
FENWICK SOLAR FARM

Preliminary Environmental Information Report

**Volume I Appendix 13-6: Indicative Access Appraisal for the
Grid Connection Corridor**

March 2024

Prepared for:
Fenwick Solar Project Limited

Prepared by:
AECOM Limited

© 2024 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1.	Introduction.....	1
1.1	Overview.....	1
1.2	The Applicant.....	1
1.3	The Site	1
1.4	Purpose and Structure of this Appendix.....	2
2.	Access Locations.....	3
2.1	Introduction.....	3
2.2	Moss Road	6
2.3	Trumfleet Lane North.....	9
2.4	Brick Kiln Lane.....	11
2.5	Trumfleet Lane South	15
2.6	Marsh Road	17
2.7	Thorpe Bank.....	22
2.8	Access to the Existing National Grid Thorpe Marsh Substation.....	24
3.	Summary	27
4.	References	28

Plates

Plate 2-1:	HGV Profile.....	4
Plate 2-2:	Tractor and 12.0 m Trailer Profile.....	4
Plate 2-3:	Tractor and 10.0 m Trailer Profile.....	4
Plate 2-4:	Grid Connection Corridor Access Locations.....	5
Plate 2-5:	North off Moss Road Access Proposal.....	6
Plate 2-6:	North off Moss Road PRow Moss-6 Interaction (Ref. 2).....	6
Plate 2-7:	South off Moss Road Access Proposal	8
Plate 2-8:	East off Trumfleet Lane Access Proposal.....	9
Plate 2-9:	North off Brick Kiln Lane Access Proposal.....	11
Plate 2-10:	Brick Kiln Lane and Trumfleet Lane Junction Tractor and Trailer 12.0 m SPA	12
Plate 2-11:	Brick Kiln Lane and Trumfleet Lane Junction Tractor and Trailer 10.0 m SPA	13
Plate 2-12:	South off Brick Kiln Lane Access Proposal	13
Plate 2-13:	North off Trumfleet Lane Access Proposal	15
Plate 2-14:	North off Marsh Road Access Proposal	17
Plate 2-15:	South off Marsh Road Access Proposal.....	19
Plate 2-16:	South off Marsh Road Swept Path Analysis Tractor and 12.0 m Trailer .	21
Plate 2-17:	West off Thorpe Bank Access Proposal 1	22
Plate 2-18:	Existing Southern Access West off Thorpe Bank to the Existing National Grid Thorpe Marsh Substation and SPA.....	25
Plate 2-19:	Existing Access North off Fordstead Lane to the Existing National Grid Thorpe Marsh Substation and SPA	26

Tables

Table 3-1: Access Locations Summary..... 27

1. Introduction

1.1 Overview

- 1.1.1 This appendix has been prepared by AECOM on behalf of Fenwick Solar Project Limited (the 'Applicant') and provides a technical review and assessment of the Indicative Grid Connection Corridor Access Locations for the proposed Fenwick Solar Farm Grid Connection Corridor. A second technical review and assessment has been undertaken on indicative access locations for the Solar PV Site. This assessment is reported in **PEIR Volume III Appendix 13-5: Indicative Access Appraisal for the Solar PV Site**.
- 1.1.2 The Scheme would comprise the installation of Solar Photovoltaic (PV) Panels, On-Site Cables, Interconnecting Cables, Battery Energy Storage System(s) (BESS) Area, On-Site Substation, a cable or line drop connecting the new On-Site Substation to the Existing National Grid Thorpe Marsh Substation, and other supporting infrastructure including fencing, access tracks, drainage, and landscaping at a proposed site in Doncaster (hereafter collectively referred to as the 'Scheme'). The Scheme would allow for the generation, storage and export of more than 50 megawatts (MW) electrical generation capacity.
- 1.1.3 Due to its proposed generating capacity, the Scheme is classified as a Nationally Significant Infrastructure Project (NSIP) and would therefore require a Development Consent Order (DCO) under the Planning Act 2008 (Ref. 1) for its construction, operation and maintenance, and decommissioning phases.

1.2 The Applicant

- 1.2.1 The Applicant is Fenwick Solar Project Limited which is a wholly owned subsidiary of BOOM Developments Limited who specialise in non-subsidised solar and battery storage projects. BOOM Developments Limited was founded in 2020, and the name BOOM is an acronym for Build Own Operate Maintain. This reflects the organisation's intentions to be involved in sustainable energy projects from day one right the way through to operation. The BOOM Managing Director and team have been responsible in previous roles for constructing more than 700 MW of solar developments in the UK between 2015 and 2017 and developing more than 850 MW of solar projects including the UK's first nationally significant infrastructure solar PV project, Cleeve Hill, which was granted a Development Consent Order in 2020. In 2021, the UK based BOOM partnered with the Pelion Green Future group of companies based across Australia, America, and the European mainland.

1.3 The Site

- 1.3.1 The Site is located approximately 5 kilometres (km) north of Doncaster and comprises three main areas:
- a. The land located east of Fenwick and immediately south of the River Went, hereafter referred to as the 'Solar PV Site';

- b. The land between the Solar PV Site and the existing compound for Thorpe Marsh Substation, hereafter referred to as the 'Grid Connection Corridor'; and
 - c. The land located within the existing compound for Thorpe Marsh Substation, hereafter referred to as the 'Existing National Grid Thorpe Marsh Substation'.
- 1.3.2 The Scheme would lie within the administrative area of City of Doncaster Council, who are also the Local Highway Authority.

1.4 Purpose and Structure of this Appendix

- 1.4.1 The purpose of this appendix is to outline potential access locations for the Grid Connection Corridor where the existing road network and the proposed Grid Connection Corridor interact, which will subsequently be progressed for preliminary design and consultation with the Local Highway Authority.
- 1.4.2 This appendix will outline the most optimal access locations along the Grid Connection Corridor, splitting the sections by road, starting at the most Northern access (North off Moss Road), and finishing at the most southern access (access into the Existing National Grid Thorpe Marsh Substation). The appendix sections will be split by road, and within these sections: a justification of the access location will be provided, alongside a screenshot, constraints, discounted locations outlined, bell mouth construction impacts and associated visibility impacts provided, and Swept Path Analysis (SPA) provided for certain access locations where necessary to validate.

