The Planning Inspectorate
Yr Arolygiaeth Gynllunio

SCOPING OPINION:

Proposed Lostrigg Solar

Case Reference: EN0110004

Adopted by the Planning Inspectorate (on behalf of the Secretary of State) pursuant to Regulation 10 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

30 July 2024

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APPENDIX 1: CONSULTATION BODIES FORMALLY CONSULTED

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1. INTRODUCTION

1.0.1 On 19 June 2024, the Planning Inspectorate (the Inspectorate) received an application for a Scoping Opinion from RWE Renewables UK Solar and Storage Ltd (the Applicant) under Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) for the proposed Lostrigg Solar (the Proposed Development). The Applicant notified the Secretary of State (SoS) under Regulation 8(1)(b) of those regulations that they propose to provide an Environmental Statement (ES) in respect of the Proposed Development and by virtue of Regulation 6(2)(a), the Proposed Development is 'EIA development'.

1.0.2 The Applicant provided the necessary information to inform a request under EIA Regulation 10(3) in the form of a Scoping Report, available from:

EN0110004 – Scoping Report (main text)

EN0110004 – Scoping Report (Appendices)

EN0110004 – Scoping Report (Figures)

1.0.3 This document is the Scoping Opinion (the Opinion) adopted by the Inspectorate on behalf of the SoS. This Opinion is made on the basis of the information provided in the Scoping Report, reflecting the Proposed Development as currently described by the Applicant. This Opinion should be read in conjunction with the Applicant's Scoping Report.

1.0.4 The Inspectorate has set out in the following sections of this Opinion where it has / has not agreed to scope out certain aspects / matters on the basis of the information provided as part of the Scoping Report. The Inspectorate is content that the receipt of this Scoping Opinion should not prevent the Applicant from subsequently agreeing with the relevant consultation bodies to scope such aspects / matters out of the ES, where further evidence has been provided to justify this approach. However, in order to demonstrate that the aspects / matters have been appropriately addressed, the ES should explain the reasoning for scoping them out and justify the approach taken.

1.0.5 Before adopting this Opinion, the Inspectorate has consulted the 'consultation bodies' listed in Appendix 1 in accordance with EIA Regulation 10(6). A list of those consultation bodies who replied within the statutory timeframe (along with copies of their comments) is provided in Appendix 2. These comments have been taken into account in the preparation of this Opinion.

1.0.6 The Inspectorate has published a series of advice notes on the National Infrastructure Planning website, including Advice Note 7: *Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping* (AN7). AN7 and its annexes provide guidance on EIA processes during the pre-application stages and advice to support applicants in the preparation of their ES.

1.0.7 Applicants should have particular regard to the standing advice in AN7, alongside other advice notes on the Planning Act 2008 (PA2008) process, available from:

https://www.gov.uk/government/collections/national-infrastructure-planning-advice-notes

Advice notes | National Infrastructure Planning (planninginspectorate.gov.uk)

1.0.8 This Opinion should not be construed as implying that the Inspectorate agrees with the information or comments provided by the Applicant in their request for an opinion from the Inspectorate. In particular, comments from the Inspectorate in this Opinion are without prejudice to any later decisions taken (e.g. on formal submission of the application) that any development identified by the Applicant is necessarily to be treated as part of a Nationally Significant Infrastructure Project (NSIP) or Associated Development or development that does not require development consent.

2. OVERARCHING COMMENTS

2.1 Description of the Proposed Development

(Scoping Report Section - various)

ID	Ref	Description	Inspectorate's comments
2.1.1	Table 2.1	Solar panels - key parameters	Height – this sentence states that panel heights are 'between 0.8m' but this sentence has not been completed.
2.1.2	Paragraph 2.4.4.1	Flexibility	The Scoping Report states that the Battery Energy Storage System is likely to consist of lithium-ion batteries. Where flexibility is being sought on the types of batteries within the Proposed Development, the ES should present a worst-case assessment for the available options.
2.1.3	Paragraph 2.4.10.4	Embedded mitigation	The Scoping Report states that an appropriate buffer between construction and properties will be used, the ES should define appropriate in terms of distance and provide a justification.
2.1.4	Paragraph 2.5.7.1	Lighting	The Scoping Report states that lighting may be required during the construction phase, but no information is required regarding location of lighting etc. The ES should provide full details of location and types of lighting and assess effects from lighting on both ecological and human receptors. If mitigation is required, this should be documented within the Construction Environmental Management Plan.
2.1.5	Section 2.6	Maintenance	The Scoping Report provides a very general overview of maintenance activities which may be required during operation. Given the size of the site and potential for replacements parts etc, the Inspectorate considers that the ES should provide more information regarding this matter. On that basis, the Inspectorate considers there may be potential for a large number of panels/components which may need to be replaced during the operational life of the project. Although there is potential for technological improvements to extend this design life, the ES should ensure that a worst-case

ID	Ref	Description	Inspectorate's comments
			scenario is assessed. Where there is the potential for comprehensive replacement of infrastructure during the operational lifespan of the Proposed Development this should be appropriately assessed. The ES should provide estimates of types and quantities of waste expected as well as an assessment of likely significant effects associated with the generation and disposal of waste if relevant.
2.1.6	Paragraph 4.5.5.3	Land reinstatement	The Scoping Report states that post decommissioning, the land would be returned to its former use 'as far as possible'. The ES should explain the nature of reinstatement works and provide explanations for areas which could not be returned to their former use.

2.2 EIA Methodology and Scope of Assessment

(Scoping Report Section - various)

ID	Ref	Description	Inspectorate's comments
2.2.1	Paragraph 2.4.5.1	Assessment of options	The cable route has not yet been finalised, but the Scoping Report explains that it will be located within the current red line boundary. The Applicant should make every attempt to narrow the option for the cable route and explain clearly in the ES why the preferred route was taken forward.
2.2.2	N/A	Scope of summary tables	The use of summary tables to summarise the scope of the assessment at the end of each aspect chapter is helpful however it would be helpful if the matter to be scoped out of the aspect assessment was described in the same way as that used in the text above for ease of comparison and understanding.
2.2.3	N/A	Transboundary	The Inspectorate on behalf of the SoS has considered the Proposed Development and concludes that the Proposed Development is unlikely to have a significant effect either alone or cumulatively on the environment in a European Economic Area State. In reaching this conclusion the Inspectorate has identified and considered the Proposed Development's likely impacts including consideration of potential pathways and the extent, magnitude, probability, duration, frequency and reversibility of the impacts. The Inspectorate considers that the likelihood of transboundary effects resulting from the Proposed Development is so low that it does not warrant the issue of a detailed transboundary screening. However, this position will remain under review and will have regard to any new or materially different information coming to light which may alter that decision.

ID	Ref	Description	Inspectorate's comments
			Note: The SoS' duty under Regulation 32 of the 2017 EIA Regulations continues throughout the application process. The Inspectorate's screening of transboundary issues is based on the relevant considerations specified in the Annex to its Advice Note Twelve, links for which can be found in paragraph 1.0.7 above.

3. ENVIRONMENTAL ASPECT COMMENTS

3.1 Agricultural Land Use

(Scoping Report Section 5)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.1.1	Paragraph 5.8.1.1 and Table 5-13 and Table 21.1	Effects on wider farm holdings/farm businesses – all phases	The Scoping Report explains that landowners involved in the Proposed Development have signed up by voluntary agreement to lease their land to the Proposed Development and have therefore considered the potential effects on the overall viability of the farm holdings. The Scoping Report states that this also includes agricultural tenants. The Inspectorate notes that the Applicant is looking into opportunities for sheep grazing whilst the Proposed Development is operational. No information is provided regarding whether this may be by the landowner or tenant and no information is provided which explains the overall viability of the farm holdings. At this stage the Inspectorate considers this matter can not be scoped out. As such, the ES should provide further information regarding the potential for grazing of livestock and report any potential significant effects.
3.1.2	Section 5.6.2 and Table 5-13	Effects on agricultural land and soils due to loss and damage - operation	The Scoping Report seeks to scope out effects on agricultural land and soils due to loss and damage during the operational phase. The justification provided in the Scoping Report is that any adverse effects would be experienced during the construction phase. The Applicant intends to produce an outline Soil Resource Management Plan and Outline Landscape and Ecological Management Plan which would be secured in the dDCO. On this basis, the Inspectorate agrees to scope this matter out.

ID	Ref	Description	Inspectorate's comments
3.1.3	Paragraph 5.9.1.1	Agricultural Land Classification (ALC)	Paragraph 5.9.1.1 of the Scoping Report states that an assessment is currently underway to identify the ALC of the site. The ES should explain how the design of the Proposed Development has taken into account Best Most Versatile (BMV) land in order to avoid, prevent, or reduce any potential likely significant effects on BMV land or explain why this is not feasible. The ES should quantify the amount of agricultural land that would be temporarily and permanently lost as a result of the Proposed Development by ALC grade, (with reference to an accompanying map/s depicting the grades) and assess any impacts, including to any Best and Most Versatile Land, that may result in likely significant effects. The ES should cross-refer conclusions in the aspect chapter to specific mitigation measures within the outline Soil Resource Management Plan which are relied upon for the conclusion of no likely significant effects.
3.1.4	N/A	Written Ministerial Statement	The Applicant's attention is drawn to the Written Ministerial Statement (UIN HCWS466) issued on 15 May 2024. The ES should contain a clear tabulation of the areas of land in each Best Most Versatile (BMV) classification to be temporarily or permanently lost as a result of the Proposed Development, with reference to accompanying map(s) depicting the grades. Specific justification for the use of the land by grade should be provided. Consideration should be given to the use of BMV land in the Applicant's discussion of alternatives.

3.2 Air Quality

(Scoping Report Section 6)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.2.1	Paragraph 6.8.1.1 and Table 6-5	Dust and particulate matter – construction	The Scoping Report seeks to scope out effects from dust and particulate matter during all phases of the Proposed Development. The Scoping Report states that sensitive receptors have been identified within 250m of the DDCO boundary, however no figures are provided which demonstrate where the sensitive receptors are located. The Scoping Report does not provide details of the numbers or types of receptor affected. The Scoping Report does not acknowledge if ecological receptors may be affected. The Inspectorate therefore does not agree to scoping this matter out. The ES should provide information regarding the location, number and type of sensitive receptor (including ecological receptors) within 250m of the DCO boundary and how these may be affected during construction, maintenance and decommissioning. The Inspectorate agrees that once operational, the Proposed Development is unlikely to result in significant air quality effects as the components of the Proposed Development do not produce dust emissions. This matter may be scoped out for the operational phase.
3.2.2	Paragraph 6.8.1.1 and Table 6-5	Vehicle emissions – all phases	Air quality in relation to vehicle emissions is proposed to be scoped out of the ES for all phases on the basis that the number of anticipated movements during construction, a total of 26 trips (52 two-way movements), covering both HGVs (18 HGV trips (36 two-way movements per day)) and workers (8 car/LGV trips (16 two-way movements)) are below the threshold criteria requiring an assessment of significant effects as set out in IAQM guidance. An outline Construction Traffic Management Plan (oCTMP) will be submitted with the application to ensure impacts on receptors are minimised.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			The Inspectorate agrees that a detailed assessment of construction traffic impacts on ecological sites can be scoped out. However, the ES should provide a plan showing the Affected Road Network (ARN) and if the ARN is located within 200m of a designated site, the ES should provide an assessment if significant effects are anticipated.

ID	Ref	Description	Inspectorate's comments
3.2.3	N/A	N/A	N/A

3.3 Biodiversity

(Scoping Report Section 7)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.3.1	Paragraph 7.8.2.5 and Table 7-7	Effects on priority habitats during operation	Scoping Report Figure 7.4.1 to Figure 7.4.5 identify areas of priority habitat and show this as 'h2a hedgerow'. The Scoping Report refers to purple moor grass and rush pasture as Priority Habitat (A35), yet these areas do not appear to be shown on the supporting figures. The Inspectorate does not, therefore agree to scope this matter out at this stage and considers that the ES should apply a consistent and accurate approach between the main report and figures and assess significant effects to these habitats where they are likely to occur.
3.3.2	Paragraph 7.8.2.5 and Table 7-7	Effects on the following species during operation: • Badger • Otter • Water vole • Amphibians • Reptiles • Fish • Invertebrates Protected and notable plants	These species are proposed to be scoped out on the basis that no direct effects are anticipated, and indirect effects can be managed by the use of embedded design measures and the outline Landscape and Environmental Management Plan (oLEMP). The Inspectorate agrees that significant effects are unlikely to occur during operation and these may be scoped out for this phase.

ID	Ref	Description	Inspectorate's comments
3.3.3	7.4.1.1	Otter and water vole surveys	Surveys for otter and water vole are proposed but this is caveated with "*where access is available*". The ES should explain any limitations to the survey work and should include a worst-case scenario assessment which would include effects on these species in areas where construction activities, including Horizontal Directional Drilling or other techniques are proposed in close proximity to watercourses.
3.3.4	Paragraph 7.6.1	Invasive non-native species (INNS)	Impacts from INNS have not been included in the impacts set out to be assessed in the ES in Scoping Report paragraph 7.6.1 though it is noted that the response from the Environment Agency refers to both Himalayan balsam and Japanese knotweed being present upstream. The ES should assess potential impacts from INNS where significant effects are likely to occur. Where mitigation measures are required, the ES should describe these measures and signpost where they are secured through the dDCO. Consideration should be given to the inclusion of a Biosecurity Method Statement and Invasive Species Management Plan alongside the DCO application as highlighted by the Environment Agency.
3.3.5	Paragraph 7.5.4.27	Great crested newts (GCN)	It is not clear from the Scoping Report if the Applicant intends to offset the effects of the Proposed Development on GCN by obtaining a licence through the Natural England District Level Licencing (DLL) scheme. However, the Scoping Report states that DLL mapping has already been used which identifies the site as 'amber' ("*amber zones have great crested newt populations, habitats and dispersal routes*"). If the Applicant enters into the DLL scheme, the outcome of the assessment by NE will be documented on an Impact Assessment and Conservation Payment Certificate (IACPC). The IACPC can be used to provide additional detail to inform the findings in the ES, including information on the Proposed Development's impact on GCN and the appropriate compensation required. If the DLL route is not pursued, the Applicant should include an assessment within the ES, including baseline surveys in line with NE's Standing Advice for GCN which suggests considering the use of a 500m study area. The Inspectorate notes the statement in paragraph 8.2.6 that GCN surveys may need to be undertaken

ID	Ref	Description	Inspectorate's comments
			according to survey areas based on "widely accepted survey guidance". Where guidance has been relied upon this should be clearly referenced within the ES.
3.3.6	Paragraph 7.7.2.2	Ancient and Veteran trees	Embedded mitigation measures for ancient and veteran trees are stated to be 15m from the Proposed Development. The ES should be supported by appropriate baseline data, including field survey, to identify the presence and condition of existing veteran and ancient trees, including hedgerow trees. Effects on ancient and veteran trees should be addressed in the ES, where there is potential for likely significant effects to occur.
3.3.7	Paragraph 7.8.1.1 and paragraph 4.2.2 of the PEA (Appendix 7.1)	Functionally Linked Land (FLL)	The Preliminary Ecological Appraisal (Appendix 7.1) states that further survey work will be undertaken to assess whether the site can be considered to be functionally linked to the Solway First SPA. If the site is identified as FLL, the ES should assess any potential significant effects as a result of the Proposed Development. The ES should provide details regarding any necessary mitigation/compensation.
3.3.8	Paragraph 7.8.1.3 and Figure 7.4.1 to 7.4.5	Priority Habitats	The Scoping Report acknowledges that the Proposed Development may affect areas of Priority Habitat which are present on site. These areas do not appear to be shown on the supporting figures. The ES should provide a plan which shows the location of all areas of priority habitat which may be affected by the Proposed Development. In their response, the Environment Agency have commented that other types of priority habitats are located in the area such as upland flushes, fens and swamps. The ES should include all areas of Priority Habitat on relevant figures.
3.3.9	Table 7-4	River Derwent and Bassenthwaite Lake Special Protection Area, Solway Firth SAC and River Ehen SAC.	It is noted that Table 7-4 does not include all qualifying species which are included in the site designations. The ES should ensure that all qualifying features for all designated sites are included. The Applicant should take note of comments provided by the Environment Agency, in their response to the Scoping Report.

ID	Ref	Description	Inspectorate's comments
3.3.10	Table 7-6	County Wildlife Sites (CWS)	Table 7-6 of the Scoping Report lists a number of CWSs within 2km of the Proposed Development. The ES should provide a plan which shows the location of these sites in relation to the Proposed Development. It is also noted that Smithywood Bank CWS is stated as being 7km from the Proposed Development, so it is not clear why this site has been included. The ES should explain the rationale for the inclusion of all sites.
3.3.11	Table 3 of the Preliminary Ecological Appraisal (Appendix 7.1)	Buffer zones for otter, white clawed crayfish and water voles	Table 3 of the Scoping Report states that with regards to otter and white clawed crayfish, Lostrigg Beck corridor and all ditches and streams shall be retained with a 10m buffer. For water vole, it is stated that a 5m buffer will be retained. The ES should explain and justify why there is a difference in approach to the buffer zones for these species.
3.3.12	NA	Confidential Annexes	Public bodies have a responsibility to avoid releasing environmental information that could bring about harm to sensitive or vulnerable ecological features. Specific survey and assessment data relating to the presence and locations of species such as badgers, rare birds and plants that could be subject to disturbance, damage, persecution, or commercial exploitation resulting from publication of the information, should be provided in the ES as a confidential annex. All other assessment information should be included in an ES chapter, as normal, with a placeholder explaining that a confidential annex has been submitted to the Inspectorate and may be made available subject to request.

3.4 Climate Change

(Scoping Report Section 8)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.4.1	Paragraph 8.5.4.3 and Table 8-8	Sea level rise	The Scoping Report seeks to scope out effects from sea level rise as the Proposed Development is not located in an area which is susceptible to sea level rise. Reference is made to the Coastal Risk Screening Tool (2024). The Inspectorate agrees with the justification provided and therefore this matter may be scoped out.
3.4.2	Table 8-9	Climate parameters for the in-combination climate change impact of the Proposed Development: • Temperature change • Sea level rise • Precipitation change • Wind	The Inspectorate agrees that changes in temperature, precipitation, sea level rise and wind as a result of climate change are unlikely to give rise to significant effects on all phases of the Proposed Development. Therefore, the Inspectorate is content to scope these matters out, however the ES should explain how the development has been designed to be resilient to such effects.

ID	Ref	Description	Inspectorate's comments
3.4.3	Paragraph 8.9.2.5	Resilience and adaptive measures	The ES should explain what the resilience and adaptive measures associated with the design or management of the Proposed Development are to mitigate the risk to receptors and the development as a whole. This should include a description of any

ID	Ref	Description	Inspectorate's comments
			likely significant effects resulting from the vulnerability of the Proposed Development to climate change.

3.5 Cultural Heritage and Archaeology

(Scoping Report Section 9)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.5.1	Paragraph 9.8.3.3 and Table 9-11	Direct impacts to buried archaeological remains – operation and decommissioning	As groundworks are not anticipated during the operational phase the Inspectorate agrees that this matter may scoped out. However, there may be potential for groundworks such as the removal of cables/piles during the decommissioning phase and therefore the Inspectorate considers this should be assessed where significant effects may occur.
3.5.2	Table 9-11 and Table 21.1	Potential impacts to the setting of designated heritage assets – construction and decommissioning	The Inspectorate considers that the Scoping Report does not provide justification as to why construction and decommissioning will not affect the setting of designated heritage assets. The layout of the Proposed Development, including the location of construction compounds and access points has not been finalised. If these were to be located close to a heritage asset, this could result in a significant effect during construction/decommissioning. As such, the Inspectorate does not agree to scope this matter out at this stage.
3.5.3	Table 9-11	Potential indirect impacts to the setting of non-designated heritage assets - construction and decommissioning	The Inspectorate considers that the Scoping Report does not provide justification as to why construction and decommissioning will not affect the setting of non-designated heritage assets. The layout of the Proposed Development, including the location of construction compounds and access points has not been finalised. If these were to be located close to a heritage asset, this could result in a significant effect during construction/decommissioning. As such, the Inspectorate does not agree to scope this matter out at this stage.
3.5.4	Paragraph 9.8.4.1	Impacts to heritage assets during decommissioning	The Scoping Report states that impacts are not anticipated during the decommissioning phase as all impacts would have already been experienced during the construction phase. The Inspectorate considers that an assessment of potential

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			affects arising from decommissioning should be included within the ES, particularly in relation to buried archaeological features e.g. the removal of piles may result in harm to these features.

ID	Ref	Description	Inspectorate's comments
3.5.5	Figure 9.1	Map legend	Figure 9.1 of the Scoping Report depicts designated heritage assets within a 3km study area of the Proposed Development. Grade I Listed Building are represented by a red dot and Grade II Listed Buildings are represented by an orange dot. It is not possible to differentiate between these colours which makes the figure difficult to understand. The Inspectorate considers that the ES should include a plan which clearly shows the different grading of Listed Buildings in the study area.
3.5.6	Paragraph 9.4.1.1	Study Area	The Scoping Report states that the study area is 3km and 1km for designated and non-designated assets respectively. It is explained that this distance is considered appropriate and is informed by professional judgement. It should be clear how the approach taken ensures that any heritage assets or conservation areas with long views towards or out from the Proposed Development have been identified and considered.

3.6 Electromagnetic Fields

(Scoping Report Section 10)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.6.1	N/A	Electric, Magnetic and Electromagnetic Fields (EMF)	The Scoping Report seeks to scope out electric, magnetic and electromagnetic fields. The Proposed Development proposes to use cable and infrastructure with a maximum voltage up to and including 132kV with the existing overhead line on the site also being 132kV. Any replacement pylons will maintain current capacity. The Applicant therefore considers that this meets guidelines published by the International Commission on Non–Ionizing Radiation Protection (ICNIRP) in 1998. On the basis that the proposed cable and infrastructure does not exceed 132kV, the Inspectorate is content that an assessment of likely significant effects from EMF from cables up to and including 132kV can be scoped out of the ES. However, if the design of the Proposed Development changes and voltages of over 132kV are proposed, this matter must be assessed.

ID	Ref	Description	Inspectorate's comments
3.6.2	N/A	N/A	N/A

3.7 Ground Conditions

(Scoping Report Section 11)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.7.1	Paragraphs 11.8.1.1, 11.8.2.1, 11.8.3.1 and Table 11.14	The effects of historic mining on the Proposed Development – All phases	The Inspectorate notes the findings of the Preliminary Risk Assessment (PRA) and information provided in the Scoping Report. Considering this and the measures proposed, the Inspectorate agrees that significant effects are unlikely to occur and is content to scope this matter out of the ES. However, the applicant should still seek to agree the approach with the Coal Authority and LPA, and the findings of the coal mining risk assessment should be summarised within the ES along with any measures proposed to mitigate significant effects.
3.7.2	Paragraph 11.8.1.2 and Table 11.14	Harm to human health from exposure to soil contamination - Construction	The Scoping Report sets out the findings of the PRA, and the commitment to the implementation of the oCEMP and best practice measures, including the use of PPE, to avoid any significant effects. On this basis, and considering the findings of the PRA, the Inspectorate agrees that significant effects are not likely to occur. This matter can be scoped out from the ES.
3.7.3	Paragraph 11.8.1.3 and Table 11.14	Effects upon ground water quality and surface water as a result of contaminant leaching - Construction	The Scoping Report states that the risk to ground and surface water from the Proposed Development is low and is to be further reduced through the implementation of the oCEMP, best practice measures and Sustainable Urban Drainage System (SuDS). On this basis, and considering the findings of the PRA, the Inspectorate is content to scope this matter out of the ES.
3.7.4	Paragraph 11.8.2.2 and Table 11.14	Effects on livestock grazing due to accumulation of any	The Inspectorate notes that the Applicant proposes to scope out the effects on grazing livestock due to the accumulation of any contamination. Given the limited information provided within the Scoping Report regarding known contaminant levels, grazing regimes and mitigation measures, the Inspectorate does not agree to scope

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
		contamination in soils - Operation	this matter out. The ES should assess the impacts from all phases of the development where there is the potential for likely significant effects to occur.
3.7.5	Paragraph 11.8.3.2 and Table 11.14	The exposure of made ground/contaminated soils through the removal of piles - Decommissioning	The Scoping Report states that there is the potential risk of human health exposure because of decommissioning activities. The Inspectorate notes the commitment to a outline Decommissioning Environmental Management Plan (oDEMP). On this basis, the Inspectorate is content to scope this matter out from further assessment within the ES.

ID	Ref	Description	Inspectorate's comments
3.7.6	Paragraph 2.5.9.6	Horizontal Directional Drilling (HDD)	It is noted that HDD is proposed where the cable plough or trenching cannot be used. The use of drilling muds associated with this work may lead to a risk of contamination of controlled waters. Where HDD is proposed to be used, the Applicant should also provide an assessment of any effects associated with its use. The Applicant's attention is also drawn to the consultation response from the Environment Agency for further information.

3.8 Human Health

(Scoping Report Section 12)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.8.1	Section 12.8	Human Health – All phases	The Scoping Report proposes to scope out a standalone chapter on human health on the basis that the Proposed Development has a limited potential for significant effects to occur and any effects are sufficiently assessed in other aspect chapters. The Inspectorate agrees that a standalone assessment can be scoped out of the ES providing sufficient clear cross-referencing is present in the ES to ensure a robust assessment.

ID	Ref	Description	Inspectorate's comments
3.8.2	N/A	N/A	N/A

3.9 Landscape and Visual

(Scoping Report Section 13)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.9.1	Paragraph 13.10.1.1	Night-time lighting – All Phases	The Scoping Report notes that lighting effects during construction would be temporary and mitigated through directing lights away from visual receptors with timers and motion sensors. Furthermore, operational lighting would not be continuous and incorporate shielded, low intensity down lighting and motion sensors or infra-red security lighting. Despite these measures, little information has been provided on the receptors that may be at risk from potential lighting effects. As such, the Inspectorate is not in a position to scope this matter out at present. The ES should provide an assessment of night-time lighting for all phases.

ID	Ref	Description	Inspectorate's comments
3.9.2	Paragraph 13.11.1.1	Decommissioning assessment	The Scoping Report states that whilst decommissioning phase effects are scoped into the ES, they will be similar and not greater than those identified for construction and as such, the construction phase effects will stand as a reasonable worst-case scenario in lieu of a separate decommissioning assessment. It is the Inspectorates opinion that the decommissioning phase should be considered as distinct from construction with any potential effects considered separately.

3.10 Major Accidents and Disasters

(Scoping Report Section 14)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.10.1	Paragraph 14.11	Major Accidents and disasters.	The Scoping Report proposes to scope this aspect out on the basis that any effects of the Proposed Development are unlikely to result in significant effects relating to major accidents and disasters. The Scoping Report explains a Construction Environmental Management Plan, Drainage Strategy and Flood Risk Assessment, outline Landscape and Ecological Management Plan, and outline Decommissioning Environmental Management Plan will be implemented to manage risks. The Scoping Report also states that if a major accident or disaster did occur it would be managed under established legislative requirements or through the design process. The Inspectorate agrees that with the implementation of plan outlined in Scoping Report para 14.7.3.1, significant effects relating to major accidents and disasters are unlikely. The Inspectorate agrees that major accidents and disasters can be scoped out, but that the ES should include clear cross-referencing to and detail in these management plans to manage any effects.

ID	Ref	Description	Inspectorate's comments
3.10.2	N/A	N/A	N/A

3.11 Noise and Vibration

(Scoping Report Section 15)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.11.1	Paragraph 15.8.1.1	Noise from Traffic during all phases of the Proposed Development	The Scoping Report proposes to scope this matter out at all stages of the development. The Inspectorate notes the information provided pertaining to traffic movements during construction, operation and decommissioning and agrees, that given the nature of the Proposed Development and the information provided, noise from traffic can be scoped out of all phases of the assessment.
3.11.2	Paragraph 15.8.1.6	Vibration from traffic during construction	The Scoping Report states that the construction traffic is unlikely to cause significant vibration effects due to low intensity of vehicle movements and the short-term nature of the impact. Based on the level of traffic generated by of the Proposed Development during construction, the Inspectorate agrees that road traffic vibration can be scoped out of the assessment.
3.11.3	Paragraph 15.8.1.9	Vibration from activities during construction	The Scoping Report states that vibration effects from construction activities including piling and vibratory compaction as construction works are expected to be greater than 10m from any buildings and structures. The Scoping Report also explains that whilst there is a potential for effects on human receptors at existing sensitive receptors, the duration of construction activities is expected to be relatively short at any individual location, and with the implementation of standard measures effects are unlikely to be significant. Given the nature of the Proposed Development and the duration of construction activities the Inspectorate agrees that vibration effects from construction activities can be scoped out of the assessment. However, the ES should detail effects from vibration on ecological receptors where significant effects may occur.
3.11.4	Paragraph 15.8.2.10	Vibration from activities during operation	The Scoping Report proposes to scope this matter out of the assessment during operation as all moving parts involved in operation of the Proposed Development (such as cooling equipment and transformers) are to be mounted on suitable anti-

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			vibration mounts. Noting this, the Inspectorate agrees, vibration effects from operational activities can be scoped out of the assessment.
3.11.5	Paragraph 15.8.2.12	Vibration from traffic during operation	The Scoping Report states that traffic created by the Proposed Development during operation would be minimal and for maintenance purposes only. The Inspectorate is content therefore, that significant vibration effects from traffic during operation are not anticipated and this matter can be scoped out of the assessment

ID	Ref	Description	Inspectorate's comments
3.11.6	15.7.2.2	Buffer between properties and construction areas.	The Scoping Report describes embedded measures to the Proposed Development relevant to noise and vibration. There is mention of an 'appropriate buffer' to be maintained between construction areas and properties but there is explanation of what is meant by 'appropriate', nor is there any description of the size of this buffer or any explanation of location. The ES should ensure that any buffer used is explained and justified.
3.11.7	15.8.1.5	Noise effects on ecological receptors	Paragraph 15.8.1.5 does not define the sensitive receptors. The ES should ensure that sensitive human and ecological are included in the assessment of effects from noise. The ES should include details of the construction programme and how this has evolved to avoid impacts from noise on ecological species.

3.12 Socio-economics

(Scoping Report Section 16)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.12.1	Paragraph 6.8.2.4 and Table 16-10	Indirect effects on commercial and community receptors (all phases)	The Inspectorate agrees that the Proposed Development is unlikely to significantly effect commercial and community receptors noting the limited number of receptors and therefore this mater can be scoped out.
3.12.2	Paragraph 16.8.2.5 and Table 16-10	Effect on development land allocations (all phases)	The Scoping Report identifies that the Proposed Development site is part of a wider allocation for onshore wind turbines and that solar panels are an alternative renewable technology and therefore in the view of the Applicant, not in conflict with this allocation. The Applicant should seek agreement of this from the Local Planning Authority before scoping this matter out, as such the Inspectorate does not agree to scope this matter out at this stage.
3.12.3	Paragraph 16.8.2.6 and Table 16-10	Impacts on mineral resources (all phases)	The Scoping Report sets out that areas of and access to mineral resources are to be safeguarded within the Order Limits from development. As such, the Inspectorate agrees that significant effects are unlikely and therefore this matter can be scoped out.
3.12.4	Paragraph 16.8.2.7 and Table 16-10	Effects on local population (amenity effects) (all phases)	The Scoping Report sets out that effects on the local population are to be mitigated through physical avoidance and effects assessed as part of other assessments in the ES such as noise and visual effects, the Scoping Report makes this commitment in relation to construction effects but not operational or decommissioning effects. The Inspectorate deems that this should also be considered for all phases. The Inspectorate is content to scope this out for all phases providing that the ES clearly demonstrate these cross references for all phases to ensure a robust assessment.

ID	Ref	Description	Inspectorate's comments
3.12.5	Table 16.10	Phrases used in the 'aspect' column of the summary table	The phrases used in Table 16.10 do not clearly align with the text in the aspect chapter and as such, the correlation is somewhat unclear. This is particularly noticeable with the final row, 'Socio-economic – wider population effects/ amenity effects. It is not clear what this covers. The ES should ensure that text used in both paragraphs and tables is consistent to avoid confusion.
3.12.6	Section 16.4	Study Area	The Study area is shown on Scoping Report Figure 16.1, however the use of a 500m buffer does not seem to reflect the text included in Section 16.4 in terms of how wide there is a potential for effect. The ES should clearly justify a study area which includes all receptors where there is a potential for significant effects and not be limited by an arbitrary distance.

3.13 Traffic and Transport

(Scoping Report Section 17)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.13.1	Paragraph 17.8.1.8 and Table 17-5	Severance (Construction)	The Inspectorate agrees that significant effects are unlikely, noting the level of traffic generation during construction, as a result of severance effects during construction and therefore this matter can be scoped out of the assessment.
3.13.2	Paragraph 17.8.1.14 and Table 17-5	Driver delay (Construction)	The Inspectorate agrees that significant effects are unlikely as a result of driver delay during construction, noting the level of traffic generation and notes agreement with consultation bodies on this point and therefore this matter can be scoped out of the assessment.
3.13.3	Paragraph 17.8.1.18 and Table 17-5	Pedestrian and Cyclist Amenity (Construction)	The Inspectorate agrees to scope this matter out during construction, noting the commitment to assess this and provide a cross reference to the socio-economic assessment.
3.13.4	Paragraph 17.8.1.21 and Table 17-5	Accidents and safety (Construction)	The Inspectorate agrees that due to the generated traffic level during the construction, not varying traffic flows by more that 10%, that significant effects in relation to accidents and safety are unlikely. The Inspectorate agrees that this matter can be scoped out during construction.
3.13.5	Paragraph 17.8.2.1 and Table 17-5	Operational traffic effects	The Inspectorate agrees that operational movements will be low and unlikely therefore to give rise to any significant effects. As such, this matter can be scoped out during operation.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.13.6	Paragraph 17.8.3.4 and Table 17-5	Decommissioning traffic effects	The Scoping Report sets out that decommissioning effects are to be similar to those assessed for construction and therefore with the provision of mitigation set out in the oDEMP, the Inspectorate is content for this matter to be scoped out.

