

West Burton Solar Project

Land South of Marton Grid Connection Options Report

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Issue Sheet

Report Prepared for: West Burton Solar Project Ltd.

Land South of Marton Grid Connection Options Report

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1 Introduction

1.1 Purpose of this Report

- 1.1.1 The appended Report was prepared by AECOM to provide information on the potential options for the grid connection routing in the area south of Marton. It was jointly commissioned by the applicants for the four schemes that are intending to use the Shared Cable Corridor, West Burton Solar Project (the Scheme) **[EN010132]**, Cottam Solar Project **[EN010133]**, Gate Burton Energy Park **[EN010131]** and Tillbridge Solar Project **[EN010142]**.
- 1.1.2 The Report was submitted at Deadline 5 of the Gate Burton Examination **[EN010131/REP5-048]** on 20 November 2023.
- 1.1.3 At the Compulsory Acquisition Hearing for the Cottam DCO Application held on 7 December 2023, the options for the routing of the Shared Cable Corridor to the south of Marton were discussed. The Cottam applicant undertook to submit the Report into the Cottam Examination and did so at Deadline 3 on 19 December 2023 **[EN010133/REP3-040]**.
- 1.1.4 The Report is being submitted into this Examination for consistency and in order to assist the ExA in understanding how the applicants of the four schemes have assessed the options for the Shared Cable Corridor in this location and how they have conducted negotiations with the landowner.

1.2 Relevance to the Scheme

- 1.2.1 As stated in paragraph 3.1.4 of the Report, the five options were chosen and then assessed by the technical teams for each of the four schemes.
- 1.2.2 The environmental assessments undertaken for each of the options set out in sections 6 to 10 of the Report accord with the approach taken in the relevant chapters of the Environmental Statement for the Scheme, namely Ecology **[APP-047]**, Cultural Heritage **[APP-051]**, Transport **[APP-052]**, Hydrology **[APP-048]**, Landscape and Visual **[APP-046]**, and Noise and Vibration **[APP-053]**.
- 1.2.3 In addition, the measures set out in the relevant control documents for the Scheme would also apply to each of the options considered, including the Outline Construction Traffic Management Plan **[REP1-016]**, Outline Construction Environmental Management Plan **[REP1-034]**, Outline Decommissioning Statement **[APP-310]**, Outline Landscape Environmental Management Plan **[REP1-042]** and the Written Scheme of Investigation for Archaeological Mitigation **[APP-122]**.
- 1.2.4 Section 11 of the Report sets out the conclusions of the assessment of the five options and concludes that:

“Overall, each option can be considered viable from a planning environmental and technical perspective, with no show-stoppers to any of the options. All options have been assessed as technically feasible. All options would require compulsory acquisition and there are no differences between the options in terms of significant environmental effects.”

Option 1 is the only one that would affect construction of the consented barns. From an environmental perspective, Options 1 and 2 are marginally better than the other options. Option 5 is worse than Options 3 and 4 due particularly to the heritage constraints and technical width restriction. The Applicant considers that there are no clear benefits associated with Options 3, 4 and 5 and, therefore, is not proposing to amend the Order limits to incorporate any of these options".

- 1.2.5 For the reasons set out in the Report, and consistent with the approach taken by Gate Burton Energy Park and Cottam Solar Project, the Applicant is therefore not proposing to amend the Order limits for the Scheme to incorporate options 3, 4 or 5.

Land South of Marton Grid Connection Options Report

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Gate Burton Energy Park Limited

Prepared for:

Gate Burton Energy Park Limited

Prepared by:

AECOM Limited

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Table of Contents

1.	Introduction	5
1.1	Purpose of this Report	5
1.2	Shared Grid Connection Corridor	5
1.3	Approach to Optioneering and Planning Application for Barns in the Area	6
2.	Technical Requirements for the Grid Connection	8
3.	Options for Grid Connection Routes South of Marton	9
3.1	Introduction	9
3.2	Option 1: Current Order limits (through the same land as the barns)	10
3.3	Option 2: Current Order limits (around the barns)	11
3.4	Option 3: North of the Proposed Barns	11
3.5	Option 4: South of the Barns at the Allotments	12
3.6	Option 5: Far South Option	12
3.7	HSE requirements	12
4.	Methodology	14
5.	Key Planning and Environmental Constraints	16
6.	Option 1: Current Order limits (same land as the barns)	18
6.1	Introduction	18
6.2	Planning Assessment	18
6.3	Ecology	19
6.4	Cultural Heritage	20
6.5	Traffic, Transport and Access	21
6.6	Water Environment	22
6.7	Landscape and Visual	23
6.8	Noise and Vibration	23
6.9	Land Ownership	24
6.10	Conclusion	25
7.	Option 2: Split Cables Around Barns	26
7.1	Introduction	26
7.2	Planning, Environmental Assessment and Access	26
7.3	Land Ownership	26
7.4	Conclusion	26
8.	Option 3: North of the Proposed Barns	28
8.1	Introduction	28
8.2	Planning Assessment	28
8.3	Ecology	28
8.4	Cultural Heritage	30
8.5	Traffic and Transport	32
8.6	Water Environment	32
8.7	Landscape and Visual	34
8.8	Noise and Vibration	35
8.9	Land Ownership	36
8.10	Conclusion	36
9.	Option 4: South of the Barns	37
9.1	Introduction	37
9.2	Planning Assessment	37
9.3	Ecology	37
9.4	Cultural Heritage	38
9.5	Traffic, Transport and Access	40

9.6	Water Environment	41
9.7	Landscape and Visual.....	42
9.8	Noise and Vibration.....	43
9.9	Land Ownership.....	44
9.10	Conclusion	44
10.	Option 5: Route South	46
10.1	Introduction	46
10.2	Planning Assessment.....	46
10.3	Ecology	46
10.4	Cultural Heritage.....	48
10.5	Traffic and Transport.....	51
10.6	Water Environment	53
10.7	Landscape and Visual.....	54
10.8	Noise and Vibration.....	55
10.9	Land Ownership.....	56
10.10	Conclusion	56
11.	Conclusion.....	58
	Appendices	60
12.	Appendix A: Figures	61
	Figure 1-1: Shared Grid Connection Corridor	62
	Figure 1-2: Combined Plan Showing Four Solar Development Consent Order projects	63
	Figure 3-1: Land Ownership within Option Area.....	64
	Figure 3-2: Options Considered on Ordnance Survey Base	65
	Figure 3-3: Options Considered on Satellite Base	66
	Figure 5-1: Environmental Constraints and Options Considered	67
	Figure 5-2: Environmental Constraints within the Option Area	68
	Figure 5-3: Allocations and Designations within the Option Area	69
	Appendix B - 145882, land at, High Street, Marton Application Site Location Plan and Site Layout Plan	70

1. Introduction

1.1 Purpose of this Report

- 1.1.1 This report has been prepared to provide information on the potential options for the grid connection routing in the area south of Marton in Lincolnshire that have been considered by Gate Burton Energy Park Limited (the Applicant) in the development of the project. The report has been provided in response to Written Question 3.5.3 posed by the Examining Authority in Further Written Questions issued on 25 October [PD-013]. Written Question 3.5.3 states (our emphasis):

‘Nicholas Hill and Emma Hill: In Response to my Further written question 2.5.6 Nick and Emma Hill provided a letter [REP4-073 and 074] suggesting a wayleave or a lease of the land. Explain why these options would not fulfil your requirements for the scheme given that it is suggested it is for a temporary period (albeit 60 years) and why a permanent easement is necessary. Furthermore, detail the alternatives that you have explored to Compulsory Acquisition (CA) of rights, including investigating alternative nearby parcels of land and why this does not resolve your need to CA rights of this land.’

- 1.1.2 The Applicant is willing to accept an option for subsoil lease as opposed to an option for easement and has communicated this to Nick and Emma Hill (henceforth Landowner D). A response confirming this point is included in the Applicant’s Response to Third Written Question [document 8.28] submitted at Deadline 5 on 20 November 2023. Document 8.28 also provides information on how the Applicant has sought to avoid compulsory acquisition through obtaining land by negotiation. Therefore, this document focuses exclusively on the alternative cable routes considered through neighbouring parcels of land and why this would not avoid the need for compulsory acquisition. We have also provided information on why alternatives have been rejected by the Applicant.
- 1.1.3 All figures listed in this report are provided in Appendix A. In this report references are provided in square brackets using the Examination library as available on the Planning Inspectorate website (e.g. [APP-022]). The exception is where a revised document is due to be submitted, in which case the document number has been provided because Examination library references are not yet available (e.g. [document 7.6]).

1.2 Shared Grid Connection Corridor

- 1.2.1 The area of the Order limits in the Land South of Marton is included for the construction of the shared Grid Connection Corridor, with the land required for the installation of the underground cables and rights retained for the maintenance of cables during the operational period.
- 1.2.2 The shared Grid Connection Corridor is a corridor for the installation of cable routes for four separate large scale solar projects to the national electricity

transmission network. The four projects that have cables through the shared Grid Connection Corridor are:

- Gate Burton Energy Park;
- Cottam Solar Project;
- West Burton Solar Project; and
- Tillbridge Solar Project.

1.2.3 The overall shared Grid Connection Corridor for the projects is shown in Figure 1-1, with a more detailed plan showing the proposed solar areas and overlap of connections for each project provided in Figure 1-2. The area under consideration is indicated by the orange box on Figure 1-2. Given that all projects are evolving, this plan shows the projects as proposed in September 2023. The Order limits for the Gate Burton scheme have changed slightly since production of this plan due to the changes made at Cottam Substation, but the plan remains current in the area under consideration.

1.2.4 All four schemes are proposals for solar energy parks that would deliver electricity to the national electricity transmission network. They each involve the construction, operation, maintenance and decommissioning of solar photovoltaic (PV) electricity generating facilities and energy storage facilities with total capacities exceeding 50 megawatts and electrical connections to the National Grid via existing substations. The projects require Development Consent Orders (DCO) to provide the consents necessary to proceed. Each scheme is distinct and subject to different delivery timescales. Further information on the four projects and their interactions is provided in the Joint Report on Interrelationships between Nationally Significant Infrastructure Projects [**document 8.26**], which has been updated for Deadline 5 on 20 November 2023.

1.2.5 The developers for the four solar schemes have worked collaboratively on design development and environmental avoidance/ mitigation to reduce overall environmental and social effects. One key way to reduce environmental effects through joint working is to combine areas of the grid connection corridor. This not only reduces the total area affected by the grid connections, but also provides the potential for cables, ducts, accesses, site establishment works and/or mitigation measures to be installed at the same time. This in turn can reduce environmental effects by reducing the number of times habitats and soils are disturbed and reducing the length of time communities are affected by construction.

1.2.6 The four developers have worked together to carry out surveys and engage landowners to explore different options to route cables in this area. However, given that this report responds particularly to a query raised on the Gate Burton Energy Park project, this report has been prepared on behalf of the Gate Burton Energy Park only.

1.3 Approach to Optioneering and Planning Application for Barns in the Area

1.3.1 The route of the Grid Connection Corridor was considered through the iterative project development stage, with information on the main alternatives

considered presented in the Environmental Statement (ES) Chapter 3: Alternatives and Design Evolution **[APP-012/3.1]**.

1.3.2 An application (ref: 145882) for two agricultural storage buildings was submitted to West Lindsey District Council in November 2022 at Land at High Street, Marton, Gainsborough. The application proposed two agricultural buildings within the shared Grid Connection Corridor south of Marton and was consented in January 2023. The agricultural buildings would provide storage for agricultural machinery and produce. The planning application boundary for this application is shown in Figure 1-3. The landowners in this area of the Grid Connection Corridor (Landowner D) have submitted Relevant Representations objecting to the Gate Burton, Cottam and West Burton Solar Projects, including objecting to the Compulsory Acquisition of rights to install and maintain the cable over their land. As a result of the evolving context in this area of the scheme, the four developers have undertaken an exercise to establish:

- whether the four grid connections can be installed without affecting the consented barns;
- whether there are any alternative routes for the Grid Connection Corridor that avoid the need for compulsory acquisition; and
- whether there are any alternative routes with fewer environmental, planning, access and technical constraints.

1.3.3 The original Grid Connection Corridor in this area (route as per Options 1 and 2 in Section 3 of this report) was selected to minimise environmental impacts and avoid constraints. The Applicant has worked alongside other developers to reduce the impact on communities in close proximity to the Grid Connection Corridor and on known ecological and archaeologically sensitive areas adjacent to the River Trent, including the Viking Great Army Winter Camp (MLI125067) on the eastern side of the River Trent (refer to ES Chapter 7: Cultural Heritage **[APP-016/3.1]**). The cable route had been selected to avoid archaeological constraints, the newly planted orchard to the south and increase separation distance from both Marton to the north and the hamlet to the south. Given that the current routing has been selected through optioneering to reduce impacts, careful thought was needed on whether alternative routing would be justifiable. This report explores those options.

2. Technical Requirements for the Grid Connection

- 2.1.1 The current grid connection corridors for the four projects and the area under consideration in this report, are shown in Figure 1-2. These connections require four cable circuits to pass through an area east and west of the A156 High Street to the south of Marton.
- 2.1.2 It is assumed that all developers will implement a ducted solution to house Cross-linked polyethylene (XLPE) cables, although this cannot be confirmed at this stage. Cables have been shown with a 10m circuit to circuit spacing between each NSIP cable set for the purposes of this study. It may be possible to reduce the separation distances during the detailed design stage once the cable configuration and trench details are known.
- 2.1.3 For the purposes of environmental assessment, the construction corridor width for the Gate Burton Energy Park is assumed to comprise of a 25m construction width, as set out in ES Appendix 2-B: Grid Connection Construction Method Statement **[APP-114/3.3]**. For the purposes of the cumulative construction assessment scenario, the ES Appendix 2-B **[APP-114/3.3]** identified a maximum 100m wide construction working area for installation of the four cables, with additional areas being beneficial for flexibility, particularly where there are likely constraints. It is envisaged that the corridor width can be reduced through micro siting as the detailed designs are developed for the four projects.
- 2.1.4 The cable circuit would be installed with a minimum cover of 0.9m. The depth of the cable installation will be increased locally to suit constraints such as watercourse crossings, existing underground utilities, localised field drainage and where a trenchless technology crossing solution is required. The horizontal radius will be kept as large as possible to assist with cable pulling. The maximum vertical bending radius of the cable ducts being considered is 9 degrees.
- 2.1.5 The preferred solution for the proposed cable installation is open cut to minimise cable installation time and costs on site. Minimising installation time also minimises the period when local people and environmental receptors are impacted by construction. It is envisaged that the proposed cable circuits can pass over or under most existing constraints within the cable corridor using open cut techniques. Where an open cut solution is not feasible due to the existing site constraints, a trenchless technology solution has been implemented, including at the identified Avoidance Areas for example as shown within ES Appendix 2B. A horizontal directional drilling (HDD) solution has been identified to pass existing site constraints such as sensitive watercourses, existing railway crossings and to pass under the River Trent.

3. Options for Grid Connection Routes South of Marton

3.1 Introduction

- 3.1.1 Following the identification of constraints and the decision to investigate alternative cable route options, the Applicant appointed a technical team to assess the different options for grid connection routes so these could be evaluated by planning, environment and lands teams.
- 3.1.2 The shared Grid Connection Corridor for the four projects needs to route between the solar arrays as shown on Figure 1-2 and the grid connection points at Cottam Substation (Gate Burton, Cottam and Tillbridge) and West Burton (West Burton). The search area for alternative alignments is shown in Figure 3-1, alongside the plots by landowner and the Order limits for the Gate Burton scheme. The plots considered were between dwellings along High Street, Marton and the area south of the hamlet further south along the High Street. Routes could not travel further north than considered due to the presence of residential properties. Locations further south were not considered to be reasonable alternatives due to the diversion they would present to the grid connections (and resultant additional land acquisition and environmental effects). This is particularly the case for the West Burton project whose corridor then needs to travel back north to reach the West Burton Substation.
- 3.1.3 Within the search area shown in Figure 3-1, a number of factors were considered to develop the potential options in this report, this included:
- assessing whether different routes were feasible from an engineering and design perspective;
 - assessment of the likely planning and environment constraints and/or impacts relating to each option;
 - consideration of the access requirements for each option; and
 - assessment of the extent to which land could be obtained by negotiation and would therefore present an alternative to compulsory acquisition of rights in Landowner D's land.
- 3.1.4 A set of five options were identified through this process as set out below. These options were then reviewed by the technical teams from the other projects to test whether additional options were available. This included discussions on different solutions and fed into the commentary on different solutions for the original route as set out in 'Option 1' below. In parallel, the same technical team assessed in more detail the viability of Option 2, which again was then critically reviewed by the other technical teams. It should be noted that due to the shape of the Landowner D's land parcel, avoiding land within the parcel is challenging.
- 3.1.5 The options identified are described below and shown in Figures 3-2 and 3-3.

3.2 Option 1: Current Order limits (through the same land as the barns)

- 3.2.1 This option considers retaining the current cable corridor proposals submitted in the DCO applications for the Gate Burton, Cottam and West Burton projects (the Tillbridge Solar DCO application has not yet been submitted and is continuing to carry out design work). It considers options to route cables through the same land as the barns. These options include:
- 1a Constructing the cables through the land with sufficient protection to enable the barns to be constructed on top of the route.
 - 1b Constructing the cables with the barns in situ using HDD techniques.
 - 1c Constructing the cables and working with the landowner to agree a solution where the barns are constructed in a different location.
- 3.2.2 Option 1a is theoretically feasible from an engineering perspective, but without an understanding of the barn construction and use (see section 5) and ground conditions a proposed solution cannot be developed in any detail. This solution would also only work if the barns were constructed after the cable routes for the four projects. This is not possible to establish given the lack of information on planned programme for construction of the barns, and the uncertain timescales for consent and construction of the solar schemes. Once the barns are constructed and in the event of an issue with the cables, maintenance could likely be done through ‘pulling through’ cables from a location outside the barn. Whilst possible, the option has a number of uncertainties associated with it and would lead to the installation of cables under a barn, which is highly undesirable from a technical and landowner perspective. This option would therefore only be pursued if no other, better options were available.
- 3.2.3 Option 1b would involve installing the four 400kV cable circuits under the two new barns and the existing A156 road on High Street using Horizontal HDD techniques. It is anticipated that the bore depth under these areas would provide 5.0m cover from the existing ground levels to the top of the proposed cable ducts subject to the assessment of existing ground conditions and the existing utilities information in this area. Again, detailed proposals cannot be developed without further information but whilst it is theoretically feasible, it would again lead to the presence of cables under the barns which is highly undesirable. This option would also be pursued if no other option were available and only if the barns are in situ when construction of the grid connections began.
- 3.2.4 Option 1c would involve the cable routes being installed where the barns are proposed without them in place. To date, it has not been possible to explore this option in detail with the landowners but discussions are ongoing. Should the cables prevent the construction of the barn and no alternative location is available, compensation would be payable, as it would be for all landowners affected by the projects.

3.3 Option 2: Current Order limits (around the barns)

- 3.3.1 This option considers retaining the current cable corridor proposals submitted in the DCO applications for the Gate Burton, Cottam and West Burton projects, with the cables routed within existing Order limits around the proposed barns. The technical teams for the four projects have explored the routing of the four cables in more detail to establish whether the cables can be installed with appropriate separation distances without affecting the barns. This work has shown that it is feasible to route the cables around the barns, although it would be desirable to carry out work on site to aid the design of the individual routes. At the time of writing, it had not been possible to gain site access to examine ground conditions and site constraints in any detail.
- 3.3.2 Option 2 would involve the Scheme's cable circuit passing to one side of the consented barns. The proposals are for cables to cross this land and the A156 High Street at a nominal depth of 1.2m. Cables may be required to be installed at a greater installation depth to pass existing utility services. The works across the A156 would be undertaken in two phases outside peak times in agreement with Lincolnshire County Council, the applicable landowners and existing utility providers, as for Options 3 and 4.
- 3.3.3 Should the open cut crossing solution not be deemed acceptable, a HDD crossing solution would be considered. It is envisaged the HDD crossing solution would require the temporary installation of a large contractor HDD compound in Landowner D's land to the west of the consented barn development area. Two temporary HDD contractor compounds would also be located on the east side of the A156 to the north and south of the existing sewage works. The compounds would be fully contained in the existing Grid Connection Corridor as shown by the red line in Figure 3-1. The bores would be carried out approximately 5.0m under the existing carriageway subject to the assessment of existing ground conditions, anticipated settlement and in agreement with the required stakeholders should this option be required.