2. Access Locations

2.1 Introduction

- 2.1.1 The standard design for bell mouth accesses, in accordance with Design Manual for Roads and Bridges (DMRB) Design Standard CD 123, are as follows: 6 m lane width after bell mouth, and 15 m radii for the entry and exit curves, CD 123 5.6.2. These are subject to change depending on Swept Path Analysis (SPA), traffic survey information, and the outcome of subsequent discussions post the issue of the routeing assessment.
- 2.1.2 DMRB standards, applicable to the strategic or trunk road network have been adopted for the local road network as equivalent local road design standards do not exist for the local highway authority.
- 2.1.3 The standards used to analyse visibility impacts from chosen access locations are DMRB CD 109 Table 2.10, for the visibility parameter associated with the existing design speed of the road, and DMRB CD 123 section 3.4, which outlines where this visibility parameter is measured from in relation to the access. The Manual for Streets 2 Section 10.1.6 outlines the methodology used to derive the desirable minimum and absolute minimum SSD values used throughout this report. The reduced SSD values utilise the average daily 85th percentile worst case direction speed, with the survey of traffic speeds spanning 7 days. If the reduced SSDs are agreed with the Local Highway Authority this has the potential to reduce the overall visibility splay impacts to adjacent environmental features.
- 2.1.4 The standard used for bell mouth arrangements is DMRB CD 123 Section 5. This is the standard for priority junctions not direct accesses, as during construction the estimated high traffic numbers would indicate the requirement to utilise the simple priority junction geometry parameters.
- 2.1.5 In the operation and maintenance phase, there will be lower traffic numbers and therefore a potential for the size of the access designs to be downgraded, post construction, to discourage misuse and fly-tipping.
- 2.1.6 SPA will be carried out for all accesses during the preliminary design stage. At this stage only a select few accesses require SPA to ensure the feasibility of the access location. For these access locations, the vehicle used will be clearly highlighted and a justification for that vehicle choice noted. The profile of the vehicles assessed in this appendix can be seen below.
- 2.1.7 For the SPA assessment, the vehicles selected for assessment have been a Max Legal HGV and Tractor with a 12.0 m trailer depicted in Figures 1 and 2, respectively. These types of vehicles have been selected based upon the strategy adopted for the East Yorkshire Solar Park Scheme, which was a recent BOOM project. However, the type of construction vehicles required may change during design development and therefore this may impact on the highway interventions required.
- 2.1.8 The access locations analysed within this appendix can be seen in Plate 2-4.

