

VISUAL IMPACT PROVISION

North Wessex Downs AONB Options Appraisal Study

August 2015

nationalgrid



This report has been prepared by LUC on behalf of National Grid. Detailed engineering and technical information was provided by National Grid. Stakeholder engagement inputs were provided by Camargue. We are also grateful to North Wessex Downs AONB and the stakeholder reference group for providing background information.

Front Cover: 400kV overhead transmission line, Subsection YYM.4, North Wessex Downs.

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1 Introduction

Visual Impact Provision

- 1.1 Ofgem and National Grid have agreed a new 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 In 2012-13, National Grid prepared a Visual Impact Provision policy setting out how the fund would be used and how stakeholders would be engaged in identifying opportunities for maximising benefits from it. After a public consultation on the draft between July and September 2013 the policy statement was presented to Ofgem for review. The policy statement made it clear that National Grid's objective:
- "is to achieve the maximum enhancement to the landscape from the available funds whilst ensuring that no significant adverse impacts arise as a result".*
- 1.3 The policy document included a set of guiding principles and a commitment to the creation of a Stakeholder Advisory Group consisting of stakeholders with national remits for England and Wales, and ways of engaging other stakeholders. National Grid is committed to using the VIP in a collaborative and transparent way.
- 1.4 In 2014, a landscape and visual impact assessment project was undertaken to provide evidence to National Grid and its Stakeholder Advisory Group about the relative impacts of the different transmission lines to inform the decision making process. The purpose of the landscape and visual impact assessment project was to identify those sections of electricity transmission lines within England and Wales that have the most important impacts on the landscape and visual amenity of these designated landscapes. The emphasis was on making a comparative assessment of the landscape and visual impacts of the sections of transmission lines that lie within the designated areas and identifying a possible shortlist of candidate schemes for consideration by the Stakeholder Advisory Group, in order to decide which ones should be taken forward for more detailed technical assessment.
- 1.5 The landscape and visual impact assessment Technical Report was published in October 2014, and included a suggested shortlist of twelve subsections of overhead line which emerged as having the highest level of combined landscape and visual impacts, and therefore merited further investigation. The twelve subsections (listed in order of combined landscape and visual impact score and by alphabetical order where scores are the same) are presented in Table 1.1.

Table 1.1.1: Twelve Shortlisted Sections of Overhead Line

Designated Area	Subsection
Tamar Valley AONB	YF.1
Peak District NP	4ZO.4
Dorset AONB	4YA.7
Peak District NP	4ZO.2
Peak District NP	4ZO.3

Designated Area	Subsection
Brecon Beacons NP	4YU.3
North Wessex Downs AONB	YYM.4
Snowdonia NP	4ZC.1
Dorset AONB	4VN.2
Dorset AONB	4YA.5
High Weald AONB	4ZJ.1
New Forest NP	4YB.2

- 1.6 The Stakeholder Advisory Group accepted all 12 of these subsections as worthy of progression to the next stage of the work. The Tamar Valley AONB was used to pilot an approach to the appraisal of the different mitigation options that might be feasible. The approach was then rolled out to all of the shortlisted subsections of line. The aim of this work was to define one or at most two preferred options for mitigation in the form of 'mitigation projects' for each shortlisted subsection of line.
- 1.7 Since undergrounding is likely to emerge in many cases as a preferred approach, a prime consideration in defining the projects in each case was the potential location of sealing end compounds (SECs) where the transition from overhead to underground lines takes place. In identifying suitable locations, it has often been the case that the most suitable place for the SECs will lie outside the extent of the line subsection on the shortlist. This means that the projects may include an adjacent part of a line subsection, not assessed as having the highest level of landscape and visual impact, but which must be included for practical purposes.
- 1.8 Conversely, in some cases not all of the shortlisted subsection is included within the study area. Reasons for this, where applicable, are highlighted in the individual reports but include changes as a result of subsequent stakeholder discussions, and further appraisal from site visits (the divisions between subsections were originally determined based on changes in landscape character, as presented in published documents prior to field surveys being carried out, rather than on the basis of scale of impact).
- 1.9 Following approval by the Stakeholder Advisory Group, National Grid, is also developing an initiative which will use part of the £500 million allocation for smaller localised visual improvement projects which can be accessed by all AONBs and National Parks with existing National Grid electricity infrastructure. This landscape enhancement initiative (LEI) has an ambition to provide up to £24 million over six years (2015 to March 2021), with the aim of reducing the visual impact of National Grid's existing infrastructure and improving the related visual quality of the landscape.

The North Wessex Downs AONB project

- 1.10 Following the acceptance of the findings of the Technical Report by the Stakeholder Advisory Group, National Grid decided to progress all of the other 11 sections to the same stage. The identified section of transmission line is located within the Vale of Pewsey, in the south-west of the AONB, and runs east to west from the A338 south of the village Burbage to a point south of the village of Pewsey. This section of line is approximately 6.8km in length, and is shown in the context of the AONB in **Figure 1.1**.
- 1.11 The North Wessex Downs AONB was designated in 1972, under the National Parks and Access to Countryside Act 1949. The AONB takes in 173 parishes and straddles the counties of West Berkshire, Hampshire, Oxfordshire and Wiltshire.





- 1.12 The purposes of AONB designation are defined as follows:
- “The primary purpose of AONB designation is to conserve and enhance natural beauty.
 - In pursuing the primary purpose, account should be taken of the needs of agriculture, forestry, other rural industries and of the economic and social needs of local communities. Particular regard should be paid to promoting sustainable forms of social and economic development that in themselves conserve and enhance the environment.
 - Recreation is not an objective of designation, but the demand for recreation should be met so far as this is consistent with the conservation of natural beauty and the needs of agriculture, forestry and other uses.”¹
- 1.13 The special qualities of the AONB were defined in the North Wessex Downs AONB Management Plan 2009-2014 as follows:
- “Visibly ancient landscape of great diversity and size;
 - It is a predominantly chalkland landscape with dramatic scarp slopes and moulded dip slopes that reflect the underlying chalk geology;
 - It embraces the high, open arable sweeps of the Marlborough Downs with their beechtop knolls and narrow, sheltered chalk river valleys;
 - Intimate and secluded wooded areas of Chute and Savernake Forests;
 - Low-lying land of the Thames Basin, Heaths with a rich mosaic of woodland, pasture, heath and common land;
 - The built environment forms an integral part of local character and distinctiveness and adds to the diversity of the AONB landscape as a whole;
 - Internationally important Late Neolithic and Early Bronze Age monumental landscape at Avebury and prominent later prehistoric hillforts overlooking the main scarp slopes; and
 - Distinctive and ancient settlement patterns”.²
- 1.14 These special qualities were used as the basis for the original assessment work carried out in summer 2014. Since then, the North Wessex Downs AONB Management Plan 2014-2019 has been published (December 2014). This expands significantly on the above list, presenting a separate series of special qualities under each of the headings of landscape, land management, biodiversity, historic environment, natural resources, development, communities and leisure tourism.³

¹ Countryside Agency (2006) *Areas of Outstanding Natural Beauty: A guide for AONB partnership members (CA24)* Page 7. <http://publications.naturalengland.org.uk/publication/45013>

² North Wessex Down AONB Management Plan 2009 – 2014

³ North Wessex Down AONB Management Plan 2014 – 2019. Available at <http://www.northwessexdowns.org.uk/About-Us/aonb-management-plan.html>

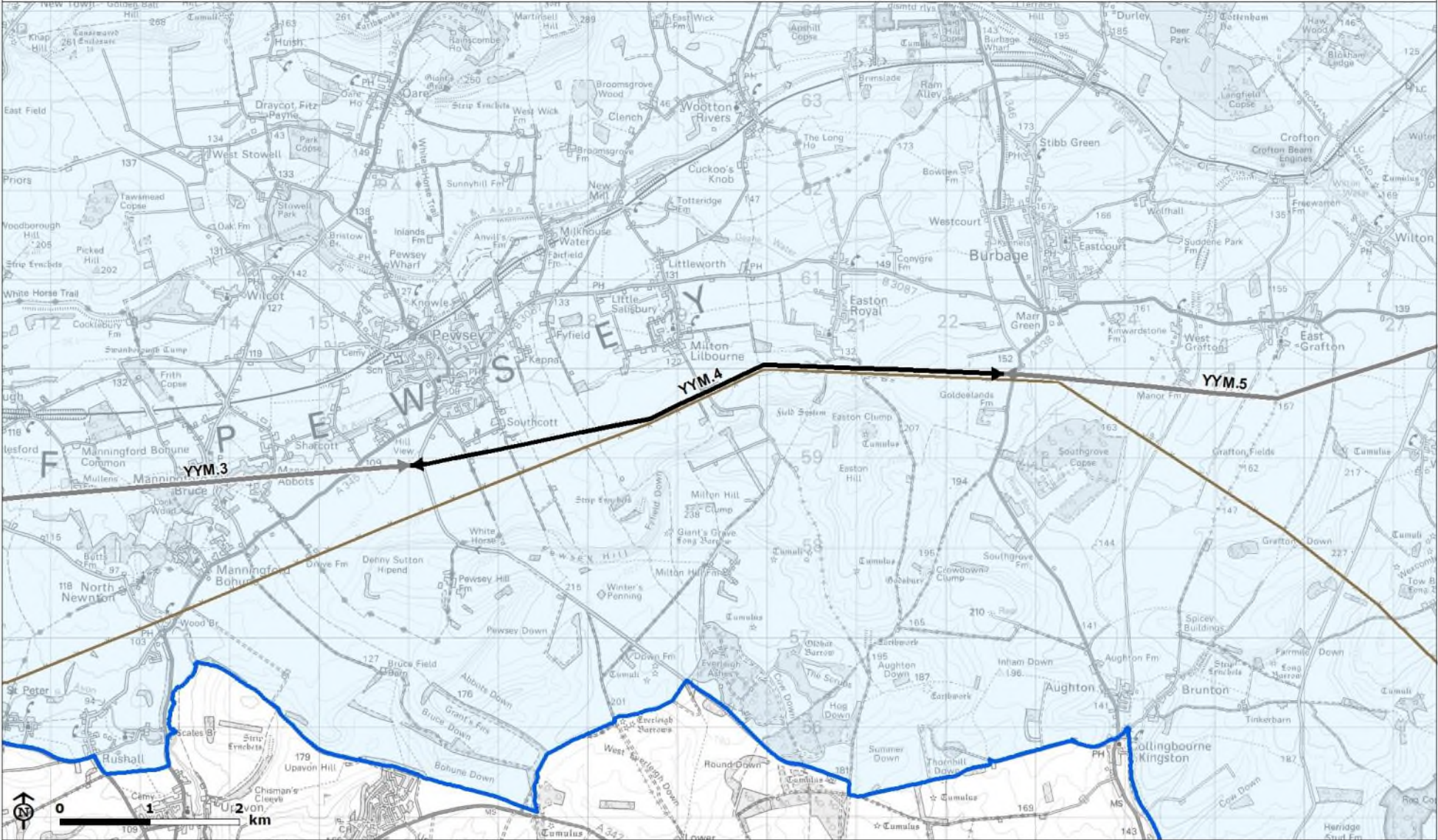
**NATIONAL GRID
NORTH WESSEX DOWNS
VIP PROJECT**

-  North Wessex Downs AONB
-  Assessed National Grid 400kV overhead line subsection
-  Other National Grid 400kV overhead line
-  DNO 132kV overhead line

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Source: Natural England, National Grid

Figure 1.1: Subsection YYM.4 within the North Wessex Downs AONB



- 1.16 The focus of the VIP project is on the mitigation of landscape and visual impacts, and the assessment of these impacts is set out in the landscape and visual impact assessment Technical Report. The summary sections relating to the Y.M.4 subsection are reproduced below.

Subsection **Y.M.4** has **the most important combined landscape and visual impacts** of all the subsections within the North Wessex AONB. It is judged to have **landscape impacts of very high importance**.

