



Strategy Report



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THIS REPORT IS PRIVATE AND CONFIDENTIAL AND IS FOR THE ATTENTION OF:

1. EAST DEVON DISTRICT COUNCIL



Strategy Report relating to
Overhead Lines at:
Cranbrook Expansion Site East

Client: East Devon District Council

Date: 05 October 2018

Surveyor: Ben Tibbetts MRICS

Signed:

Instruction

This update report has been commissioned by East Devon District Council and compiled using information provided in emails, previous site visit carried out on 24 May and documentation obtained (including a site plan and title information). This report is confidential and intended solely for our client and cannot be relied on by any third party.

The purpose of this report is to provide comprehensive advice on the relocation opportunity of two high voltage overhead electricity lines currently affecting the subject development site. It assesses the indicative costs associated with diversion options and the potential timescales involved in undergrounding the overhead lines.

The lines in question are a 132kV and a 33kV. Both are currently extending over the site known as 'Cranbrook Expansion Site East, London Road, Whimple'. This report sets out the options for diverting the overhead lines underground.

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Cranbrook Expansion Site East, London Road, Whimble Strategy Report

1 Introduction

1. Over the past five years the new town of Cranbrook has expanded to a community in excess of 4,000 people, with around 1,800 to 3,500 consented houses built. The East Devon Local Plan allows for further expansion of the town up to total of around 8,000 homes. Currently four planning applications (covering the three expansion areas) have been lodged with East Devon District Council (EDDC) for residential development that will grow the town to around 7,500 homes with associated supporting infrastructure.
2. EDDC has instructed consultants to assist in preparing a masterplan for the proposed expansion of Cranbrook new town, which is part of the Exeter and East Devon Growth Point. A Development Plan Document (DPD) for Cranbrook will provide the detailed policy to guide, inform and set the standard for development. The masterplan will form part of the DPD evidence base.
3. We have been instructed by EDDC to produce this updated report to evaluate the opportunity of diverting/undergrounding the overhead lines within the eastern expansion area, viability of the scheme and the delivery of housing in this area. This includes the opportunities and constraints of undergrounding the overhead line south of London Road.
4. The eastern and south eastern expansion areas are bordered to the north by the Exeter to London Waterloo railway line, with agricultural land and areas of woodland beyond, and to the east by more agricultural land. Its southern extent is dissected by the London Road (the 'old' A30) and bordered by field and woodland to the south. A watercourse (Cranny Brook) flows from east to west through the site. There are two prominent high voltage overhead electricity tower lines on the site operating at 132,000 volts (132kV) and 33,000 volts (33kV).

1.1 Assumptions and Caveats

5. Both lines are owned and operated by Western Power Distribution (WPD). We are not aware of any plans to change or upgrade the voltages of the lines and have therefore assumed that the electricity company is intending to continue using them at their current capacities.
6. For the purpose of this report and the calculations it contains, we have assumed that outline planning permission will be granted for the eastern expansion areas previously referred to as parcels C and D (to the east and south-east of Cranbrook phase 1). We have relied entirely on the information we have been given and have

estimated costs based on previous quotes provided by electricity companies. We have conducted a site visit and have not found anything which will materially affect our advice in this report.

7. We were previously provided with an illustrative masterplan, produced by Savills, set out below in Figure 1, a copy of which is also provided in Appendix 1. The plan shows previously consented/emerging development parcels (phase 1) and the expansion areas of C and D to the east.

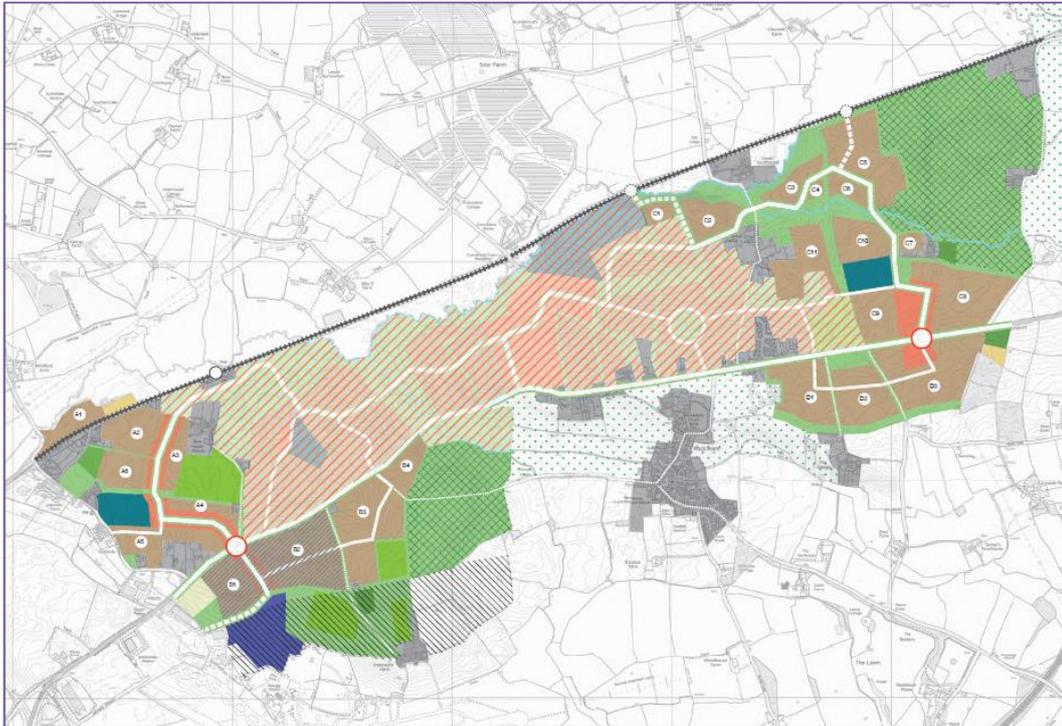


Figure 1: Illustrative Masterplan (Savills - UD0101)

8. We have now been provided with an updated masterplan and our advice within this report wholly reflects this new information. We provide a copy of this Draft Cranbrook Masterplan received from EDDC August 2018 overleaf in Figure 2 and is shown in Appendix 2. Clearly land to the east is now more constrained by site factors such as flooding, and this has influenced our advice in this report.

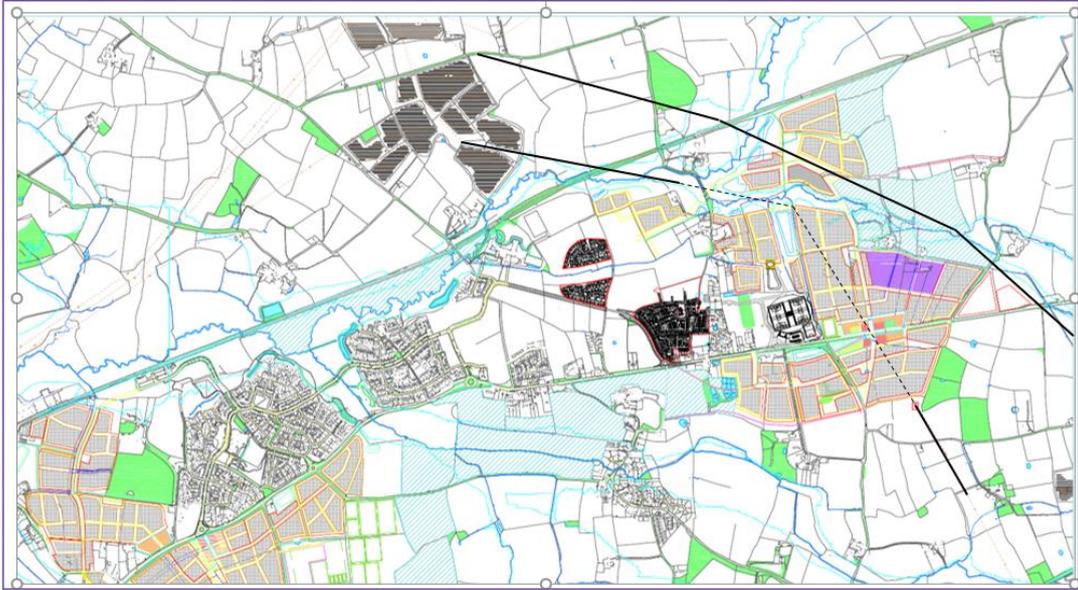


Figure 2: Draft Cranbrook Masterplan (EDDC)

2 Engineering Information

9. As previously stated, this report focuses on two overhead lines (illustrated in Figure 3 overleaf, a copy of which is included in Appendix 3). Both are steel lattice tower lines which enter the site from the northern boundary with the railway line and extend south-east across the site. The easterly overhead tower line is operating at 33,000 volts (33kV) and extends for 1.21 km across the site. Most of this line passes over the proposed eastern Strategic Alternative Natural Greenspace (SANG). The 132,000 volts (132kV) overhead line enters from the northern boundary and crosses Southbrook Lane before changing direction and heading in a more southerly direction. This overhead line extends for 1.7 km.
10. A double circuit 33kV overhead line is usually supported on wooden 'H' pole structures. On this site the 33kV is supported on 132kV constructed steel lattice towers. For the time being, as the overhead line has been constructed to 132kV specifications, it is prudent to assess the line's restrictions on this basis.

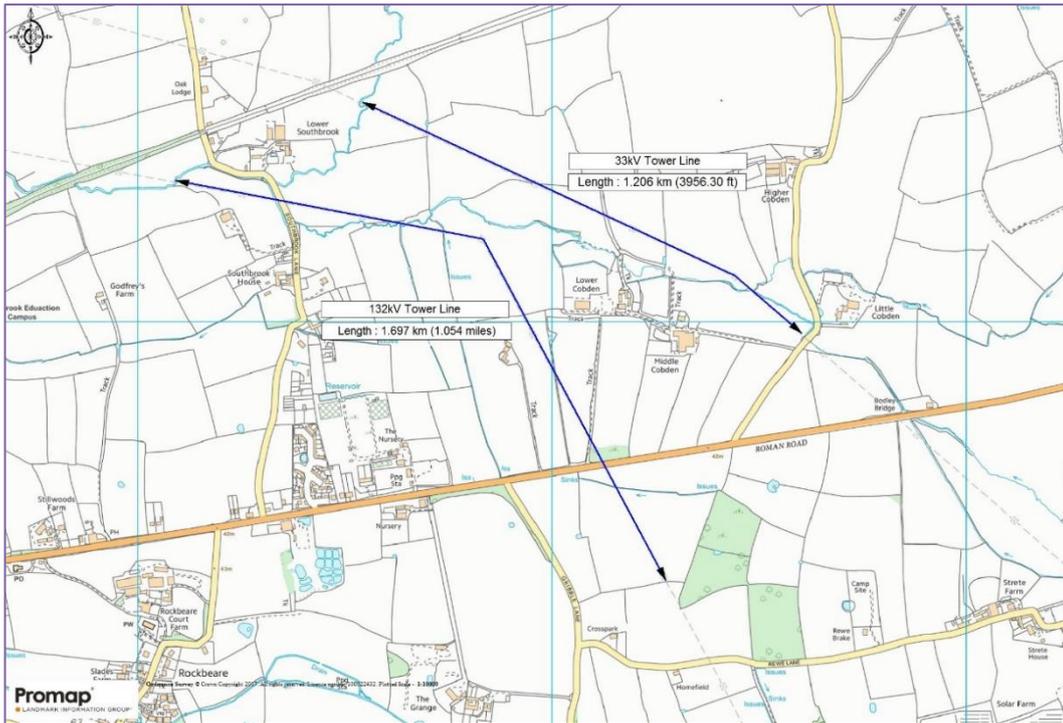


Figure 3: Illustration of Overhead Lines

11. We have been provided with specific engineering drawings setting out the physical constraints of the overhead lines and have also seen the schematic network plans which show the locations of the apparatus within the local area. We provide copies of the engineering building and structure drawings for both the 132kV and 33kV lines in Appendix 10. The extract set out in Figure 4 illustrates the 132kV and 33kV overhead lines heading out from Exeter Main Bulk Supply Point (BSP).



