steeply sloping undeveloped agricultural land	Located directly south of Western Moors LWS within an area of undeveloped agricultural land. Potential for amenity effects as in close proximity to residential properties
Planning Applications (within last 5 years)	No applications outstanding	No applications outstanding	No applications outstanding	No applications outstanding	No applications outstanding
Planning Policy	Natural Zone	Safeguarding former railways Green ways and PRoW Greenbelt Biodiversity and geodiversity	Safeguarding former railways Green ways and PRoW Greenbelt Biodiversity and geodiversity	Greenbelt	Greenbelt Biodiversity and geodiversity
Tree Preservation Orders	TBC	None within the site boundary	None within the site boundary	None within the site boundary	None within the site boundary
Conservation Areas	None identified	None identified	None identified	None identified	None identified
Soils, Geology and Ground Conditions					

Environmental Constraint	WF-A	WF-B	WF-C	WF-D	WF-E
Soils	Slowly permeable wet very acid upland soils with a peaty surface	Slowly permeable wet very acid upland soils with a peaty surface	Slowly permeable wet very acid upland soils with a peaty surface	Slowly permeable seasonally wet acid loamy and clayey soils	Slowly permeable seasonally wet acid loamy and clayey soils
ALC Grade	Grade 4 or 5 (poor or very poor)	Grade 4 or 5 (poor or very poor)	Grade 4 or 5 (poor or very poor)	Grade 4 (poor)	Grade 4 or 5 (poor or very poor)
Nitrate Vulnerable Zones	None identified	None identified	None identified	None identified	None identified
Geology	Huddersfield White Rock – Sandstone	Huddersfield White Rock – Sandstone and Marsden Formation – Mudstone and Siltstone	Huddersfield White Rock – Sandstone	Huddersfield White Rock – Sandstone and Marsden Formation – Mudstone and Siltstone	Rossendale Formation – Mudstone and Siltstone
Hydrogeology	Underlain by a Secondary A aquifer	Underlain by a Secondary A aquifer	Underlain by a Secondary A aquifer	Underlain by a Secondary A aquifer	Underlain by a Secondary A aquifer
Landfills and Historic Landfills	None identified	Contains areas of historically infilled land associated with the former railway sidings and spoil	Contains areas of historically infilled land associated with the former railway sidings and spoil	None identified	None identified
Pollution Incidents	None identified	None identified	None identified	None identified	None identified
Hydrology and Flood Risk					
Flood Zones	Flood Zone 1 within site boundary	Flood Zone 1 within site boundary	Flood Zone 1 within site boundary	Flood Zone 1 within site boundary	Flood Zone 1 within site boundary
Watercourses and Waterbodies	The River Don lies approximately 120m north	The River Don lies approximately 50m north	The River Don lies approximately 50m north	The River Don lies approximately 30m south	The River Don lies approximately 450m south
Water Abstraction Licences	None within study area	None within study area	None within study area	None within study area	None within study area

Environmental Constraint	WF-A	WF-B	WF-C	WF-D	WF-E
Historic Environment					
Archaeology	Further investigation may be required of undeveloped land (geophysics and possibly trial trenching)	No further investigation required	No further investigation required	Further investigation may be required of undeveloped land (geophysics and possibly trial trenching)	Further investigation may be required of undeveloped land (geophysics and possibly trial trenching)
Listed Buildings	1 – Grade II within study area (425m north) with potential views of proposed area None within site boundary	1 – Grade II within study area (350m north) with potential views of proposed area None within site boundary	1 – Grade II within study area (375m north) with potential views of proposed area None within site boundary	1 – Grade II within study area (275m northeast) None within site boundary	1 – Grade II within study area (230m northeast) None within site boundary
Scheduled Monuments	None identified	None identified	None identified	None identified	None identified
World Heritage Sites	None identified	None identified	None identified	None identified	None identified
Non-Statutory Historic Designations (Registered Battlefields, Registered parks and Gardens)	None identified	None identified	None identified	None identified	None identified
Landscape					
Visual	Visible in views from the north. Temporary access would require removal of existing vegetation, which would open up views to the Proposed SEC in the short term.	Visible in views from the north, with the western half being particularly visible where it is in close proximity to the River Don.	Temporary access may require removal of existing vegetation, which would open up views to the Proposed SEC in the short term.	Visible in views from the north. Direct views down the valley due northern side of valley having limited tree cover.	Visible views from the immediate surroundings (local community, road users, and PRoW). Laydown area would form large component of views

Environmental Constraint	WF-A	WF-B	WF-C	WF-D	WF-E
	If significant levelling is required this may result in a further impact to the landscape.		Views from the north would be screened by existing trees.		along Brook Hill Lane.
Areas of Outstanding Natural Beauty	None identified	None identified	None identified	None identified	None identified
National Parks	Within Peak District National Park	Directly north of Peak District National Park boundary	Directly north of Peak District National Park boundary	100m north of Peak District National Park boundary	500m north of Peak District National Park boundary
Local Landscape Designations	Located within an area designated as Natural Zone	None identified	None identified	None identified	None identified
Recreation					
National Cycle Network	Directly south of National Cycle Route 62 along TPT TPT sandwiched between WF-A and SEC construction works	Directly north of National Cycle Route 62 along TPT	Directly north of National Cycle Route 62 along TPT	100m north of National Cycle Route 62 along TPT	500m north of National Cycle Route 62 along TPT
Local Cycle Network	None identified	None identified	None identified	None identified	None identified
National Trails	Directly north of TPT	Directly south of TPT	Directly south of TPT	100m north of TPT Regular interactions between users of the TPT diversion, and construction traffic and personnel	500m north of TPT Regular interactions between users of the TPT diversion, and construction traffic and personnel
PRoW	Directly north of TPT	Directly south of TPT	Directly south of TPT	Directly north of TPT diversion	500m north of TPT

Environmental Constraint	WF-A	WF-B	WF-C	WF-D	WF-E
				250m north of PROW	120m north of PROW
Common Land or Open Access Land	Within Open Access Land Not within Common Land	Not within Open Access Land or Common Land	Not within Open Access Land or Common Land	Not within Open Access Land or Common Land	Not within Open Access Land or Common Land
Ecology					
Statutory Designated Ecological Sites	None identified	None identified	None identified	None identified	None identified
Non-Statutory Designated Ecological Sites	Within Western Moors LWS	Within Wogden Foot LWS	Within Wogden Foot LWS	None identified	Directly south of Western Moors LWS
Notable Habitats	Acid grassland (semi improved)	Botanically rich neutral and small area of acid grassland Scrub and young woodland	Botanically rich neutral grassland Scrub and young woodland	Improved or poor semi-improved grassland of negligible value Adjacent to River Don riparian corridor	Improved grassland of negligible value
Protected and Notable Species	Ground nesting birds (e.g. curlew and lapwing) Reptiles	Nesting birds including willow tit Terrestrial invertebrates Bats (foraging only)	Nesting birds including willow tit Terrestrial invertebrates Bats (foraging only)	Ground nesting birds (low potential) Otter	Ground nesting birds including proximity to potentially functionally linked SPA land to north of Brook Hill Lane (Tinker Hill)
Engineering					
Engineering	Issue with site topography associated with the difference in levels between the TPT	A combined site entrance would be formed to enable the laydown area to be connected to the site area required to	The TPT diversion would need to extended by approximately 200m to enable segregation of TPT	This proposed location would prohibit TPT diversion users from using the access over the River Don	This proposed location would prohibit TPT diversion users from using the access over the River Don