This subsection runs through the Vale of Pewsey character area and close to the edge of the High Chalk Plain - Salisbury Plain character area. The vale is a generally flat landscape, almost wholly under arable cultivation, with relatively large, open, regular fields and pockets of woodland. It is considered to have moderate susceptibility to the transmission line. The Salisbury Plain character area, by contrast, consists of a dramatic escarpment that includes Pewsey Hill and Fyfield Down, which both provide panoramic views across the adjacent lowland Vale of Pewsey. The open scarp slopes often remain as unimproved semi natural grassland, with features such as old field systems being apparent. The scarp is considered to have a higher susceptibility to the presence of the transmission line compared with the vale itself. The landscape influenced by the transmission line is considered to have very high value in parts, with the distinctive landscape features of Pewsey Hill, Milton Hill Clump and Easton Clump providing strong scenic qualities. The **importance of the impact is very high** as the pylons sit higher in the landscape than in the previous subsection, are very close to the scarp, and detract from the valued characteristics of this feature in the landscape. The presence of a smaller distribution line running in parallel to the transmission line creates a high degree of stacking in places, and a landscape cluttered with manmade vertical structures along the foot of the scarp.

This subsection is judged to have **visual impacts of high importance** on these visual receptors. Looking north into the vale from the dramatic escarpment of Salisbury Plain, the local distribution line and larger transmission lines occupy a wide part of the view. However, the large scale of the vale as a landscape feature and the effective backcloth provided by the Horton Downs to the north help to accommodate the transmission line into the visual context of the landscape. From views looking north into the vale, the **scale of impact and overall importance of impact is considered moderate**.

As the White Horse Trail passes over Pewsey Hill, a high value panoramic view across the vale is obtained. The presence of the transmission and distribution lines running in parallel leads a cumulative visual impact on these views; however, due to the effective backcloth provided by the downs to the north, the importance of the impact is low.

From the southern edge of the villages of Milton Lilbourne, Easton Royal, and Burbage, views looking south towards both the transmission and distribution lines lose the effective backcloth provided by the downs that enclose the vale. The pylons of both lines extend above the skyline and form highly prominent features that contrast sharply with the otherwise picturesque views of Pewsey Hill, Fyfield Down and Easton Hill. The scale of **the cumulative impact caused by both the lines on these types of views is considered very high**. Due to a lack of large numbers of visual receptors and formal recognition/promotion, these views are considered to be of moderate value; the importance of the impact on the views is therefore considered to be high rather than very high.

- 1.17 Engagement events ('Stakeholder Reference Group' and public 'drop in') were undertaken in March 2015 (see **Section 4**).
- 1.18 A number of potential solutions may exist which would mitigate the landscape and visual impact of the 400kV overhead transmission line (400kV OHL) on the AONB. The purpose of this Option Appraisal Study is to identify these and determine which, if any, will deliver the necessary mitigation without giving rise to adverse impacts that would be greater than those being mitigated.

Figure 1.2 YYM.4 passing in front of Milton Hill, south of the village of Easton Royal



2 Methodology

- 2.1 This study identifies potentially feasible methods of mitigating the identified impacts of the YYM.4 route on the North Wessex Downs AONB. The appraisal of the identified options follows the general approach set out in National Grid’s document *Our approach to Options Appraisal* (2012). It covers the three main topic areas (Technical, Environmental and Socio-Economic) which can be broken down into sub-topics as identified in **Table 2.1** below. Sub-topics are only considered where they may influence the choice of option.

Table 2.1: Appraisal Topics

Technical	Environmental	Socio-economic
Technical complexity	Landscape and visual	Local economic impact
Construction/project delivery issues	Ecology	Aviation and defence
Suitability of technology	Historic environment	Traffic and transport
Network capacity	Water	
Network efficiencies/ benefits	Local air quality	
	Noise and vibration	
	Soils and geology	

- 2.2 The methodology for this study comprises the following key stages:
- Establish a study area and gather baseline information, including information assembled for the landscape and visual impact assessment (see **Section 3**);
 - Undertake local stakeholder engagement to gather information, organised by National Grid in association with the National Park Authority (see **Section 4**);
 - Identify options which would mitigate the identified impacts without giving rise to other significant adverse impacts (see **Section 5**); and
 - Undertake an appraisal of these options and report on their potential impacts, and make a recommendation to the Stakeholder Advisory Group on the favourable option (see **Section 6**).
- 2.3 In addition, the table in **Appendix 1** provides a preliminary overview of the likely primary consents associated with each option. It should be noted that that this is an initial view based on the draft options and has not been the subject of discussions with stakeholders. The purpose at this stage is to assist in understanding the complexity of the options, in consenting terms and to provide an indication of the associated timescale for achieving consent. Any option chosen would also need agreement from the landowner. If an option is selected to be taken forward to the next stage of development a detailed Consents and Land Strategy will be produced.

Environmental Statement

- 2.4 If this area is selected to be taken forward to the next stage whereby a detailed scheme will be developed, regardless of whether the proposal requires an Environmental Impact Assessment

under the terms of the *Town and Country Planning (Environmental Impact Assessment) Regulations*, National Grid would undertake an Environmental Impact Assessment and produce a detailed Environmental Statement to accompany planning applications.

3 Study Area and Baseline

Route History

- 3.1 Section YYM.4 is part of the 400kV electricity overhead line route connecting Bramley and Melksham 400kV substations. The line was constructed in 1957 and is of L2 lattice pylon design with twin conductor bundles. The YYM route is part of the National Electricity Transmission System connecting the South West and South East of England; the substations of Bramley and Melksham all provide feeder circuits for the local distribution networks owner (DNO) substations.
- 3.2 There is an ongoing need to provide system supplies to both the transmission and distribution networks and any potential solution as part of this project would need to be designed to meet the capability of the existing infrastructure.

Study Area

- 3.3 The study area has been defined based on the extent of subsection YYM.4, which was assessed as having important impacts on landscape and visual amenity. The study area for YYM.4 is shown in **Figure 3.1**, and includes an area approximately 1km either side of the 400kV OHL. The line runs within the Vale of Pewsey, which separates the two main chalk uplands of Salisbury Plain to the south and Savernake Plateau to the north. The lowland landscape of the Vale comprises rich soils which support predominantly arable production, with some pasture fields bounded by thick, tall hedgerows. The area to the north of the line is relatively well inhabited including the large nucleated villages of Pewsey and Burbage and the linear spring line villages of Milton Lilbourne and Easton Royal. To the south of the line are located the distinctive Downland scarp edges of Pewsey Hill, Fyfield Down, and Easton Clump which rise up from the vale marking the northern edge of the Salisbury Plain. A number of historic Drovers' tracks (now public footpaths and bridleways) and the White Horse long-distance footpath run north-south from the vale up onto the Downland passing underneath both the YYM line and 132kV overhead line owned and operated by the DNO. This subsection is judged to have visual impacts of high importance.
- 3.4 The outer limits of the study area have been offset by 1km from the existing 400kV OHL, a description of the study area boundary is defined as:
 - Manningford Bruce to the west;
 - The settlements of Pewsey, Milton Lilbourne, Easton Royal and Burbage to the north;
 - Grafton Fields to the east; and
 - Southgrove Copse, Easton Hill, Milton Hill Clump and Denny Sutton Hipend to the south.
- 3.5 The resulting study area is shown in **Figure 3.1**. The rest of this section outlines and potential constraints features of the study area and its immediate surroundings which are likely to influence a decision on which mitigation solution to pursue for the North Wessex AONB, with reference to the topics listed in **Table 2.1**.

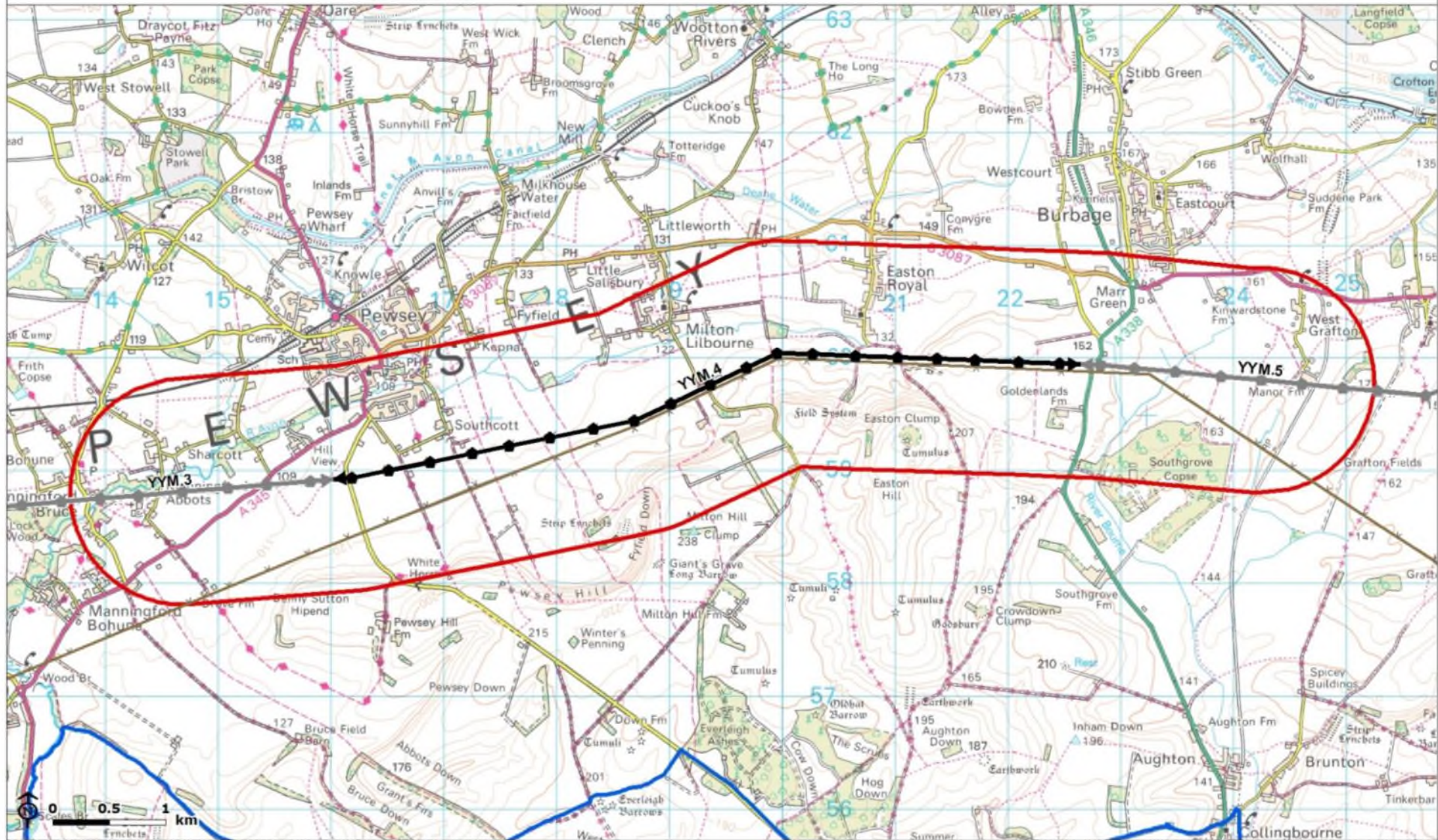
**NATIONAL GRID
NORTH WESSEX DOWNS
VIP PROJECT**

- ▭ Study area
- ▭ North Wessex Downs AONB
- ◆ Y.M.4 Pylon
- ◆ Other OHL pylon
- ↔ Assessed National Grid 400kV overhead line subsection
- DNO 132kV overhead line
- ↔ Other National Grid 400kV overhead line

nationalgrid

Source: Natural England, National Grid

Figure 3.1: Study Area



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Environmental Baseline

Landscape and Visual

3.6 Landscape and visual impacts are defined in the *Guidelines for Landscape and Visual Impact Assessment* (GLVIA3), as follows:

- Landscape impacts means effects on the landscape as a resource in its own right; and
- Visual impacts means effects on specific views and on the general visual amenity experienced by people.⁴

3.7 YYM.4 runs in an east – west direction along the Vale of Pewsey from Eveleigh Road in the west to Milton Lilbourne where it meets the 132kV DNO line. Both lines continue east, running in parallel where they pass over the slightly elevated foot slopes of Pewsey Hill, Milton Hill, and Easton Hill. YYM.4 ends at the A338 south of Burbage.

Landscape Character

3.8 This section presents an overview of the landscape baseline including landscape character, current landscape condition and any designation attached to the landscape.

3.9 The western part of the YYM.4 section runs predominately through large arable fields located on the foot slopes of the Downland escarpment. Low remnant hedgerows break up the otherwise large open fields in the west. Field boundaries are more intact in this area, with occasional mature trees providing further enclosure, contributing to the sense of rural tranquillity. The area has a strong scenic quality provided by the distinctive Downland escarpment to the south, in contrast to the gently undulating Vale. The eastern pylons sit higher in the landscape than in the west and are closer to the scarp, detracting from the valued characteristics of this landscape.