Figure 4: WPD Network Schematic Plan

12. Overhead lines operating at their maximum temperature in high wind conditions create an elliptical curve constraint between supporting towers. At mid-span the ‘sag and swing’ of the overhead line is at its greatest restriction and often it is not practical to plan a development based on these exact engineering specifications. The electricity company therefore generally accept a linear restriction based on the greatest restriction at the mid-span point. For 132kV tower lines this is generally estimated as 15 metres either side of the centre point of the overhead line and we have used this as a basis for our calculations. Despite the 33kV overhead line having lesser restrictions, the construction of this overhead line is actually 132kV and we have therefore made a prudent assessment on this basis. The table in Figure 5 below sets out the minimum health and safety restrictions imposed by 132kV overhead lines and reduced restrictions for a 33kV line:

Type of Line	Conductors to Ground Level	Clearance from any Building
132kV	6.7 metres	3.6 metres
33kV	5.2 metres	3 metres

Figure 5: ESI Standard 43-8

3 Legal Background

13. The site is currently held under several titles with a number of different landowners. We have prepared an ownership plan which summarises the ownerships across the site below in Figure 6 and a copy can be found in Appendix 4.

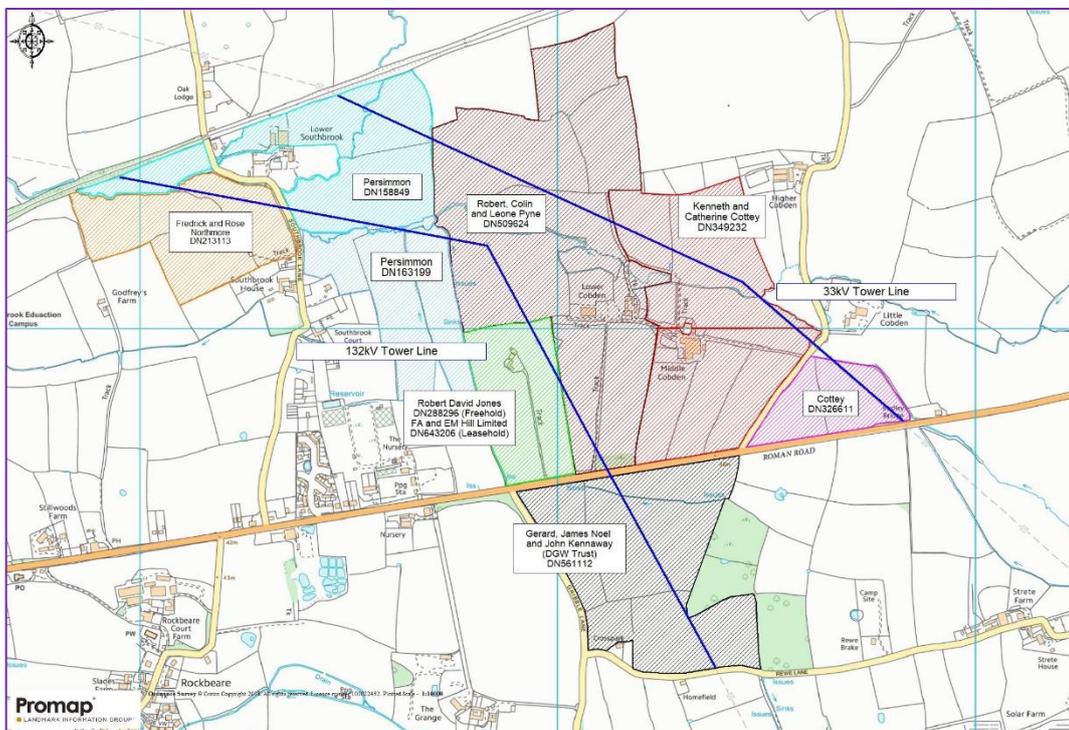


Figure 6: Land Ownerships Plan

3.1 Electricity Company Rights

14. Most electricity lines are installed under a wayleave granted by the original landowner in accordance with the Electricity Act 1989, which supersedes earlier legislation, and a consent granted by the Business, Energy and Industrial Strategy (BEIS), under Section 37 of the Electricity Act 1989, formerly Schedule 10b of the Electric Lighting (Clauses) Act 1899. This consent provides both ministerial permission and planning permission for an overhead line. A wayleave is a personal licence granted by a landowner and/or occupier.

3.2 Wayleave Agreements

15. We have reviewed the electronic Land Registry information for the land parcels crossed by the overhead lines and have provided a summary of the agreements registered to the 132kV and 33kV overhead lines crossing those titles in Figure 7 below:

Title Number	Landowner	Grantor/Grantee	Date of Agreement	Details
132kV Overhead Lines				
DN561112	Gerard Lionel Gordon Noel James Douglas George Noel and John Michael Kennaway (Delia Griffith-Williams Will Trust)	Mrs. Delia Griffith-Williams / South Western Electricity	7 July 1961	6 months' termination notice
DN158849	Persimmon Homes Limited	Louis James Junkin / South Western Electricity	7 July 1961	Termination on 6 months' notice
DN163199	Persimmon Homes Limited	James Gordon Griffin / South Western Electricity	7 July 1961	Termination on 6 months' notice
33kV Overhead Lines				
DN349232	Kenneth Ian Cottey and Catherine Jayne Cottey	Christopher John Cottey and Ivy May Cottey / South Western Electricity	25 Feb 1963	Termination on 6 months' notice

DN326611	Kenneth Ian Cottey and Catherine Jayne Cottey	Devon County Council acting by H.G Godsall	7 March 1963	Termination on 6 months' notice
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Figure 7: Wayleave Agreements – 33kV and 132kV Overhead Lines

16. We are not aware if any of the current land owners are receiving payments for the overhead lines from WPD. Although we have not seen any evidence of payments, for the purpose of this report we have assumed that all the landowners are receiving regular payments. We strongly recommend checking with each landowner to ascertain if payments have been received and to ensure that any future payments are returned so that the existing rights relating to the overhead line can be extinguished.
17. On the assumption that payments are being received by the landowners, any existing wayleave rights will be binding until they have been terminated.

3.3 Deeds of Grant

18. We are aware of a deed of grant relating to the land in title DN643206 which can be seen on the Land Ownerships Plan in Figure 6 and also on the legal right plan in Figure 9 following. The Deed of Grant is shown in full in Appendix 5. We have summarised the agreement below:

Title Number	Land Owner	Grantor/Grantee	Date of Agreement	Details
DN643206 (Leasehold)	F A and E M Hill Limited	Ann Joyce Hill / Western Power Distribution	21 September 2012	132kV Line Tower 10. 4.3m clearance distance to objects.
DN288296 (Freehold)	Robert David Jones			15m easement on either side for trees.

Figure 8: Deed of Grant - 132kV Overhead Lines

19. There is no opportunity to exploit this deed of grant and although there is opportunity to develop under the overhead lines themselves providing the 4.3 m clearance is met. We would need the cooperation of WPD to surrender these rights in return for any new agreement relating to the underground diversion. Due to this being a very short section of line, exploiting the rights north and south will immediately put pressure on WPD to concede to the diversion and the surrender of this easement section.
20. The legal rights across the site are summarised in Figure 9 overleaf and can be found in Appendix 6.

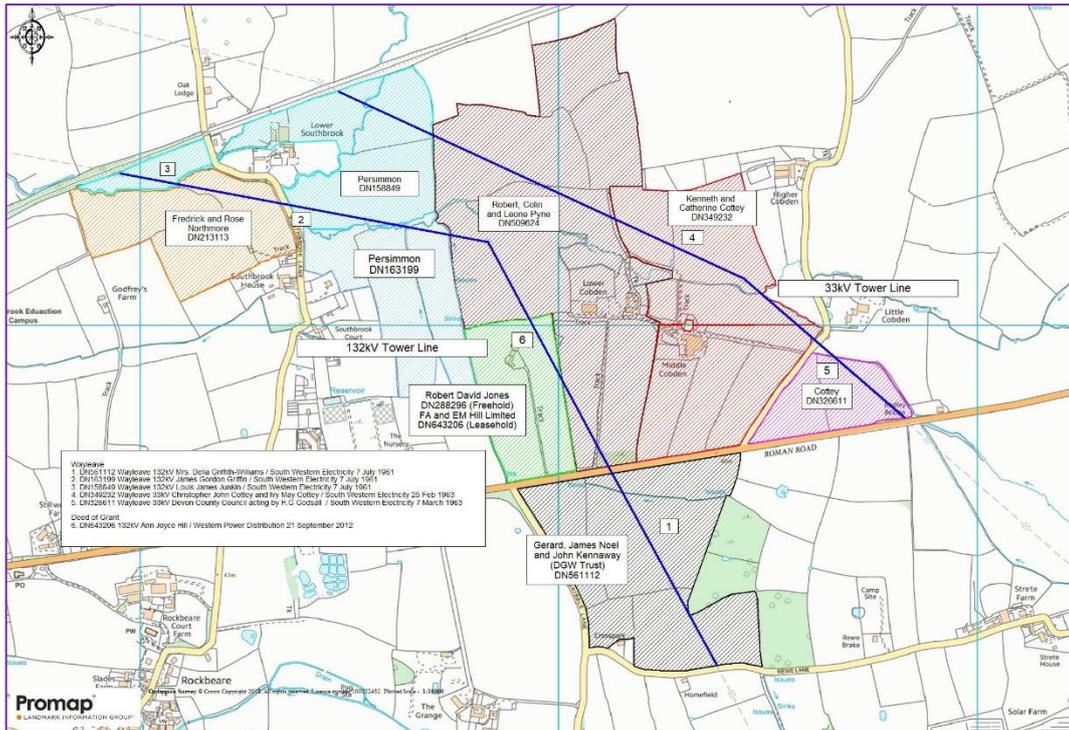


Figure 9: Legal Rights Plan

3.4 Notices

21. Following termination of a valid wayleave, a notice can be served on the electricity company requiring it to remove the overhead line. If a notice to remove the line has been served the electricity company must either remove the line or apply for a necessary wayleave within three months. The electricity company can still lawfully retain the line until the matter is determined by the Secretary of State and any necessary wayleave hearing is usually held in abeyance until agreement is reached between the parties. Commencing this process will usually prompt the electricity company to open up conversations about diversions or retention of part or all of their apparatus.

3.5 Compulsory Purchase Powers

22. Under Schedule 3 of the Electricity Act 1989 an electricity company has the option to apply for a compulsory purchase order to retain the overhead line which, by definition, includes all supporting towers. However, this would be an extreme step for an electricity company to take and rarely happens.

4 **Planning Issues**

4.1 Planning

23. Planning is a critical factor in any assessment and will determine the basis on which any appraisal calculations can be made when understanding the opportunity to release valuable development land. We note that planning applications have been submitted for expansion to the west, south and east of phase 1. EDDC's DPD

preferred approach document identifies additional land to the south-east (Area D) and this is continued through in to the revised masterplan provided.