3.4 Option 3: North of the Proposed Barns

- 3.4.1 This cable crossing option would involve diverting the proposed cable corridor to the north of the existing watercourse outside Landowner D's land. Cables across agricultural areas should be installed at a nominal depth of 1.2m. It is proposed that the cables crossing the existing watercourse would be in open cut with the top of the ducts installed with a minimum cover of 600mm from the existing river bed / base of ditch. A concrete protection slab would then be placed over the top of the ducts for at least 2.0m either side of the existing watercourse crossing with warning tape or protection tiles above prior to reinstatement of the watercourse. Existing flows through the watercourse could be managed by creating a dam either side of the works area and over pumping to maintain the flows where required. The precise nature of works and construction methods would be confirmed in discussion with the affected landowners and the Environment Agency. The cables are proposed to cross the existing A156 High Street in open cut by implementing a single lane closure and installing the cables under the existing carriageway in two phases

subject to agreement with Lincolnshire County Council and affected utility providers. Works would likely be carried out overnight or outside peak hours with suitable traffic management implemented by the appointed contractor.

3.5 Option 4: South of the Barns at the Allotments

- 3.5.1 Crossing option four considers utilising either HDD or an open cut solution at a nominal depth of 1.2m to pass under existing allotment and agricultural land prior to passing under the existing A156 carriageway in open cut. The precise nature of works and construction would be subject to discussion with the affected landowners, Lincolnshire County Council and affected utility providers. Works under the A156 High Steet are proposed in two phases with a single lane closure per phase. The works are to be programmed outside of peak times and will require the appointed contractor to implement suitable traffic management during the works.

3.6 Option 5: Far South Option

- 3.6.1 Option 5 considers relocating the Grid Connection Corridor south of the hamlet and avoiding Landowner D's land. The cable installation would be at a nominal depth of 1.2m. Where existing underground utilities are encountered, cables may be required to be installed at a greater depth to provide suitable vertical separation distances. The existing watercourse has been identified as environmentally sensitive by the ecology team, therefore a trenchless technology solution is required to enable the 400kV cable circuit to pass under the existing river bed / base of ditch. At present, the developers envisage a thrust / auger bore solution at this stage with bores at a minimum depth of 3.0m below the existing riverbed subject to assessment of the existing ground conditions and approvals from the relevant stakeholders. The cable route would either cross the A156 in two phases as per option 3 or may be required to pass under the A156 using trenchless technology techniques due to the close proximity of the existing watercourse. All works are subject to discussion with the landowners, Lincolnshire County Council, the Environment Agency and affected utility providers.

3.7 HSE requirements

- 3.7.1 There are existing overhead transmission lines to the south of the existing sewage works. The asset owner of these overhead transmission lines is National Grid Electricity Distribution. The presence of the overhead transmission lines will require safety clearance distances to be considered in assessing the above options. Safety clearance distances are minimum distances that must be maintained between the overhead lines and any structures, equipment, or people to prevent electric shock or fire hazards. As identified in Figure 1a in Appendix A, the Overhead Transmission Lines cross all options considered in this report.
- 3.7.2 The voltage of the overhead transmission lines is yet to be confirmed, however it is recommended that the horizontal clearance from the outer most tower conductor to the proposed site works is a minimum of 9.0m from 132kV overhead lines, 12.0m from 275kV overhead lines and 14.0m from 400kV

overhead transmission lines based on the Western Power Distribution (now National Grid Electricity Distribution) Company Directive OH1A/4 – Table 7 and ENATS 43-08 Issue 5. The standards dictate that safety barrier should be erected at the applicable cable distance to avoid plant and equipment breaching these safety clearances. The proposed horizontal clearances will restrict the works area available to the contractor although the team still consider this option feasible should this be required.

4. Methodology

- 4.1.1 Following identification of the preferred five options, all options were assessed to enable comparisons to be made and aid decision making on the final Grid Connection Corridor. The Applicant considers that all five options are feasible from an engineering and design perspective and therefore technical feasibility is not discussed in the remainder of this report. Option 1 is considered feasible on the basis that the worst case scenario is that the cable route is constructed, and the barns are either not constructed or are demolished. It may also be possible for the cables to be installed under the barns or for the barns to be constructed elsewhere and the Applicant is keen to continue discussions with the landowners on how this might best be implemented.
- 4.1.2 The five options are all in a very similar location due to the need to provide a continuous grid connection and all comprise underground cables. Extensive information is already available on the area affected by the current solution (Options 1 and 2) as ESs have been prepared for Gate Burton, Cottam and West Burton schemes based on this area being utilised. Consequently, an initial sifting exercise was undertaken to determine relevant environmental factors for consideration when comparing the five options. This exercise found several environmental factors were unlikely to show differing results from any of the identified options and as a result were excluded from this assessment. It was considered that the impacts arising from the following environmental constraints could differ between options and are assessed against each option below:
- Ecology;
 - Cultural Heritage;
 - Traffic and Transport;
 - Water Environment;
 - Landscape and Visual; and
 - Noise and Vibration.
- 4.1.3 The planning constraints considered included the potential impact on the proposed agricultural barns and other consents; compliance with national policy statements (NPS); and compliance with the Central Lincolnshire Local Plan (Adopted April 2023).
- 4.1.4 Each option was also reviewed from an access design perspective, with consideration given to whether any option would result in changes to the proposed accesses identified as part of the DCO applications.
- 4.1.5 Finally, each option was considered in terms of land ownership constraints. Initially the land referencing information was reviewed and updated to take account of all areas affected by the five options. The Applicant then issued initial contact letters to the landowners that would be affected by the each of the options. The letters requested access to their land to allow surveys to be undertaken, which then fed into the assessment of the options. Initial feedback was also sought from landowners on their willingness to allow the cable route through their land. It should be noted that agreements with landowners change over time as land is bought and sold, negotiations progress and individuals

change their minds. Indications of whether negotiations might be successful in this report are provided based on the professional judgement of experienced land agents based on information available.

- 4.1.6 This was important to establish whether any options could involve rights being acquired by negotiation rather than requiring compulsory acquisition.

5. Key Planning and Environmental Constraints

- 5.1.1 All five cable corridors cross the A156, with the crossing points varying for the options considered. The village of Marton is located to the north of all options, with Option 3 being closest to the village and Option 5 the furthest away. There is a hamlet of dwellings approximately 350m south of Marton, with Options 1-4 all passing between Marton and the hamlet. Options 4 and 5 are closest to dwellings in the hamlet. The area under consideration for all five options is described here as the 'search area'. The area south of Marton is characterised by an agricultural landscape and the River Trent flows to the east of the search area.
- 5.1.2 There are no National Parks or Areas of Outstanding Natural Beauty within or in close proximity to the search area. There are also no Sites of Special Scientific Interest, Special Areas of Conservation, Special Protection Areas, Scheduled Monuments or listed buildings within the search area. Outside the search area there are eight listed buildings located in Marton; seven listed at Grade II and one, the Church of St Margaret of Antioch, listed at Grade I.
- 5.1.3 There are no Conservation Areas, World Heritage Sites, Registered Parks and Gardens, or Registered Battlefields located within the search area.
- 5.1.4 Identified non-designated archaeological assets of relevance to the options considered in this report include:
- cropmarks of a probable Roman trackway and field boundaries to the south-east of Marton (MLI52489);
 - post-medieval flood defence earthworks (MLI52488);
 - remains of the Viking Great Army Camp at Torksey (MLI125067); and
 - a mound marked on the 1956 Ordnance Survey map (MLI52497), which is likely to be of prehistoric date and could be the remains of a burial mound.
- 5.1.5 Part of the search area is located within flood zone 3, which extends westward towards the River Trent. Marton and its immediate vicinity is within flood zone 2, with areas to the north and east of the search area located within flood zone 1. Underground cables are resilient to flooding and flood zones do not provide a significant constraint to development of the Grid Connection Corridor.
- 5.1.6 Other constraints on the site include existing overhead transmission lines to the south of the existing sewage works. The constraints in the area where the options are presented are shown in Figures 5-1 and 5-2. The asset owner of these overhead transmission lines is National Grid Electricity Distribution.
- 5.1.7 The Central Lincolnshire Local Plan (CLLP) (Adopted April 2023) includes designations and allocations relevant to Marton and its immediate vicinity. An Area of Great Landscape Value (AGLV) begins to the north of Marton and extends northwards to Gainsborough. The search area is located wholly outside the AGLV, although part of the Solar and Energy Storage Park element of the Gate Burton Energy Park is located within this AGLV. Land off Stow Park Road to the north of the A1500 has planning permission for 39 dwellings and

is an allocated housing site under CLLP Policy S81: Housing Sites in Medium Villages. None of the cable options will affect this site.

- 5.1.8 There are four areas of Important Open Space which are protected under CLLP S65, one of which extends to the South of Marton. Option 3 is located in close proximity to this designation but has been routed to avoid the area. These designations and the proposed development are identified in Figure 5-3.
- 5.1.9 The agricultural barns proposed at Land at High Street Marton were consented in January 2023. The proposed Location and Layout Plans submitted for the application are provided in Appendix B and the planning application boundary is shown in Figure 5-3. The proposal is described in the application as 'Proposed erection of two agricultural barns', with access to be provided using renewed gates on the existing access. The Flood Risk Assessment submitted with the barns application recognises that the site for the barns is within flood zone 2/3. It states that the barns will have open sides and a compacted hardcore finish to each, with the access being permeable. The Flood Risk Assessment also states that: *'The proposed development is on land owned by the applicant which he has recently purchased and is to start a new agricultural business, he therefore will require suitable simple structures to store their agricultural machinery and produce.'* No further information on the location of the barns within the land holding or how the barns will support the proposed business is available in the application documents.

6. Option 1: Current Order limits (same land as the barns)

6.1 Introduction

- 6.1.1 Option 1 considers the use of the existing shared Grid Connection Corridor which passes through largely agricultural land to the immediate south and east of Marton, 400m to the north of Brampton in Lincolnshire. It then travels 50m to the north of Cottam and 300m east of Rampton to connect with Cottam Power Station in Nottinghamshire. The grid connection route for the West Burton Solar Project diverges from the other three at the River Trent to travel to the West Burton substation. Given that it is highly undesirable to have cables installed underneath the consented barns, the more realistic sub-options for Option 1 would be for the barns not to be constructed on the alignment or, if constructed, the barns to be demolished. Either option may be accompanied by the construction or re-construction of barns elsewhere. More detailed consideration of how this option might be developed cannot happen prior to consent without further engagement from Landowner D.
- 6.1.2 Figures 5-1 and 5-2 shows the locations of main constraints described in this chapter.

6.2 Planning Assessment

- 6.2.1 As assessed in the Planning, Design and Access Statement for the Gate Burton Energy Park [REP2-006/2.2], it is considered that the Gate Burton Energy Park complies with national and local planning policy and makes a significant contribution to policy aims associated with decarbonisation, energy security and biodiversity. Option 1, as part of the currently proposed scheme, is compliant with policy on its existing route. As explored below, the grid connection route has been selected to avoid environmentally sensitive areas and properties, minimising environmental impacts.
- 6.2.2 Option 1 would conflict with the extant consent for agricultural barns on the land. However, the site is not allocated, and given that the business is planned rather than operational, nothing is known about its viability or operational requirements. It is similarly not known whether the smallholding would provide employment or contribute to the rural economy. Finally, it is not known whether the barns could be located in another area of land either in their current configuration or an alternative configuration that continues to meet the needs of the business. All these uncertainties make it challenging to assess what the impacts would be on the planned business if the barns were not constructed.
- 6.2.3 At present planning consent is in place for the barns in their current location and is not in place at another location. However, given that surrounding land is also agricultural use it is likely that planning permission could be gained for the barns in an alternative location if a suitable alternative location could be identified. It is noted that the original application for the barns was determined swiftly (within two months) and with relatively limited information provided so

an application for an alternative location could potentially be similarly obtained swiftly.

- 6.2.4 Notwithstanding the uncertainties above, for the purposes of assessing a worst case scenario, it is assumed that Option 1 would prevent the construction of the barns and adversely affect the operation of an agricultural smallholding. It is not considered that this additional impact would materially alter the conclusion that the Gate Burton Energy Park is compliant with planning policy or the findings of the ES.

6.3 Ecology

Baseline & Survey

- 6.3.1 The ecological assessment to inform the baseline for Option 1 was undertaken within the existing Grid Connection Corridor and an appropriate study area (up to 2km either side of the Grid Connection Corridor), as described in the ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1] and accompanying appendices. Site surveys, to identify ecological receptors within Option 1, were undertaken between August 2021 and October 2022.

- 6.3.2 These surveys identified the following ecological receptors for consideration within Option 1 of the Grid Connection Corridor:

- Notable habitats, including hedgerows, individual trees, arable field margins, ponds and a watercourse (Marton Drain – shown on Figure 5-1– in Appendix A of this report);
- A pond supporting Great Crested Newt *Triturus cristatus*, to the east of Option 1 (as shown on Figure 5-1 – in Appendix A of this report);
- Semi-improved grassland habitat, to the east of the A156, supporting a population of two species of reptile;
- Breeding birds;
- Riparian mammals (Water Vole *Arvicola amphibius* presence from desk study records); and
- A main Badger *Meles meles* sett.

- 6.3.3 There are no statutory or non-statutory designated sites within Option 1 of the Grid Connection Corridor.

- 6.3.4 There are no trees or buildings with known, or the potential to support, bat roosts.

Key Issues & Mitigation

- 6.3.5 To the east of the A156, an area of semi-improved grassland and scrub supports a population of reptiles (Common Lizard *Zootoca vivipara* confirmed through ecological surveys and Grass Snake *Natrix helvetica* identified during the desk study) along with breeding birds. Therefore, mitigation within this area would include phased vegetation clearance at an appropriate time of year. Furthermore, Great Crested Newt are present in a pond to the east of Option 1. This pond will be retained and mitigation, as summarised above for reptiles, will be undertaken within the area of semi-improved grassland to the east of the A156 and where this is within 250m of the pond.

- 6.3.6 To the west of the A156, Option 1 would cross predominantly arable farmland and a single hedgerow that, during site surveys in 2022, supported a main Badger sett. This main Badger sett would be retained and avoided with a 30m buffer around the sett and pre-commencement checks would be used to confirm the exact location of the sett(s), prior to construction.
- 6.3.7 Marton Drain will also be crossed, although any impacts upon riparian mammals (if present) will be mitigated against by undertaking the crossing using non-intrusive techniques, with launch and receive pits excavated either side of the channel to facilitate directional drilling beneath the watercourse bed. This is illustrated by the 'avoidance areas' as shown on Figure 5-1.

Conclusion

- 6.3.8 Mitigation will be required to avoid impacts on ecological receptors as summarised above and described in ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1] and the Framework Construction Environmental Management Plan (CEMP) [document 7.3].
- 6.3.9 There are no significant effects for Option 1 with regard to ecology and biodiversity and the conclusions remain as per ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1].

6.4 Cultural Heritage

Baseline & Survey

- 6.4.1 The baseline conditions for the existing Grid Connection Corridor are presented in ES Appendix 7-A: Desk-based assessment [APP-117/3.3]. Identified non-designated archaeological assets that extend into Option 1 (as shown on Figure 5-1 – in Appendix A of this report) comprise cropmarks of a probable Roman trackway and field boundaries to the south-east of Marton (MLI52489), and post-medieval flood defence earthworks (MLI52488), extending partially into the Grid Connection Corridor. Geophysical survey (ES Volume 3, Appendix 7-D [APP-120/3.3]) and trial trenching (ES Appendix 7-E [APP-123/3.3]) were undertaken within the Grid Connection Corridor.
- 6.4.2 There are eight listed buildings located in Marton; seven listed at Grade II and one, the Church of St Margaret of Antioch, listed at Grade I. No effects to these assets were identified in ES Chapter 7: Cultural Heritage [APP-016/3.1]. Seven non-designated historic buildings recorded outside the Grid Connection Corridor, but within the 500m study area, were identified and no potential for significant effects were identified. These assets were scoped out of further assessment in the ES.

Key Issues & Mitigation

- 6.4.3 An assessment of the impact of Option 1 on cultural heritage is made in the ES Chapter 7: Cultural Heritage [APP-016/3.1]. Significant effects are assessed prior to additional mitigation on the Roman trackway and enclosures (MLI52489) due to the loss of multiple elements of this asset. The partial loss of a small proportion of the post-medieval flood defence earthworks (MLI52488) is assessed as a negligible effect, which is considered not significant.

- 6.4.4 The Archaeological Mitigation Strategy **[document 7.6]** includes provision for archaeological strip, map and record within areas of construction disturbance in respect of the Roman trackway and enclosures (MLI52489) (Site 9). Provision is also made for the reinstatement of the probable post-medieval flood defence earthwork (MLI52488) following construction (Site 10). Additionally, the full length of the Grid Connection Corridor, outside of the defined archaeological mitigation sites, will be subject to an archaeological watching brief where intrusive groundworks and topsoil stripping are required. The mitigation through archaeological investigation and recording would reduce the magnitude of impact on these assets resulting in residual minor adverse effects, which are not significant.
- 6.4.5 Assessment of the impact of Option 1 on designated and non-designated heritage assets through change to their settings (ES Chapter 7: Cultural Heritage **[APP-016/3.1]**) found no impacts in relation to the Grid Connection Corridor. Option 1 will not result in any significant effects through change to setting.

Conclusion

- 6.4.6 The statements and conclusions made in ES Chapter 7: Cultural Heritage **[APP-016/3.1]** as well as in the Archaeological Mitigation Strategy **[document 7.6]** remain unchanged.

6.5 Traffic, Transport and Access

Baseline

- 6.5.1 The baseline remains unchanged from that reported within the ES Chapter 13: Traffic and Transport **[REP4-012/3.1]**. No additional surveys have been carried out (or are considered to be required) to those identified within ES Chapter 13: Traffic and Transport **[REP4-012/3.1]**.
- 6.5.2 For Option 1, access to the east and west of the A156 High Street will be via points 12/10 and 12/09 on Sheet 12 of the Streets, Rights of Way and Access Plans **[REP2-024/5.3]** respectively.
- 6.5.3 Access 12/10 will feature the construction of a new bellmouth access to the east of the A156 High Street to cater for an abnormal load vehicle 24.56m in length as defined on drawing 60664324-HGN-DR-CH-0008 contained within Appendix B of the Framework Construction Traffic Management Plan (CTMP) **[REP4-014/3.3]**.
- 6.5.4 Access 12/09 will upgrade an existing field access to the south of the cable route as defined on drawing 60664324-HGN-DR-CH-0003 contained within Appendix B of the Framework CTMP **[REP4-014/3.3]**. From this access point, construction vehicles will travel east and north along an existing agricultural track to access the land parcels where the cable will be installed. The effects of these accesses are assessed as part of the current Development Consent Order application material for the Gate Burton project.

Key Issues & Mitigation

- 6.5.5 There are no further issues or mitigation required as a result of Option 1, to those previously considered within ES Chapter 13: Traffic and Transport **[REP4-012/3.1]**. Temporary Traffic Management (TTM) should be implemented on the A156 where required, when the Grid Connection Corridor cables are installed to connect Cottam Substation with the Solar and Energy Storage Park.

Conclusion

- 6.5.6 The findings within ES Chapter 13: Traffic and Transport **[REP4-012/3.1]** would remain unchanged.

6.6 Water Environment

Baseline and Survey

- 6.6.1 The Water Environment baseline for Option 1 within the Grid Connection Corridor and a 1km study area either side has been described in ES Chapter 9: Water Environment **[APP-018/3.1]**, and in terms of Water Framework Directive (WFD) waterbodies within ES Appendix 9-A: WFD Assessment **[APP-137/3.3]**. The baseline for Option 1 is unchanged from that presented in these reports.
- 6.6.2 The key surface water receptor in the study area for Option 1 is Marton Drain, which would be crossed by the cable at approximate NGR SK 83680 81181 (as shown on Figure 5-1 in Appendix A).
- 6.6.3 The 'Marton Drain Catchment (tributary of Trent)' WFD waterbody (GB104028057840) is heavily modified with Moderate Ecological Potential and fails to achieve Good status as a result of physical modification, point source sewage discharges, and diffuse pollution from the presence of livestock. Water quality data presented in ES Chapter 9: Water Environment **[APP-018/3.3]** indicated that the watercourse is affected periodically by organic pollution and is under pressure from surrounding agricultural land uses. In terms of water quality, Marton Drain is considered a high importance receptor for water quality and low importance receptor in terms of morphology.
- 6.6.4 Flood risk to the proposed cable route within the existing Order Limits is considered at high risk from fluvial, artificial and groundwater sources based on ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]** but this is not considered to be an issue given the nature of the development, its location underground and the lack of alternatives that do not go through areas of high flood risk.

Key Issues & Mitigation

- 6.6.5 The key constraint with this existing option relates to the crossing of Marton Drain. However, this watercourse would be crossed by HDD rather than intrusive, open-cut techniques, with drilling being a minimum of 2m below the watercourse bed, avoiding impacts to the watercourse.
- 6.6.6 The Framework CEMP **[document 7.3]** and Water Management Plan (WMP) (an appendix of the CEMP) will be followed which outline measures to be

taken to prevent the deposition of fine sediment or material in, and the pollution by sediment of, any existing watercourse, for instance from construction runoff.