3.10 The YYM.4 section falls entirely within the *Vale of Pewsey* landscape character area (LCA) and comes within close proximity to the High Chalk Plain - *Salisbury Plain* LCA, in the central section of the study area. The vale is a generally flat landscape, almost wholly under arable cultivation, with relatively large, open, regular fields and pockets of woodland. It is considered to have moderate susceptibility to the 400kV OHL. The Salisbury Plain character area, by contrast, consists of a dramatic escarpment that includes Pewsey Hill and Fyfield Down, which both provide panoramic views across the adjacent lowland Vale of Pewsey. The open scarp slopes often remain as unimproved semi natural grassland, with old field systems being apparent. The scarp is considered to have a higher susceptibility to the presence of the 400kV OHL compared with the vale itself. The landscape influenced by the 400kV OHL is considered to have very high value in parts, with the distinctive landscape features of Pewsey Hill, Milton Hill Clump and Easton Clump providing strong scenic qualities. The importance of the impact is very high as they are very close to the scarp, and detract from the valued characteristics of this feature in the landscape. The presence of the smaller 132kV DNO line running in parallel to the 400kV OHL creates a high degree of stacking in places, and a landscape cluttered with manmade vertical structures along the foot of the sensitive scarp. LCAs are illustrated on **Figure 3.2**.

3.11 The North Wessex Downs Integrated Landscape Character Assessment describes the character of the *Vales* LCT, referring to the important relationship between the vales and the adjacent downs in terms of 'borrowed' landscape. The character assessment also refers to the "localised intrusion of roads, overhead power lines and pylons all of which are highly visible in the context of this flat low lying landscape". In relation to the Vale of Pewsey, the assessment reiterates the "vulnerability [of the vale landscape] to the impact [of] development on the 'borrowed' landscape of the scarps that tower to either side of the Vale."⁵

⁴ Landscape Institute and Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment*, 3rd Edition. Routledge. Paragraph 2.21.

⁵ Land Use Consultants (2002) North Wessex Downs Area of Outstanding Natural Beauty Integrated Landscape Character Assessment: Technical Report. Countryside Agency.

Visual Amenity

- 3.12 The Vale of Pewsey is situated on low, gently undulating land of Salisbury Plain to the south and Savernake Plateau to the north. This section identifies the extent of visibility of the 400kV OHL, and identifies the visual amenity and availability of views as experienced by people (visual receptors). Visual receptors include local communities, residents in scattered houses/farmsteads, visitors to the area, recreational users including users of the public rights of way, motorists on the local road network and people working within the area.
- 3.13 The Vale of Pewsey is experienced from a large number of viewpoints, including a number of elevated locations along the downs to both north and south. Many of these viewpoints are intervisible, forming an overlapping series of scenic views into which the OHL intrudes to a greater or lesser degree.
- 3.14 Views to the north over the open vale from the dramatic escarpment of Salisbury Plain, are of a high quality, especially along the White Horse Trail. The 132kV DNO overhead line and larger 400kV OHL occupy a wide part of the view and when seen together leads a cumulative visual impact, they have a moderate scale of impact. However, backclothing and the large-scale, open character help to accommodate the 400kV OHL, reducing the impact locally. From the southern edge of the villages of Milton Lilbourne, Easton Royal, and Burbage, views south towards both the 400kV OHL and 132kV DNO lines lose the effective backcloth provided by the downs. The pylons of both OHLs extend above the skyline and form highly prominent features that contrast sharply with the otherwise picturesque views of Pewsey Hill, Fyfield Down and Easton Hill. The scale of cumulative impact caused by both OHLs on these types of views is considered very high. However, due to a lack of large numbers of visual receptors and formal recognition/promotion views, by Ordnance Survey or the AONB authority, these views are considered to be of moderate value; the importance of the impact on the views is therefore considered to be high rather than very high. The OHL is also visible from the downs to the north of the Vale of Pewsey, though at greater distance (4-5km) and with a lesser degree of impact.
- 3.15 Settlements within the surrounding area generally face inwards and are enclosed by mature trees and hedgerows, with limited views of the 400kV OHL, especially when trees are in leaf. Where views to the south are available from the settlement edges of Southcott, Milton Lilbourne, Easton Royal and Burbage, the 400kV OHL and smaller 132kV DNO line extend above the skyline forming an highly prominent feature, contrasting sharply with the otherwise undeveloped view of escarpment edge. Similar views can be gained from the White Horse Trail and a number of Public Rights of Way (PRoW) that pass under the line and around the villages. Where the 400kV OHL meets the 132kV DNO line the scale of the cumulative impact is considered to be very high. However, due to a relatively limited number of visual receptors, these views are considered to be of moderate value; the importance of the impact on the views is therefore considered to be high rather than very high.

NATIONAL GRID
NORTH WESSEX DOWNS
VIP PROJECT

- Study area
- North Wessex Downs AONB
- Assessed National Grid 400kV overhead line subsection
- Other National Grid 400kV overhead line

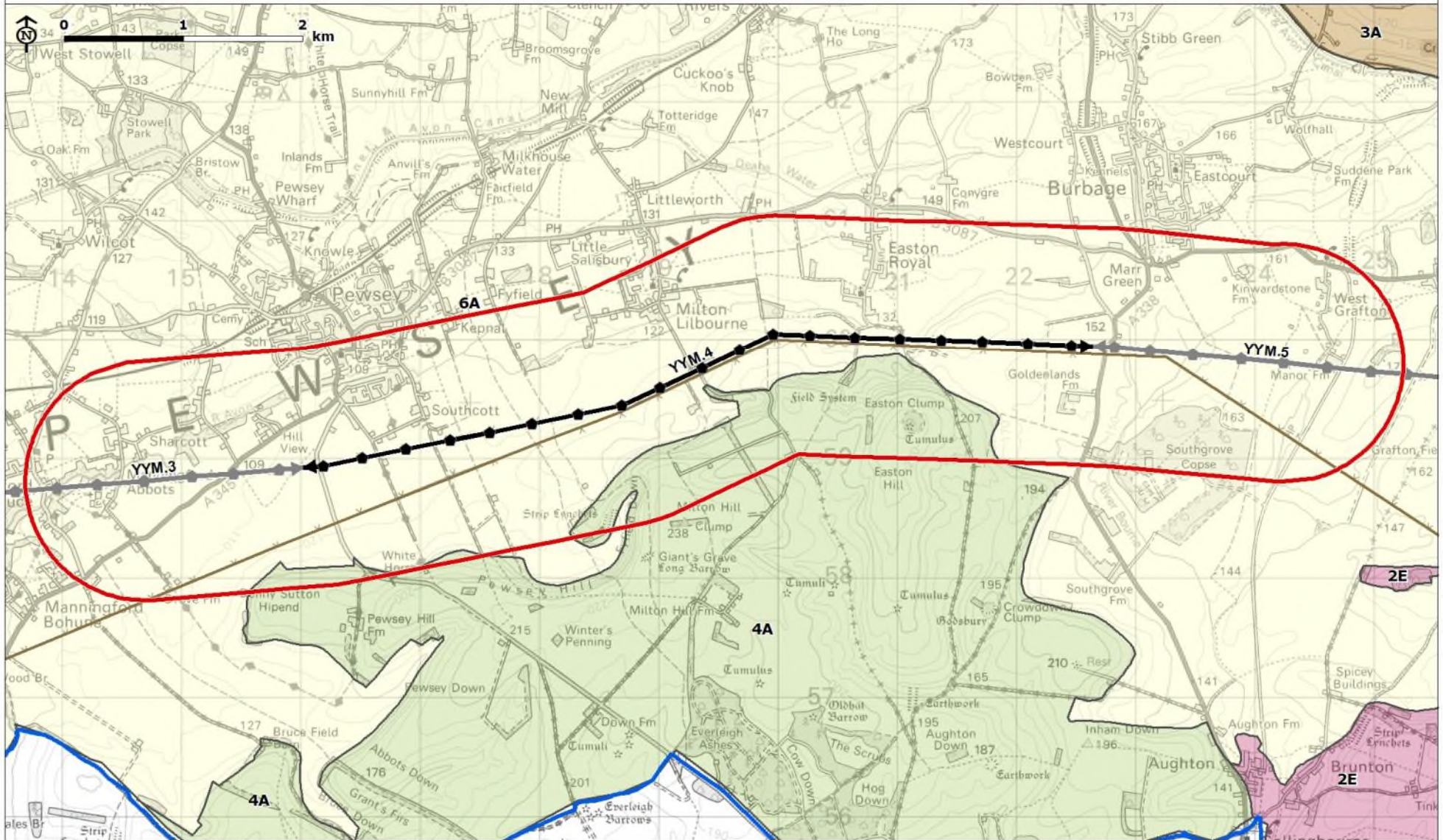
- Landscape**
- Downland with Woodland
 - High Chalk Plain
 - Vales
 - Wooded Plateau

Landscape character areas

- 2E: Chute Forest - Facombe
- 3A: Savernake Plateau
- 4A: Salisbury Plain
- 6A: Vale of Pewsey

- YYM.4 Pylon
 - Other OHL pylon
 - DNO 132kV overhead line
- nationalgrid**

Source: Natural England, National Grid, LCA - North Wessex Downs AONB (2002)



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Ecology

- 3.16 This section of 400kV OHL does not currently pass through any statutory ecological designations. Within the wider study area international and national ecological designations include the River Avon System Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) located near the villages of Manningford Abbots and Sharcott to the southwest of Pewsey; and Jones's Mill SSSI located to the north of Pewsey, which is also part of the River Avon System. The River Avon System has a mosaic of aquatic habitats that support a diverse fish community. The site is designated under article 4(4) of the Directive (92/43/EEC). Qualifying habitats include water courses with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation (rivers with floating vegetation often dominated by water-crowfoot). Species of note include Bullhead *Cottus gobio*, Brook lamprey *Lampetra planeri*, Sea lamprey *Petromyzon marinus*, Atlantic Salmon *Salmo salar*, and Desmoulin's whorl snail *Vertigo moulinsiana*.
- 3.17 Local ecological value as highlighted in the *Strategy for Arable Biodiversity in the North Wessex Downs AONB* (2010)⁶, indicates that this sub-section of 400kV OHL is situated within the Arable Biodiversity Strategy target area. The Arable Biodiversity Strategy is required to help protect and enhance the nationally important arable biodiversity found within the North Wessex Downs. "Arable farmland within the North Wessex Downs supports a nationally and/or regionally important range of farmland birds such as Tree sparrow, Corn bunting, and Stone-curlew, as well as priority species of arable flora including Shepherd's needle and Corn buttercup, and mammals such as Brown hare"⁷. The importance of the area for ground-nesting birds, some of which are declining at a national level, has been highlighted by stakeholders.
- 3.18 The wider study area to the north is composed of predominately large arable fields with occasional pockets of rich, pastoral fields threaded by numerous minor streams with associated remnant waterside pastures and riparian woodlands that provide variety and ecological interest.

⁶ A strategy for Arable Biodiversity in the North Wessex Downs AONB, Simon Smart, Black Sheep Countryside Management Julie Ewald, Game and Wildlife Conservation Trust. March 2008 (Updated February 2010) <http://www.northwessexdowns.org.uk/publications.html>

⁷ Ibid. Para 1.3.

