

Technical Note 01

Assessment of Grid Connection Route Cable Laying Process

Prepared for: AGR 4 Solar Ltd

PINS Ref: APP/X1925/V/23/3323321

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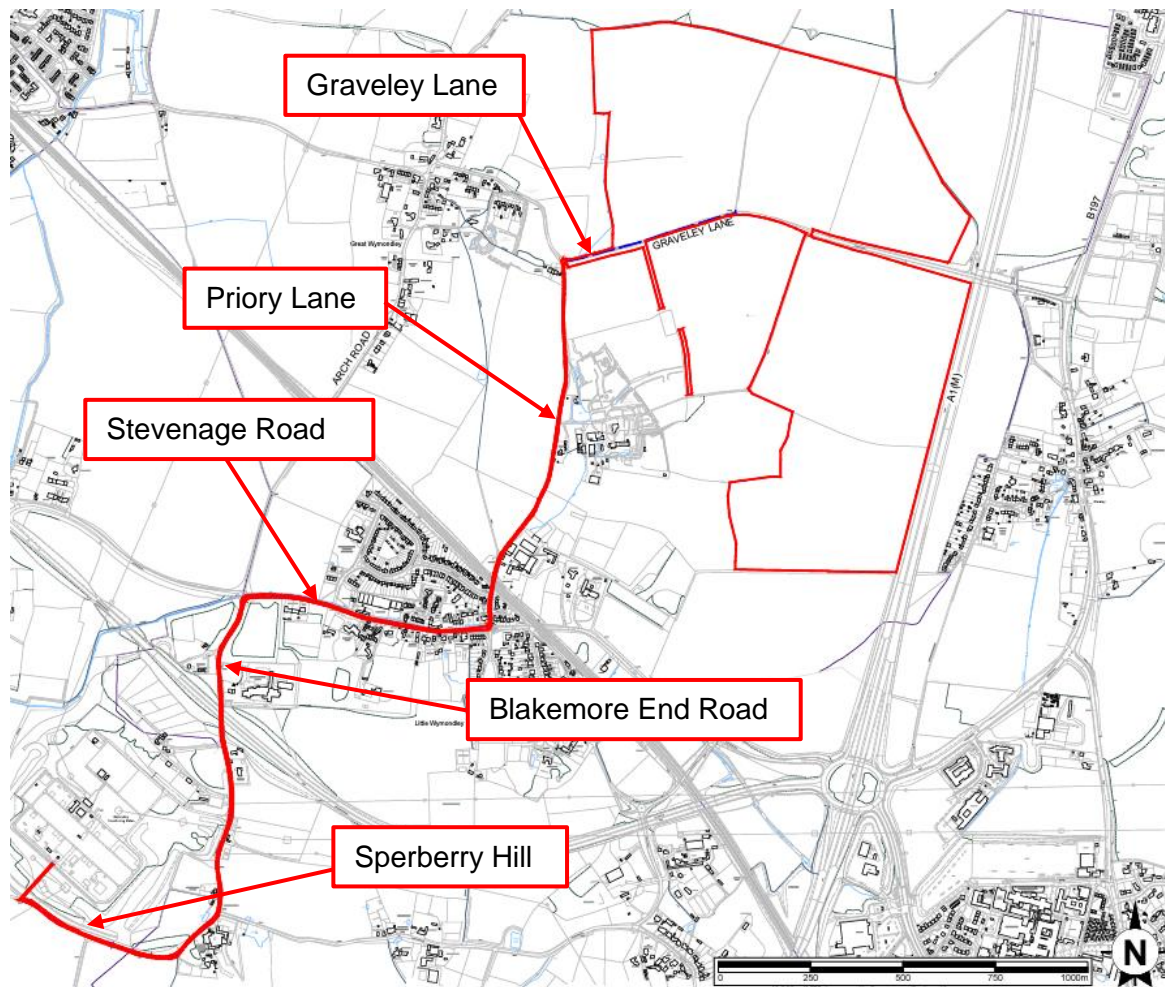
18 September 2023