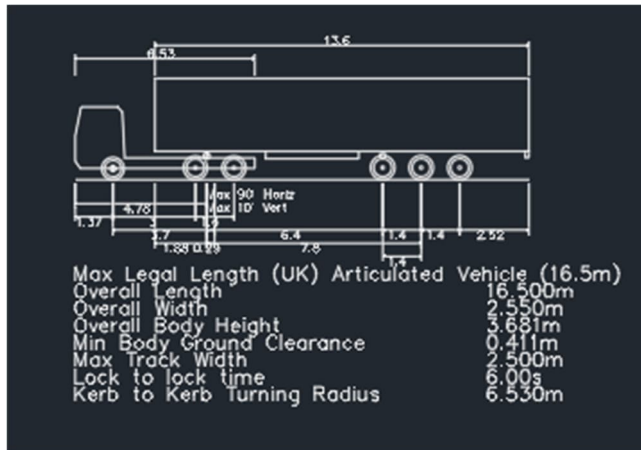


Plate 2-1: HGV Profile

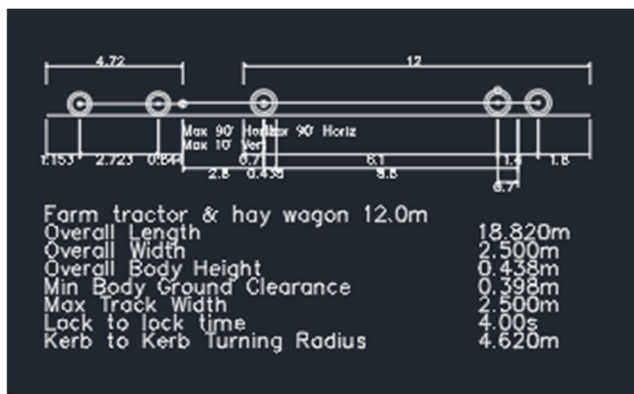


Plate 2-2: Tractor and 12.0 m Trailer Profile

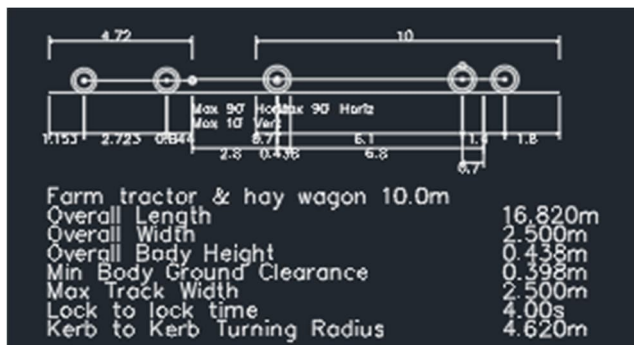


Plate 2-3 Tractor and 10.0 m Trailer Profile

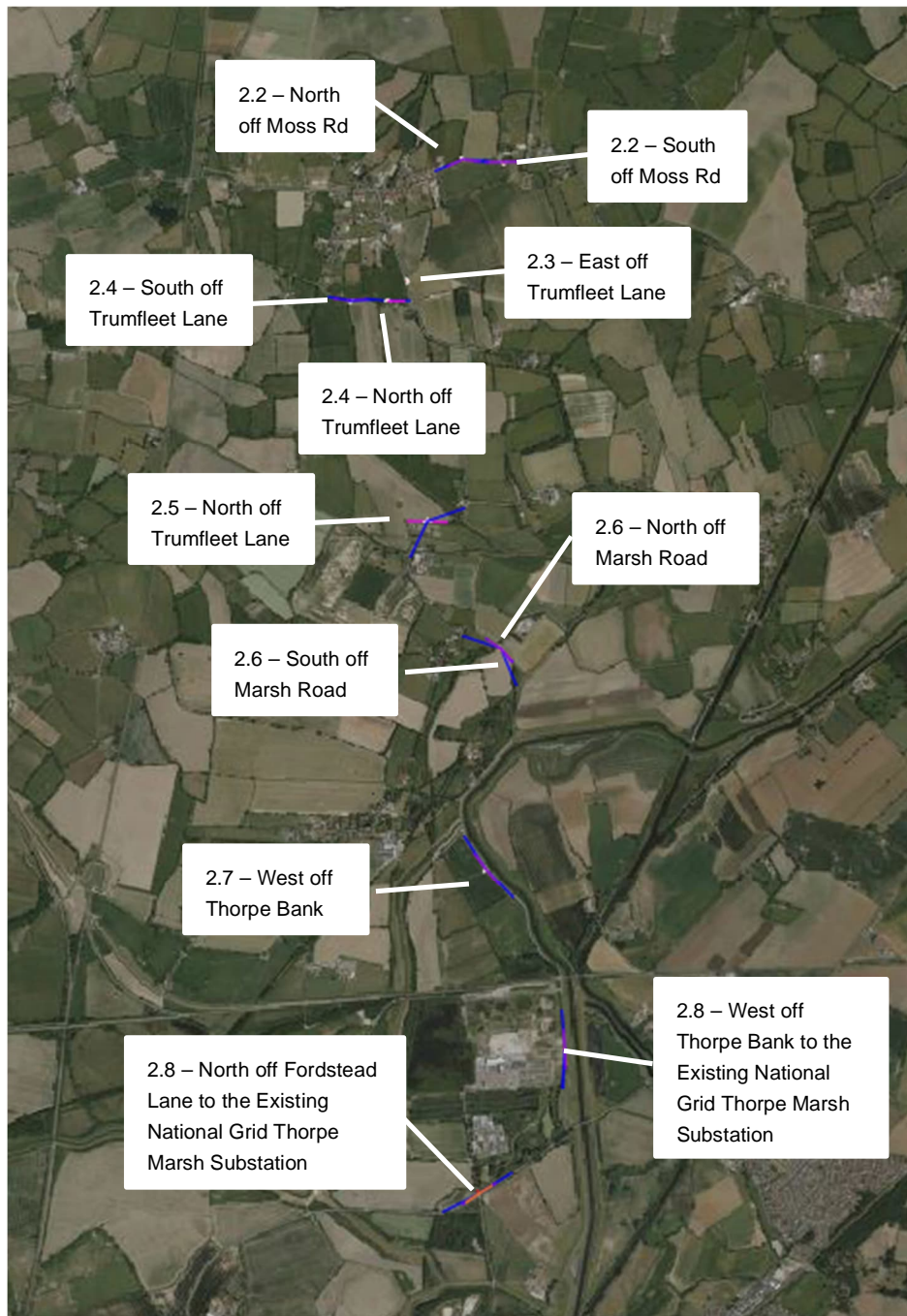


Plate 2-4: Grid Connection Corridor Access Locations

2.2 Moss Road

North off Moss Road

- 2.2.1 The location for the access north off Moss Road has been identified on the outside of a bend, to the east of the village of Moss, this location can be seen in Plate 2-5.
- 2.2.2 There is the potential that this access will be utilised to provide means of entry to the Solar PV Site. In the event it is, the Scheme will develop the design of the access during preliminary design in order to allow construction traffic associated with the Solar PV Site to access. For further details in relation to access to the Solar PV Site, refer to **PEIR Volume III Appendix 13-5: Indicative Access Appraisal for the Solar PV Site**.



Plate 2-5: North off Moss Road Access Proposal

- 2.2.3 This access location is identified as being the most optimal due to the presence of an existing access, thereby reducing the hedgerow removal required for the bell mouth. This location also provides the best visibility with the smallest impact on surrounding vegetation. The existing access spans a ditch which is assumed to pass through a culvert underneath this access as highlighted by the OS Mapping information, any other location would result in the requirement for the construction of a new culvert. Additionally, there is a Public Right of Way (PRoW) footpath Moss-6 that interacts with this location, shown in Plate 2-6.

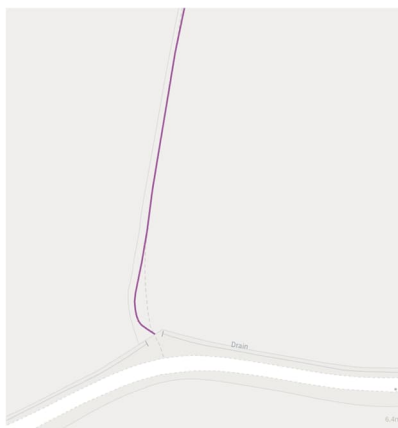


Plate 2-6: North off Moss Road PRoW Moss-6 Interaction (Ref. 2)

- 2.2.4 Constraints for this access include back of verge hedgerow, trees within the hedgerow confirmed by CAD aerial imagery and Google Street View, a ditch

at the back of verge and culvert underneath existing access, Harland House to the west of the proposal and Plumtree Cottage to the east. There are also statutory undertaker assets (overhead electricity cable) crossing the field which would need to be assessed for any protection/diversion works that may be required to facilitate construction access, including assessment of vertical clearances.

- 2.2.5 The access proposal presented in Plate 2-5 utilises an existing footprint, but the bell mouth proposal, designed in accordance with DMRB CD 123, exceeds the footprint of the existing access so there will be a small amount of hedgerow clearance to facilitate the access proposal's footprint.
- 2.2.6 The speed limit varies on Moss Road changing from 40 mph to 50 mph around the access location, the worst-case scenario for 50 mph was used to assess visibility. The 50 mph limit indicates a design speed of 85 kph, using DMRB CD 109 Table 2.10 this provides a Stopping Sight Distance (SSD) of 160 m. For a 160 m SSD and a setback of 2.4 m from the carriageway, there would be a requirement for hedgerow clearance to achieve this SSD on both sides of the access proposal.
- 2.2.7 Speed survey information has been obtained and the 85th percentile Desirable Minimum SSD and Absolute Minimum SSD has been calculated based on Manual for Streets 2. These SSD splays can be seen in Plate 2-5, depicted as an orange line (Absolute Min.) and a purple line (Desirable Min.) at SSD distances of 73 m and 93 m respectively. These reduced SSDs based on road users actual speed for this section of road show the potential for little to no vegetation clearance for the access location, subject to further refinement of the preliminary design and approval by the Local Highway Authority.
- 2.2.8 SPA has not been completed for this access proposal as it is assumed that a tractor and 12.0 m length trailer could comfortably make this manoeuvre. A 12.0 m length trailer would be permitted in this location as this area would not be subject to the constraints identified in **PEIR Volume III Appendix 13-7: High-Level Route Assessment**.
- 2.2.9 Due to the proximity of PRow Moss-6, either a diversion or suitable management of this PRow would need to be developed in order to minimise pedestrian and construction vehicle interaction.

South off Moss Road

- 2.2.10 The location for the access South off Moss Road has been identified on Plate 2-7.