24. The applications for the other two sites can be summarised as follows:
25. **‘Cranbrook Expansion Site West’** – seeking permission for up to an additional 820 residential properties, one 1-form entry primary school, a cemetery, sports and recreation facilities, green infrastructure and community uses (Application Ref: 15/0046/MOUT).
26. **‘Cranbrook Expansion Site South’** – under the most recent application seeks permission for up to an additional 1,200 residential properties, 35,000 sqm of employment, one 2-form entry primary school, a local centre, sports and recreational facilities, green infrastructure and community uses (Application Ref: 17/0046/MOUT).
27. The Design and Access Statement submitted as part of the planning application (Application Ref: 15/0046/MOUT), describes **‘Cranbrook Expansion Site East’** as follows:

“The Eastern Expansion area is bounded to the north by the railway line, to the south by the existing ‘old’ A30 and to the west by the consented Cranbrook scheme (Ref 03/P1900). The Cranny Brook runs in an east west direction through the development parcel which is further dissected by two electricity pylon routes”

28. Collectively, applications covering the three areas are seeking planning permission for 3,770 dwellings. The individual proposal for the Eastern Expansion is as follows:

“Up to 1,750 residential dwellings; one 2-form entry primary school; local centre comprising up to 1,000 sqm of A1 uses plus A2, A3, A4, A5 uses and up to 1,250 sqm B1 business use; sports and recreation facilities including children’s play; green infrastructure; community uses (including non-residential institutions); assembly and leisure; landscaping; allotments; engineering (including ground modelling and drainage) works; demolition; associated infrastructure; and car parking for all uses.”

29. The most recent masterplan is set out in Figure 10 and a copy is provided in Appendix 2. The black lines have been added to highlight the presence of the overhead lines. The section of line that is denoted by a dashed line on the 132kV overhead line represents the section of line to be undergrounded.

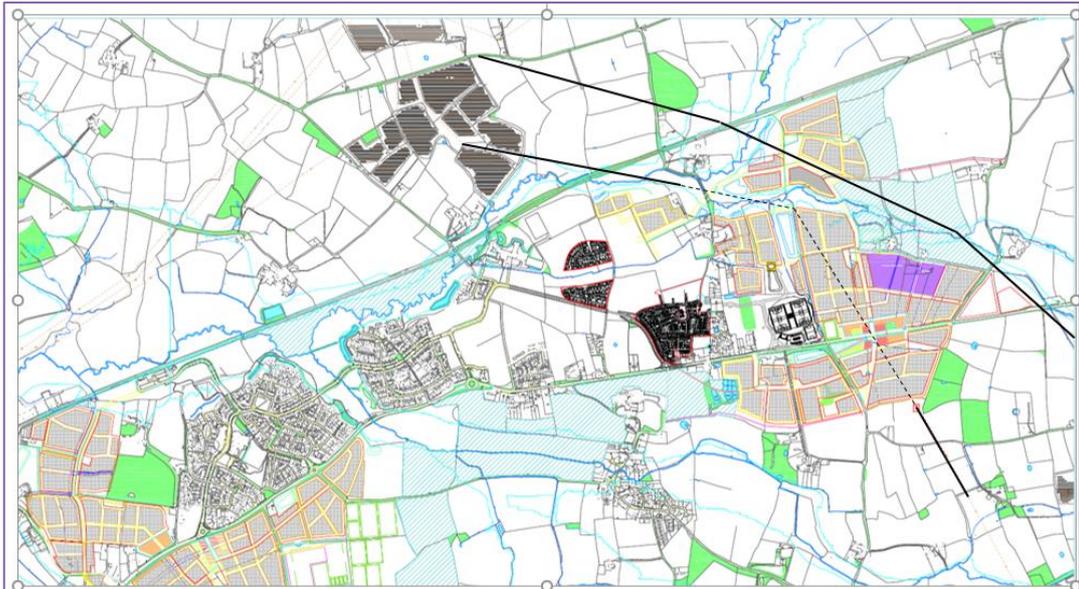


Figure 10: Draft Cranbrook Masterplan (EDDC)

30. A copy of the Parameters Plan submitted with the original planning application illustrates a number of differences from the more recent masterplan shown in Figure 10. As set out in Figure 11 the original parameters plan shows a significant amount of POS for the site in the areas below the overhead lines. EDDC have confirmed that narrow arms of open space beneath overhead power lines would not meet Natural England's (NE's) Suitable Alternative Natural Greenspace (SANG) design criteria.

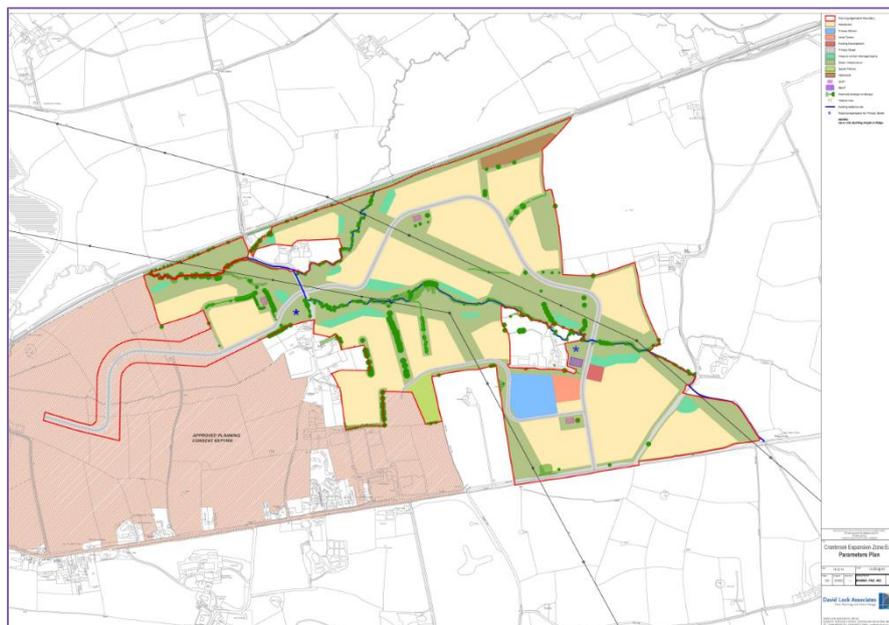


Figure 11: Parameters Plan (accompanying Hallam planning application)

31. EDDC's emerging DPD masterplan considers removal of the 132kV overhead power lines and corresponds with the latest masterplan in Figure 10. Illustrating the creation of a SANG to the east together with further development to the south-east

of London Road. This report focuses on development land on the emerging DPD masterplan.

32. In the emerging masterplan in Figure 10 the Eastern Expansion development land is more contained with the impact of the 33kV tower line reduced and only impacting a short section of the line to the north east. In the Parameters Plan in Figure 11 (Hallam Planning Application) the corridor created by the 33kV line is posing a much greater constraint on development land which could otherwise be used for development if undergrounded. We have disregarded Figure 11 for our report and wholly focussed on the emerging masterplan and the significantly reduced impact the 33kV has. The 132kV overhead line to the west is clearly a major constraint on development if it was retained in location.
33. We have assessed the restrictions of both overhead lines based on the extent of the development land affected in the emerging masterplan.
34. The 'With' and 'Without' scenarios presented in Figures 10 and 11 both retain a corridor through which Cranny Brook roughly follows the route of the 132kV overhead line. The 132kV line begins to impact on development from the angle tower at the centre of the site as it heads south.
35. Reasonable expectation of a future planning permission is always considered contentious. So, although we can put together an appraisal of the likelihood of receiving planning permission for residential purposes, this will be difficult to substantiate until planning permission has been granted.
36. If planning permission is granted there are likely to be a number of planning costs and conditions associated with the consented land and any S106 obligations for affordable housing or CIL contributions.
37. Using the Ordnance Survey plan in Figure 12 following (a copy of which has been provided in Appendix 7) we have set out the areas of land affected by the overhead lines. These measurements refer to the emerging masterplan only.
38. The section of overhead line shaded in light blue are those that would impact the development area if retained. This section, along with the line highlighted in pink are those proposed for undergrounding or diversion. New proposed terminal tower locations can be seen either side of the highlighted overhead line denoted by 'TT'.

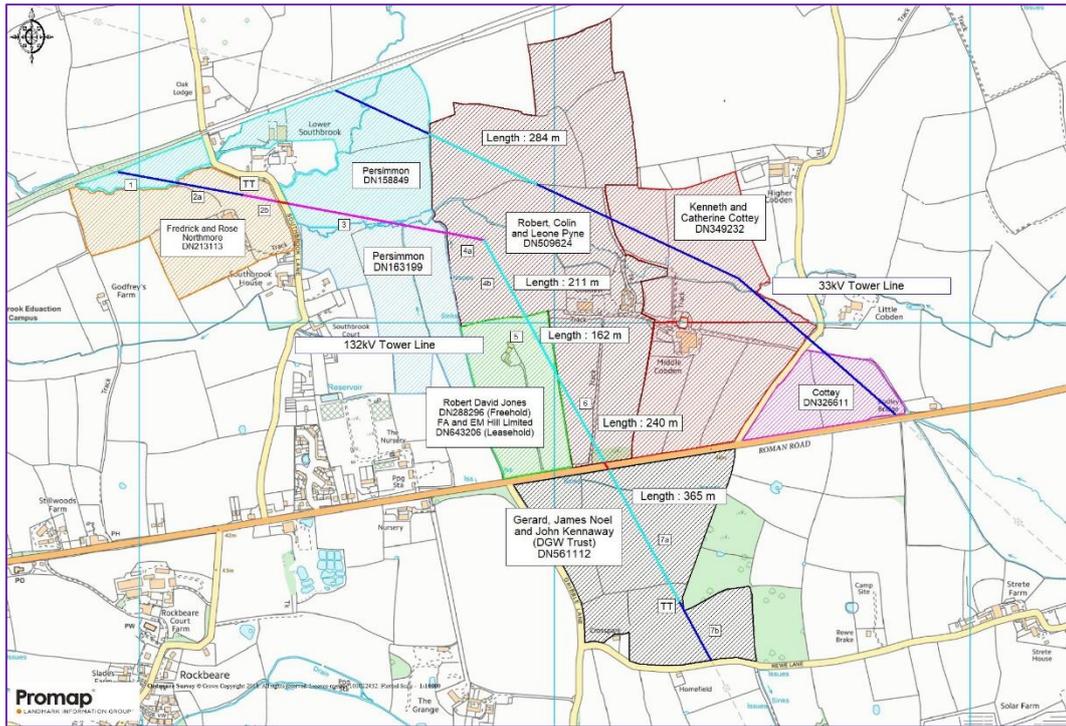


Figure 12: Development Areas Affected

39. The areas affected are only approximate and reflect the general restrictions applied to lines of this size and nature. We would need to analyse the clearance drawings for both overhead lines with your master planners so that we can be clear on the exact specifications. The areas below reflect the emerging masterplans impacted development areas only.

Route	Length (metres)	Restriction	Development Area (ha)
132kV - Pyne	451	15 metres either side	1.35
132kV – FA & EM Hall Ltd (leasehold) Robert David Jones (Freehold)	162	15 metres either side	0.49
132kV - DGW Trust	365	15 metres either side	1.1
33kV - Pyne	284	15 metres either side	0.85

Figure 13: Impacted Areas

40. We would also recommend that a further plan is drawn up to supplement the emerging DPD masterplan showing the 132kV overhead line in location, so that we can more accurately determine the areas of land directly affected. We have also assumed the restrictions of the 33kV tower line will reflect the constraints imposed

as if it were operating at 132kV. This is a reasonable assumption in these circumstances due to it being constructed to 132kV standard.

41. In terms of the 33kV line the impact has been mitigated on the emerging plan and only 0.853 hectares (2.1 acres) would be released if this overhead line was diverted or undergrounded.
42. Were the 132kV overhead line to be removed, 2.94 hectares (7.26 acres) would be released for development across the site and this represents a good opportunity to underground this line. Please however be aware that 0.49 hectares (1.2 acres) of this land is currently constrained by the deed on the FA & EM Hall Ltd (Leasehold) and Robert David Jones (Freehold) land.