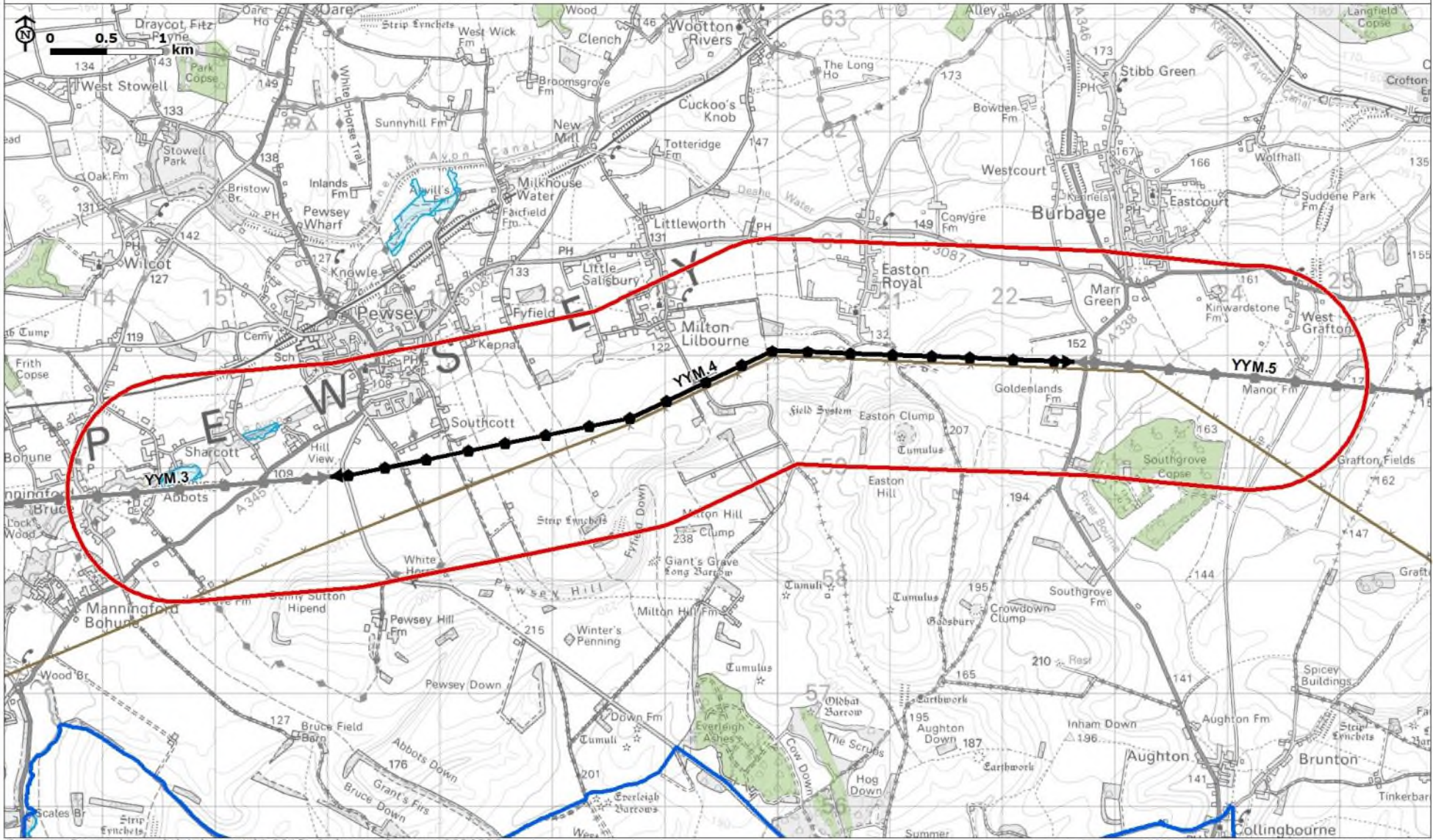
**NATIONAL GRID
NORTH WESSEX DOWNS
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- ▭ Study area
- ▭ North Wessex Downs AONB
- ↔ Assessed National Grid 400kV overhead line subsection
- ↔ Other National Grid 400kV overhead line
- ▭ Ancient Woodland
- ▭ Special Area of Conservation (SAC)
- ▭ SSSI
- ◆ YYM.4 Pylon
- ◆ Other OHL pylon
- DNO 132kV overhead line

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Figure 3.3: Ecology

Source: Natural England, National Grid




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Historic Environment


- 3.19 The Vale of Pewsey sits mid-way between Stonehenge, some 15km to the south of Pewsey, and Avebury, around 12km to the north-west, which are the two focal elements of the Stonehenge and Avebury World Heritage Site. Archaeology is a key issue for this area, and there is potential for significant finds in any part of this landscape.
- 3.20 The Vale of Pewsey has served as the economic heart of the Kennet District for hundreds of years, and encompasses the majority of the settlements within the area. Historic continuity is expressed in settlements with Pewsey being Saxon in origin, Wootton Rivers once being the centre of a Saxon royal estate, and villages such as Coate and All Cannings in the east of the vale displaying a typical medieval layout. The built form of many of the historical settlements within the surrounding landscape being of soft red brick and flint, often used in decorative styles, limestone, sarsen, cob and timber frame, with roofs of straw, thatch or clay tile.
- 3.21 The agricultural landscape to the north and east of the section is predominately a product of the 18th and 19th century Enclosure Acts comprising medium sized arable and pastoral fields bounded by mature hedgerows, occasional hedgerow trees and small pockets of deciduous woodland. Evidence of earlier enclosure can be found with smaller paddocks surrounding settlements and lining the minor stream of Hurly Lake. The larger arable fields through which the 400kV OHL runs in the west were created in the later 20th Century through enclosure of land not previously part of the farmed landscape. These fields are regular in shape and have straight boundaries composed of intermittent low hedgerows.
- 3.22 The steeper slope of the scarp has number of historical field systems with distinctive terraces of strip lynchets being highly evident along Fyfield Down, Milton Hill and Easton Clump. Lynchets are a build-up of soil on the downslope of a ploughed field, indicating historic field cultivation and are a feature of ancient field systems. The Downland scarp to the south also contains a number of scheduled monuments including relics of the ancient settlements of The Spectacles and Easton Clump. Settlement and field system on Milton Hill (Fyfield Down) Scheduled Monument and Giant's Grave Long Barrow overlook the 400kV OHL from Fyfield Downs. This Iron Age promontory fort/settlement is one of three on the escarpment, and is an example of the significant evidence of Iron Age settlement in the Pewsey area. Easton Clump Settlement and Disc barrow at Easton Clump Scheduled Monuments is the second with the third, 'The Spectacles', just outside the study area at Pewsey Hill.
- 3.23 There are a number of Grade II listed buildings within the study area clustered within the settlements of Manningford Abbots, Southcott, Milton Lilbourne, Easton Royal and Burbage.
- 3.24 The new Pewsey white horse, is of historic interest, located on the north facing slopes of Pewsey. It was carved by volunteers from Pewsey Fire Brigade in April 1937⁸ and is positioned near to the site of the old Pewsey white horse, which is thought to be much earlier. Wiltshire is considered the county for white horses with numerous horses carved in the chalk hills. The white horse is valued by the local communities. The local Historic Environment Record (HER) may identify further historic features within the study area and would be reviewed as part of the next stage of assessment if this subsection is selected. Historic designations in the local area are shown on **Figure 3.4**.

⁸ <http://www.wiltshirewhitehorses.org.uk/pewseynew.html>

 Study area

 North Wessex Downs AONB

 Assessed National Grid 400kV overhead line subsection


 Other National Grid 400kV overhead line


Listed Building


 I


 II*


 II

 Scheduled Monument

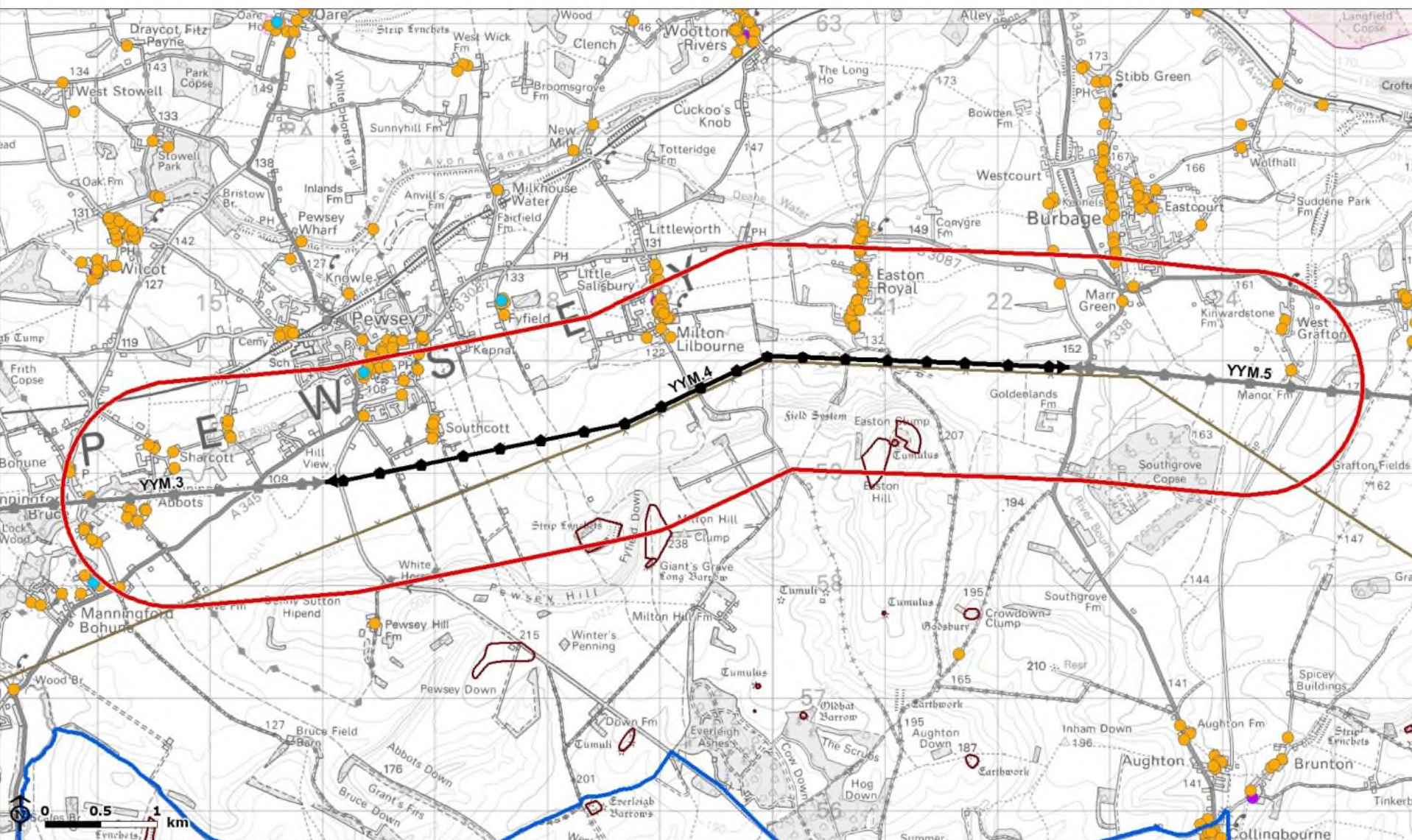
 Registered Parks and Gardens

 Y.M.4 Pylon

 Other OHL pylon

 DNO 132kV overhead line

Source: Natural England, National Grid, Historic England



Water

- 3.25 A minor stream named Hurly Lake runs parallel to YYM.4, in the east and is flanked by riparian woodland, wet meadows with numerous small ponds. The Environment Agency's Flood Map Zones shows that the stream has a 'High' risk of flooding equivalent to a 1 in 100 or greater annual probability of flooding. In the west, the River Avon runs roughly parallel to the 400KV OHL. The headwaters of the River Bourne rise to the south of Burbage, in the area east of the A338.
- 3.26 The landscape within the wider study area to the north is threaded by numerous minor streams draining to the headwaters of the River Avon and the Kennet and Avon Canal passes from east to west, north of the 400kV OHL.

Soils and Geology

- 3.27 The bedrock underlying most of the Vale comprises Upper Greensand - Sandstone, Sedimentary Bedrock formed by siliciclastic sediments deposited as mud, silt, sand and gravel during Cretaceous Period when the local environment was previously dominated by shallow seas. The bedrock of the southern flank of the Vale comprises a series of low undulating foothills of the West Melbury Marly Chalk Formation. A sedimentary bedrock formed approximately 94 to 100 million years ago in the Cretaceous Period when the local environment was previously dominated by warm chalk seas. Superficial deposits comprise clay, sand and gravel alluvium and river terrace were laid down 3 million years ago during the Quaternary Period when the local environment was previously dominated by subaerial slopes and rivers.
- 3.28 Available records will be investigated as part of further assessment stages prior to the selection of a detailed route alignment.

Other Environmental Issues

- 3.29 At this stage of the appraisal process it is considered that certain environmental topics, for example local air quality, noise and vibration would not influence the choice of a preferred option and hence have not been included. More detailed assessment of a wide range of topics (including air quality, noise and vibration) is likely to be required for construction and operational activities as part of the supporting documentation to accompany a planning application(s).