- 6.6.7 Flood risk to the proposed cable route within the existing Order Limits is considered to be at low risk following the embedded mitigation measures as described in ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]**.

Conclusion

- 6.6.8 There are no significant effects identified for Option 1 with regard to the water environment or flood risk.

6.7 Landscape and Visual

Baseline and Survey

- 6.7.1 The landscape and visual baseline for Option 1 within the existing Grid Connection Corridor and a 2km study area radius to either side has been described in ES Chapter 10: Landscape and Visual Amenity **[REP2-01/3.10]** as well as in ES Appendices 10-C and 10-E **[APP-146 and 148/3.3]**. Site surveys were conducted in 2022 and 2023.

Key Issues & Mitigation

- 6.7.2 A key issue is the removal of existing vegetation to facilitate the construction works, which will result in temporary significant effects. Embedded Mitigation measures are stated within the Framework CEMP **[document 7.3]** and Outline Landscape and Ecological Management Plan (OLEMP) **[REP2-037/7.10]**. The objective is to minimise vegetation removal and the retention of habitats where possible. The restoration of habitats and the replanting of removed vegetation, where feasible, shall be carried out at the completion of construction works.

Conclusion

- 6.7.3 The statements and conclusions made in ES Chapter 10: Landscape and Visual Amenity **[REP2-010/3.1]** as well as in ES Appendices 10-D and 10-F **[APP-147 and 149/3.3]** continue to apply.

6.8 Noise and Vibration

Baseline & Survey

- 6.8.1 Option 1 is contained within the existing Order Limits that were assessed in the ES. As such, Option 1 would not affect the conclusions of the noise and vibration assessment presented in ES Chapter 11: Noise and Vibration **[APP-020/3.1]**.
- 6.8.2 The assessment of cable construction activities was undertaken using fixed thresholds for noise (65dB for the Lowest Observed Adverse Effect Level (LOAEL) and 75dB for the Significant Observed Adverse Effect Level (SOAEL) during core working hours). Consequently, no baseline surveys were considered necessary to define ambient noise conditions at receptors that

may be affected by temporary construction activities along the Grid Connection Corridor.

Key Issues & Mitigation

- 6.8.3 The assessment of cable laying noise and vibration considered the potential for works taking place at any location in the Order Limits to cover a worst-case. As such, it is likely that the potential for significant effects was overestimated and could be reduced by maximising the distance to sensitive receptors as far as reasonably practicable.
- 6.8.4 To reduce noise and vibration emissions due to construction activities, measures to control noise as defined in Annex B of BS 5228-2 and measures to control vibration as defined in Section 8 of BS 5228-2 would be adopted. These embedded measures represent Best Practicable Means and are secured within the Framework CEMP [**document 7.3**] for the construction phase and the Framework Decommissioning Environmental Management Plan (DEMP) [**REP4-037/7.5**] for the decommissioning phase. This includes a communication strategy so occupants of affected properties would be notified of the timings and duration of works. Other measures include the use of acoustic fencing and alternative quieter equipment to ensure the SOAEL (75dB) is not exceeded. Additionally, the final cable route would be designed to maximise the distance to sensitive receptors. Operation of heavy plant such as excavators and rollers would not take place within 15m of residential receptors.
- 6.8.5 As construction traffic routes would be unchanged for Option 1, the results of the construction traffic noise assessment in the ES remain valid and no significant effects are identified.

Conclusions

- 6.8.6 There would be no residual significant effects given that mitigation will be implemented such as the use of acoustic screening and ensuring a minimum of 15m distance from residential receptors to the location of construction plant such as excavators and rollers.
- 6.8.7 No significant effects are identified due to construction traffic noise.

6.9 Land Ownership

- 6.9.1 This option for the cable route crosses a total of five landowners as seen in Figure 3-1. Of these five landowners, one is currently objecting to the Scheme (Landowner D) and is not considered likely to agree to grant the necessary land rights by negotiation within the timescales available until the end of the Examination. It is considered possible that rights may be obtained by negotiation for the other four landowners, with Heads of Terms either already signed or progressing towards agreement. Given that no Option agreements have yet been signed, there is not yet certainty that land can be obtained by negotiation for any parcels. Given this context compulsory acquisition powers would be required to provide certainty that Option 1 could be delivered.

6.10 Conclusion

- 6.10.1 To summarise, Option 1 considers the use of the existing shared Grid Connection Corridor for the cable route. This Option would likely prevent construction of the agricultural barns in their current location or require their demolition. Should these barns be necessary for the agricultural business and no alternative location is found, this would have an adverse effect on the smallholding on the land. The landowners would be compensated for this impact.
- 6.10.2 With regards to the environment, Option 1 is as described in the submitted ES. No significant environmental effects are identified as the cable route was selected to reduce impacts as far as possible.
- 6.10.3 Land ownership negotiations are ongoing, with various levels of agreement and opposition among the landowners. Of the five affected landowners, only one is objecting to the route (Landowner D) and it is hoped that voluntary agreements can be agreed with the other four.
- 6.10.4 In summary, while some potential impacts have been identified, mitigation measures and best practices would be implemented to minimise effects. The overall conclusion in the original application and in this options assessment is that Option 1 can proceed with appropriate mitigation strategies to address its various impacts effectively. The benefits of the scheme would significantly outweigh the impacts. However, given the impacts on the proposed barns and the objection to compulsory acquisition, alternatives have been investigated to ensure that compulsory acquisition is necessary and no lower impact options are available.

7. Option 2: Split Cables Around Barns

7.1 Introduction

- 7.1.1 Option 2 investigated whether it was possible to construct the four cables on either side of the two agricultural buildings on Landowner D's land via open cut trenching or HDD. The cable route would then follow the existing shared Grid Connection Corridor as proposed in the initial applications.
- 7.1.2 The details regarding the construction and design of the agricultural buildings are currently unknown. However, understanding the potential impacts on the proposed development through additional trenching works/HDD could be determined through determining influence line on the foundations. Initial feasibility assessments concluded that it is likely to be possible to lay all four cables either side of the proposed development. This would avoid the impacts on the proposed barns associated with Option 1. Any configuration would also avoid the National Grid Electricity Distribution overhead transmission lines.
- 7.1.3 Detailed design of this option would require access to the proposed site of the barns and greater understanding of the planned construction. Gaining access to the land to establish this has not been possible at the time of writing.

7.2 Planning, Environmental Assessment and Access

- 7.2.1 Given that the shared Grid Connection Corridor would remain the same as Option 1, the planning and environmental assessment is the same as for Option 1 with the exception of the impact on the barns. From an access design perspective, the splitting of the cables to either side of the barn will not change the nature of the access proposals presented in Option 1.

7.3 Land Ownership

- 7.3.1 The shared Grid Connection Corridor would remain the same as for Option 1 because this option is affecting the location of cables within the corridor not the corridor itself. The landowners therefore remain as described for Option 1. At present there is no indication that Option 2 would avoid compulsory acquisition as it would still mean locating cables across Landowner D's land.

7.4 Conclusion

- 7.4.1 This option involves constructing the cables on either side of the two agricultural buildings on Landowner D's land, using either open cut trenching or HDD. Option 2 is likely to result in less impact on the proposed barns than Option 1, avoiding either going underneath the barns, their demolition or relocation. Feasibility assessments have shown that the Scheme's cables can be laid on either side of the proposed development while avoiding impacts on existing structures and overhead transmission lines. Further information on the barn construction and ground conditions would be required to progress the design further. It has not been possible to complete this work on site due to

the lack of land access. Therefore, flexibility would still be required to enable another option (i.e. Option 1) to be implemented in the unlikely event that it was not possible to install the Scheme's cables without impacting the barns.

- 7.4.2 Like Option 1, there are no significant environmental effects associated with this option and the route would likely require compulsory acquisition due to objections from Landowner D.

8. Option 3: North of the Proposed Barns

8.1 Introduction

- 8.1.1 Option 3 would involve extending the Grid Connection Corridor to the agricultural fields to the north, moving the cable route closer to Marton. This option would also cross the watercourse to the north before aligning with the current Order limits towards Cottam substation.
- 8.1.2 Option 3 would involve development outside the Order limits for the Gate Burton, Cottam and West Burton projects so changes would be required to the Development Consent Order applications for the three projects to implement this option. Tillbridge Solar has not yet been submitted their application so could widen the Order limits before submission should the project developer decide to pursue this option.

8.2 Planning Assessment

- 8.2.1 Option 3 crosses land to the north of Options 1 and 2. This area is characterised by agricultural fields of a uniform composition. An area of Important Open Space under Policy S65 of the Central Lincolnshire Local Plan borders this option to the north. Policy S65 safeguards areas of Important Open Space from development unless it can be demonstrated that there are no significant detrimental impacts on the character and appearance of the surrounding area, ecology and heritage assets.
- 8.2.2 Given that the cables would be outside the Important Open Space, there would be no conflict with this policy, although greater noise would be experienced within the open space during construction than for Options 1 and 2. This option would avoid affecting the proposed barns.

8.3 Ecology

Baseline & Survey

- 8.3.1 Option 3, which lies to the north of the existing Grid Connection Corridor, is within some of the study areas (dependent on the receptor) used during the ecological assessment to inform the baseline for the existing Grid Connection Corridor, as described in ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1] and accompanying appendices.
- 8.3.2 Site surveys to identify ecological receptors within Option 3, were undertaken between August 2021 and October 2022. A walkover survey within accessible areas of Option 3 was undertaken on 6 July 2023.
- 8.3.3 Known, or predicted, ecological receptors for consideration within Option 3 of the Grid Connection Corridor are:
- Notable habitats, including hedgerows, individual trees, arable field margins, ponds and watercourses (including Marton Drain);

- A pond supporting Great Crested Newt, to the east of Option 3 (as shown on Figure 5-1 – in Appendix A of this report);
- Semi-improved grassland habitat, to the east of the A156, supporting a population of two species of reptile;
- Breeding birds;
- Trees supporting bat roosts;
- Riparian mammals (Water Vole presence from desk study records); and
- Badger setts.

8.3.4 There are no statutory or non-statutory designated sites within Option 3.

8.3.5 As shown within Annex A Tree Constraints Plan (Sheet 9) within Appendix 10-I Arboricultural Impact Assessment Part 1 **[APP-152/3.3]** and on Figure 5-1 – in Appendix A of this report, there are seven individual trees protected by the Marston to Newton Tree Preservation Order (TPO) within Option 3. These seven trees are not located within the Option 1 or 2 areas. In terms of species, two of the trees are identified within the TPO as Ash and five are Elm. The condition of the Elm trees is identified as being “possibly dead” with the condition of the Ash trees are identified as being “Replacement” and “No information”.

Key Issues & Mitigation

8.3.6 To the west of the A156, Option 3 would cross more hedgerows and ditches / watercourses than Options 1 and 2 and the habitats within this area comprise grassland, which is of higher value than arable habitat and likely to support more biodiversity interest (such as plants, terrestrial invertebrates and protected species (such as reptiles)). Therefore, a key issue for Option 3 would be installation methods within this area (open trench or non-intrusive) and how much of the existing vegetation could be retained, avoided or will be removed to facilitate construction works.

8.3.7 Requirements for mitigation would be similar to Options 1 and 2, with retention and avoidance of notable habitats, including hedgerows and individual trees and precautionary methods of work or avoidance of areas where protected species are known, or likely to be, present.

8.3.8 Whilst it may not be possible to avoid every hedgerow, those surveyed within Option 3 appear to be species-poor and not important (using the ecology criteria within the Hedgerow Regulations¹). There remains the possibility that some hedgerows that were not surveyed in July 2023 may be important. However, embedded mitigation measures are described within the OLEMP **[REP2-037/7.10]** and the objective should be to minimise vegetation removal and retain habitats, where possible. Post-construction, habitats will be restored.

8.3.9 In terms of the TPO's within Option 3, as stated within Appendix 10-I Arboricultural Impact Assessment Part 1 **[APP-152/3.3]** the Order dates from 1965 and it is likely that some of these trees are no longer present or have been replaced by new trees. As stated within the Framework CEMP submitted at Deadline 2 “*where TPOs are in place for trees which are no longer present,*

¹ HMSO (1997). Hedgerow Regulations 1997. HMSO, London.

are dead or are no longer worthy of TPO status, and impact or removal is required, approval of the Local Planning Authority will be obtained in advance as part of pre-construction planning”.

Conclusion

- 8.3.10 Option 3 crosses a number of additional watercourses and hedgerows compared to Options 1 and 2 and habitat of greater value. It would also potentially impact seven trees protected by TPOs that would not be affected by Options 1 and 2, albeit noting that ground survey has identified that the trees are no longer present, dead or no longer worthy of TPO status. The hedgerows affected may be difficult to avoid during construction and as a result there may be more hedgerow removal required for Option 3 compared to Options 1 and 2. However, on the basis that hedgerows within the Grid Connection Corridor will largely be reinstated following construction, there would not be a significant residual effect.
- 8.3.11 As for Option 1, mitigation will be implemented to avoid impacts on other ecological receptors and the measures detailed within the Framework CEMP **[document 7.3]** will apply to any known, or potential ecological receptors within Option 3 which were identified in July 2023.
- 8.3.12 When compared to Options 1, there are no new likely significant residual effects for Option 3 with regard to ecology and biodiversity and the conclusions would remain as per ES Chapter 8: Ecology and Nature Conservation **[REP4-008/3.1]**. However, Option 3 would result in greater loss of vegetation than Option 1 and is less preferable from an ecological perspective.

8.4 Cultural Heritage

Baseline & Survey

- 8.4.1 The Option 3 Grid Connection Corridor falls within the defined study areas for cultural heritage as described for Option 1 above. However, a portion of Option 3 is outside the Grid Connection Corridor for Option 1 and therefore has not been subject to non-intrusive and/or intrusive archaeological surveys as part of the submitted DCOs.
- 8.4.2 Due to land access constraints, only one additional land parcel within the Option 3 Grid Connection Corridor was subject to geophysical survey to support this Options Report. No features of archaeological origin were identified within this land parcel.
- 8.4.3 As with Option 1, identified non-designated archaeological assets that extend within the Option 3 Grid Connection Corridor include post-medieval flood defence earthworks west of High Street, Marton (MLI52488). Additionally, an undated possible earthwork (possibly a fishpond or similar) (MLI52484) also lies within the Option 3 Grid Connection Corridor (as shown on Figure 5-1).
- 8.4.4 With regards to the setting of designated and non-designated heritage assets, there are eight listed buildings located in Marton relevant to the assessment of this Option; seven listed at Grade II and one, the Church of St Margaret of Antioch, listed at Grade I (as shown on Figure 5-1).

- 8.4.5 There is one non-designated historic building of low value which is of relevance to the assessment of new or different significant effects due to Option 3; namely, Barnfield Farm, in Marton, which comprises the converted remains of a 19th century farm building (MLI116490).

Key Issues & Mitigation

- 8.4.6 Option 3 does not materially differ from Options 1 and 2 in terms of assessed effects on the post-medieval flood defence earthworks (MLI52488) (ES Chapter 7: Cultural Heritage [APP-016/3.1]), which is assessed as a negligible effect. However, Option 3 would additionally impact on the undated possible earthworks (MLI52484); there would be a high impact prior to additional mitigation on the very low value asset, resulting in a minor adverse effect, which is considered to be not significant.
- 8.4.7 Archaeological mitigation would be as for Option 1 in respect of the probable post-medieval flood defence earthwork (MLI52488) (Site 10 – reinstatement of the earthwork following construction of the cable corridor).
- 8.4.8 Mitigation in the form of archaeological investigation and recording would be required in respect of the probable earthwork (MLI52484). The Archaeological Mitigation Strategy, Part 2 (Appendix A) [document 7.6] includes provision for an archaeological watching brief over the full length of the Grid Connection Corridor, outside of the defined archaeological mitigation sites, where intrusive groundworks and topsoil stripping are required. This mitigation would reduce the magnitude of impact on this asset, resulting in a residual negligible effect, which is considered to be not significant.
- 8.4.9 With regard to the setting of designated and non-designated heritage assets, Option 3 brings the Grid Connection Corridor closer to assets located in Marton, when compared to Options 1 and 2. However, no impacts are predicted in relation to changes to the setting of these heritage assets due to the presence of intervening built form which provides adequate screening of construction activities. This includes the eight designated listed buildings and the non-designated Barnfield Farm (MLI116490).

Conclusions

- 8.4.10 As for Options 1 and 2, Option 3 will have no significant effect on the post-medieval flood defence earthworks (MLI52488). The Archaeological Mitigation Strategy [document 7.6] includes provision for reinstatement of the earthwork following construction of the cable corridor (Site 10).
- 8.4.11 A new residual negligible effect is identified in respect of the possible earthwork feature (MLI52484). The Archaeological Mitigation Strategy [document 7.6] includes provision for an archaeological watching brief over the full length of the Grid Connection Corridor, outside of the defined archaeological mitigation sites, where intrusive groundworks and topsoil stripping are required.
- 8.4.12 Option 3 would have no additional significant effects on archaeological assets, when compared to Option 1. With regards to the setting of designated and non-designated heritage assets Option 3 is not considered to be materially different from Option 1 and it will not result in any additional significant effects. However, whilst the effects do not vary significantly, the presence of an

additional earthwork feature would mean this option is less preferred than Options 1 and 2 from a cultural heritage perspective.

8.5 Traffic and Transport

Baseline & Survey

- 8.5.1 The baseline remains unchanged from that reported within ES Chapter 13: Traffic and Transport **[REP4-012/3.1]**, as no additional access points or receptors need to be considered as a result of Option 3. No additional surveys have been carried out (or are considered to be required) on traffic or transport.
- 8.5.2 From an access design perspective, installing the cables to the north of the proposed barn locations will not change the nature of the access proposal to the west of the A156 High Street, with the access point 12/09 presented on Sheet 12 of the Streets, Rights of Way and Access Plans **[REP2-024/5.3]** remaining the preferred access location.
- 8.5.3 For access to the east of the A156 High Street, it is recommended that the current access proposal at point 12/10 presented on Sheet 12 of the Streets, Rights of Way and Access Plans **[REP2-025/5.3]** would be retained. Relocating the proposed access 12/10 closer to the proposed alignment of the cable would result in the access for construction traffic being positioned considerably closer to the village of Marton and in the vicinity of a change in posted speed limit for southbound traffic from 30mph to 50mph. Relocating the access closer to this speed limit transition point is not recommended as vehicles travelling southbound will have begun to accelerate and may not anticipate construction traffic exiting onto the A156 High Street.
- 8.5.4 From an access design perspective, it is recommended that no change to the access locations presented in Option 1 are made for Option 3. Therefore, there is no change in the effects reported in the current DCO application for Gate Burton.

Key Issues & Mitigation

- 8.5.5 There are no further issues or mitigation required as a result of Option 3, to those previously considered within ES Chapter 13: Traffic and Transport **[REP2-024/5.3]**. TTM should be implemented on the A156 where required, when the Grid Connection Cables are installed to connect Cottam Substation with the Solar and Energy Storage Park.

Conclusions

- 8.5.6 The findings within ES Chapter 13: Traffic and Transport **[REP2-024/5.3]** are considered to remain unchanged from Option 1, as Option 3 is not expected to result in any significant effects.

8.6 Water Environment

Baseline & Survey

- 8.6.1 The Water Environment baseline for Option 3 within the Grid Connection Corridor and a 1km study area either side is generally the same as that

described in ES Chapter 9: Water Environment **[APP-018/3.1]**, and in terms of WFD waterbodies within ES Appendix 9-A: WFD Assessment **[APP-137/3.3]**.

- 8.6.2 The key surface water feature in the study area is Marton Drain, as described above in relation to Option 1 and 2. There is also an agricultural, straight drainage ditch that may be crossed by Grid Connection Corridor at approximate NGR SK 83726 81351. This ditch is a low importance receptor for water quality and morphology.
- 8.6.3 Flood risk to the proposed cable route whereby cables are routed to the north of the proposed barns within revised Order Limits is considered at high risk from fluvial, artificial and groundwater sources following a desk-based review of information within ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]**

Key Issues & Mitigation

- 8.6.4 As with Options 1 and 2, Marton Drain would need to be crossed by the Grid Connection Corridor, with impacts mitigated by using non-intrusive techniques and standard mitigation as described in relation to Option 1 above. The crossing point for Option 3 would be in the same reach of the watercourse as for Option 1 and so there would be no additional adverse impacts to the watercourse.
- 8.6.5 The potential crossing of the unnamed ditch for Option 3 would be expected to use an intrusive open-cut approach and was not assessed in the ES because this ditch was not affected by Options 1 and 2. A pre-works morphology survey of the channel would be undertaken prior to construction. The pre-works survey is to ensure that there is a formal record of the condition of each watercourse prior to commencement of works to install cables beneath the channel. The survey would be a precautionary measure so that should there be any unforeseen adverse impacts there is a record against which any remedial action can be determined.
- 8.6.6 Measures to reduce the impacts on watercourses would be as per Options 1 and 2 and would be described in the final CEMP. Given the mitigation, any impact associated with the open cut crossing would be temporary and minor in terms of water quality and temporary and moderate for morphology. As a low importance receptor for both water quality and morphology this would result in a slight adverse effect in both cases, which is not significant.
- 8.6.7 Flood risk to the proposed cable route whereby cables are routed to the north of the proposed barn within revised Order Limits would be at low risk following the embedded mitigation measures as described in ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]**.