ID	Ref	Description	Inspectorate's comments
3.13.7	17.1.1.3	Aspects to be considered	The Applicant should ensure that the aspects considered as part of the assessment reflect those set out in the 2023 IEMA Traffic and Transportation guidance and provide commentary where departures are made. Comments have been provided above on the matters discussed as part of the Scoping Report. The Applicant should consider the applicability to the matters set out in the 2023 IEMA guidance: • Severance of communities • Road vehicle driver and passenger delay • Non-motorised user delay • Non-motorised amenity • Fear and intimidation on and by road users • Road user and pedestrian safety • Hazardous/large loads
3.13.8	N/A	Plan of the study area	The ES should include a figure showing the study area for the assessment, this was not present in the Scoping Report. The study areas should include the affected road network where there is the potential for significant effects. This should be justified and explained in the ES.

3.14 Water Resources and Flood Resources

(Scoping Report Section 18)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.14.1	N/A	N/A	No matters have been proposed to be scoped out.

ID	Ref	Description	Inspectorate's comments
3.14.2	Section 18.4 and Figure 18.1	Study area	The study area is shown on Scoping Report Figure 18.1 however the Scoping Report does not provide any explanation or justification for the use of 1km buffer around the order limits for the study area. This should be clearly explained in the ES.
3.14.3	Figure 18.1	Ordinary watercourse	In their response, the Environment Agency have noted that Figure 18.1 does not show an ordinary watercourse located in the north of the DCO area near to Caple How. The ES should ensure that all water features are depicted on relevant figures and likely significant effects resulting from the Proposed Development on the watercourses should be reported.
3.14.4	Paragraph 18.5.4.8	Climate Change modelling	The Scoping Report outlines the approach to consideration of future climate allowances. The ES should consider including the 1% (1 in 100) plus higher central climate change scenario as the fluvial design event for the appropriate epoch given the lifetime of the development. The ES should also consider including the 2080's epoch.
3.14.5	18.6.2	Firewater runoff	The ES should include consideration of effects of firewater runoff and include appropriate cross references to the outline Battery Fire Safety Management Plan

3.15 Cumulative and in-combination effects

(Scoping Report Section 19)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.15.1	N/A	N/A	No matters have been proposed to be scoped out.

ID	Ref	Description	Inspectorate's comments
3.15.2	Table 19.5	Study area	The study area for various projects is set out in Scoping Report Table 19.5 but no explanation is provided as to why these distances from the Proposed Development are used. The ES should provide a clear justification for the extent of each study area and how it captures the effects from the Proposed Development. It is recommended that the cumulative assessment follows the methodology set out in the Inspectorate's Advice Note Seventeen. Wherever possible it should be agreed with the relevant statutory consultation bodies as part of discussions on the assessment methodologies. Evidence of agreement on these points should be provided in the ES.
3.15.3	Table 19.6	Location of projects considered in the cumulative assessment.	Scoping Report Table 19.6 lists the current projects considered cumulatively with the Proposed Development. This provides a description and distance to the Proposed Development and the Scoping Report states that this will be updated as the project progresses. The ES should include a figure depicting the locations and extent of cumulative developments in relation to the Proposed Development.

APPENDIX 1: CONSULTATION BODIES FORMALLY CONSULTED

TABLE A1: PRESCRIBED CONSULTATION BODIES

Bodies prescribed in Schedule 1 of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (as amended) (the 'APFP Regulations (as amended)')

SCHEDULE 1 DESCRIPTION	ORGANISATION
The relevant parish council or, where the application relates to land in Wales or Scotland, the relevant community council	Little Clifton Parish Council
	Great Clifton Parish Council
	Winscales Parish Council
	Dean Parish Council
	Greysouthen Parish Council
	Workington Parish Council
	Distington Parish Council
The Environment Agency	The Environment Agency
Natural England	Natural England
The Forestry Commission	The Forestry Commission North West and West Midlands
The Historic Buildings and Monuments Commission for England (known as Historic England)	Historic England
The relevant Highways Authority	Cumberland Borough Council
	National Highways
The Health and Safety Executive	Health and Safety Executive
United Kingdom Health Security Agency, an executive agency of the Department of Health and Social Care	United Kingdom Health Security Agency

SCHEDULE 1 DESCRIPTION	ORGANISATION
NHS England	NHS England

TABLE A2: RELEVANT STATUTORY UNDERTAKERS

'Statutory Undertaker' is defined in the APFP Regulations (as amended) as having the same meaning as in Section 127 of the Planning Act 2008 (PA2008)

STATUTORY UNDERTAKER	ORGANISATION
The Coal Authority	The Coal Authority
The Crown Estate Commissioners	The Crown Estate
The relevant police authority	Cumbria Police and Crime Commissioner
The relevant ambulance service	North West Ambulance Trust
The relevant fire and rescue authority	Cumbria Fire and Rescue Service
The relevant Integrated Care Board	NHS North East and North Cumbria Intergrated Care Board
NHS England	NHS England
The relevant NHS Trust	North West Ambulance Service NHS Trust
The relevant NHS Foundation Trust	North Cumbria Integrated Care NHS Foundation Trust
Railways	Network Rail Infrastructure Ltd
	National Highways Historical Railways Estate
Universal Service Provider	Royal Mail Group
Homes and Communities Agency	Homes England
The relevant Environment Agency	The Environment Agency

STATUTORY UNDERTAKER	ORGANISATION
The relevant water and sewage undertaker	United Utilities
The relevant public gas transporter	Cadent Gas Limited
	Northern Gas Networks Limited
	Scotland Gas Networks Plc
	Southern Gas Networks Plc
	CNG Services Ltd
	Energy Assets Pipelines Limited
	ES Pipelines Ltd
	ESP Connections Ltd
	ESP Networks Ltd
	ESP Pipelines Ltd
	Fulcrum Pipelines Limited
	GTC Pipelines Limited
	Harlaxton Gas Networks Limited
	Independent Pipelines Limited
	Indigo Pipelines Limited
	Inovyn Enterprises Ltd
	Last Mile Gas Ltd
	Leep Gas Networks Limited
	Mua Gas Limited
	Quadrant Pipelines Limited
	Stark Infra-Electricity Ltd
	National Gas
	Electricity North West Limited

STATUTORY UNDERTAKER	ORGANISATION
The relevant electricity distributor with CPO Powers	Aidien Ltd
	Eclipse Power Network Limited
	Energy Assets Networks Limited
	ESP Electricity Limited
	Fulcrum Electricity Assets Limited
	Harlaxton Energy Networks Limited
	Independent Distribution Connection Specialists Ltd
	Independent Power Networks Limited
	Indigo Power Limited
	Last Mile Electricity Ltd
	Leep Electricity Networks Limited
	Mua Electricity Limited
	Optimal Power Networks Limited
	Squire Energy Metering Ltd
	The Electricity Network Company Limited
	UK Power Distribution Limited
	Utility Assets Limited
	Vattenfall Networks Limited
	National Grid Electricity Transmission Plc
	National Grid Electricity System Operation Limited

TABLE A3: LOCAL AUTHORITIES AS DEFINED IN SECTION 43(3) OF THE PA2008

LOCAL AUTHORITY
Lake District National Park Authority
Westmorland and Furness Council - South Lakeland and Barrow areas

LOCAL AUTHORITY
Northumberland County Council
Northumberland National Park Authority
Cumberland Borough Council

APPENDIX 2: RESPONDENTS TO CONSULTATION AND COPIES OF REPLIES

CONSULTATION BODIES WHO REPLIED BY THE STATUTORY DEADLINE:
Coal Authority
Cumbria Police and Crime Commissioner
Electricity North West
Environment Agency
Forestry Commission
Historic England
Health and Safety Executive
National Grid
Natural England
Network Rail
Northern Gas Networks
Northumberland County Council
UK Health Security Agency
United Utilities Water Limited
Workington Town Council

The Coal Authority

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG
T: 01623 637 119 (Planning Enquiries)
E: planningconsultation@coal.gov.uk
W: www.gov.uk/coalauthority

For the attention of: Ms K King – Senior Environmental Impact Assessment Advisor
[By email: lostriggsolar@planninginspectorate.gov.uk]

16th July 2024

Dear Ms King

Re: EN0110004 - Scoping consultation - Lostrigg Solar

Thank you for your notification of the 21st June 2024 seeking the views of the Coal Authority on the above.

The Coal Authority is a non-departmental public body sponsored by the Department for Energy Security and Net Zero. As a statutory consultee, the Coal Authority has a duty to respond to planning applications and development plans in order to protect the public and the environment in mining areas.

Our records indicate that within the area identified there are approximately 193 mine entries, shallow coal workings and reported surface hazards. These features pose a potential risk to surface stability and public safety.

It is noted that the submission is supported by a EIA Scoping Report – Main text, dated June 2024 and prepared by RWE. Appendix 11.1 of EIA Scoping Report – Appendices, dated June 2024, is formed by a Geo-Environmental Desk Study and Preliminary Risk Assessment dated May 2024 and prepared by Wardell Armstrong. The report sets out consideration of the risks posed by coal mine workings.

The report authors acknowledge that in light of the coal mining constraints identified and the potential for the development to comprise the construction of sensitive structures (i.e., inverter stations etc) coupled with the identification of evidence of damage at the ground surface associated with mine entries; it is considered prudent to undertake a Coal Mining Risk Assessment and Mining Appraisal to further categorise the risks.

The report authors state that detailed development proposals should consider the coal mining legacy risks to the development, in order to inform a detailed layout plan. It is envisaged that a detailed Coal Mining Risk Assessment should be prepared and which should comprise the following:

• A detailed review of the CA Consultants Mining Report including information relating recorded mine entries within influencing distance of proposed infrastructure and buildings etc.

• Liaison with the CA to obtain relevant copies of source records for recorded mine entries, copies of opencast completion plans and abandoned mine plans showing the extent of recorded, shallow mine workings (where available).

• Interpretation, assessment and georeferencing of the above documents obtained from the CA to categorise risk areas of the draft Order Limits and to proposed mitigation measures, where appropriate.

The report authors comment that completion of the CMRA should consider the nature of the development and ensure that the proposed mitigation is proportionate. They note that such mitigation may involve the positioning of sensitive infrastructures outside of high-risk areas (i.e., mine entry potential zone of instability etc), investigation and treatment of shallow mine workings and mine entries and delineation of any former opencast highwalls. They state that they envisage that intrusive investigation and treatment would only be warranted in areas where the risk cannot be reduced or removed by other methods (relocation of infrastructure to low risk areas etc).

We are pleased to see that the Scoping Report includes consideration of risks posed by coal mining features. We concur with the recommendations set out in the Geo-Environmental Desk Study and Preliminary Risk Assessment and would expect any formal submission to be supported by a Coal Mining Risk Assessment. This should demonstrate that the layout of the development has taken account of the risks posed by past coal mining activity, especially where mine entries and their zones of influence are present.

The Coal Authority is of the opinion that building over the top of, or in close proximity to, mine entries should be avoided wherever possible, even after they have been capped, in line with our adopted policy:
https://www.gov.uk/government/publications/building-on-or-within-the-influencing-distance-of-mine-entries

If you would like to discuss this matter further, please contact me on the above number.

Yours sincerely

[redacted]

Melanie Lindsley *BA (Hons), DipEH, DipURP, MA, PGCertUD, PGCertSP, MRTPI*
Principal Planning & Development Manager

Disclaimer

The above consultation response is provided by the Coal Authority as a statutory consultee and is based upon the latest available data and the electronic consultation records held by the Coal Authority since 1 April 2013. The comments made are also based on the information provided to the Coal Authority by the Local Planning Authority and/or information that has been published on the Council's website for consultation purposed in relation to this specific planning application. The views and conclusions contained in this response may be subject to review and amendment by the Coal Authority if additional or new data/information (such as a revised Coal Mining Risk Assessment) is provided by the Local Planning Authority or the applicant for consultation purposes.

In formulating this response the Coal Authority has taken full account of the professional conclusions reached by the competent person who has prepared the Coal Mining Risk Assessment or other similar report. In the event that any future claim for liability arises in relation to this development the Coal Authority will take full account of the views, conclusions and mitigation previously expressed by the professional advisors for this development in relation to ground conditions and the acceptability of development.

From:	Hunton, Andrew
To:	Lostrigg Solar
Subject:	Scoping Opinion, 50MW Lostrigg Solar, Workington
Date:	02 July 2024 12:54:48
Attachments:	image001.png

Your Ref EN0110004
My Ref CCC/1607/24

FAO Katherine King

Many thanks for your consultation dated 21st June 2024.
I wish to offer the following comments, which I have considered from a crime prevention and counter-terrorism perspective. Facilities of this nature are becoming increasingly lucrative to Organised Crime Groups for the theft of substantial quantities of solar panels and associated precious metals for acquisitive gain.
I recommend the applicant makes contact with the National Infrastructure Crime Reduction Partnership Homepage (nicrp.org)

As this facility shall also form a significant part of critical national infrastructure, it presents as a potential target to extremism and must be protected against motivated activity. Accordingly, I shall require the Constabulary's Counter-Terrorism Security Advisor to be included in any further exchanges regarding security measures for this site.

Item 2.4.9.1 (Additional Infrastructure) of the published EIA Scoping Report – Main Text – is of particular relevance and describes several security measures that shall be implemented:

- Perimeter fence – A 2.0m deer fence to enclose the 'Operational Areas' of the development (Depicted Figure 2.10 Scoping Report – Figures). This type is not sufficient to deter motivated human intrusion and may be easily breached. However, matching gates should be secured with security rated locking devices, e.g. padlocks certified to LPS 1654 or Europrofile cylinder locks certified to Sold Secure SS 312 3◇. This measure is intended to prevent and deter any unauthorised vehicle entry to the site. I recommend the sub-station, battery containers and storage containers should be enclosed within a more secure compound, formed by a 2.4m welded mesh fence, certified to LPs 1175 B3
- CCTV – Pole mounted 'Event Driven' cameras utilising infra-red technology, positioned inside the deer fence. It is not apparent who shall be expected to respond to intrusions in the event of alarm activations via this equipment. If police attendance is required, the intruder system and appointed Alarm Receiving Centre must be compliant with National Police Chiefs' Council Security Systems Policy. The described intruder system should also incorporate a remote challenge capability via loudspeakers to inform intruders that their presence has been noticed. Deployment of CCTV demands compliance with GDPR legislation (placement of warning signage, etc.). Consideration must also be given to the deployment of supplementary intruder detection equipment to the sub-station and storage containers
- Lighting – Noted infra-red technology to complement CCTV
- Storage containers – deployment of security rated locking devices

Additional Recommended Security Measures:

- Physical linking of solar panels to disrupt easy removal
- Deployment of locking fasteners
- Deployment of a covert forensic marking product to panels / components as appropriate and placing of appropriate warning signage

Metal Theft | SelectaDNA SmartWater Forensic Marking | DeterTech

I shall be pleased to advise on any crime prevention issues as this proposal progresses.

Best regards

Andy Hunton
Designing Out Crime Officer
T: [redacted]
M: [redacted]
E: [redacted]

Cumbria Constabulary
Brunel Way, Durranhill Industrial Estate, Carlisle, CA1 3NQ

From:	Planning Applications
To:	Lostrigg Solar
Subject:	EN0110004 - Lostrigg Solar - EIA Scoping Notification and Consultation (nearest postcode CA14 1YX)
Date:	16 July 2024 11:46:20
Attachments:	image001.jpg HS G 47_Avoiding danger from underground services.pdf TS_43-8_270861.pdf GS6_Avoidance pf danger from overhead electric lines.pdf

Dear Sir,

Planning Application – EN0110004 - Lostrigg Solar - EIA Scoping Notification and Consultation (nearest postcode CA14 1YX)

We have considered the above planning application and find it could have an impact on our infrastructure.

The development is shown to be adjacent to or affect Electricity North West's operational land or electricity distribution assets. Where the development is adjacent to operational land the applicant must ensure that the development does not encroach over either the land or any ancillary rights of access or cable easements. If planning permission is granted the applicant should verify such details by contacting Electricity North West, Land Rights & Consents, Frederick Road, Salford, Manchester M6 6QH.

Having reviewed the Scoping Report Main text, ENWL would like to advise you in relation to the below:

- Paragraph 2.4.7 'Point of Connection' Subsection 1 - **Any connection to existing 132KV overhead line will be subject to an in-depth feasibility study and design review prior to any amendments from ENWL.**
- Paragraph 2.4.8 '132KV underground cabling' Subsection 1 - **900mm is the specified maximum depth for 132KV underground cabling in agricultural land. If in highway, depths of distribution cables are subject to Streetworks UK guidance.**

The applicant should be advised that great care should be taken at all times to protect both the electrical apparatus and any personnel working in its vicinity. The applicant should also be referred to two relevant documents produced by the Health and Safety Executive, which are available from The Stationery Office Publications Centre and The Stationery Office Bookshops, and advised to follow the guidance given.

The documents are as follows:-
HS(G)47 – Avoiding danger from underground services.
GS6 – Avoidance of danger from overhead electric lines.

The applicant should also adhere to the minimum safety clearances contained within the Energy Network Associations Guidance, a copy of which is also attached to this email.

Furthermore, should there be a requirement to divert the apparatus because of the proposed works, the applicant should be advised that the cost of such a diversion would usually be borne

by the applicant. The applicant should be aware of our requirements for access to inspect, maintain, adjust, repair, or alter any of our distribution equipment. This includes carrying out works incidental to any of these purposes and this could require works at any time of day or night. Our Electricity Services Desk (Tel No. 0800 195 4141) will advise on any issues regarding diversions or modifications.

Electricity North West offers a fully supported mapping service, at a modest cost, for our electricity assets. This is a service which is constantly updated by our Data Management Team who can be contacted by telephone on 0800 195 4141 or access the website Know before you dig (enwl.co.uk)

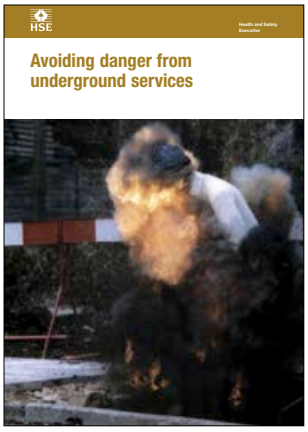
It is recommended that the applicant gives early consideration in project design as it is better value than traditional methods of data gathering. It is, however, the applicant's responsibility to demonstrate the exact relationship on site between any assets and rights that may cross the site and any proposed development.

Yours sincerely,

Asset Protection
Land Rights & Consents
Electricity North West
Frederick Road
Salford
M6 6QH
E: Planningapplications@enwl.co.uk

Electricity NorthWest LTD

Avoiding danger from underground services



HSG47 (Third edition), Published 2014

This guidance is aimed at all those involved in commissioning, planning, managing and carrying out work on or near underground services. It will also be of use to the owners and operators of such services.

It outlines the potential dangers of working near underground services and gives advice on how to reduce any direct risks to people's health and safety, as well as the indirect risks arising through damage to services.

It explains the three basic elements of a safe system of work during excavation:

- Planning the work
- Locating and identifying buried services
- Safe excavation

This third edition brings the guidance up to date, but the basic requirements remain the same.

First edition 1989
Second edition 2000
Third edition 2014

ISBN 978 0 7176 6584 6

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

Acknowledgments

Figure 3 is reproduced with permission of Electricity North West and PelicanCorp.

Figure 4 is reproduced with permission of National Grid.

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Introduction

1 This guidance outlines the potential dangers of working near underground services and gives advice on how to reduce the risks. It deals principally with risks to health and safety rather than damage to services. However, precautions taken which reduce risks to people's health and safety will generally also reduce the risk of damage to services, which can directly or indirectly pose a risk to people's health and safety.

Who is this guidance for?

2 The guidance is aimed at all of those involved in commissioning, planning, managing and carrying out work on or near underground services, as well as the owners and operators of such services.

Where does the guidance apply?

3 The guidance applies to situations where underground services may be found and disturbed, including:

- street works;
- road works;
- excavation, drilling and piling;
- demolition and site remediation;
- site investigation surveys;
- any other work that involves penetrating the ground at or below surface level.

Underground services are widespread. Assume they are present unless you have been shown otherwise.

How to use the guidance

4 The guidance is divided into four chapters:

- Identifying and managing the dangers;
- Planning the work;
- Detecting, identifying and marking underground services;
- Safe excavation.

Guidance on the general precautions to prevent damage to all types of underground services is in the sections 'Planning the work' and 'Detecting, identifying and marking underground services'. Additional guidance for particular services is in the 'Safe excavation' section.

Terms used in the guidance

Service(s)

5 All underground pipes, cables and equipment associated with electricity, gas, water (including piped sewage) and telecommunications. Also includes other pipelines which transport a range of petrochemical and other fluids. It does not include underground structures such as railway tunnels etc.

Service connection(s)
6 Pipes or cables between distribution mains and individual premises.

Emergency work
7 Work that needs to be done immediately to repair damaged services in order to prevent continuing risk(s) to health and safety either directly, such as stopping a gas leak, or indirectly when restoring power to traffic signals at a major junction. It does not mean restoration of service to meet customer service targets.

Client
8 Any person or organisation for whom a project or work is carried out.

Design
9 Includes drawings, design details, specifications and bills of quantities. A designer is anyone who prepares or modifies these; for example, people planning the route of a new cable television scheme are designers.

Identifying and managing the dangers

Underground services: the dangers

10 Damage to underground services can cause fatal or severe injury as well as significant disruption and environmental damage; it can also delay the project and incur considerable costs.

Case study 1

A construction company paid £210 000 in fines and costs after an employee died in an explosion following damage to an 11 000-volt live cable within an excavation.

The worker suffered burns over 60% of his body while he and other workers were using breakers and a shovel within the excavation. He died of his injuries 13 days later. The company had not informed workers that there were live cables in the excavation and failed to put adequate measures in place to prevent them being damaged.

Electricity cables
11 Injuries are usually caused by the explosive effects of arcing current, and by any associated fire or flames that may result when a live cable is penetrated by a sharp object such as the point of a tool (see front cover). Such effects can also occur when a cable is crushed severely enough to cause internal contact between the conductors, or between metallic sheathing and one or more conductors. Typically, injuries are severe – potentially fatal – burns to the hands, face and body; electric shock is possible but less likely.

12 Incidents may also arise from cables, connections and terminations which have been damaged but left unreported and unrepaired, or which have deteriorated with age.

13 Other nearby services, such as plastic gas pipes, may also be at risk from damaged live electricity cables. This could result in explosions and a greater fire risk.

Gas pipes

14 Damage to gas pipes and connections can cause leaks that may lead to fire or explosion. There are two types of damage:

- damage that causes an immediate leak;
- damage that causes a leak some time later.

The damage may occur when the work is carried out, or subsequently; for example, poor reinstatement may leave a pipe inadequately supported or subject to unequal forces.

15 The risk from leaking liquified petroleum gas (LPG) is greater than from a natural gas leak as it is heavier than air and does not disperse so readily. It can also travel great distances below ground level before accumulating at low level, for example in basements and cellars.

Water pipes and sewers

16 Although damage to water pipes is less likely to result in injury, the following may occur:

- A jet of water from a main can be of sufficient pressure and intensity to injure a person. It may also contain stones or other hard objects ejected from the ground around the pipe.
- Leaks of water from underground pipes can affect adjacent services and reduce support for other structures.
- Damage to mains pipes can result in flooding, leading to subsequent risks from drowning or the rapid collapse of support to the sides of an excavation; water can enter gas pipes if they are also damaged.

17 While some sewage is pumped at pressure, sewers are generally gravity-fed and the main risks from damage to a sewer are to the health of workers from exposure to raw sewage, the chance of ground collapse and possibility of environmental contamination and pollution.

Other pipelines

18 The danger arising from damage to other pipelines depends on the nature of the conveyed fluid. Fluids and their associated risks include:

- flammable liquids and gases – risk of fire and explosion;
- fluids at elevated pressure – risk of injury from sudden release of contents;
- toxic liquids and gases – risk of poisoning;
- inert gases such as nitrogen and argon – risk of asphyxiation.

19 Very often a fluid will present a combination of risks; for example, a liquid may be both toxic and flammable.

Telecommunication cables

20 Damage to telecommunication and TV cables may require expensive repairs and can cause considerable disruption to those relying on the system. However, the risk of personal injury to workers is normally very low.

21 Flammable and toxic gases can enter cable-carrying ducts, particularly if the duct has been damaged. Such gases can accumulate in chambers, manholes etc and pose a risk to operatives who may need to work there.

Figure 1 Aftermath of a gas explosion, following damage to an underground gas service pipe

Working safely

22 A safe system of work has three basic elements:

- planning the work;
- detecting, identifying and marking underground services;
- safe excavation/safe digging practices.

23 These key elements complement each other, and all three are essential when working near underground services. More details of each are given in the chapters that follow. A flow diagram, outlining the process, is at Figure 2.

24 Anyone planning or undertaking work that may disturb underground services must contact the owners/operators of those services for information about the location and status of the services. Those owners and operators should in turn provide any relevant information about the location of services in the work area. Service owners and operators should be prepared to help locate and identify the services (for example, by sending a representative to the site). Long-term plans or formal arrangements for co-operation may be needed with other utilities, local authorities and contractors who carry out road and footway excavation.

25 Plan work to avoid underground services. Where this is not possible, develop plans to minimise the risk of damage to those services in the work area.

26 Detecting underground services will require information from those who own the services. Individuals with sufficient experience and technical knowledge should carry out a comprehensive survey of the work area using the appropriate survey tools and equipment.

27 When carrying out excavations, it is important that:

- those supervising and carrying out the work have sufficient skills, knowledge and experience to do so safely;

- safe working practices are put in place and used;
- appropriate traffic signing is used on highways; this is described in *Safety at street works and road works. A Code of Practice*[1] and chapter 8 of the *Traffic signs manual;*[2,3]
- risks from other sources, such as collapse of excavations, are avoided;
- adequate welfare facilities are available to those doing the work.

A brief look at the process from referring to plans on site to the start of work near underground services

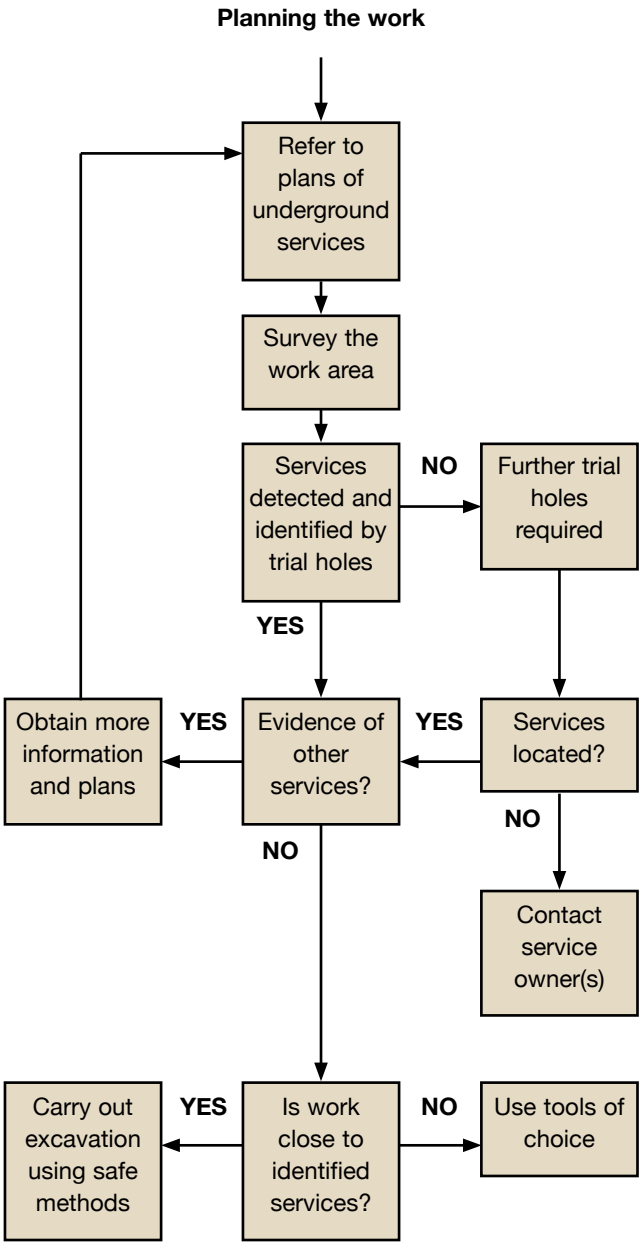

Figure 2 A safe system of work

Planning the work

In summary

Identify clearly the extent of the work area and find out what underground services are within the area before considering whether they are likely to be disturbed:

- Obtain service drawings from utilities companies and other organisations with relevant information about the site.
- Survey the site to identify the services and other underground structures. Record the location of any services.
- Review/assess the planned work to avoid disturbing services where possible.
- Allow sufficient time and provide sufficient resource to do the work safely.
- Emergency work still requires planning and assessment of the risks arising from the work. A precautionary approach must be taken when breaking ground.

Obtaining information on services

28 Obtain plans or other suitable information about all underground services in the area when the work is being planned. Wherever possible, you must consult owners/operators. Remember that for some services there may be more than one owner/operator.

29 There are a number of 'one-call' services available that can simplify the process of identifying who may have underground services in the work area and arranging for copies of plans and service records to be provided. Some of these services are free to use while others may charge.

30 Where it is not possible for those undertaking the work to obtain information, as may be the case when emergency work has to be undertaken, the work **must** be carried out as though there are underground services in the area.

Electricity

31 Most electrical service cables belong to the regional distribution network operator (DNO). However, some cables belong to other bodies, such as: the highway or roads authority; the street lighting authority; electricity generating companies; National Grid; Ministry of Defence; railway operator (usually Network Rail); Independent Distribution Network Operators (IDNOs); or other companies.

Gas

32 Most underground gas pipes are operated by public gas transporters (PGTs). The main exceptions are new developments, often supplied by independent gas transporters (IGTs) and properties fed from bulk-stored LPG, where the pipes may be owned by the property owners or other private individuals. In the latter case, owners/managers should be able to provide information but on certain estates owners and managers may not be available round the clock. You can obtain further information from the LPG supplier, whose name and telephone number (manned 24 hours) should be displayed at the bulk storage vessel compound or, for underground LPG tanks, at the segregated area above the tanks.

33 Where the presence of gas pipes which operate at pressures of 2 bar (30 psig) and above is indicated, consult the owner/operator before work begins.

Other services

34 Other underground pipes may be found on or around: hospitals; airports; Ministry of Defence sites; universities; research parks; petrochemical, nuclear and other industrial sites. Where work is planned on such sites, make contact with the owner/occupier of the sites to request specific information about underground services.

35 Because of the difficulty in detecting some telecommunication cables and the cost of damage to them, telecommunication companies may prefer to visit the site to locate the cables.

Provision of plans by service owners

36 Owners should provide either up-to-date, readable plans, which show the recorded line and depth (where known) of all their known services buried in the proposed work area, or other suitable information which achieves the same aim. A symbol key is important to help the recipient understand the plans.

37 Owners should do everything reasonably practicable to make sure that such information is made available to enquirers. They are likely to receive many routine applications for information and should consider how best to make information available at short notice. They should also make arrangements to deal with emergencies outside office hours so that operatives can be given plans of underground services when they receive their work instructions.

38 Some owners may have reservations, for reasons of security, about supplying copies of their underground services plans for areas such as those around important civil and military establishments. In such cases, an alternative method should be used; for example, a representative could be sent to the site to provide information.

Use and limitation of plans

39 Plans alone are not sufficient to identify and locate services before starting work. They provide basic information on which to base a thorough site survey before work begins.

40 Plans vary in scale, content and style. Two examples are shown in Figures 3 and 4. Provide adequate instruction and training in how to read and interpret plans to anyone who needs to use them. Ideally, plans should be in colour to assist their interpretation and understanding.

41 Plans can give an indication of the location, configuration and number of underground services at a particular site and should help subsequent tracing by detecting devices or locators. However, they are not always drawn accurately to scale and, even if they claim to be, you should not rely on them to obtain distances or depths. For example, errors may have been made during drafting, or reproduction may have changed the scale, especially if the plan was obtained from a microfiche slide or digital map. Accuracy may be further limited because:

- the position of reference points (eg the kerb line) may have changed since the plans were drawn;
- re-grading of the surface may mean that the depths shown are now incorrect;
- services, particularly cables, may have been moved without the knowledge of their owners/operators;

- in many cases service connections are not marked;
- services marked as straight lines may, in practice, snake. Excessively long cables may have been laid in horizontal loops outside substations, switch rooms etc;
- plans may show spare ducts;
- the routes of older services in particular may not have been recorded, so the absence of records should never be taken as proof that the area in question is free of underground services.