Socio-Economic Baseline

Local Economic Activity

- 3.30 Commercial properties in the study area are mainly agricultural; the majority of the agricultural land within the study area is classified grade 2 or 3, but with some areas to the north near the Kennet and Avon Canal being grade 1. Tourism is an important component of the local economy, with numerous businesses benefiting from visitors to the area, including walkers on the White Horse Trail, recreational users of the Kennet and Avon Canal and its towpath, which is listed at a National Waterways Link and is one of the busiest paths in the British Waterways Network. Within the wider study area The Pewsey Heritage Centre and the Crofton Steam Engines and Pumping Station on the Kennet and Avon Canal at Great Bedwyn represent a popular visitor attraction with the wider study area. In addition, stakeholders have highlighted many other tourism initiatives and promotional activity focused on the Vale of Pewsey and the wider AONB.

Aviation and Defence

- 3.31 The Defence Training Estate Salisbury Plain (DTE SP) is located approximately 5km to the south-west of the 400kV OHL on the vast, sparsely populated chalk plateau of the Salisbury Plain. The military training area is owned and run by the Ministry of Defence (MOD) and covers approximately half of the plain comprising 390 km² of land and is the largest military training area in the UK. Approximately 100 km² of the site area is permanently closed to the public, and access is greatly restricted in other areas.

Traffic and Transport

- 3.32 The B3087 runs in parallel, approximately 1km to the north, to the 400kV OHL, connecting Pewsey to Burbage. It is characterised by mature hawthorn hedgerows lining either side of the road. Running south off the B3087 are a number of minor dead-end roads leading to the linear springline villages of Milton Lilbourn, Eastern Royal and West Grafton. The busy A338 runs south from the Burbage to Tidworth along the River Bourne valley, passing under the 400kV OHL at Goldenlands Farm.
- 3.33 Due to the steep gradient, access to the Downland scarp of Pewsey Down, Fyfield Down, Milton Hill, and Easton Hill to the south of the 400kV OHL is limited to a number of north south running byways and farm tracks with many stopping at the foot of the scarp.

Access and Recreation

- 3.34 The Downland to the south of the 400kV OHL is accessed by numerous PRow, which include the White Horse Trail long-distance footpath, which run from the settlements in the north passing under the 400kV OHL and up and over the Downland scarp.
- 3.35 National Cycle Network (NCN) route 45 cuts across the study area north to south from Pewsey. The NCN route 4 passes through Pewsey picking up the B3087 north of the study area. Both NCN routes are shown on **Figure 3.5**.

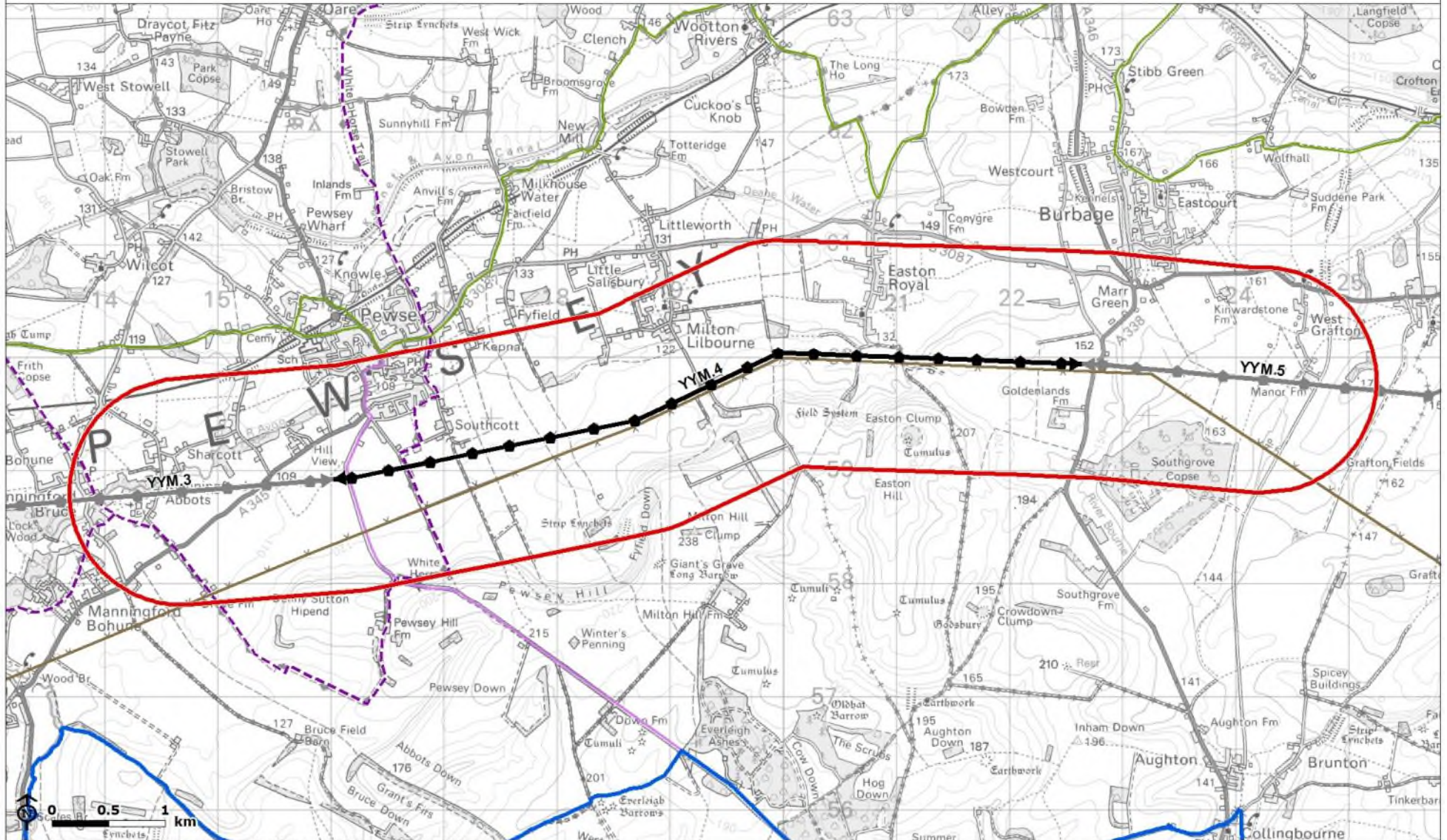
**NATIONAL GRID
NORTH WESSEX DOWNS
VIP PROJECT**

- Study area
- North Wessex Downs AONB
- Assessed National Grid 400kV overhead line subsection
- Other National Grid 400kV overhead line
- White Horse Trail
- National Cycle Network (NCN4)
- National Cycle Network (NCN45)
- YYM.4 Pylon
- Other OHL pylon
- DNO 132kV overhead line



Figure 3.5: Access & Recreation

Source: Natural England, National Grid



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4 Stakeholder Engagement

Introduction

- 4.1 Having identified a shortlist of 12 sections of line in eight designated areas using the landscape assessment methodology, the Stakeholder Advisory Group asked National Grid to carry out early stage engagement with stakeholders and the public at a local level.
- 4.2 The aim of this early engagement was to gather information and intelligence on the areas to inform the options assessments and to gauge local attitudes and opinions on the work. It was also felt that involving local groups and individuals at the outset would not only help to identify any potential problems and challenges but also to give the local community a sense of ownership. It should be a requirement of any scheme taken forward to major engineering work that it has the support and involvement of local people.
- 4.3 It was also agreed at the Stakeholder Advisory Group that National Grid should work closely with the North Wessex Downs AONB to present a collaborative, inclusive partnership approach to the local community.

Stakeholder Meeting

- 4.4 A meeting was held on 27 November 2014 following the announcement of the 12 shortlisted sections. This meeting was attended by National Grid, Camargue and representatives from North Wessex Downs AONB (Andrew Lord) and New Forest National Park (Sarah Kelly).
- 4.5 The following points were discussed and agreed during the meeting:
 - Stakeholder engagement would take place as soon as practical.
 - Ideally engagement events would take place on the same day with a workshop for selected, relevant individuals / organisations followed by a drop in event for the public (afternoon and evening).
 - This initial stakeholder engagement would inform the landscape and technical work.
 - The workshop would be a closed session, focused on a smaller group and technical in nature. Attendees would comprise primarily key representatives from the AONB and other key statutory bodies identified by the AONB Partnership and agreed with National Grid.
 - Personal invites would be issued to the workshop. Personal invites would also be issued to the drop in sessions to selected groups / individuals (as advised by the AONB Partnership).
 - General invites would be sent to other relevant groups / local affected communities primarily using the AONB's and NPA's networks / databases. National Grid would work with the AONB's communications officers to ensure that the message was delivered to relevant audiences.
 - Drop in events would need to take place at a convenient location for members of the community as advised by the AONB.
 - National Grid would take responsibility for organising and delivering the events but they would be collaborative activities between National Grid and the AONB teams.
 - Invites and materials for each event would be co-branded.

Engagement Events

- 4.6 On the advice of the North Wessex Downs AONB team, the events were held as follows. Both workshop and drop in events took place on Tuesday 3rd March 2015. The workshop was held at the Bouverie Hall in Pewsey. The drop in event was held in the Pewsey Heritage Centre, also in the centre of Pewsey.
- 4.7 The workshop ran from 9.30am until 1.00pm and was attended by five representatives from local stakeholders including North Wessex Downs AONB officers and representatives from Wiltshire Council and the Pewsey Community Area Partnership. Representatives from National Grid, LUC and Camargue were in attendance and Mary O'Connor, Associate Director of WYG and member of the Landscape Institute, attended on behalf of the Stakeholder Advisory Group as an observer. Jill Smith, Communications and Events Manager for the National Association for AONBs also attended as an observer.
- 4.8 The drop-in events ran from 2.00pm until 8.00pm and were staffed by representatives from National Grid (VIP project team) along with LUC and Camargue. They were attended by a broad cross section of the local community with a number of local landowners represented, as well as local residents. In total, 90 people attended the event.

Promoting the Events

- 4.9 The event was publicised as agreed with the AONB with direct invitations sent to the AONB's mailing list of key stakeholders. The event was also promoted via the AONB's e-newsletter, a news article on its website, a piece on its Facebook page and regular tweets through its Twitter profile. North Wessex Downs communications officer Rose Somerset was active in encouraging people to attend and used the local community network to circulate information about the event. National Grid worked closely with Rose and provided material for use in publicity proactively and on demand.
- 4.10 A press release was produced and issued to local media resulting in coverage in BBC News online, Wiltshire Gazette and Herald, Marlborough News, Swindon Advertiser and on BBC Radio Wiltshire – which interviewed Henry Oliver and National Grid's VIP project manager, Hector Pearson.

Stakeholder Feedback

Technical Workshop

- 4.11 The following key issues were discussed at the Technical Workshop:
- 4.12 Landscape and Visual
- The North Wessex Downs AONB highlighted the gently rolling nature of the downland throughout the Vale of Pewsey and suggested that the pylons represented a harsh intrusion into this landscape.
 - The extension of any work into the sections YYM5 or YYM6 would receive wide support locally were they to be considered as part of the solution (this was backed up at the public drop in).
 - YYM.4 sits between the A338 and A345. Taking the SECs (if undergrounding is the preferred option) outside the road boundaries would be a logical step – there is more opportunity to hide infrastructure here as the landscape changes.
 - The worst affected locations are Easton Royal and Milton Lilbourne – the pylon line cuts between them.
 - The AONB commented that the Distribution Network Operator (DNO) line is less intrusive as the pylons are lower / smaller and they sit closer to the downs. As a result the removal of the National Grid line would have significant positive impact on the area.
 - The area is dominated by arable farmland in the Vale with rolling chalk downs on either side. A series of ancient, steep-sided paths (droves) used by drovers to move livestock run north – south through the Vale.

- Given the topography of the area and its very open nature, it would be very difficult to mitigate the impact of the line section by planting. For those using paths, the line crosses at right angles making clump planting as a solution ineffective.
- There are opportunities for positive impact in terms of planting post any work to reinstate plants such as orchids.