Conclusions

- 8.6.8 There are no new significant effects identified for Option 3, when compared to Option 1 and the conclusions would remain as per ES Chapter 9: Water Environment **[APP-018/3.1]** and ES Appendix 9-A: WFD Assessment **[APP-137/3.3]**. However, Option 3 would result in an additional, albeit minor adverse and not significant, effect on an additional unnamed watercourse, when compared to Options 1 and 2, with the former two options therefore preferred from a water perspective.

- 8.6.9 There are no new significant effects for this option with regard to flood risk, when compared to Option 1 and the conclusions would remain as per ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]**.

8.7 Landscape and Visual

Baseline and Survey

- 8.7.1 The landscape and visual baseline for Option 3 is captured within the 2km study area radius to either side of the Grid Connection Corridor as described in the ES Chapter 10: Landscape and Visual Amenity **[REP2-010/3.1]** as well as in ES Appendices 10-C and 10-E **[APP-146 and 148/3.3]**. A site survey was conducted in 2023.

Key Issues & Mitigation

- 8.7.2 A key issue is the removal of existing vegetation to facilitate the construction works, which will result in temporary significant effects. The Grid Connection Corridor will move closer to residential receptors and to P_{RoW} LL|Mton|68/1 both located along the southern fringe of Marton. This option is also associated with additional hedgerow removal.
- 8.7.3 Embedded mitigation measures are set out within the OLEMP **[REP2-037/7.10]**. The objective is to minimise vegetation removal and the retention of habitats where possible. The restoration of habitats and the replanting of removed vegetation, where feasible, shall be carried out at the completion of construction works.
- 8.7.4 Other key issues include the visibility of construction works and likely localised and temporary changes to the visual amenity for local receptor groups namely residents, vehicle users and public transport, recreational users, and outdoor workers / farmers.

Conclusion

- 8.7.5 No significant landscape character effects have been identified for Local Landscape Character Areas (LLCA) 09: Trent Plain South and LLCA 13 Trent Plain in which Option 3 is located.
- 8.7.6 Visual effects will be experienced by a range of receptors mainly local residents, road users / public transport, recreational users, and outdoor workers / farmers. Effects during construction have been identified as moderate adverse and therefore significant but temporary. Visual effects at operation have been assessed as negligible neutral and therefore not significant. The relocation of the Grid Connection Corridor further north and closer to Marton will increase the visual effects during construction for nearby residents and users of P_{RoW} LL|Mton|68/1 slightly when compared to Option 1 but will remain moderate adverse and temporary. At operation, visual effects will remain negligible and neutral.
- 8.7.7 The statements and conclusions made in ES Chapter 10: Landscape and Visual Amenity **[REP2-010/3.1]** as well as in ES Appendices 10-D and 10-F **[APP-147 to 149/3.3]** would therefore remain unchanged, although Option 3 is slightly worse than Options 1 and 2 from a landscape and visual perspective.

8.8 Noise and Vibration

Baseline & Survey

- 8.8.1 The noise and vibration study area presented in ES Chapter 11: Noise and Vibration [APP-020/3.1] includes noise and vibration sensitive receptors within 300m of the Order Limits. This distance has been selected as construction noise predictions (based on guidance in BS 5228-1 are generally reliable up 300m. Option 3 would introduce new sensitive receptors in Marton (to the north of the Order Limits) into the study area for noise.
- 8.8.2 The assessment of cable construction activities was undertaken using fixed thresholds for noise (65dB for the Lowest Observed Adverse Effect Level (LOAEL) and 75dB for the Significant Observed Adverse Effect Level (SOAEL) during core working hours). Consequently, no baseline surveys were considered necessary to define ambient noise conditions at receptors that may be affected by temporary construction activities along the Grid Connection Corridor.

Key Issues & Mitigation

- 8.8.3 There are a number of sensitive residential receptors (conservatively estimated at approximately five receptors) at the south edge of Marton that are in close proximity to Option 3. Construction activity would be closer to these receptors as compared with Options 1 and 2. Overall impact would slightly increase, however there would be no significant environmental effects assuming the mitigation set out below is adopted.
- 8.8.4 To reduce noise and vibration emissions due to construction activities, measures to control noise as defined in Annex B of BS 5228-2 and measures to control vibration as defined in Section 8 of BS 5228-2 would be adopted where reasonably practicable. These embedded measures represent Best Practicable Means and would be secured within the **Framework CEMP [document 7.3]** for the construction phase and **Framework DEMP [REP4-037]** for the decommissioning phase. This includes a communication strategy so occupants of affected properties would be notified of the timings and duration of works. Other measures include the use of acoustic fencing and alternative quieter equipment to ensure the SOAEL (75 dB) is not exceeded where practicable. Additionally, the final cable route would be designed to maximise the distance to sensitive receptors as far as reasonably practicable.
- 8.8.5 As construction traffic routes would be unchanged for Option 3, the results of the construction traffic noise assessment in the ES (and therefore Options 1 and 2) are still valid and no significant effects are identified.

Conclusions

- 8.8.6 The findings within ES Chapter 11: Noise and Vibration [APP-020/3.1] would remain unchanged, as Option 3 will not result in any additional significant residual effects on noise sensitive receptors when compared to Options 1 and 2 assuming heavy plant and vibratory rollers are not operated within 15m of residential properties to the south of Marton. The works for Option 3 would increase noise levels at new receptors in Marton, when compared to Options 1 and 2 so would be slightly worse from a noise perspective.

8.8.7 No significant effects are identified due to construction traffic noise.

8.9 Land Ownership

8.9.1 This option for the cable route contains a total of six landowners as seen in the plan in Figure 3-1. Following initial conversations, two landowners indicated that they would be strongly opposed to the cable route passing through their land along this route so compulsory acquisition would be necessary to implement this option. One of these landowners is also affected by Options 1 and 2 and has said they would object to Option 3 but not to Options 1 or 2.

8.9.2 The other four landowners were open to discussions, but there is no certainty that any land could be obtained by negotiation. This option has a greater amount of land and a larger number of landowners who have expressed that they would object to the acquisition of their land than Options 1 and 2.

8.10 Conclusion

8.10.1 Option 3 involves extending the Order Limits to the agricultural fields north of the current grid connection corridor alignment and to the immediate south of Marton. Option 3 would avoid any adverse impacts on the proposed barns.

8.10.2 A change in the cable corridor to include this area would not lead to any new or different significant environment effects and the overall conclusions of the Gate Burton ES would remain the same. However, the route is less preferred from an environmental perspective than Options 1 and 2 because it would affect additional hedgerows, an additional watercourse and additional trees protected by TPOs. It would also locate construction works closer to Marton and a PRoW which is slightly worse from a noise and visual perspective. Option 3 would also affect an additional potential earthwork. Mitigation measures would ensure none of these minor differences would result in additional significant effects.

8.10.3 From an access design perspective, it is recommended that no change to access proposals would be made compared to Options 1 and 2.

8.10.4 Regarding land ownership, there are two landowners that strongly oppose the cable route passing through their land. It is considered possible that agreement might be reached to obtain land through negotiation with the other four landowners. Whilst this option avoids the land owned by Landowner D and may reduce or remove their objection, it would introduce objections from two other parties. This Option would also introduce more landowners than Options 1 and 2, including landowners not previously included within the Order limits, who have not therefore been consulted on land acquisition to date. Option 1 affects five landowners compared to six for Option 3. In landowner terms, this option is not preferred over the existing Grid Connection Corridor. This Option is not likely to remove the need for compulsory acquisition and is worse from an environmental perspective than Options 1 and 2. Therefore, Option 3 is not preferred over the existing Grid Connection Corridor.

9. Option 4: South of the Barns

9.1 Introduction

9.1.1 This option is located within the existing shared Grid Connection Corridor to the east of the A156 but is then located south of the corridor to the west of the A156. This route would avoid the barns but would still affect land owned by Landowner D. The existing use of Option 4 land is primarily for agricultural production with an orchard and residential play area to the immediate south of Landowner D's land. This option considers utilising HDD or an open cut trench solution.

9.2 Planning Assessment

9.2.1 Option 4 follows much of the existing Order Limits and therefore planning constraints are similar to those of Option 1. As with Options 2 and 3, potential impacts on the barns would be avoided due the cable route in this area now being located to the immediate south.

9.3 Ecology

Baseline & Survey

9.3.1 Option 4 is predominantly within the existing Grid Connection Corridor and a small section is outside of the original Order Limits, but within some of the study areas (dependent on the receptor) used during the ecological assessment to inform the baseline for the existing Scheme as described in ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1] and accompanying appendices.

9.3.2 Site surveys, to identify ecological receptors within Option 4, were undertaken between August 2021 and October 2022. A walkover survey, within the orchard area and land to the immediate south, was undertaken on 10 July 2023.

9.3.3 Known ecological receptors for consideration within Option 4 of the Grid Connection Corridor are:

- Notable habitats, including hedgerows, individual trees, ponds and a watercourse (Marton Drain – see Figure 5-2);
- A pond supporting Great Crested Newt, to the east of Option 4 (see Figure 5-2);
- Semi-improved grassland habitat, to the east of the A156, supporting a population of two species of reptile;
- Breeding birds;
- Riparian mammals (Water Vole presence from desk study records); and
- A main Badger sett.

- 9.3.4 There are no statutory or non-statutorily designated sites within Option 4 of the Grid Connection Corridor.
- 9.3.5 There are no additional ecological receptors within the orchard area, or land to the immediate south where Option 4 is proposed, when compared to Option 1.

Key Issues & Mitigation

- 9.3.6 The key issues and mitigation are the same as per Option 1 with retention and avoidance of notable habitats, including hedgerows and individual trees and precautionary methods of work or avoidance of areas where protected species are known to be present.

Conclusion

- 9.3.7 Option 4, to the east of the A156, tracks predominantly through low-value improved grassland habitat and would reduce the amount of semi-improved grassland removed, compared to Options 1, 2 and 3. This route does not involve the additional effects to trees and hedgerows associated with Option 3 so is slightly better from an ecological perspective. The different grassland affected also means it is very slightly better than Options 1 and 2 from an ecological perspective although this difference is very marginal given grassland can be reinstated over the cable route after construction.
- 9.3.8 There are no different ecological receptors within Option 4 of the Grid Connection Corridor, when compared to Options 1 and 2 and the ecological receptors that have been identified within Option 4 are already reported. Therefore, the statements and conclusions made in ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1] would remain valid for Option 4.
- 9.3.9 As for Option 1, mitigation will be required to avoid impacts on known ecological receptors as summarised above and described in ES Chapter 8: [REP4-008/3.1] and the Framework CEMP [document 7.3]. As for Option 1, there are no significant effects for Option 4 with regard to ecology and biodiversity and the conclusions remain as per ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1].

9.4 Cultural Heritage

Baseline & Survey

- 9.4.1 Option 4 falls within the defined study areas for cultural heritage as described for Option 1 above. However, a portion of Option 4 is outside the Grid Connection Corridor for Option 1 and therefore has not been subject to non-intrusive and/or intrusive archaeological surveys as part of the submitted DCO applications.
- 9.4.2 Due to land access constraints, no additional geophysical survey was undertaken within the Option 4 Grid Connection Corridor to support this Options Report.
- 9.4.3 As with Options 1 and 2, identified non-designated archaeological assets that extend into Option 4 comprise cropmarks of a probable Roman trackway and field boundaries to the south-east of Marton (MLI52489), and post-medieval

flood defence earthworks (MLI52488) which extend partially into the Grid Connection Corridor (see Figure 5-1). Geophysical survey (ES Appendix 7-D **[APP-120/3.3]**) and trial trenching (ES Appendix 7-E **[APP-123/3.3]**) were undertaken within the Grid Connection Corridor.

- 9.4.4 With regards to the setting of designated and non-designated heritage assets, there are eight listed buildings located in Marton relevant to the assessment of this Option; seven listed at Grade II and one, the Church of St Margaret of Antioch, listed at Grade I.

Key Issues & Mitigation

- 9.4.5 Significant effects (moderate adverse) are assessed prior to additional mitigation due to the loss of multiple elements of the Roman trackway and enclosures (MLI52489) (ES Chapter 7: Cultural Heritage **[APP-016/3.1]**). The partial loss of a small proportion of the post-medieval flood defence earthworks (MLI52488) is assessed as a negligible effect, which is considered to be not significant.
- 9.4.6 Archaeological mitigation would be as for Option 1 in respect of both the Roman trackway and enclosures (MLI52489) (Site 9 – strip, map and record) and the probable postmedieval flood defence earthwork (MLI52488) (Site 10 – reinstatement of the earthwork following construction of the cable corridor). The mitigation through archaeological investigation and recording would reduce the magnitude of impact on these assets resulting in residual minor adverse effects, which are considered not to be significant.
- 9.4.7 With regard to the setting of designated and non-designated heritage assets, Option 4 will not result in any impacts or effects to the designated assets in Marton.

Conclusions

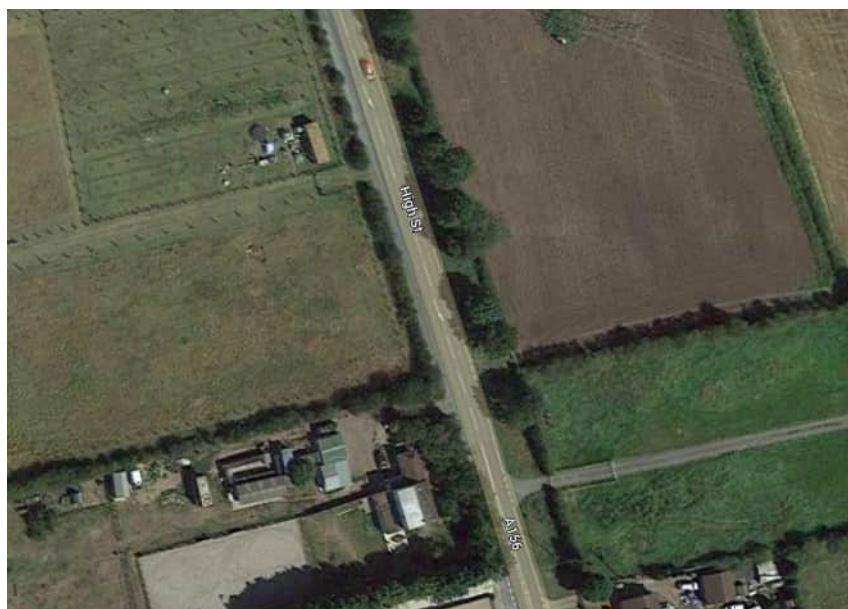
- 9.4.8 As for Options 1 and 2, without mitigation, Option 4 would have significant effects on one archaeological heritage asset, a Roman trackway and enclosures (MLI52489); this is assessed as a moderate adverse effect. Mitigation through archaeological investigation and recording would reduce the magnitude of impact on this asset, resulting in a residual minor adverse effect, which is not significant.
- 9.4.9 Additionally, as for Options 1 and 2, Option 4 would result in a negligible effect on the post-medieval flood defence earthworks (MLI52488) which is not significant. The Archaeological Mitigation Strategy **[document 7.6]** includes provision for reinstatement of the earthwork following construction of the cable corridor (Site 10). Option 4 would have no additional significant effects on archaeological assets, when compared to Options 1 and 2.
- 9.4.10 With regards to the setting of designated and non-designated heritage assets Option 4 will not result in any significant effects.
- 9.4.11 The statements and conclusions made within ES Chapter 7: Cultural Heritage **[APP-016/3.1]** and the Archaeological Mitigation Strategy **[document 7.6]** would remain unchanged if this option were taken forward.

9.5 Traffic, Transport and Access

Baseline & Survey

- 9.5.1 The baseline remains unchanged from that reported within ES Chapter 13: Traffic and Transport [REP4-012/3.1], as no additional access points or receptors need to be considered as a result of Option 4. No additional surveys have been carried out or are required on traffic and transport.
- 9.5.2 From an access design perspective, installing the cables to the south of the orchard would not change the nature of the access proposal to the west of the A156 High Street, with the access point 12/09 presented on Sheet 12 of the Streets, Rights of Way and Access Plans [REP2-025/5.3], remaining the preferred access location.
- 9.5.3 For access to the east of the A156 High Street, it is recommended that the current access proposal at point 12/10 presented on Sheet 12 of the Streets, Rights of Way and Access Plans [REP2-025/5.3] is retained. A field access is available to access the land to the east of the A156 High Street closer to the cable route to the south of the orchard as shown in Figure 9-1. However, to upgrade this existing field gate access to accommodate the abnormal load vehicle 24.56m in length, additional sections of hedgerow would need to be removed in conjunction with established trees sited in the southbound verge. Furthermore, the access would be considerably closer to the residential properties to the south which is anticipated to be more disruptive to residents than the current access proposal.

Figure 9-1 – Existing Field Access to the East of the A156 High Street



- 9.5.4 From an access design perspective, it is recommended that no change to the access locations presented in Option 1 would be made for the relocation of the cables to the north of the barn. Therefore, there would be no change in the effects compared to Options 1 and 2.

Key Issues & Mitigation

- 9.5.5 There are no further issues or mitigation required for Option 4, to those previously considered within ES Chapter 13: Traffic and Transport **[REP4-008/3.1]**. TTM should be implemented on the A156 where required, when the Grid Connection Cables are installed to connect Cottam Substation with the Solar and Energy Storage Park.

Conclusions

- 9.5.6 The findings within ES Chapter 13: Traffic and Transport **[REP4-008/3.1]** would remain unchanged from Option 1.

9.6 Water Environment

Baseline & Survey

- 9.6.1 The Water Environment baseline for Option 4 within the Grid Connection Corridor and a 1km study area either side is generally the same as that described in ES Chapter 9: Water Environment **[APP-018/3.1]**, and in terms of WFD waterbodies within ES Appendix 9-A: WFD Assessment **[APP-137/3.3]**.
- 9.6.2 The key surface water feature in the study area is Marton Drain as described above. There is also an agricultural, straight drainage ditch that may be crossed by Option 4 at approximate NGR SK 84180 81356. This ditch is a low importance receptor for water quality and morphology.
- 9.6.3 Flood risk to the proposed cable route whereby cables are routed to the south of the proposed barns and across the orchard within revised Order Limits is considered at high risk from fluvial, artificial and groundwater sources following a desk-based review of information within ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]**.

Key Issues & Mitigation

- 9.6.4 As with Options 1, 2, and 3, Marton Drain would need to be crossed by the Grid Connection Corridor and this would be mitigated using non-intrusive techniques and standard mitigation as described above. The crossing point for Option 4 would be in the same reach of the watercourse as for the other options.
- 9.6.5 The potential crossing of the unnamed ditch for Option 4 would be expected to use an intrusive open-cut approach and was not assessed in the ES. A pre-works morphology survey of the channel would be undertaken prior to construction. The pre-works survey is to ensure that there is a formal record of the condition of each watercourse prior to commencement of works to install cables beneath the channel. The survey is a precautionary measure so that should there be any unforeseen adverse impacts there is a record against which any remedial action can be determined.
- 9.6.6 At this stage it is assumed that where open-cut crossings are required that water flow would be maintained by damming and over pumping. Works should be carried out in the drier months where possible as this would reduce the risk of pollution propagating downstream, particularly as the ditch is expected to

be ephemeral. Once the watercourse is reinstated, silt fences, geotextile matting or straw bales should be used initially to capture mobilised sediments until the watercourse has returned to a settled state. It will be a requirement that the watercourse is reinstated as found and water quality monitoring will be undertaken prior to, during, and following on from the construction activity. Regular observations of the watercourse will also be required post-works during vegetation re-establishment of the banks, especially following wet weather, to ensure that no adverse impacts have occurred.

- 9.6.7 The requirements above would be described in the Waste Management Plan (WMP) (technical appendix of the final CEMP). Given the mitigation, any impact associated with the open cut crossing would be temporary and minor in terms of water quality and temporary and moderate for morphology. As a low importance receptor for both water quality and morphology this would result in a slight adverse effect in both cases, which is not significant.
- 9.6.8 Flood risk to the proposed cable route whereby cables are routed to the south of the proposed barns and across the orchard within revised Order Limits is considered to be at low risk following the embedded mitigation measures as described in ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]**.