Environmental Constraint	WF-A	WF-B	WF-C	WF-D	WF-E
	and the proposed area. Extensive works required to demarcate the proposed area and install the required depth of stone. Extensive drainage systems would be required to manage the high volumes of water that would pass over the site. The depth of the stone will need to be designed to allow for the site constraints. An indicative depth of 500-700mm of stone is assumed to be required to be installed and compacted to form a top layer suitable for the numbers of vehicles that would need to be operated from the laydown area undertaking and progressing numerous different works activities.	construct the new SEC. Demarcation of the laydown area would need to take consideration for the existing OHL and the subsequent site constraints whilst operating vehicles within proximity of an OHL. Installation of GS6 height restriction barriers and lock out devices on plant would be required whilst working and operating plant in this area.	users from the construction works. This extension to the TPT diversion would need to be installed and subsequently removed and reinstated within an area east of the SEC, with the TPT diversion re-joining the existing TPT in the eastern area of Wogden Foot.	during construction vehicle movements over the temporary access bridge. The bridge design is not appropriate in dimensions to be able to install the necessary demarcation features to enable TPT diversion users and construction vehicles to use the temporary bridge concurrently. The proposed area would need to be installed on a severe gradient and would require significant civils works to firstly form the laydown area. The area would create issues with the segregation of vehicles and TPT diversion users.	during construction vehicle movements over the temporary access bridge. The bridge design is not appropriate in dimensions to be able to install the necessary demarcation features to enable TPT diversion users and construction vehicles to use the temporary bridge concurrently. The proposed area is located within close-proximity of numerous residential properties. Extensive works required to demarcate the proposed area and install the required depth of stone. Both overhead and underground utilities are in close proximity to the proposed laydown area. Precautionary measures associated with safety distances from the assets will

Environmental Constraint	WF-A	WF-B	WF-C	WF-D	WF-E
					impact on the area available for use

8.2 Conclusion prior to SRG Feedback

8.2.1 Following a review of publicly available information, an ecological appraisal, and engineering review it was initially concluded that either proposed area WF-B or WF-C would be the preferred location for the laydown area on environmental/engineering grounds for the following reasons:

- While both WF-B and WF-C are located within Wogden Foot LWS, the removal of Pylon 4ZO158, the construction of the proposed SEC, access routes and the Trans Pennine Trail Diversion route will cause disturbance to this LWS. The addition of a laydown area to facilitate this would result in a relatively small additional adjacent area of disturbance within the LWS. The alternative of WF-A being located within the Western Moors LWS would result in disturbance to an additional LWS rather than containing disturbance to just one LWS.
- Both Laydown Areas WF-B and WF-C are located in close proximity to the works that they will be facilitating, allowing for minimal disturbance to the surrounding area and users of the Trans Pennine Trail. The alternatives of WF-D and WF-E would result in regular interactions between users of the Trans Pennine Trail diversion and construction traffic where the Trans Pennine Trail diversion crosses the River Don, increasing risk to users for the duration of the works.
- Both WF-B and WF-C contain areas of former railway sidings and spoil from the construction of the Woodhead tunnel, these are not considered to be archaeologically sensitive. Therefore, if development is contained to areas of previously developed land, there would be less potential for archaeological effects.
- WF-A is located within the Peak District National Park and within an area designated as 'Schedule 3 Natural Zone' by the Peak District National Park Authority and only under exceptional circumstances are proposals for development in the Natural Zone usually permitted.
- WF-E is located in a more open/exposed location at the top of the valley closer to the 'Tinker Hill' habitat. Based upon previous consultation with Natural England the potential noise and visual disturbance effects of a laydown in this location upon breeding birds (using either this area for nesting or flying over the valley south to the habitats south of the Trans Pennine Trail) would be raised as a potential concern.
- WF-E is constrained by the presence of both overhead and underground utilities in close proximity to the proposed laydown area. Precautionary measures associated with safety distances from the assets will impact on the area available for use. The PRoW is located adjacent to the proposed Southern boundary of Laydown Area WF-E, which runs east-west linking to two points along Brook Hill Lane. 100m south of Laydown Area WF-E the PRoW is crossed by the construction access track between Brook Hill Lane and the new SEC. The location of Laydown Area WF-E north of this PRoW would result in regular crossings of the PRoW by construction vehicles.
- It is estimated that a significant number of vehicle movements would be required between the laydown area and the cable installation area each day, these works would be carried out as per the sequence of works detailed within the construction programme. Laydown area WF-A, WF- B and WF- C on the southern side of the River Don would require the use of the temporary bridge over the River Don to transport certain materials and equipment from the Northern vehicle access route whilst the public and TPT users are using the temporary diversion. It is currently anticipated that approximately 10 vehicle movements will be required to gain access over the temporary bridge on a daily basis Traffic management will be

installed either side of the temporary bridge to enable the construction vehicles to transport materials and equipment over the bridge.

- The use of Laydown Area WF-D or WF-E would prohibit Trans Pennine Trail diversion users from using the access over the River Don during construction vehicle movements over the temporary access bridge. This would involve a significant number of vehicle movements using the bridge between the cable installation corridor and the laydown areas. The current bridge design is not appropriate in dimensions to be able to install the necessary demarcation features to enable Trans Pennine Trail diversion users and construction vehicles to use the temporary bridge concurrently. The bridge would require regular cleaning to remove debris left by construction vehicles in order to be safely accessible for Trans Pennine Trail diversion users. It may be possible to install a second bridge that could be used by TPT users alone, but interaction with construction traffic would remain as a crossing between the TPT diversion and the construction access road is unavoidable. Normal practice during construction is to segregate or minimise contact between the public and construction activities, to minimise risks to both parties. Although achievable through active management, it is not National Grid's preferred method of working.

8.3 SRG Meeting to discuss the 5 Potential Laydown Options (July 2018)

8.3.1 Following production of the Main on Site Laydown Area Options Appraisal Report, the results were shared with consultees who form the Stakeholder Reference Group (SRG) for the VIP, Peak District (East) Project and discussed at a meeting in July 2018.