4.2 Overhead Lines and Underground Cables

43. Any diversion or modification to an existing overhead line requires planning permission in the form of consent under Section 37 of the Electricity Act 1989. An Environmental Assessment may also be required, as diversions and modifications to overhead lines at 132kV and above are classed as Schedule 2 projects under environmental legislation.
44. Any proposed overhead line, underground cable or tower on third party land also requires the consent of the owner and occupier. If this is not granted voluntarily the electricity company has the power to apply for a necessary wayleave or compulsory purchase order. An underground cable diversion is exempt from requiring planning consent.
45. The 'Planning Act 2008' sets out the circumstances in which consent is not required for an overhead line and has applied to the Planning Act by virtue of the Overhead Lines (Exempt Installations) Order 2010. Regulation 4 allows the replacement of an existing line providing the voltage is not increased and the height of the support does not increase by more than 10% and a distance between the new support and the centre of the existing line does not exceed 60 metres. The exemption regulations were extended in 2013 to include 132kV and other high voltage lines less than 2 km in length as these are no longer classed as nationally significant infrastructure projects. Any modification will therefore only require S37 consent.

4.3 Public Open Space

46. The allocation of public open space (POS) and its relationship to development is important in any assessment and needs to be carefully considered.
47. Locating formal or informal open space under overhead lines is often compromised due to the inferior quality of the open space this provides and the fact that many local authorities would not regard linear open space as being acceptable or

adoptable for a scheme of this size and nature. As previously mentioned, EDDC have confirmed that narrow arms of open space beneath power lines would not meet NE's SANGS design criteria. There is a real risk that the land might not be adopted by a local authority and the success of the scheme may be seriously compromised. These points are evidence that land under the line would be better utilised for development.

48. The Design and Access Statement that accompanied the planning application summarises the landscape and POS elements of the site as follows:

“A green corridor extends across the site on an east – west alignment, accommodating informal areas of open space, amenity greenspace, and equipped areas of play. A sports pitch is co-located with the community sports pitches and allotments off the former A30 in the existing scheme. Existing important hedgerow features and veteran trees are retained where practical, to provide landscape features of ecological benefit.”

49. Given that significant work has gone into the previous planning applications for this site, evidence could be provided that were the overhead lines to remain in their current locations the resulting constraint would severely restrict development on this site.
50. Cranny Brook, which passes through this area of the site, is a constraint on the development and any developer will have to make allowances for its presence when planning the scheme (see 4.4 below).

4.4 Flood Risk

51. A large proportion of the eastern site lies within Flood Zone 1 (an area at low risk of flooding). There are also areas on the site on either side of Cranny Brook which fall within Flood Zones 2 and 3.
52. We understand a Flood Risk Assessment has been undertaken and the report notes that the land adjacent to the railway line has been:

“raised in order to provide provision for the station and associated infrastructure. As this land is within the modelled Flood Zone 3, an area of land was set aside for flood plain compensation”

and confirms that:

“At present, during the 1 in 100 year (1% AEP) and 1 in 1,000 year (0.1 AEP) flows exceed bank levels for Cranny brook and the Rockbears Stream, placing the proposed development site within Flood Zone 2 and 3”.

53. Although most of the eastern expansion site is at a low risk of flooding, some of the land has been lost due to measures taken to prevent flooding and as previously mentioned, the Cranny Brook constitutes an additional serious constraint on the site. At least 50% of the 132kV overhead line over the land north of London Road appears to follow Cranny Brook until it reaches an angle tower. The line then continues on further south-east. Even if the 132kV line were removed, this area of land would still be undevelopable.

5 Options for Diversion

54. At this stage, we have not discussed any detailed diversion proposals however, we have requested a budget diversion estimate from WPD which they have provided based on the illustrative route options in Figure 14 below.
55. This plan is provided in full in Appendix 8 and shows where we anticipate the proposed locations of the terminal towers to be for underground routes through the development and has been the basis of WPD budget estimate.

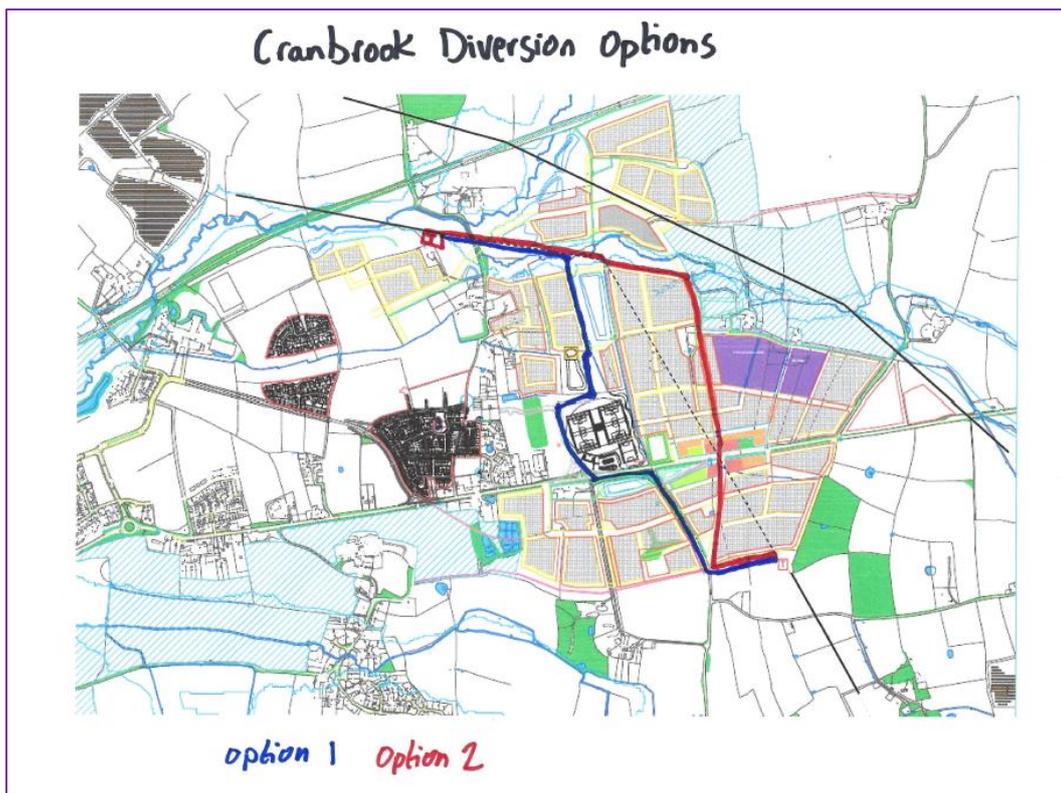


Figure 14: Diversion Options

56. To maintain control over timescales and opportunity we would always recommend that the developer opts for a solution with associated terminal towers within their land ownership. This will ensure that they have a deliverable solution that will sidestep any third party issues. It will also help in any negotiations with third parties. It is likely that these routes will be reviewed subject to service corridors within the development and any other constraints that will influence routing.

57. It is worth noting that any proposed terminal towers replacing existing support towers are likely to be of heavier construction due to the physical characteristics needed for a terminal tower. We have provided an example image of a 132kV terminal tower in Appendix 9.
58. Any underground route will require a strip of land incorporating a trench for each circuit. The circuits could run in conjunction with other utility services within the site, subject to detailed engineering design. For double 132kV circuits we have been advised in the past that an easement total strip ranging from 6 to 12 metres would be required depending on whether the underground cables were in the highway or a strip of open space land. Following consultation, it is likely that this distance will be reduced, but due to the size of the circuits the electricity company will want to keep a corridor of land free of any development or landscaping which might affect their apparatus or future maintenance on it. We have assumed that the routes will either follow a green corridor or alternatively roadways between the terminal towers.
59. Until the detailed design of the terminal towers (including engineering distances from existing towers, temporary towers, and overall construction) it will not be possible for WPD to determine the actual route and the locations of the proposed terminal towers. It will also be very difficult to evaluate the costs until a full detailed design study has been commissioned by the electricity company and they have gone out to tender with their approved contractors. The cost assessment provided by WPD does not take into account any ground or unforeseen conditions on the site, nor do they allow for the wider context of manufacturing and cost changes for 132kV apparatus. Furthermore, they make no allowance for any problems with third parties, although the contingency element of the costs below do make provision for some of these unforeseen complications.
60. We have only focussed on the 132kV diversion as our past recommendations were to retain the 33kV in location.
61. WPD have provided us with our estimate of cost based on the two options chosen for the underground diversion. Their e-mail is based on longer routes demonstrating terminal tower closer to the railway and we have reflected the shorter routes in our calculations below. We have set out our estimated costs in Figure 15 below and provide the e-mail received from WPD in Appendix 10.

Route	Length (metres)	Cost (£)
132kV Option 1	1887	£5,028,000
132kV Option 2	1795	£4,808,000

Figure 15: Routes and Estimated costs

62. The figures above do not constitute a technical breakdown of the cost and are only a budget cost. We have reflected on these costs illustrating a couple of slightly different route options which reduces the costs provided by WPD. This reflects the shorter routes, approximately 500m shorter based on the terminal tower proposed locations on the emerging masterplan. WPD have stipulated a 9 metre easement width within their clearance drawings email as provided within Appendix 10. We will not know for definite this width assumption until we have entered into a detailed design study discussion with WPD. In this report we advise 9 metres is appropriate at this time and there have been many occasions where we have negotiated this width down.
63. Due to the time and cost implications of dealing with Network Rail, we would also strongly recommend that any new terminal tower for the 132kV overhead line is located south of the existing tower shown on our illustrative diversion plan and south of the railway line. Additional technical input will be required on this, as we are unaware of the topographical or engineering constraints in this location. Please also note that any involvement or consent required from Network Rail can extend the whole process by a further year.
64. It is likely that the development will contain other utility crossings and other infrastructure which will be integral to the works. This in turn will have an effect on the standard cable depths and the cable routes may need to be deeper to accommodate other utility infrastructure. Any developer will need to anticipate these problems at the earliest stage.

5.1 Health and Safety Considerations

65. Extensive research has been carried out into the possible health effects of living close to overhead lines. To date no link has been established in the UK between the electromagnetic fields (EMFs) emitted by overhead lines and childhood leukaemia.
66. Studies have included the Stakeholder Advisory Group on ELF and EMF (SAGE) published in 2007. This document offered advice in relation to the perceived problems of overhead lines and suggested that caution should be used when developing near to overhead lines.
67. We have set out the current guidelines in the table overleaf:

Voltage	Restriction on Development
275kV and 400kV lines	60 metres
132kV, 110kV and 66kV lines	30 metres
33kV, 22kV, 11kV and 6.6kV lines	provisionally no restriction

400 volts lines	no restriction
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Figure 16: SAGE Guidelines

68. As these restrictions have not been endorsed by the Government we can only assume that the physical, generally accepted restrictions, set out in Section 2 of this report are applicable. This does however illustrate the uncertainty surrounding the impact of high voltage electricity lines and the perception impact this then has on planning, developers and future occupiers. As a result, we have often found that development is built to greater stand-offs than the physical restrictions generally accepted by the electricity companies. This would then substantially increase the quantum of restricted development land if the guidelines set out in SAGE were implemented.

5.2 Planning Issues

69. Some local authorities have developed policies with regard to development close to overhead lines and along with developers have been strongly influenced by the planning guidance in SAGE, (see Section 5.1 of this report), market and consumer perception.
70. Subsequently the physical restrictions imposed by an overhead line on the land which is disjointed from the rest of the site can have an impact on planning. This is land which could potentially be developed but has not been granted planning permission because it is not a viable part of the overall development of the site.
71. In view of the complicating factors above, we would strongly recommend assessing further schemes on a 'with and without' basis. This will calculate the difference between the development potential of the land with the lines in place, and its potential with the lines removed. The best way to represent this would be to produce two separate 'with' and 'without' layouts for the site.
72. This method takes into consideration constraints such as planning, topography, access and sustainability, which can then be evaluated in relation to the land restricted by the overhead line. This will give a more accurate assessment of the development square metre/number of units affected by the lines.