Conclusions

- 9.6.9 There are no new significant effects identified for Option 4, when compared to Options 1 and 2, and the conclusions would remain as per ES Chapter 9: Water Environment **[APP-018/3.1]** and ES Appendix 9-A: WFD Assessment **[APP-137/3.3]**.
- 9.6.10 There are no new significant effects for this option with regard to flood risk. When compared to Options 1 and 2 and the conclusions remain as per ES Appendix 9-D: Flood Risk Assessment **[APP-142/3.3]**.

9.7 Landscape and Visual

Baseline and Survey

- 9.7.1 The landscape and visual baseline for Option 4, which is located mainly within the Grid Connection Corridor, is captured within the 2km study area radius to either side of the Grid Connection Corridor as described in ES Chapter 10: Landscape and Visual Amenity **[REP2-010/3.1]** as well as in ES Appendices 10-C and 10-E **[APP-146 and 148/3.3]**. A site survey was conducted in 2023 for the additional area.

Key Issues & Mitigation

- 9.7.2 A key issue is the removal of existing vegetation to facilitate the construction works, which will result in temporary significant effects. Option 4 would mean that the Grid Connection Corridor moves slightly south and closer to residential receptors along the A156 / High Street.
- 9.7.3 Embedded Mitigation measures are stated within the OLEMP **[REP2-037/7.10]**. The objective is to minimise vegetation removal and the retention of habitats where possible. The restoration of habitats and the replanting of

removed vegetation, where feasible, shall be carried out at the completion of construction works.

Conclusion

- 9.7.4 No significant landscape character effects have been identified for Local Landscape Character Areas (LLCA) 09: Trent Plain South and LLCA 13 Trent Plain in which Option 4 is located.
- 9.7.5 Visual effects will be experienced by a range of receptors mainly local residents, road users / public transport, recreational users, and outdoor workers / farmers. Effects during construction have been identified as moderate adverse and therefore significant but temporary. Visual effects at operation have been assessed as negligible neutral and therefore not significant. The slight relocation of a section of the Grid Connection Corridor further south and closer to nearby residents will increase visual effects slightly during construction when compared to Option 1 but will remain moderate adverse and temporary. At operation, visual effects will remain negligible and neutral.
- 9.7.6 The statements and conclusions made in ES Chapter 10: Landscape and Visual Amenity [REP2-010/3.1] as well as in ES Appendices 10-D and 10-F [APP-151/3.3] will therefore remain unchanged, although Option 4 is slightly worse from a landscape and visual perspective than Options 1 and 2.

9.8 Noise and Vibration

Baseline & Survey

- 9.8.1 The noise and vibration study area presented in ES Chapter 11: Noise and Vibration [APP-020/3.1] includes noise and vibration sensitive receptors within 300m of the Order Limits. This distance has been selected as construction noise predictions (based on guidance in BS 5228-1 are generally reliable up 300m. No new sensitive receptors would be introduced into the study area; however, the Order Limits would be closer to sensitive receptors on the west side of the High Street.

Key Issues & Mitigation

- 9.8.2 There are a number of sensitive receptors (conservatively estimated at approximately ten receptors) on either side of the High Steet that are in close proximity to the Option 4 boundary. These properties have the potential to experience significant effects during cable laying activities, depending on the final location of the construction activities.
- 9.8.3 The assessment of cable laying noise and vibration considers the potential for works taking place at any location in the Order Limits to cover a worst-case. As such, the final cable route could be designed so sensitive receptors are greater than 15m from any works site as far as possible.
- 9.8.4 To reduce noise and vibration due to construction activities, measures to control noise as defined in Annex B of BS 5228-2 and measures to control vibration as defined in Section 8 of BS 5228-2 would be adopted. These

embedded measures represent Best Practicable Means and would be secured within the Framework CEMP [document 7.3].

- 9.8.5 The results of the construction traffic noise assessment in the ES remain valid and no significant effects are identified, although Option 4 is slightly worse from a noise perspective than Options 1 and 2 due to being closer to sensitive receptors.

Conclusions

- 9.8.6 The findings within ES Chapter 11: Noise and Vibration [APP-020/3.1] would remain unchanged, as, with mitigation implemented, Option 4 will not result in any additional significant residual effects on noise sensitive receptors when compared to Options 1 and 2. However, the works would increase noise levels at new receptors either side of High Street when compared to Options 1 and 2.
- 9.8.7 No significant effects are identified due to construction traffic noise.

9.9 Land Ownership

- 9.9.1 This option for the cable route contains a total of six landowners as seen in Figure 3-1. This Option would still require development on land owned by Landowner D and discussions to date have not suggested that a relocation to the south of their land would remove their objection. This option would therefore require compulsory acquisition of land in the same parcel as Options 1 and 2. The remaining five landowners have indicated that they are open to discussions on obtaining land by negotiation but given the need for certainty, compulsory acquisition powers would still be needed to provide certainty that the grid connection could be developed.

9.10 Conclusion

- 9.10.1 Option 4 primarily involves much of the existing Grid Connection Corridor included in the DCO application as submitted. The proposed change includes areas to the south of the barns but would still affect Landowner D's land.
- 9.10.2 There would be no additional or new significant environmental effects associated with Option 4 compared to Options 1 and 2. Option 4 would be slightly worse from a noise, landscape and visual impact perspective due to the cable route moving closer to properties; but very slightly better than Options 1 and 2 ecologically. The route would still pass through Landowner D's land and would introduce an additional landowner not affected by Options 1 and 2. Therefore, this route would not avoid the need for compulsory acquisition and is not considered to be better than Options 1 and 2 from a land acquisition perspective.
- 9.10.3 Regarding access, installing the cables to the south of the orchard will not change the nature of the access proposal, with the access point 12/09 remaining the preferred access location. For access to the east, it is recommended that access proposal 12/10 is maintained. Further consideration may need to be given to a potential field access to the south as this would site it closer to residential receptors and require vegetation removal.

Overall, it is recommended for Option 4, that no change to the access locations presented in Option 1 are made for the relocation of the cables to the south of the proposed development.

- 9.10.4 Overall, Option 4 is considered a viable alternative and would not result in any additional new or significant effects. However, Option 4 is not likely to avoid the need for compulsory acquisition and is slightly worse than Option 2 from a planning and environmental perspective. Given it would avoid impacting the barns but would be closer to properties and involve additional land that has not previously been consulted on by the Applicant, it is considered similar to Options 1 and 2 when considered overall. Therefore, Option 4 is not preferred over the existing Grid Connection Corridor.

10. Option 5: Route South

10.1 Introduction

10.1.1 Option 5 considers extending the Order Limits to agricultural land to the south of Option 4. This Option would cross the Marton Drain Catchment to the east when travelling from Cottam Substation before moving north to join the existing cable route to the southeast of Marton.

10.2 Planning Assessment

10.2.1 Option 5 extends further to the south than all other options. This area where Option 5 extends is characterised by agricultural fields of a uniform shape interspersed with hedgerows and trees. The Marton Drain waterbody flows across the south east of the cable route and a number of non-designated heritage assets have been identified within the proposed route for Option 5. The potential impacts on these constraints are considered in more detail below.

10.2.2 The Scheme would not affect the barns located further north.

10.2.3 Any impacts on agricultural land in this area will be temporary, with these occurring during the installation of the cable. Once this is complete, the land can be returned to its previous agricultural use.

10.3 Ecology

Baseline & Survey

10.3.1 Option 5 routes to the south of the existing Grid Connection Corridor; however, this area is within some of the study areas (dependent on the individual receptor) used during the ecological assessment to inform the baseline for the existing Grid Connection Corridor, as described in ES Chapter 8: Ecology and Nature Conservation [REP4-008/3.1] and accompanying appendices.

10.3.2 Site surveys, to identify ecological receptors within Option 5 were undertaken within accessible areas of Option 5 on 6 July 2023.

10.3.3 Known, or predicted, ecological receptors for consideration within Option 5 of the Grid Connection Corridor are:

- Notable habitats, including hedgerows, individual trees, arable field margins, ponds and watercourses (including Marton Drain)
- A pond supporting Great Crested Newt, to the east of Option 5 (as shown on Figure 5-1);
- Semi-improved grassland habitat, to the east of the A156, supporting a population of two species of reptile;
- Breeding birds;
- Trees supporting bat roosts;
- Riparian mammals (Water Vole presence from desk study records); and
- Potential for Badger setts.

10.3.4 There are no statutory or non-statutorily designated sites within Option 5 of the Grid Connection Corridor.

Key Issues & Mitigation

10.3.5 Land access within this area was limited and therefore assumptions have been made with regards to Option 5 based on known ecological receptors within this area (from the desk study); the results of the site survey undertaken on 6 July 2023; and via an appraisal of habitats using Ordnance Survey aerial imagery for non-accessible areas.

10.3.6 To the east of the A156, a smaller area of semi-improved grassland (known to support reptiles) would be utilised and temporarily removed to facilitate construction works. Mitigation for reptiles is already proposed for this area.

10.3.7 As the routing option heads south from this area, large areas were inaccessible for survey. However, individual trees have potential to support bats roosts, grassland habitats have the potential to support reptiles and there is a likelihood of badger setts being present.

10.3.8 To the west of the A156, Option 5 traverses arable farmland after crossing Marton Drain.

10.3.9 Requirements for mitigation would be similar to other options, with retention and avoidance of notable habitats, including hedgerows and individual trees and precautionary methods of work or avoidance of areas where protected species are known, or likely to be, present.

10.3.10 Broadly, mitigation would include:

- Mitigation for reptiles, breeding birds and Great Crested Newt within the semi-improved grassland to the east of the A156 and within any other areas of grassland habitat, on the assumption of the presence of reptiles with vegetation clearance as per that for areas to the east of the A156 and used for Options 1 and 2. The timing of works should also avoid the breeding bird season (typically March to August, inclusive), particularly where hedgerows, scrub and trees are removed.
- Retention of and avoidance (including a 30m buffer) of any Badger setts (the locations of which would be determined during pre-commencement checks, prior to construction);
- Retention of and avoidance (including a 15m buffer) of any trees with the potential to support bat roosts; and
- Non-intrusive crossing methods for watercourses.

10.3.11 Whilst it may not be possible to avoid every hedgerow, those surveyed within Option 5 appear to be species-poor and not important (using the ecology criteria within the Hedgerow Regulations). There remains the possibility that some hedgerows that were not surveyed in July 2023, may be important. However, embedded mitigation measures are described within the OLEMP **[REP2-037/7.10]** and the objective is to minimise vegetation removal and retain habitats, where possible. Post-construction, habitats would be restored.

Conclusion

- 10.3.12 Providing mitigation is adopted to avoid impacts on ecological receptors, following the measures detailed within the Framework CEMP **[document 7.3]** then the conclusions and assessment within ES Chapter 8: Ecology and Nature Conservation **[REP4-008/3.1]** are still valid and will also apply to any known, or potential ecological receptors within Option 5 which were identified in July 2023. Therefore, there are no new likely significant effects for Option 5, when compared to Option 1 with regard to ecology and biodiversity, providing mitigation is adopted. The effects for Option 5 are considered to be comparable to Options 1 and 2 for ecology.

10.4 Cultural Heritage

Baseline & Survey

- 10.4.1 The baseline conditions for the Option 1 Grid Connection Corridor and associated study areas are presented in ES Appendix 7-A: Desk-based assessment **[APP-117/3.3]**. The Option 5 Grid Connection Corridor falls within these defined study areas (as described for Option 1); however, most of the Option is outside the Grid Connection Corridor for Option 1 and therefore has not been subject to non-intrusive and/or intrusive archaeological surveys.
- 10.4.2 Due to land access constraints, only two additional land parcels within the Option 5 Grid Connection Corridor were subject to geophysical survey to support this Options Report. No features of archaeological origin were identified within these land parcels.
- 10.4.3 As with Option 1, identified non-designated archaeological assets that extend into the Option 5 Grid Connection Corridor comprise cropmarks of a probable Roman trackway and field boundaries to the south-east of Marton (MLI52489), and post-medieval flood defence earthworks (MLI52488). The remains of the Viking Great Army Camp at Torksey (MLI125067) also extends into the Option 5 Grid Connection Corridor. Additionally, a mound marked on the 1956 Ordnance Survey map (MLI52497), which is likely to be of prehistoric date and could be the remains of a burial mound, also lies within the Option 5 Grid Connection Corridor. Geophysical survey (ES Appendix 7-D **[APP-120/3.3]**) and trial trenching (ES Appendix 7-E **[APP-123/3.3]**) were undertaken within the Grid Connection Corridor.
- 10.4.4 With regards to the setting of designated and non-designated heritage assets, there are eight listed buildings located in Marton relevant to the assessment of this Option; seven listed at Grade II and one, the Church of St Margaret of Antioch, listed at Grade I.
- 10.4.5 There are two non-designated historic buildings of low value which are of relevance to the assessment of new or different significant effects due to Option 5; namely, Rectory Farm, now known as Poplar Farm (MLI50066), and Brampton Grange (MLI52496), both of which are partially surviving 19th century farmsteads.

Key Issues & Mitigation

- 10.4.6 Option 5 does not materially differ from Option 1 in terms of assessed effects on the Roman trackway and enclosures (MLI52489) and post-medieval flood defence earthworks (MLI52488).
- 10.4.7 Option 5 would additionally impact on the possible remains of a burial mound (MLI52497); there would be a high impact prior to additional mitigation on the low value asset due to the loss of multiple elements of the asset, resulting in a moderate adverse significance of effect, which is significant.
- 10.4.8 Option 5 would also additionally impact on the remains of the Viking Great Army Camp (MLI25067); there would be a low impact prior to additional mitigation on the high value asset due to the partial loss of a small proportion of the asset, resulting in a moderate adverse significance of effect, which is also significant.
- 10.4.9 Archaeological mitigation would be as for Option 1 in respect of the Roman trackway and enclosures (MLI52489) (Site 9 – strip, map and record) and the probable post-medieval flood defence earthwork (MLI52488) (Site 10 – reinstatement of the earthwork following construction of the cable corridor). The mitigation through archaeological investigation and recording would reduce the magnitude of impact on these assets resulting in residual minor adverse effects, which would not be significant.
- 10.4.10 Additional mitigation by archaeological investigation and recording would be required in respect of the possible remains of a burial mound (MLI52497) and the Viking Great Army Camp (MLI25067); which may be in the form of strip, map and record. The mitigation through archaeological investigation and recording would reduce the magnitude of impact on these assets resulting in residual minor adverse effects, which are considered to be not significant.
- 10.4.11 The Archaeological Mitigation Strategy **[document 7.6]** would need to be updated to include any new identified mitigation measures.
- 10.4.12 With regard to the setting of designated and non-designated heritage assets, Option 5 will not result in any impacts or effects to the designated assets in Marton.
- 10.4.13 With regards to the non-designated Rectory Farm (Poplar Farm) (MLI50066) Option 5 is located immediately to the west of the farmhouse. The farmhouse is oriented with its principal elevation facing south over its former garden plot. Modern agricultural buildings have replaced the historic farm buildings to its north side. The construction of the grid connections would take place within the principal views south from the farmhouse, over farmland and in views on approach to the farmhouse from the south. This will result in a very low impact, of temporary duration during construction. On this asset of low value, this results in a negligible significance of effect, which is not significant.
- 10.4.14 With regards to the non-designated Brampton Grange (MLI52496), Option 5 is located to the north and north-west of the asset and runs across the access drive to the building from the A156 High Street. The asset comprises an L-shaped farmhouse to the west of associated outbuildings that are the remains of a larger loose courtyard farm with its yard to the south of the farmhouse. The principal elevation of the farmhouse appears to face north, but the building

has been extended on that side. The farm now has an enclosed setting within mature trees, but historic Ordnance Survey maps indicate that the farm previously had an open aspect on all sides. Some vegetation removal on the outer fringes of the farm's land parcel may be required for construction of this Option and the access to the farm would also be impacted (see below).

- 10.4.15 Embedded Mitigation measures are stated within the OLEMP **[REP2-037/7.10]**. These include the commitment to minimise vegetation removal combined with the replanting of removed vegetation, where feasible, to be carried out at the completion of construction works. Avoidance of the impact of removing the farm's access track could be achieved through routing the option to the north of the access track, or, if HDD is to be undertaken to avoid the watercourse to the west of the A156 High Street, this could be extended to also HDD under the farm's access track and thus avoid the impact. If avoidance is not viable, additional mitigation of the impact of removal of the farm's access track would be temporary re-routing of the access with reinstatement on the original alignment following construction. The re-routing would also need to be designed to avoid permanent change to setting of the asset, with minimal vegetation removal.
- 10.4.16 The removal of vegetation required to the construction of this Option is not considered to result in an impact to the heritage value of the asset. Brampton Grange will, however, experience temporary impacts during the construction period through the temporary re-routing of this access track. This will result in low to medium impact (depending upon the design of the temporary access) on this asset of low value resulting in a negligible to minor effect which would be not significant. If the impact can be avoided there would be no change to the asset, resulting in a neutral effect.

Conclusion

- 10.4.17 As with Option 1, Option 5 will have significant effects on one archaeological heritage asset, a Roman trackway and enclosures (MLI52489), this is assessed as a moderate adverse effect. Mitigation through archaeological investigation and recording would reduce the magnitude of impact on this asset, resulting in a residual minor adverse effect, which is not significant.
- 10.4.18 Additionally, as for Option 1, Option 5 would result in a negligible effect on the post-medieval flood defence earthworks (MLI52488) which is not significant. The Archaeological Mitigation Strategy **[document 7.6]** includes provision for reinstatement of the earthwork following construction of the cable corridor (Site 10).
- 10.4.19 Option 5 would result in two new significant effects when compared to Option 1 (both moderate adverse) in respect of the possible remains of a burial mound (MLI52497) and the remains of the Viking Great Army Camp (MLI25067). Additional mitigation through archaeological investigation and recording would reduce the magnitude of impact on these assets resulting in residual minor adverse effects, which are not significant. The Archaeological Mitigation Strategy **[document 7.6]** would be updated to include any new identified mitigation measures.
- 10.4.20 With regards to the setting of designated and non-designated heritage assets Option 5 will not result in any significant effects, when compared to Option 1;

however, a new negligible effect is identified at the non-designated Rectory Farm (Poplar Farm) (MLI50066), of temporary duration during the construction period. This is due to the presence of construction activities within views to and from the asset's principal façade. The potential for a new negligible to minor effect of temporary duration during construction is also identified at Brampton Grange (MLI52496) if the temporary removal of its access track cannot be avoided.

10.4.21 With regards to the setting of designated and non-designated heritage assets, the findings within ES Chapter 7: Cultural Heritage **[APP-016/3.1]** are considered to remain unchanged, as Option 5 will not result in any new significant effects.

10.4.22 Overall, whilst additional effects are possible to mitigate to a certain extent, this option is worse than all other options from a cultural heritage perspective.

10.5 Traffic and Transport

Baseline & Survey

10.5.1 The baseline remains unchanged from that reported within ES Chapter 13: Traffic and Transport **[REP4-012/3.1]** as no additional access points or receptors need to be considered as a result of Option 5.

10.5.2 No additional surveys have been carried out (or are considered to be required) to those identified within ES Chapter 13: Traffic and Transport **[REP4-012/3.1]**.

10.5.3 From an access design perspective, installing the cables to the south will not change the nature of the access proposal to the west of the A156 High Street, with the access point 12/09 presented on Sheet 12 of the Streets, Rights of Way and Access Plans **[REP2-025/5.3]** remaining the preferred access location.