4.13 Ecology / Environment

- It was suggested that although the area has considerable biodiversity, Natural England had told the AONB that they did not foresee any show-stopping issues as far as biodiversity is concerned.
- The line sits within the zone of influence for an SSSI and the Hants Avon SAC – this would require appropriate assessment. Although National Grid would not need to cross the river, it needs aware of it in context of the chalk stream.
- The area around Manningford Bridge is very swampy and this swamp is associated with the Hants Avon SAC. There have been problems with run-off from the A345. The general swampy nature of the Avon in the area is challenging.
- Much of the area through which the line runs is arable farmland – although a major dairying area in the past, there is little or no dairying today.
- In terms of wildlife, the main issue is ground nesting birds such as stone curlew, lapwing, skylark and corn bunting. Most of the landowners already have agricultural agreements in place and are aware of the issues relating to these species. Other species that maybe affected include the turtle dove and tree sparrow. Brown hare are also found in the area.
- Farmland dominates but because the land has only relatively recently been turned over to arable there are unlikely to be any rare arable weeds. There are orchids in the green sides of the ancient droves.
- Burbage, Easton Royal and Grafton delineate the boundary of the ancient Savernake Forest Estate. It is unlikely that there are many ancient trees in the droves and surrounding the fields. Older trees are found on the clumps.
- There is gapping in the hedgerows where YYM.5 and YYM.6 run. There could be opportunities here for the Landscape Enhancement Initiative to come into play.

4.14 Archaeology / Heritage

- As with biodiversity, initial soundings taken by the AONB suggested that archaeology would not be a showstopper for any work.
- The meeting advised that it would be worth contacting the following people to find out more about the local archaeology.

4.15 Land Ownership / Access / PRoWs

- Land ownership in the area is mainly family run farms. The group advised on local farmers who should be approached.
- The AONB also suggested that the firm, Black Sheep Consulting is approached as they have been advising local farmers on agri-environment agreements.
- The Farmers Club which meets every third Thursday of the month would be a useful point of contact.
- Technical issues with public rights of way and access include:
 - The area is crossed by 12 paths and drovers' trails as follows: 10x bridleways; 1x public footpath; and 1x byway.
 - The White Horse Trail – which is being increasingly actively promoted by the AONB runs under the line section. A number of businesses offering accommodation and refreshments have sprung up along the trail.

4.16 Socio-Economic / Tourism / Community Impacts

- A number of businesses offering accommodation and refreshments have sprung up along the White Horse Trail. Some of the farming businesses supplement their income with tourism related activity.
- The line is visible from the Kennet and Avon Canal which is a major tourist attraction in the area.
- The AONB is planning to boost visitor numbers to the area by actively promoting the White Horse Trail. There is an annual White Horse Walk in May / June which attracts large numbers of participants.
- The group felt that the work could have an eventual positive impact on tourism. There will be interest in the project while it is under construction and the AONB will work with National Grid to promote it.

4.17 Technical Issues

- The Environment Agency representative noted that when considering undergrounding cables, it was important to be mindful that the trench could act as a land drain and carrying pollutants into the river.
- It was noted that a Flood Defence Consent would be required before any project could be progressed.
- It was noted that it would be important to integrate LiDAR and ground surveys.

4.18 Summary

- It was generally felt by the group that despite the potential disruption, undergrounding would offer the best solution for the line section.
- T-pylons or lower height pylons (see **Section 5**) would not do sufficient to lessen the impact. It was felt that although T-pylons might add an 'exotic' flavour to the landscape, it would contrast with the DNO line and the cumulative visual impact would be greater.
- If pylons are to remain, the group would prefer the lattice design as they had lived with it for so long.
- The AONB commented that the DNO line is less intrusive as the pylons are lower / smaller and they sit closer to the downs. As a result the removal of the National Grid line would have significant positive impact on the area.
- Either side of the A roads (A338 and A345) would be the best potential places for SECs. The A roads would also be best for access as some of the B roads are very narrow and banked.
- With a significantly higher number of vehicle movements during construction a detailed transport plan would need to be produced as part of the planning application process. Routes through villages should be avoided where possible.

Feedback from the Two Drop-In Events

4.19 23 feedback forms were received from a public-drop in session held in Pewsey on 3 March 2015. Comments are summarised as follows:

- The written feedback received at this event was generally supportive of the VIP project.
- To reduce the visual impact of the pylons, the majority of the residents in Pewsey preferred undergrounding the cables. One resident would consider replacing the lattice pylons with T-Pylons as an alternative.
- Most residents did not feel that the other options, such as painting or screening the pylons, would help in minimising their visual impact.
- Three residents noted that the disruption during any major engineering works to bury the cables would be minimal, especially as the pylons are in the middle of flat arable land.
- For several residents, the removal of the pylons would enhance the tourism experience and "*drastically improve the area*" and ensure that the beautiful views of Pewsey would not be affected by an overhead line.

- A local community group, Pewsey Community Area Partnership, and the local tourism group, Pewsey Vale Tourism, voiced their support for the project and spoke in detail to the project team about the socio-economic benefits that the project would bring to the area.
- Four local people did feel that the project's provision could potentially be spent elsewhere. One resident within this group felt that the pylons in the valley had little visual impact on the community.
- One resident raised concerns about the visual impact of a new SECs on the landscape.
- The SECs were viewed as a "*small price to pay*" to have the line buried one resident noted in their feedback, and could be situated in a discrete area within the AONB.
- The DNO line that runs alongside the National Grid line was highlighted as a concern in two feedback forms. These residents felt that the opportunity for the VIP project to improve the landscape through removing the pylons would be compromised as the DNO line would still be visible.
- Other anecdotal feedback included:
 - A number of residents highlighted both YYM.5 and YYM.2 as worthy of attention due to the perceived high visual impact of the line in these sections.
 - Some landowners expressed their concern at the prospect of the work – particularly as the DNO line would remain in place.

Feedback from the Second Technical Workshop

- 4.20 A second meeting of technical stakeholders took place at the Bouverie Hall in Pewsey on 10 August 2015. Prior to the meeting each attendee was sent a copy of the Options Appraisal report. The aim of the session was to obtain their feedback on the report and to provide attendees with a forum in which they could raise any issues before the report is formally presented to the project's Stakeholder Advisory Group in September 2015.
- 4.21 Attendees were asked by National Grid to highlight any issues or inaccuracies in the report. The meeting raised the following key points.
- The SRG (and specifically representatives from Wiltshire Council and Historic England) felt that more was needed on the archaeology of the area and the potential for significant finds.
 - The site is located between the two main elements of the World Heritage Site (Stonehenge and Avebury) and there is also significant evidence of Iron Age settlement in the Pewsey area. This should be acknowledged in the report.
 - Discussion on the potential location of the Sealing End Compounds identified a strong location at the western of the line (adjacent to the Salisbury Business Park). The SRG felt that more work was needed at the eastern 4end as the search area focused on two small mixed farms.
 - Members of the Pewsey Community Area Partnership suggested that extending the search further east into the adjacent red section of line might offer a better solution.
 - It was confirmed by National Grid that any landscaping works required to mitigate the visual impact of the Sealing End Compound would form a part of the main scheme and would not need to be applied for separately under the Landscape Enhancement Initiative.
 - The Hampshire Avon Catchment Partnership representative highlighted the need to include mention of the River Bourne (which is dry in summer) within the report.
 - The SRG felt strongly that the impact of the remaining 132kV cable (which runs in parallel with the shortlisted subsection for part of its length) should not affect a decision on the line. In its view, the 132kV lines impact was significantly less due to its smaller towers and lower height.
 - It also felt that the impact of the 400kV pylons on views southwards across the Vale from the Horton Downs was downplayed or barely mentioned at all in the report and that this should be corrected (see box under paragraph 1.15 and para. 3.13).

- The view from the SRG was that the removal of the 400kV line would also strengthen its negotiating position with Ofgem and the DNO as it seeks to have the 132kV line removed at a later date.
- The AONB Partnership has recently published its latest five-year management plan to 2019. The SRG requested that reference be made to this document at appropriate points within the Options Appraisal report.
- The SRG felt that the report as drafted makes insufficient reference to tourism initiatives and promotional activity in the Pewsey area and the AONB as a whole. Examples were given of legally accessible off-road cycling routes, walks and trails focused on the nine White Horse monuments in the area as well as more general initiatives.
- The SRG requested that more reference is made to these in the report. It also took issue with the lack of promoted viewpoints – particularly in relation to the OS maps where it is not within its gift to identify viewpoints for inclusion. It also suggested that many viewpoints are not highlighted because they are impacted by the presence of the pylons.
- Given the nature of the Vale (high scarp on wide, valley), the whole area is comprised of viewpoints with much inter-visibility of sites across the whole of the Vale. The SRG would like to see more of this reference in the report.
- The SRG highlighted that the decline in ground nesting birds in farmland is a national issue which makes the preservation of these habitats (working with local farmers and agronomists) extremely valuable.

5 Potential Mitigation Solutions

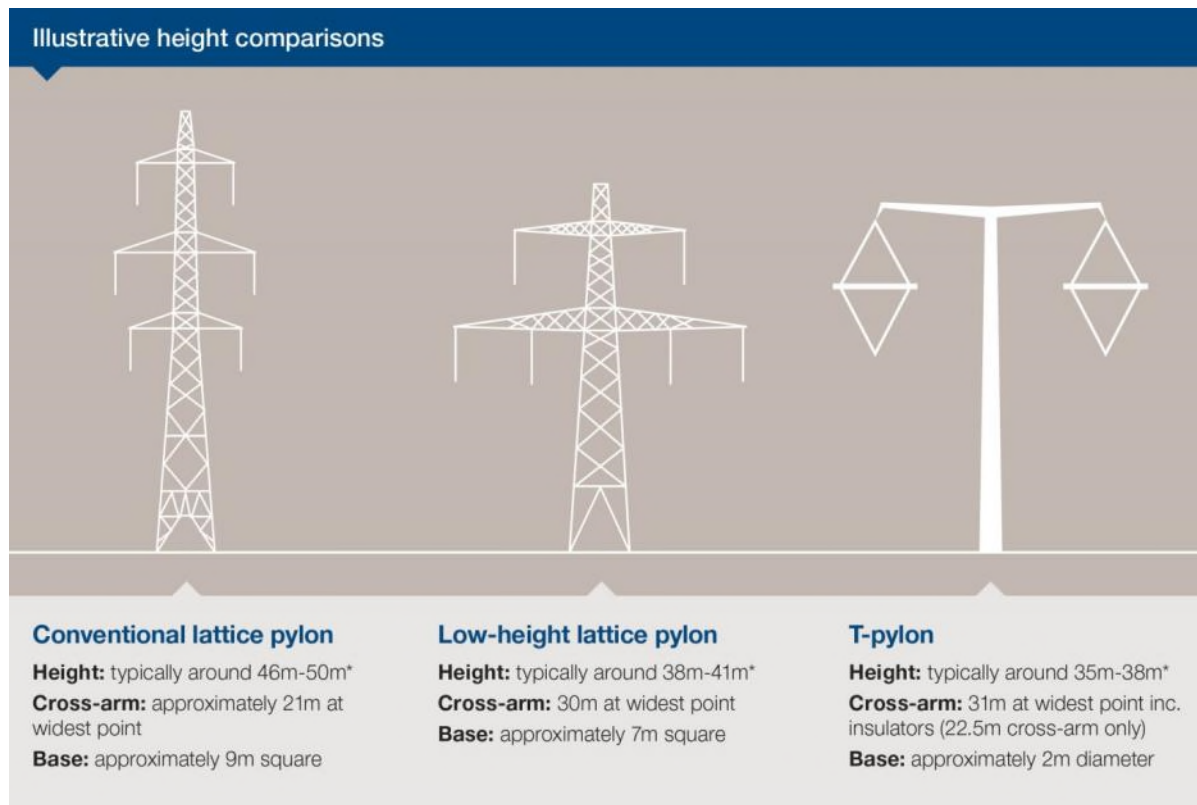
Introduction

- 5.1 A number of alternative solutions exist which could mitigate the impact of the 400kV OHL on the AONB, and these are described below. All routes shown are entirely indicative, and will be subject to detailed route design if shown to be feasible. Construction and operational impacts have been included in the consideration of these potential solutions. Decommissioning of the existing 400kV OHL has not been factored in at this appraisal stage as it is unlikely to influence the mitigation options. However, the following paragraph outlines the envisaged decommissioning process of the redundant infrastructure once the new connection is operational.
- 5.2 Decommissioning would involve many of the activities associated with the construction phase, for example provision of access points and haul roads and associated traffic movements for the removal of equipment. Upon removal, much of the material would be taken for reuse or recycling. Pylon fittings, such as dampers and spacers, would be removed from the conductors. The conductors would be cut into manageable lengths or would be winched onto drums. Each pylon may be dismantled by crane, with sections cut and lowered to the ground for further dismantling and removal from site. If space is particularly restricted, the pylon can act as the scaffold and be dismantled from the inside. Conversely, in large areas it may be possible to cut the pylon at the base and then pull the pylon to the ground using a tractor and then cut into sections. A decision as to whether pylon foundations would be left in the ground would be made at such time in the future and would also take account of land owner wishes and environmental issues.
- 5.3 For the mitigation options identified it may be necessary for the erection of temporary structures whilst cable sealing end and/or overhead line works are undertaken. These temporary structures would require new designated access routes, however, these access routes and structures would be removed once the new connection becomes operational.
- 5.4 With some of the VIP schemes, 132kV OHLs are in close proximity to the identified subsection. These 132kV OHLs are on pylons approximately 25m lower than the standard 400kV lattice pylons. The 132kV OHL has been included only where a potential option would be to 'take over' the 132kV route with a 400kV OHL (and replacement 132kV infrastructure would have to be constructed elsewhere). Whilst the inclusion of 132kV infrastructure not subject to 'take over' has not been considered as an option at this stage, the presence of a 132kV OHL is acknowledged in the appraisal where appropriate.