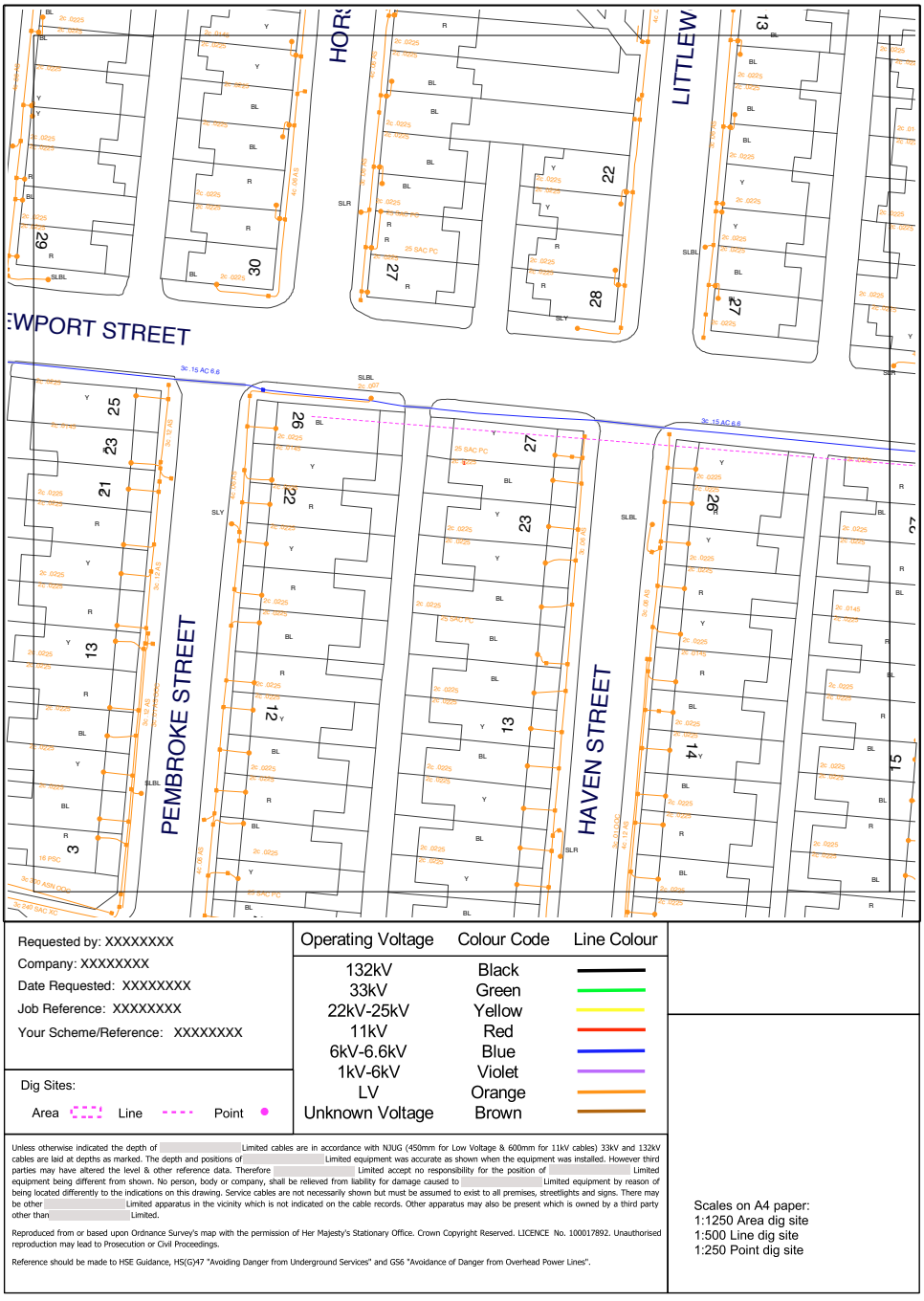

Figure 3 Example of an electricity plan

42 These limitations make it very important that you take into account other indicators and use a suitable detecting device and safe digging methods.

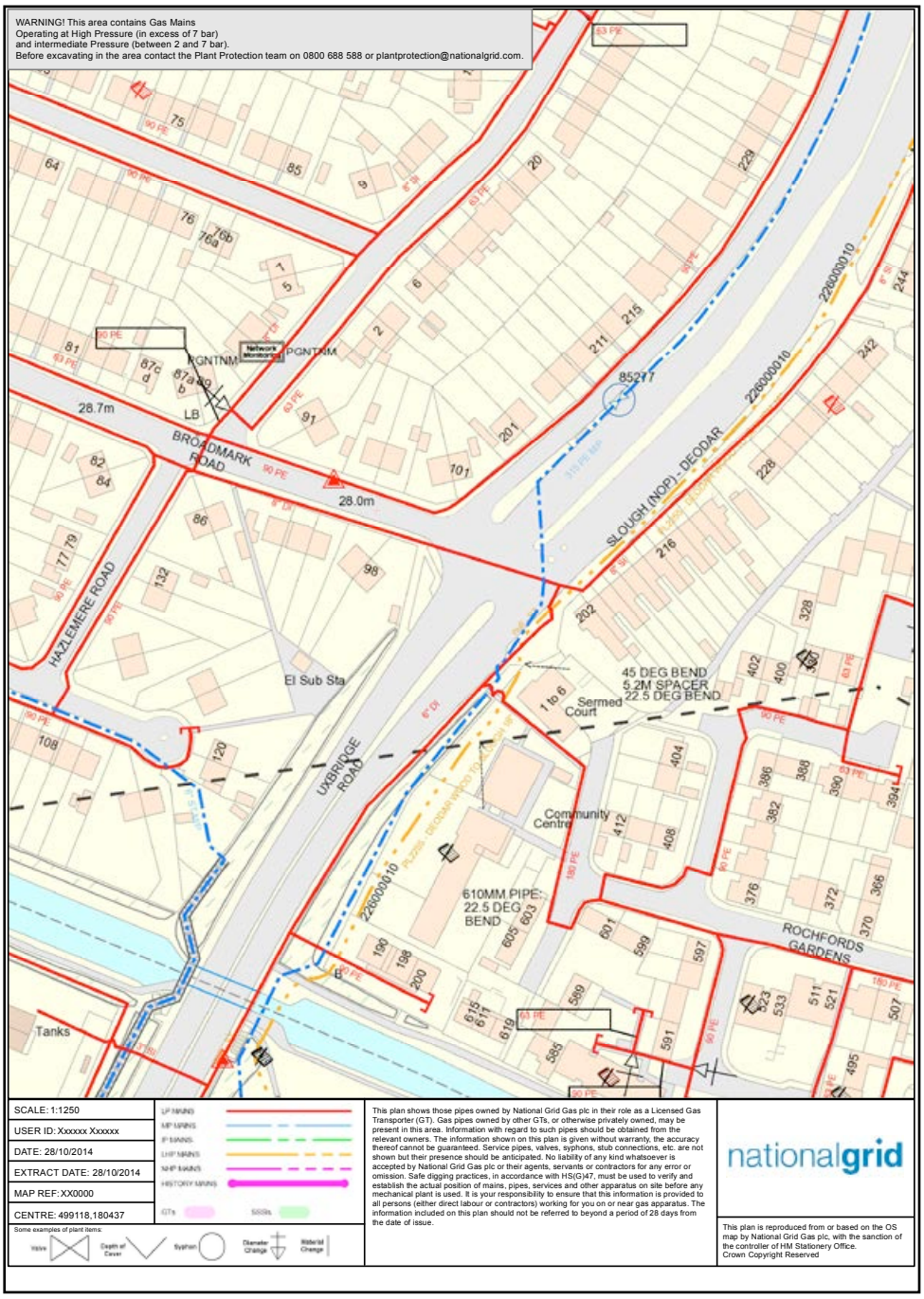

Figure 4 Example of a plan of gas pipes

43 The service location information should be copied onto the working drawings for the guidance of those carrying out the work. Information should include all relevant features, such as valve pits, depths etc. Take particular care where topographical changes have occurred since services were laid.

44 Those using or interpreting plans need to have sufficient knowledge and experience to understand what the plans show in order to determine the likely presence of services on the work site.

Case study 2

A 3-phase electrical cable was struck during excavation works by a renewable energy company. The cable was not marked with tape or tiles. The cable was shallower than shown on the plan. The work area was not surveyed to locate underground services. Relying on plans is not sufficient. The work area should be surveyed to accurately locate services shown on plans.

Service identification surveys

45 A service detection and mapping survey of the work area should be undertaken at the planning stage as its findings will be useful to the designer(s) and contractor(s) in designing out and planning to reduce the risk of damage to the underground services.

46 Time spent on a survey at this stage can save significant costs and delays to the work by allowing for the avoidance of damage to underground assets and efficient programming of the work.

47 More information on identification surveys is given in 'Detecting, identifying and marking underground services'.

Your duties as a client

48 Clients have a duty to make reasonable enquiries about underground services and pass relevant information to the designer(s) and contractor(s). Your own files and other records may contain information on underground services. If they do, remember that it may have been obtained for previous work and may be out of date. The most up-to-date information should be included in the tender information.

49 A client who is unable or unwilling to obtain this information **must** allow the contractor sufficient time and resource to do so instead.

50 Clients need to consider how contractors have addressed the risks from underground services.

Your duties as a designer

51 Designers have a duty to reduce or 'design out' the risks arising from damage to underground services. Having reduced the risks to a level as low as reasonably practicable by design, information should be provided to those doing the work about the risks that remain. In most cases, the best way of informing contractors and individuals doing the work is by providing this on working drawings.

52 You will need to know if there are underground services present so that you can amend the design to avoid them where possible.

53 For building work, re-siting the services away from the work is often a reasonably practicable means of avoiding the risk. Ask the service owner/operator to do this and include adequate notice.

54 Other options to re-siting the services may include:

- repositioning or redesigning structures or parts of structures to ensure that services are avoided during the work;

- arranging for the supply to be disconnected during the work; or, if none of these are possible;
- choosing methods to avoid the services; for example, by using ground beams to bridge or span the services.

55 For electricity cables more than other services, there may be a need to make them dead for the work to proceed safely. Contact electricity companies as early as possible to allow them to isolate supplies. Plan project schedules to allow sufficient time for this to happen.

56 If the cable cannot be made dead, an alternative safe way of doing the work will be required.

57 Permanent structures such as buildings should generally not be built over services, nor should services be encased in concrete as this may introduce additional risks to construction workers and can prevent future access to the services. If it is not possible to avoid building structures over any service, make arrangements with the utility to relocate the services in a duct or something similar.

58 Consider the location of underground gas pipelines when planning building, excavation, landfill or other such work. Such activities may either cause damage to the pipelines or deny access to them for maintenance purposes. Make suitable arrangements for future access and maintenance before undertaking the work.

59 Consider ancillary work, including the erection of perimeter fencing and walling, or the position of temporary and permanent roadways onto the site that may affect underground services at the site perimeter. Early identification and planning are essential if you are to control risks during the entire construction phase of the project, including enabling works.

Case study 3

A self-employed sub-contractor was burnt when he struck a 415 V electrical cable with an electrical breaker he was using to break up some concrete. The client had chosen to build over the cable rather than have it diverted. The cable had been protected by a conduit and its location was known. The client did not tell the contractor of its location before starting work and the contractor did not ask. The cable was diverted following the incident.

Some specific situations

New housing developments
Underground services within the confines of partly completed housing developments are especially prone to damage from ongoing construction work. Each utility company should keep to its agreed position; see *Guidelines on the positioning of underground utilities apparatus for new development sites Volume 2*.[4] A common trench may help to control the position and separation of underground services. Special arrangements may be necessary to restrict vehicle and mobile plant crossings to locations where temporary protection for the services has been provided.

Where new services such as electrical or gas supplies are being installed, it may be possible to reduce risks by not installing or commissioning them until other groundworks and work on the installation have been completed.

This should be considered early in the design process to allow the works to be sequenced accordingly.

Close liaison should be maintained between the developers, their contractors and the utilities. The builder/developer should keep a marked-up plan of the estate showing the up-to-date position of underground services (including any variations from planned routes) on site for the information of those involved in excavation and groundwork.

Major hazard pipelines
Pipelines are used to convey a wide range of fluids, including oils and other petrochemicals, ethylene, oxygen, nitrogen and similar industrial gases and a number of other chemicals.

The more hazardous of these pipelines (known as major accident hazard pipelines) are not normally found in residential areas. They are usually in rural areas and often near chemical and petrochemical installations. Cross-country pipelines are also found on agricultural land. They usually cross roads, railways and motorways etc at right angles.

It is important to consider the location of underground pipelines before carrying out building, excavation, landfill or other such work. Such activities may not only cause damage to pipelines but could also affect future access to them for maintenance purposes. Both the landowner and local authority should be contacted for further information; it is a statutory requirement for plans of pipelines to be lodged with local authorities.

Liaison with the pipeline operator is important, as information can be provided about not only the location but also the nature of the fluid being transported, any restrictions on excavations near the pipeline, the precautions to be taken during excavating and action to be taken in an emergency. Accordingly, where work is proposed near pipelines, the specific requirements of pipeline operators should be adhered to.

Installing new services near existing services

60 New underground services often have to be laid in ground which contains existing services. Where it is reasonably practicable to do so, the designer planning the new installation should aim to site it so that it is separated from all existing underground services by the distances specified in *Guidelines on the positioning and colour coding of underground utilities' apparatus Volume 1*.[5]

61 It is important to have information about existing services to help select a route for the new service that avoids them. The risk of contact with existing services can be reduced by choosing a route with a low density of underground services. For example, a cable television duct might be routed at the side of a road if there is a reduced cable density there.

62 Designers of pipelines should also be aware of the guidance in *A guide to the Pipelines Safety Regulations 1996*,[6] which advises that the parallel running of similar pipelines in the street should be avoided. Liaison with the owners of services is important as they are in a position to provide information to the designers to enable them to make such decisions.

63 Where you cannot achieve the recommended separation, there should be as great a separation as is reasonably practicable. Where the installation of a service would obstruct access to an existing service you should use all reasonably practicable means to avoid this. In particular, avoid the practice of laying multiple ducts directly above other services. This may require diversion of services or the installation of accessible shared service ducts or chambers.

64 If the utility or its contractors laying the new service have had to reduce the separation, they should inform the owner/operator whose service has been affected so that they can then amend their records for future reference.

Your duties as a contractor

65 Contractors must prepare safe systems of work for their employees by identifying the hazards they are likely to encounter during the work and making a suitable and sufficient assessment of the risks posed by those hazards. Clear information on the type, location and status of underground services and the tools, equipment and working practices they will require to avoid damaging the services is essential.

66 Make sure that those doing the work have sufficient information, clear instruction and training to work safely, and that proper management and supervision of the work ensures that it is done safely.

67 Information about the risks from underground services should be provided before arriving on site. Where services have been disconnected, this should be recorded and information about where and when the disconnection was done should be given to the contractors working in that area. Co-operate with any principal contractor to make sure any rules or agreed methods of working are adhered to.

68 Anyone who carries out work near underground gas pipes and associated equipment should observe any specific requirements made by the gas transporter, and make sure that access to the equipment is available at all times. Do not make any unauthorised repairs to gas pipes. If in doubt, seek advice from the appropriate gas transporter.

69 Where heavy plant may have to cross the line of any vulnerable service during construction work defined crossing points should be provided and used. Keep the number of crossing points to a minimum, indicate them clearly and do not allow crossings at other places along the line of the service. Where an existing road does not adequately protect the pipe, crossing points should be suitably reinforced with sleepers, steel plates or a specially constructed reinforced concrete raft, as necessary. The owner/operator of the service will advise on the type of reinforcement necessary.

70 On completion of the work, provide information on underground services, found or newly installed, to the client and the owners of other services encountered. This will allow them to update their own records on the position of their services and should be made available to others who will need to use this information for subsequent maintenance, repair and construction work.

Emergency work

71 There will be occasions where it is necessary to do emergency work to repair damaged services in order to make them safe or restore them following damage. Often this emergency work may just require a temporary fix before a permanent repair can be done, though circumstances may mean it is appropriate to make a permanent repair immediately.

72 Routine work that does not arise from a safety-critical situation, and could be planned, should not be done as emergency work.

73 Emergency work still requires planning and assessment of the risks before and while carrying it out. Attempts must be made to obtain information about underground services in the area.

74 Inevitably, there will be greater emphasis on the work on site to locate services and excavate safely. This is not an excuse for cutting corners or running unacceptable or avoidable risks. The work must be done by individuals with sufficient knowledge and experience, and be reviewed as it is undertaken.

75 Those managing emergency work must balance the risk of potential damage to underground services against the continuing risk from the emergency situation. For example, the risk of damage to cables while isolating a gas pipe to stop a leak must be weighed against the risk of fire and explosion from the continued leak. In all cases, make sure that the overall risk to safety is not increased.

Detecting, identifying and marking underground services

In summary

Locate the services identified at the planning stage survey as being in the work area.

Make sure those involved in detecting and identifying services are competent in the proper use of survey tools and detecting devices as well as reading/interpreting plans.

Once detected, identify and mark the services and confirm their status – ie whether electricity cables are live, whether gas pipes are pressurised – and then record their location.

Detecting services

76 There are different levels of survey:

- *Desktop study:* Involves requesting and considering the service drawings from the owners of underground services. This should be done for all projects that involve excavation or penetrating the ground.

- *Desktop study and site investigation:* Involves using the information from the desktop study to assist a physical inspection of the site (looking for physical signs such as inspection hatches, reinstated excavations, street lights and telecoms boxes) and a survey using detection tools.
- *Physical identification of the services:* In addition to the above, this involves taking steps to detect and identify the underground services through trial holes to verify their location, depth and identity. It may also involve passing a tracing device through a pipe or tunnel.

77 The level of survey needed will depend on the nature of the work site. Some congested urban locations will require a more detailed survey than some brown and green field sites. The decision on the necessary level of survey should be informed by an assessment of the likelihood of underground services being present, based on the information obtained for the work site. The designer should make this decision at the planning stage in consultation with the contractor and surveyor.

78 The results of the survey should be shared with the designer and recorded in a clear, usable format on working drawings to be shared with those working on the site and, where possible, marked out on site.

79 Those doing the survey need to have sufficient knowledge and experience in the use of survey equipment and techniques. They will need to understand the limitations of the equipment, the effect of differing ground conditions on the survey results, how to survey a given area effectively, and to appreciate the limitations of plans and drawings provided by the service owners. Some training providers offer courses in service detection and mapping and an NVQ qualification in utility mapping.

80 The position of any services in or near the proposed work area should be pinpointed as accurately as possible using a detecting device in conjunction with up-to-date service plans and other information which provides a guide to the possible location of services, and help interpret the signal.

81 Take account of any indications that underground services exist, such as the presence of lamp posts, illuminated traffic signs, gas service pipes entering buildings, pit covers, pipeline marker posts, evidence of reinstated trenches etc. However, if there are no such indications, this does not mean that there are no underground services.

82 Plans do not normally show the position of gas service connections and their existence should be assumed. It may be possible to estimate the probable line of the service connection pipe from the gas meter position, or from the point of entry into the premises.

83 Gas plant may be shown by valve boxes, pits and housings. However, covers for valve boxes and pits will sometimes not show clearly whether gas is the service present; if in doubt, contact the gas transporter.

84 Anyone selecting detection tools and survey methods must understand the range of methods and tools and their limitations. In particular, they need to be aware of the potential for false readings or signals in certain techniques as they may lead to inaccurate information being included in the plan of work and, in turn, lead to a false sense of security.

Types of detecting devices or locators

85 The main types available can be classed as follows:

Figure 5 Using a cable locator

- *Hum detectors* are receiving instruments that detect the magnetic field radiated by electricity cables which have a current flowing through them. They do not respond to:
  - cables where there is little or no current flowing; for example, service connection cables to unoccupied premises or street lighting cables in the daytime;
  - direct current cables;
  - some well-balanced high-voltage cables, where these generate relatively little field (which in turn may be further screened by the cable sheathing);
  - pot-ended cables, see paragraph 89.
- *Radio frequency detectors* are receiving instruments that respond to low-frequency radio signals, which may be picked up and re-emitted by long metallic pipes and cables. If radio frequency detection is used, other metallic objects such as abandoned pipes, cables and tram tracks may re-radiate the signal and results may vary appreciably according to locality, length of the underground cable or pipe and distance from the termination and geographical orientation.
- *Transmitter/receiver instruments*, where a small portable transmitter or signal generator can be connected to a cable or pipe, or placed very close to it so that the signal is introduced into it. The receiver, typically the same radio frequency detectors mentioned above, can then detect this signal. Usually the location of some part of the cable or pipe needs to be already known so that the transmitter can be properly positioned. A direct connection is not required but accuracy will be greatly improved if a direct connection can be made. Some signal generators can be sent along pipes. They can provide useful information in difficult situations where the techniques using hum detectors and radio frequency detectors have not been successful. **Use of signal generators will significantly increase the accuracy of the service location.**
- *Metal detectors* are conventional detectors, which will usually locate flat metal covers, joint boxes etc, but may well miss round cables or pipes.

- *Ground probing radar* is a method capable of detecting anomalies in the ground. When these anomalies can be plotted into a continuous line it may indicate a cable, duct or pipe. However, this technique alone would not determine the precise nature of the service and it should be supported by information available about the services present and also, preferably, by the use of other more conventional forms of detecting device. Knowledge of ground conditions is important. For example, false readings are most likely where there are boulders and debris in the ground or where the ground has often been disturbed. Because of equipment costs and the need for specialist training it may be cost-effective to use firms specialising in this technique.
- *Radio frequency identification (RFID)* is a system increasingly used to mark or 'tag' new services. These markers can be programmed with information about the particular service and its depth, and this information can be read by detecting devices. The accuracy of the information depends on the marker being properly attached to the service. As a developing system, RFID will often be found on new services so will not necessarily assist with older services. RFID marker systems may require specific detecting tools that may not be compatible with one another.

86 Some instruments use more than one of the technologies listed and may include a depth-measuring facility.

Using a detecting device

87 The degree of confidence with which underground services can be detected depends on a number of factors, such as:

- the training, skill, hearing and experience of the operator;
- the characteristics of the device being used;
- the calibration and reliability of the detecting device;
- the type, length and depth of the service;
- for cables, the magnitude of the current being carried;
- the effects of other nearby services;
- the nature of surface conditions, eg reinforced concrete;
- the nature of the ground conditions;
- whether or not a signal generator is being used.

88 Anyone who uses a locator should have received thorough training in its use and limitations. Always use detection devices in accordance with the manufacturer's instructions, check and calibrate regularly, and maintain in good working order.

Figure 6 Congested services

89 Occasionally, cables are terminated in the ground by means of a seal, sometimes with external mechanical protection. These 'pot-ended' or 'bottle-ended' cables should be treated as live and should not be assumed to be abandoned or disused. They can be difficult to detect with locators even when 'live'.

90 A locator may not be able to distinguish between cables or pipes running close together and may represent them as a single signal. If, for example, two are sited one above the other the lower one may not be detected. Use signal generators whenever possible as they greatly increase the accuracy of detecting and tracing an underground service.

91 Locators (with the possible exception of ground-probing radar) do not detect plastic pipes or other non-metallic services unless:

- a metallic tracer wire has been laid with the pipe. This enables a signal transmitter/receiver to be used. Plastic gas and water pipes are the non-metallic services most likely to be encountered and few have been laid with metallic tracer wires in the past, with the exception of plastic pipes on LPG-metered estates; or
- a small signal transmitter or tracing rod is inserted into and pushed along the pipe or duct. This is a sophisticated technique which may not be appropriate for many jobs; or
- RFID markers, or similar, have been affixed to or overlay the pipes.

92 **Note:** Tracer wire(s) on a service may not be continuous due to being damaged or not properly laid out, therefore the true length of a particular service may be missed.

93 If a service recorded on a plan cannot be located, seek appropriate assistance or advice from the service owner.

94 Many telecommunication and railway signalling cables cannot be located by detecting devices, unless metal components (such as a metal sheath) are connected to earth, they have been tagged with location markers, or they are laid in ducts where tracing rods can be used.

95 Services should be traced through the full extent of the work area as they may not run in straight lines. Cables will often have kinks or loops and pipes may have joints or bends that are not shown on service drawings.

96 Use trial holes to positively identify a service and its depth. Exposing a service safely in this way will allow its status to be checked and may make it easier for a tracing signal to be applied.

97 Note the line of any identified services and mark with waterproof crayon, chalk or paint on paved surfaces (use biodegradable paint or erase residual markings as far as possible after excavation), or with wooden pegs in grassed or un-surfaced areas, preferably to one side of the service. Steel pins, spikes or long pegs which could damage services laid at shallow depth should not be used.

Safe excavation

In summary

Determine the method or technique for excavating near underground services before work starts, taking account of:

- the nature and scope of the work;
- the type, position and status of underground services;
- the ground conditions;
- site constraints.

Provide those doing the work with a written plan, including information about the location and nature of underground services. They should be competent, provided with appropriate personal protective equipment (PPE) and work equipment, and allowed sufficient time.

Identified services should be carefully exposed and clearly marked. A permit system may be appropriate for particularly hazardous work. This will involve written authorisation by a responsible person, identifying the work to be done and the precautions to be taken. A permit system needs suitable supervision and monitoring to ensure that the conditions of a permit are complied with (see paragraph 163).

Backfilling of excavations must properly support and protect the underground services. Concrete must not be used to encase services when backfilling.

If an underground service suffers damage during the excavation or subsequent work, inform the owner/operator. In the case of electricity cables, gas pipes, other pipelines or high-pressure water mains, arrange to keep people well clear of the area until it has been repaired or otherwise made safe by the owner/operator.

Exposing services

98 All those working to expose services and those supervising them must be competent to do so. They should have had sufficient information, instruction and training to:

- understand the risk to safety from damaging services;
- use detection tools;
- practise safe excavation techniques and understand the value of hand digging and the risks from using power tools or mechanical excavators.

99 Excavation work should follow safe digging practices. Once a detecting device has been used to determine position and route, excavation may proceed, with trial holes dug (using suitable hand tools or vacuum excavation), as necessary, to confirm the position of any detected services. Take special care when digging above or close to the assumed line of such a service.

100 You should carefully plan and manage mechanical excavation, which is a common source of damage to services. Another person should assist the excavator driver, from a position where they can safely see into the excavation and

warn the driver of any services or other obstacles. This person should remain outside the operating radius of the excavator arm and bucket.

101 Instruct drivers to stay in the cab if a cable is struck. If drivers climb down, they may be electrocuted. When a cable is struck, the area should be isolated and secured; no one should go into the excavation or approach the excavator or the cable until the cable owner has made the damaged cable safe.

102 The danger created by damaging a gas pipe with an excavator is much greater than if the damage is done with a hand-held power tool, the opposite is true for work near electricity cables.

103 Remember that the effects may not only occur at the point of impact, for example:

- damage to a service connection may result in unseen damage to the connection inside the building;
- gas from a damaged pipe may travel along the line of a service pipe into a building, causing a dangerous build-up of gas there.

104 Hand-held power tools can damage services and should be used with care until the exact position of the service has been determined. You may use them to break a paved or concrete surface above a service, unless there are any indications that the service is particularly shallow or too close to the surface to be broken up.

105 Hand tools are a common source of accidents if incorrectly used. However, when used carefully, they can normally provide a satisfactory way of exposing services.

106 Make every effort to excavate alongside the service rather than directly above it. Avoid using hand-held power tools over the service unless:

- the service has already been exposed by digging under the surface to be broken out and it is at a safe depth (at least 300 mm) below the bottom of the hard surface material; or
- physical precautions have been taken to prevent the tool striking the service.

107 Mechanical excavators and power tools can be used to break up hard surfaces where the survey has proved that there are no services, or the services are deep enough so as not to be damaged by such tools.

108 Using hand-held power tools to break up hard surfaces often leads to accidents. Where practicable, only use such power tools 500 mm or more away from the indicated line of a service buried in or below a hard surface. Having done so, the service should then be positively located by careful hand digging under the hard surface. Gradually remove the hard surface until the cable is exposed. If the cable is not so exposed, then assume it is embedded within the surface.

109 Use a cable locator as a depth guide down the side of the excavation. The 500 mm safety margin may be reduced:

- where congestion of services renders it impracticable; or
- where surface obstructions limit the space available;

but **only** if the line of the cable has been positively identified by plans, confirmed by a locator, and additional precautions are used to prevent damage to the services.

110 Final exposure of the service by horizontal digging is recommended, as the force applied to hand tools can be controlled more effectively. Use insulated tools when hand digging near electric cables. In particular:

- spades and shovels (preferably those with curved edges) should be used rather than other tools. They should not be thrown or spiked into the ground, but eased in with gentle foot pressure;
- picks, pins or forks may be used with care to free lumps of stone etc, and to break up hard layers of chalk or sandstone;
- picks should not be used in soft clay or other soft soils near to underground services.

Figure 7 Using an air digging tool

111 Safe methods of excavating may include vacuum excavation, which may incorporate use of water jetting and high-velocity air jets. They can be very effective in congested excavations where mechanical excavation and use of hand tools is difficult. However, they have limitations and will not work on all ground conditions or materials such as concrete.

112 Assess the precautions needed to prevent injury – to the operative or those nearby – from ejected soil and other material and put in place appropriate controls.

113 Assess carefully the use of jetting tools to excavate around cables as there is potential for old and fragile cables to be damaged by the jet of water or air.

114 **Make frequent and repeated use of locators during the course of the work. Service location is likely to become more accurate as cover is removed.**

115 **Once exposed, services may need to be supported and should never be used as handholds or footholds for climbing out of excavations.**

116 Sometimes there may be joints in cables. These may be enclosed in earthenware pipes, filled compound, or be of cast iron or plastic epoxy-filled casings. They need proper support and should not be roughly treated. Do not move, except in consultation with the owner.

117 Where gas pipes cross or run alongside excavations, changes in backfill etc may cause differential ground settlement and increased stress in the pipe. Wherever an excavation may affect support for a gas pipe, consult the owner. In some cases, it may be necessary to divert the gas pipe before work begins.

118 **Assume all services are live until disconnected and proven safe at the point of work. Obtain written confirmation of disconnection from the owner/ operator before removing a redundant service.**

Protective clothing

119 Burns are the main injuries that result from damage to live electrical cables or from fire or explosion following a gas leak. In many cases, burns are made more severe by the injured person working bare-chested. Even ordinary work clothing can greatly reduce the severity of the burns and protective clothing is better. However, clothing made from man-made fibres such as nylon may melt and stick to the skin, increasing the severity of the burns.

120 Where electricity cables may be encountered during excavation work, employers should consider whether the work justifies wearing clothing designed to protect against electric arc, or flame-retardant clothing. Advice on the suitability and performance of protective clothing should be available from reputable companies specialising in its supply.

121 **Wearing protective clothing is not a substitute for a safe system of work.**

Identifying exposed services

122 Once underground services have been uncovered, failure to identify them correctly is another common cause of accidents. A wide variety of materials and colours have been used for services over the years. Furthermore, some services may be very similar in appearance and some services run in ducts made of various materials, including asbestos cement, making them difficult to identify. Adopt the following approaches until you have positively confirmed the identity of the service:

- Water pipes, electricity cables and telecommunication cables may be covered in black plastic. If any black plastic service is found, assume it is a live electricity cable.
- Iron and steel water pipes and gas pipelines may appear very similar. If any such pipe is uncovered, treat it as if it were a gas pipe.
- Always treat continuously welded steel pipes as if they contain a hazardous or high-pressure fluid.
- At collieries, beware of electricity cables, some of which are yellow or blue and may be mistaken for other services.
- On some building sites beware of electricity cables being placed in yellow service pipes or blue water pipes.
- Where there is any doubt about the identity of an exposed service treat it as an electricity cable or gas pipe until proved otherwise.

123 For modern installations, most utilities have agreed a national colour coding system for underground services, described in *Guidelines on the positioning and colour coding of underground utilities' apparatus.* This colour coding system should not be confused with the one contained in BS 1710:1984,[7] which generally applies to above-ground building and process services.

124 Remember that:

- old, non-utility services or other pipelines may not conform to this system;
- colours may look different under poor or artificial lighting;
- ducts could include any of the services.

125 Once the exposed service(s) is identified, determine its status, ie is it live or dead? **The status of the service may change, eg an electricity cable may become live or a pipe pressurised, so check the status when work near the service begins.**

Marking identified services

126 The system used to mark the identified services needs to be agreed and understood by all those working on site. If you use a colour coding system, this should correspond to the national colour coding system referred to in paragraph 123.

127 The services should be marked on site plans and on the ground. Markings on the ground are typically done with paint, though stakes, pins or posts can be used. Take great care if using stakes, pins or posts to make sure that they are not driven into ground where they could damage the services. For example, do not use them directly above the identified services.

Safety at excavations

128 Excavations should be properly supported, stepped or battered back to prevent them collapsing. Excavation support may involve the use of shuttering and shoring or a trench box system. Provide a safe means of access into the excavation, such as a secured ladder.

129 Provide edge protection, fencing and or coverings to prevent anyone falling into the excavation. Also take steps to prevent excavated material falling into the excavation.

Backfilling

130 Backfilling of any excavation should be done carefully to make sure that services are not damaged. Put back warning tiles, tape etc in their original position above the services unless visual examination after exposure showed this to be incorrect, in which case replace them above the service to which they refer. Do not use warning tape for any other purpose (for example, guarding an excavation) and do not discard it in an excavation during backfilling.

131 If road construction is close to the top of a gas pipe, ask the owner/operator about necessary precautions. Do not reduce the road construction depth without permission from the local highway or roads authority.

132 Backfill materials containing items likely to damage the services, such as large pieces of rock and hard core, should not be used. You can obtain further information on backfilling from:

- utilities and owner/operators, for their particular services;
- the Code of Practice (under Section 71 of the New Roads and Street Works Act 1991) *Specification for the reinstatement of openings in highways*.[8]

133 When backfilling an exposed gas pipe, observe the following:

- Backfill material adjacent to gas plant should be suitable fine material or sand, containing no stones, bricks or lumps of concrete.

- The backfill should be suitably compacted. Where the excavation has exposed an existing gas pipe, compaction should give comparable support and protection to that before the excavation. In all situations, compaction beneath the pipe is particularly important to prevent any settlement that would subsequently damage the pipe.
- There should be no power compaction until 200 mm cover of selected fine fill has been suitably compacted.
- Do not use concrete backfill within 300 mm of a gas pipe.

Use of concrete as backfill

134 Services should not be buried or encased in concrete as excavating close to them is dangerous. Using mechanical means to break up concrete can cause damage to cables or pipes which, if live, will likely mean that anyone present will be injured. Service owners should ensure that their own employees and contractors are aware that this practice is unacceptable.

Updating plans

135 If the plans or other information have proved to be inaccurate (for example, a service has been found well away from its recorded position), or if the present work changes the path or depth of a service, inform the service owners/operators (preferably before the excavation is backfilled) and they should amend their records accordingly.

136 The plans for new services should show how they have been laid, not how they were designed. Contractors may need to amend the design drawings accordingly.