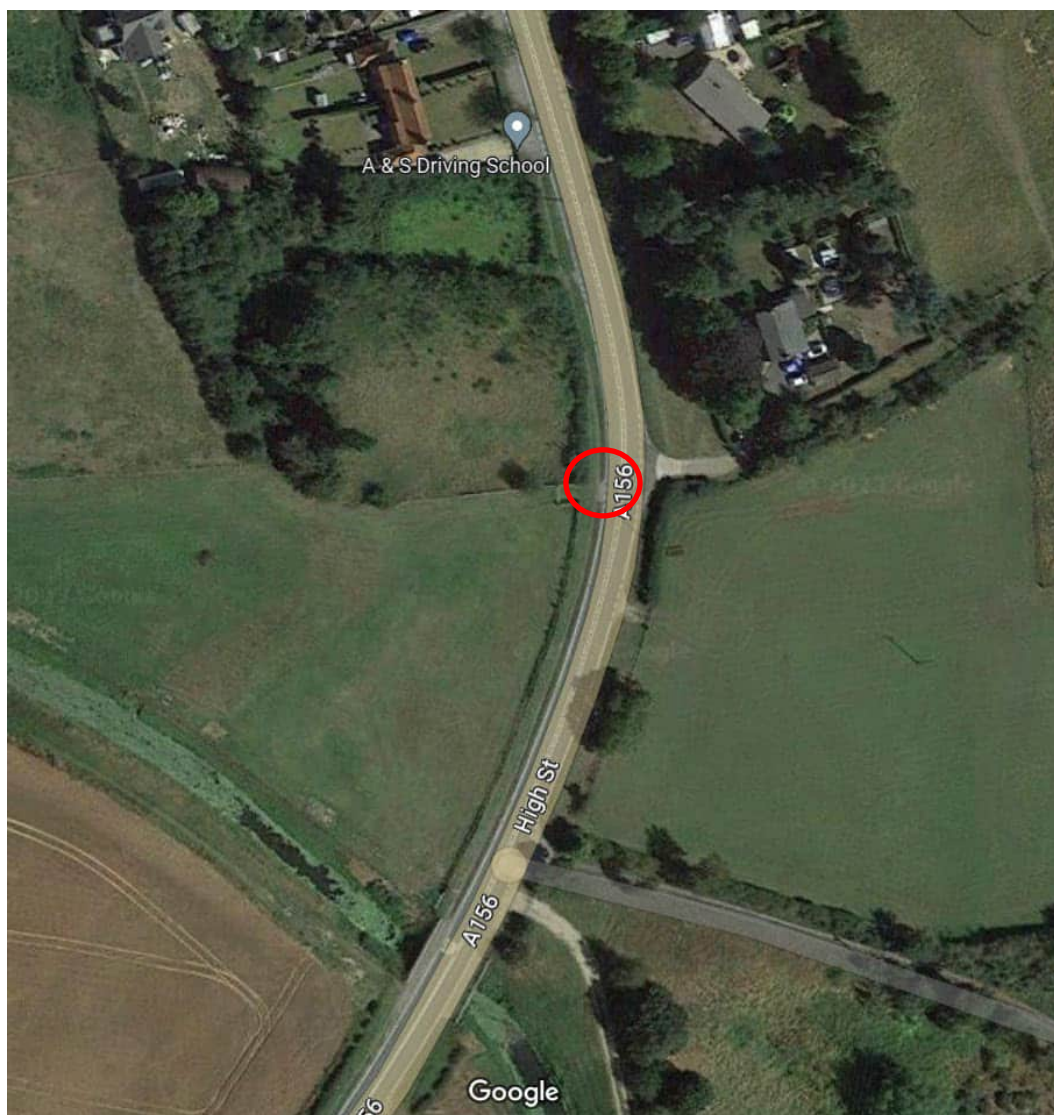


Figure 10-1 – Existing Field Gate Access

- 10.5.4 In the event that the existing access at point 12/10 on Sheet 12 of the Streets, Rights of Way and Access Plans **[REP2-025/5.3]** is considered unsuitable due to its distance from the cable route in this option, a new access to the east of the A156 High Street would be required.
- 10.5.5 An existing field gate access is available at the location circled in Figure 10-1. This access is located on the outside of a bend in the carriageway in the vicinity of an existing hedgerow to the north and an existing land boundary fence line to the south. To ensure that an appropriate level of visibility is achieved in accordance with the Design Manual for Roads and Bridges DMRB CD123, a visibility envelope of 160m would be required in accordance with a design speed of 85kph reflecting the posted speed limit of 50mph. This visibility splay would need to consider visibility to both the inside and outside of the major road in accordance with Figures 3.9 and 3.10 of DMRB CD123. Based upon a preliminary assessment, the visibility splay to the inside of the curved road would extend within the two land parcels located to the south of the existing property, which would impact on existing established vegetation that delineates the field boundaries. Of these land parcels, only the southernmost land parcel is currently in the proposed survey extents, with the land parcel closest to the existing property excluded.

- 10.5.6 To the south of the access a similar situation is observed, with a small section of hedgerow on the northbound carriageway to the south of the watercourse likely to be impacted.
- 10.5.7 Therefore, from an access design perspective, access to the west of the A156 High Street would be unaffected by this option. In the event that proposed access 12/10 as shown on Sheet 12 of the Streets, Rights of Way and Access Plans [REP2-025/5.3] is not practical for use in this option. It is anticipated that the upgrade of the existing access would require a greater length of hedgerow removal when compared to the Option 1 to ensure that the required junction visibility is achieved.
- 10.5.8 Alternatively, if the access 12/10 as shown on Sheet 12 of the Streets, Rights of Way and Access Plans [REP2-025/5.3] is still able to be utilised to access this southern parcel, there would be no change in effects compared to Options 1 and 2.

Key Issues & Mitigation

- 10.5.9 There are no further issues or mitigation required as a result of Option 5, to those previously considered within ES Chapter 13: Traffic and Transport [REP4-008/3.1]. TTM should be implemented on the A156 where required, when the Grid Connection Cables are installed to connect Cottam Substation with the Solar and Energy Storage Park. Mitigation may be required for additional vegetation removal for the access, likely to involve reinstatement of vegetation as far as possible after construction.

Conclusions

- 10.5.10 The findings within ES Chapter 13: Traffic and Transport [REP4-008/3.1] are considered to remain unchanged from Option 1.

10.6 Water Environment

Baseline & Survey

- 10.6.1 The Water Environment baseline for Option 5 within the Grid Connection Corridor and a 1km study area either side is similar to that described in ES Chapter 9: Water Environment [APP-018/3.1], and similar in terms of WFD waterbodies within ES Appendix 9-A: WFD Assessment [APP-137/3.3].
- 10.6.2 The key water feature in the study area is Marton Drain, as described above in relation to Options 1 to 4, although the crossing point is approximately 550m upstream of other options. The character of the watercourse here remains as previously described.
- 10.6.3 Flood risk to the proposed cable route whereby cables are routed to the south of Marton within revised Order Limits is considered at high risk from fluvial, artificial and groundwater sources following a desk-based review of information within ES Appendix 9-D: Flood Risk Assessment [APP-142/3.3].

Key Issues & Mitigation

- 10.6.4 As with the other options, the key constraint to Option 5 is the crossing of Marton Drain which will be mitigated using non-intrusive techniques. The

Framework CEMP [**document 7.3**] and associated WMP will be followed which outline further measures to be taken to prevent the deposition of fine sediment or material in, and the pollution by sediment of, any existing watercourse.

- 10.6.5 The crossing point for Option 5 is around 550m upstream of the original crossing point, however, provided non-intrusive techniques are used and that measures outlined in the Framework CEMP and WMP are followed, there should be no additional adverse impacts to the watercourse compared to the other options.
- 10.6.6 Flood risk to the proposed cable route whereby cables are routed to the south of Marton within revised Order Limits is considered to be at low risk following the embedded mitigation measures as described in ES Appendix 9-D: Flood Risk Assessment [**APP-142/3.3**].

Conclusions

- 10.6.7 There are no new significant effects identified for Option 5, when compared to Option 1 and the conclusions remain as per ES Chapter 9: Water Environment [**APP-018/3.1**] and ES Appendix 9-A: WFD Assessment [**APP-137/3.3**].
- 10.6.8 There are no new significant effects for this option with regard to flood risk, when compared to Option 1 and the conclusions would remain as per ES Appendix 9-D: Flood Risk Assessment [**APP-142/3.1**].

10.7 Landscape and Visual

Baseline and Survey

- 10.7.1 The landscape and visual baseline for Option 5, which diverts south of the Order Limits submitted with the DCO Application, is captured within the 2km study area radius to either side of the grid connection corridor as described in GBEP ES Chapter 10: Landscape and Visual Amenity [**REP2-010/3.1**] as well as in ES Appendices 10-C and 10-E [**APP-146 and 148/3.3**]. A site survey was also conducted in 2023 to look at the route of Option 5.

Key Issues & Mitigation

- 10.7.2 A key issue is the removal of existing vegetation to facilitate the construction works, which will result in temporary significant effects. The Grid Connection Corridor will move south and travel along the north of Brampton Grange, which becomes a new residential receptor for Option 5. Embedded Mitigation measures are stated within the **Framework CEMP [document 7.3]** and **OLEMP [REP2-037/7.10]**. The objective is to minimise vegetation removal and the retention of habitats where possible. The restoration of habitats and the replanting of removed vegetation, where feasible, would be carried out at the completion of construction works.

Conclusion

- 10.7.3 No significant landscape character effects have been identified for Local Landscape Character Areas (LLCA) 09: Trent Plain South and LLCA 13 Trent Plain in which Option 5 is located.

- 10.7.4 Visual effects during construction will be experienced by fewer residential receptors than Options 1 and 2 as Option 5 moves further south and away from the southern fringe of Marton, but would be in close proximity to receptors along the High Street. Road users / public transport and outdoor workers / farmers will experience similar visual effects as assessed in the ES. Recreational users will see a slight increase in visual effects during construction as the Grid Connection Corridor will become more into view for users of P_{RoW} LL|Bram|66/1.
- 10.7.5 However, overall, visual effects during construction, which have been identified as moderate adverse and therefore significant but temporary, remain unchanged. Just the area where they occur moves further south. Visual effects at operation will remain negligible neutral and therefore not significant.
- 10.7.6 The statements and conclusions made in ES Chapter 10: Landscape and Visual Amenity [REP2-010/3.1] as well as in ES Appendices 10-D and 10-F [APP-147 and 149/3.3] remain unchanged and therefore Option 5 does not result in any additional significant effects when compared to Option 1.

10.8 Noise and Vibration

Baseline & Survey

- 10.8.1 The noise and vibration study area presented in ES Chapter 11: Noise and Vibration [APP-020/3.1] includes noise and vibration sensitive receptors within 300 m of the Order Limits. This distance has been selected as construction noise predictions (based on guidance in BS 5228-1) are generally reliable up to 300 m. Option 5 would introduce new sensitive receptors into the study area to the south of the Order Limits at Brampton Grange, High Street.
- 10.8.2 The assessment of cable construction activities was undertaken using fixed thresholds for noise (65dB for the Lowest Observed Adverse Effect Level (LOAEL) and 75dB for the Significant Observed Adverse Effect Level (SOAEL) during core working hours). Consequently, no baseline surveys were considered necessary to define ambient noise conditions at receptors that may be affected by temporary construction activities along the Grid Connection Corridor.

Key Issues & Mitigation

- 10.8.3 Although the Option 5 Order Limits would be closer to sensitive receptors on the west side of the High Street, the only receptor within 15m of the Order Limits is 66 High Street, Marton and therefore, without mitigation, there is the potential for significant noise effects at this location.
- 10.8.4 The assessment of cable laying noise and vibration considers the potential for works taking place at any location in the Order Limits to cover a worst-case. As such, it is likely that the potential for significant effects was overestimated and could be reduced by maximising the distance to sensitive receptors as far as reasonably practicable.
- 10.8.5 To reduce noise and vibration emissions due to construction activities, measures to control noise as defined in Annex B of BS 5228-2 and measures to control vibration as defined in Section 8 of BS 5228-2 would be adopted

where reasonably practicable. These embedded measures represent Best Practicable Means and would be secured within the **Framework CEMP [document 7.3]**.

- 10.8.6 The results of the construction traffic noise assessment in the ES would remain valid and no significant effects are identified.

Conclusions

- 10.8.7 The findings within ES Chapter 11: Noise and Vibration **[APP-020/3.1]** would remain unchanged, as Option 5 will not result in any additional significant residual effects on noise sensitive receptors when compared to Options 1 and 2. However, the works would slightly increase noise levels at new receptors either side of High Street, when compared to Options 1 and 2 and would introduce a new residential receptor to the south of the Option 5 Order limits.
- 10.8.8 No significant effects are identified due to construction traffic noise.

10.9 Land Ownership

- 10.9.1 This option for the cable route may contain six or seven landowners as seen in Figure 3-1. This corridor includes unregistered land parcels and work has been ongoing to establish the owners of the land through site notices and discussions with adjacent landowners. Ownership has been established over some areas and not others so the number of landowners affected is not yet certain. One landowner has stated that they would object to the acquisition of their land so compulsory acquisition would be required to implement this option. Additionally, given that the land ownership has not been established for all areas, there remains a risk of additional objections arising should the option be taken forward.

10.10 Conclusion

- 10.10.1 Option 5 involves extending the cable route to the south of the original alignment. This will avoid affecting the consented barns.
- 10.10.2 Option 5 would result in two new heritage effects when compared to Options 1 and 2 in respect of the possible remains of a burial mound (MLI52497) and the remains of the Viking Great Army Camp (MLI25067). Additional mitigation through archaeological investigation and recording would reduce the magnitude of impact on these assets resulting in residual minor adverse effects, which are not significant. However, this would be two additional adverse effects not experienced with other options. Further investigation could result in the need to avoid construction in parts of these areas.
- 10.10.3 Along the A156, there is a pinch point of approximately 70m width constrained by a residential property to the north and heritage assets to the south. This provides no construction flexibility or space for avoidance should it be required. This provides a risk to detailed design, particularly given the need for up to four separate cable routes to pass through this area. This route is also the longest, affecting the largest area of land and with additional costs associated with construction.

- 10.10.4 Option 5 also introduces new residential receptors both to the north and the south of the corridor compared to Options 1 and 2, although overall it is considered that noise effects should be possible to mitigate and landscape and visual effects remain broadly equal to those for Options 1 and 2.
- 10.10.5 This Option would see a number of new landowners impacted by the scheme, including some unregistered parcels and would still require compulsory acquisition. This option is not more favourable than the existing Grid Connection Corridor in land ownership terms.
- 10.10.6 Overall, Option 5 presents a number of new environmental impacts, specifically in relation to cultural heritage and construction disturbance to residential receptors. This option is therefore not preferred compared to Options 1 and 2.

11. Conclusion

- 11.1.1 This report identified and assessed five potential options for the alignment of the section of the shared Grid Connection Corridor to the south of Marton. Options 1 and 2 would be delivered within the current Grid Connection Corridor, whilst Options 3, 4 and 5 would require changes to the Order limits as set out in the DCO applications for the Gate Burton, Cottam and West Burton solar projects. The Tillbridge Solar DCO application is yet to be submitted and work on its cable route design is continuing.
- 11.1.2 Within Options 1 and 2, there is one landowner (Landowner D) who is objecting to the compulsory acquisition of rights to install and maintain the cable route. This landowner has also recently gained planning permission for agricultural barns within the Grid Connection Corridor that could be affected by the cable routes. For these reasons, work was undertaken to establish whether any other options would avoid the need for compulsory acquisition and/ or be justified to avoid impacting the consented barns. Initial discussions indicated that there would also be objections to acquisition for Options 3, 4 and 5; with these options also affecting more landowners than Options 1 and 2.
- 11.1.3 The grid connection is necessary for the delivery of the Scheme, the development of which is in the public interest due to its benefits. The Applicant considers that there are no alternatives to compulsory acquisition for land in this area because there are no routes where all landowners are committed to selling land by negotiation. No routes are better than Options 1 and 2 from a landowner perspective.
- 11.1.4 Landowners affected by the current route have been extensively consulted throughout development of the Scheme, including through statutory consultation and the process of notifying landowners following submission of a DCO application. Should the route change to affect new landowners or existing landowners in a different way, these landowners would have less opportunity to comment than those consulted earlier in the process.
- 11.1.5 Option 1 utilises the existing shared Grid Connection Corridor provided in the original DCO application and retains cables through the same land as is proposed for the barns. This option would either require the cables to be installed under the barns (1a and b), which would be challenging and undesirable, or the barns to be relocated/ not constructed (1c). Significant uncertainty is associated with all three options due to the lack of opportunity for site surveys and uncertainty over the construction of the barns. Therefore, to assess a worst case scenario it would be assumed that this option would result in the barns not being constructed or demolished. Whilst it is considered that this is still a viable option and justified for the construction of the scheme, it should only be pursued if Option 2 was not viable. From an environmental perspective, Options 1 and 2 are better than Options 3, 4 and 5.
- 11.1.6 Option 2 utilises the same Grid Connection Corridor but proposes to construct the cables around the agricultural buildings. This would avoid impacts on the agricultural barns associated with Option 1. Work has been undertaken and verified by the technical teams working across the four projects, with all parties

agreeing that there is sufficient space to implement this option subject to the parties adopting a suitable cable formation. The environmental constraints assessed against this Option would otherwise remain the same as for Option 1.

- 11.1.7 Option 3 proposes to re-route the cable to the north of Options 1 and 2 via an extension to the Order limits for the three submitted DCO applications. This would avoid any adverse impacts on the proposed barns. A change in the cable corridor to include this area would not lead to any new or different significant environment effects. However, the route is less preferred from an environmental perspective than Options 1 and 2 because it would affect additional hedgerows, an additional watercourse and additional trees protected by TPOs. It would also locate construction works closer to Marton and a PRoW. Option 3 would also affect an additional potential earthwork.
- 11.1.8 Option 4 proposes a route to the south of Options 1 and 2 and would require an extension to the Scheme's Order limits, though it primarily utilises much of the existing Grid Connection Corridor. This option would avoid affecting the proposed barns. No new significant effects are identified in relation to the environmental constraints and the access design remains unchanged. Option 4 would be slightly worse from a noise, landscape and visual impact perspective due to the cable route moving closer to properties; but very slightly better than Options 1 and 2 ecologically. Subject to ongoing landowner discussions, Option 4 is considered to be a viable alternative but is not better than Options 1 and 2 from an environmental perspective.
- 11.1.9 Lastly, Option 5 proposes to realign the cable route to agricultural fields to the south of the existing alignment via a change to the Order limits for the three submitted applications. This would avoid the proposed barns. A number of new ecological receptors are identified with mitigation measures proposed to reduce impact. The cultural heritage assessment has identified moderate adverse impacts on two archaeological assets, with proposed mitigation reducing this to residual minor adverse which is not significant. Identified temporary landscape impacts can also be mitigated. Option 5 is also the most challenging from an access perspective. Whilst Option 5 remains viable, a higher number of constraints are identified including cultural heritage impacts, the introduction of additional residential receptors to the north and south, limited construction flexibility either side of the A156 and a more complex access. It is therefore considered the worst of the five options from an environmental perspective.
- 11.1.10 Overall, each option can be considered viable from a planning environmental and technical perspective, with no show-stoppers to any of the options. All options have been assessed as technically feasible. All options would require compulsory acquisition and there are no differences between the options in terms of significant environmental effects. Option 1 is the only one that would affect construction of the consented barns. From an environmental perspective, Options 1 and 2 are marginally better than the other options. Option 5 is worse than Options 3 and 4 due particularly to the heritage constraints and technical width restriction. The Applicant considers that there are no clear benefits associated with Options 3, 4 and 5 and, therefore, is not proposing to amend the Order limits to incorporate any of these options.