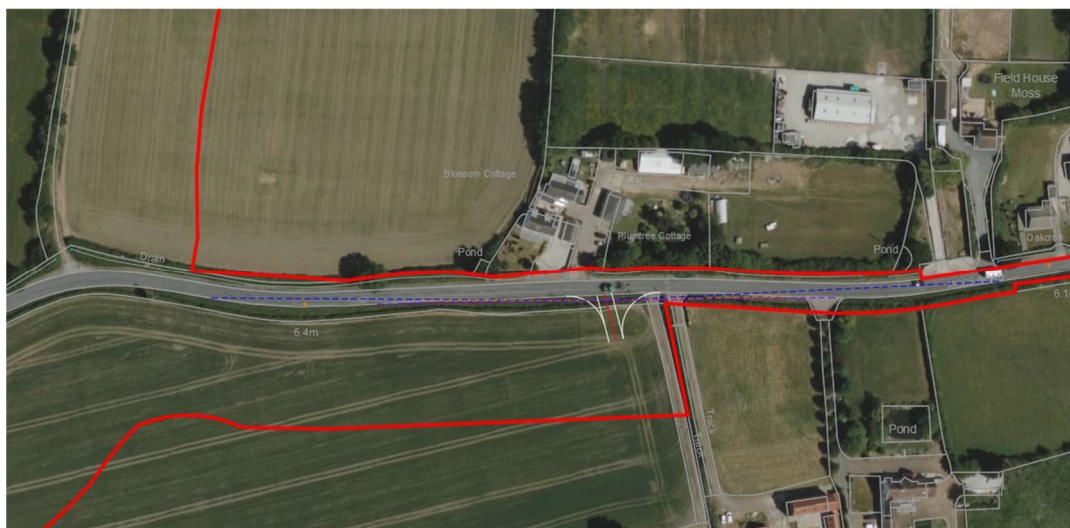


Plate 2-7: South off Moss Road Access Proposal

- 2.2.11 This access location is identified as the location which provides the best visibility with the smallest impact on surrounding vegetation.
- 2.2.12 Constraints for this access include back of verge hedgerow, trees within the hedgerow, a residential area to the east of the proposal, a private access track to the Old Brick barn adjacent and parallel to the existing access track. Additionally, there is a telecommunications pole and overhead cables between the access proposal and the private access track, with this risk comes a danger of electrocution, it is not clear from Google Street View alone whether they are communications or overhead electrical cables and therefore this would need to be confirmed with the Statutory Undertaker, the overhead cables may represent a vertical constraint to the vehicle and load height using the access.
- 2.2.13 An access staggered opposite the 'north off Moss Road' proposal was assessed and discounted due to the vegetation clearance required to achieve the compliant DMRB CD 109 visibility criteria exceeding the option presented in Plate 2-7.
- 2.2.14 The access proposal cannot utilise the existing access footprint due to the upgrades required to accommodate the intended vehicles resulting in an impact to the private access directly to the east and necessitating a diversion of the existing telecommunications pole. Therefore, hedgerow clearance to facilitate the access proposals footprint shown in Plate 2-7 would be required along its whole width.
- 2.2.15 The speed limit varies on Moss Road changing from 40 mph to 50 mph around the access location, the worst-case scenario for 50 mph was used to assess visibility. The 50 mph limit indicates a design speed of 85 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 160 m. For a 160 m SSD and a setback of 2.4 m, the maximum visibility can be achieved with no additional vegetation clearance.

2.3 Trumfleet Lane North

East off Trumfleet Lane

- 2.3.1 The location for the access east off Trumfleet Lane has been identified on Plate 2-8.



Plate 2-8: East off Trumfleet Lane Access Proposal

- 2.3.2 This access location is identified as providing the best visibility considering the alignment of the road. Additionally, this location features an existing access, thereby limiting the amount of hedgerow removal required to accommodate the bell mouth of the proposal.
- 2.3.3 The constraints in this area include telecommunication poles and overhead lines running along the length of the eastern verge, hedgerow at the back of the verge, narrow verge widths on both sides of the carriageway, and a ditch at the back of verge.
- 2.3.4 The existing access south of the access proposal was discounted due to its location. The existing access is located directly opposite the junction of Brick

Kiln Lane with Trumfleet Lane, without providing any staggered junction arrangement outlined as a requirement in DMRB CD 123 Section 2.20. Additionally, due to the alignment of the carriageway to the south of the existing access any visibility splay would result in a large vegetation management zone, including the requirement of considerable hedgerow clearance and potential tree removal to achieve the required DMRB CD 109 visibility criteria. The speed survey information for the 85th percentile of speeds would have to output a required SSD of 60 m or less in order to avoid this requirement for vegetation clearance for the discounted existing access option. This location would also require the removal and relocation of existing street name signage.

- 2.3.5 The access proposal presented in Plate 2-8 utilises an existing footprint, but the bell mouth proposal exceeds the footprint of the existing access so there will be a small amount of hedgerow clearance to facilitate the access proposal's footprint. Additionally, due to the ditch at the back of verge there would be the requirement for culvert widening.
- 2.3.6 The speed limit on this section of Trumfleet Lane is 40 mph. The 40 mph limit indicates a design speed of 70 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 120 m. For a 120 m SSD and a setback of 2.4 m, the minimum visibility can be achieved with no vegetation clearance.

2.4 Brick Kiln Lane

North off Brick Kiln Lane

- 2.4.1 The location for the access north off Brick Kiln Lane has been identified on Plate 2-9.



Plate 2-9: North off Brick Kiln Lane Access Proposal

- 2.4.2 This access location is identified as being the most optimal due to it utilising an existing access, thereby limiting the hedgerow clearance required to accommodate the bell mouth for the proposal.
- 2.4.3 The constraints for this location include back of verge hedgerow on the northern side of the carriageway, trees occupying the back of verge on the southern carriageway, and the winding, narrow single-track road geometry.
- 2.4.4 The access proposal utilises an existing footprint, but the bell mouth proposal exceeds the footprint of the existing access so there will be a small amount of hedgerow clearance to facilitate the access proposal's footprint.
- 2.4.5 The speed limit on this section of Brick Kiln Lane is 40 mph. The 40 mph limit indicates a design speed of 70 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 120 m. For a 120 m SSD and a setback of 2.4 m, the minimum visibility requirements to the west of the access proposal can be achieved with no vegetation clearance, but the minimum visibility to the east cannot be achieved without hedgerow removal. The worst-case scenario hedgerow removal for this access location would be approximately 71.5 m. Whereas, the worst-case scenario of the access proposal west off Trumfleet Lane described in Section 2.3.1 would result in approximately 134.0 m of hedgerow clearance, further reinforcing the selection of Brick Kiln Lane.
- 2.4.6 To the east, DMRD CD 109 visibility cannot be achieved, to resolve this and limit the impacts on surrounding vegetation on Brick Kiln Lane, additional speed survey information will be obtained, which based on the width and the alignment of the road would permit visibility parameter reduction. If additional speed survey information cannot be obtained, then a Departure from Standard will be pursued with the Local Highway Authority to reduce visibility related vegetation impacts. Additionally, due to this access location being on a narrow rural road with vegetation bordering each side of the carriageway, it is recommended that temporary warning signage is considered to alert road users for construction vehicles turning.
- 2.4.7 The junction of Brick Kiln Lane and Trumfleet Lane could cause issues for vehicles turning down Brick Kiln Lane due to the narrow nature of Brick Kiln Lane. Access and egress of a tractor and trailer of 12 m and 10 m lengths were assessed and can be seen below. As shown on Plate 2-10, the 12 m trailer would require the existing junction to be widened to facilitate these

manoeuvres. Whereas the 10 m trailer can complete these manoeuvres with no additional works as shown in Plate 2-11. Although, the vehicle does take up the entire width of the junction at the time, highlighting the requirement for passing places to be reviewed on Brick Kiln Lane.