Option 1: Alternative Pylon Design

- 5.5 In this option, the route of the current overhead line would be maintained, but alternative pylon designs would be deployed. This could include either of the following designs, which are illustrated in **Figure 5.1** together with a conventional lattice pylon, which is included for comparison purposes:
- The new T-pylon design; or
 - Low height pylon design (L12/LH).

Figure 5.1 Alternative pylon designs



*Height will vary depending upon the local topography and environment

- 5.6 The T-ylon design was introduced by National Grid following a competition, as it was considered to be an attractive, innovative and simple design while still offering the required structural performance. It is around 10m shorter than the typical lattice pylon. Operational T-pylons have not yet been deployed in the UK, though prototypes have been erected. An artist's impression of a T-Pylon is shown in **Figure 5.2**. Discussion of this option with the project team, together with the feedback from the stakeholder engagement, indicated that this option would not mitigate the landscape and visual impacts of the 400kV OHL on the AONB.
- 5.7 Low-height pylons are variations on the lattice pylon design, which carry the conductors in a different arrangement. They are around 10m shorter than the typical lattice pylon, though significantly wider with more substantial cross-arms. An example is shown in **Figure 5.3**. Discussion of this option with the project team, together with the feedback from the stakeholder engagement, indicated that this option would not mitigate the landscape and visual impacts of the 400kV OHL on the AONB.
- 5.8 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 overhead line route which would in turn require consent.
- 5.9 The use of alternative pylon designs along the existing alignment was not investigated further.

Figure 5.2 Example T-pylon (artist's impression)



Figure 5.3 Example low-height pylon



Option 2: Overhead Line on Alternative Route Alignment

- 5.10 This option would involve re-routeing the 400kV OHL along an alternative alignment (either using conventional lattice or alternative pylon design). As this subsection is relatively straight and is situated in a generally flat landform, if it was re-routed north within the Vale or south along the escarpment, it would not mitigate the landscape and visual effects on this part of the AONB and would likely impact on key characteristics of the AONB. Therefore, no reasonable alternative routes have been identified for this subsection. The development of alternative route alignments was therefore not investigated further.

Option 3: Underground Cable – Direct Burial

- 5.11 This option would involve replacement of the 400kV OHL with an underground cable (the 400kV OHL would be removed following installation and commission of the cable).
- 5.12 Direct burial of an underground cable would require a construction corridor typically 30-50m wide along the length of the cable route. This width is to accommodate the cable trenches, haul road, storage areas for stripped topsoil and sub soil from the cable trench excavation and inclusion of any temporary and permanent land drainage requirements. This is based on the assumption that direct burial is using twelve cables to maintain circuit capacity. Following completion of the cable installation, the ground would be returned to its previous use. Hedgerows and other field boundaries would be reinstated. Trees felled would not be replanted over the buried cable but would be replaced elsewhere. **Figure 5.4** shows a typical cross section for underground cable construction.
- 5.13 An alternative to direct burial is the use of cable troughs which may be able to reduce the number of cables required to six in total. This method is generally used where the width of the cable corridor is restricted or where vegetative reinstatement is not required (for example along cycle trails or canal tow paths).
- 5.14 Each cable would be installed in an individual concrete trough, with a total single circuit trough width of typically 2m (a double circuit installation would require two of these). The trough is laid at a depth of approximately 1m and the achievable electrical rating is critically dependant on maintaining a constant minimum burial depth. As such, any points/obstacles along a route normally necessitating deeper burial, such as under watercourses and roads, would require special design considerations. A cable trough construction swathe would be less than that of direct burial largely because there is less of a requirement for material storage on site.
- 5.15 In conjunction with direct burial and cable troughs, National Grid can use horizontal directional drilling (HDD) technology to negotiate steep topography and sensitive terrain. The directional drilling provides a bore beneath the sensitive /difficult area that the cable is then sleeved into using a biodegradable lubricant. There is no space available to accommodate a cable joint within the HDD bore. The maximum distance that can be achieved with HDD techniques will be determined by the length of suitably rated cable that can be delivered to site on a single cable drum.
- 5.16 A SEC would be located at each end of the cable route, to achieve the transition from an overhead to an underground cable. A terminal pylon forms the end of the 400kV OHL, with a fenced compound approximately 80m by 40m. A diagram of a typical SEC is shown in **Figure 5.5**, with a photograph of an existing compound in **Figure 5.6**. Both cable SECs would require permanent road access which would result in additional construction activities. It is important to note that the designs for SECs do vary, and normally each compound is slightly different, the SEC is likely to be similar to the examples shown; and the pylon is often contained within the compound.
- 5.17 Broad sealing end search areas have been identified at either end of this subsection to give flexibility in where the SECs are sited. These areas are quite large as it cannot be determined at this stage where exactly the SECs would be located.
- 5.18 It is considered that direct burial of section YYM.4 and the associated SECs has the potential to mitigate the impacts on the AONB sufficiently to be investigated further. This option is shown in **Figure 5.7**. There are various sub-options relating to direct burial of the 400kV OHL and these are appraised in **Section 6**.

Figure 5.4 Typical underground cable construction swathe drawing

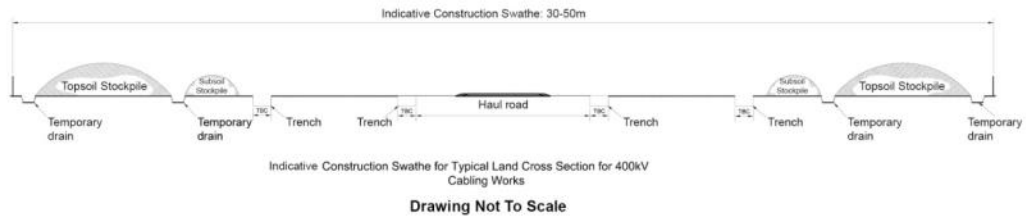


Figure 5.5 Diagram of a typical sealing end compound

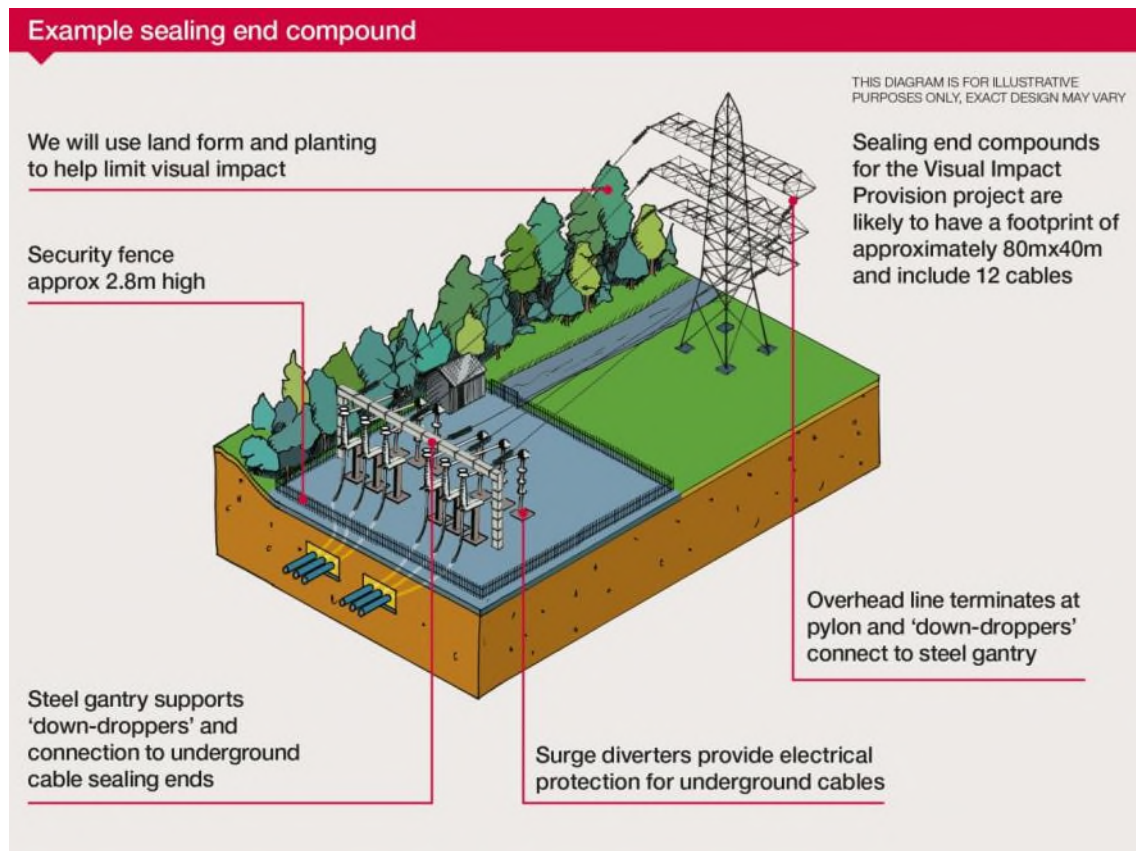


Figure 5.6 An operational sealing end compound



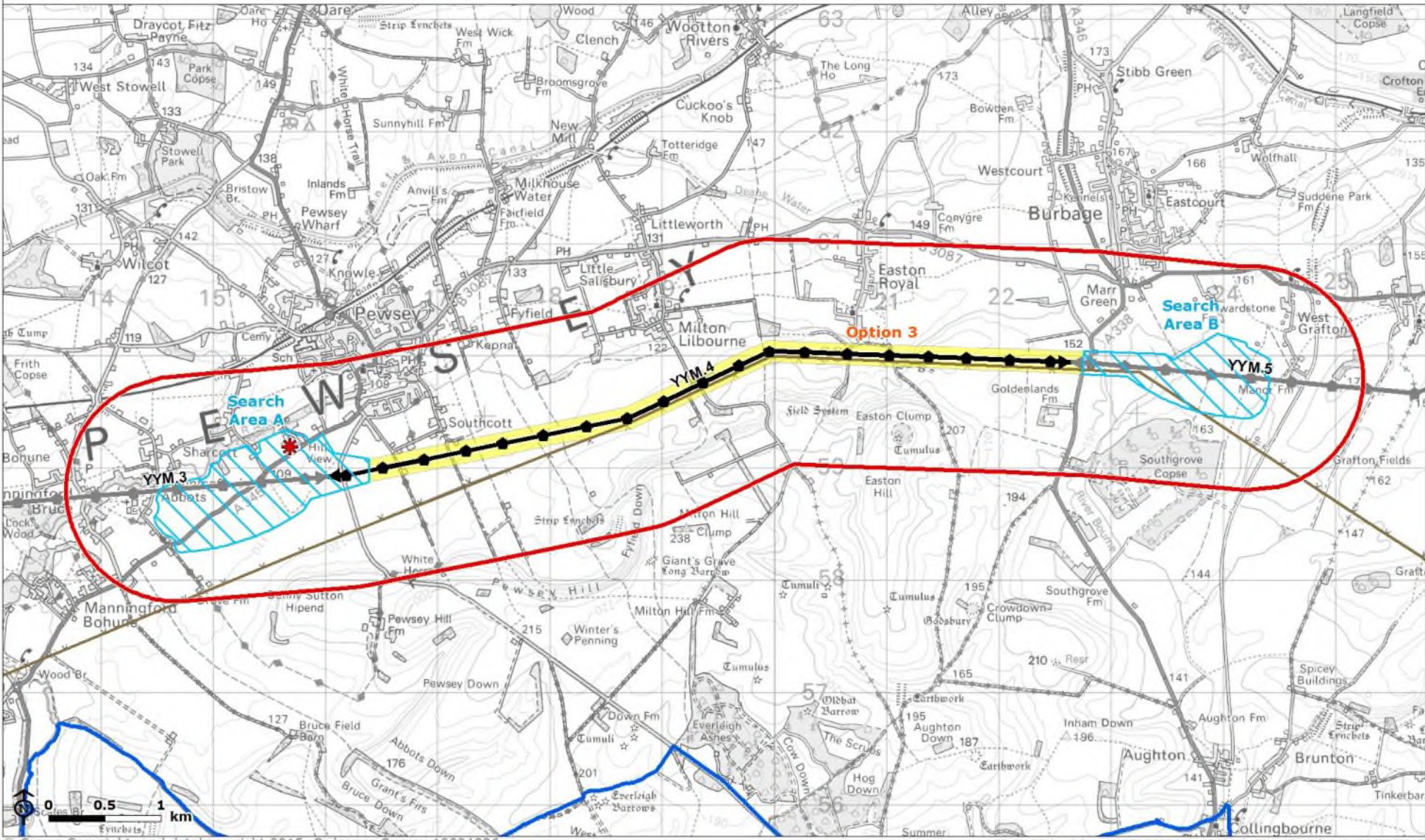
NATIONAL GRID
NORTH WESSEX DOWNS
VIP PROJECT