Appendices

Appendix A – Figures

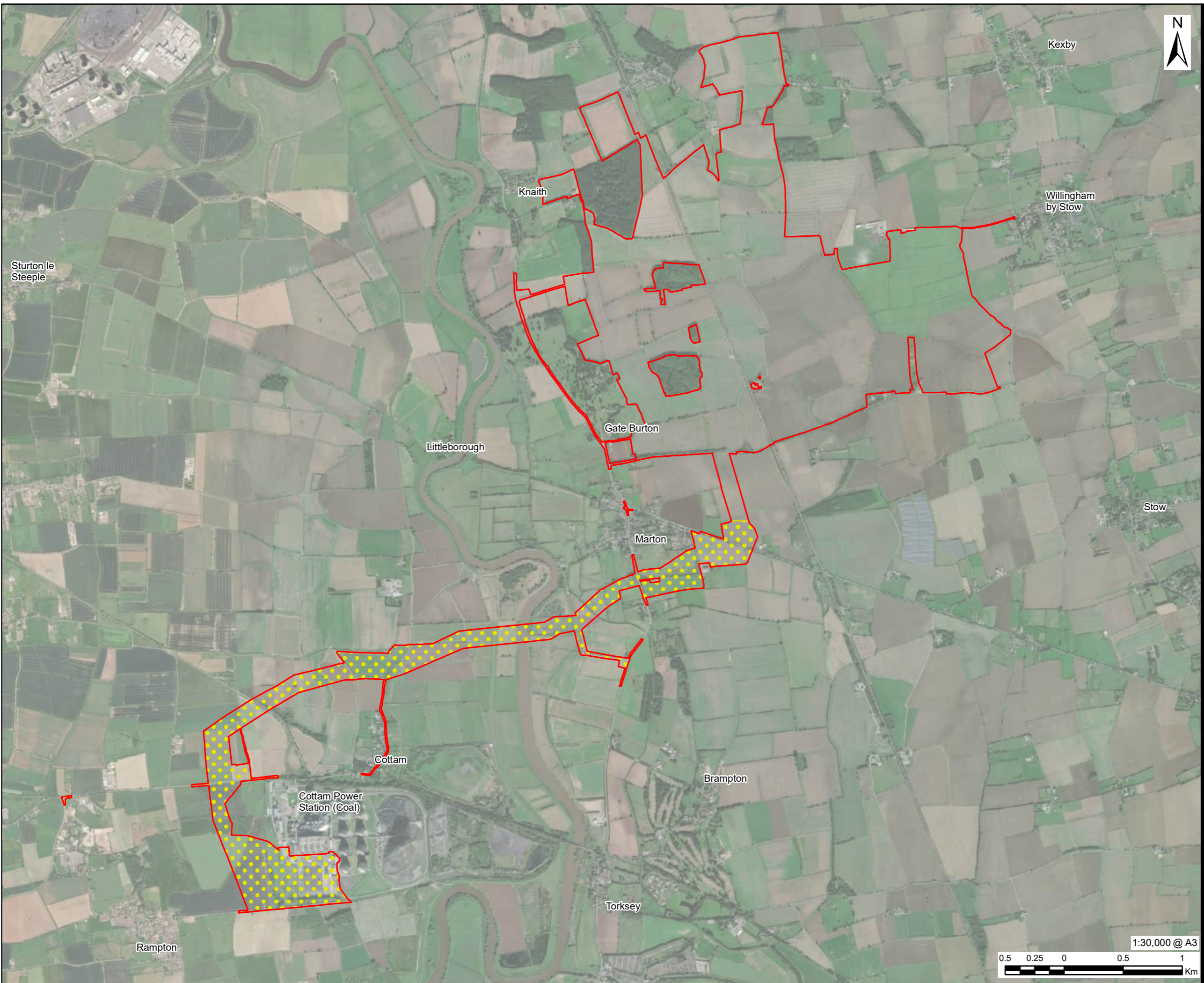
Appendix B – 145882, land at, High Street, Marton Application Site Location Plan and Site Layout Plan

12. Appendix A: Figures

The figures included in this report include:

- Figure 1-1: Shared Grid Connection Corridor
- Figure 1-2: Combined Plan Showing Four Solar Development Consent Order projects
- Figure 3-1: Land Ownership within the Option Area
- Figure 3-2: Options Considered on Ordnance Survey Base
- Figure 3-3: Options Considered on Satellite Base
- Figure 5-1: Environmental Constraints and Options Considered
- Figure 5-2: Environmental Constraints within the Option Area
- Figure 5-3: Allocations and Designations within the Option Area

Figure 1-1: Shared Grid Connection Corridor



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LEGEND

- Gate Burton Order Limits
- Gate Burton, West Burton and Cottam Shared Grid Connection Corridor

NOTES

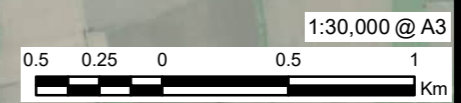
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ISSUE PURPOSE
 Environmental Statement

PROJECT NUMBER
 60664324

FIGURE TITLE
 Shared Grid Connection Corridor

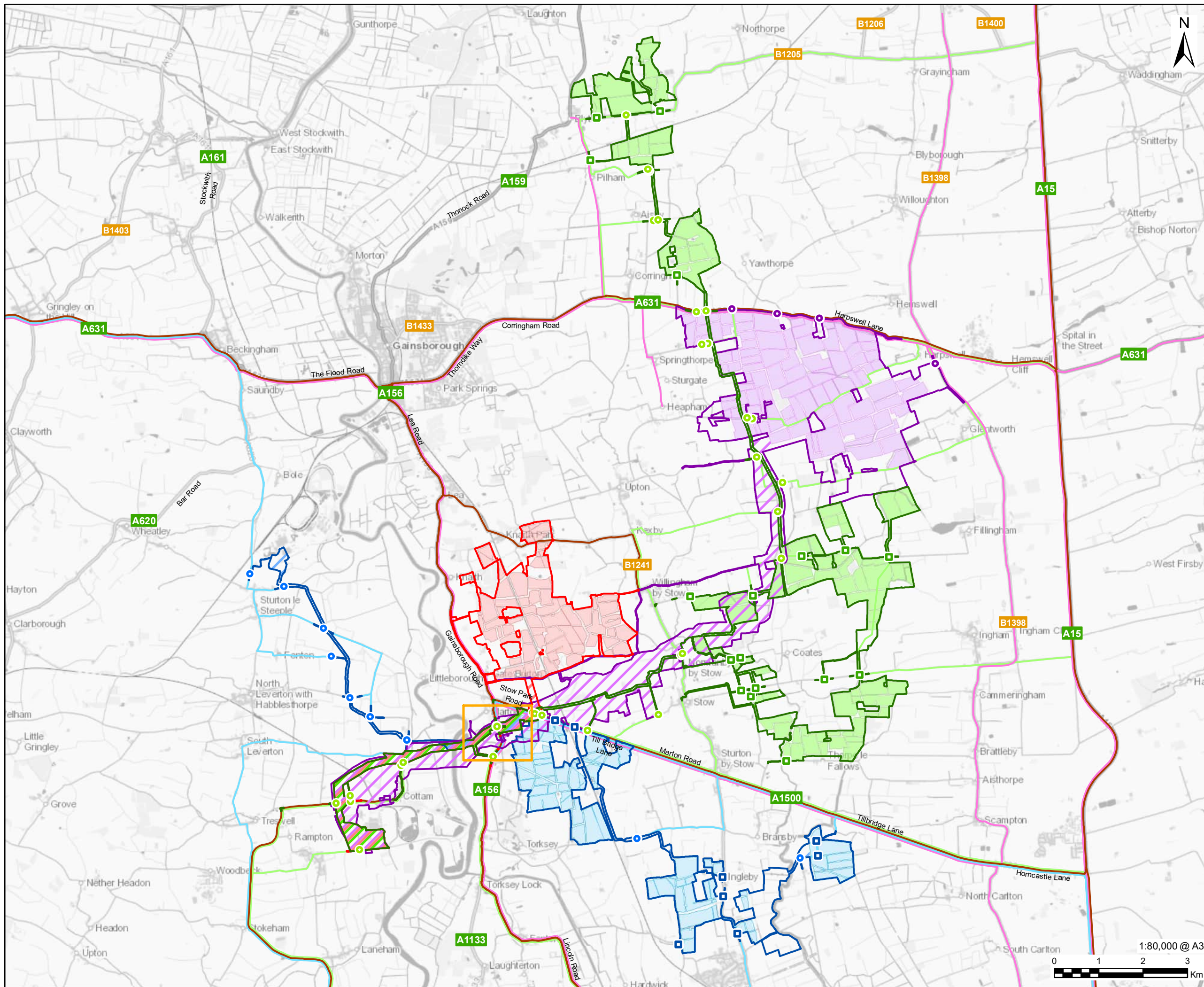
FIGURE NUMBER
 Figure 5-1



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Figure 1-2: Combined Plan Showing Four Solar Development Consent Order projects

Revision: 01 Drawn: VC Checked: RW Approved: WB Date: 2023-09-12
 Filename: \\na.aecomnet.com\fs\EMEA\Croydon\UKCRD1\Legacy\UKCRD1\Legacy\UKCRD1\FP001-V11E\projects\general\GIS\Projects\Gate Burton Energy Park\02_Maps\Environmental Statement\Exam\DCO_Interrelationship_Report_Overview.mxd



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LEGEND

- Area Under Consideration
- Cottam**
- Order Limits
- Grid Connection Corridor
- Solar Arrays
- Construction Route
- Construction Access
- Cable Route Access
- Gate Burton**
- Order Limits
- Grid Connection Corridor
- Solar Arrays
- Construction Route
- Tillbridge**
- Draft Order Limits (June 2023)
- Grid Connection Corridor
- Solar Arrays
- Construction Route
- Access Point
- West Burton**
- Order Limits
- Grid Connection Corridor
- Solar Arrays
- Construction Route
- Construction Access
- Cable Route Access

ISSUE PURPOSE
For Information

PROJECT NUMBER
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FIGURE TITLE
Gate Burton, Cottam, West Burton and
Tillbridge Energy Parks: Overview Plan

FIGURE NUMBER
Figure 1.2

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Figure 3-1: Land Ownership within Option Area



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 3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTATION

Key to Symbols

- Order Limits from DCO Submission
- Area Surveyed
- Landowner A
- Landowner B
- Landowner C
- Landowner D
- Landowner E
- Landowner F
- Landowner G
- Landowner H
- Landowner J
- Landowner K
- Landowner L
- Landowner M
- Landowner N
- Landowner P
- Landowner Q

Rev	Description	Date	By	Check	Approved
P03	Land information updated	19/09/23	SM	CG	JB
P02	Landowner references updated	11/09/23	SM	CG	DA
P01	First Issue	26/07/23	JD	AH	DA

Purpose of Issue
 FOR INFORMATION

Gateley / HAMER
 One Eleven Edmund Street
 Birmingham B3 2HJ
 Tel: 0121 234 0000
 Web: gateleyhamer.com

Client
 LOW CARBON

Project Title
 GATE BURTON ENERGY PARK

Drawing Title
 OPTION APPRAISAL PLAN - LAND OWNERSHIP
 SHEET 1 OF 1

Drawn	Checked	Approved	Date
SM	CG	JB	19/09/23

GH Project Number	Scale at A1
144625.001	1:2,500

Drawing Number	Revision
GH-144625001-OAP-LO	P03

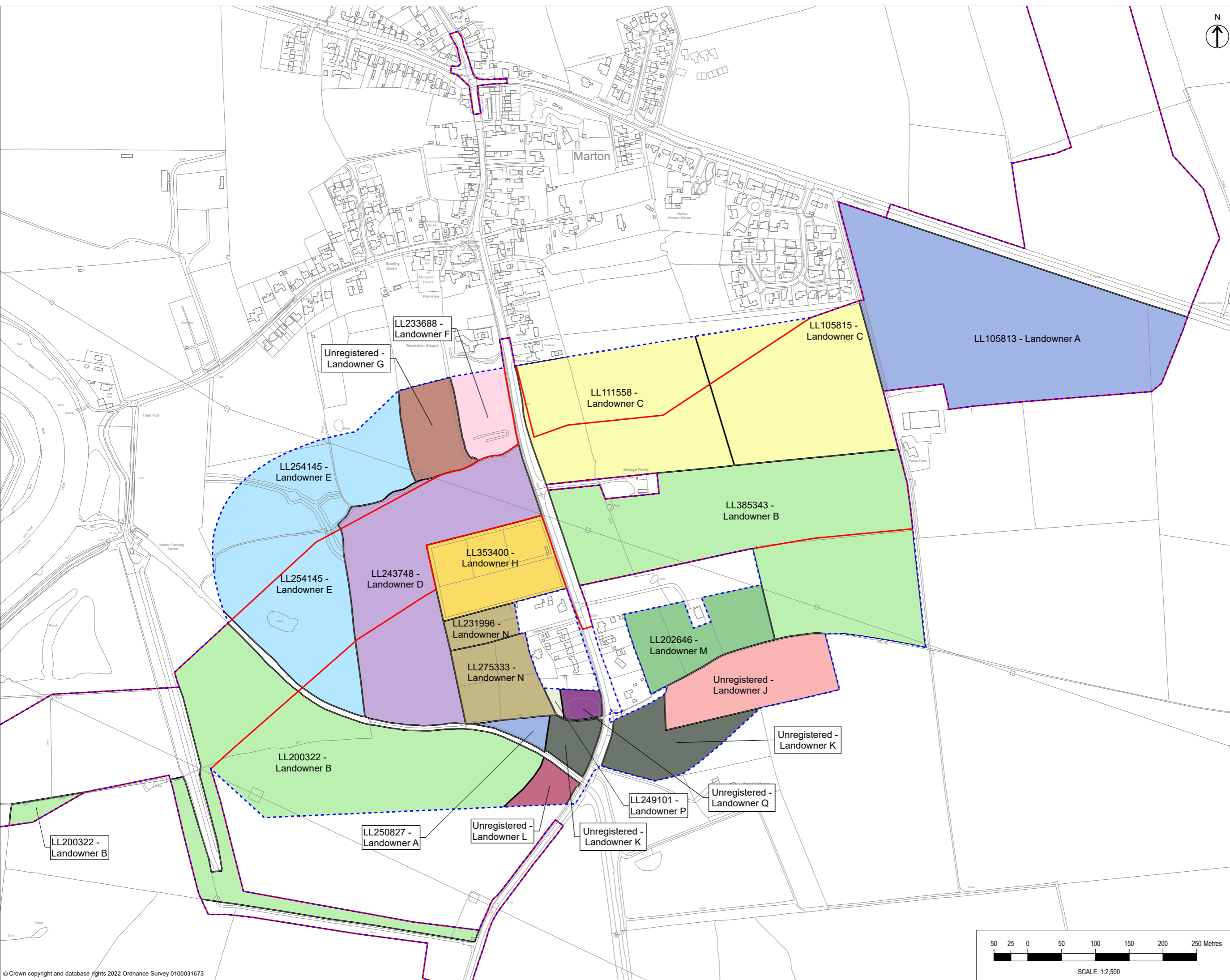
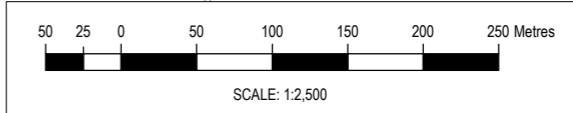
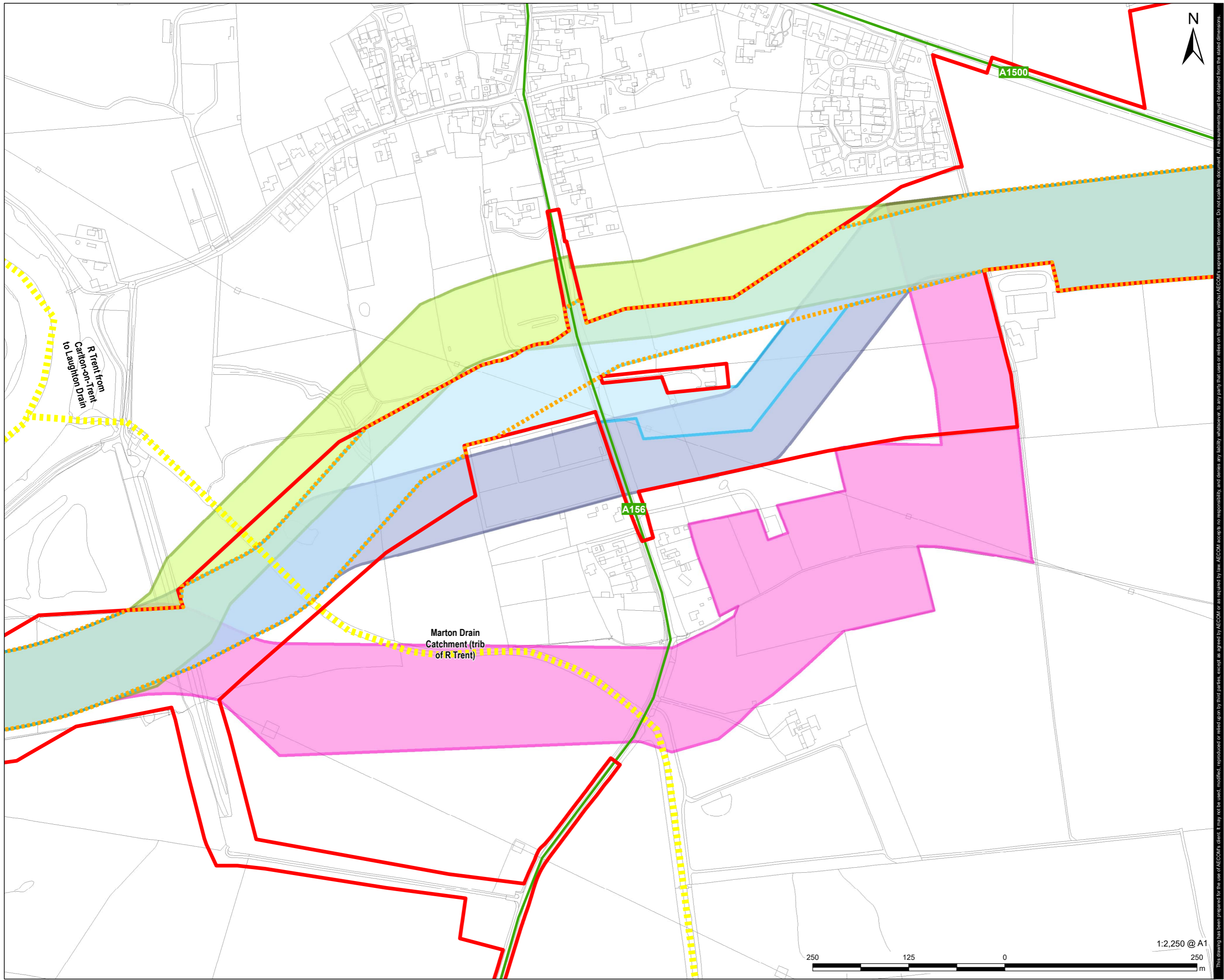











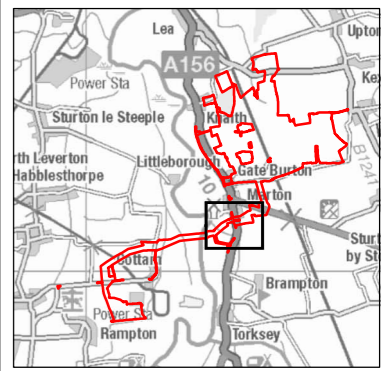
Figure 3-2: Options Considered on Ordnance Survey Base



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- LEGEND**
-  Order Limits
 -  Waterbody
 -  A Road
- Cable Route Options**
-  Cable Route Option 1
 -  Cable Route Option 2
 -  Cable Route Option 3
 -  Cable Route Option 4
 -  Cable Route Option 5



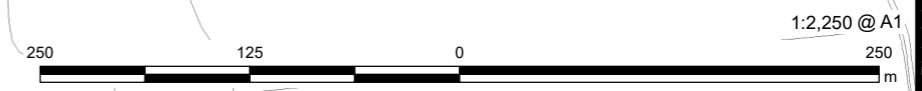
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ISSUE PURPOSE
Options Report

PROJECT NUMBER
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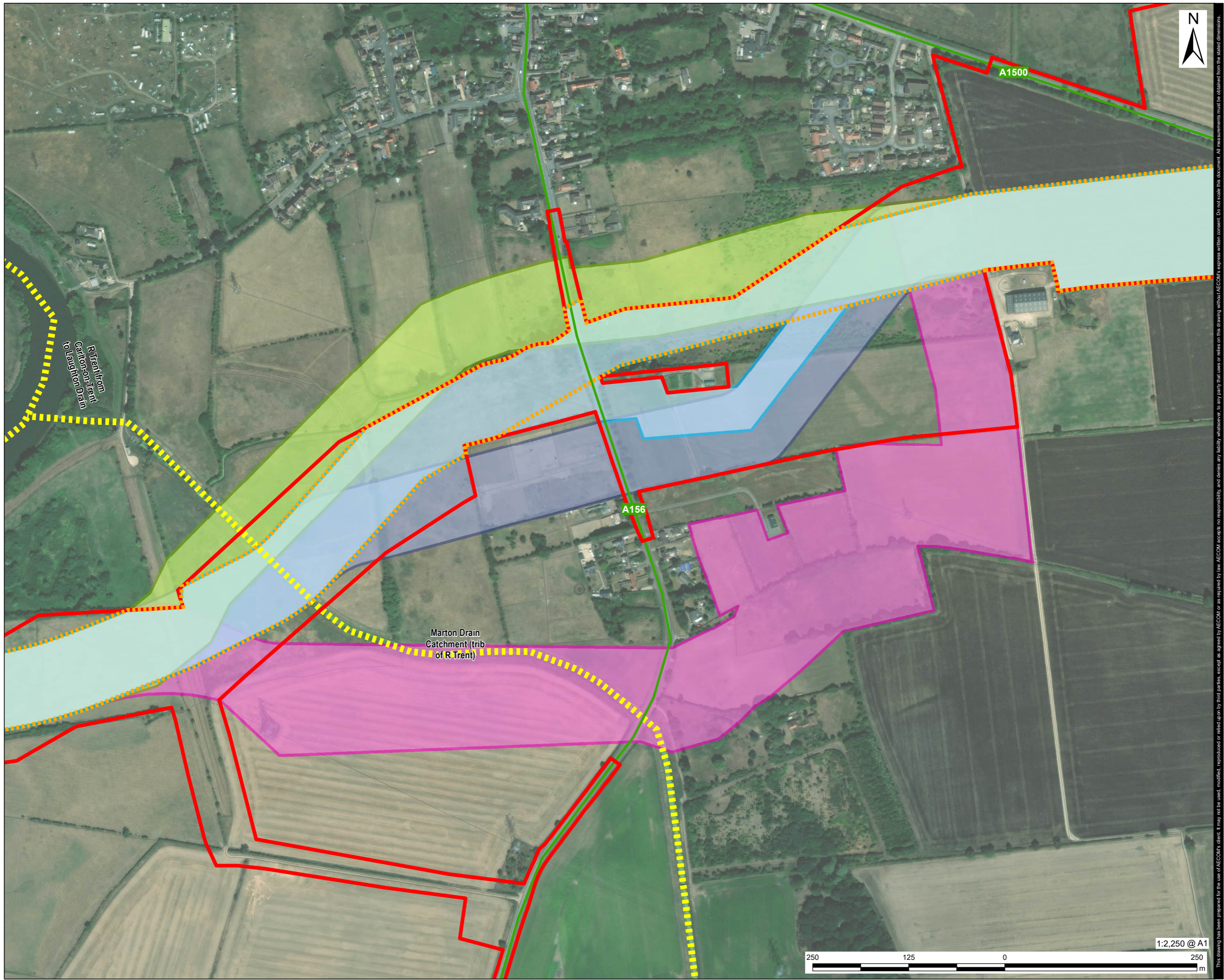
FIGURE TITLE
Environmental Constraints – Options Report: Land South of Marton