5.3 Perception Issues

73. Future purchasers will have a perception of the potential health impact of the overhead lines and will be discouraged by the dominating visual effect towers can have. This will have an effect on the marketing of future dwellings and the sales prices developers are likely to be able to achieve. From experience this can impact properties within 30 metres either side of the physical restrictions of the overhead line and is set out overleaf in Figure 17.

Route	Length (metres)	Restriction	Development Area (ha)
132kV - Pyne	451	30 metres either side	2.7
132kV – FA & EM Hall Ltd (leasehold) Robert David Jones (Freehold)	162	30 metres either side	0.97
132kV - DGW Trust	365	30 metres either side	2.19
33kV - Pyne	284	30 metres either side	1.71

Figure 17: Visual Impact

74. Figure 17 above shows the visual impacted land which will directly affect the proposed development area. Other areas of line have been mitigated due to the line running over land designated as POS.

6 Timescales

75. There are a number of factors that could extend the time required to achieve a solution on diversion of the 132kV scheme. These include: (a) the position adopted by the planning authority, (b) the granting of planning consent for comprehensive development, (c) S37 consent required for any new terminal towers and alterations to the existing line, (d) underground cable procurement, (e) arranging outages for potentially two circuits, (f) timing of serving notices and (g) wayleave hearing proceedings.
76. Once new routes have been established and agreed with WPD they will have to consult with the local authority which may require an environmental impact assessment to obtain S37 consent. Consultation may also be required with the wider community and third party consents may need to be obtained while the application is being considered. Assuming consent is granted, the materials would be ordered and arrangements would be made by WPD to book outages with National Grid. It is likely to take approximately 3 years from the point at which planning permission is granted for the development until the delivery of an underground diversion for the 132kV overhead line.
77. Additional factors such as complicated terminal tower locations, delay in obtaining planning permission for the site and third party consent involvement will have a significant bearing on timescales. From experience, and particularly if any involvement is required on the part of Network Rail, this could easily extend the timeframe by up to a further 12 months.

78. At this stage our recommendation is that the 33kV overhead line is retained in location as the land impacted is limited and the commercial benefits will not outweigh the cost of diverting.
79. The timing of the works will be heavily dependent on the outages needed for the works and the budget allocation necessary to undertake them. Depending on the importance of the overhead line to the electricity network, these times will fluctuate. Even if the developer were to offer financial incentives to divert the overhead line, there would still be no greater certainty regarding the timing of the works at this stage. This is also providing the opposing surveyors and the electricity company handle the claim reasonably and a wayleave hearing is avoided. It is likely that a compromise will have to be reached with the electricity company if the works are to be programmed in accordance with the timescales for development and delivery of the scheme.

7 Conclusions

80. The matrix table in Figure 18 overleaf sets out our summary of the impacted land area, constraint and diversion costs.

Land Ownership	Development Land Area (ha)	Visually Impacted Land (ha)	Diversion Cost Average (£ Million)
132kV – Pyne (4b,6) FA & EM Hall Ltd (5) DGW Trust (7a)	2.94	5.86	4.9
33kV Pyne	0.85	1.7	n/a

Figure 18: Summary Table

81. In terms of the 132kV the overhead line will need to be diverted as a whole rather than in sections. In our opinion it would not be feasible for an underground diversion scheme to take place in isolation. The section of overhead line affecting it is too short and it would be counterproductive to remove one support tower and replace it with two heavier terminal towers at each end of this individual parcel. WPD would strongly resist any diversion of any overhead line under 2 spans in length and when presented with this situation will opt to retain the line in location.

7.1 Legal

82. There is an opportunity to terminate the existing wayleaves and talk to WPD in relation to the underground diversion of the overhead lines in return for agreeing new easement rights through the land. The overhead line section over the land parcel referenced as FA & EM Hall Ltd and Robert David Jones is held on a deed

and negotiation of surrender/variation of this agreement will be needed to release this part of the constraint.

7.2 Diversion and Costs

83. We have estimated the diversion costs relating to the 132kV line. An underground diversion route as per the emerging masterplan extending south of London Road would cost approximately £4.9m. Please assume any route at this stage will require a 9 metre easement corridor within the road or within a corridor free of landscaping and trees. This can however be reduced once further detail is established.
84. We have not estimated the cost of the 33kV overhead line diversion as the commercial viability of undergrounding this line is limited.
85. These figures are based on the budget estimate given to us by WPD and pro-rata for the route options we set out earlier. Although independent studies can be undertaken, only the electricity company can commission these works. We are therefore dependent on them for accurate costings and will need to refer to them directly on this.

7.3 Planning

86. Planning and the allocation of POS will be crucial to understanding the impact and release of land on this site. The best way to look at this will be to produce a number of scenarios on the basis that the overhead lines are retained in their current location against an underground diversion proposal. At this early stage it is clear that approximately 2.9 hectares (7.2 acres) of development land will be released along with a further 5.9 hectares (14.6 acres) of visually impacted land should the 132kV overhead line be diverted underground.

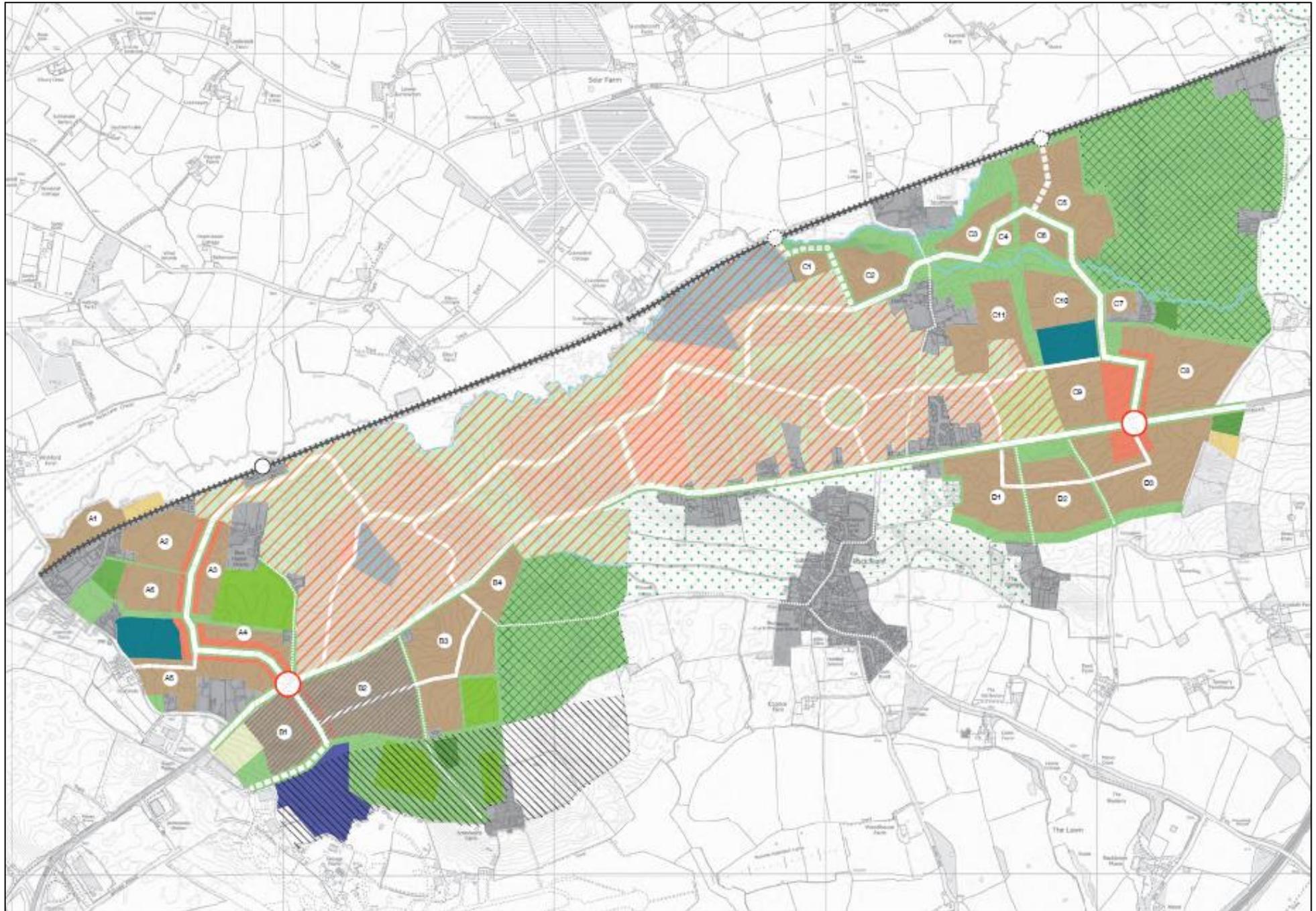
7.4 Timing

87. In relation to the 132kV, the process of serving notices, conducting negotiations, decision-making and agreement of the works with WPD, along with the actual construction work on the underground diversion of the line, is likely to take at least 3 years. If there are complications arising from dealings with Network Rail, this could easily increase the timeframes by up to 1 year

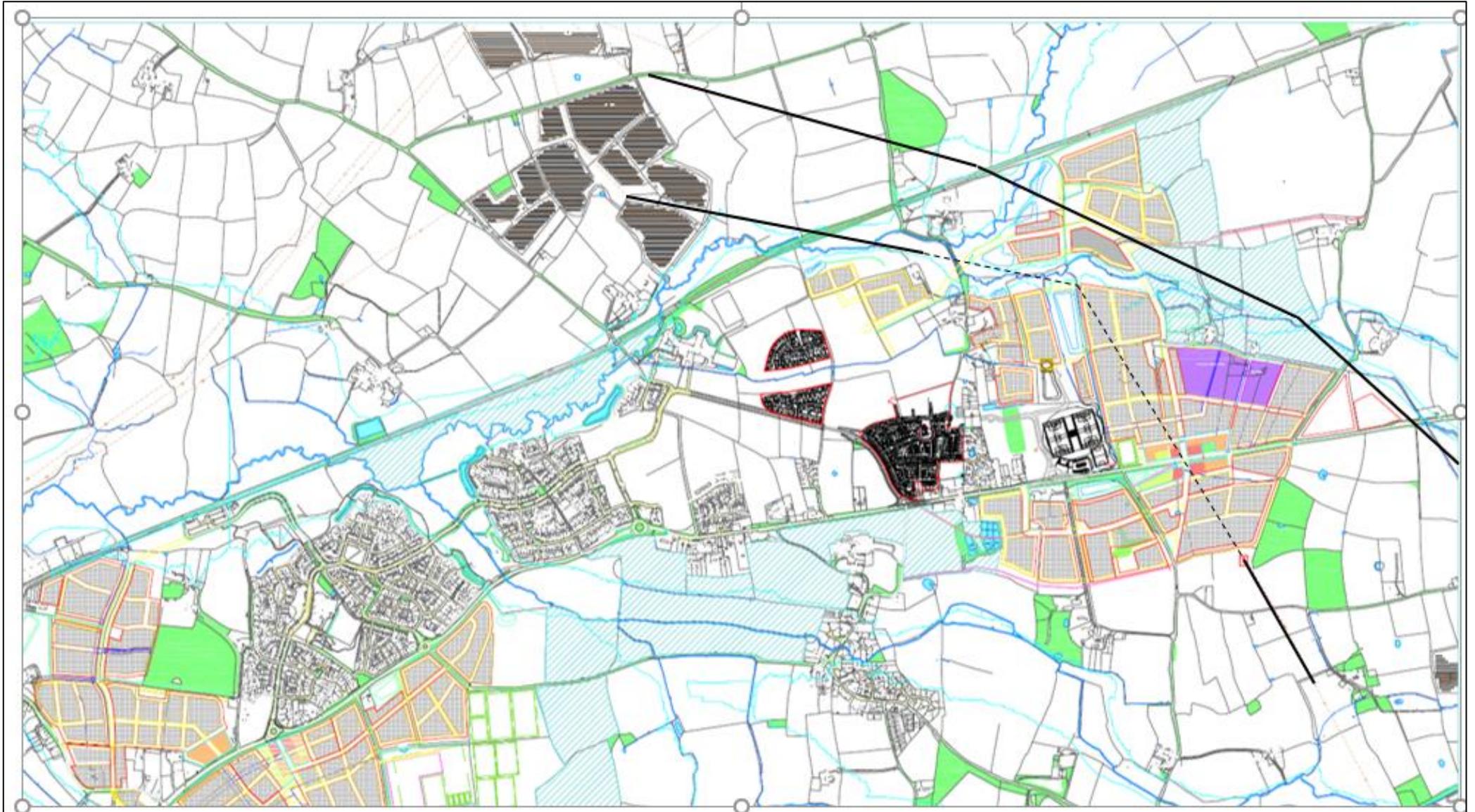
7.5 Summary

88. In our opinion, there are convincing arguments and benefits to underground the 132kV overhead line through the development. Diverting the 132kV overhead line could release approximately 2.9 hectares of development land and 5.9 hectares of visually impacted land.