3004-01-TN01

Introduction

1. The Technical Note 01 (TN01) has been prepared to assist the Inspector and all other interested parties to better understand the typical process involved in, and implications of, laying the grid connection cables between the proposed solar farm and the National Grid sub-station at Sperberry Hill.
2. This includes consideration of the potential flood risk implications of the proposed cable laying works.
3. This Note has been prepared jointly by Mr Kendall, the Applicant's expert witness on transport, and Dr Tilford, the Applicant's expert witness on flooding.
4. The proposed cable route is shown below (source – CD14):-





Points of Concern Raised

5. During Mr Kendall's evidence on 14/09/23, a query was raised in relation to the likely methodology by which the appointed contractor might carry out the cable route trench excavation and reinstatement works. The query was raised specifically in the context of how local business and residents, for example those situated along Priory Lane, might maintain access to their properties during any temporary road closure periods.
6. Mr Kendall stated that he did not profess to have any particular expertise in this matter, and that it would be a matter for the appointed contractor to consider and agree as part of their S50 License application (which is a separate consenting regime to planning).
7. Nonetheless, he speculated that, in his own view, it would probably be impractical to expect that the spoil from the excavated trenches would be backfilled each day - for example to allow local residents and business to use the affected sections of roads during the evenings when the works are not occurring.



8. During Dr Tilford's evidence the following day on 15/09/23, further queries were raised by the Joint Objector's Group (JOG) and the Inspector in relation to any potential flood risk implications on Priory Lane (a surface water 'flow pathway') and Stevenage Road (within flood zone 3) if and when the cable trenches are open and spoil might be stored adjacent on the highway.
9. These particular discussions revolved around two concerns – firstly that the spoil might contaminate the surface water run-off, thus leading to blocked highway drains, and secondly, that any such spoil heaps might potentially divert surface water run-off so that increased flood risk arises in certain areas.
10. This Note therefore seeks to clarify matters in relation to these two issues – the maintenance of access to local business and residents during the cable laying works, and the potential implications of excavated trench spoil on flood risk.

Access to Local Businesses and Residents during Cable Laying Works

11. The precise methodology by which the appointed contractor will carry out the cable laying works will, as indicated above, be the subject of an application process that largely lies outside the scope of the planning system.
12. Nonetheless, for added reassurance on this topic, in this instance it is proposed to add extra planning controls in relation to the flood risk issues (as discussed later in this Note).
13. It should also be noted that the process outlined in this Note has been prepared without prejudice to any risk assessment, method statement, traffic management plan, schedule plan, consideration of other utility routes and other details that the appointed Independent Connection Provider (ICP) will submit in due course.
14. Works in the highway are governed by the New Roads and Street Works Act 1991. As part of this any contractor doing works in the highway would have to apply to the Local Highways Authority (LHA), in this case, Hertfordshire County Council's highways department, for a Section 50 licence. The Section 50 licence would cover all details of the works including the re-construction of the cable trench, traffic management plans and reinstatement. This process is typically very detailed and heavily controlled by the LHA, and requires competent contractors with demonstrable track records and all relevant public liability and professional indemnity insurances to be in place.