- 2.4.8 Additionally, **PEIR Volume III Appendix 13-7: High-Level Route Assessment** highlights that there are SPA issues at the junction of Moss Road and Trumfleet Lane for a tractor and trailer of 12 m length, however it was found that a tractor with a 10 m trailer could safely manoeuvre that junction and stay within the carriageway. However, Due to the issues regarding the Moss Road and Trumfleet Lane junction the Scheme is seeking to minimise the impact on the local road network by investigating the feasibility of using an internal haul route within the Site Boundary between the south off Moss Road access proposal and the East off Trumfleet Lane access proposal. This optioneering will continue to be evaluated and refined during preliminary design.



Plate 2-10: Brick Kiln Lane and Trumfleet Lane Junction Tractor and Trailer 12.0 m SPA



Plate 2-11: Brick Kiln Lane and Trumfleet Lane Junction Tractor and Trailer 10.0 m SPA

South off Brick Kiln Lane

- 2.4.9 The location for the access south off Brick Kiln Lane has been identified on Plate 2-12.



Plate 2-12: South off Brick Kiln Lane Access Proposal

- 2.4.10 This access location is identified as being the most optimal for this road due to it utilising an existing access, thereby limiting the hedgerow clearance required to accommodate the bell mouth for the proposal.
- 2.4.11 The constraints for this location include back of verge hedgerow on the northern side of the carriageway, trees occupying the back of verge alongside extensive scrub on the southern carriageway, and the winding, narrow single-track road geometry.
- 2.4.12 The existing access to the east of this access proposal was discounted in order to allow Lowlands Farm unobstructed use of their access during construction and alleviate conflict between residential/agricultural and construction traffic.
- 2.4.13 The access proposal utilises an existing footprint, but the bell mouth proposal exceeds the footprint of the existing access so tree clearance to facilitate the access proposal footprint will be required.
- 2.4.14 The speed limit on this section of Brick Kiln Lane is 40 mph. The 40 mph limit indicates a design speed of 70 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 120 m. For a 120 m SSD and a setback of 2.4 m from the

carriageway, there would be a requirement for vegetation clearance to the west and the east.

- 2.4.15 To the west and the east DMRB CD 109 visibility cannot be achieved. To resolve this and limit the impacts on surrounding vegetation on Brick Kiln Lane additional speed survey information will be obtained, which based on the width and the alignment of the road would permit visibility parameter reduction. If additional speed survey information cannot be obtained, then a Departure from Standard will be pursued with the Local Highways Authority to reduce visibility related vegetation impacts. Additionally, due to this access location on a narrow rural road with vegetation bordering each side of the carriageway, it is recommended that temporary warning signage is considered to alert road users for construction vehicles turning.
- 2.4.16 SPA for the junction of Brick Kiln Lane and Trumfleet Lane has been assessed in Section 2.4.7.
- 2.4.17 If vehicles are navigating between the north and south access on a regular basis, consultation with the Local Highway Authority will be required to determine if any passing places between the two accesses are required given the narrow rural nature of the road.

2.5 Trumfleet Lane South

North off Trumfleet Lane

- 2.5.1 The location for the access north off Trumfleet Lane has been identified on Plate 2-13.

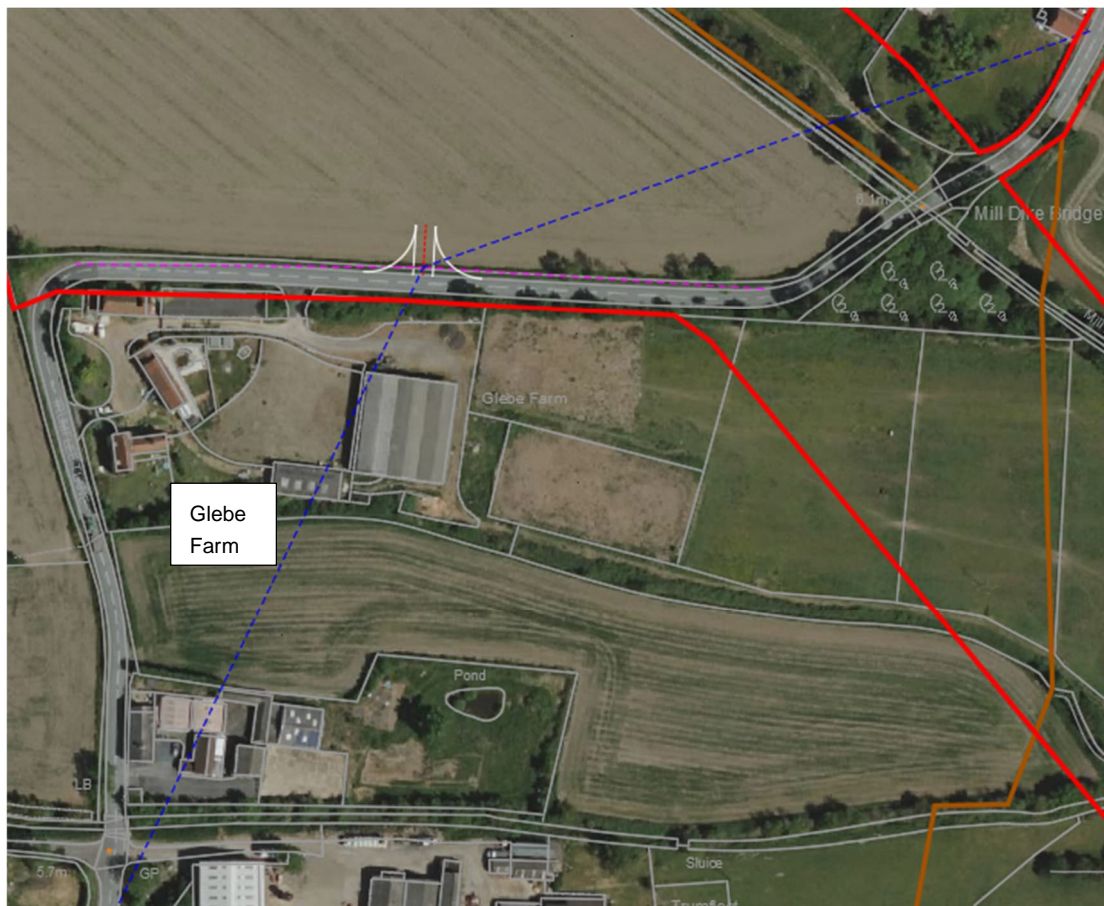


Plate 2-13: North off Trumfleet Lane Access Proposal

- 2.5.2 This access location is identified as being the most optimal for this road due to it providing the best possible visibility for vehicles entering and existing the junction.
- 2.5.3 The constraints for this location include back of verge hedgerow on the northern side of the carriageway, trees occupying the back of verge on the southern carriageway, and the curved alignment of the road with a 90-degree bend to the west of the access proposal. This section of the road also acts as part of the Trans Pennine Trail for walkers, cyclists and horses, labelled as 'Tilts to Braithwaite'.
- 2.5.4 The access proposal would be new and would require complete hedgerow removal for the width of the bell mouth to accommodate the access.
- 2.5.5 The speed limit on this section of Trumfleet Lane is the national speed limit for single carriageways – 60 mph. The 60 mph limit indicates a design speed of 100 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 215 m. For a 215 m SSD and a setback of 2.4 m from the carriageway, there would be a requirement for vegetation clearance to the west and the east, additionally Glebe Farm sits within the DMRB CD 109 visibility splay.