Electricity cables

137 Most underground cables are laid in trenches between 450 mm and 1 m deep. Some high-voltage cables will be deeper. **However, never assume depths; you may find cables at shallower depths.**

138 In most cases, there will be no permanent surface marker posts or other visible indication of the presence of an underground cable. Even if no cables are shown on plans, or detected by a locator, there may still be cables present that could be live and you should keep a close watch for any signs that could indicate their presence.

139 A cable is positively located only when it has been safely exposed. Even then, digging should still proceed with care as there may be other cables and services adjacent or lower down. In addition, some lines of 11 kV or greater can be laid out as separate single-phase cables, spread out up to 600 mm across, particularly near cable joints. Where it is clear there is a risk of damage to a cable during the course of any work, the owner(s) may wish to be present on site.

Cables in concrete

140 It is bad practice for cables to be encased or buried in concrete. Unfortunately, it is not uncommon to find cables encased in concrete.

141 Using hand-held power tools to break up concrete can damage cables and, if the cable is live, anyone present is likely to be injured.

142 Careful planning is important to find alternative routes or, failing that, to arrange to make the cable dead. Cable owners are likely to want to attend the site to verify the circumstances surrounding any request to make dead. Electricity companies should co-operate, subject to the request being reasonable, and deal with the request as soon as possible. An alternative supply or bypass arrangement could be used to allow the cable to be made dead.

143 Work with the cable live should only be done if the circumstances mean it is unreasonable to make the cable dead, and if you take suitable precautions to prevent injury. If there is no alternative route, and the cable cannot be made dead, then you should agree alternative safe methods of excavation with the cable owners. Remember that powered hand tools used close to live cables are likely to represent the greatest risk of injury.

144 When work can proceed safely only after a cable has been made dead, the parties involved should continue to liaise to ensure that work is completed, and workers are clear, before the circuit is re-energised. A permit-to-work system may assist in managing this process.

145 Cables may have been laid directly in the ground with a bed or surround of fine soil or sand, or in cement-bound sand, or in earthenware or plastic pipes or ducts. Very occasionally, they may be in steel pipes. They may have a layer of tiles, slabs or coloured plastic marker tape laid above them. However, any such protection may have been disturbed and moved and you should not rely on them to give an accurate indication of a cable position.

Gas pipelines

146 The depth of cover for gas mains laid in a roadway is normally about 750 mm, and for those laid in a footway about 600 mm. The depth of cover for gas service connections is normally about 450 mm in both roads and footways. However, on private property, including at entry positions to buildings, the depth of cover for the service connection may be less, about 375 mm. High-pressure gas transmission pipelines are usually buried with at least 900 mm cover. **However, never assume depths; pipes may be found at shallower depths.**

147 Gas pipes are generally laid directly in the ground, although in certain soils selective backfill may have been used as a bed and pipe surround and, on occasion, pipes may be laid in ducts. Ductile iron pipe will sometimes be found wrapped in loose-fit polyethylene (PE) sleeving as protection against corrosion. PE mains may be inserted into redundant iron gas mains and PE service connection pipes may be inserted into yellow convoluted ducting on new housing estates.

148 Markers may also have been used to indicate gas services, namely:

- marker tiles, which may have been used above gas pipes; for example, when they have been laid at shallow depths in bridges or above cellars;
- coloured plastic markers, including for PE mains;
- marker posts/plates, which may show the position and size of valves or test points on gas mains.

However, such markers may have been disturbed and you should not rely on them as an accurate indicator of position.

149 Locate PE gas pipes by hand digging before mechanical excavation begins. This may also be necessary for metallic pipes if they have not been successfully located by a pipe-detecting device. This is particularly important for service connection pipes, which will not be marked on plans. A suitable hand-digging method is to dig a trial trench along the road near the kerb or in the footway where the service connection pipes are likely to be at their shallowest. When the position and depth of the pipes have been determined, work can proceed.

150 Gas pipes may have projections such as valve housings, siphons and stand pipes that are not shown on the plans. To allow for this, do not use mechanical excavators within 500 mm of a gas pipe. The gas transporter may advise greater safety distances, depending on the pipeline pressure.

151 Never disturb pipe restraints or thrust blocks (or the ground supporting them) where they are close to gas mains as this can cause sudden failure of the main.

Gas leak or damage

152 If a gas leak is suspected, do not attempt repairs. Instead, take the following action immediately:

- Evacuate everyone from the immediate vicinity of the escape. If the service connection to a building or the adjacent main has been damaged, warn the occupants to leave the building, and any adjoining building, until it is safe for them to return.
- Inform the gas distribution network operator by telephoning the National Gas Emergency number 0800 111 999.
- Prohibit smoking, and extinguish all naked flames and other sources of ignition within at least 5 m of the leak.
- Help gas transporter staff, police or fire services, as requested.

153 Report any damage, however slight, to the owner. Where an excavation uncovers a gas pipe with a damaged wrapping, tell the owner so that they can make repairs to prevent future corrosion and leakage.

Other work near gas pipelines

154 Because of the risks they pose, do not undertake the following without consulting the pipeline owner/operator:

- the use of explosives within 30 m of any gas pipe;
- piling or vertical boring within 15 m of any gas pipe;
- excavation work within 10 m of any above-ground gas installation;
- building a manhole, chamber or other structure over, around or under a gas pipe;
- work that results in a reduction of cover or protection over a pipe.

155 If you are to carry out welding or other hot work involving naked flames within 10 m of exposed gas plant, ask the gas transporter to check the atmosphere before work begins and continue monitoring during the work. Take care to make sure that no damage occurs, particularly to plastic gas pipes or to the protective coatings on other gas pipes.

Water pipes and sewers

156 To avoid the effects of frost, water mains and sewers are generally laid at depths of 900 mm or more; water services to premises normally have about

750 mm cover; unless local circumstances necessitate shallower depths. In general, work near underground water pipes is of low risk and most precautions are more concerned with reducing the cost of damage than with eliminating the risk.

157 However, there are some dangers and precautions should include:

- Where work is carried out near water mains, obtain plans from the relevant water company and use a pipe locator. However, plastic pipes will not be detectable by most detecting devices. Follow safe digging practices, using hand tools as far as practicable.
- At bends in mains, concrete thrust blocks may be used. Under no circumstances should either thrust blocks or the ground supporting them be disturbed, as this can cause sudden failure of the main.
- Support exposed water pipes, as necessary, and use the correct method of backfilling. For advice, contact the relevant water company or water authority.
- If a water pipe or its wrapping is damaged, inform the relevant water company or water authority – and the owners of any other underground services which may be affected – immediately. Do not make unauthorised repairs.

Major hazard pipelines

158 These pipelines may be laid directly in the ground, although sometimes selective backfill will have been used as a bed and pipe surround. They are normally buried with at least 900 mm cover and may be even deeper where they cross roads and railways. Therefore, they are unlikely to be affected by shallow excavations.

159 Although marker posts/plates are sometimes used to indicate the position, size and ownership of pipelines, such markers may have been disturbed and you should not rely on them as an accurate indicator of position.

160 Locate pipelines by hand digging before using mechanical excavators nearby. In any event, do not use mechanical excavators within 500 mm of a pipeline.

161 Most pipelines will be protected against corrosion by a coating. This will normally be:

- coal tar or bitumen – coloured black, sometimes with traces of white limewash;
- polyethylene cladding – usually yellow;
- fusion-bonded epoxy powder – can be any colour, usually green or beige.

162 Some pipelines will be protected against corrosion by an alternative method known as cathodic protection, which will be linked to the pipeline by cabling. Both pipeline coatings and cathodic protection systems are susceptible to damage, even with hand tools, so take great care when excavating and backfilling and use a physical means of prevention (such as boards etc) where appropriate. It is important to report to the owner/operator any damage, including to the corrosion protection, before reburying the service.

Case study 4

A worker suffered severe burns after drilling in to a low-voltage cable during work to install street furniture. The electrical cable had been moved, wrapped in plastic and encased in reinforced concrete during earlier works to redevelop the street environment. Its location had not been recorded by the contractor managing the work.

The cable should not have been encased in concrete. It should have been moved in consultation with the electricity distribution company.

Permit to work

163 A permit-to-work system is a formal recorded process used to control work that is identified as potentially hazardous. It is also a means of communication between managers, supervisors and operatives who carry out the hazardous work.

164 A permit-to-work system aims to ensure that proper consideration is given to the risks of a particular job, and authorises certain people to carry out specific work at a specific site at a certain time – and sets out the precautions needed to complete the job safely.

165 Essential features of permit-to-work systems are:

- clear identification of who may authorise particular jobs and who is responsible for specifying the necessary precautions;
- clear identification of the types of work considered hazardous;
- clear identification of permitted tasks, risks, duration and control measures to be applied.

166 A permit-to-work system will be more effective if you have consulted operatives. Imposing systems without consultation can lead to procedures that do not reflect the circumstances on site.

Some specific sites and situations

Safe systems of work for trenchless methods

167 Trenchless methods are increasingly used for laying and renovating underground pipes and cables, particularly where there is a need to avoid surface disruption. The most widely used techniques are directional drilling, impact moling, microtunnelling, pipe bursting and auger boring.

168 Use plans, detecting devices and trial excavations to locate existing services in the same way as for open-cut excavation methods. The route of the device being used should then be planned accordingly to avoid colliding with, and damaging,

other services. In addition, if moling or pipe bursting are undertaken too near to other services or ducts, displaced soil may damage or enter them.

169 As a general guide, to avoid damage and to allow sufficient clearance for maintenance of the services, the minimum clearance between adjacent services should be either 250 mm or one and a half times the diameter of the pipe being laid, whichever is the greater. For electricity cables, clearances for maintenance work should be approximately 300 mm.

170 However, clearances for any technique may need to be varied, taking into account such factors as the construction of adjacent plant, ground conditions, bore diameter, the accuracy and reliability of the technique/ equipment being used and whether the other plant is parallel to or crosses the proposed line. You should take into account any requirements of the owners of adjacent services.

Figure 8 Horizontal drilling being used for laying a cable under a road

171 Moles can be prone to deflection from their original course and, if there are existing services in the vicinity, you should use a mole-tracking device. Where you are using trenchless techniques, all equipment should be effectively earthed at all times it is in use using an equipotential mat, as required, in case it hits a power cable and causes the machinery to become live.

172 Further information in *Trenchless and minimum excavation techniques: Planning and selection*[9] and *Trenchless techniques*.[10]

Demolition sites

173 Special problems can arise in the case of service terminations in derelict property or on demolition sites. Anyone concerned with demolition work should give adequate notice to the relevant gas, electricity and water services of their intention to demolish any premises. Do not start work until they have confirmed in writing that either the supply has been disconnected or other appropriate safeguarding action has been taken.

174 Underground services on industrial or commercial sites may be owned by the site occupier. A contractor who is to demolish buildings or plant on such a site should contact the owner or occupier, in addition to the utilities and other service operators, to ensure that all relevant services are isolated before work starts.

175 Even where supplies have been disconnected, beware of, for example:

- services that run through sites and are not part of the site supplies;
- pot-ended or bottle-ended cables.

If in doubt, treat services as ‘live’.

176 Further advice on demolition can be found in BS 6187:2011.[11]

Case study 5

A devastating explosion destroyed part of a former hospital building undergoing refurbishment to convert it into residential apartments. A demolition contractor cut through a 6-inch cast-iron gas main in an underground tunnel. No checks were made about the pipe, its contents and whether it had been properly isolated.

When doing demolition and refurbishment works, confirm that gas and electricity supplies are properly identified, located and point of isolation confirmed before work starts on site.

Appendix 1: Legislation

1 The following summary outlines the main legal requirements that apply to work near underground services. The list is not exhaustive and does not give a definitive interpretation of the law. It summarises the main issues to bear in mind when carrying out such work.

The Health and Safety at Work etc Act 1974

2 The 1974 Act applies to all work activities. Section 2(1) imposes a duty on an employer to ensure so far as is reasonably practicable the health, safety and welfare of employees while at work. This extends to the provision and maintenance of safe systems of work as well as such information, instruction, training and supervision as is necessary.

3 Section 3(1) imposes a duty on employers to take precautions, so far as is reasonably practicable, to ensure the health and safety of people not in their employment. This duty could apply to any owner/operator of underground services, to clients, local authorities or contractors.

4 Section 3(2) imposes a similar duty on the self-employed for the health and safety of themselves and others.

5 Section 4(2) imposes a duty on people in control of non-domestic premises to ensure, so far as is reasonably practicable, the health and safety of people not in their employment who are using those premises. The definition of premises is wide-ranging and is not confined to buildings.

6 Section 7 imposes duties on each employee to take reasonable care for their own health and safety and for the health and safety of anyone else who may be affected by their acts or omissions at work, and to co-operate with their employer to enable the employer to comply with their duties.

The Management of Health and Safety at Work Regulations 1999

7 These Regulations require employers and the self-employed to assess the risks arising from work activities. They should do this with a view to identifying the measures which need to be taken to comply with relevant health and safety legislation, therefore eliminating risks where possible and controlling those which remain.

The Construction (Design and Management) Regulations 2007

8 The Construction (Design and Management) Regulations 2007 apply to all construction projects and set out requirements in relation to their design and management. They place responsibilities on all those who can contribute to improving health and safety, including clients, designers and contractors. These responsibilities relate to planning, management, design and co-operation between those involved in the project. Risks should be properly managed by action during the design, planning and execution phases of the project.

The Provision and Use of Work Equipment Regulations 1998

9 These Regulations require that equipment is maintained in good repair. Employers should ensure that employees who use work equipment or who manage or supervise its use, have received adequate training in the risks involved, methods of use and precautions to be adopted.

The Electricity at Work Regulations 1989

10 These Regulations require that those in control of part or all of an electrical system should ensure that the system is safe when provided, safe to use, and that it is maintained in a safe condition. They also require that any work activity on or near an electrical system be carried out in such a manner as to prevent danger – excavation work should not be carried out unless all suitable and sufficient steps have been taken to identify and, as far as is reasonably practicable, prevent any risk from any underground cable or other underground electrical service (regulation 4(3)).

11 Regulation 14 requires that work should not be done on or near a live conductor, where danger may arise, unless:

- it is unreasonable in all the circumstances for it to be dead;
- it is reasonable in all the circumstances for the work to be done while it is live;
- suitable precautions are taken to prevent injury.

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013

12 These Regulations require employers and the self-employed to report certain occupational injuries, diseases and dangerous occurrences to the relevant enforcing authority (for incidents arising during excavation work this will almost certainly be the Health and Safety Executive via an online reporting system).

13 Any work-related injury which results in a worker being unable to carry out the full range of their duties for more than seven days (including rest days and holidays) is reportable. There is also a range of injuries defined as specified injuries.

14 Where there are no reportable injuries, underground electrical cable strikes become reportable as dangerous occurrences where the resulting fire or electrical explosion had the potential to cause death, or if it puts the cable out of action for more than 24 hours.

15 Certain pipeline incidents, including gas escapes, are also reportable as dangerous occurrences by the operator of the pipeline. Schedule 2, part I, paragraphs 21 and 22 list dangerous occurrences associated with pipelines which

are reportable. (Certain pipelines are exempted, corresponding to those to which the Pipelines Safety Regulations do **not** apply, eg water mains, drains and sewers.)

16 The dangerous occurrences include:

Electrical incidents causing explosion or fire

17 Any explosion or fire caused by an electrical short circuit or overload (including those resulting from accidental damage to the electrical plant) which either:

- results in the stoppage of the plant involved for more than 24 hours; or
- causes a significant risk of death.

18 Where the failure of an item of electrical equipment (including as a result of accidental damage) results in a fire or explosion, the failure is reportable as a dangerous occurrence if the equipment concerned is rendered unusable for over 24 hours, or if the occurrence was one with the potential to cause the death of any person. The incident is reportable even if the system in which the damaged equipment was installed is put back into service using new equipment within 24 hours. In such a case, an assessment should be made on how long a repair to the damaged equipment would have taken had it been attempted. Repair time does not include incidental time delays such as those associated with travelling to repair plant in remote locations, or with sourcing parts.

Pipelines or pipeline works

19 In relation to a pipeline or pipeline works:

- any damage to, accidental or uncontrolled release from, or inrush of anything into a pipeline;
- the failure of any pipeline isolation device, associated equipment or system; or
- the failure of equipment involved with pipeline works;

which could cause personal injury to any person, or which results in the pipeline being shut down for more than 24 hours;

- the unintentional change in position of a pipeline, or in the subsoil, which requires immediate attention to safeguard the pipeline's integrity or safety.

20 The incidents listed are reportable in respect of onshore pipelines or pipeline works. The following types of pipeline are **not** covered by these requirements:

- a drain or sewer;
- any pipe used to provide heating or cooling, or for domestic purposes;
- a pipe used in the control or monitoring of plant;
- a pipe used for the conveyance of air, water vapour or steam;
- a water pipe, other than when used for the purposes of injecting water into an underwater well or reservoir containing mineral resources;
- a pipeline contained wholly within the premises of a single undertaking;
- a pipeline contained wholly within a caravan site;
- a pipeline contained wholly within land classed as a railway asset;
- any part of a gas-supply pipeline which is downstream of an emergency control.

21 The phrase 'accidental or uncontrolled release' is not intended to include minor leaks from pipelines, eg small leaks from valve stems, flanges etc. However, sudden or uncontrolled escapes requiring immediate attention or action should be reported.

22 Examples of reportable damage with the potential for harm would include such things as gouging, denting, buckling etc caused by external interference requiring immediate action. Such damage may or may not have resulted in any escape of the pipeline contents. External coating damage without damage to the underlying substrate would not be reportable.

The Gas Safety (Management) Regulations 1996

23 These Regulations are aimed at ensuring the natural gas distribution network is safely managed. To deal with gas leaks, they require the following:

- BG Group plc (or its successors) to provide a continuously manned, national freephone telephone service, so that people can report gas escapes;
- where BG Group plc (or its successors) is notified of escapes they should straight away notify the relevant gas conveyor or emergency service provider;
- the relevant gas conveyor or emergency service provider should go to where the gas is escaping as soon as reasonably practicable;
- gas conveyors/emergency service providers should stop gas escaping within 12 hours.

24 Where a gas escape from a service pipe or main has, or was likely to have, resulted in a fire or explosion, then the gas conveyor has to ensure an investigation is carried out.

The Pipelines Safety Regulations 1996

25 These Regulations deal with the safe design, construction and operation of pipelines. The scope includes requirements that:

- no person shall cause such damage to a pipeline as may give rise to a danger;
- pipeline operators shall take reasonable steps to inform people of the existence and whereabouts of a pipeline to prevent damage to it.

New Roads and Street Works Act 1991

26 This Act requires utilities and other undertakers (undertaker is a defined term under the Act) to give notice of their planned works under a variety of circumstances, depending upon the type of street in which the works are to be carried out and the type of works to be done. Emergency, urgent and some minor works can be started without issuing notice.

27 The Act also requires undertakers to record the location of apparatus belonging to them, to keep records up to date and to make them available for inspection at all reasonable hours, free of charge to any person having authority to carry out works in the street.

28 The terms ‘emergency’, ‘urgent’ and ‘minor’ works referred to above relate only to notifications for the purpose of the NRSWA and do not affect the legal obligations under the Health and Safety at Work etc Act 1974 (HSW Act) to give and obtain information needed to ensure safe working.

29 The HSW Act requirements apply to all work regardless of NRSWA classification and include work not covered by the NRSWA. There is also a specific duty on electricity companies to supply information under the Electricity Safety Quality and Continuity Regulations 2002 (see paragraph 31).

30 Section 67 of NRSWA requires that for any street works, work is supervised by a person qualified under the Street Works (Qualifications of Supervisors and Operatives) Regulations 1992. There also has to be an operative qualified under the same Regulations on site while work is in progress.

Electricity Safety Quality and Continuity Regulations 2002

31 A supplier of electricity has a duty under regulation 15 of the Regulations to make and, so far as is reasonably practicable, keep up to date 'a map or series of maps indicating the position and depth below surface level of all his works'. The supplier must provide these maps free of charge to anyone who has good reason for requiring them. Regulation 14 of the Regulations imposes requirements for the protection of underground cables and also imposes requirements for the depth and manner of their installation.

Fire Services Act 1947

32 Section 16 requires notice to be given to the fire authority of works which will affect a water supply or a fire hydrant.

References and further reading

1 *Safety at street works and road works. A Code of Practice* (also known as the Red Book) Department for Transport 2011 ISBN 978 0 1155 119580

2 *Traffic signs manual Chapter 8 (Part 1). Road works and temporary situations – design* The Stationery Office 2009 ISBN 978 0 11 553051 7

3 *Traffic signs manual Chapter 8 (Part 2). Road works and temporary situations – operations* The Stationery Office 2009 ISBN 978 0 11 553052 4

4 *Guidelines on the positioning of underground utilities apparatus for new development sites (Issue 3) Volume 2* National Joint Utilities Group 2010

5 *Guidelines on the positioning and colour coding of underground utilities' apparatus (Issue 6) Volume 1* National Joint Utilities Group 2012

6 *A guide to the Pipelines Safety Regulations 1996. Guidance on Regulations* L82 HSE Books 1996 ISBN 978 0 7176 1182 9
www.hse.gov.uk/pubns/books/l82.htm

7 BS 1710:1984 *Specification for identification of pipelines and services* British Standards Institution

8 *Specification for the reinstatement of openings in highways: A Code of Practice* (Second edition) The Stationery Office 2002 ISBN 978 0 11 552538 4

9 *Trenchless and minimum excavation techniques: Planning and selection* (SP147) Construction Industry Research and Information Association (CIRIA) ISBN 978 0 8601 7483 7

10 *Trenchless techniques* IGEM/SR/28 Institution of Gas Engineers & Managers

11 BS 6187:2011 *Code of practice for demolition* British Standards Institution

Guidance

Guidelines on the management of third party cable ducting Volume 3 National Joint Utilities Group 2007

Dealing with gas escapes IGEM/SR/29
Institution of Gas Engineers & Managers

Trenching practice (Second edition) R97 Construction Industry Research and Information Association (CIRIA) ISBN 978 0 8601 7192 8

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
www.hse.gov.uk/riddor
www.hse.gov.uk/riddor/examples-reportable-incidents.htm

Memorandum of guidance on the Electricity at Work Regulations 1989. Guidance on Regulations HSR25 (Second edition) HSE Books 2007
ISBN 978 0 7176 6228 9
www.hse.gov.uk/pubns/hsr25.htm

A guide to the Gas Safety (Management) Regulations 1996. Guidance on Regulations L80 HSE Books 1996 ISBN 978 0 7176 1159 1
www.hse.gov.uk/pubns/books/l80.htm

Managing health and safety in construction. Construction (Design and Management) Regulations 2007. Approved Code of Practice L144
HSE Books 2007 ISBN 978 0 7176 6223 4
www.hse.gov.uk/pubns/books/l144.htm

Managing for health and safety
www.hse.gov.uk/managing/index.htm

Useful links

HSE
www.hse.gov.uk
Source of guidance and access to HSE publications

National Joint Utilities Group
www.njug.org.uk
Source of guidance and information on street works and detecting underground services

Energy Networks Association
www.energynetworks.org
Information about gas and electricity supply companies

Utility Strike Avoidance Group
www.utilitystrikeavoidancegroup.org
A collaborative group of utilities asset owners, industry groups and contractors developing standards of safety when carrying out work on services

Utility Mapping Association
www.utilitymappingassociation.com
A trade body developing standards of training and competence for surveyors

The Survey Association
www.tsa-uk.org.uk
A trade body for commercial surveyors and source of information about surveying companies and technologies

Association of Geotechnical and Geoenvironmental Specialists
www.ags.org.uk
Trade association for those involved in site investigation. Provides guidance for clients and practitioners

UKOPA
www.ukopa.co.uk
Industry body for pipeline operators. Source of information about pipeline safety

UKSTT
ukstt.org.uk
Source of information about trenchless technology
Linewatch
www.linewatch.co.uk/index.php
Source of information and guidance about some major hazard pipelines

British Standards Institution
www.bsigroup.co.uk

Institution of Gas Engineers & Managers
www.igem.org.uk

Electrical Safety Council
www.electricalsafetycouncil.org.uk

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

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PRODUCED BY THE OPERATIONS DIRECTORATE OF ENERGY NETWORKS ASSOCIATION

Technical Specification 43-8

Issue 5 2019

Overhead line clearances

www.energynetworks.org

PUBLISHING AND COPYRIGHT INFORMATION

Operations Directorate
Energy Networks Association
4 More London Riverside
London
SE1 2AU

Last published, 2016.

Revised, 2019

Amendments since publication

Issue	Date	Amendment
Issue 5	June, 2019	Issue 4 has been subject to a minor revision which includes the following principal technical changes. Clause 2, Normative references: ENA EREC C99 added to reference list. All references to 'Skycradle' removed from document. Note added to definition 3.16 for 'ordinarily accessible'. New definition 3.23.1 added for 'auxiliary wire'. Table 1, Note 4: Cross-reference to Clause 10.2 added. Table 2, Note 2: Amended with respect to 'ordinarily accessible'. Table 2, Note 4: Cross-reference to Clause 11.3 added. Table 3: Clearances for 'Service termination at a building which is ordinarily accessible' deleted. This aspect is now covered by Clause 6.3.4. Deleted clearances for locations where line is ordinarily accessible but not accessible to vehicles. Table 3: New Note 1 added to clarify that the '2.5 m' laneway width does not prohibit the application of 4.3 m ground clearance to wider driveways. Table 3: New Note 2 added to clarify that clearances for LV systems attached to buildings may be determined in accordance with Clause 6.3.4. Table 4: Amended the wording 'Clearance to parts of a building or structure not ordinarily accessible' to 'Clearance to parts of a building or structure not accessible without access equipment' Clause 6.3.4, LV systems attached to buildings: New explanations added under items a) and b). These explanations are intended to steer

		appropriate selection for ground clearance on 'service flights'. New Clause 8.3, Clearances to crane jibs on railways: New Clause added to capture clearance requirements for crane jibs on railways working under overhead lines. Clause 10.1, Telecommunications: Clarified that ENA TS PO5 applies to all voltages. New Clause 10.2, Auxiliary wires: New Clause added to capture clearance requirements for auxiliary wires installed on overhead supports. Clause 11.2, Horizontal clearances – working near but not underneath overhead lines: Deleted recommendation that the horizontal clearance to steel tower lines should be 15 m and replaced with a NOTE to clarify that some ENAMCs may specify a larger distance than 10 m. Table 7: New Note 2 added to clarify that the ENAMC should be contacted to ensure distances are sufficient. Clause 11.3, Vertical passing clearances – passing underneath overhead lines on work sites: Paragraph 3, wording related to vehicles 'not of fixed height' has been removed and replaced with a new 'Item 2' in Table 8 for 'Passing clearance for vehicles NOT of fixed height'. Clause 11.4, Vertical clearances – on sites where work will be undertaken beneath the line: New Commentary added to explain the intent of the minimum vertical clearance. Figure 1 amended - the ladder against the 'Building' has been replaced with scaffold. Annex B.2: Items i) and ii) clarified regarding determination of clearance to a laneway. New item iii) added.
Issue 4 + A1	2016	Figure 1 amended. Position of objects altered to improve interpretation of diagram. The 'Structure' has been moved and the ladder against the 'Building' has been repositioned. Reference to Table 2, Item 1 added.
Issue 4	2015	This issue includes the following principal technical changes. Amendment 1 (Issue 3): This amendment is now removed and the correction incorporated to Clause 11.3.2. Foreword: Major amendment to structure so as to align with recommendations in EREC G0. The previous references are updated. Description of 'specified maximum conductor temperature' has been moved to 'Definitions'. Paragraphs moved from 'Scope' describing how the document can be used and who can use the document. New sentence added to introduce GS6. New reference to ENA EREC L44 added. Scope: Major amendment to content. Requirements for effectively insulated conductors have been moved to Clause 6.3. New references for induced voltages added. Various paragraphs moved to 'Foreword' including the paragraph stating that 'ENAMC shall be contacted' for definitive clearances. Normative References: Numerous references have been updated and those which have been withdrawn or superseded are removed. New references are now included as used in the document. Definitions: New definitions added for ABC, BIL, Skycradle, withstand voltage, ordinarily accessible, laneway, road and vehicles. The definitions for specified maximum conductor temperature and basic electrical clearance have been amended. The reference to ENA TS 43-122 has been removed from the definition of covered conductor. Clause 5: New requirement d) added to capture assessment of laneways.

		Clause 6.1: Table 1 amended with new details for effectively insulated conductors. Notes 1 – 3 in Table 1 have been changed to align with these changes. Table 1 Item 1 for 400 kV has been changed from 7.6 m to 7.3 m to align with ESQCR. Clause 6.2: Table 2 amended with new details for effectively insulated conductors including values for clearances to these conductors. New Notes 1, 3 and 5 added. Amendments existing notes. Clause 6.3: The scope of this clause has been amended to include all effectively insulated conductors up to and including 33 kV. Changes to the wording and some text has been moved from the 'Scope' and 'Definitions' to this clause. Table titles have been changed. Clause 7: New Figure 6 added to replace Note 1 description in Table 5. Clause 8: Minor amendments to terminology to reflect updates to references. Table 6 Item 2 figures have been corrected for accuracy (conversion from feet to metres). Reference added to Minor Railways. Table 6: Note 1 has been deleted and two new paragraphs added beneath the table to describe requirements for use of scaffolds when overhead lines cross railways. Figure 7 has been added to aid the descriptions. New Note 1 added in relation to vertical clearance above minor railways. Clause 10: Title amended and new paragraph added to include requirements for clearances to telecommunications masts. References updated. Clause 11: Major changes to content of entire clause to reflect and align with the latest revision of HSE Guidance Note GS6. This includes incorporating the 10 m clearance from overhead lines stipulated in HSE Guidance Note GS6 and the exclusion zones identified by HSE Guidance Note GS6 when third parties are working underneath an overhead line. Terminology amended to align with HSE Guidance Note GS6. Table column headings have been updated to align with other tables in the document. New Clause 11.4 added to include pertinent points from SHEC004, which has been withdrawn. New Clause 11.5 added to clarify requirements for agricultural work, which is no longer covered by HSE Guidance Note GS6 but is covered by HSE Information Sheet AIS8 instead. Annex A: Reference to BS 7354:1990 has been updated to reflect that it has been superseded and the relevant content is now included in ENA TS 41-38. Annex B: New annex added to explain rationale for overhead line clearances for roads and laneways. Details of all other technical, general and editorial amendments are included in the associated Document Amendment Summary for this Issue (available on request from the Operations Directorate of ENA).

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Foreword

This Technical Specification (TS) is published by the Energy Networks Association (ENA) and comes into effect from date of publication. It has been prepared under the authority of the ENA Engineering Policy and Standards Manager and has been approved for publication by the ENA Electricity Networks and Futures Group (ENFG). The approved abbreviated title of this engineering document is “ENA TS 43-8”.

This Specification is intended to ensure that ENA Member Companies (ENAMC) meet their statutory obligations under the Electricity Safety, Quality and Continuity Regulations 2002 (ESQCR) [N1] with respect to minimum clearances from overhead lines, wires and cables including minimum ground clearance requirements.

This Specification supersedes the following documents, which previously specified requirements for clearances to overhead lines.

a) ENA Engineering Recommendation L11/4.

b) ENA Engineering Recommendation L40/1.

c) ENA Engineering Recommendation G35.

d) Clearances given in ENA TS 43-12 [N6].

e) Issue 4 of this Specification.

This Specification may be of use to the general public and to bodies other than the ENAMC as a general guidance document.

The overhead clearances specified in this Specification have been determined to provide safety to the general public and protection against flashover from the line. Minimum clearances for certain voltage levels are determined from the relevant tables in this document. Where a particular voltage is not listed the next higher voltage in the table will apply, e.g. for 110 kV equipment, 132 kV clearances will apply. In all cases, where definitive clearances are required, contact with the owner of the overhead line will be necessary. This is particularly important where a change in land use is envisaged. An appropriate employee of the ENAMC will then determine the clearance to be adopted for that particular situation, along with any precautions deemed necessary. Statutory clearances are denoted by being underlined in the tables.

Clearances in this Specification are specified in metres (m) and those distances which have previously been specified in feet (ft.) have been converted to metres, rounded up to two decimal places.

For work activities in vicinity to overhead lines, this Specification complements the guidance in HSE Guidance Note GS6 [N3]. It is important to note that the vertical clearances in this document are minimum clearances consistent with the requirements of ESQCR [N1] as opposed to horizontal and vertical safe working clearances described in HSE Guidance Note GS6 [N3].

This Specification can be used to specify clearances to wind turbines mounted on buildings. However, for those involved in the siting of wind farms or wind turbines in the vicinity of overhead lines, reference should be made to ENA EREC L44 [N15].

The wider application of effectively insulated conductors for locations that may be ordinarily accessible has been addressed in this Specification. HV effectively insulated conductors are included to cater for those small number of installations that exist. The application of HV effectively insulated conductors is not expected to be widespread but is intended to be used for a limited number of special situations.

The concept of a ‘laneway’ is covered in Annex B of this Specification. This provides guidance for ENAMC inspectors when assessing those types of accesses that could otherwise be dismissed as not being ‘roads’. In some circumstances, a minimum ground clearance of 5.2 m may not be adequate; this concept requires ENAMC inspectors to assess whether the minimum ground clearance of any overhead line crossing a laneway is adequate given the nature and extent of any vehicles that may use the laneway.

1 Scope

This Specification defines the minimum clearances between ENAMC overhead lines at all nominal system voltages and objects, ground, railway property and other ENAMC overhead lines. The Specification also refers to National Agreements between ENAMC and other Authorities.

The clearances specified refer to bare, lightly and effectively insulated line conductors, based on the conductor sag at the specified maximum conductor temperature. These clearances are based on normal use of any land, buildings or structures crossed by the line. Unusual situations can only be determined by local assessment and may require an increase in the clearances specified or may require other measures to be taken such as those described in ENA TS 43-90 [N7]. All clearances shall therefore be determined by the appropriate ENAMC, considering the circumstances in which the line is used and having regard to the use of the surrounding land. This Specification has been produced primarily for use by such personnel, who may find Annex A useful.