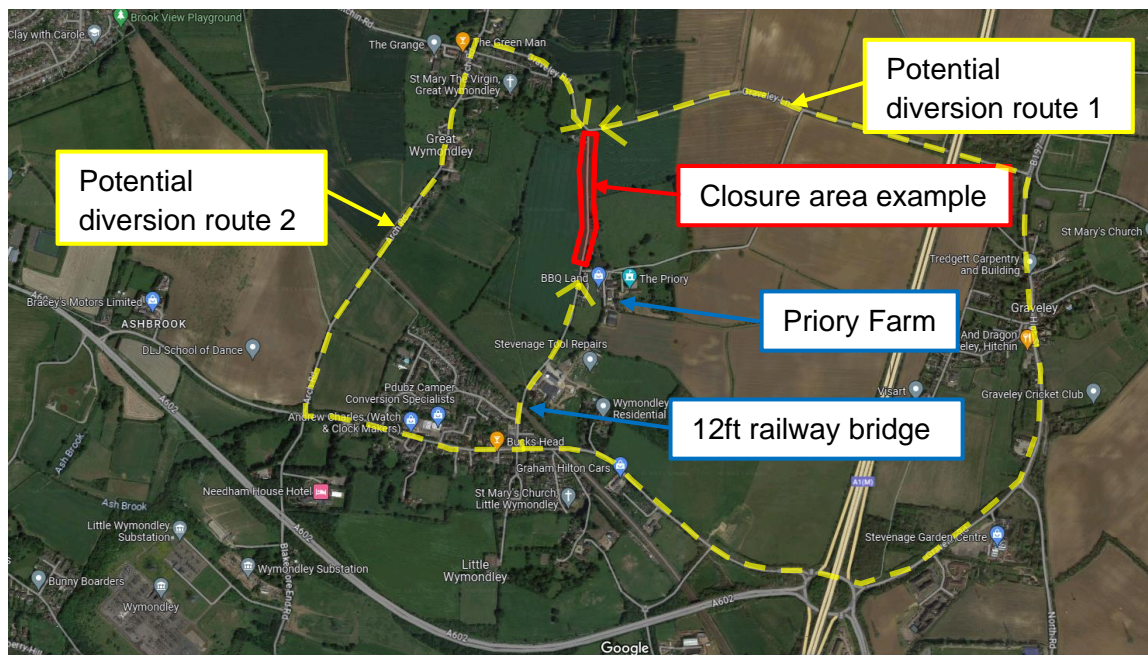


15. Notwithstanding this fact, this Note has been prepared to set out how, typically, these kinds of operations might take place. Nonetheless it has due regard to the specifics of the proposed solar farm at Wymondley, the constraints of the local highway network and how some of the concerns raised during the course of the Inquiry might be satisfactorily mitigated and controlled.

The Typical Process

16. The cable laying process is likely to be planned well in advance, following a 'route proving' study, and will very likely be undertaken in sections. Consultation with local residents and business will likely have a very significant bearing on the timetabling and length of each works section, so as to minimise disruption, and indeed the methodology taken along each section.
17. Experience from other projects suggests that it may be possible to lay a 50-100m length of cable per day. The cable will typically be laid some 600mm to 750mm deep below the highway surface.
18. Where the road width constraints mean that a one-way working system (i.e. one controlled by traffic lights or 'stop & go' signs) cannot practically be implemented, a full road closure will be necessary (for example along most of Priory Lane, parts of Blakemore End Road and elsewhere). Where this is required, a temporary diversion route will be put in place.
19. An example of how such a diversion route might look during the relatively brief temporary road closure periods is shown below, using the 430m-long northern section of Priory Lane as an example (again, it should be noted that this has been prepared simply as an example for illustrative purposes, and without prejudice to the substance of any S50 License application that is subsequently prepared by the appointed contractor).





20. In the example above, vehicles heading to and from the residents and businesses around Priory Farm would be diverted along the southern section of Priory Lane, where there is a 12ft high railway bridge constraint.
21. The consultation process with these businesses and residents may reveal that, for example, a road closure period of say, 7 days along the northern section would seriously affect their usual business patterns, insofar as they may require daily access by the vehicles higher than 12ft.
22. In such circumstances, the contractor would therefore simply need to re-adjust their plan to maintain suitable access for those businesses before the plan can be agreed with the Local Highway Authority (HCC) through the S50 License process.
23. Again, taking the example above, the plan adjustments could include (inter alia):-
 - i) Carrying out the cable laying works and road closures in much shorter sections, so that backfilling and route reinstatement can be completed in much shorter time periods (within a working day);
 - ii) Carrying out certain parts of the route, to minimise disruption to businesses, over weekends, rather than during working hours;
 - iii) With specific regard to the wedding venue at Priory Farm, gaining an understanding of the event timetable and planning the works around those events as best as possible;