However, it is anticipated that, due to the horizontal geometry of the existing carriageway, vehicle speeds are considerably lower than the posted national speed limit. Therefore, additional speed survey information will be obtained which, based on the nature of the carriageway in this area, is anticipated to provide a relaxation of the visibility splay parameters based upon the recorded 85th percentile speeds of road users. In the event that the speed survey information obtained during preliminary design still identifies a conflict for junction visibility, a Departure from Standard will be sought with the Local Highway Authority on the basis that this area is considered to be, on the balance of safety, the most appropriate location to access this region of the Grid Connection Corridor.

2.6 Marsh Road

North off Marsh Road

- 2.6.1 The design team has identified the existing access highlighted in Plate 2-14 as a potential access location and the Scheme is currently considering the implementation of either a new access or an upgrade to the existing access.
- 2.6.2 The location for the new access north off Marsh Lane has been identified on Plate 2-14.

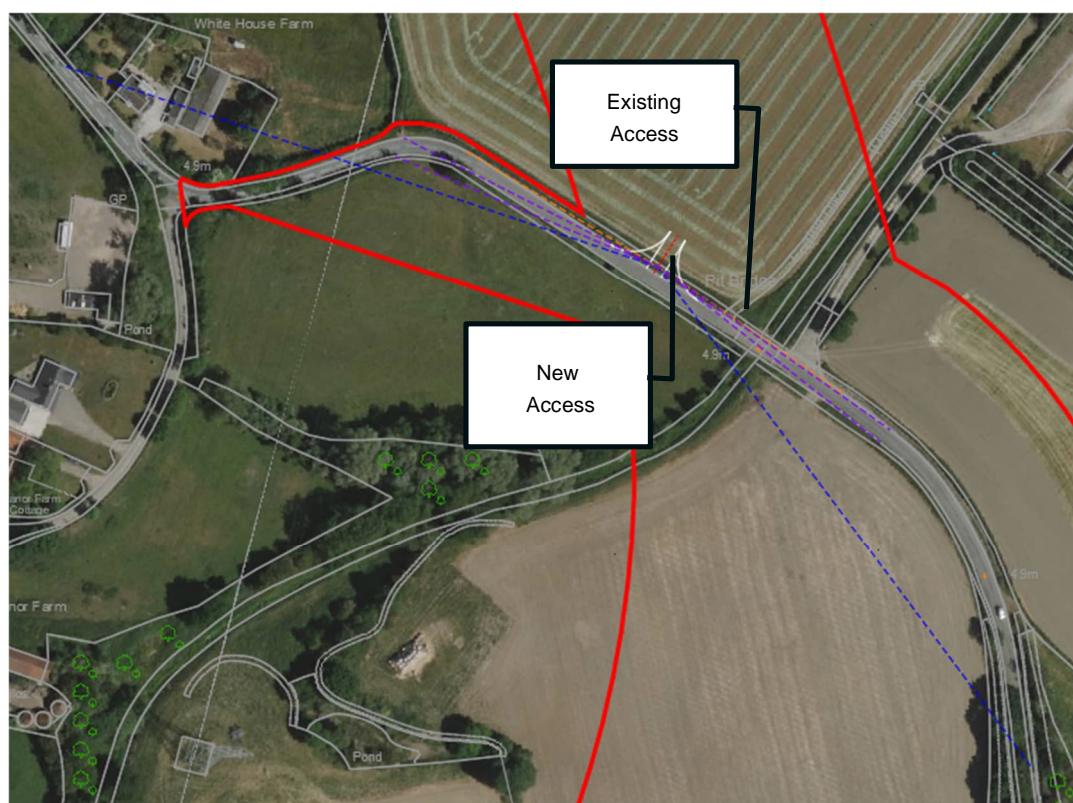


Plate 2-14: North off Marsh Road Access Proposal

- 2.6.3 The new access location is identified as being the most optimal due to it providing the best possible junction visibility in this area whilst avoiding existing telecommunications assets. To avoid possible interaction between the bell mouth and the telecommunications poles in the northern verge, the access location is positioned equidistant between two adjacent poles. However, it is noted based upon street view imagery that there is a risk of construction vehicles encroaching on any safety envelope to the telecommunication cables dictated by the affected statutory undertaker. Therefore, consultation with the affected statutory undertaker would be required in order to define any protection or diversion works required to accommodate an access proposal in this region.
- 2.6.4 The constraints for this location include back of verge hedgerow on both sides of the carriageway, telecommunications poles, and overhead lines on both sides of the carriageway, Pit Bridge spanning Engine Dike that runs through the centre of the Grid Connection Corridor, Warwick Energy and its private access adjacent to the existing track and the curved alignment of

Marsh Road. This section of the road also acts as part of the Trans Pennine Trail for walkers, cyclists and horses, labelled 'Tilts to Braithwaite'.

- 2.6.5 The existing access north off Marsh Road is highlighted on Plate immediately to the south east of the new access proposal. SPA indicates that junction works would be required in order for a tractor and 10 m trailer to safely enter and exit. With the increased access footprint of the bell mouth, the proposal would clash with the existing bridge to the east, eliciting the requirement for bridge widening. The bell mouth would also encroach on the Warwick Energy private access. The junction improvement works for the existing access would also have conflicted with a telecommunications pole in the verge resulting in the requirement for telecommunication pole to be relocated. Preliminary design will continue to refine the access solution in this location to seek to maximise the existing access location where practicable.
- 2.6.6 The speed limit on this section of Marsh Road changes from 30 mph to the national speed limit just west of the access proposal. The 60 mph limit indicates a design speed of 100 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 215 m. For a 215 m SSD and a setback of 2.4 m from the carriageway, required visibility cannot be achieved to the west of the proposal without significant vegetation clearance, additionally White Horse Farm sits within the visibility splay. Visibility to the east also cannot be achieved without considerable vegetation clearance.
- 2.6.7 However, speed survey information has been obtained and the 85th percentile Desirable Minimum SSD and Absolute Minimum SSD has been calculated based on the Manual for Streets 2. These SSD splays can be seen in Figure 14 depicted as an orange line (Absolute Min.) and a purple line (Desirable Min.) at SSD distances of 77 m and 98 m respectively. These reduced SSDs based on road users actual speed for this section of road show the potential for little to no vegetation clearance for the access location if these values are accepted by the Local Highway Authority.

South off Marsh Road

- 2.6.8 The location for the access south off Marsh Lane has been identified on Plate 2-15.