Where other considerations, e.g. induced voltages, would dictate the use of metallic screens or enhanced clearances, the owner of the overhead line will specify the requirements[1,2].

2 Normative references

The following referenced documents, in whole or part, are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Standards publications

BS EN 50341-1:2012, *Overhead electrical lines exceeding AC 1 kV – Part 1: General Requirements – Common specifications*

BS EN 61936-1:2010+A1:2014, *Power installations exceeding 1 kV a.c. – Part 1: Common rules*

BS EN 60071-1:2006+A1:2010, *Insulation co-ordination – Part 1: Definitions, principles and rules*

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[1] Further guidelines on the control of electric and magnetic fields (EMFs) can be found in Power Lines: Control of Microshocks and other indirect effects of public exposure to electric fields [1].

[2] Guidance on the suppression of electrical interface when high voltage lines cross telecommunications power lines is provided in ENA TS PO5 Appendix H [N10].

The following referenced documents, in whole or in part, are generally applied by ENAMCs for the specification of effectively insulated conductors mentioned in this document. For undated references, the latest edition of the referenced document (including any amendments) applies.

Standards publications – effectively insulated conductors at LV

BS 6004, *Electric cables. PVC insulated and PVC sheathed cables for voltages up to and including 300/500 V, for electric power and lighting*

BS 6485, *PVC-covered conductors for overhead power lines*

BS 7870-3.11, *LV and MV polymeric insulated cables for use by distribution and generation utilities. Specification for distribution cables of rated voltage 0.6/1 kV. XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors*

NOTE: This Standard relates to single-phase and three-phase combined neutral and earth (CNE) service cables.

BS 7870-3.21, *LV and MV polymeric insulated cables for use by distribution and generation utilities. Specification for distribution cables of rated voltage 0.6/1 kV. XLPE insulated split concentric cables with copper or aluminium conductors*

NOTE 1: This Standard relates to single-phase and three-phase separate neutral and earth (SNE) service cables.

BS 7870-5, *LV and MV polymeric insulated cables for use by distribution and generation utilities. Polymeric insulated aerial bundled conductors (ABC) of rated voltage 0.6/1 kV for overhead distribution*

ENA TS 43-13, *Aerial bundled conductors insulated with cross-linked polyethylene for low voltage overhead distribution*

NOTE 2: ENA TS 43-13 requires conformance with BS 7870-5 subject to a number of specific amendments.

ENA TS 43-122, *XLPE covered-conductors for overhead lines (having rated voltages Uo/U greater than 0.6/1 kV up to and including 19/33kV)*

NOTE 3: XLPE covered-conductors that comply with ENA TS 43-122 are considered to be lightly insulated conductors when used for HV applications.

Standards publications – effectively insulated conductors at HV

There is no single Standard publication that defines requirements for aerial HV cables. Such cables are required to comply with relevant requirements of underground cable Standards, e.g. BS 7870-4.20 and IEC 60502. In general, aerial HV cables are required to be assessed as being suitable for self suspension, incorporating outer sheaths resistant to ultra-violet (UV) radiation, abrasion and the effects of external temperature variations and moisture.

Other publications

[N1] Statutory Instrument 2002 No. 2665, *The Electricity Safety, Quality and Continuity Regulations 2002 (as amended)*[3]

[N2] Statutory Instrument 1989 No. 635, *The Electricity at Work Regulations 1989*

[N3] HSE Guidance Note GS6 (rev 4), *Avoiding danger from overhead power lines.* ISBN 978 0 7176 1348 9

[N4] HSE Agriculture Information Sheet AIS8 (rev 3), *Working safely near overhead electricity power lines*. HSE books 2012

[N5] ENA TS 41-38, *Power installations exceeding 1 kV a.c.: Design of high-voltage open-terminal stations*

[N6] ENA TS 43-12, *Insulated aerial bundled conductors erection requirements for LV overhead distribution systems*

[N7] ENA TS 43-90, *Anti climbing devices and safety signs for HV lines up to and including 400 kV*

[N8] ENA TS 43-103, *Low voltage overhead line shrouding materials*

[N9] ENA TS 43-119, *Design and use of temporary scaffold guards*

[N10] ENA TS PO5, *Protection of telecommunication lines from power lines*

[N11] ENA EREC G39, *Model code of practice covering electrical safety in the planning, installation, commissioning and maintenance of public lighting and other street furniture*

[N12] ENA EREC G55, *Safe tree working in proximity to overhead electric lines*

[N13] ENA EREC G96, *Use of mechanical harvesters in vegetation management*

[N14] ENA EREC EB/TP, *Engineering Recommendation for telecommunication providers and distribution network operators joint use of poles*

[N15] ENA EREC L44, *Separation between wind turbines and overhead lines: Principles of good practice*

[N16] ENA EREC C99, *Guidance for working on cables under induced voltage conditions*

[N17] Railway Master Wayleave Agreement 1961

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[3] In Northern Ireland, the Electricity Safety, Quality and Continuity Regulations (Northern Ireland) 2012 apply. Some aspects of overhead line clearances in this Specification may not apply retrospectively to existing overhead lines subject to the requirements of Regulation 2(9) with regard to “material alteration”.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
aerial bundled conductor (ABC)
assembly of LV effectively insulated phase and neutral conductors

NOTE: Types of ABC in general use can also include an additional earth conductor.

3.2
application factor
distance (dependent upon working situation) which is added to the safety distance to determine working and access clearance

3.3
basic electrical clearance
smallest permissible clearance in air between live parts or between live parts and earth

[BS EN 61936-1:2010+A1:2014, 6.52]

NOTE: Basic electrical clearances do not include any additions for constructional tolerances, wind effects, etc.

3.4
basic insulation level (BIL)

standard lightning impulse waveform withstand voltage of an insulation device under specified conditions

NOTE: The term BIL is interpreted as lightning impulse withstand voltage in BS EN 60071-1 and is specific to equipment rated above 1 kV.

3.5
cable
conductor, or assembly of conductors, which are effectively insulated and incorporate an earthed metallic screen

3.6
controlled zone
inside of an enclosure efficiently protected against unauthorised access by fencing not less than 2.4 m in height or other means necessary to meet the requirements of ESQCR [N1] Regulation 11 (b)

3.7
covered conductor (CC)
conductor that can be lightly or effectively insulated

NOTE: In the Guidance Notes to the ESQCR [N1], the term ‘BLX conductors’ is used, which is a trade name used in Scandinavia. BLX is interpreted as lightly insulated in this document.

3.8
creep
non-elastic stretch of a conductor

NOTE: This consists of two parts – bedding down of the strands and the long-term stretch of conductor material.

3.9
effectively insulated conductor
line conductor which is insulated for continuous phase-to-phase or phase-to-earth contact and is protected, so far as is reasonably practicable, against mechanical damage or interference having regard to its accessibility

NOTE 1: The implication here is that effectively insulated conductors may be placed such that they are ordinarily accessible.

NOTE 2: For a HV conductor to be considered effectively insulated it must have an earthed metallic screen incorporated in its construction.

3.10
jumper connection
connection at a support from a phase conductor to another conductor or to a terminal on transformers, switchgear, fusegear, line taps, etc.

3.11
laneway
defined access between a road and a residential or business address that is suitable for vehicular traffic but which is either not of constructed material or which the public do not have unrestricted access

NOTE: See Annex B for further explanation of a laneway.

3.12
lightly insulated conductor
line conductor which is insulated against momentary phase-to-phase or phase-to-earth contact and is considered as a bare conductor for clearance purposes

NOTE: This level of insulation may not be designed to support the full phase-to-earth or phase-to-phase voltage (as appropriate). For example, the covering on some types of HV or EHV CC overhead line conductors could be described as lightly insulated. Other types of CC exist that can be effectively insulated.

3.13
line conductor
conductor used, or to be used, for conveying a supply of electricity

NOTE: A line conductor is deemed to include a through jumper.

3.14
normal use of land
type of work or activity which is likely to occur on or over a particular piece of land or water

3.15
object
building, wall, fence, structure, stationary vehicle, tree, vegetation or similar with an elevation above ground level

3.16
ordinarily accessible
capable of being reached by hand from any scaffolding, ladder or other construction erected or placed on, in, against or near to any building or structure

NOTE: Ordinarily accessible is applicable to parts of a building or structure that are reasonably expected to be accessed by persons for the purposes of inspection, maintenance, cleaning and repairs.

[similar to ESQCR [N1] Regulation 18 (6)]

3.17
overhead line
equipment in the open air and above ground level coming within the scope of the ESQCR [N1]

3.18
road
constructed material suitable for vehicular traffic over which the public have access whether by permission or right

NOTE 1: The intention is that high-sided vehicles will have safe passage beneath any overhead line crossing a road.

NOTE 2: Forest roads designed and built for timber transport using road haulage vehicles are classed as roads.

3.19
safety distance
distance maintained from the nearest exposed conductor or from an insulator supporting a conductor to avoid danger

3.20
specified maximum conductor temperature
design maximum temperature of the conductor resulting from a combination of climatic conditions and the rated electrical load under normal operating conditions[4]

3.21
system voltage
nominal r.m.s. phase-to-phase voltage of a three-phase a.c. system

3.22
vehicle
mechanically-propelled vehicle intended or adapted for use on roads and laneways

3.22.1
high load vehicle
vehicle with maximum height exceeding 5 m but not exceeding 6.1 m

[4] For overhead lines which are designed using probabilistic thermal rating concepts which allows a defined conductor temperature exceedance then the 'specified maximum conductor temperature' shall be interpreted as the 'maximum likely conductor temperature' in accordance with Regulation 17 (1) of ESQCR [N1].

3.22.2
high-sided vehicle
vehicle with maximum height exceeding 4 m but not exceeding 5 m

3.22.3
non high-sided vehicle
vehicle with maximum height not exceeding 4 m

3.23
wire
wire which is not designed to convey electricity but which is attached to a support carrying line conductors

3.23.1
auxiliary wire
wire used for the purposes of control, protection, regulation of supply, or for communication

NOTE 1: An auxiliary wire is not a line conductor.

NOTE 2: In general, an auxiliary wire uses the same supports as intended for the line conductor.

3.24
withstand voltage
value of the test voltage to be applied under specified conditions in a withstand test, during which a specified number of disruptive discharges is tolerated

[BS EN 60071-1:2006+A1:2010,3.22]

4 Derivation of clearances

In general, the clearances stated in this Specification have been derived from the summation of the following.

a) Basic electrical clearance, as specified in BS EN 50341-1, increased by 10% and rounded up, or where past practice has employed greater clearances, these have been retained.

b) An appropriate physical distance to allow for the normal use of the ground or object to which clearance is required. This is termed the application factor.

The summation method has not been applied where this conflicts with statutory requirements or where certain clearances, e.g. to railways, are the subject of agreement with the appropriate companies.

Where the clearance derived by the summation of a) and b) is greater than the statutory clearance, it is this greater clearance which is quoted in this Specification.

NOTE: Annex A clarifies the process used to determine the clearances to objects. Where overhead lines are refurbished, or constructed, so that the BIL exceeds that used in determining the clearances, then the clearances will need to be re-assessed. This is particularly pertinent in cases where a line is insulated for a higher voltage than that at which it is operated.

5 Application of clearances

The following factors need to be taken into consideration when providing clearances to overhead lines.

a) Allowance shall be made for the effects of creep in conductors, as the specified clearance shall be maintained for the life of the conductor.

b) In some cases, lines are operated at a lower voltage than that for which they are designed. It is important when specifying clearances to fixed objects that the clearances appropriate to the intended nominal operating voltage of the line be adopted.

c) When an overhead line is being erected in proximity to existing objects, the clearances shall allow for future maintenance of the object.

d) The adequacy of overhead line conductor clearances above laneways will be determined by the ENAMC. This may be based on an assessment/and, if necessary, discussion with the landowner/resident, to determine the nature (e.g. maximum height of vehicle) and extent of vehicular traffic requiring access to the laneway.

e) When work is to be carried out, or objects are to be erected in proximity to an existing overhead line, the clearance may need to be increased substantially to allow for the operation and movement of site traffic. Detailed guidance on safe working methods are given in HSE Guidance Note GS6 [N3]. If utilised, the clearances provided in Clause 11 will allow the site operator to comply with HSE Guidance Note GS6 [N3].

6 Clearance to ground, roads and objects

6.1 Clearances to ground and roads

The clearances specified in Table 1 shall not be infringed at the specified maximum conductor temperature with the conductor (including its suspension insulators if fitted) hanging vertically in still air or deflected at any angle up to 45° from the vertical.

Table 1 — Clearances to ground and roads (*1 of 2*)

Item	Description of clearance	Nominal system voltage (kV) Minimum clearance (m)					
		≤ 33 (NOTE 2)		66	132	275	400
		B	EI				
1	Line conductor at any point not over road. (NOTE 3)	5.2	5.2	6.0	6.7	7.0	7.3
2	Line conductor to road surface other than as specified in 3, 4, and 5. (NOTE 4)	5.8	5.8	6.0	6.7	7.4	8.1
3	Line conductor to road surface of designated '6.1 m high load vehicle' routes. (NOTE 5)	6.9	6.9	7.1	7.5	8.5	9.2
4	Line conductor to motorway road surface where scaffolding is to be used on:						
	a) Normal 3 lane motorways.	14.0	14.0	14.2	14.6	15.6	16.3
	b) Elevated 2 lane motorways (NOTE 6 & 7)	11.0	11.0	11.2	11.6	12.6	13.3
5	Bare live metalwork, e.g. transformer terminals, jumper connections, etc. (NOTE 8)	4.3	NA	4.3	Controlled Zone Safety Rules Apply		

Table 1 — Clearances to ground and roads (*2 of 2*)

NOTE 1: Statutory clearances are denoted by being underlined within this table.

NOTE 2: Clearances to effectively insulated conductors are detailed in this table. The column heading codes are: B = Bare conductors and EI = Effectively insulated conductors.

NOTE 3: Clearance for EI conductors could be lower in some cases if the overhead line is not ordinarily accessible. Clause 6.3.2 provides further guidance for clearances in particular situations. Annex B provides information regarding the rationale for definitions of ‘road’ and ‘laneway’.

NOTE 4: The minimum height of any wire or cable (other than a line conductor) which is attached to a support carrying a line conductor is 5.8 m above any road. The clearances specified allow for the safe passage below the line of a high-sided vehicle. These clearances are based on a vehicle height not exceeding 5 m (except for the 6.1 m high load vehicle routes). See also Clause 10.2.

NOTE 5: 'High load vehicle' routes are roads designated by the Department for Transport, for which the higher load clearance of 6.1 m shall be maintained.

NOTE 6: These clearances allow for the erection of scaffolding/guard netting with the overhead circuits live.

NOTE 7: Should the erection of temporary scaffolding in proximity to overhead lines be considered then appropriate guidance shall be sought relating to acceptable working methods and appropriate preparation prior to any work commencing. Detailed guidance on the design and construction of temporary scaffolding, including clearances to overhead lines, is contained in ENA TS 43-119 [N9].

NOTE 8: These clearances apply to supports of overhead lines that in addition support transformers, isolators, cable sealing ends, etc. These clearances do not apply to pole mounted, LV fuses as long as they are effectively insulated and the fuse carriers are in place. These clearances are not required for effectively insulated jumper connections but shall be maintained from any bare jumpers and terminals. These clearances do not apply to section jumpers.

6.2 Clearances to objects

The clearances specified in Table 2 shall not be infringed at the specified maximum conductor temperature with the conductor (including its suspension insulators if fitted) hanging vertically in still air or deflected at any angle up to 45° from the vertical towards the object unless otherwise specified. The clearances apply in any direction.

Table 2 — Clearances to objects (*1 of 2*)

Item	Description of clearance	Nominal system voltage (kV) Minimum clearance (m)					
		≤ 33 (NOTE 1)		66	132	275	400
		B	EI				
1	Line conductor to any object which is ordinarily accessible (including permanently mounted ladders and access platforms) or to any surface of a building. (Note 2 and Figure 1)	3.0	Note 3	3.2	3.6	4.6	5.3
2	Line conductor to any object to which access is not required AND on which a person cannot stand or lean a ladder. (Note 4)	0.8	0.5	1.0	1.4	2.4	3.1
3	Line conductors to that part of a tree under / adjacent to line and:						
	(i) Unable to support ladder/climber.	0.8	0.5	1.0	1.4	2.4	3.1
	(ii) Capable of supporting ladder/climber.	3.0	0.5	3.2	3.6	4.6	5.3
	(iii) Trees falling towards line with conductors hanging vertically only. (Note 5, Note 6 and Figure 2(a))	0.8	0.5	1.0	1.4	2.4	3.1
4	Line conductors to trees in Orchards and Hop Gardens. (Note 7 and Figure 2(b))	3.0	3.0	3.2	3.6	4.6	5.3
5	Line conductors to irrigators, slurry guns and high pressure hoses (Note 8)	30.0	30.0	30.0	30.0	30.0	30.0
6	Line conductor to street lighting standards with:						
	(i) Standard in normal upright position.	1.7	1.0	1.9	2.3	3.3	4.0
	(ii) Standard falling towards line with conductor hanging vertically only.	1.7	0.3	1.9	2.3	3.3	4.0
	(iii) Standard falling towards line. (Note 9, Figure 3 and 4)	0.4	0.3	0.7	0.8	1.4	1.9

Table 2 — Clearances to objects (*2 of 2*)

NOTE 1: Clearances to effectively insulated conductors are detailed in this table. The column heading codes are: B = Bare conductors and EI = Effectively insulated conductors.

NOTE 2: These are the minimum clearances that shall be maintained between an overhead line conductor and a structure or a building (walls, roof, windows etc.) that is ordinarily accessible. They permit a person to stand on or access parts of a structure or building that are ordinarily accessible but only allow for free movement of short hand held objects. Minimum clearances to installed photovoltaic panels shall satisfy these values. Detailed guidance on the avoidance of danger from electric lines on construction sites is contained in HSE Guidance Note GS6 [N3].

NOTE 3: Detailed guidance on supplementary clearances for effectively insulated conductors from objects, excluding LV conductors attached to buildings, is provided in Table 4.

NOTE 4: Account should be taken of the possible movement of the object, e.g. flagpole in the wind. These clearances also apply to moving objects to which access is precluded during passage below the line. The height or position of the object should take into account any possible undulating or rocking movement of the object, e.g. a mobile crane jib travelling over uneven ground. Detailed guidance on the avoidance of danger from electric lines on construction sites is contained in HSE Guidance Note GS6 [N3]. See also Clauses 8.3 and 11.3.

NOTE 5: Clearances to effectively insulated conductors may be lower than the value stated but the conductor must be afforded mechanical protection.

NOTE 6: Clearances quoted in 3 i) and ii) are minimum acceptable clearances but in practice, larger clearances will be necessary to take account of growth rates of trees and of the swaying of trees/branches in the wind. Clearances quoted in 3 iii) are recommended in order to protect lines from falling trees but due to wayleave considerations will not always be attainable. Detailed guidance on the avoidance of danger from electric lines during tree work is contained in ENA EREC G55 [N12] and ENA EREC G96 [N13].

NOTE 7: These clearances shall be obtained vertically when any part of a tree is within 7.5 m horizontally of a line. For hop gardens, the clearances apply to the strain wires forming the mesh supporting system.

NOTE 8: The clearance quoted is for general guidance only. Detailed guidance on the use of irrigators, slurry guns and high-pressure hoses in the vicinity of overhead lines should be obtained from the individual ENAMC.

NOTE 9: The clearances quoted in 6 i) assume that maintenance platforms will be positioned such that clearances quoted in Item 1 are maintained. Reduced clearances for LV conductors are indicated in Figure 4. Clearances to effectively insulated conductors may be reduced depending on position as detailed in Figure 4 and Clause 6.3.3. The clearances quoted in 6 iii) can be neglected if the location of the lighting column is such that impact by a vehicle is improbable. ENA EREC G39 [N11] contains guidance on maintenance of street lighting columns in proximity to overhead lines. Where for maintenance purposes the operative requires to work on the upper part of a lantern, within the clearances specified in Item 6 i), appropriate safety measures shall be taken, which shall be agreed in advance between the distribution or transmission company and the lighting maintenance company or authority. The clearances quoted in 6 ii) include additional clearance to allow for the erection of street lighting columns.

6.3 Supplementary clearances for effectively insulated conductors attached to poles

6.3.1 General

Effectively insulated conductors up to and including 33 kV, e.g. Ericsson aerial HV cable, and low voltage conductors, e.g. ABC installed in accordance with ENA TS 43-12 [N6], shall conform with the clearances in Table 3 and Table 4 in addition to those stated in Clauses 6.1 and 6.2.

The clearances specified in Table 3 and Table 4 are minimum clearances and the ENAMC may install HV effectively insulated conductors at a greater height, e.g. above bare LV conductors on the same route. Hence, the ENAMC may specify greater clearances than presented in this clause.

ENAMCs shall provide justification for the use of effectively insulated conductors operating at HV (≤ 33 kV), where they are installed at reduced clearance to ground or objects (see Table 3 and Table 4).

Clearances between line conductors and other power lines and above railways, as detailed in Clauses 7 and 8 and Tables 5 and 6 shall be met.

6.3.2 Supplementary ground clearances to effectively insulated conductors only

Where effectively insulated conductors are used over roads accessible to vehicular traffic, ground clearances shall still conform with Clause 6.1 and Table 1 as stated in Regulation 17 (2) (a) of ESQCR [N1].

However clearances in other locations are provided in Table 3. Such conductors shall be positioned so that they are not likely to cause injury or be damaged by persons going about normal everyday activities.

Table 3 — Reduced ground clearances for effectively insulated lines not accessible to vehicular traffic

Location	Minimum clearance (m)	
	LV	HV (≤ 33 kV)
Along the line of hedgerows, fences and boundary walls etc.	4.0	4.0
Access laneway to a property, with a width of 2.5 m or less which is defined by gateposts, hedges or other fixed features. (NOTE 1)	4.3	4.3
Between buildings, attached to buildings, or locations where the line is safe in the particular circumstance (e.g. over gardens), in addition to there being no vehicular access. (NOTE 2 & 3)	3.5	3.5
NOTE 1: A ground clearance of 4.3 m may also be applied to laneways which are wider than 2.5 m subject to there being a physical restriction(s) prohibiting a high-sided vehicle travelling down the laneway to the point where the line crosses over the laneway. Physical restrictions may include bending radius, trees etc. NOTE 2: Where the LV system is attached to the building(s), such as for a service, then the clearances may be determined in accordance with Clause 6.3.4. NOTE 3: “safe in the particular circumstances” means overhead lines are positioned so that they are not likely to cause injury or be damaged by persons going about normal everyday activities.		

6.3.3 Supplementary clearances to objects for effectively insulated conductors

The clearances in Table 4 do not apply to LV mains or services attached to buildings. In determining clearances the following conditions should be considered as appropriate.

a) Sags at the specified maximum operating temperature of the conductor determined by the ENAMC from data provided by the manufacturer.

b) Line conductor deflected at 30° at a working temperature of 30 °C.

Deflected conditions need not be considered if the span is effectively shielded from wind by the building or structure.

Table 4 — Supplementary clearance to objects for effectively insulated conductors

Location	Minimum clearance (m) ≤33 kV
Vertical clearance to any surface or structure that is accessible without access equipment (see Figure 5).	3.0
Horizontal distance to any surface of a building or structure which is accessible without access equipment (see Figure 5).	1.0
Clearance to parts of a building or structure not accessible without access equipment (see Figure 5). See NOTE 1.	0.5
Clearance to free-standing apparatus such as street lighting columns, traffic signs, telecommunications provider poles or columns (see Figure 5).	0.3
NOTE 1: This clearance is to prevent mechanical abrasion of the conductor. When connecting an LV effectively insulated conductor to a building it is only necessary to ensure that the attachment route avoids risk of abrasion.	

6.3.4 LV systems attached to buildings

For LV systems attached to buildings consideration needs to be given as to additional protective measures to prevent danger. An on-site assessment may be necessary to determine appropriate clearances.

The appropriate construction system for LV effectively insulated conductors is described in ENA TS 43-12 [N6], which covers the following points.

a) "*Service flights from a pole to a building shall be insulated where they are ordinarily accessible and at a 'suitable height' where they are unlikely to be damaged, or where people going about their everyday activities cannot come into contact with them*."

   The 'suitable height' shall be determined by the ENAMC and will be dependent on the what the conductor is oversailing, i.e. the risk of contact during everyday activities. It would be expected that a minimum clearance of 3.5 m, in accordance with Table 3 of this Specification, might not be satisfied for the service flights from a pole to a building, especially where the building is single storey. However, it would be expected that measures are taken to achieve the minimum clearance of 3.5 m as close as reasonably practicable from the building taking into account the risk of contact with the service flight from the pole to the building. For example: a measure could be to minimise the span length between the terminal pole and the building.

b) If an effectively insulated conductor is attached to a building at any point below 2.4 m, it shall be subject to additional protection.

The additional protection is necessary for the risk of contact and mechanical damage to the conductor.

7 Clearances where power lines cross or are in close proximity to one another

The following minimum clearances shall apply where power lines cross or are in close proximity to one another. In all cases the clearances shall be determined with consideration of the ultimate nominal system voltage of the upper or lower line, whichever is greater.

Table 5 — Minimum clearances where power lines cross or are in close proximity to one another (*1 of 2*)

Item	Description of clearance	Nominal system voltage (kV) Minimum clearance (m)						
	conductor or earth wire to:	0.4	11	33	66	132	275	400
1	Lowest line conductor or earth wire of upper line to highest line conductor of lower line. (NOTE 1)	1.0	1.8	2.0	2.3	2.7	3.7	4.4
2	Lowest line conductor or earth wire of upper line to earth wire of lower line where erected. (NOTE 1)	0.7	1.4	1.6	2.3	2.7	3.7	4.4
3	Lowest line conductor or earth wire of upper line to any point on a support of the lower line on which a person may stand. (NOTE 2)	2.7	2.8	3.0	3.2	3.6	4.6	5.3
4	Support of upper line and any conductor of lower line. (NOTE 2)	7.5	7.5	7.5	7.5	7.5	15.0	15.0

NOTE 1: See Figure 6 for methods of determining clearances that shall be adopted.

NOTE 2: Clearance shall be obtained with the conductor/earth wire at its specified maximum conductor temperature and deflected by any angle up to 45°.

8 Railway crossings

8.1 General

Clearances to railways and their associated lines, buildings and yards are covered by the second schedule (General and Engineering Conditions) of the Railway Master Wayleave Agreement [N17].

Table 6 lists the principal vertical clearances referred to in the Master Agreement [N17]. For horizontal clearances to railway circuits (excluding traction wires) reference should be made to the Master Agreement [N17].

Table 6 — Principal vertical clearance to railways and associated structures

Item	Description of clearance	Nominal system voltage (kV) Minimum clearance* m (ft.)				
		≤33	**66**	**132**	**275**	**400**
1	Ground level.	6.1 (20)	6.1 (20)	6.7 (22)	7.0 (23)	7.6 (25)
2	Ground level at roads or yards where road mobile cranes are likely to be employed.	10.7 (35)	10.7 (35)	11.3 (37)	11.6 (38)	12.2 (40)
3	Rail level. (NOTE 1)	7.3 (24)	7.3 (24)	8.0 (26)	8.2 (26)	8.8 (29)
4	Buildings, gantries or other structures on which a person might stand and to traction wires.	3.0 (10)	3.0 (10)	3.7 (12)	4.6 (15)	6.1 (20)

* The imperial values take precedence since they are specified in the Agreement.

NOTE 1: See Office of Rail Regulation, Railway Safety Publication 5, *Guidance on Minor Railways* [3] for minimum clearance requirements above rail level for minor railways.

8.2 Use of scaffolding across railways

The clearances specified in Table 6 items 3 and 4 do not incorporate any allowances for the use of scaffolding across railway tracks/traction wires during erection/maintenance of overhead lines. To accommodate such scaffolding, the requirements in ENA TS 43-119 [N9] are applicable. Clause 9.2 of ENA TS 43-119 [N9] stipulates a minimum clearance of 4.6 m from scaffolding/catenary wires to railway traction wires or supports. Clearances from scaffolds/catenary wire to overhead lines shall satisfy Table 2 of ENA TS 43-119 [N9]. Figure 7 depicts the clearance requirements for overhead lines, scaffolds and railways.

It is important to note that clearances between overhead lines, scaffolds/catenary wires, railway traction wires, and supports or rails represent the ‘final’ distances to be achieved.

WARNING: Additional clearances and precautions will be necessary to ensure safety during erection of temporary scaffolds.

8.3 Clearances to crane jibs on railways

The operation of railway borne cranes in proximity to overhead lines shall be in accordance with Clause 11, except that the minimum vertical clearance to jibs of railway borne cranes working under overhead lines shall satisfy the distances specified in Table 8 Item 2.

9 Waterway crossings

Clearances to waterways are not subject to a single national agreement but are dealt with by agreement with the appropriate Authority.

10 Telecommunication lines and auxiliary wires

10.1 Telecommunications

Vertical and lateral clearances to telecommunication lines shall comply with those clearances specified in ENA TS PO5 [N10] for all voltages.

ENA EREC EB/TP [N14] specifies the clearance requirements for apparatus when poles are jointly used between a telecommunications provider and a DNO.

Where telecommunications masts are constructed adjacent to an existing overhead line, the minimum lateral clearance between the line conductor and the nearest point on the mast shall be 1.5 times the height of the mast or 15.0 m, whichever is the greater.

10.2 Auxiliary wires

Auxiliary wires should be treated as effectively insulated, unless otherwise specified by the ENAMC.

In general, an auxiliary wire is not current carrying and the voltage level is low, i.e. LV. However, the auxiliary wire may be subject to induced voltage from adjacent live conductors – this is particularly the case during network fault events (fault current flowing in adjacent live conductor). An estimate of induced voltage in the auxiliary wire can be determined in accordance with ENA EREC C99 [N16]. Historical practice in the UK electricity industry has been to consider a maximum induced voltage of 5 kV when in proximity to 11/33 kV conductors, and a maximum induced voltage of 15 kV when in proximity to 132/275/400 kV conductors. For the purposes of induced voltage circumstances, an auxiliary wire should be treated as a line conductor ≤33 kV.

NOTE: Safe working methods for, auxiliary wires subject to induced voltage, are not covered by this document but may be as described in ENA EREC C99 [N16] and/or ENAMC specific procedures.

The minimum clearances for an overhead auxiliary wire should be in accordance with those distances in Table 1 and Table 2 of this ENA TS for an effectively insulated line conductor ≤33 kV.

NOTE: In certain situations, the consequence of damage to an auxiliary wire may be detrimental to the safe and efficient operation of the associated network. For this reason, the ENAMC may wish to maintain the same clearance to the auxiliary wire as would be required for the associated line conductor.

11 Work in proximity to overhead lines

11.1 General

The following clauses deal with the use of plant or vehicles in proximity to overhead lines. Where work is undertaken using ladders, scaffold, mobile platforms etc. then the clearances provided in Tables 1 and 2 shall be used unless other risk mitigation can be employed such as temporary shrouding of the overhead conductor.

Whenever work is to be carried out in proximity to overhead lines, consideration shall always be given to the possibility of making the line dead, or diverting it around the area affected. All work near live overhead power lines must be fully justifiable and satisfy all three requirements of Regulation 14 of the Electricity at Work Regulations 1989 [N2].

The HSE provides guidance for the avoidance of danger from overhead lines in their Guidance Note GS6 [N3] (subsequently referred to as GS6 [N3]). The ENAMC shall be prepared to provide, preferably in writing, safety clearances and advice on safe working methods to those working in proximity to overhead lines. Where work can only be carried out safely with the line dead, this shall be the subject of precise written agreement between the ENAMC and site operators.

The requirements and guidance provided in the following clauses of this Specification aim to complement that provided in GS6 [N3].

11.2 Horizontal clearances – working near but not underneath overhead lines

GS6 [N3] recommends that the ENAMC should be contacted for advice for any work within 10 m, measured at ground level horizontally from below the nearest overhead line.

NOTE: Some ENAMCs specify a larger horizontal clearance (up to 15 m) to cater for overhead line swing on longer span lengths.

GS6 [N3] recommends the erection of safety barriers to establish a safety zone parallel to the overhead line to maintain clearance from it. Table 7 details typical minimum values for horizontal separation of the overhead lines and safety barriers.

Table 7 — Horizontal distances to safety barriers

Description	Clearance (m)					
	≤33 kV Wood pole	66 kV Wood pole	132 kV Wood pole	132 kV Tower	275 kV Tower	400 kV Tower
Minimum horizontal distances to safety barriers	6.0	6.0	6.0	9.0	12.0	14.0
NOTE 1: Site conditions will dictate whether this clearance is adequate and consideration shall be given to line parameters, e.g. span length, maximum sag etc. when calculating an actual clearance. NOTE 2: To ensure these distances are sufficient the ENAMC should be contacted to assist with any calculations.						

11.3 Vertical passing clearances – passing underneath overhead lines on work sites

GS6 [N3] specifies the use of passageways where plant or vehicles have to pass underneath the overhead line at the work sites.

Plant or vehicles passing underneath overhead lines must not breach the safety clearance distance. Table 8 details these passing clearances and Annex A provides their derivation.

The vertical clearances given in Table 8 are minimum clearances and must not be infringed under any circumstances.

Table 8 — Vertical passing clearances

Item	Description	Clearance (m)				
		≤33 kV	66 kV	132 kV	275 kV	400 kV
1	Passing clearance fixed height loads	0.8	1.0	1.4	2.4	3.1
2	Passing clearance for vehicles NOT of fixed height (NOTE 1,2)	2.0	2.2	2.6	3.6	4.3
NOTE 1: The distances stated include an allowance of 1.2 m to cater for some variation in the vehicle height e.g. crane jib bounce, abnormal load, uneven ground. NOTE 2: Greater clearance may be required when there is a risk that the height variation may exceed 1.2 m.						