FIGURE NUMBER
Figure 3-1






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



Figure 3-3: Options Considered on Satellite Base

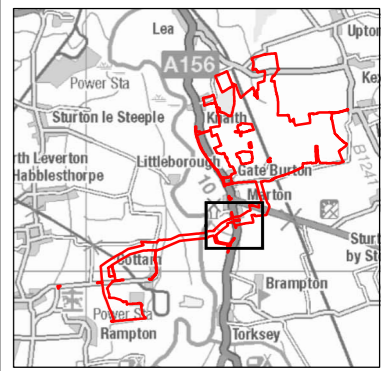


LEGEND

-  Order Limits
-  Waterbody
-  A Road

Cable Route Options

-  Cable Route Option 1
-  Cable Route Option 2
-  Cable Route Option 3
-  Cable Route Option 4
-  Cable Route Option 5



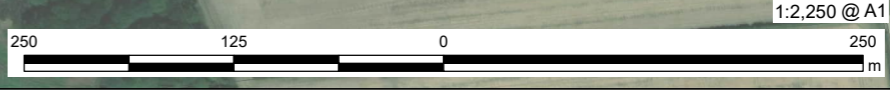
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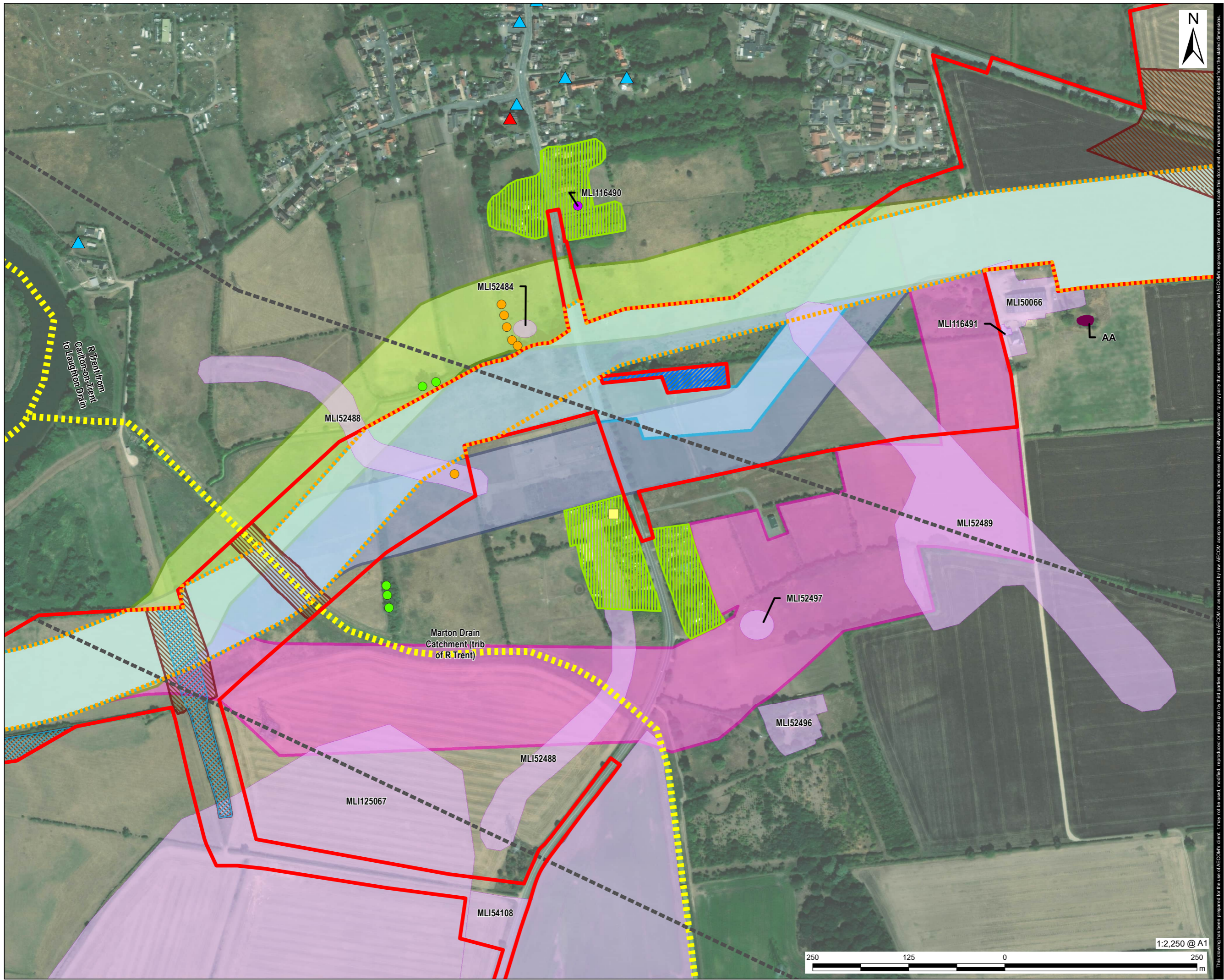
FIGURE TITLE
Environmental Constraints – Options Report: Land South of Marton

FIGURE NUMBER
Figure 3-2

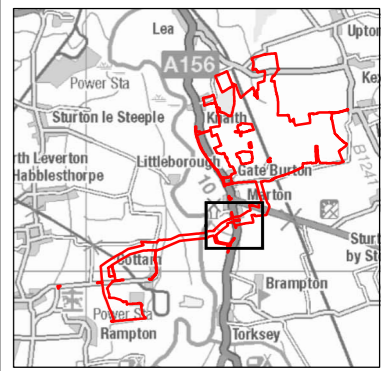


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Figure 5-1: Environmental Constraints and Options Considered



- LEGEND**
- Order Limits
 - Noise Sensitive Receptor Modelled (66 High Street Marton)
 - TPOs - Possibly Dead
 - TPOs - Existing and Confirmed
 - Waterbody
 - Overhead Transmission Line
 - Sewage Works
 - No Temporary Access - Flood Defence Boundary
 - Grid Connection Avoidance Area
 - Residential Receptors at Marton
 - Pond with GCN Present
 - Heritage Asset
 - Listed Buildings**
 - ▲ Grade I
 - ▲ Grade II
 - Cable Route Options**
 - Cable Route Option 1
 - Cable Route Option 2
 - Cable Route Option 3
 - Cable Route Option 4
 - Cable Route Option 5



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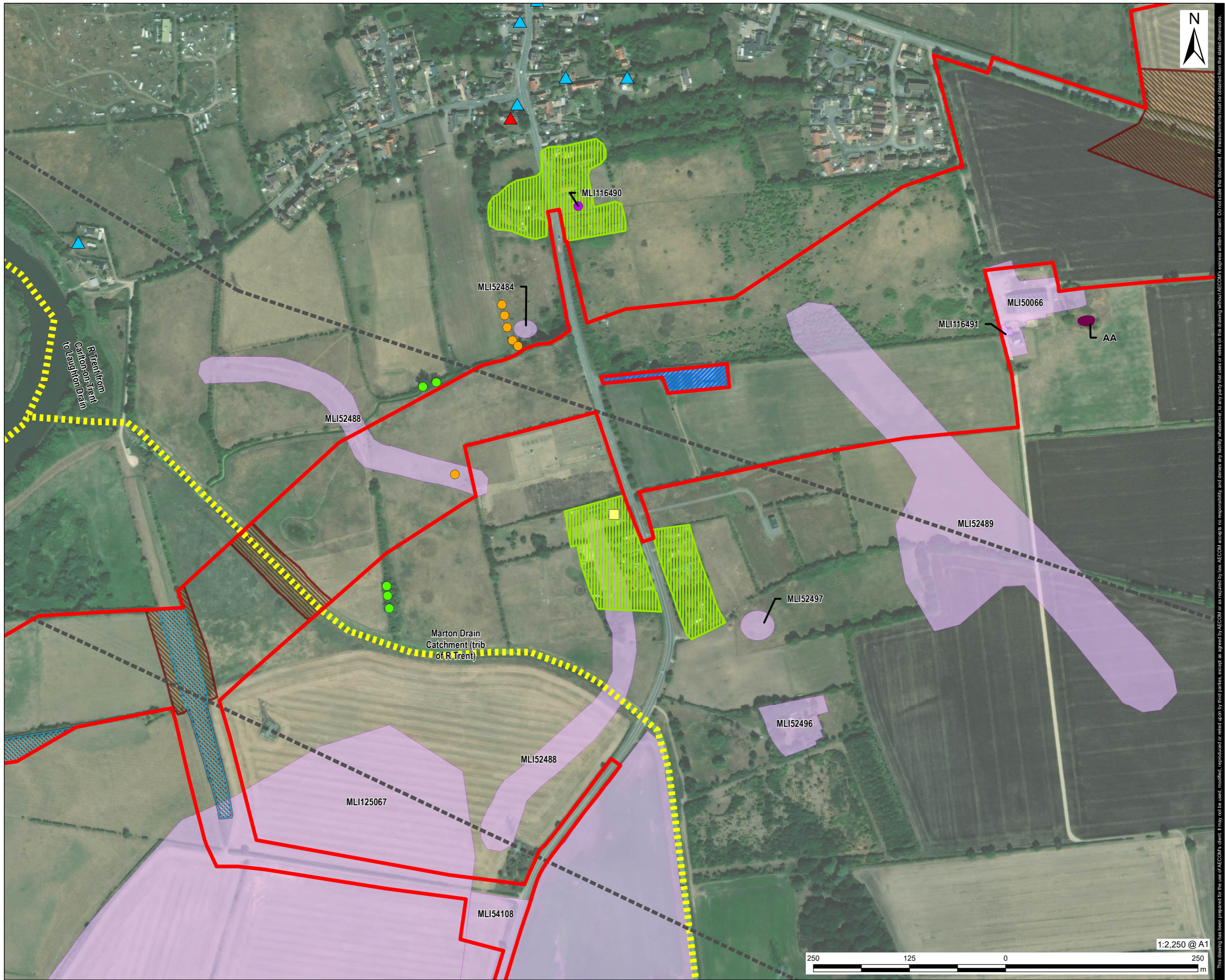
ISSUE PURPOSE
Options Report: Land South of Marton

PROJECT NUMBER
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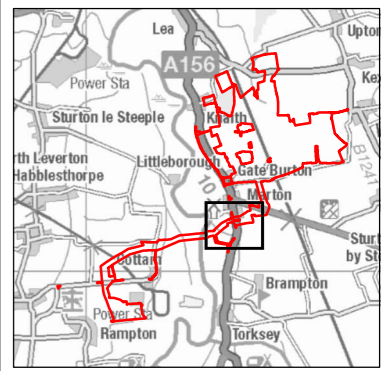
FIGURE TITLE
Environmental Constraints – Options Report: Land South of Marton

FIGURE NUMBER
Figure 1a

Figure 5-2: Environmental Constraints within the Option Area



- LEGEND**
- Order Limits
 - Noise Sensitive Receptor Modelled (66 High Street Marton)
 - TPOs - Possibly Dead
 - TPOs - Existing and Confirmed
 - Waterbody
 - Overhead Transmission Line
 - Sewage Works
 - No Temporary Access - Flood Defence Boundary
 - Grid Connection Avoidance Area
 - Residential Receptors at Marton
 - Pond with GCN Present
 - Heritage Asset
- Listed Buildings**
- ▲ Grade I
 - ▲ Grade II



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 HER Data obtained from Lincolnshire County Council HER and Nottinghamshire County Council 2022.

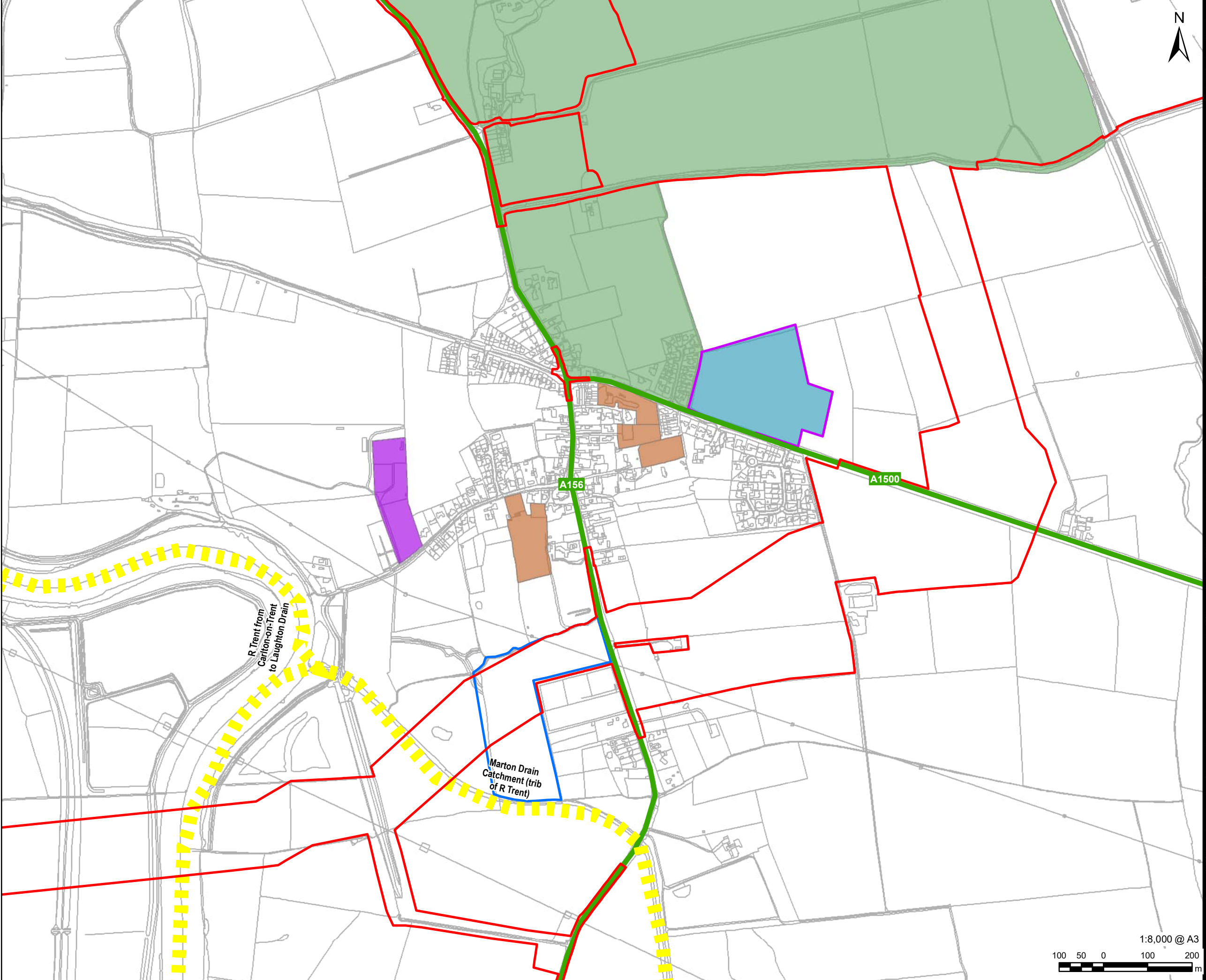
ISSUE PURPOSE
 Options Report: Land South of Marton

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FIGURE TITLE
 Environmental Constraints – Options Report: Land South of Marton

FIGURE NUMBER
 Figure 1b

Figure 5-3: Allocations and Designations within the Option Area



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LEGEND

- Order Limits
- Waterbody
- A Road

Planning Application

- Ref 145882 - Two agricultural barns at Marton
- Ref 133907 - 39 dwellings on Land off Stow Park Road, Marton

Key Designations

- Area of Great Landscape Value
- Gypsy and Traveller Site Allocation
- Important Open Space Policy
- Proposed Housing Site Allocation

NOTES

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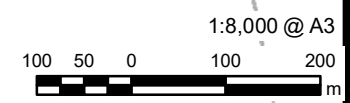
Planning Application and Designation Boundaries are Indicative.

ISSUE PURPOSE
 Options Report

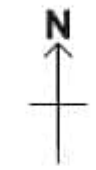
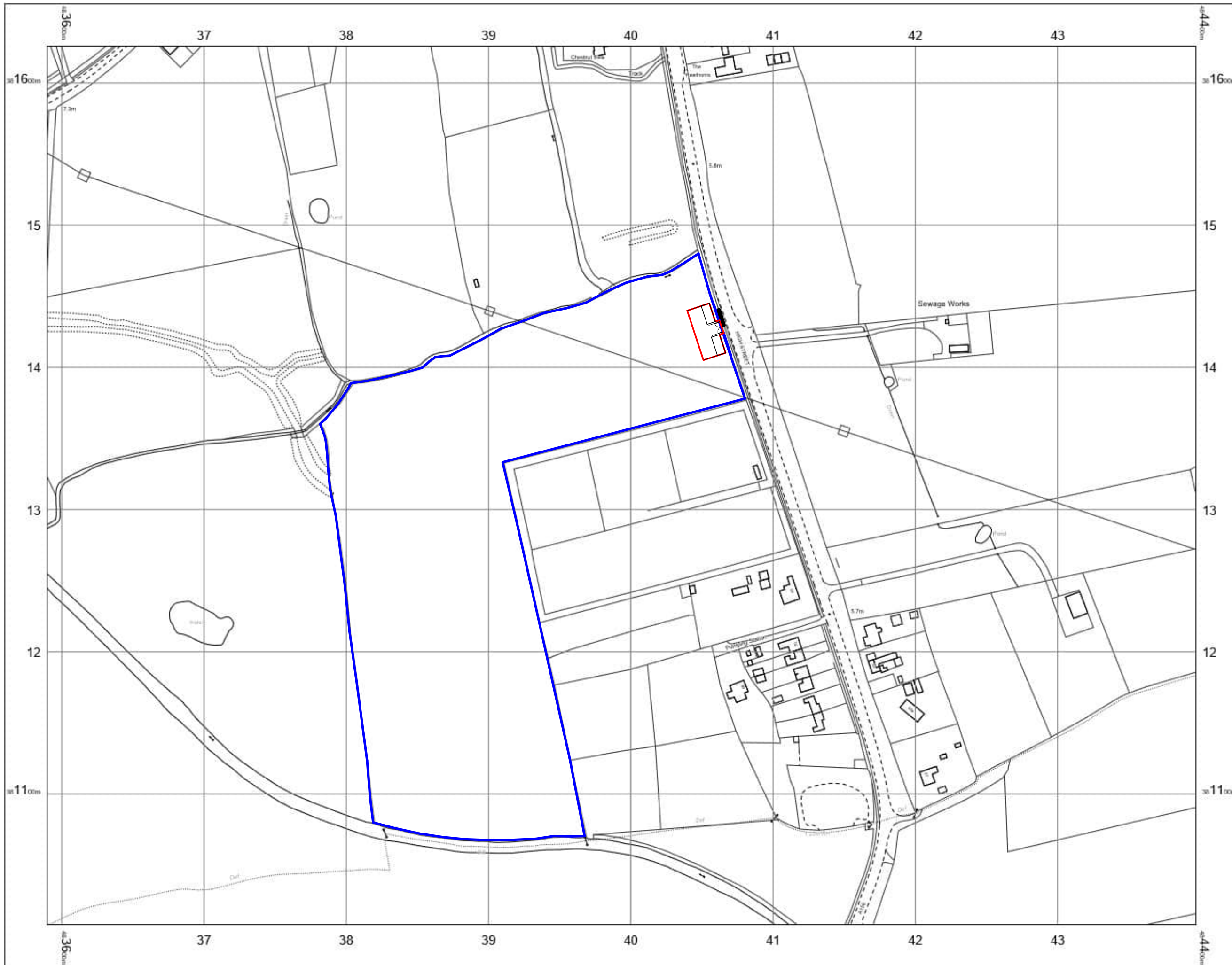
PROJECT NUMBER
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FIGURE TITLE
 Planning Application Boundaries and Key Designations

FIGURE NUMBER
 Figure 1-3



Appendix B - 145882, land at, High Street, Marton Application Site Location Plan and Site Layout Plan



OS MasterMap 1250/2500/10000
scale
Thursday, November 17, 2022, ID:
BW1-01072718
maps.blackwell.co.uk

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BLOCK PLAN

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A3 SHEET



Permeable Hard Standing

Building 'B'

Building 'A'

HIGH STREET