- Study area
- North Wessex Downs AONB
- Assessed National Grid 400kV overhead line subsection
- Other National Grid 400kV overhead line
- Potential route corridor
- Sealing end search area
- * Salisbury Road Business Park
- YYM.4 Pylon
- Other OHL pylon
- DNO 132kV overhead line



Source: Natural England, National Grid

Figure 5.7: Direct Burial Potential Routes



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CB:EL EB:lendak_e LUCEDI FIG6-1_6059_r2_DirectBurial_A4L 20/07/2015

Option 4: Underground Cable – Tunnel

- 5.19 Under this option, construction of a bored tunnel would require the sinking of vertical shafts at each end, to enable access for a tunnel boring machine which would complete the subsurface excavation (**Figure 5.8**). Additionally a shaft may be required at the midpoint for access and egress. A substantial construction compound would be required at each shaft location, and access would be required for bringing in plant and material. The diameter of a cable tunnel is very much dependant on the geology and the quantity of cables that need to be installed. It is envisaged that a cable tunnel diameter of approximately 4-5m would be required for this option. Disposal of spoil would be necessary, either on-site through creation of earth mounding, or off-site, necessitating numerous lorry movements. Following completion of the tunnel and installation of the cable, the construction compounds would be restored although the permanent tunnel headhouses and SECs would remain.
- 5.20 Whilst both bored tunnels and direct burial of underground cables are major engineering exercises, bored tunnels are only usually considered where the traditional direct burial method is not a realistic technical or environmental option (for example under a large water body) or when located in a highly urbanised environment (where direct burial would cause unacceptable disruption). No compelling reasons have been identified which would require a tunnel rather than direct burial, and tunnelling has not been investigated further.

Figure 5.8 Tunnel boring machine being lowered into a vertical shaft



6 Appraisal of Preferred Option and Conclusion

- 6.1 Discussions between LUC and National Grid, informed by site visits in May 2015 and by the stakeholder engagement (**Section 4**), led to a decision on which solutions to pursue for subsection YYM.4 in the North Wessex Downs AONB. Sub-topics are only considered where they may influence the choice of option.
- 6.2 Direct burial of the cables was considered to be the most effective means of mitigating the impacts of section YYM.4 in the AONB. The remainder of this section describes the options of achieving this. The route shown is entirely indicative, and will be subject to detailed route design if shown to be feasible.

Option 3: Direct burial of Section YYM.4

Corridors and Search Areas

- 6.3 For the purposes of direct burial, a corridor has been defined which follows the route of the existing 400kV OHL, since this is the shortest route. The corridor has been defined as up to 200m wide to accommodate avoidance of known constraints such as historic field systems, listed buildings and the foot slopes of the escarpment. Two search areas for SEC locations have been identified for this option, as follows:
 - Search Area A at the western end of the 400kV OHL consists of a number of relatively large flat arable fields located on the same alignment of the existing 400kV OHL to south west of Pewsey. It also includes smaller fields on the west of Salisbury Road Business Park.
 - Search Area B at the eastern end of the 400kV OHL consists of a number of arable fields located on the same alignment of the 400kV OHL to the south of West Grafton, where it could be partially screened by existing vegetation.
- 6.4 The SEC search areas A and B, and the 200m wide direct burial corridor are shown on **Figure 5.7**.
- 6.5 A variant of this option was also considered which would require part of the 400kV OHL to be realigned at its western end. This would allow a SEC to be located next to Salisbury Road Business Park, which has a light industrial character. To facilitate this option the existing alignment of the 400kV OHL at the western end will need to be diverted north. The new alignment will change direction from west to east to south-west to north-east towards the business park, where the proposed SEC would be located. From here an underground cable would be buried following a south-east direction until it intercepts the current alignment of the 400kV OHL. The underground cable would continue along the existing alignment towards the eastern SEC. A SEC in this location would increase the distance between the River Avon SAC and SSSI and the SEC.
- 6.6 A more precise location has not been identified for the eastern SEC, and further work will be undertaken as part of the detail design phase.

Appraisal

Landscape and Visual

- 6.7 Depending on the locations of the SECs, direct burial of this section of the 400kV OHL would result in the removal of between 19 and 26 pylons equating to between 6.8km and 8.9km of overhead line removed from the *Vale of Pewsey* LCA and the sensitive foot slopes of the *Salisbury Plain* LCA. Removal of the pylons and overhead line would primarily mitigate impacts on views south towards the Downland scarp from a number of PRoW, including drovers' trails and the White Horse Trail that currently pass under the line. The removal will also mitigate impacts on

views north from the Downland scarp. However, this will be to a lesser extent due to the existing line being well back-clothed by the landscape of the vale.

- 6.8 Search area A is relatively well screened by existing hedgerows, hedgerow trees and riparian woodland. Locating a SEC into the west of this area could have significant impacts on views from the A345, Everleigh Road and a minor road running north of the A345 towards East Sharcott, where there are gaps in boundary vegetation. Significant impacts may also occur from New Farm located to the north of the A345, and the White Horse Trail and a PRoW located to the south of the A345. The SEC would also be visible from the Downland scarp to the south; however from here it is likely to be well back-clothed by existing vegetation.
- 6.9 Locating a SEC in the east of search area A would help to reduce the landscape and visual impact on the arable farmland landscape by locating it next to an area of industrial development. At this location the SEC would also be further away from sensitive riparian vegetation. The business park would provide some screening from views in the east; however, significant visual impacts are likely to occur from New Farm, as rerouted 400kV OHL passes over the arable field to the immediate south-east of this property.
- 6.10 Search area B would be less visible in the wider landscape, being sited further away from the local road network and well screened by hedgerows and mature trees. It may be visible from the Downland scarp, if not relatively well back-clothed by the existing vegetation, and from the local bridleway which crosses search area B.
- 6.11 Following removal of the 400kV OHL, the landscape and visual impacts of the 132kV DNO line will remain, though in the view of local stakeholders these impacts are significantly less than those of the 400kV line, due to its smaller towers and lower height.

Ecology

- 6.12 Search Areas A would be located approximately between 100m to 250m to the south of the River Avon SAC and River Avon System SSSI along the River Avon. The undergrounding of the line will give rise to disturbance of habitats along the route corridor, specifically with the removal of hedgerows and trees. However, the corridor primarily runs through arable land and is less sensitive. Further investigation of the areas will be needed to identify species and habitats in detail.

Historic Environment

- 6.13 The undergrounding corridors and SEC search areas avoid a number of scheduled monuments sited on the Downland scarp to the south of the 400kV OHL, as a result direct impacts are not anticipated. Removal of the OHL would be beneficial, improving the setting of the scheduled monuments, specifically referring to the prominent Easton Clump ancient settlement, located on the brow of Easton Hill (the highest point on Salisbury Plain). Direct burial of the 400kV OHL would significantly improve the setting of these historically important features.
- 6.14 Development of SECs or re-routing the western section of the line is unlikely to give rise to impacts on the setting of any scheduled monuments or listed buildings located within the area that is greater than the impact of the existing 400kV OHL.

Socio-Economic Appraisal

- 6.15 The undergrounding corridor would cause a degree of ground disturbance across what is likely to be a large number of landholdings. It is likely that the removal of the 400kV OHL would have a beneficial impact on visitors experience and views within the area including walkers and horse riders using the White Horse Trail and wider footpath network.

Technical Appraisal

- 6.16 The direct burial of the route from search area A to search area B would require the installation of approximately 7-9km km of underground HV electric cables and the construction of two cable SECs, one at either end of the underground section with terminal pylons to transition between the underground section cables and existing overhead line route.
- 6.17 A temporary haul road would be built along the length of the cable installation. The SECs would require significant land take and full planning permission (see **Appendix 1**). Permanent road

access is required to the compounds. Where possible, this may be via an existing access, otherwise a permanent route would need to be established.

- 6.18 During the construction period, access for heavy vehicles and plant would be required along the proposed cable route. It is envisaged at this stage that a total of 12 HV cables would need to be installed to ensure there are no restrictions on the capacity of the existing line. Horizontal directional drilling (HDD) may be used where the cable route crosses existing roads.
- 6.19 The road network in this location is considered to be capable of handling construction traffic with the A338 to the east and A345 to the west. On completion of the construction activities, up to 26 pylons would be decommissioned and, where possible, the ground would be reinstated back to its original condition.
- 6.20 The use of cable technology is suitable to achieve this option, but further detailed assessment would be required to ensure that network capacity isn't unduly affected. Shunt reactors may be required on the electricity network in order to compensate for the electrical properties of the cable.

Overall Conclusion

- 6.21 This section of the report has presented the option which seems to be the most feasible for addressing the visual impact of this existing subsection of National Grid overhead line.
- 6.22 It is proposed that, should the VIP Stakeholder Advisory Group recommend to National Grid that YYM.4 be taken forward into the next stage of the VIP process, National Grid would work closely with the stakeholders in identifying a specific route alignment and locations for the two SECs within the search areas. In order to do this, it would be necessary to undertake physical site investigations (such as borehole surveys). The provision of this information would inform further decision making, again through the Stakeholder Advisory Group, for progressing this project under VIP.

Appendix 1- Summary of Potential Primary Consenting Requirements

Consent	1: OHL (Alternative Pylon Design) along Existing Alignment	2: OHL (Alternative Pylon / Conventional Lattice Design) along Alternative Alignment	3: Underground cable (direct burial) of 400kV line	4: Underground cable (Cable tunnel)
Development Consent Order (DCO) under the Planning Act 2008 (as amended)	Required as new line is >2km and defined as a Nationally Significant Infrastructure Project (NSIP)	Required as new line is >2km and defined as an NSIP	n/a	n/a
Town and Country Planning Act (T&CPA) 1990 (as amended)	n/a	n/a	Required for sealing end compounds (SECs)	Required for SECs and tunnel head houses
Section 37 (S37) Electricity Act 1989 (as amended)	n/a	n/a	Potentially if diversion to new SEC required	Potentially if diversion to new SEC required
Environmental Impact Assessment (EIA) Regulations (various) Development	Likely, due to sensitivity of environment (Schedule 3 criteria)	Likely, due to sensitivity of environment (Schedule 3 criteria)	Likely, due to sensitivity of environment (Schedule 3 criteria)	Likely, due to sensitivity of environment (Schedule 3 criteria)
'Appropriate Assessment' under Habitat Regulations 2010	Unlikely, but subject to screening	Unlikely, but subject to screening	Possible, depending on location of western SEC	Possible, depending on location of western SEC and tunnel head house
Permitted Development (PD) Rights under T&CP (General Permitted Development) Order 1995	n/a	n/a	Screening of PD rights for cable (subject to restrictions and conditions)	Screening of PD rights for cable (subject to restrictions and conditions)