- iv) Planning the route of the cable trenches, where feasible, within the highway verge or at the edges of the lane so that specific, pre-agreed provision can be made to allow certain higher vehicles through the closure area, to the side of the trench works;
 - v) Removing spoil via a 'grab wagon' to a temporary storage location off the highway to allow the above (see also the section below on Flood risk in relation to this point); and/or,
 - vi) Making provision to allow specific vehicles through the closure areas within specific time windows, whereby reinforced steel plating is temporarily laid across any open trenches and banksmen are used to guide certain higher vehicles along.
24. Where the cable works need to pass across the junction bellmouths of accesses or driveways served from the highway, typically the trench and associated road closure area will extend half-way across the said access (so that physically gaining access is still achievable via the other 'open' half of the access), then backfilling / reinstating that half of the road so that the other half can be worked on thereafter. Again, steel plating can be used to cover open trenches temporarily in these situations. There are also alternative methods available, such as directional tunnel boring machines that do not require the surface of a highway to be broken.
25. Where the cable runs along the highway or other land between a solar farm and the sub-station, this is typically known as the 'contestable' part of the works. That is to say, the overall part of the works where the appointed contractor has the flexibility to select suitable works methodologies that satisfy all other consenting and permit requirements of the Local Highway Authority or other landowners. For contestable works, there is considerable flexibility available to the appointed contractor and methodical changes that can be explored and agreed to mitigate specific concerns or challenges along all or part of the route.
26. Typically, the only 'non-contestable' part of the works will concern that part of the cable route that runs through National Grid land, for example the sub-station itself, and which National Grid's own contractors would therefore be expected to oversee. The non-contestable part of the works would not however be expected to cause material disruption to any local residents or businesses, and so is irrelevant to the matter at hand.



Potential Flood Risk Implications of Trench Excavation Works

27. At the time of preparing this Note, some discussion has already taken place in relation to the wording and structure of planning conditions, and that a further Inquiry session is planned in due course to refine the conditions that might be applied to any grant of planning permission.
28. At the time of writing, draft condition 4 is a pre-commencement condition which relates to the required content of the Construction Management Plan. Stem (11) of the condition currently suggests that the Construction Management Plan will need to include:
- “confirmation that during installation of underground cables, no spoil or material shall be stored adjacent to Stevenage Road, within the extent of Flood Zone 3.”*
29. Given that spoil material might otherwise be stored for perhaps up to one week or so alongside trench sections before re-instatement, it is important that spoil material is not stored along Stevenage Road which is located in Flood Zone 3 (as previously recommended), but also that spoil material should not be stored along Priory Lane.
30. It is therefore recommended that the wording of stem (11) of draft condition 4 is amended to:
- “Confirmation that during installation of underground cables, no spoil or material shall be stored adjacent to Stevenage Road, within the extent of Flood Zone 3, or along Priory Lane, which is at risk of surface water flooding at times of heavy and/or sustained rainfall.”*
31. Whilst open trenches would not increase flood risk, it is considered prudent that cable trenches are not excavated if heavy rainfall and or flooding is forecast, to avoid the extraction and storage of additional spoil material at this time.
32. Little Wymondley is located in a Flood Warning Area¹ and a Flood Alert Area² (refer definitions presented in Annex 1) providing advance warning (typically up to 5 days for a Flood Alert) of potential flooding in the area.