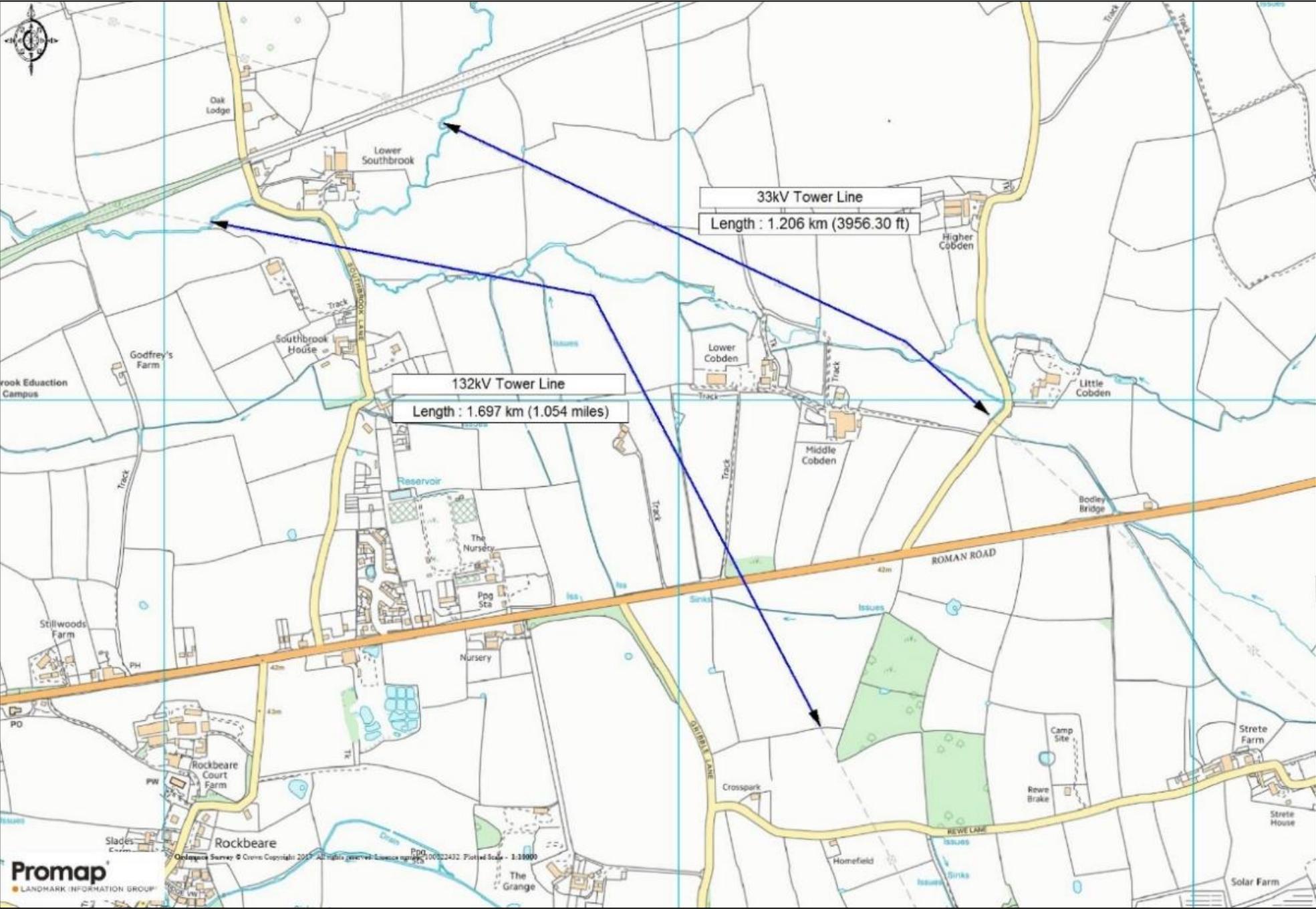
Appendix 1: Illustrative Masterplan (Savills – UD0101)



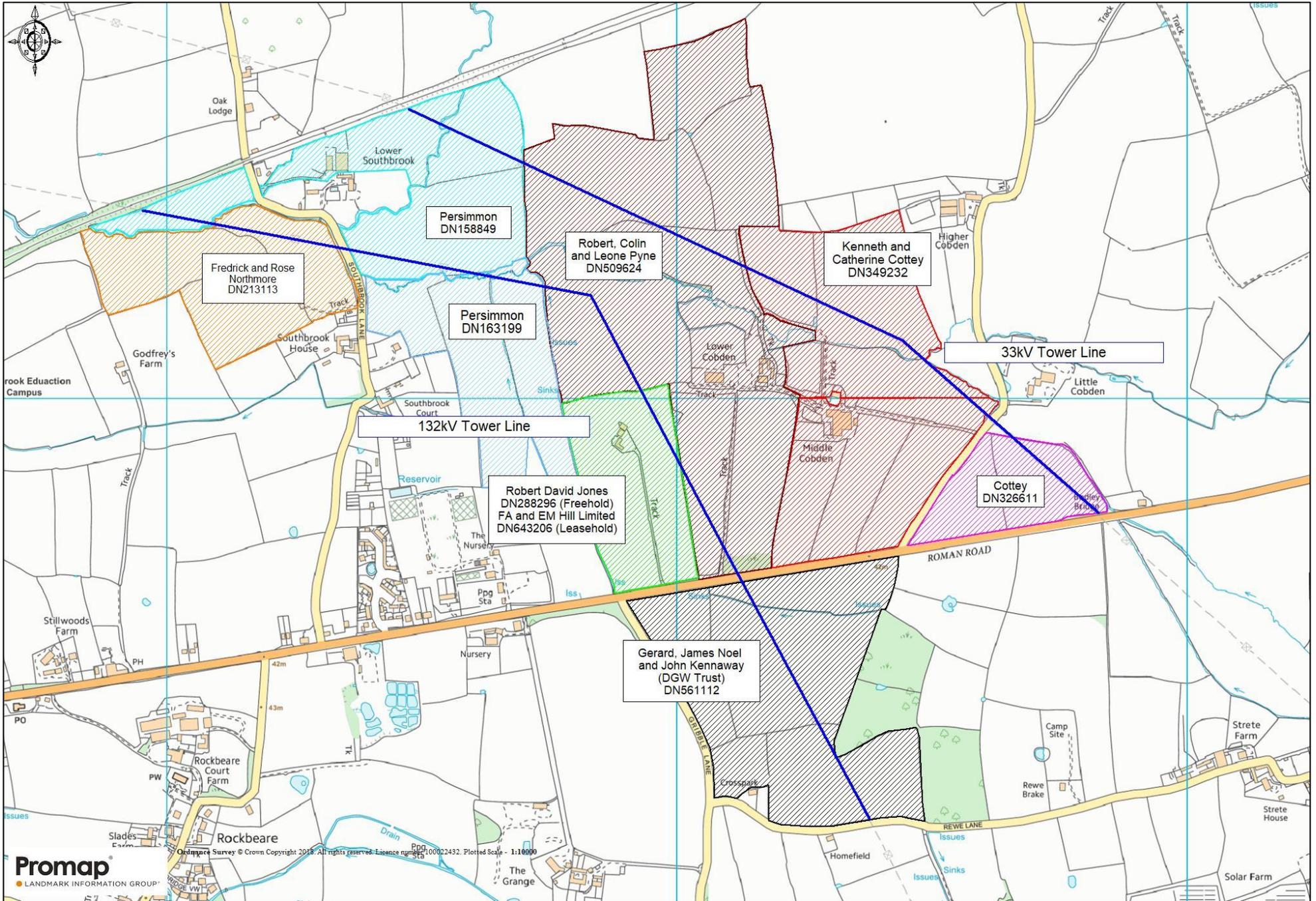
Appendix 2: Draft Cranbrook Masterplan (EDDC)



Appendix 3: Line Length Plan



Appendix 4: Land Ownership Plan



WESTERN POWER DISTRIBUTION (SOUTH WEST) PLC

DEED OF GRANT

PARTICULARS	
1.	County and District : Devon: East Devon
2.	Title Number : DN288926
3.	The Owner : Ann Joyce Hill
4.	The Company : Western Power Distribution (South West) plc (Company Reg. No. 2366894) whose registered office is at Avonbank Feeder Road Bristol BS2 0TB
5.	The Land : the land of the Owner at Farlands Road: : Whimble, Place: : Exeter, EX5 2PJ contained within the Title Number
6.	The Purchase Money : £60,000.00 (Sixty Thousand Pounds Only)
7.	Date : 21 st September 2012

1.1 Definitions:-

Overhead Electric Lines	means overhead electric lines for transmitting electricity at a pressure up to 132,000 volts within the meaning of Section 64 of the Electricity Act 1989.
Plan	means the plan attached hereto.
Rights	means the rights set out in Schedule 1 granted for the benefit of the Company and its Undertaking and which may be exercised by the Company and its employees agents contractors sub-contractors and licensees as are properly engaged in the Company's Undertaking.
Supporting Equipment	means earth wires signalling fibre optic cables towers poles structures stays supports, safety structures and all necessary guards wires appliances and apparatus appertaining to the Overhead Electric Lines and their maintenance and for the avoidance of doubt any fibre optic cables shall be for use only in connection with the Company's Undertaking.
Undertaking	means the undertaking of the Company within its area pursuant to the Company's distribution licence granted, or treated as granted, under Section 6(1)(c) of the Electricity Act 1989 (as amended, supplemented, novated or replaced from time to time), and each and every part of it.

1.2 In interpreting this Deed of Grant:-

- (a) Words importing the masculine and feminine shall be construed as importing any other gender;
- (b) Words importing the singular shall be construed as importing the plural and vice versa;
- (c) The schedule and clause headings do not form part of this Deed and shall not be taken into account in its construction or interpretation;
- (d) Any reference to a colour is to one on the Plan;
- (e) Any covenant by the Owner or the Company not to do an act or thing is deemed to include an obligation not to permit or suffer such act or thing to be done;
- (f) Any reference to any legislative provision includes any subsisting re-enactment or amending provision;
- (g) The terms "Owner" and "Company" shall include successors in title and where the Owner comprises more than one party any obligations on its part shall be joint and several;

- (h) The Particulars form part of this Deed and the words and expressions contained therein shall have the meanings therein specified;
 - (i) Where the Company erects or has erected more than one overhead electric line reference to "Overhead Electric Lines" in this Deed shall be to each and every overhead electric line erected or to be erected (as appropriate).
2. In consideration of the Purchase Money the Owner with full title guarantee **HEREBY GRANTS** to the Company over the Land the Rights together with all incidental rights and consequences which flow from such grant for the benefit of and appurtenant to the Company's Undertaking.
 3. The Owner acknowledges receipt of the Purchase Money.
 4. The Owner is the owner of the freehold title to the Land free from encumbrances (except those currently stated on the registers of title) and the Owner has agreed to grant a legal easement relating to the Overhead Electric Lines on the terms of this Deed.
 5. The Company covenants with the Owner that it will observe and perform the matters set out in Schedule 2.
 6. The Owner covenants with the Company that it will observe and perform the matters set out in Schedule 3 for the benefit and protection of the Company's Undertaking and the Overhead Electric Lines (and every part of them) so as to bind the Land into whosoever hands the same may come but not so as to render the Owner liable for any breach of this covenant occurring after it has parted with all interest in the Land.
 7. The Owner and the Company agree and declare as set out in Schedule 4.