8.3.2 National Grid presented the five options for potential laydown areas (WF-A-E). Following discussions regarding each potential Laydown Area the following points were agreed:

- The SRG discounted Laydown Areas WF-D and WF-E;
- Laydown Area B was preferred by the SRG to Laydown Area WF-C;
- Questions remained over the viability, value and benefits of Laydown Area WF-A. The Yorkshire Wildlife Trust was particularly keen to have further information on Laydown Area A prior to this being completely discounted.
- The key concluding decision to make was whether there were any advantages to progressing with Laydown Area WF-A over WF-B. The majority of the SRG felt that Laydown Area WF-B would contain the works within a more localised area, avoid having temporary effects on two LWS's and were uncertain about the potential success with reinstatement of Laydown Area WF-A.
- It was agreed that further information on several areas (as detailed in 8.3 below) would be provided by both National Grid and the SRG to assist in a decision to either progress with Laydown Area WF-B; or undertake some further work with Laydown Area WF-A.

8.4 Further Information Obtained Relating to Laydown Area WF-A

8.4.1 At the July 2018 SRG meeting National Grid were requested to provide more information on what would be required to make Laydown Area WF-A a feasible option. The SRG were particularly keen to understand more about how much levelling would be required and to what depth, would a retaining wall be required, and what would be done with the topsoil during the construction period.

8.4.2 A drawing was produced to show the estimated level of cut and fill required to make Laydown area WF-A feasible. Figure 6 details the cut and fill requirements to establish a flat working area that could be utilised as a laydown area during the construction phase of the Proposed Project, which is anticipated to last up to 18 months. Figure 6 shows a surplus volume of approximately 27,655m^3 that would need to be removed to establish a laydown area. The volumes are currently based on removal of material to establish a flat working area. The volumes may need to be increased to allow for sub-base materials as required to obtain the necessary ground bearing capacity to enable the plant and machinery to be operated within Laydown Area WF-A.

8.4.3 The total area required for Laydown Area WF-A would need to increase from 10,000m^2 to approx. 13,000m^2 to allow for the change in levels required to form the Laydown Area (i.e. the additional area is required to form the battered back areas around the perimeter of Laydown Area WF-A). The cut and fill works would require approx. 300-400 vehicle movements to transport the surplus material off site. The final vehicle movements could increase significantly depending on the cut material i.e. depth of Peat / water content within the material / sub-base material requirements.

8.4.4 Other items identified which would require further consideration if Laydown Area WF-A was to be taken forward are:

- Significant civils works would be required to reinforce the Thurlstone Moor culvert, with new large diameter pipes required to enable the ground in the vicinity of the open culverts to be raised and the Laydown Area WF-A to be established. These works would need to be carried out prior to undertaking the cut and fill works.
- Significant third-party asset works may be required to lower and realign the Yorkshire Water assets that are situated within Laydown Area WF-A. The assets would need to be lowered/diverted in advance of the cut and fill works.
- Storage of the removed material would probably need to be accommodated somewhere offsite, taking into account the ongoing maintenance requirements of the removed material.

Ecology/ Habitat Restoration

Natural England

8.4.5 Natural England were unable to attend the SRG meeting in July 2018 and therefore a conference call was held with them to provide an overview of discussions at the SRG meeting and seek feedback on its position with regard to Laydown Areas WF-A and WF-B.

- For Laydown Area WF-A (and impacts on N2K SPA features) Natural England advised that they would need to understand how this land is used by breeding and feeding moorland birds, particularly the SPA and SSSI species. The impact of use of this moorland area and the impacts of the restoration on the SPA species would need to be considered as part of a Habitat Regulations Assessment.
- For the restoration of Laydown Area WF-A, Natural England advised that a better understanding would be needed about the depth of peat that is involved. Natural England commented that the removal of the top layers of peat would have a huge impact on the hydrology of the area and the use of such large quantities of stone would also impact the underlying hydrology. In addition, the need to divert the water coming from south of the proposed area would also impact the hydrology. Even if the peat could be kept moist and in good condition through storage, it

would be extremely difficult if not impossible to ensure that the hydrological function could be restored and the moorland habitats restored.

- Based on the current information provided, Natural England confirmed that their preferred option would be for the use of Laydown Area WF-B, with mitigation put in place to protect and enhance the area for willow tits. This area would be partially disturbed for construction of the SEC and Cable Corridor even if not used as a laydown area.
- Whilst Natural England appreciated the concerns around the temporary loss of scrub required for Laydown Area WF-B, it considered that this habitat would be easier to restore than the moorland habitats in Laydown Area WF-A. There would also be a lower chance of disturbing breeding/feeding moorland species.

Peak District National Park Authority

8.4.6 Following the July 2018 SRG meeting he Peak District National Park Authority provided the following further advice regarding Laydown Area WF-A and WF-B with regard to ecology/habitat restoration:

8.4.7 The Park Authority considered that Laydown Area WF-A would remove/ potentially destroy important habitat and disturb a number of bird species using that area which is important fringe habitat for birds on the adjacent designated moorland sites. After detailed consideration it considered Laydown Area WF-B was preferred, whilst also acknowledging e concerns about Willow tit habitat loss and the potential complexities of recreating this elsewhere to compensate in terms of deadwood scrub nesting availability. There were also strong concerns regarding landscape effects over a long period of time for Laydown Area WF-A, as well as the potential to affect other bird habitats when there would already be disturbance in Laydown Area WF-B . It was felt that in the view of the National Park the greater impacts of disturbing two areas could not be justified based on the available information.

8.4.8 The National Park Authority liaised with the Moors for The Future organisation who raised strong concerns about the ability, in unknown peat depth/ground conditions, to properly restore area Laydown Area WF-A. It was deemed likely that this could be done physically but this would require translocation of the turves involving carefully stripping and recorded/laying out in the same way. They would need to be stored in specialist conditions and with specialist care throughout the period. Concerns were identified relating to peat being lost beneath the turves which may never go back to the same levels and would be likely to lead to the fields having an undulating appearance. Taking the above additional information into account the SRG members from the Peak District National Park advised that they could not support Laydown Area WF-A and had a clear and strong preference for Laydown Area WF-B with the caveat that specialist mitigation would be required for Willow tit habitat enhancement nearby for a sufficient period.