Plate 2-15: South off Marsh Road Access Proposal

- 2.6.9 This access location is identified as being the most optimal for this road due to it providing the best possible visibility for an access south off Marsh Road. Additionally, it utilises an existing access, thereby reducing the length of hedgerow removal required to accommodate the access proposal bell mouth.
- 2.6.10 The constraints for this location include back of verge hedgerow on both sides of the carriageway, narrow verges on both sides of the carriageway, telecommunications poles on both sides of the carriageway at small, spaced intervals, and overhead lines on both sides of the carriageway, Pit Bridge spanning Engine Dike that runs through the centre of the Grid Connection Corridor and the curved alignment of Marsh Road. Any access south off this section of the carriageway would require it to be on the inside of a curve which would result in unfavourable visibility. Existing trees on both sides of the carriageway to the south-east of the access proposal eliminate access opportunities further down Marsh Road. This section of the road also acts as part of the Trans Pennine Trail for walkers, cyclists, and horses, labelled 'Tilts to Braithwaite'.
- 2.6.11 To avoid conflict with the telecommunications poles, an option to the east of the access proposal on the inside of the bend in the road was analysed. This option was discounted due to the vegetation clearance that would be required to achieve minimum required junction visibility.

- 2.6.12 The preferred access proposal utilises an existing footprint, but the bell mouth proposal exceeds the footprint of the existing access so additional hedgerow clearance to facilitate the access proposal footprint will be required.
- 2.6.13 The speed limit on this section of Marsh Road changes from 30 mph to the national speed limit just west of the access proposal. The 60 mph limit indicates a design speed of 100 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 215 m. For a 215 m SSD and a setback of 2.4 m from the carriageway, required visibility cannot be achieved to the west of the proposal without significant vegetation clearance. Required visibility to the east cannot be achieved without considerable vegetation clearance.
- 2.6.14 However, speed survey information has been obtained and the 85th percentile Desirable Minimum SSD and Absolute Minimum SSD has been calculated based on the Manual for Streets 2. These SSD splays can be seen in Figure 15 depicted as an orange line (Absolute Min.) and a purple line (Desirable Min.) at SSD distances of 77 m and 98 m respectively. These reduced SSDs based on road users actual speed for this section of road show the potential for less vegetation clearance for the access location if these values are accepted by the Local Highways Authority. If this is not possible, a departure from standard should be sought with the Local Highways Authority on the basis that this area is considered to be, on the balance of safety, the most appropriate location to access this region of the Grid Connection Corridor.
- 2.6.15 Due to the proximity of the telecommunications poles, the standard bell mouth geometry would need to be revised to avoid any potential conflict. As a result, the radii on the western side of the access would need to be decreased from 15 m to 10 m. To ensure vehicles can still make all manoeuvres in and out of the access, SPA was completed using a tractor pulling a 12.0 m trailer as shown in Plate 2-16. Due to the alignment of the road and the smaller radii, the manoeuvre of this vehicle travelling from east to west making a left turn into the access will utilise the whole width of the access, therefore not permitting two vehicles to use the access simultaneously. This risk has been assessed against the risk of providing the access in an alternative location with further reduced visibility. It was deemed that the risk associated with the selected access proposal was less severe and could be more easily mitigated through the use of appropriate traffic management.
- 2.6.16 If the proximity of the telecommunication pole to the access however is not acceptable to the Statutory Undertaker, it would be necessary to divert and relocate the telegraph pole to provide the necessary clearance. In this event, it would be recommended that the diversion works accommodate a bell mouth that eliminate the issues highlighted in Section 2.6.15 allowing two-way movement through the access.



Plate 2-16: South off Marsh Road Swept Path Analysis Tractor and 12.0 m Trailer

2.7 Thorpe Bank

West off Thorpe Bank

2.7.1 The location for the access west off Thorpe Bank is identified on Plate 2-17.



Plate 2-17: West off Thorpe Bank Access Proposal 1

- 2.7.2 This access location is identified as being the most optimal for this road as it provides the best visibility along this section of road.
- 2.7.3 The constraints for this area include the southbound verge comprising an earthen bund topped with sheet piles that act as a flood defence for the River Don behind.
- 2.7.4 The access proposal would be new and would require complete hedgerow removal for the width of the bell mouth to accommodate the access. Though it is noted that the line of hedgerow running perpendicular to the carriageway that previously separated the adjacent fields in two has since been removed, therefore limiting any internal hedgerow removal.
- 2.7.5 The speed limit on Thorpe Bank is the national speed limit. The 60 mph limit indicates a design speed of 100 kph, using DMRB CD 109 Table 2.10 this provides a SSD of 215 m. For a 215 m SSD and a setback of 2.4 m from the

carriageway, minimum required visibility cannot be achieved to the east or west of the access proposal. Further investigation on Google Street view shows that the southbound verge, which the 215 m visibility splay interacts with, consists of an earthen bund with a significant vertical profile, topped with sheet piles, protecting the road from the River Don. It is recommended that this bund should not be partially excavated or regraded to achieve required visibility, as this could cause issues with the geotechnical design and strength of the sheet piles that act as part of the existing flood defence system.

- 2.7.6 However, speed survey information has been obtained and the 85th percentile Desirable Minimum SSD and Absolute Minimum SSD has been calculated based on the Manual For Streets 2. These SSD splays can be seen in Figure 22 depicted as an orange line (Absolute Min.) and a purple line (Desirable Min.) at SSD distances of 85 m and 109 m respectively. These reduced SSDs based on road users actual speed for this section of road show the potential for little to no vegetation clearance for the access location if these values are accepted by the Local Highway Authority.

2.8 Access to the Existing National Grid Thorpe Marsh Substation

- 2.8.1 Engagement with the Existing National Grid Thorpe Marsh Substation is recommended in order to discuss a suitable access strategy in line with their requirements.
- 2.8.2 SPA has been completed on all existing accesses to the old power plant off Thorpe Bank and at the junction of Fordstead Lane and Marsh Lane to outline the best access to the Existing National Grid Thorpe Marsh Substation. SPA was completed with the max. legal Heavy Goods Vehicle to demonstrate a worst-case scenario. However, this should be read in conjunction with the conclusions of **PEIR Volume III Appendix 13-7: High-Level Route Assessment**.

Access to Existing National Grid Thorpe Marsh Substation – West off Thorpe Bank

- 2.8.3 The southern existing access has been identified as the most optimal location for the access west off Thorpe Bank to the Existing National Grid Thorpe Marsh Substation as the existing access has been demonstrated through SPA to be adequate to accommodate HGV movements and increases the distance from the level crossing to the north. This arrangement and SPA is shown below in Plate 2-18.