The above clearances shall be used to determine the maximum distance to the underside of the passageway goalpost[5] erected to prevent vehicles or plant from infringing these clearances whilst traversing the line. The maximum height to the underside of the goalpost

[5] The term ‘goalpost’ is referred to in GS6 [N3].

shall be the minimum ground clearance of the line less the specified passing clearance from Table 8.

It is important that the minimum ground clearance of the line is determined at the specified maximum conductor temperature, when specifying the passageway height.

11.4 Vertical clearances – on sites where work will be undertaken beneath the line

Work beneath the line shall be deemed to be any work carried out within the minimum horizontal distances specified in Table 7 or the calculated distance (see NOTE 1 in Table 7) whichever is greater.

GS6 [N3] provides recommendations for working under the line and describes two general cases: ground-level work, and erection of buildings or structures close or underneath an overhead line. Exclusion zones from the overhead line are stipulated for the various voltages.

GS6 [N3] recommends that the ENAMC should be consulted when there is doubt about the use of the exclusion zones. In the cases where the exclusion zone may be breached, it is imperative that the clearances maintained shall satisfy Table 8 Item 1.

COMMENTARY ON: Minimum vertical clearance

The intent of a vertical clearance when working beneath a line is to ensure that the safety distance (see Table 8 item 1 and Table A.1) is maintained as a minimum at all times i.e. prevention of a person breaching the safety distance (see A.1). It is important that an appropriate safe system of work is employed and overseen by experienced and competent persons. The use of an 'application factor' is a relevant consideration, as described in A.2: an allowance of 2.2 m for a person to move their arm whilst holding a short metallic object. Another robust and industry accepted concept is a 'working and access clearance' which is the safety clearance + 0.3 m (as described in the Model Distribution Safety Rules [4]).

11.4.1 Work at ground-level only

Where work is carried out at ground-level the passing clearances specified in Table 8 Item 1 for fixed height loads are permissible, as GS6 [N3] requires that no vehicle, item of plant, ladders or poles shall reach beyond the safe clearance limit. Where plant such as cranes and excavators has the capability to reach into the safe clearance limit it shall be fitted with a physical restraint in order to prevent such action.

GS6 [N3] requires that all such work shall be "directly supervised by someone who is familiar with the risks".

11.4.2 Work on buildings or structures close to or underneath an overhead line

This work includes erection of permanent and temporary structures as specified by GS6 [N3].

A horizontal physical barrier should be erected to form a roof between the area of work and the overhead line such that the safe clearance limit cannot be infringed. The distances in Table 8, Item 1 shall be treated as a minimum necessary clearance and shall be used to calculate the height of the underside of the physical barrier.

Where a conductive material is used to form the barrier this shall be earthed.

The line shall be made dead if, during the erection of the physical barrier, safety clearances would be infringed.

11.5 Safe working of third parties carrying out work in close proximity to live LV overhead conductors which are not effectively insulated

Where third parties, e.g. owner-occupiers or their contractors, carry out work in close proximity to live LV overhead conductors, the requirements of Clauses 11.2, 11.3 and 11.4 are applicable in the first instance.

Where these requirements are not satisfied and in order to prevent inadvertent contact with live conductors or equipment, the ENAMC shall be contacted for advice. The following precautions shall be considered for bare or lightly insulated LV overhead mains and services, excluding undereaves mains, services and all similar means of supply secured to buildings.

a) De-energise the line and take appropriate precautions in accordance with ENAMC procedures.

b) Apply temporary shrouding complying with ENA TS 43-103 [N8].

c) Erect a horizontal physical barrier as described in Clause 11.4.2.

d) Underground the mains/service.

e) Replace bare open conductor services with effectively insulated services, for example ABC, together with the requirements of Clause 6.3.

f) Divert the line.

The procedure adopted shall be recorded and communicated appropriately between the third party and ENAMC.

11.6 Agricultural work

The HSE provide information for persons in agriculture working near overhead lines in Agriculture Information Sheet No 8 [N4]. The information sheet recommends carrying out specified activities at least 10 m from overhead lines.

NOTE: Some ENAMCs specify a larger horizontal clearance (up to 15 m) to cater for overhead line swing on longer span lengths.

Where the above conditions cannot be satisfied for agricultural work, the ENAMC approach shall be adopted.

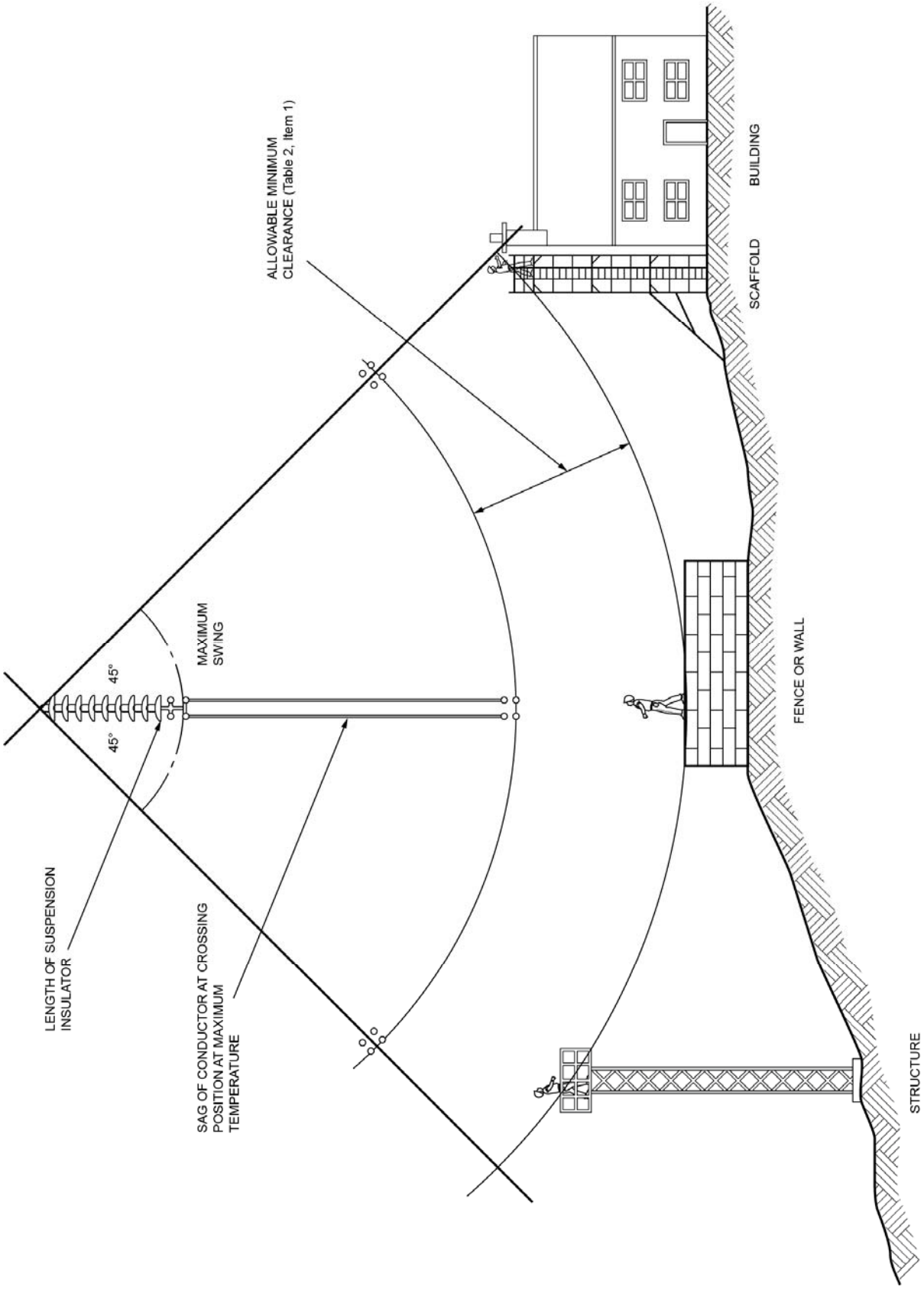


Figure 1 — Clearance to objects (on which a person can stand)

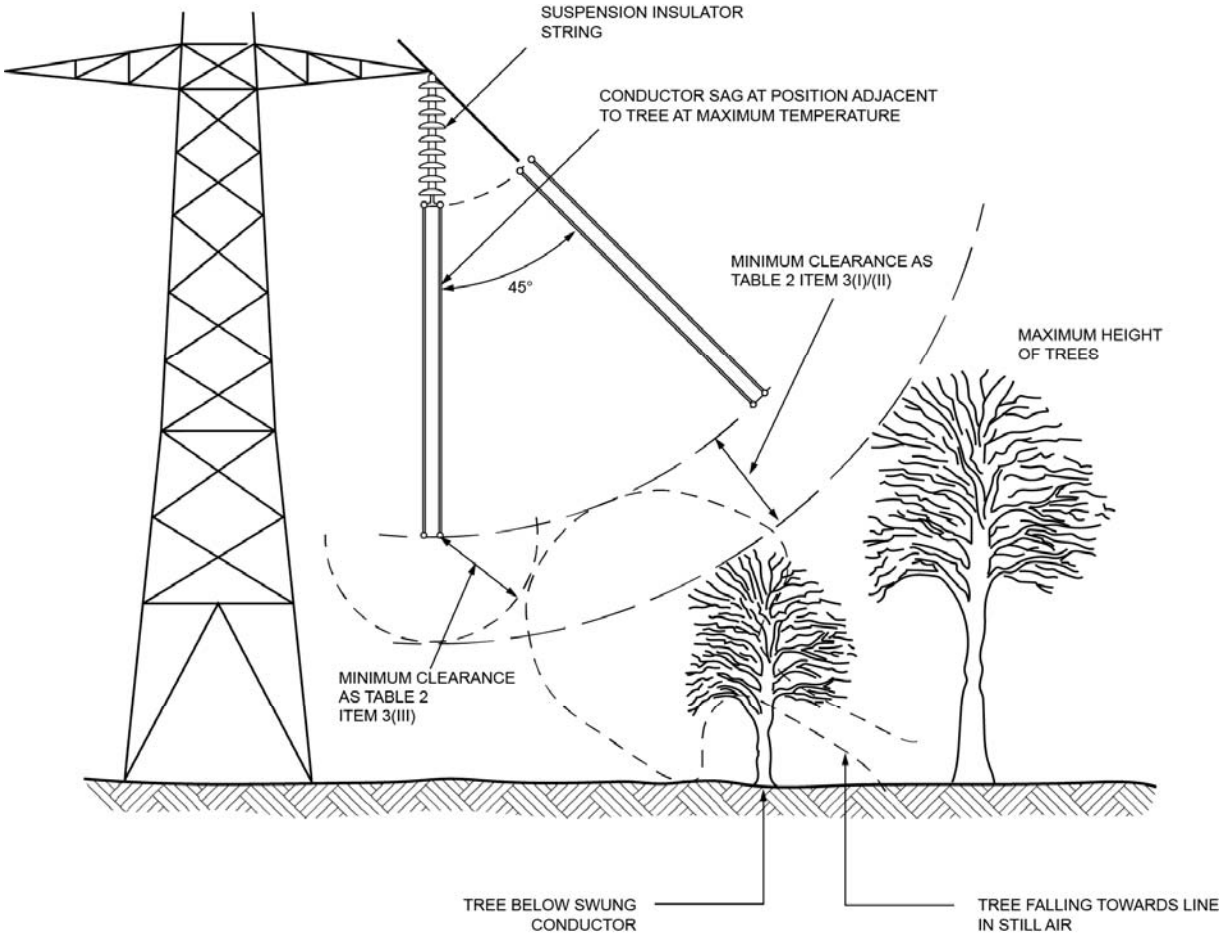
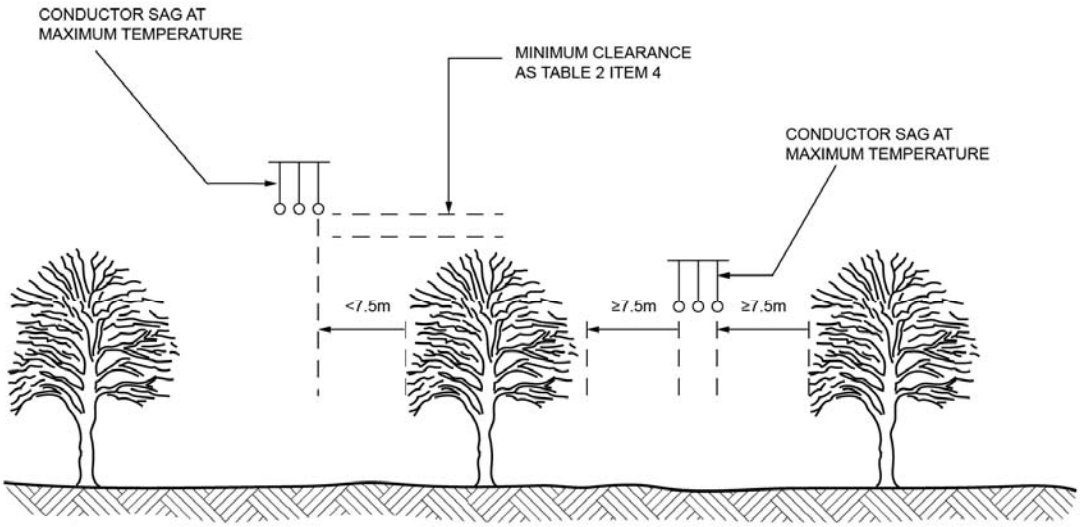


Fig. 2(a) Clearance to trees



Note: The leftmost configuration shows that when a tree is horizontally closer to the line than 7.5m, then vertical clearance, from the treetop, shall be maintained

Fig. 2(b) Clearance to trees in orchards and hop gardens

Figure 2 — Examples of clearance to trees

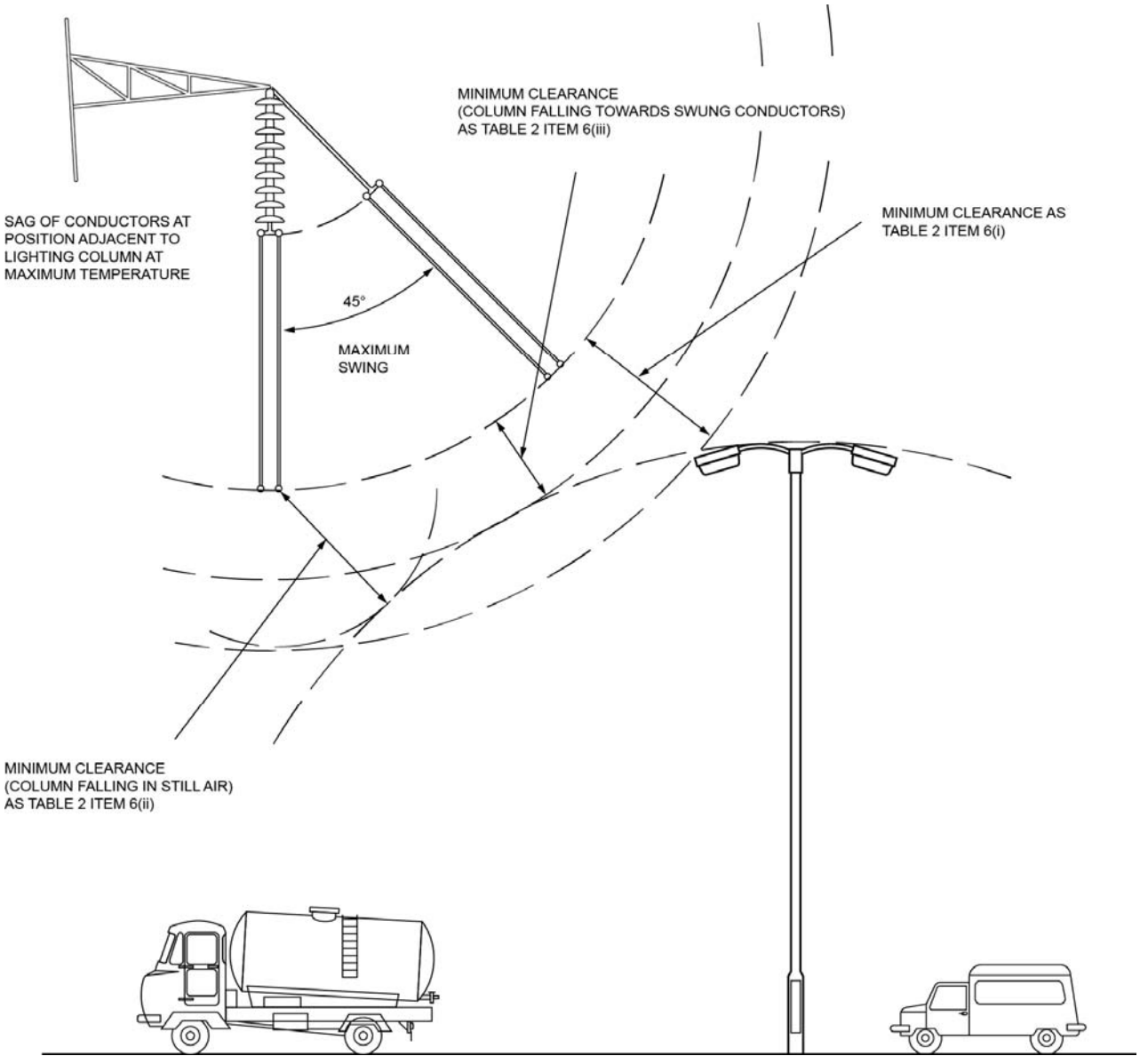


Figure 3 — HV conductor clearance to lighting columns

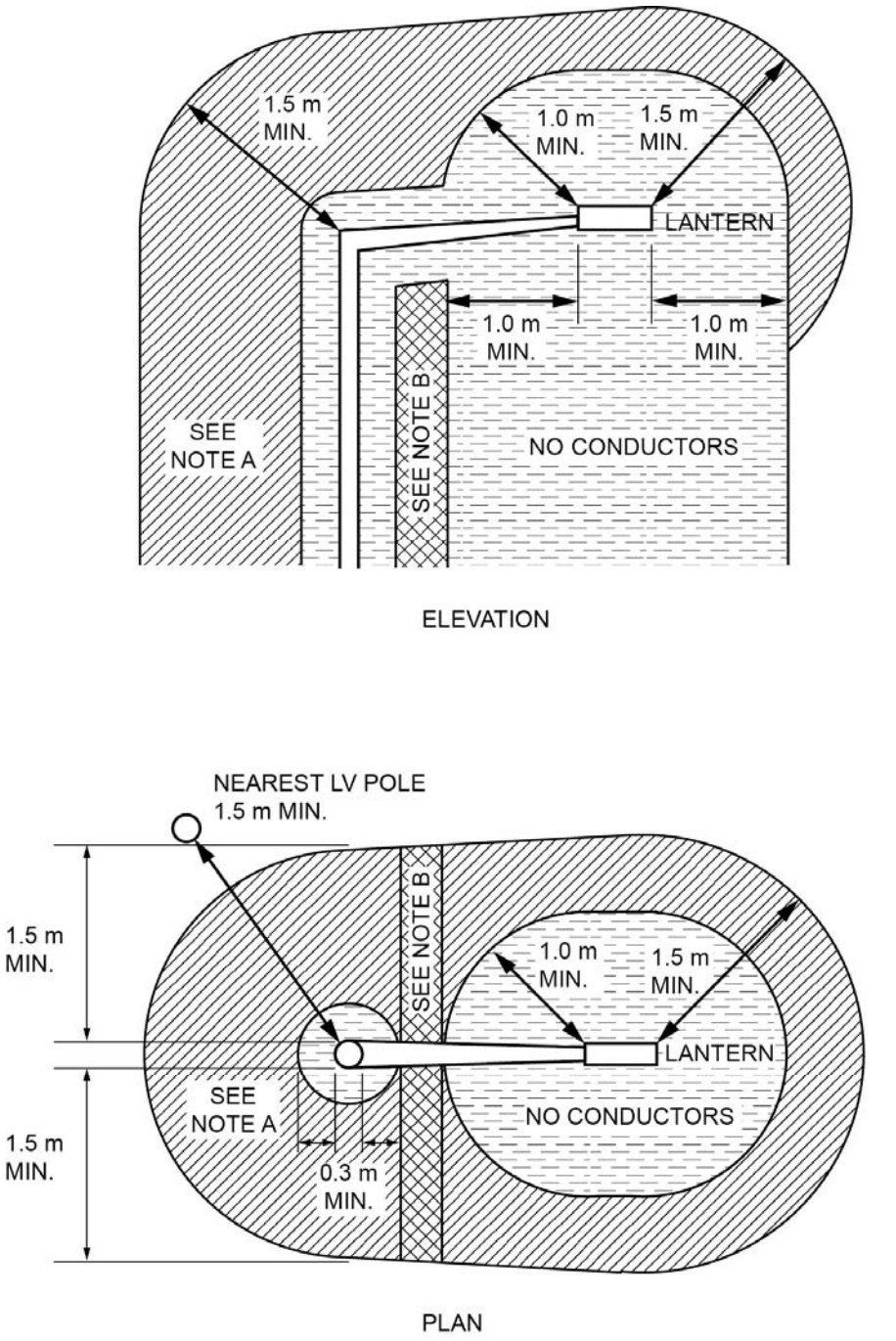


Figure 4 — LV conductor clearances from lighting columns

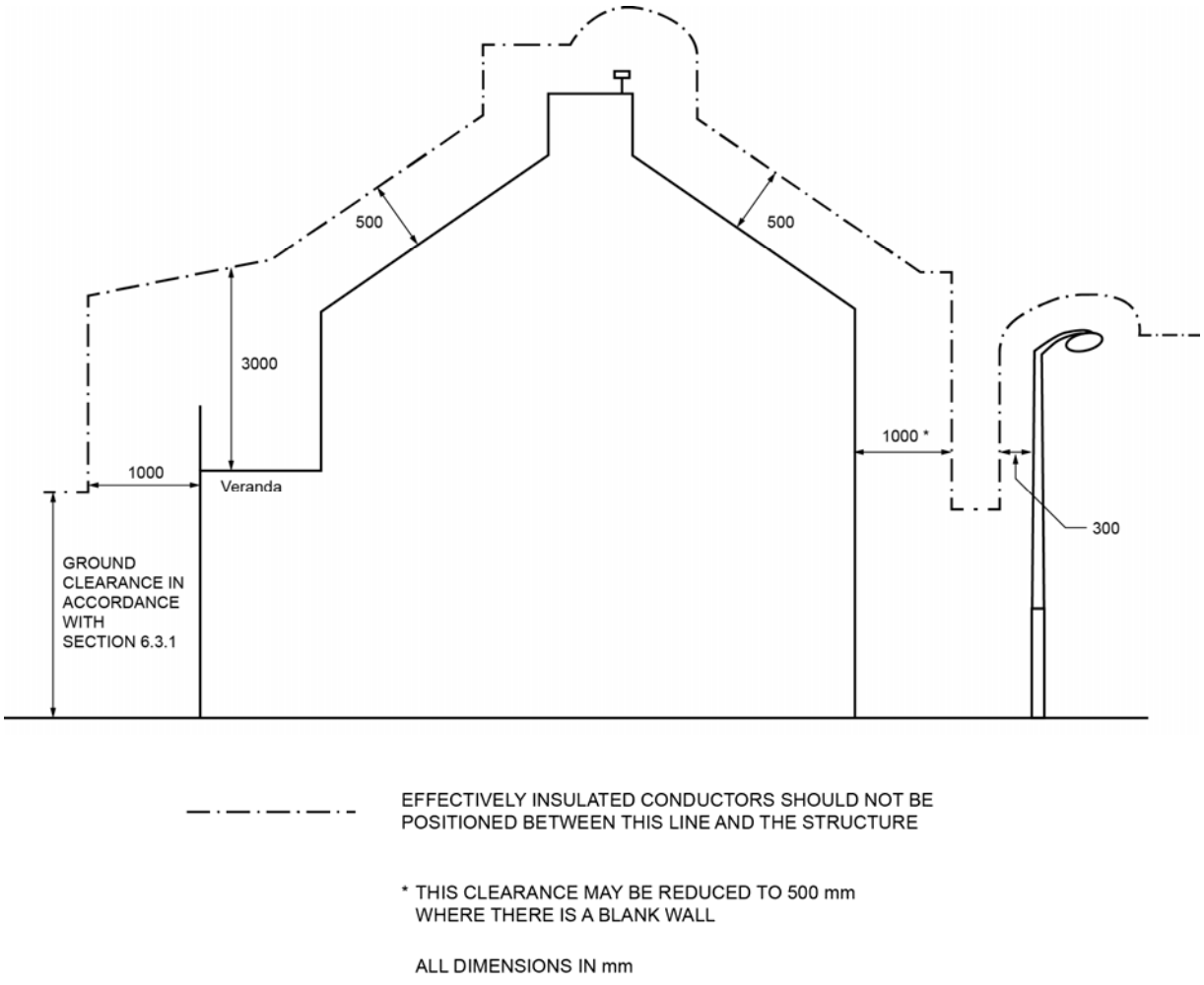


Figure 5 — Clearance between structures and effectively insulated conductors installed on poles

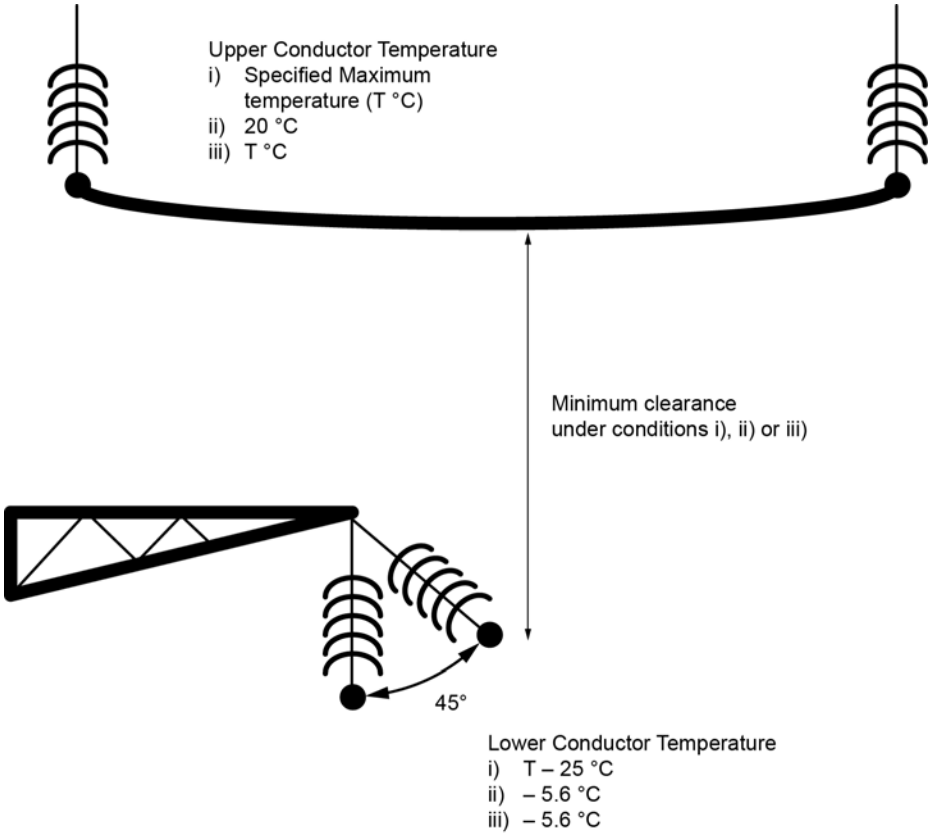


Figure 6 — Clearance between crossing overhead lines

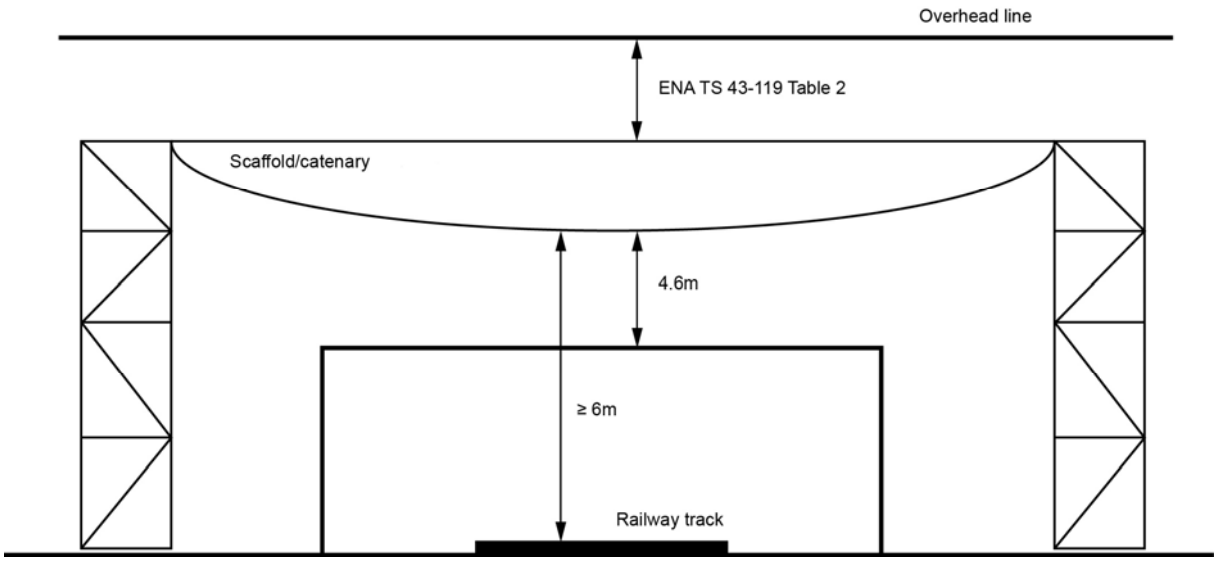


Figure 7 — Vertical clearances between an overhead line, scaffold structure and railway

Annex A
(informative)

Clearances to objects – philosophy

A.1 Introduction

The clearances to objects specified in 6.2 and Table 2 have been computed, in general, using the philosophy set out below.

Clearances to objects shall be maintained such that under no circumstances will the 'safety distance', as quoted in the Model Distribution Safety Rules [4], be infringed. This condition shall apply to both fixed objects and to any temporary objects that can be placed on or adjacent to fixed objects, for example a ladder against a building, or a mobile platform adjacent to a street lighting column. Clearances to objects shall be maintained under all likely line conditions, i.e. at maximum and minimum sag and with conductors hanging in still air and deflected due to wind. The two most probable conditions relative to objects are set out below.

These safety distances have been derived from the basic electrical clearance from overhead line to structure or obstacle (D_{el}) in BS EN 50341-1 increased by 10 % in accordance with 5.5.3 of that document and rounded up. Where past practice[6] employed greater clearances, these have been retained, as indicated Table A.1 [of ENA TS 43-8].

Table A.1 — Derivation of clearances to objects

Description	Distance (m)				
	≤33 kV	66 kV	132 kV	275 kV	400 kV
Safety Distance	0.8	1.0	1.4	2.4	3.1
D_{el} (NOTE 1)	0.6	0.7	1.2	2.1	2.8
D_{el} + 10 % (NOTE 1)	0.66	0.77	1.32	2.31	3.08
Rounded up to (NOTE 1)	0.7	0.8	1.4	2.4	3.1

NOTE 1: For information.

NOTE: Where overhead lines are refurbished, or constructed, so that the BIL exceeds those used in determining the above clearances, then the clearance to obstacles will have to be re-assessed.

[6] Past practice was based on basic electrical clearance originally defined in BS 7354:1990 and now referenced in ENA TS 41-38 Table B.5.2. The values in this tables are increased by 300 mm to allow for the use of hand held tools.

A.2 Normal clearance

This is the distance between the conductor at maximum sag hanging vertically or deflected by any angle up to 45° and an object. It is not normal to permit any object to be placed above an electric line. If a person can stand on the object or any temporary object adjacent to it, then the normal clearance shall include an 'application factor' of 2.2 m to allow for the person to move their arm whilst holding a short metallic object. Should it be necessary for a person to move their arm whilst holding a longer object, then this normal clearance may have to be increased by a distance of up to the length of the object.

A.3 Passing clearance

This is the minimum distance between the conductor at maximum sag hanging vertically or at an angle of up to 45° towards an object and the object itself when it is moving relative to the line. The passing clearance therefore does not normally require an 'application factor' since it is intended for objects which are moving, and on which no person may be able to stand, relative to the line. This clearance can also be applied to any object when there is no likelihood of any temporary platform being situated adjacent to it.

The normal and passing clearances, which have been derived from the 'safety distances', at the various nominal system voltages are shown in Table A.2.

Table A.2 — Derivation of normal and passing clearances

Description	Clearance (m)				
	≤33 kV	66 kV	132 kV	275 kV	400 kV
Normal clearance	3.0	3.2	3.6	4.6	5.3
Passing clearance	0.8	1.0	1.4	2.4	3.1

Annex B
(informative)

Definitions for roads and vehicles – rationale

B.0 Preamble

It is intended that the definitions of ‘road’ and ‘laneway’ will provide improved clarity for ENAMC inspectors, who carry out ESQCR inspections of overhead lines. In particular, these definitions are intended to reduce the number of situations, where ENAMC inspectors may otherwise dismiss some types of access as not being roads but where a minimum ground clearance of 5.2 m may not be adequate. A more detailed assessment of the minimum ground clearance of overhead line crossings is now prescribed in light of vehicles that may use laneways. Laneways are principally concerned with assessment of clearances below existing overhead line crossings, where access have been created that may be used by vehicles but may not be reasonably considered roads.

The definitions of ‘road’ and ‘laneway’ are intended to assist with interpretation of requirements in the ESQCR. Notwithstanding this, it is important to state that the ESQCR provides clear statutory requirements for line clearances above roads, and other ground; the Regulations do not make any reference to reduced clearances over laneways, nor do they make any reference to laneways. Users of this Technical Specification are reminded of the duty to comply with the ESQCR requirements for line clearances.