Habitat Restoration Specialist

8.4.9 National Grid also sought the advice of a habitat restoration specialist to discuss the viability of restoring Laydown Area WF-A following its use. National Grid drew on the specialists experience and understanding of the approach to the completion of projects involving peat removal, long term storage (more than 12months) and success and considerations of restoration. The following advice was provided:

- The level of restoration would depend on the depth of peat present (and being removed and replaced). Peat removed, in order to be 'viable' for restoration would need to be stored on a level site (to avoid degradation and run off to watercourses (highly organic material can have a detrimental effect if released in any quantity to water) where it could be accessible and be kept wet at all times.
- The material/turves should not be stacked but would need to be spread out (18inches deep) and monitored (and watered for the entire storage period) to ensure the moisture content is retained.
- Given the topography of Laydown Area WF-A (and assumption that the area of land affected would wish to be kept to a minimum), and to ensure that the peat would be stored appropriately it would need to be taken off site. The specialist estimated a rough calculation of approximately 600 tractor and trailer loads.
- The turves/material moved would be vulnerable to drying out, particularly the peat with its ability to oxidise and be permanently changed, but if well stored well it should be successful.
- This approach would generally be acceptable for peat to a depth of no more than around 300-600mm deep. If greater depth than this, it is likely that the removal and reinstatement of peat in this way would be difficult to achieve as effectively.
- .
- Based upon the specialist's previous experience, whilst reinstatement of peat material is in principle possible such that the grassland/heathland could be recreated and recover in 5-10 years, it is likely that the habitat would be visually different especially where the ground had been compacted or changes to the local hydrology have occurred.
- An initial peat depth survey would need to be conducted to understand the depth of material, the substrate beneath the peat and what substrate would be likely required to be replaced upon which the peat material would then be placed back.

Planning Policy (Section 3 Natural Zone)

8.4.10 Following the July SRG meeting the Peak District National Park Authority provided the following advice regarding Section 3 Land:

8.4.11 Laydown Area WF-A is designated 'Section 3 Natural Zone' where polices have a necessarily high bar for development proposals to pass in order to be exceptionally allowed where formal consent is required. In this case Laydown Area WF-A would technically be classed as permitted development but consideration of the impacts of the development would mean that it would be likely to have significant impacts on the environment and therefore be EIA development requiring full planning permission. Furthermore in the context of its location and characteristics it would be a large enough area to be formally Major development under the Development Management Procedure Order being over 1ha in area (the National Park Authority would consider it major in the context of impacts upon the parks landscape and valued characteristics). Given the information known about the proposed area and the potential impacts SRG officers from the Peak District National Park advised that they would not be supportive of such a proposal in the event that Laydown Area WF-A was to be pursued, its suitability would need to be tested in the public domain via the need for a formal application for development consent.

Archaeology

8.4.12 Following the July 2018 SRG meeting the Peak District National Park Authority provided the following advice regarding the archaeological potential of Laydown Area WF-A:

8.4.13 Laydown Area A is a small area of enclosed moorland at Rolly Home Enclosures. This is a small area of enclosures created in the 19th century as part of the 1813 Thurstone Parliamentary Enclosure Award, it is small area of enclosure in a wider area of unenclosed moorland. Wider areas of the Thurlstone moors were allotted during the 1813 enclosure award, but were never enclosed, so they remain largely open landscape of unenclosed moorland. The Rolly Enclosure are formed of drystone walls that appear to be in a decayed state and part of one of the internal dividing walls has been lost in the area where Laydown Area WF-A is located. The project would need to consider rebuilding and repairing existing walls and re-instating the lost section, as this formsan important part of this areas historic development and historic landscape character, and would restore the historic enclosure.

8.4.14 Common with many of the upland moors of the Dark Peak, Thurlstone Moor has archaeological interest and potential for prehistoric remains, particularly dating back to the Mesolithic. This period predates the onset of farming, when groups of hunter gatherers, people highly skilled at exploiting the resources available to them, would have moved across the uplands in small groups as part of their regular seasonal cycle, foraging for food and materials, and hunting animals. They left very little physical trace of their activities in the landscape. However, most of the their activity occurred prior to the start of peat formation, so the interface between the base of the peat and the mineral soil is particularly important to understanding the environmental changes that happened at this time (preserved as environmental evidence, burnt deposits, pollen etc. in the basal peats) and the activities of the Mesolithic people (from artefact scatters, chance finds etc.). A number of find spots of Mesolithic artefacts are recorded on the Thurlstone Moors, these include flint cores (from the production of tools), blades, flakes scrappers, and microliths (very small bladed or pointed tools), and some of them in quite large numbers. Later finds, from the Neolithic and later activity onwards may also be contained within the peat. Any activity that disturbs the peat has the potential to reveal such artefacts, and where chance finds have been made in the past these have been in areas of peat erosion– along tracks, sides of streams or gullys, areas of bare peat or hagging etc. Therefore , it is possible that such finds may be encountered during the extensive groundworks and cut and fill works required for the creation of the laydown area. However, because the finds of such artefacts in the past have been chance discoveries, and because the area has not been the focus of archaeological survey or investigation in the area, there is no evidence to suggest a particular concentration of finds in specific areas i.e. a focus of Mesolithic activity. Therefore, Laydown Area WF-A is considered to have archaeological potential for prehistoric activity sealed within but beneath the peat, particularly at interface between the peat and the natural mineral soil. The peat sequences could also have considerable paeloenvironmental interest and significance, depending on their state of preservation.

8.4.15 Further information would be required on the depth of the peat sequences to help understand the depth of the archaeological interest and extent of the paleoenvironmental interest. If Laydown Area WF-A was taken forward, this area would need to be included and assessed as part of the archaeological assessment and evaluation work. Appropriate evaluation would need to take place to understand the archaeological potential of area which should take the form of test pitting and peat sampling and would need to take place in accordance with an approved written scheme of investigation. This type of evaluation in this type of environment would need hand dug test pits with hand sieving, which would

be a very time consuming and costly exercise, and this should be weighed in the balance when considering which Laydown Area to take forward.

The Preferred Laydown Area

8.4.16 Following circulation of the above information to the SRG, the Group reconvened via a teleconference meeting in August 2018 to discuss and agree the preferred Laydown Area taking into account the additional information. The **SRG agreed that Laydown Area WF-B should be taken forward**. This was a unanimous decision among the SRG members.