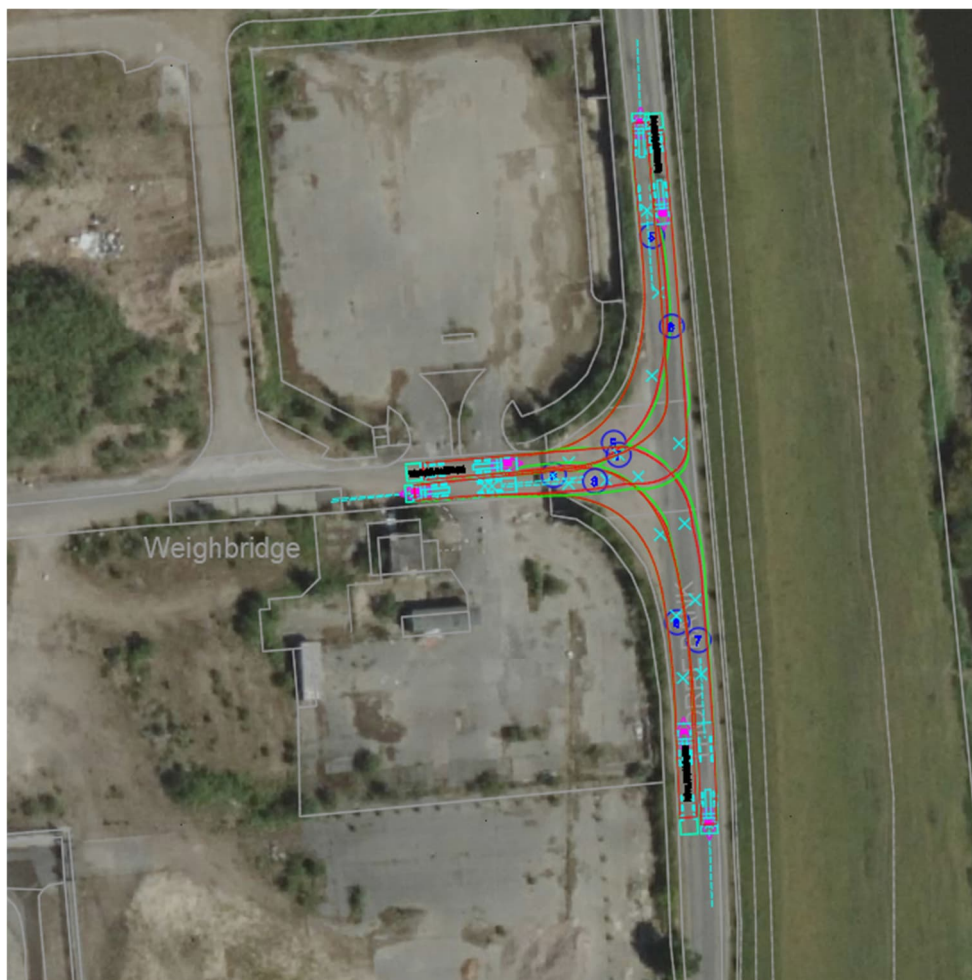


Plate 2-18: Existing Southern Access West off Thorpe Bank to the Existing National Grid Thorpe Marsh Substation and SPA

Access to Existing National Grid Thorpe Marsh Substation – North off Fordstead Lane

- 2.8.4 The junction of Marsh Lane and Fordstead Lane provides another potential access to the Existing National Grid Thorpe Marsh Substation, as travelling northbound on Marsh Lane leads into the Existing National Grid Thorpe Marsh Substation. However, due to the 7.5-ton weight limit on Fordstead Lane to the east of this location, access and egress would be limited to the west as reported in the conclusions of **PEIR Volume III Appendix 13-7: High Level Route Assessment**. SPA for this arrangement presented below in Plate 2-19 shows that this existing access would require no retrofitting to accommodate the manoeuvres required for HGV vehicles.



Plate 2-19: Existing Access North off Fordstead Lane to the Existing National Grid Thorpe Marsh Substation and SPA

- 2.8.5 As both accesses highlighted above would require no works apart from traffic management to be feasible access points for the Existing National Grid Thorpe Marsh Substation, it is recommended that both accesses are be considered for preliminary design, with engagement of the Existing National Grid Thorpe Marsh Substation Operator to be undertaken to identify the preferred option.

3. Summary

- 3.1.1 This appendix should be read in conjunction with both **PEIR Volume III Appendix 13-5: Indicative Access Appraisal for the Solar PV Site** and **PEIR Volume III Appendix 13-7: High Level Route Assessment** in order to undertake a holistic review of the proposed access strategy.
- 3.1.2 Access locations for the Grid Connection Corridor have been assessed, and these access locations will now be developed during preliminary design and the proposals submitted to the Local Highways Authority for consideration. The access locations are tabulated below in Table 3-1.
- 3.1.3 The Grid Connection Corridor has been reviewed in the context of a Tractor with a 10 m Trailer moving within the Local Road Network from the Solar PV Site to the Existing National Grid Thorpe Marsh Substation in the south. A number of locations have been highlighted in **PEIR Volume III Appendix 13-7: High Level Route Assessment** that could cause conflicts along the route. These locations will be communicated to the Local Highway Authority and appropriate mitigation will be agreed upon. For details on these points of interest along the Grid Connection Corridor, refer to **PEIR Volume III Appendix 13-7: High Level Route Assessment**.
- 3.1.4 Additionally, due to the issues regarding the Moss Road and Trumfleet Lane junction the Scheme is seeking to minimise the impact on the local road network by investigating the feasibility of using an internal haul route within the Site Boundary between the south off Moss Road access proposal and the East off Trumfleet Lane access proposal. This optioneering will continue to be evaluated and refined during preliminary design.

Table 3-1: Access Locations Summary

Access Proposal	Corresponding Plate
North off Moss Road	Plate 2-5
South off Moss Road	Plate 2-7
East off Trumfleet Lane	Plate 2-8
North off Brick Kiln Lane	Plate 2-9
South off Brick Kiln Lane	Plate 2-12
North off Trumfleet Lane	Plate 2-13
North off Marsh Road	Plate 2-14
South off Marsh Road	Plate 2-15
West off Thorpe Bank	Plate 2-17
West off Thorpe Bank to Existing National Grid Thorpe Marsh Substation and North off Fordstead Lane to Existing National Grid Thorpe Marsh Substation	Plate 2-18 and Plate 2-19

4. References

- Ref. 1 His Majesty's Government (2008). Planning Act 2008. Available at: <https://www.legislation.gov.uk/ukpga/2008/29/contents>. [Accessed 15 February 2024].
- Ref. 2 City of Doncaster Council (2023). Public Rights of Way Pages. Available at: <https://www.doncaster.gov.uk/services/culture-leisure-tourism/public-rights-of-way-pages>. [Accessed 15 February 2024].

An aerial photograph of a vast solar farm at sunset. The rows of solar panels stretch across the landscape, creating a strong sense of perspective. The sky is a deep, dark orange, and the sun is low on the horizon, casting long, soft shadows across the panels.

BOOM
POWER

BUILD | OWN | OPERATE | MAINTAIN

BOOM-POWER.CO.UK