Schedule 1 -The Rights

- 1 To retain erect maintain use and from time to time adjust repair alter relay renew inspect examine test and remove the Overhead Electric Lines and/ or Supporting Equipment (including and without prejudice to the generality of the foregoing the perching of wild birds on the Overhead Electric Lines and such of the Supporting Equipment as is applicable) in the approximate position shown coloured yellow on the Plan.
- 2 At its own expense to fell lop or cut from time to time all trees shrubs hedges coppice wood or the roots thereof on the Land which now or hereafter may obstruct or interfere with the construction maintenance or working of the Overhead Electric Lines and/or the Supporting Equipment provided that any felling lopping or cutting is carried out in accordance with good forestry arboricultural practice.
- 3 At all reasonable times with the required contractors vehicles materials and equipment to enter onto so much of the Land which does not have buildings thereon as is reasonably necessary and to break up the surface of so much of such Land as is reasonably necessary for the purpose of exercising the Rights referred to in paragraphs 1 and 2 of Schedule 1 and to gain access

and egress to/from the nearest public highway to/from the Overhead Electric Lines and/or Supporting Equipment and any land adjacent to or adjoining the Land over or in respect of which the Company has either now or in the future erected and/or installed Overhead Electric Lines and/or Supporting Equipment

Schedule 2 - Covenants on the part of the Company

- 1 On every occasion that the Company shall enter on to the Land either now or in the future in exercise of the Rights the Company will:
 - (a) give the Owner reasonable prior notice except in the case of emergency where no notice shall be required; and
 - (b) do so in accordance with any statute rule order instrument or regulation applicable thereto from time to time in force; and
 - (c) where the Owner has indicated its requirements by relevant and visible notices on the Land comply with any reasonable health and safety or security regulations relating to the Land provided that these do not in the reasonable opinion of the Company prejudice its statutory duties in respect of its Undertaking; and
 - (d) exercise the Rights diligently; and
 - (e) do as little damage as reasonably practicable and make good to the reasonable satisfaction of the Owner as soon as possible any damage to the Land or to the buildings trees hedges fences crops livestock or personal property including motor vehicles of the Owner caused by the Overhead Electric Lines and if for any reason any such damage cannot be made good or if the Company so chooses it may in lieu of making good such damage compensate the Owner to the reasonable satisfaction of the Owner.
- 2 If so required by the Owner the Company will remove from the Land all timber cordwood and brushwood felled or lopped in exercise of the Rights referred to in paragraph 2 of Schedule 1 and leave the Land neat and tidy.
- 3 Save where due to an act default or omission of the Owner the Company will keep the Owner indemnified against all actions, claims, costs and expenses which may be made against or suffered by the Owner by reason of any default or negligence on the part of the Company in exercising the Rights under this Deed **PROVIDED THAT** the Owner shall:
 - (a) as soon as possible notify the Company in writing about any claims or potential claims or actions of which the Owner becomes aware; and
 - (b) permit the Company to have exclusive conduct of any matters arising under paragraph 3(a) of Schedule 2; and
 - (c) take all necessary steps to mitigate its actual or potential loss arising out of or in connection with any matters arising under paragraph 3(a) of Schedule 2; and

- (d) not admit liability in respect of, nor settle or compromise any such action or claim without the consent of the Company.

For the avoidance of doubt the Company may at its own expense defend any such action or claim in the name of the Owner.

Schedule 3 - Covenants on the part of the Owner

- 1 Not to do or permit anything to be done in or upon the Land which will interfere with the exercise by the Company of the Rights or cause damage to the Overhead Electric Lines and/or Supporting Equipment or affect their electrical performance and in the event of such damage being caused to notify the Company immediately of such damage.
- 2 Not at any time to construct erect or place or permit to be constructed erected or placed any building structure erection plant or materials on the Land (or any part or parts) within 4.3 metres of any of the conductors of the Overhead Electric Lines when such conductors are at maximum temperature and/or maximum swing and sag conditions and/or so as to encroach upon any foundations of the Supporting Equipment.
- 3 Not at any time to plant or grow or permit to be planted or grown any trees coppice or wood under the Overhead Electric Lines and/or Supporting Equipment or within a distance of 15 metres on either side of the centre line of the Overhead Electric Lines and/or Supporting Equipment unless first approved in writing by the Company (such approval not to be unreasonably withheld or delayed).
- 4 Without prejudice to the generality of paragraph 2 of Schedule 3 not in any manner whatsoever raise the level of the ground above the level thereof existing at the date of this Deed so as to make the distance between the level of such ground and the lowest conductor of the Overhead Electric Lines at any point of the span less than 7.0 metres at a temperature of 75°C.
- 5 Not to commence any action in nuisance in connection with the erection retention existence or proper operation of the Overhead Electric Lines and/or the Supporting Equipment in accordance with the terms of this Deed.
- 6 To keep the Company indemnified against all liabilities reasonably and properly incurred by the Company in respect of the Company having to carry out or comply with any obligations contained in any planning agreements including but not limited to an agreement pursuant to Section 106 of the Town and Country Planning Act 1990.

Schedule 4 - Provisos and Stipulations

The Owner and the Company hereby declare and agree as follows:

- 1 a party which is not a party to this Deed shall not enforce any of its terms under the Contracts (Rights of Third Parties) Act 1999;

- 2 the benefit of this Deed is to run with the Company's Undertaking and be attached to each and every part of it;
- 3 the burden of this Deed is to run with the Land and bind every part of it;
- 4 that the Company will apply to the Chief Land Registrar for the entry of notice of the Rights on the above Title Number; and
- 5 any dispute arising under the provisions of this Deed shall be submitted to arbitration in accordance with the Arbitration Act 1996.

EXECUTED as a DEED
By the Owner in the presence of:

) X

A. J. Hill

Signature of Witness:

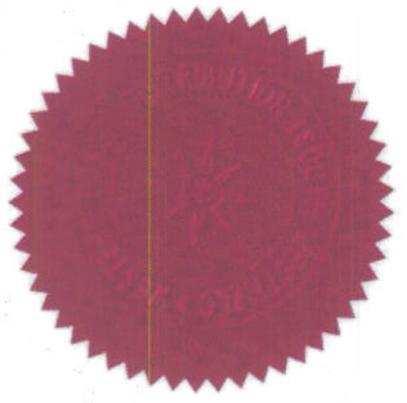
J. J. Smith

Name (in BLOCK CAPITALS): X JACK JAMES SMITH

Address: Higher Holbrook Farm
Clyst Honiton
Devon
EX5 2HR.

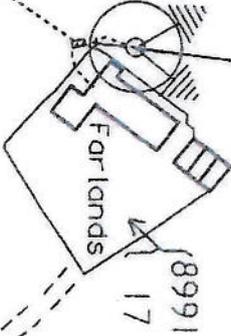
EXECUTED as a DEED by the Company)
by its Secretary as authorised by the)
Board of Directors)

Sally A Jones



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FARLANDS

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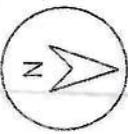
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Pond

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This is a Legal Plan related to it. It is NOT to be used for identification unless it has been installed or in connection with the works. If you require plans of WPD's works, please refer to our website.



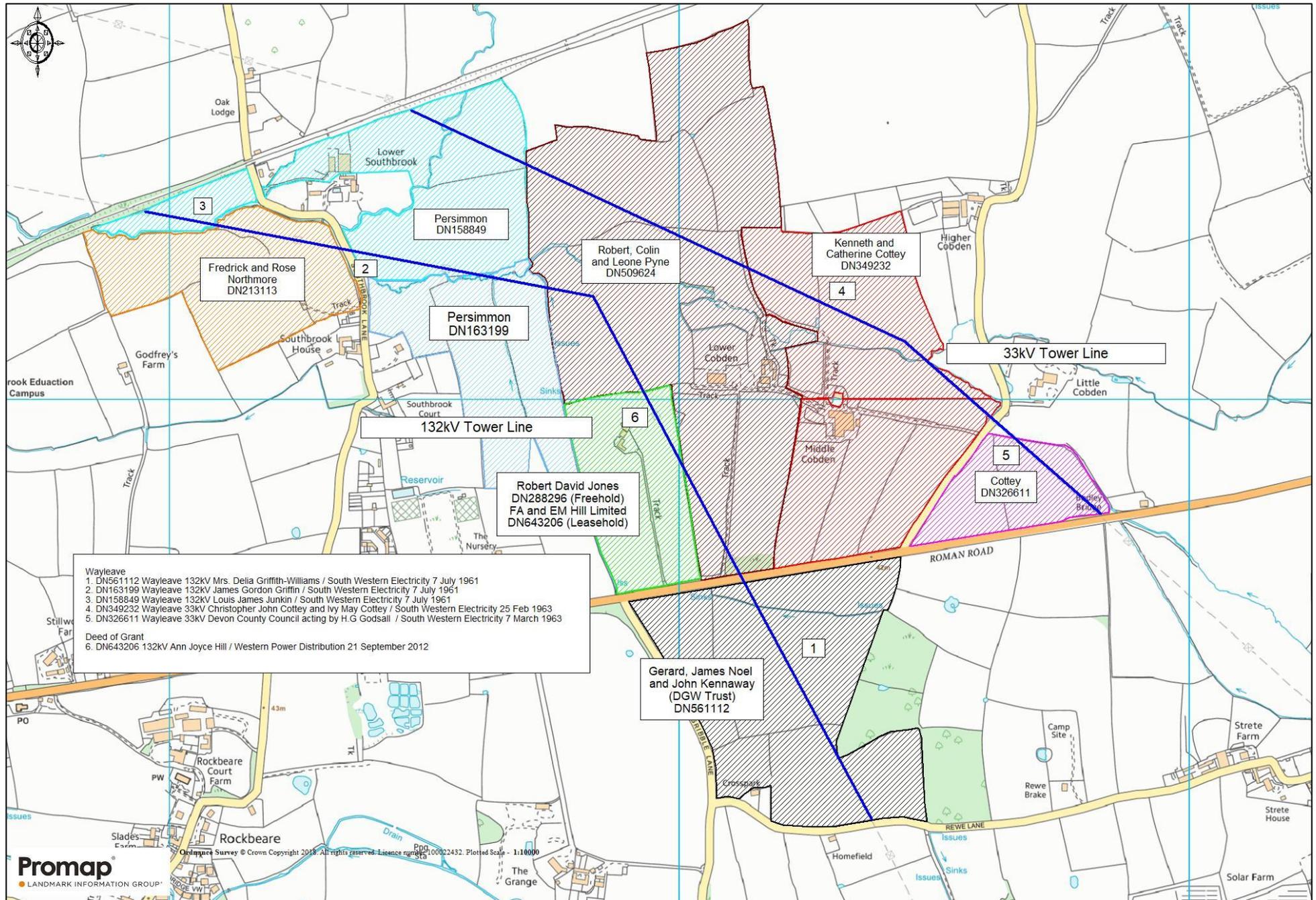
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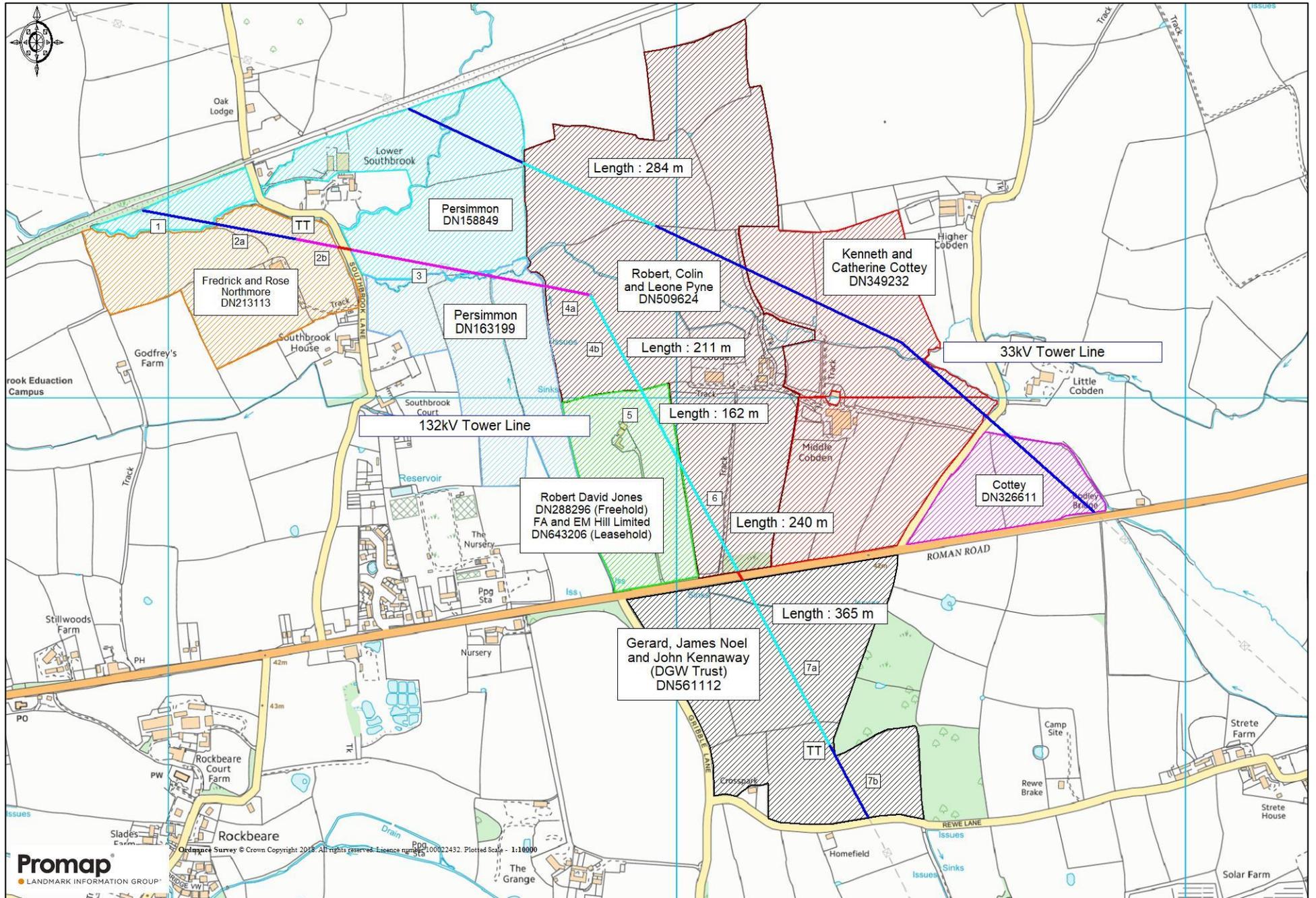
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Appendix 6: Legal Rights Plan