APPENDIX 1: FIGURES

Overview Figure: Laydown Area Options (PDD-33492-LAY-SK02)

Figure 1: Proposed Areas for use as Temporary Laydown Area (Study Area WF-A)

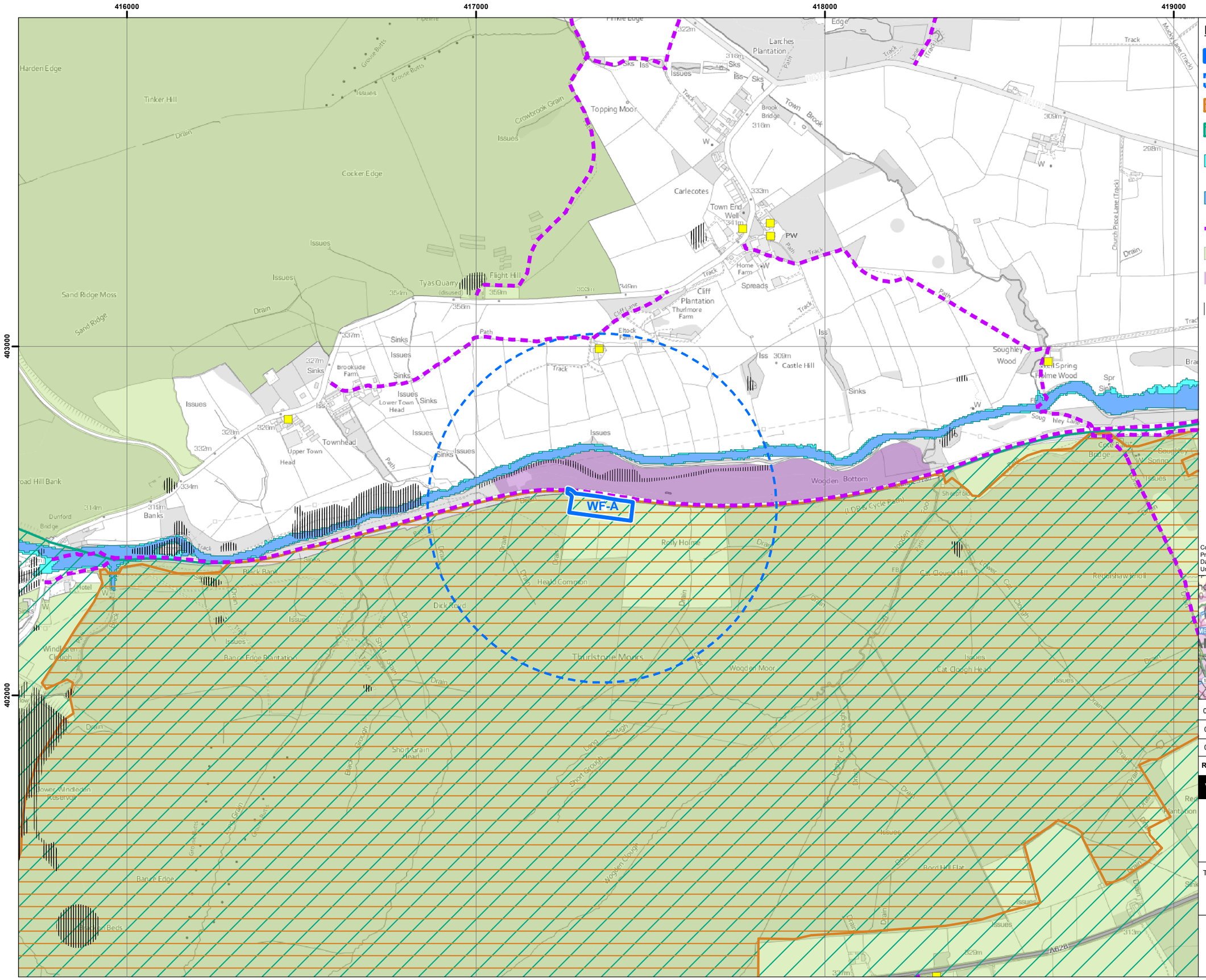
Figure 2: Proposed Areas for use as Temporary Laydown Area (Study Area WF-B)

Figure 3: Proposed Areas for use as Temporary Laydown Area (Study Area WF-C)

Figure 4: Proposed Areas for use as Temporary Laydown Area (Study Area WF-D)

Figure 5: Proposed Areas for use as Temporary Laydown Area (Study Area WF-E)

Figure 6: Laydown Area A Cut and Fill Analysis



Legend:

- Area WF-A
- Study Area for WF-A
- Natural Area (Section 3 Land)
- National Park
- Environment Agency Flood Zone 2
- Environment Agency Flood Zone 3
- Public Right of Way
- Western Moors LWS
- Wogden Foot LWS
- Historical Potentially Infilled Land
- Listed Building

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
02	18/07/2018	LWS bdy, legend labels	NH	DJ	SR
01	16/07/2018	Laydown areas defined	NH	DJ	SR
00	30/05/2018	First Draft	NH	JR	WH

Visual Impact Provision (VIP) Peak District

RSK

TITLE:

Figure 1: Proposed Areas for use as Temporary Laydown Area (Study Area WF-A)

0 200 400
Metres

SCALE: 1:10,000 @ A3

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416000 417000 418000

403000

402000

WF-B WF-B1

Legend:

- Area WF-B
- Area WF-B1
- Study Area for WF-B
- Natural Area (Section 3 Land)
- National Park
- Environment Agency Flood Zone 2
- Environment Agency Flood Zone 3
- Public Right of Way
- Western Moors LWS
- Wogden Foot LWS
- Historical Potentially Infilled Land
- Listed Building

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
02	18/07/2018	LWS bdy, legend labels	NH	DJ	SR
01	16/07/2018	Laydown areas defined	NH	DJ	SR
00	30/05/2018	First Draft	NH	JR	WH

Visual Impact Provision (VIP) Peak District

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TITLE:

Figure 2: Proposed Areas for use as Temporary Laydown Area (Study Area WF-B)