B.1 Background

Experience of the ENAMC has proven that it is not uncommon for confusion to arise when describing what constitutes a road and what constitutes a vehicle. Indeed, the clearances to an overhead line will depend on the nature of the road and the vehicles using it. It is imperative therefore that persons using this document understand the context for the definition of roads and vehicles when determining whether safe passing clearances for vehicles exist for any particular road in question.

B.2 Roads

The definitions in Clause 3 of the document distinguish between defined ‘roads’ and ‘laneways’, that are required to have safe passing clearance for vehicles and other routes that may be used by vehicles but where adequate safe passing clearance may not exist.

The definition of a ‘road’ is based on section 192 of the Road Traffic Act 1988, which sets down that a 'road' means 'any highway and any other road to which the public have access and includes bridges over which a road passes'. The definition of ‘road’ in this Specification has been amended from that in the Road Traffic Act to reflect roads and other accesses, which are specifically constructed from suitable materials for the purpose of carrying vehicles driven by the public. The definition of ‘road’ is distinct from that of ‘laneway’, which reflects routes principally across agricultural land, that could be inappropriately classed as ‘roads’ by virtue of vehicles, such as off-road vehicles, compacting ground by running over it and making it suitable for vehicles.

It is acknowledged that some accesses from roads to dwellings may not be made of constructed materials but which are the designated access for the resident and members of the public to service that dwelling. To ensure adequate ground clearance exists from overhead lines to routes constituted from stone and other tracks that are legitimately used by residents and other members of the public driving vehicles, e.g. for making deliveries, the term ‘laneway’ is defined. In essence a laneway is the principal access from a road to an addressed property which is used by vehicles visiting that property.

The intention is that the ENAMC will assess whether overhead lines crossing laneways provide adequate ground clearance given the nature and extent of vehicle usage. This will consider whether, in general, an overhead line above a laneway should:

a) provide safe passage for non high-sided vehicles, i.e. Table 1 item 1 clearances are relevant;

b) provide safe passage for high-sided vehicles, i.e. Table 1 item 2 clearances are relevant.

In order to enable the ENAMC to adequately manage the risk moving forwards, suitable means for recording information from the assessment will need to be provided. This may include the use of risk codes and/or a specific classification for laneways. The ENAMC will consider what action is appropriate for managing the risk to the public in accordance with Regulation 3(3) of the ESQCR – in a similar manner to other specific applications and land use, where there is an increased risk of accidental contact with overhead line conductors.

The following examples are typical of the considerations for the assessment of laneways.

i. A stoned-route or other track that crosses agricultural land, that does not have public access and that is not the principal access to an addressed dwelling from a ‘road’. Overhead line clearances to this laneway would not be treated as a ‘road’ according to this Specification i.e. a minimum ground clearance of 5.2 m would be appropriate.

ii. A vehicle access constituted from stone that is the principal access from a ‘road’ to a farm, which is used by tractors towing road legal high-sided trailers. Overhead line clearances to this laneway would be treated as a ‘road’ according to this Specification i.e. a minimum ground clearance of 5.8 m would be appropriate.

iii. A paved drive that is the principal access from a ‘road’ to a property which has a physical restriction(s) (width, tree, bending radius) prohibiting a high-sided vehicle travelling down it. Overhead line clearances to this laneway would not be treated as a ‘road’ according to this Specification. Refer to Clause 6.3.2 when the overhead line is effectively insulated in this situation.

B.3 Vehicles

The definition of a vehicle in section 185(1) of the Road Traffic Act 1988 and section 136(1) of the Road Traffic Regulation Act 1984 is "a mechanically-propelled vehicle, intended or adapted for use on roads". This definition does not distinguish between vehicles of different heights that may use roads and laneways.

The term ‘non high-sided vehicle’ in this Specification defines a vehicle of maximum fixed height not greater than 4 m. This is intended to cover vehicles up to 7.5 tonne box lorries with tail lifts, which typically have a fixed height of 3.6 m. These vehicles could be reasonably expected to use laneways for making deliveries and removals.

It is intended that vehicles greater than 4 m but not greater than 5 m (defined as high-sided vehicles in this Specification) can be expected to use all ‘roads’ and will have adequate passing clearance beneath overhead lines with a minimum ground clearance of 5.8 m. High load vehicles are defined as only being suitable for specified ‘high load vehicle routes’, where the vehicle height exceeds 5 m but not 6.1 m.

Bibliography

Other publications

[1] Department of Energy & Climate Change voluntary code of practice, *Power line: Control of microshocks and other indirect effects of public exposure to electric fields. URN 13D/204.*

[2] Department of Trade and Industry Guidance on Regulations, *Guidance on the Electricity Safety, Quality and Continuity Regulations 2002. URN 02/1544*

[3] Office of Rail Regulation, Railway Safety Publication 5, *Guidance on Minor Railways*

[4] ENA SHE Standard 07, *Model Distribution Safety Rules*

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Avoiding danger from overhead power lines

Guidance Note GS6 (Fourth edition)

This general series guidance note is for people who may be planning to work near overhead lines where there is a risk of contact with the wires, and describes the steps you should take to prevent contact with them. The fourth edition makes the advice easier to follow and has brought the supporting visuals up to date. The guidance has not fundamentally changed from the previous version.

It is primarily aimed at employers and employees who are supervising or in control of work near live overhead lines, but it will also be useful for those who are carrying out the work.

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Introduction

1 Every year people at work are killed or seriously injured when they come into contact with live overhead electricity power lines. These incidents often involve:

- machinery, eg cranes, lorry-loader cranes, combine harvesters, and tipping trailers;
- equipment, eg scaffold tubes and ladders;
- work activities, eg loading, unloading, lifting, spraying, and stacking.

2 If a machine, scaffold tube, ladder, or even a jet of water touches or gets too close to an overhead wire, then electricity will be conducted to earth. This can cause a fire or explosion and electric shock and burn injuries to anyone touching the machine or equipment. An overhead wire does not need to be touched to cause serious injury or death as electricity can jump, or arc, across small gaps.

3 One of the biggest problems is that people simply do not notice overhead lines when they are tired, rushing or cutting corners. They can be difficult to spot, eg in foggy or dull conditions, when they blend into the surroundings at the edge of woodland, or when they are running parallel to, or under, other lines.

4 Always assume that a power line is live unless and until the owner of the line has confirmed that it is dead.

5 This guidance is for people who may be planning to work near overhead lines where there is a risk of contact with the wires, and describes the steps you should take to prevent contact with them. It is primarily aimed at employers and employees who are supervising or in control of work near live overhead lines, but it will also be useful for those who are carrying out the work.

Types of overhead power lines and their heights

6 Most overhead lines have wires supported on metal towers/pylons or wooden poles – they are often called ‘transmission lines’ or ‘distribution lines’. Some examples are shown in Figures 1–3.

Figure 1 275 kV transmission line

Figure 2 11 kV distribution line

Figure 3 400 V distribution line

7 Most high-voltage overhead lines, ie greater than 1000 V (1000 V = 1 kV) have wires that are bare and uninsulated but some have wires with a light plastic covering or coating. All high-voltage lines should be treated as though they are uninsulated. While many low-voltage overhead lines (ie less than 1 kV) have bare uninsulated wires, some have wires covered with insulating material. However, this insulation can sometimes be in poor condition or, with some older lines, it may not act as effective insulation; in these cases you should treat the line in the same way as an uninsulated line. If in any doubt, you should take a precautionary approach and consult the owner of the line.

8 There is a legal minimum height for overhead lines which varies according to the voltage carried. Generally, the higher the voltage, the higher the wires will need to be above ground (see Figure 4). Equipment such as transformers and fuses attached to wooden poles and other types of supports will often be below these heights. There are also recommended minimum clearances published by the Energy Networks Association (ENA Technical Specification 43–8 *Overhead Line Clearances*)[1] between the wires and structures such as buildings and lamp posts.

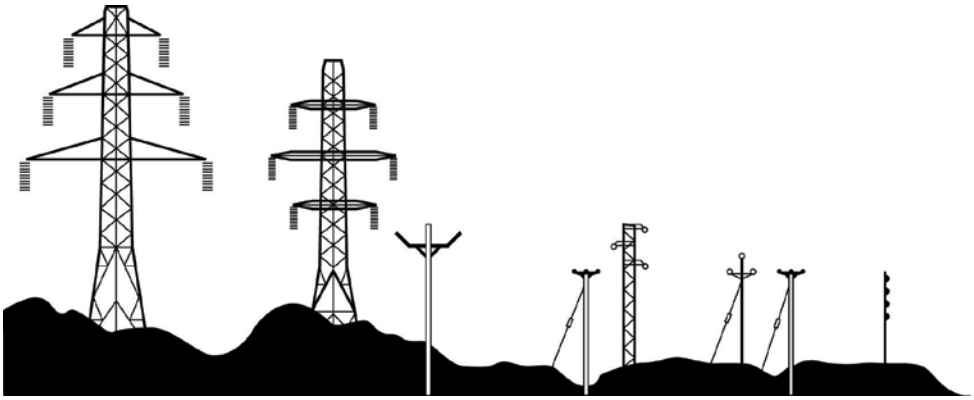

Figure 4 Minimum heights above ground level for overhead power lines

What does the law require?

9 The law requires that work may be carried out in close proximity to live overhead lines only when there is no alternative and only when the risks are acceptable and can be properly controlled. You should use this guidance to prepare a risk assessment that is specific to the site. Guidance on how to carry out a risk assessment is available at www.hse.gov.uk/toolbox/managing/managingtherisks.htm.

10 Businesses and employees who work near to an overhead line must manage the risks. Overhead line owners have a duty to minimise the risks from their lines and, when consulted, advise others on how to control the risks. The line owner will usually be an electricity company, known as a transmission or distribution network operator, but could also be another type of organisation, eg Network Rail, or a local owner, eg the operator of a caravan park. More details about legal responsibilities can be found in Annex 1.

Preventing overhead line contact accidents

11 Good management, planning and consultation with interested parties before and during any work close to overhead lines will reduce the risk of accidents. This applies whatever type of work is being planned or undertaken, even if the work is temporary or of short duration. You should manage the risks if you intend to work within a distance of 10 m, measured at ground level horizontally from below the nearest wire.

Remove the risk

12 The most effective way to prevent contact with overhead lines is by not carrying out work where there is a risk of contact with, or close approach to, the wires.

13 If you cannot avoid working near an overhead line and there is a risk of contact or close approach to the wires, you should consult its owner to find out if the line can be permanently diverted away from the work area or replaced with underground cables. This will often be inappropriate for infrequent, short-duration or transitory work.

14 If this cannot be done and there remains a risk of contact or close approach to the wires, find out if the overhead line can be temporarily switched off while the work is being done. The owner of the line will need time to consider and act upon these types of requests and may levy a charge for any work done.

Risk control

15 If the overhead line cannot be diverted or switched off, and there is no alternative to carrying out the work near it, you will need to think about how the work can be done safely. If it cannot be done safely, it should not be done at all. Your site-specific risk assessment will inform the decision. Things to consider as part of your risk assessment include:

- the voltage and height above ground of the wires. Their height should be measured by a suitably trained person using non-contact measuring devices;
- the nature of the work and whether it will be carried out close to or underneath the overhead line, including whether access is needed underneath the wires;
- the size and reach of any machinery or equipment to be used near the overhead line;
- the safe clearance distance needed between the wires and the machinery or equipment and any structures being erected. If in any doubt, the overhead line's owner will be able to advise you on safe clearance distances;
- the site conditions, eg undulating terrain may affect stability of plant etc;
- the competence, supervision and training of people working at the site.

16 If the line can only be switched off for short periods, schedule the passage of tall plant and, as far as is possible, other work around the line for those times.

17 Do not store or stack items so close to overhead lines that the safety clearances can be infringed by people standing on them.

Working near but not underneath overhead lines – the use of barriers

18 Where there will be no work or passage of machinery or equipment under the line, you can reduce the risk of accidental contact by erecting ground-level barriers to establish a safety zone to keep people and machinery away from the wires. This area should not be used to store materials or machinery. Suitable barriers can be constructed out of large steel drums filled with rubble, concrete blocks, wire fence earthed at both ends, or earth banks marked with posts.

- If steel drums are used, highlight them by painting them with, for example, red and white horizontal stripes.
- If a wire fence is used, put red and white flags on the fence wire.
- Make sure the barriers can be seen at night, perhaps by using white or fluorescent paint or attaching reflective strips.

19 The safety zone should extend 6 m horizontally from the nearest wire on either side of the overhead line. You may need to increase this width on the advice of the line owner or to allow for the possibility of a jib or other moving part encroaching into the safety zone. It may be possible to reduce the width of the safety zone but you will need to make sure that there is no possibility of encroachment into the safe clearance distances in your risk assessment.

20 Where plant such as a crane is operating in the area, additional high-level indication should be erected to warn the operators. A line of coloured plastic flags or 'bunting' mounted 3–6 m above ground level over the barriers is suitable. Take care when erecting bunting and flags to avoid contact or approach near the wires.

Passing underneath overhead lines

21 If equipment or machinery capable of breaching the safety clearance distance has to pass underneath the overhead line, you will need to create a passageway through the barriers, as illustrated in Figure 5. In this situation:

- keep the number of passageways to a minimum;
- define the route of the passageway using fences and erect goalposts at each end to act as gateways using a rigid, non-conducting material, eg timber or plastic pipe, for the goalposts, highlighted with, for example, red and white stripes;
- if the passageway is too wide to be spanned by a rigid non-conducting goalpost, you may have to use tensioned steel wire, earthed at each end, or plastic ropes with bunting attached. These should be positioned further away from the overhead line to prevent them being stretched and the safety clearances being reduced by plant moving towards the line;
- ensure the surface of the passageway is levelled, formed-up and well maintained to prevent undue tilting or bouncing of the equipment;
- put warning notices at either side of the passageway, on or near the goalposts and on approaches to the crossing giving the crossbar clearance height and instructing drivers to lower jibs, booms, tipper bodies etc and to keep below this height while crossing;
- you may need to illuminate the notices and crossbar at night, or in poor weather conditions, to make sure they are visible;
- make sure that the barriers and goalposts are maintained.

Figure 5 Typical passageway through barriers

22 On a construction site, the use of goalpost-controlled crossing points will generally apply to all plant movements under the overhead line.

Working underneath overhead lines

23 Where work has to be carried out close to or underneath overhead lines, eg road works, pipe laying, grass cutting, farming, and erection of structures, and there is no risk of accidental contact or safe clearance distances being breached, no further precautionary measures are required.

24 However, your risk assessment must take into account any situations that could lead to danger from the overhead wires. For example, consider whether someone may need to stand on top of a machine or scaffold platform and lift a long item above their head, or if the combined height of a load on a low lorry breaches the safe clearance distance. If this type of situation could exist, you will need to take precautionary measures.

25 If you cannot avoid transitory or short-duration, ground-level work where there is a risk of contact from, for example, the upward movement of cranes or tipper trailers or people carrying tools and equipment, you should carefully assess the risks and precautionary measures. Find out if the overhead line can be switched off for the duration of the work. If this cannot be done:

- refer to the Energy Networks Association (ENA) publication *Look Out Look Up! A Guide to the Safe Use of Mechanical Plant in the Vicinity of Electricity Overhead Lines.*[2] This advises establishing exclusion zones around the line and any other equipment that may be fitted to the pole or pylon. The minimum extent of these zones varies according to the voltage of the line, as follows:
  - low-voltage line – 1 m;
  - 11 kV and 33 kV lines – 3 m;
  - 132 kV line – 6 m;
  - 275 kV and 400 kV lines – 7 m;

- under no circumstances must any part of plant or equipment such as ladders, poles and hand tools be able to encroach within these zones. Allow for uncertainty in measuring the distances and for the possibility of unexpected movement of the equipment due, for example, to wind conditions;
- carry long objects horizontally and close to the ground and position vehicles so that no part can reach into the exclusion zone, even when fully extended. Machinery such as cranes and excavators should be modified by adding physical restraints to prevent them reaching into the exclusion zone. Note that insulating guards and/or proximity warning devices fitted to the plant without other safety precautions are not adequate protection on their own;
- make sure that workers, including any contractors, understand the risks and are provided with instructions about the risk prevention measures;
- arrange for the work to be directly supervised by someone who is familiar with the risks and can make sure that the required safety precautions are observed;
- if you are in any doubt about the use of exclusion zones or how to interpret the ENA document, you should consult the owner of the overhead line.

26 Where buildings or structures are to be erected close to or underneath an overhead line, the risk of contact is increased because of the higher likelihood of safety clearances being breached. This applies to the erection of permanent structures and temporary ones such as polytunnels, tents, marquees, flagpoles, rugby posts, telescopic aerials etc. In many respects these temporary structures pose a higher risk because the work frequently involves manipulating long conducting objects by hand.

27 The overhead line owner will be able to advise on the separation between the line and structures, for example buildings using published standards such as ENA Technical Specification 43–8 *Overhead Line Clearances.*[1] However, you will need to take precautions during the erection of the structure. If the overhead line cannot be diverted or switched off then you should take account of the guidance in paragraphs 23 to 26 relating to working underneath such lines.

28 Consider erecting a horizontal barrier of timber or other insulating material beneath the overhead line to form a roof over the construction area – in some cases an earthed, steel net could be used. This should be carried out only with the agreement of the overhead line owner, who may need to switch off the line temporarily for the barrier to be erected and dismantled safely.

29 Ideally, work should not take place close to or under an overhead line during darkness or poor visibility conditions. Dazzle from portable or vehicle lighting can obscure rather than show up power lines.

Working near overhead lines connected to buildings

30 Sometimes, work needs to be carried out near uninsulated low-voltage overhead wires, or near wires covered with a material that does not provide effective insulation, connected to a building. Examples of such work are window cleaning, external painting or short-term construction work. If it is not possible to re-route or have the supply turned off, the line's owner, eg the distribution network operator, may be able to fit temporary insulating shrouds to the wires, for which a charge may be levied. People, plant and materials still need to be kept away from the lines.

Emergency procedures

31 If someone or something comes into contact with an overhead line, it is important that everyone involved knows what action to take to reduce the risk of anyone sustaining an electric shock or burn injuries. Key points are:

- never touch the overhead line's wires;
- assume that the wires are live, even if they are not arcing or sparking, or if they otherwise appear to be dead;
- remember that, even if lines are dead, they may be switched back on either automatically after a few seconds or remotely after a few minutes or even hours if the line's owner is not aware that their line has been damaged:
- if you can, call the emergency services. Give them your location, tell them what has happened and that electricity wires are involved, and ask them to contact the line's owner:
- if you are in contact with, or close to, a damaged wire, move away as quickly as possible and stay away until the line's owner advises that the situation has been made safe:
- if you are in a vehicle that has touched a wire, either stay in the vehicle or, if you need to get out, jump out of it as far as you can. Do not touch the vehicle while standing on the ground. Do not return to the vehicle until it has been confirmed that it is safe to do so;

- be aware that if a live wire is touching the ground the area around it may be live. Keep a safe distance away from the wire or anything else it may be touching and keep others away.

Industry-specific guidance

32 HSE and other organisations publish industry and sector-specific guidance based on this guidance. The main industries and sectors covered by this are construction, agriculture, horticulture, forestry and arboriculture. The Energy Networks Association (ENA), the body representing transmission and distribution network operating companies, also publishes guidance leaflets (see the References section).

Annex 1 The law

1 The Health and Safety at Work etc Act 1974 (HSW Act) places responsibilities on everyone concerned with work activities, including employers, the self-employed and employees.

Regulations:
www.legislation.gov.uk/ukpga/1974/37/contents

2 The Management of Health and Safety at Work Regulations 1999 require that:

- risks are properly assessed and controlled;
- employees are provided with adequate health and safety training;
- employers who share a workplace consult and co-ordinate with each other.

Regulations:
www.legislation.gov.uk/uksi/1999/3242/contents/made

3 Regulation 9 of The Provision and Use of Work Equipment Regulations 1998 requires all people who use work equipment to have received adequate training in the use of that equipment.

Regulations:
www.legislation.gov.uk/uksi/1998/2306/contents/made

Approved Code of Practice:

Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance L22 (Third edition) HSE Books 2008 ISBN 978 0 7176 6295 1 www.hse.gov.uk/pubns/books/l22.htm

4 The Electricity at Work Regulations 1989 require precautions to be taken against the risk of death or personal injury from electricity in work activities. Regulation 14 addresses live work activities, which include working on, or so near, live overhead lines that there is a risk of injury.

Regulations:

www.legislation.gov.uk/uksi/1989/635/contents/made

Guidance:

Memorandum of guidance on the Electricity at Work Regulations 1989. Guidance on Regulations HSR25 (Second edition) HSE Books 2007 ISBN 978 0 7176 6228 9 www.hse.gov.uk/pubns/books/hsr25.htm

5 The Electricity Safety Quality and Continuity Regulations 2002 require, among other things, owners of overhead lines to ensure that they are at the appropriate height and meet certain standards.

Regulations:

www.legislation.gov.uk/uksi/2002/2665/contents/made

Guidance:

www.berr.gov.uk/files/file26709.pdf

6 The Construction (Design and Management) Regulations 2007 place duties on construction clients, designers and contractors to plan and organise work so as to avoid danger from energy distribution networks.

Regulations:

www.legislation.gov.uk/uksi/2007/320/contents/made

Approved Code of Practice:

Managing health and safety in construction. Construction (Design and Management) Regulations 2007. Approved Code of Practice L144 HSE Books 2007 ISBN 978 0 7176 6223 4 www.hse.gov.uk/pubns/books/l144.htm

References

1 ENA Technical Specification 43–8 *Overhead Line Clearances* www.energynetworks.org/electricity/

2 *Look Out Look Up! A Guide to the Safe Use of Mechanical Plant in the Vicinity of Electricity Overhead Lines* Energy Networks Association (ENA) www.energynetworks.org/electricity/

Further reading

Agriculture

Working safely near overhead electricity power lines Agriculture Information Sheet AIS8(rev3) HSE Books 2012 www.hse.gov.uk/pubns/ais8.htm

Safety information for farmers and agricultural contractors ENA 2007 http://energynetworks.squarespace.com/agriculture/

Safety information for farmers utilising polytunnels ENA 2008 http://energynetworks.squarespace.com/polytunnels/

Construction

Guidance is published by HSE under the heading *Electricity – Overhead power lines* at www.hse.gov.uk/construction/safetytopics/overhead.htm

Safe use of Lorry Loaders – Best practice guide the Association of Lorry Loader Manufacturers and Importers (ALLMI) and the Construction Plant-hire Association (CPA) www.allmi.com

Safety information for demolition companies ENA 2008 http://energynetworks.squarespace.com/demolition/

Safety information for scaffolders ENA 2007 http://energynetworks.squarespace.com/scaffolders/

Quarries

Guidance is published by HSE at www.hse.gov.uk/quarries/hardtarget/electricity.htm

Arboriculture and forestry

Treework web pages: www.hse.gov.uk/treework/safety-topics/power-lines.htm

Safety information for tree trimming near overhead power lines ENA 2008 http://energynetworks.squarespace.com/tree-trimming/

Landscaping and ground maintenance

Safety information for landscaping and ground maintenance workers ENA 2011 http://energynetworks.squarespace.com/tree-trimming/

Railways

Advice in relation to railways is available at www.rail-reg.gov.uk/upload/pdf/rgd-2011-05-web.pdf

Emergency services
Safety advice for the fire service ENA 2007
http://energynetworks.squarespace.com/fire-service/

Safety advice for the police service ENA 2007
http://energynetworks.squarespace.com/police/

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This document is available at: www.hse.gov.uk/pubns/gs6.htm.

 First published 03/13.

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Environment Agency

The Planning Inspectorate
[via Planning Inspectorate email address lostriggsolar@planninginspectorate.gov.uk]

Our ref:XA/2024/100113/01-L01
Your ref:EN0110004

Date:19 July 2024

Dear Sir/Madam

PLANNING ACT 2008 (AS AMENDED) AND THE INFRASTRUCTURE PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017 (THE EIA REGULATIONS) REGULATIONS 10 AND 11 - SCOPING CONSULTATION.

APPLICATION BY RWE RENEWABLES UK SOLAR AND STORAGE LTD (THE APPLICANT) FOR AN ORDER GRANTING DEVELOPMENT CONSENT FOR LOSTRIGG SOLAR (THE PROPOSED DEVELOPMENT) TO THE EAST OF WORKINGTON IN CUMBRIA (NW ENGLAND) BETWEEN THE VILLAGES OF LITTLE CLIFTON AND BRANTHWAITE TO THE NORTH-EAST OF LILLYHALL INDUSTRIAL ESTATE

Thank you for your consultation on the Environmental Impact Assessment (EIA) Scoping Opinion for the above Nationally Significant Infrastructure Project (NSIP). We have reviewed the Lostrigg Solar EIA Scoping Report Main Text, Appendices and Figures. We have the following advice to offer.

Flood Risk

We acknowledge that a Flood Risk Assessment (FRA) is to be completed at a later stage and we welcome the opportunity to discuss the scope and requirements for this with the applicant at an early stage.

There are some areas of the site that are situated within Flood Zones 2 & 3 which have a higher probability of flooding from rivers and/ or the sea. The Sequential Test will therefore be required to be passed, as outlined in the National Policy Statement (NPS) EN-1, and the National Planning Policy Framework (NPPF).

If the site needs to be situated in areas at risk of flooding, then The Exception Test must also be applied and the FRA must assess flood risk from all sources of flooding.

It is stated, in paragraph 2.6.1.1 of the Scoping Report, that the project has an operational lifetime of 40 years. Please note that the Planning Practice Guidance

(PPG) (Paragraph: 006 Reference ID: 7-006-20220825) states that non-residential development should include an assessment of flood risk over at least 75 years.

The assessment of future flood risk should incorporate a Credible Maximum scenario and should also be able to demonstrate how proposals can be adapted over their predicted lifetimes to remain resilient to the credible maximum climate change scenario, as required by NPS EN-1.

The applicant will need to confirm operational needs for the site, i.e., will the site remain operational and will staff remain on site during a flood event. There will also need to be consideration given to access and egress from the site during flood event scenarios.

The Environment Agency (EA) do not hold any detailed hydraulic modelling for the Lostrigg Beck or River Marron. The below section provides detailed comments on specific sections of the Scoping Report regarding flood risk, which include hydraulic modelling.

Section 18.2.4 Table 18-3
The available guidance on undertaking modelling for FRAs may also be of use to the applicant. This can be accessed here: Using modelling for flood risk assessments - GOV.UK (www.gov.uk)

Figure 18.1 Surface water features
There is also an ordinary watercourse near to Caple How which runs from 303900, 527381 to the confluence with the Lostrigg Beck at 304495, 527349. The watercourse at Cavil Gill appears to start at 303534, 526756. Ordnance Survey base mapping and Lidar data may be useful datasets for identifying smaller watercourses and drainage pathways within the order limits. The applicant can obtain Lidar data online at: Defra Survey Data Download

Paragraph 18.5.3.39 Flood Map for Planning and Risk of Flooding from Surface Water mapping
Catchments which have an area of less than 3 km^2 may not be represented in the Flood Map for Planning. This does not mean that there is no associated fluvial flood risk, it is just that the risk is not modelled or represented for some smaller catchments. With regards to the Risk of Flooding from Surface Water mapping, this is based on direct rainfall modelling. If the applicant uses the Risk of Flooding from Surface Water mapping as a proxy for the fluvial flood risk from ordinary watercourses, please bear in mind that this product does not consider the effects of climate change. They may need to undertake more detailed hydraulic modelling for the locations where they intend to solely rely on the Risk of Flooding from Surface Water mapping or provide evidence that it is a reasonable proxy for fluvial flood risk including the effects of climate change.

Paragraph 18.5.3.39. Hydraulic modelling
We do not have any detailed hydraulic modelling for the Lostrigg Beck or River Marron within the order limits for the site. The modelling which is used to define the current Flood Map for Planning within the order limits is based on strategic scale 2d modelling produced using JFlow modelling software in 2004. We do not have any detailed hydraulic modelling for the ordinary watercourses which bisect the site. We recommend the applicant undertakes detailed hydraulic modelling of the Lostrigg Beck and, depending on the location of infrastructure, the ordinary watercourses which bisect the site, noting the limitations raised with regards to using the Flood Map for Surface Water as a proxy for fluvial flood risk. In terms of the River Marron, given its location in respect to the order limits, and the fact that the topography as shown by 2022 1 metre composite Lidar data rises to the west, fluvial flood risk to the current red line boundary from the River Marron is likely to be less of a concern but should be referenced and investigated as part of any FRA.

Paragraph 18.5.4.8 page 308. Climate Change
The Lostrigg Beck falls within the Derwent Northwest Management catchment. As the development would be classed as Essential Infrastructure, the applicant should consider the 1% (1 in 100) plus higher central climate change scenario as the fluvial design event for the appropriate epoch given the lifetime of the development. The 2080's epoch should be considered. The applicant also needs to consider an Upper End scenario as a sensitivity test (Credible Maximum) in line with policy, and guidance available online at: Flood risk assessments: climate change allowances - GOV.UK (www.gov.uk)

Surface Water
We are pleased to see that a Water Framework Directive (WFD) Assessment will be completed.

Section 18.6.2
The applicant should include impacts from firewater runoff at the Battery Energy Storage Systems (BESS) in the list of potential operational impacts.

Table 18-11 WFD
Care should be taken by the applicant when applying the methodology for determining watercourse sensitivity. This methodology risks misrepresenting the sensitivity of a watercourse to pollutions and changes in water quality. The table proposes that a river with a higher Q95 flow is more sensitive than one with a lower Q95. The reverse of this is true with regards to water quality, with the less dilution meaning a higher sensitivity to change. Additionally, the table proposes that watercourses with a WFD designation are more sensitive than those that do not. This is again inaccurate, as WFD designation is a method of monitoring and classifying the ecological health of the water environment and not an indication of greater or lesser sensitivity to change. When determining the sensitivity of a watercourse, the applicant should ensure that

professional judgement and the results of any surveys are also incorporated into the assessment.

The table proposes to use changes in WFD status as the key indicator for the magnitude of an impact. This approach risks misrepresenting impacts from significant pollution and changes in water quality, which can cause detrimental effects on the local ecology without impacting the WFD status of the overall waterbody. This could be due to the duration of the change or the location of the impact in relation to monitoring locations used to classify individual element status. The Applicant should also consider the duration, extent and severity of any water quality impacts when determining their magnitude.

Groundwater

The proposed scheme is largely underlain by the Devensian Till which is classified as a Secondary (Undifferentiated) aquifer. Small areas of the site are underlain by Alluvium, which is classified as a Secondary A aquifer. The Pennine Middle Coal Measures and Pennine Lower Coal Measures Formations underlie the alluvium. These are classified as Secondary A aquifers.

Section 2.5.9

The use of HDD in some parts of the scheme may be proposed. This work could involve the use of drilling muds and their use may require risk assessment to ensure they do not pose a risk to controlled waters. We would expect this assessment to be included in the CEMP. A bentonite breakout will also be required for any HDD activities. Where the placement of cables takes place in land affected by contamination, the management of the waste material will need to be carefully managed.

Section 3.3.4

The area has a legacy of coal mining, and several mine shafts are known to exist in the local area. We note that the exact cable routes are yet to be defined. However, historic mine shafts should be avoided when considering potential routes. This would help prevent the potential creation of pathways for the migration of contaminants.

Section 11.6

We note that previous uses of the site may have had the potential to cause contamination. Whilst additional site investigation as part of the EIA is not proposed, which we agree with, we may request that a requirement for investigating unsuspected contamination is included on any DCO granted for the site.

Section 11.8

It is not clear what foundations will be required for the new pylons that may be installed but it is anticipated that these would be deep. We therefore expect that a foundation works risk assessment would form part of the CEMP.

Further comments

An operational landfill (Lillyhall Stage 3 Landfill Site (EPR/GP3037SJ)) is present adjacent to the site boundary. Any works on the development site should not interfere with any existing monitoring of groundwater or leachate at the site.

A suite of management plans will be submitted with the DCO application. It is not clear whether firewater drainage from the BESS will be considered as part of the management plans. BESS have the potential to pollute the environment. Applicants should consider the impact to all environmental receptors during each phase of development. Particular attention should be applied in advance to the impacts on groundwater and surface water from the escape of firewater/foam and any contaminants that it may contain. Suitable environmental protection measures should be provided including systems for containing and managing water run-off. The applicant should ensure that there are multiple 'layers of protection' to prevent the source-pathway-receptor pollution route occurring.

Water Resources

The use of any local surface water would be subject to restrictive licence conditions which may prevent access to water in the summer or during low flows. More information about water availability can be found here: Derwent and West Cumbria abstraction licensing strategy - GOV.UK (www.gov.uk). This may mean water is restricted when it is needed most.

We recommend that consumptive uses of water (such as any potable and domestic water, water used for dust suppression; machinery/wheel wash down or other process water) and potential sources of supply are scoped into the EIA. This is to ensure that potential problems can be identified and solved early in the planning process in order to expedite future permitting applications and incorporate solutions, such as temporary or permanent storage into designs if needed.

Biodiversity

We note that otter and water vole surveys have been recommended within the Preliminary Ecological Appraisal. However, these surveys have not been confirmed within this section of the Scoping Report. We strongly recommend that a riparian mammal survey is conducted on watercourses throughout the site, to identify any potential presence of shelters (burrows, holts and couches). The survey results would inform the siting of the watercourse crossings via Horizontal Directional Drilling (HDD).

Section 7.6.1

We note that purple moor grass and rush pasture has been identified as a priority habitat and potential impacts scoped in. However, our records (in addition to Section 13.1 of Appendix 7.1) show that other priority habitats are present within the site boundary, including upland flushes, fens and swamps (located to the east). We encourage the scoping in of these priority habitats in addition to purple moor grass and rush pasture, and consideration of potential impacts from the scheme to these features.

Paragraph 18.11.1.3
We strongly advise that any biodiversity enhancements around waterbodies compliment the local environmental objectives and programmes of measures within the River Basin Management Plan. The applicant should refer to the 'Catchment Action Plan for the River Marron produced by the West Cumbria Catchment Partnership, to understand issues facing the catchment (such as a lack of diversity in in-stream habitat and riparian shade).