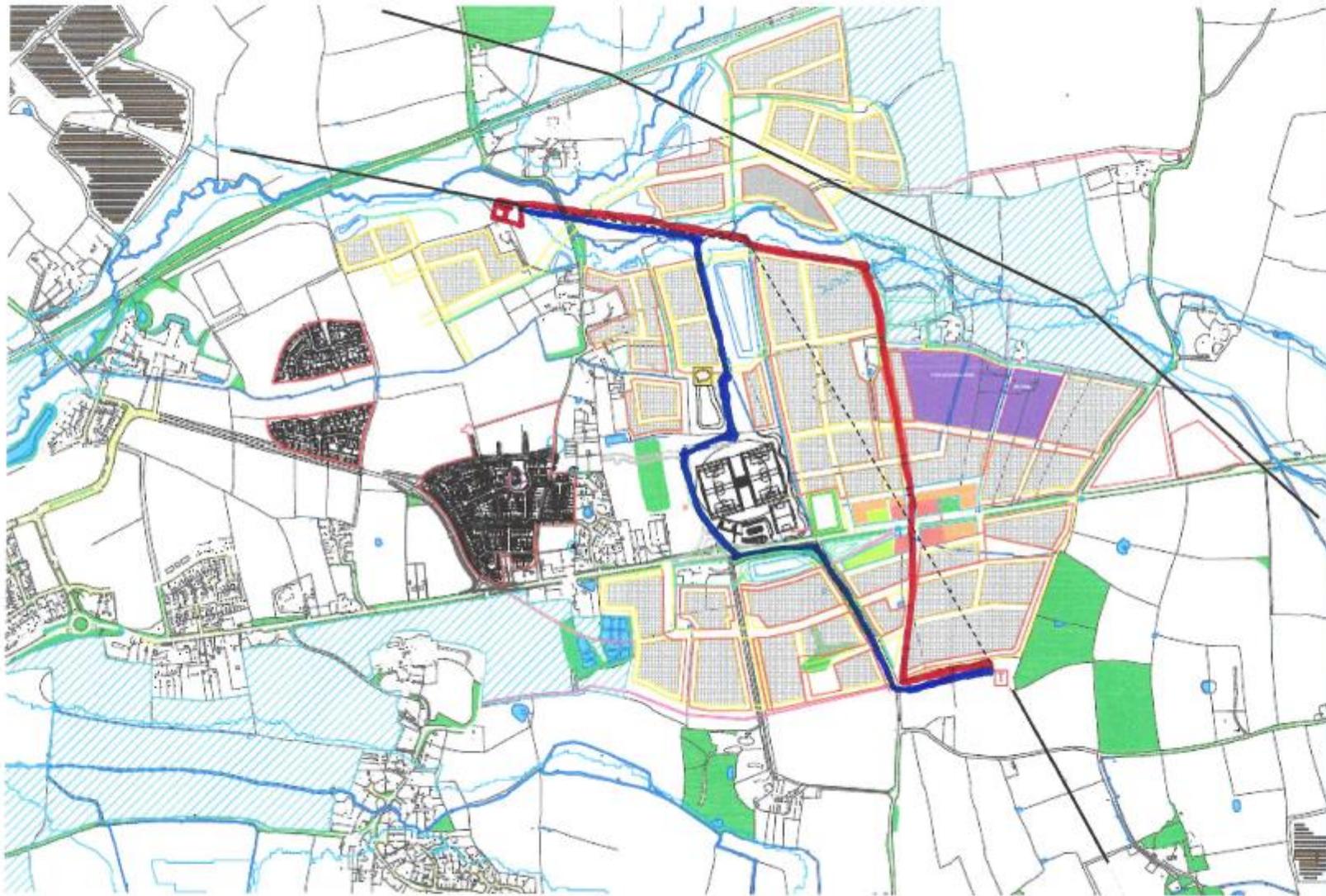


Appendix 6: Legal Rights Plan

Appendix 7: Development Areas Affected Plan



Cranbrook Diversion Options



option 1 option 2

Appendix 9: 132kV Terminal Tower Example



Appendix 10: Correspondence from WPD

Cranbrook Engineering Clearance Drawings

As requested "cleargraphs" are attached which show the maximum levels above Ordnance Datum (Newlyn) of ground, buildings or plant for the appropriate minimum clearance in the table at any location relative to the towers. The clearance given in the title is included at the levels on the graph; you do not have to subtract the clearance. Please do not attempt to take levels of the conductors on site as the height of conductors will vary dramatically with different load currents and weather conditions.

WPD has no objection to development works being undertaken under or adjacent to our overhead lines provided that adequate clearances are maintained, and that vehicular access is possible to towers on completion of the development.

Minimum statutory clearances required are shown in the table below for the voltage for which the line is designed; in order to allow for construction tolerances and compliance with HSE Note of Guidance GS6 during construction and subsequent maintenance, WPD strongly recommend that clearances are increased to the figures shown in the right hand column.

Description of Clearance	Minimum Clearance - metres, 132 kV Lines	Recommended Clearances – metres, 132 kV lines
Line conductors to ground, other than a road.	6.7	7.0
Line conductors to road surface (not a high load route or Motorway)	6.7	7.3
Line conductor to building or other structure	3.6	6.6
Line conductor to plant during construction	3.2*	6.0**

*Any part of the barrier which may be stood on must be 3.6 m from the conductors.

**In the absence of site specific survey information that takes into account the maximum design sag of the conductors (as opposed to the actual sag if measured on site), the establishment of a 6m exclusion zone (as indicated in HSE GS6) is recommended. Where "cleargraphs" are provided, these are based on the maximum design sag of the conductors under worst case conditions, and so the lower clearance distance of 3.2m may be applied.

Any construction works close to lines are subject to the requirements of HSE Notes of Guidance GS6. The barrier required by GS6 must be sited 9 m out horizontally from the outside conductor for lines on steel towers, and 6 m for lines on wood poles. Within this corridor the height of plant and equipment must be restricted, and a barrier erected above building works. The minimum clearance from this barrier, and to any plant in this corridor is 3.2m.

It should be noted that some of the clearances given in the table above are less than the "exclusion zone" recommended in HSE GS6. This is because the GS6 clearances make an allowance for the variability of Conductor sag and swing relative to the observed position of the Conductor. The cleargraphs provided by WPD are based on the position of Conductors at maximum sag and swing, and therefore do not need this extra conservatism.

Appendix 10: Correspondence from WPD

I would also draw to your attention the requirements of HSE in respect of the use of cranes; they specify that cranes must be sited so that the jib cannot infringe the 9 m or 6 m horizontal clearance in any circumstances. This may present difficulties when erecting frames or cladding.

Any changes in ground levels within 8m of the tower legs may affect the stability of the tower and should be discussed with me. Any buildings should be sited at least 10m from the tower.

ALL WPD OVERHEAD LINES, UNDERGROUND CABLES AND PLANT SHOULD BE TREATED AS LIVE UNLESS YOU HAVE BEEN ADVISED OTHERWISE IN WRITING.

Any accidental contact with these overhead lines is likely to cause a fatality. Risk assessments for procedures on the site and associated method statements should record and take account of the overhead lines.

Appendix 10: Correspondence from WPD

Cranbrook 132kV Diversion Options

The costs for both options are comparable at this stage as we have not undertaken any of the work which might preclude or favour either option. In both cases the route length of the diverted cable is approximately 2.3km.

Indicative Costs only:

Contestable Elements	
132kV cable diversion @ approximately £1,200/m per circuit	£5,520,000
Non-Contestable Elements	
132kV terminal towers and final jointing works	£400,000
Design/survey fees	£100,000
Total	£6,020,000

These are purely indicative costs and subject to survey, design work and *competitive tender*. It has been assumed the circuits will be laid in agricultural land with some simple highways crossings, should works be required in the highway the cost may increase.

Additional design considerations which may impact this figure to be assessed at a later date:

- Bending radius' will be significant, in the order of several meters (dependant on chosen cable cross-sectional area).
- Easements will need to be provided for the new route. A 20m working corridor will be required with a 9m enduring easement strip (within the 20m working corridor).
- Planning may be required for the terminal towers.
- Temporary roads may be required to terminal tower positions.
- The foundations may require improvements at the terminal positions if poor ground conditions are present.
- Additional protective scaffolding requirements if working within one span of the railway or main road OHL crossing.
- Lower voltage diversions may be required.