0 200 400
Metres

SCALE: 1:10,000 @ A3

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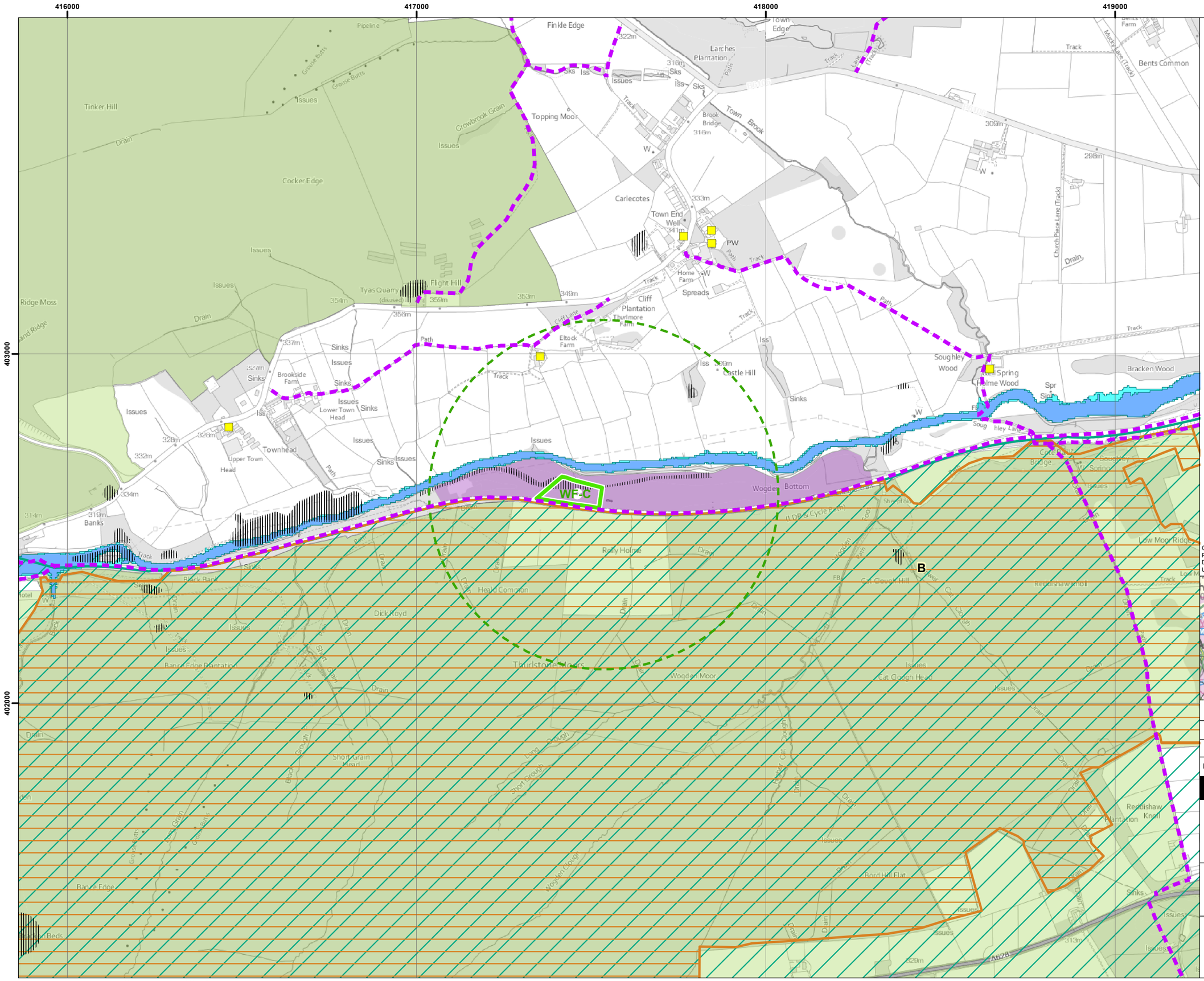

Rev	Date	Description	Drn	Chk	App
02	18/07/2018	LWS bdy, legend labels	NH	DJ	SR
01	16/07/2018	Laydown areas defined	NH	DJ	SR
00	30/05/2018	First Draft	NH	JR	WH

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TITLE: Figure 3: Proposed Areas for use as Temporary Laydown Area (Study Area WF-C)

0 200 400 Metres

SCALE: 1:10,000 @ A3

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416000 417000 418000

404000 403000 402000

WF-D

Legend:

- Area WF-D
- Study Area for WF-D
- Natural Area (Section 3 Land)
- National Park
- Environment Agency Flood Zone 2
- Environment Agency Flood Zone 3
- Public Right of Way
- Western Moors LWS
- Wogden Foot LWS
- Historical Potentially Infilled Land
- Listed Building

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
02	18/07/2018	LWS bdy, legend labels	NH	DJ	SR
01	16/07/2018	Laydown areas defined	NH	DJ	SR
00	30/05/2018	First Draft	NH	JR	WH

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Figure 4: Proposed Areas for use as Temporary Laydown Area (Study Area WF-D)

0 200 400
Metres

SCALE: 1:10,000 @ A3

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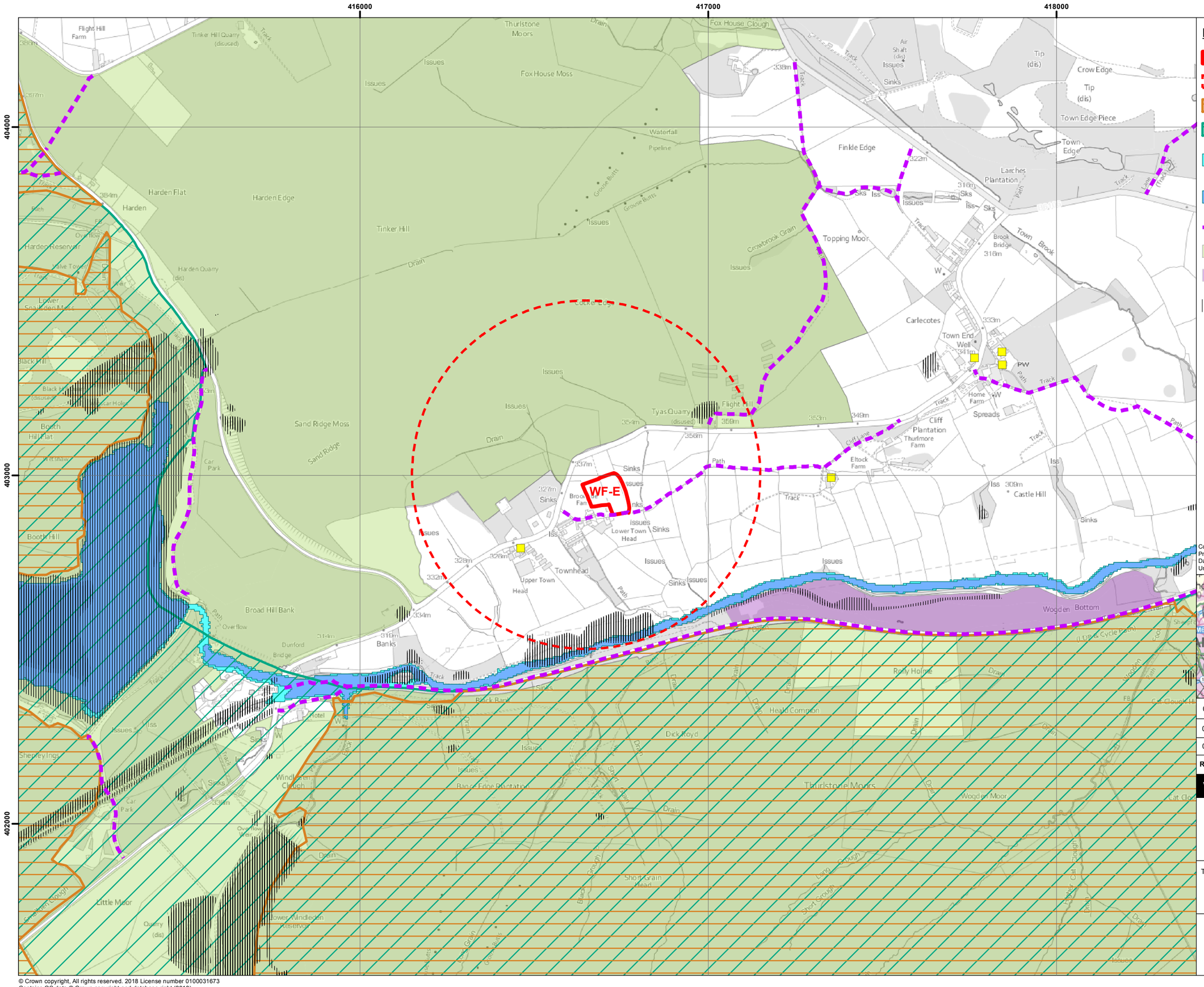