¹ Environment Agency reference: 052FWFIVHG - Ash Brook, Ippollitts Brook and River Purwell at Hitchin, Ashbrook, Little Wymondley and Graveley

² Environment Agency reference: 052WAFIVEL - River Ivel in Hertfordshire and Central Bedfordshire

33. As such, it is recommended that the Construction Management Plan also includes a Flood Management Plan. The Flood Management Plan would:

- i) Require the contractor to sign up to the Environment Agency flood warning service; and
- ii) Set out the actions to be taken in the event that a Flood Alert and/or Flood Warning is received from the Environment Agency (including a requirement that no new trenches to be excavated until the Environment Agency has issued an “All Clear”).

34. The above measures would in Dr Tilford’s opinion appropriately mitigate the risk of the cable laying process increasing flood risk, as well as mitigating the risk of spoil material being mobilised by flood water.



Annex 1:

Explanatory Note on Flood Alert Areas and Flood Warning Areas

The following information is available on the gov.uk website, and has been provided verbatim. Website references have been provided:

Flood Alert Areas

Source: <https://www.data.gov.uk/dataset/7749e0a6-08fb-4ad8-8232-4e41da74a248/flood-alert-areas>

Published by: Environment Agency

Last updated: 01 September 2023

Topic: Not added

Licence: Other Licence

[View licence information](#)

1

2 [Summary](#)

This record is for Approval for Access product AfA055. Flood Alert Areas are geographical areas where it is possible for flooding of low-lying land and roads to occur from rivers, sea and in some locations groundwater. A single Flood Alert Area may cover the floodplain within the Flood Warning Service Limit of multiple catchments of similar characteristics. A Flood Alert Area may contain one or more Flood Warning Areas. In some coastal locations a Flood Alert may be issued for spray or overtopping and be defined by a stretch of coastline.

A Flood Alert is issued to warn people of the possibility of flooding and encourage them to be alert, stay vigilant and make early / low impact preparations for flooding. Flood Alerts are issued earlier than Flood Warnings to provide advance notice of the possibility of flooding and may be issued when there is less confidence that flooding will occur in a Flood Warning Area. Flood Warnings Areas (established to apply to discrete communities) are available in AfA054.

INFORMATION WARNING: The groundwater flood alert areas are either at a community/local scale, or where this is not possible are more generalised and based on other factors, such as geology and counties. In general, specialists used the national groundwater dataset to make a comparison with historical maps and bedrock geology to create the groundwater flood alert areas. Additional data sources, including groundwater susceptibility maps, borehole data, local modelling and LiDAR may also have been used depending on the location of the area.

Flood Alert Areas can be created, amended, or deleted at certain times in the year. The next scheduled updates where changes may be introduced is 22nd November 2023



Flood Warning Areas

Source: <https://www.data.gov.uk/dataset/0d901c4a-6e1a-4f9a-9408-73e0c1f49dd3/flood-warning-areas>

Published by: Environment Agency

Last updated: 02 September 2023

Topic: Not added

Licence: Other Licence

[View licence information](#)

3

4 [Summary](#)

This record is for Approval for Access product AfA054 Flood Warning Areas. These are geographical areas where we expect flooding to occur and where we provide a Flood Warning Service. They generally contain properties that are expected to flood from rivers or the sea and in some areas, from groundwater. Specifically, Flood Warning Areas define locations within the Flood Warning Service Limit that represent a discrete community at risk of flooding.

Flood Warnings are issued when flooding is expected to occur, Severe Flood Warnings are issued to similar areas when there is a danger to life or widespread disruption is expected.

INFORMATION WARNING: Groundwater flood warning areas are property based, usually containing a discrete urban area, suburb, city, village, or hamlet and were created in various ways. In general specialists used the national groundwater dataset, historical maps, bedrock geology and records of properties affected by groundwater flooding in the past to create the groundwater flood warning areas. Additional data sources, including groundwater susceptibility maps, borehole data, local modelling and LiDAR may also have been used depending on the location of the area.

Flood Warning Areas can be created, amended, or deleted at certain times in the year. The next scheduled updates where changes may be introduced is 22nd November 2023