Legend:

- Area WF-E
- Study Area for WF-E
- Natural Area (Section 3 Land)
- National Park
- Environment Agency Flood Zone 2
- Environment Agency Flood Zone 3
- Public Right of Way
- Western Moors LWS
- Wogden Foot LWS
- Historical Potentially Infilled Land
- Listed Building

Coordinate System: British National Grid
Projection: Transverse Mercator
Datum: OSGB 1936
Units: Meter



Rev	Date	Description	Drn	Chk	App
02	18/07/2018	LWS bdy, legend labels	NH	DJ	SR
01	16/07/2018	Laydown areas defined	NH	DJ	SR
00	30/05/2018	First Draft	NH	JR	WH

Visual Impact Provision (VIP) Peak District

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TITLE:

Figure 5: Proposed Areas for use as Temporary Laydown Area (Study Area WF-E)

0 200 400
Metres

SCALE: 1:10,000 @ A3

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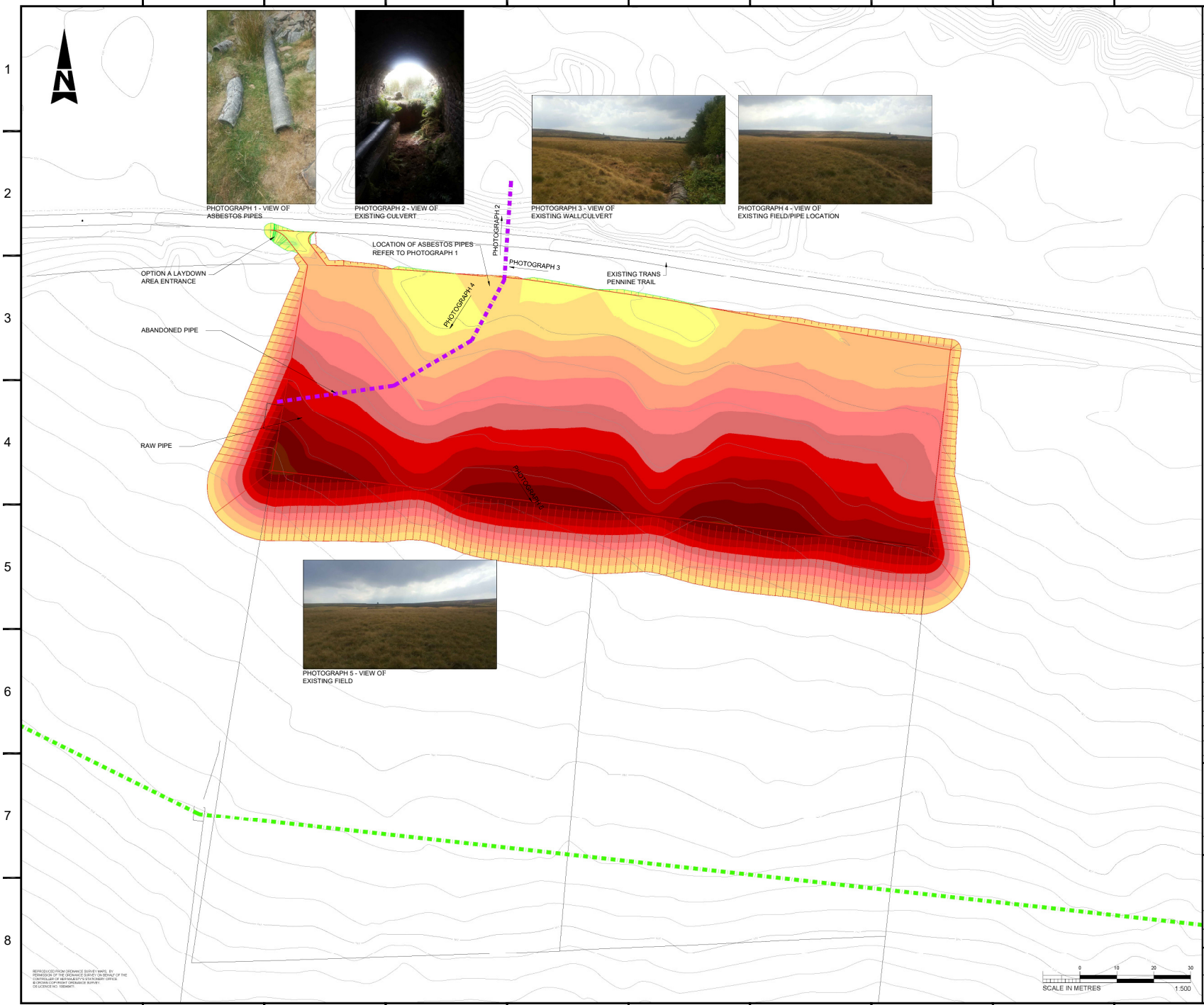

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LEGEND

COLOUR	DEPTH OF CUT FROM (m)	DEPTH OF CUT TO (m)	AREA (m²)	VOLUME (m³)
	-5.00	-4.50	44	6
	-4.50	-4.00	657	149
	-4.00	-3.50	1203	644
	-3.50	-3.00	1424	1296
	-3.00	-2.50	1581	2056
	-2.50	-2.00	1778	2905
	-2.00	-1.50	1804	3791
	-1.50	-1.00	1832	4698
	-1.00	-0.50	2064	5682
	-0.50	0.00	1567	6551

COLOUR	DEPTH OF FILL FROM (m)	DEPTH OF FILL TO (m)	AREA (m²)	VOLUME (m³)
	0.00	0.50	736	114
	0.50	1.00	18	5
	1.00	1.50	3	1

BULK EARTHWORKS VOLUMES

NO SITE STRIP ASSUMED

CUT:27775 cu.m
FILL:120 cu.m
27655 cu.m - SURPLUS CUT

Rev	Description	Cre'd	Chk'd	App'd	Date
P1	FIRST ISSUE	RD	CN	CN	02/08/18

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Master Scheme No:	Sub-Scheme No:	Site:
33492	–	400KV OHL

Scheme Name: VISUAL IMPACT PROVISION – WORK PACKAGE 1
PEAK DISTRICT NATIONAL PARK

Document Title:

LAYDOWN AREA
OPTION A
CUT & FILL ANALYSIS

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
R.DAWSON	01/08/18	C.NUNN	02/08/18	C.NUNN	02/08/18

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
D.SPURR	2D DRAWING	1:1000	A1	1 OF 1	P1

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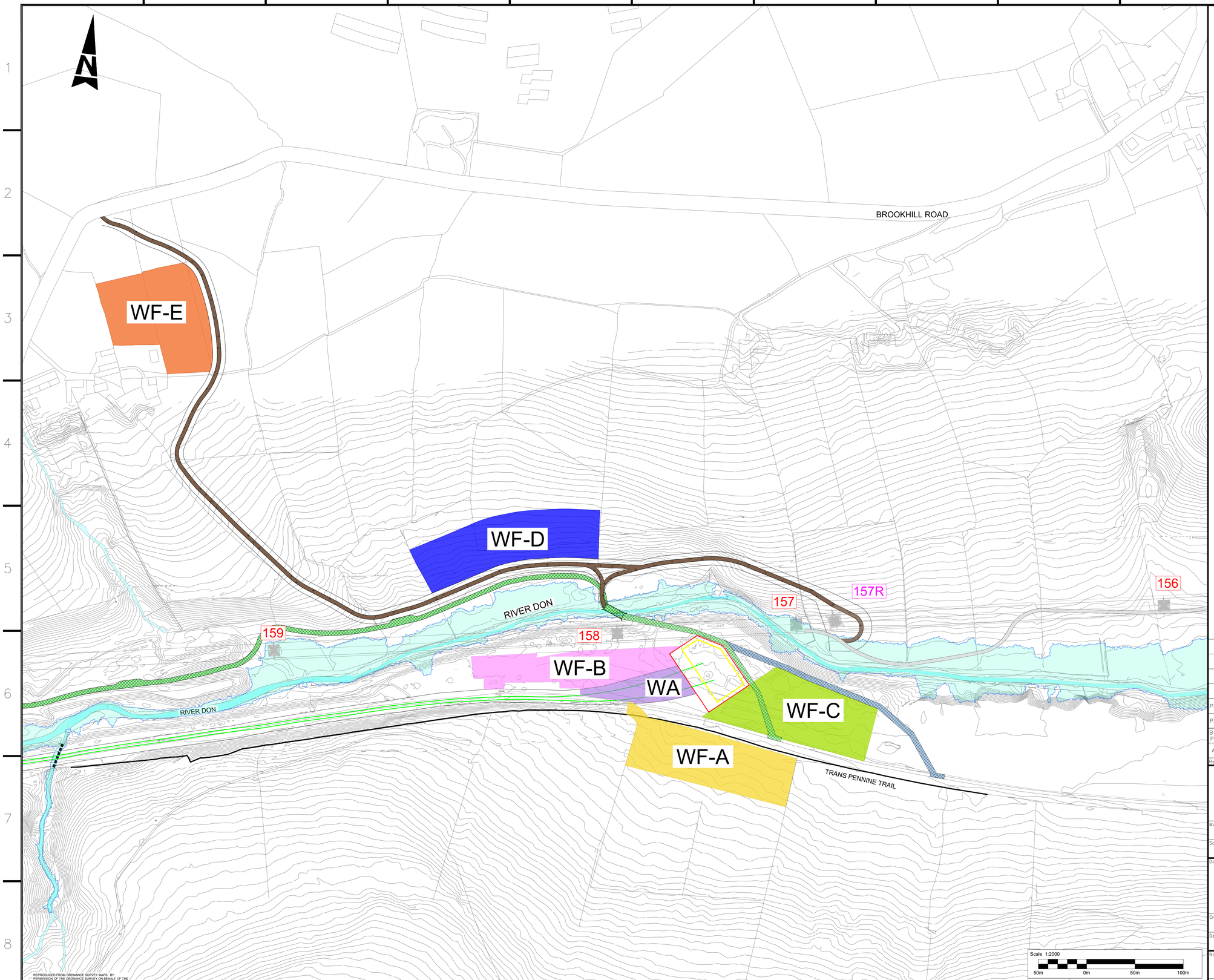

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NOTES

1. LAYDOWN OPTIONS ARE APPROXIMATE AREAS AS INDICATED ON PLAN

KEY:		
	LAYDOWN OPTION AREA WF-A	10092m²
	LAYDOWN OPTION AREA WF-B	7073m²
	LAYDOWN OPTION AREA WF-C	10051m²
	LAYDOWN OPTION AREA WF-D	10456m²
	LAYDOWN OPTION AREA WF-E	10168m²
	SEC REQUIRED CONSTRUCTION AREA	3770m²
	WOGDEN FOOT SEALING END COMPOUND AREA	2206m²
	AREA TO CONSTRUCT SEC AND GIL - REQUIRED IN ADDITIONAL TO EACH OPTION	2773m²
	PROPOSED UNDERGROUND ROUTE CORRIDOR	
	PROPOSED TEMPORARY TPT DIVERSION FOR WORKING AREAS A&B	
	PROPOSED TEMPORARY TPT DIVERSION FOR WORKING AREA C ONLY	
	TEMPORARY STONE ACCESS ROAD INCLUDING WORK AREA FOR OVERHEAD LINE CONSTRUCTION AT PYLON 157	
	TEMPORARY TRAKWAY ACCESS ROAD	
	FLOOD AREA (1:100 YEAR)	

Rev	Description	Cre'd	Chk'd	App'd	Date
P3	LEGEND UPDATED	SPS	MAC	CN	07.08.19
P2	GIL AND SEC CONSTRUCTION AREA ADDED.	MAC	PP	CN	03.08.18
P1	TRAKWAY ACCESS ROAD UPDATED	SPS	PP	CN	19.07.18
A	FIRST ISSUE	SPS	PP	CN	11.07.18

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Master Scheme No:	Sub-Scheme No:	Site:
33492	–	400KV OHL

Scheme Name: VISUAL IMPACT PROVISION – WORK PACKAGE 1
PEAK DISTRICT NATIONAL PARK

Document Title:

LAYDOWN AREA OPTIONS SKETCH 2

Created by:	Date:	Checked by:	Date:	Approved by:	Date:
S.SPINKS	11/07/18	P.PARSLEY	11/07/18	C.NUNN	11/07/18

Development Eng:	Document Type:	Scale:	Format:	Sheet(s):	Rev:
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