Appendix 7.1, Table 3
We understand that Invasive Non-native Species (INNS) were not recorded on site during surveys. However, considering that Himalayan balsam and Japanese knotweed are present upstream, there is the strong potential for the species to spread to the site. In addition, we are aware that American skunk-cabbage (*Lysichiton americanus*) and a species of *Gunnera* have been recorded upstream of the site. Therefore, we strongly suggest that INNS are scoped into the Environmental Statement (ES) and given consideration within Chapter 7 of the Scoping Report. Similarly, we also recommend that the applicant submits a Biosecurity Method Statement and Invasive Species Management Plan alongside the DCO application for the proposed development.

Figure 2.4
We wish to review a detailed, high-resolution landscape masterplan for each zone to assess the applicant's design approach appropriately.

Further comments
We recommend that the Cumbria Wildlife Trust are consulted with regards to impacts to the Lower Lostrigg Beck Local Wildlife Site (LWS) (present within the site, near the northern boundary), Oily Johnnies Willow Patch LWS (partially located within site boundary, along Winscales Road) and the Old Railway (River Marron) LWS (located to east of the site).

Fisheries
Section 2.5.7
Artificial light near the Lostrigg Beck during nighttime hours can interrupt migration and spawning of fish species. The ES should include an assessment of any artificial lighting near the Lostrigg Beck and its effect on fish. Any mitigation should be included within the Construction Environmental Management Plan (CEMP).

Section 2.5.8
The preparatory works may involve the temporary and permanent installation of culverts under watercourses and ditches on site. Any culverting of a watercourse or waterbody that contains fish can impact on lifecycle migration, both locally and more long distant. Culverting also impacts on fish habitat and spawning habitat by decreasing the quality of substrate. Therefore, we would oppose to the culverting of any watercourse and would prefer the installation of a clear full span crossing that maintains the natural substrate and allows free passage of fish.

Such preparatory works need to be fully assessed within the ES and CEMP which should include the location of any watercourse crossings and how they will be designed to ensure impacts on fish are negligible.

Paragraph 2.5.9.2
The installation of construction drainage with pumping may be required during the construction phase. Over-pumping of any waterbody could have an impact on fish through entrainment and impingement in the pump(s). Furthermore, any over-pumping of waterbodies could cause loss of flow or desiccation of a reach which would lead to loss of fish habitat and mortality.

Any pumps must have screens installed and be compliant with the Eel Regulations (2009). Should any over-pumping occur measures must be in place to ensure that fish are not harmed, or habitat it not lost.

Section 2.8; Table 2-3
The Lostrigg Beck provides spawning grounds for Atlantic salmon, brown/sea trout, brook lamprey and river lamprey. An increase in fine sediment/silt in the Lostrigg Beck would smother important spawning gravels, clog interstitial spaces in gravel, impact on fish egg and larval development and reduce all fish's ability to respire by the clogging of gills. The CEMP, Landscape and Ecological Management Plan (LEMP), and Decommissioning Environmental Management Plan (DEMP) must detail the following mitigation:

- Robust silt control measures such as, but not limited to, buffer strips, barriers, Sustainable Urban Drainage (SuDS) ponds.
- A method of works which make sure construction is stopped if unacceptable silt run off were to occur.

Section 7.2; Table 7-1
The Salmon and Freshwater Fisheries Act 1975 has not been included in the list of legislation that is relevant to biodiversity. The legal responsibility on the applicant pertaining to this fish specific legislation has not been considered. This act should be listed as relevant in the Preliminary Environmental Information Report (PEIR) and ES.

Section 7.5.1
The desktop study does not include EA fish survey data. Therefore, impacts from construction and decommissioning cannot be fully understood.

EA fish survey data should be presented within the PEIR and ES as part of the baseline data.

Section 7.5.4; Table 7-4
The full list of fish species that form part of the River Derwent & Bassenthwaite Lake Special Protection Area (SAC), and Solway Firth SAC have not been included.

Therefore, potential likely significant effects from the development on protected fish species may not be assessed within the EIA or Habitats Regulations Assessment (HRA).

The following fish species should be added to the designated sites table (table 7-4) as follows:

- Sea lamprey (*Petromyzon marinus),* and bullhead (*Cottus gobio); River Derwent & Bassenthwaite Lake SAC*
- Allis Shad *(Alosa alosa)* and twait shad *(Alosa fallax);* Solway Firth SAC
- Brook Lamprey *(Lampetra planeri)*; River Ehen SAC

Section 7.6
Noisy construction activities such as piling and HDD under watercourses may disturb fish during key periods of migration and spawning. In extreme cases, noise may kill fish. Within the Lostrigg Beck and River Marron, those species associated with the River Derwent and Bassenthwaite SAC are particularly sensitive to disturbance. Atlantic salmon, brook lamprey and river lamprey are present in the Lostrigg Beck and River Marron, and so there is functional linkage with the River Derwent and Bassenthwaite SAC. Additionally, the Lostrigg Beck and River Marron has a population of European eel (*Anguilla anguilla*) and brown/sea trout (*Salmo trutta*), both priority species listed on Section 41 of the Natural Environment and Rural Communities Act.

The EIA should include an assessment on the risk of fish populations within the Lostrigg Beck, Cavel Gill and River Marron being impacted by noise and vibration from construction and decommissioning. This assessment should also be included in the Noise and Vibration chapter of the PEIR and ES. Mitigation and management of any impacts should be detailed in the CEMP and DEMP.

Section 7.8.1
Cable routes that cross the Lostrigg Beck could have an impact on sensitive fish species through increase noise from construction activities, magnetic fields from buried cables and an impact from the footprint of the crossing on sensitive spawning grounds.

Cable crossings of any watercourse should be avoided in the first instance. If crossings cannot be avoided then full details which specify how the crossing will not impact fish must be detailed with the CEMP, DEMP and ES.

Geomorphology
Lostrigg Beck is a moderate energy, sinuous to meandering, historically modified and fixed, yet locally active gravel bed stream, which is situated in the River Marron sub-catchment of the River Derwent catchment. Any potential construction, operational, and decommissioning phase impacts that the proposed scheme may have on the river must be subject to a WFD Assessment to the satisfaction of the EA.

The geomorphological condition and functioning of the Lostrigg Beck results in good spawning habitat for migratory Atlantic Salmon. Both geomorphology and Salmon represent key interest features of the functionally linked River Derwent and Bassenthwaite SAC.

The applicant should be aware that the EA and its partners have delivered multiple riparian corridor enhancement projects along Lostrigg Beck in the recent past, and that the beck remains a target for future river restoration projects under the Cumbria River Restoration Strategy. This reflects the importance of the beck within the context of the closely connected SAC/ Site of Special Scientific Interest.

Any infrastructural developments on the river/floodplain environment of the beck should be designed and delivered to have a minimal impact on natural river dynamics (e.g. erosion, deposition, meander migration etc.) and should not place any significant limitations on future river restoration projects.

Geomorphologically dynamic behaviour is deemed likely to intensify in the next decades in line with Flood Estimation Handbook (Flood Estimation Handbook (FEH) | UK Centre for Ecology & Hydrology (ceh.ac.uk) model predictions pointing to very significant increases in storm/flood magnitudes/frequencies in the Derwent catchment area and all Lake District catchments. Therefore, any infrastructure developments should also take some account of the likelihood for increased lateral and vertical river dynamics anticipated to result from continued hydro-climatic intensification (e.g. 'a flood-rich epoch') over the remainder of the 21st century (i.e., future proofed designs that are not just based on present-day baseline geomorphological configuration/behaviour).

The Scoping Report suggests that river crossings (bridges, culverts, and buried cables) may be required as part of this development. Therefore, we would expect to see geomorphologically robust designs that will cause minimal impacts on natural fluvial processes operating in the river/floodplain environment over the course of the 21st century.

Waste

Section 11.2.4

It is essential to ensure that the principles outlined in the Definition of Waste: Code of Practice (DoW CoP) are fully integrated into the oCEMP and oDEMP, particularly concerning waste management. This includes the sustainable reuse of soils, the management of extractive wastes within the Mining Waste Directive and ensuring that materials are not used in a manner that could harm human health or pollute the environment.

A Verification Report must be prepared upon completion of the work as set out in the Remediation Strategy/Design Statement covering the site. This report must be provided to the Environment Agency upon request.

Further information or support regarding the DoW CoP is available on the CL:AIRE website.

Section 11.7.2
We provide the following advice in relation to the Materials Management Plan (MMP) to be undertaken. The MMP should include:

- **Identification of waste types:** Clearly define the types of waste that will be generated during construction and decommissioning.
- **Waste hierarchy implementation:** Outline measures to prevent waste, encourage reuse, recycling, and recovery of waste materials before considering disposal.
- **Waste handling procedures:** Detail the methods for handling, separating, and storing different types of waste on-site to prevent contamination and facilitate recycling or disposal.
- **Waste tracking:** Implement a system to track the amount of waste generated, reused, recycled, and disposed of, ensuring compliance with waste management plans and regulations.
- **Contractor responsibilities:** Specify the responsibilities of contractors and subcontractors in managing waste, including training and compliance within the MMP.
- **Environmental protection measures:** Include measures to protect soil, water, and air quality from potential impacts of waste management activities.
- **Emergency procedures:** Establish procedures for managing accidental releases or spills, including immediate actions and notification processes.
- **Permitting and legal compliance:** Ensure that all necessary waste management permits are obtained and that the MMP complies with relevant legislation and guidance, such as the CL:AIRE Definition of DoW CoP.
- **Monitoring and reporting:** Set up regular monitoring of waste management activities and reporting to relevant authorities to demonstrate compliance with the MMP and environmental regulations.

Yours faithfully

Lewis Pemberton
Planning Specialist

Direct dial [redacted]
Direct e-mail [redacted]

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for people and wildlife

Environment Agency

Appendix 1 – Environmental Permitting – advice to applicant

The guidance below should be followed to inform which permits may be necessary for this project. Due to the lengthy timescales currently involved in the determination process, we would encourage the applicant to engage with our permitting pre-application advice service at the earliest possible opportunity.

Flood Risk Activity Permit (FRAP)

The Environmental Permitting (England and Wales) Regulations 2016 require a permit or exemption to be obtained for any activities which will take place:

- on or within 8 metres of a main river (16 metres if tidal)
- on or within 8 metres of a flood defence structure or culverted main river (16 metres if tidal)
- on or within 16 metres of a sea defence
- involving quarrying or excavation within 16 metres of any main river, flood defence (including a remote defence) or culvert
- on the floodplain of a main river if the activity could affect flood flow or storage and potential impacts are not controlled by a planning permission

For further guidance please visit https://www.gov.uk/guidance/flood-risk-activities-environmental-permits or contact our National Customer Contact Centre on 03708 506 506 (Monday to Friday, 8am to 6pm) or by emailing enquiries@environmentagency.gov.uk

Water Resources - Abstraction and Impoundment

The proposals may require Water Resource Licences in respect of the construction activities required. Advice on regulated activities and licence requirements is given below.

Water Resource (Impoundment and Abstraction) Licences are issued by the Environment Agency under the terms of the Water Resources Act 1991 and the provisions of the Water Resources (Abstraction and Impounding) Regulations 2006. No other Environment Agency administered Regulatory Regime provides consent to create or modify an impoundment and / or abstracted water at volumes greater than 20m3/day. You should seek to fully understand the permissions required for your proposal and not assume consent for abstraction and impoundment activity is provided by other regulatory documents.

Abstraction licence requirement

If you intend to abstract more than 20 cubic metres of water per day from a surface water source e.g. a stream or from underground strata (via borehole or well) for any particular purpose, then you will need an abstraction licence from the Environment

Agency. There is no guarantee that a licence will be granted as this is dependent on available water resources and existing protected rights.

Dewatering is the removal/abstraction of water (predominantly, but not confined to, groundwater) to locally lower water levels near the excavation. This can allow operations to take place, such as mining, quarrying, building, engineering works or other operations, whether underground or on the surface. If dewatering is required it may require an environmental permit if it doesn't meet the exemption in The Water Abstraction and Impounding (Exemptions) Regulations 2017 Section 5: Small scale dewatering in the course of building or engineering works. More information can be found using this link:
https://www.gov.uk/government/publications/temporary-dewatering-from-excavations-to-surface-water

If the exemption can not be met a full abstraction licence will be required. It is important to note that some aquifer units may be closed for new consumptive abstractions in this area. More information can be found via this link:
https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

Impounding licence requirement
If you intend to impound a watercourse then you are likely to need an impounding licence from the Environment Agency. An impoundment is any dam, weir or other structure that can raise the water level of a water body above its natural level. 'On-line' impoundments hold back water in rivers, stream, wetlands and estuaries, and consequently affect downstream flows, sediment transport and migration of fish. Impoundments could be created through works to modify or change existing watercourses. An Impoundment Licence could also be required if you amend, modify or remove existing in channel structures. More information is available on gov.uk:
https://www.gov.uk/guidance/water-management-apply-for-a-water-abstraction-or-impoundment-licence

Discharge of trade effluent
Effluent discharged from any premises carrying on a trade or industry and effluent generated by a commercial enterprise where the effluent is different to that which would arise from domestic activities in a normal home is described as trade effluent. If you are not able to discharge effluent, it will be classed as waste, and you must then comply with your duty of care responsibilities.

If you wish to discharge effluent, after appropriately treating it, to groundwater or surface water a permit under the Environmental Permit Regulations will be required. Full characterisation of the effluent will be required, and modelling may be required at the planning stage to determine the impact of the effluent on the receiving watercourse.

A trade effluent consent or a trade effluent agreement with your water and sewerage company must be obtained before you discharge trade effluent to a public foul sewer or a private sewer that connects to a public foul sewer.
Further guidance is available at: https://www.gov.uk/guidance/pollution-prevention-for-businesses

Discharge of groundwater
You may need to consider discharge of groundwater, following any treatment. More information can be found here:
https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits

It is worth considering the likely infrastructure required to meet any potential discharge permit requirements to ensure that there is sufficient space within the Order Limits. For example, infrastructure required to treat any contaminated groundwater which may need to be discharged to surface waters. Insufficient space is a common constraint which can result in permit non-compliance, non-permitted discharges or expensive/complex treatment methods.

Water Quality Permit requirements
You do not require a permit if you are only discharging uncontaminated surface runoff. If you intend to discharge to surface water for dewatering purposes, this may be covered by a Regulatory Position Statement (RPS) for water discharge activities. If you can comply with all the conditions within the RPS, then a permit is not required for this activity. Please find the RPS conditions here: https://www.gov.uk/government/publications/temporary-dewatering-from-excavations-to-surface-water

If any discharges do not fully comply with the RPS, then a bespoke discharge permit will be required. Please find guidance on applying for a bespoke water discharge permit here: https://www.gov.uk/guidance/discharges-to-surface-water-and-groundwater-environmental-permits

Appendix 2 – Environmental betterment opportunities - advice to applicant

Biodiversity Net Gain (BNG) will become a legal requirement for NSIPs in November 2025. It is positive to read that you intend to submit a Biodiversity Net Gain Report alongside the DCO application and are considering enhancements to the Lostrigg Beck to support BNG and intend to consult Cumberland Council regarding BNG issues.

We are pleased to see that any losses to priority habitats will be accounted for within the BNG metric. You should use the latest statutory (official) version of the biodiversity metric tool to calculate BNG. We also encourage the use of the Watercourse Metric (where appropriate).

Potential BNG opportunities

The EA is working with the Derwent River Corridors Group (a partnership between riparian owners, government agencies and local environmental non-government organisations) to deliver riparian habitat improvement works in the Derwent catchment. The WFD status of Lostrigg Beck is currently classed as 'moderate' (Lostrigg Beck | Catchment Data Explorer | Catchment Data Explorer). The partnership has previously delivered projects in the Lostrigg Beck catchment to install buffer strips to prevent stock poaching and reduce sediment input. This improves water quality and habitat for fish. The partnership has identified opportunities for further work in this catchment to help this waterbody achieve 'good' status.

There are a several weirs on the River Marron, downstream of the confluence with Lostrigg Beck, that could be removed to improve water connectivity.

Westmorland and Furness Council have been appointed as the responsible authority to develop the Local Nature Recovery Strategy (LNRS). The Cumbria Habitat Basemap and Habitat Network Maps have been produced as part of the Cumbria LNRS pilot, therefore we advise that you refer to these maps to help inform decisions on where to site off-site BNG delivery and potential environmental enhancements.

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Date: 19 July 2024

Dear Sir/Madam

Planning Application for **Lostrigg Solar**

Thank you for seeking the Forestry Commission's advice about the impacts that this application may have on Ancient Woodland. As a non-statutory consultee, the Forestry Commission is pleased to provide you with the attached information that may be helpful when you consider the application:

- Details of Government Policy relating to ancient woodland
- Information on the importance and designation of ancient woodland

Ancient woodlands are irreplaceable. They have great value because they have a long history of woodland cover, with many features remaining undisturbed. This applies equally to Ancient Semi Natural Woodland (ASNW) and Plantations on Ancient Woodland Sites (PAWS).

It is Government policy to refuse development that will result in the loss or deterioration of irreplaceable habitats including ancient woodland, unless "*there are wholly exceptional reasons and a suitable compensation strategy exists" (*National Planning Policy Framework paragraph 186).

Forestry Commission England

We also particularly refer you to further technical information set out in Natural England and Forestry Commission's Standing Advice on Ancient Woodland – plus supporting Assessment Guide and Case Decisions.

As a Non Ministerial Government Department, we provide no opinion supporting or objecting to an application. Rather we are including information on the potential impact that the proposed development would have on the ancient woodland.

All woodlands contribute to carbon sequestration and can support biodiversity. Could the developer / proposer provide details of any impacts to woodlands within or adjacent to the proposed solar development and their mitigation proposals.

Subsequent Enforcement Notices, may be materially relevant to planning applications in situations where the site looks to have been cleared prior to a planning application having been submitted or approved.

If the planning authority takes the decision to approve this application, we may be able to give further support in developing appropriate conditions in relation to woodland management mitigation or compensation measures. Please note however that the Standing Advice states that "*Ancient woodland, ancient trees and veteran trees are irreplaceable. Consequently you should not consider proposed compensation measures as part of your assessment of the merits of the development proposal*."

We suggest that you take regard of any points provided by Natural England about the biodiversity of the woodland.

We also assume that as part of the planning process, the local authority has given a screening opinion as to whether or not an Environmental Impact Assessment is needed under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. If not, it is worth advising the applicant to approach the Forestry Commission to provide an opinion as to whether or not an Environmental Impact Assessment is needed under the Environmental Impact Assessment (Forestry) (England and Wales) Regulations 1999, as amended.

We hope these comments are helpful to you. If you have any further queries please do not hesitate to contact me.

Yours sincerely

[redacted]

Graham Simms
Area Admin Officer

Forestry Commission England

A summary of Government policy on ancient woodland

Natural Environment and Rural Communities Act 2006 (published October 2006).
Section 40 – "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity".

National Planning Policy Framework (published February 2019).
Paragraph 186 – "*development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists*".

National Planning Practice Guidance – Natural Environment Guidance. (published March 2014)
This Guidance supports the implementation and interpretation of the National Planning Policy Framework. This section outlines the Forestry Commission's role as a non statutory consultee on *"development proposals that contain or are likely to affect Ancient Semi-Natural woodlands or Plantations on Ancient Woodlands Sites (PAWS) (as defined and recorded in Natural England's Ancient Woodland Inventory), including proposals where any part of the development site is within 500 metres of an ancient semi-natural woodland or ancient replanted woodland, and where the development would involve erecting new buildings, or extending the footprint of existing buildings"*

It also notes that ancient woodland is an irreplaceable habitat, and that, in planning decisions, **Plantations on Ancient Woodland Sites (PAWS) should be treated equally in terms of the protection afforded to ancient woodland in the National Planning Policy Framework**. It highlights the Ancient Woodland Inventory as a way to find out if a woodland is ancient.

The UK Forestry Standard (4th edition published August 2017).
Page 23: "Areas of woodland are material considerations in the planning process and may be protected in local authority Area Plans. These plans pay particular attention to woods listed on the Ancient Woodland Inventory and areas identified as Sites of Local Nature Conservation Importance SLNCIs)".

Keepers of Time – A Statement of Policy for England's Ancient and Native Woodland (published June 2005).
Page 10 "The existing area of ancient woodland should be maintained and there should be a net increase in the area of native woodland".

Natural Environment White Paper "The Natural Choice" (published June 2011)
Paragraph 2.53 - This has a "renewed commitment to conserving and restoring ancient woodlands".
Paragraph 2.56 – "The Government is committed to providing appropriate protection to ancient woodlands and to more restoration of plantations on ancient woodland sites".

Standing Advice for Ancient Woodland and Veteran Trees (first published October 2014, revised 14 July 2022)
This advice, issued jointly by Natural England and the Forestry Commission, is a material consideration for planning decisions across England. It explains the definition of ancient woodland, its importance, ways to identify it and the policies that are relevant to it.

The Standing Advice refers to an Assessment Guide. This guide sets out a series of questions to help planners assess the impact of the proposed development on the ancient woodland.

Biodiversity 2020: a strategy for England's wildlife and ecosystem services (published August 2011).
Paragraph 2.16 - Further commitments to protect ancient woodland and to continue restoration of Plantations on Ancient Woodland Sites (PAWS).

Importance and Designation of Ancient and Native Woodland

Ancient Semi Natural Woodland (ASNW)
Woodland composed of mainly native trees and shrubs derived from natural seedfall or coppice rather than from planting, and known to be continuously present on the site since at least AD 1600. Ancient Woodland sites are shown on Natural England's Inventory of Ancient Woodland.

Plantations on Ancient Woodland Site (PAWS)
Woodlands derived from past planting, but on sites known to be continuously wooded in one form or another since at least AD 1600. They can be replanted with conifer and broadleaved trees and can retain ancient woodland features, such as undisturbed soil, ground flora and fungi. Very old PAWS composed of native species can have characteristics of ASNW. Ancient Woodland sites (including PAWS) are on Natural England's Inventory of Ancient Woodland.

Other Semi-Natural Woodland (OSNW)
Woodland which has arisen since AD 1600, is derived from natural seedfall or planting and consists of at least 80% locally native trees and shrubs (i.e., species historically found in England that would arise naturally on the site). Sometimes known as 'recent semi-natural woodland'.

Other woodlands may have developed considerable ecological value, especially if they have been established on cultivated land or been present for many decades.

Information Tools – The Ancient Woodland Inventory

This is described as provisional because new information may become available that shows that woods not on the inventory are likely to be ancient or, occasionally, vice versa. In addition ancient woods less than two hectares or open woodland such as ancient wood-pasture sites were generally not included on the inventories. For more technical detail see *Natural England's Ancient Woodland Inventory*. Inspection may determine that other areas qualify.

As an example of further information becoming available, Wealden District Council, in partnership with the Forestry Commission, Countryside Agency, the Woodland Trust and the High Weald AONB revised the inventory in their district, including areas under 2ha. Some other local authorities have taken this approach.

Forestry Commission England

Further Guidance

Felling Licences - Under the Forestry Act (1967) a Felling Licence is required for felling more than 5 cubic metres per calendar quarter. Failure to obtain a licence may lead to prosecution and the issue of a restocking notice.

Environmental Impact Assessment - Under the Environmental Impact Assessment (Forestry) (England and Wales) Regulations 1999, as amended, deforestation which is likely to have a significant impact on the environment may also require formal consent from the Forestry Commission.

Historic England

The Planning Inspectorate
Environmental Services
Operations Group 3
Temple Quay House
2 The Square
Bristol
BS1 6PN

Our ref:
PL00796238
Your ref:
EN0110004

Telephone
[redacted]

19 July 2024

Dear Sir / Madam

Re: LOSTRIGG SOLAR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) SCOPING REPORT

Thank you for your letter of 21 June consulting us about the above EIA Scoping Report.

The methodology for the assessment of the cultural heritage topic as detailed in the scoping report is generally appropriate, although we have the following comments to make:

- Local planning authorities hold the most up to date information on conservation areas, so this data should be obtained from Cumberland Council.
- Any assessment of impacts to the setting of the English World Heritage Site should be expressed in terms of impacts to its Outstanding Universal Value and undertaken using UNESCO's own current guidance on impact assessment.
- The Archaeological Desk-Based Assessment that is to be produced should include an assessment of aerial photographic and LiDAR data.
- Archaeological trial trenching may need to be undertaken to inform the assessment. The need for this can be determined following the production of the Archaeological Desk-Based Assessment.

.

If you have any queries about any of the above, or would like to discuss anything further, please contact me.

Historic England

Yours sincerely

Pete Owen
Development Advice Team Leader

Historic England, Suite 3.3, Canada House, 3 Chepstow Street, Manchester M1 5FW
Telephone 0161 242 1416 HistoricEngland.org.uk

Health and Safety Executive

CEMHD Policy - Land Use Planning,
NSIP Consultations,
Building 1.2,
Redgrave Court,
Merton Road,
Bootle, Merseyside
L20 7HS.

HSE email: NSIP.applications@hse.gov.uk

Planning Inspectorate

Email only: lostriggsolar@planninginspectorate.gov.uk

Dear Mr Todd Brumwell

Date: 18 July 2024

PROPOSED LOSTRIGG SOLAR (the project)
PROPOSAL BY RWE RENEWABLES UK SOLAR AND STORAGE LTD (the applicant)
INFRASTRUCTURE PLANNING (ENVIROMENTAL IMPACT ASSESSMENT) REGULATIONS 2017 (as amended) REGULATIONS 10 and 11

Thank you for your letter of 21 June 2024 regarding the information to be provided in an environmental statement relating to the above project. HSE does not comment on EIA Scoping Reports but the following information is likely to be useful to the applicant.

HSE's land use planning advice

Will the proposed development fall within any of HSE's consultation distances?

The planning redline indicated by the attached documents indicates that no part of the proposed installation is located within the consultation zones of any Major Accident Hazard 'installation or pipeline'; CEMHD5 have therefore no comments to add. However as there is little detail on the nature of the associated Battery Energy Storage Systems; the Applicant should be reminded that if the threshold of any hazardous substance given in the Planning (Hazardous Substances) Regulations 2015 is exceeded, then Hazardous Substance Consent will be required before operation begins.

Explosives sites

HSE has no comment to make as there are no licensed explosives sites in the vicinity.

Electrical Safety

No comment from a planning perspective.

At this time, please send any further communication on this project directly to the HSE's designated e-mail account for NSIP applications at nsip.applications@hse.gov.uk . We are currently unable to accept hard copies, as our offices have limited access.

Yours sincerely

[redacted]

Cathy Williams
CEMHD4 NSIP Consultation Team

National Grid House
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

Tiffany Bate
Development Liaison Officer
UK Land and Property
[redacted]
+44 (0)[redacted]

www.nationalgrid.com

SUBMITTED ELECTRONICALLY:
lostriggsolar@planninginspectorate.gov.uk

17 July 2024

Dear Sir/Madam

APPLICATION BY RWE RENEWABLES UK SOLAR AND STORAGE LTD (THE APPLICANT) FOR AN ORDER GRANTING DEVELOPMENT CONSENT FOR THE LOSTRIGG SOLAR (THE PROPOSED DEVELOPMENT)

SCOPING CONSULTATION RESPONSE

I refer to your letter dated 21st June 2024 in relation to the above proposed application. This is a response on behalf of National Grid Electricity Transmission PLC (NGET).

Existing Assets

Having reviewed the scoping report, NGET has no existing apparatus within or in close proximity to the proposed site boundary but would like to be kept informed as the proposal progresses.

New infrastructure

Please refer to the Holistic Network Design (HND) and the National Grid ESO website to view the strategic vision for the UK's ever growing electricity transmission network. https://www.nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design/hnd'

There are currently no plans for any new infrastructure within or in close proximity to the proposed red line boundary, however if this changes NGET requests that all future assets are given due consideration given their criticality to distribution of energy across the UK.

The Great Grid Upgrade is the largest overhaul of the electricity grid in generations, we are in the middle of a transformation, with the energy we use increasingly coming from cleaner greener sources. Our infrastructure projects across England and Wales are helping to connect more renewable energy to homes and businesses. To find out more about our current projects please refer to our network and infrastructure webpage. https://www.nationalgrid.com/electricity-transmission/network-and-infrastructure/infrastructure-projects.

National Grid House
Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

I enclose a plan showing the location of NGET's existing apparatus in relation to the scoping area.

If you require any further information, please do not hesitate to contact me.

Yours faithfully

Tiffany Bate
Development Liaison Officer
Commercial and Customer Connections
Electricity Transmission Property Land and Property

nationalgrid | National Grid Web Map

Legend

Buried Cable

Buried Cable Commissioned

OHL 400Kv

OHL 400Kv Commissioned

Notes

0 3.25 6.5 13 19.5 26 km

Date: 7/16/2024
Time: 10:20 AM

Page size: A3 Landscape
Printed By: Tiffany.Bate
Scale: 1:250,000

N

Note: Any sketches on the map are approximate and not captured to any particular level of precision.

Date: 16 July 2024
Our ref: 480266
Your ref: EN0110004

Katherine King
Senior EIA Advisor
on behalf of the Secretary of State

BY EMAIL ONLY

Consultations
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 900

Dear Ms King

Environmental Impact Assessment Scoping consultation under Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulation 11

Proposal: Lostrigg Solar
Location: Land north-east of Lillyhall industrial estate, Cumbria

Thank you for seeking our advice on the scope of the Environmental Statement (ES) in the consultation dated 21 June 2023, received on 21 June 2023.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

A robust assessment of environmental impacts and opportunities, based on relevant and up to date environmental information, should be undertaken prior to an application for a Development Consent Order. Annex A to this letter provides Natural England's advice on the scope of the Environmental Impact Assessment (EIA) for the proposed development.

SUMMARY OF NATURAL ENGLAND ADVICE

Natural England advise that impacts on the River Derwent & Bassenthwaite Lake Special Area of Conservation (SAC) will need to be fully assessed through a Habitats Regulations Assessment due to the hydrological connection from the site to the River Marron.

An in-combination assessment of the impacts on designated sites will be required with the adjacent Dean Moor Solar Nationally Significant Infrastructure Project (NSIP).

Natural England advise that hen harrier should be scoped in for further assessment.

The Environmental Statement should include a Soil Management Plan (SMP).

Further advice on the scope of the Environmental Statement is available in the attached Annex.

For any further advice on this consultation please contact the case officer Kate Berry and copy to consultations@naturalengland.org.uk.

Yours sincerely

Kate Berry
Sustainable Development Lead Adviser

Annex A – Natural England Advice on the Environmental Scoping Report

Topic, Section (Paragraph/page)	Comment
Biodiversity Designated Sites River Derwent and Bassenthwaite Lake SAC River Derwent & Tributaries Site of Special Scientific Interest (SSSI) 7.8.1.1, p108	The eastern edge of the red-line boundary is within 200m of the River Marron (part of the River Derwent and Bassenthwaite Lake SAC). The potential for polluted run-off entering the SAC at both the construction and operational phases of the development needs to be fully assessed within a Habitats Regulations Assessment and appropriate mitigation implemented. Potential disturbance impacts on Otters should also be assessed in the HRA based on further survey work. Impacts on the SAC should be assessed against the European Site Conservation Objectives. The HRA will need to consider the in-combination effects with Dean Moor Solar NSIP which is adjacent to the southern red line boundary of this project. The Environmental Statement should include a full assessment of the direct and indirect effects of the development on any additional features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects. More information about this SSSI is available here.
Biodiversity Hen Harrier Preliminary Environmental Assessment - 4.5.21, p36 (Appendix 7.1 of Scoping Report)	As stated in the Preliminary Environmental Assessment there are desk study records for hen harrier within 2km of the site and suitable habitat is present on site which is capable of supporting this species Natural England previously published a guidance note in 2009 indicating this area of Cumbria has records of breeding hen harrier. The RSPB also published guidance for wind-farm developers in 2007 which highlighted the area for the Lostrigg Solar land as a hen harrier over-wintering area. Natural England therefore advise that hen harrier are scoped in for further assessment. Natural England also recommend contacting Cumbria bird club and Cumbria Wildlife Trust to see if they have up to date information on hen harrier records in this area. The Local Planning Authority should also be contacted for records of any hen harrier mitigation land they may have secured for previous wind farm planning consents in this area.
Biodiversity Biodiversity Net Gain	Although Biodiversity Net Gain (BNG) is not yet a mandatory requirement for NSIPs, we strongly recommend that BNG provision is secured through this development. This will reflect the important role NSIPs must play in delivering the government's environmental targets. Natural England recommend that the Environmental Statement include a

Preliminary Environmental Appraisal 1.2.4 p2	Biodiversity Net Gain Assessment and Habitat Management Plan (HMP). The HMP should explain how any proposed new habitat on site will continue to be managed and secured for the lifetime of the development. The Habitat Management Plan should also provide details on retention and enhancement of existing habitat features such as hedgerows, woodland and ponds. The HMP should ensure habitat connectivity to surrounding habitats, which would contribute to the wider Nature Recovery Network. Biodiversity Metric 4.0 provides a way of measuring and accounting for biodiversity losses and gains resulting from development or land management change.
Agricultural Land and Soils. 5.6 p. 62	Soils are a valuable, finite natural resource and should also be considered for the ecosystem services they provide, including for food production, water storage and flood mitigation, as a carbon store, reservoir of biodiversity and buffer against pollution. It is therefore important that the soil resources are protected and sustainably managed. The potential disturbance of soil as a result of the temporary and permanent infrastructure, and the underground cable installation can result in soil damage if undertaken inappropriately. In order to safeguard all soil resources as part of the overall sustainability of the whole development, it is important that the soil is able to retain as many of its many important functions and services (ecosystem services) as possible through careful soil management and appropriate soil use. A detailed ALC survey is normally required to assess the land use implications of the development in line with National Policy Statements where a significant amount of agricultural land is likely to be affected. As no detailed post-1988 ALC survey data is available for the site a soil survey should be undertaken across the site. This should inform site layout and master-planning, including restoration or reinstatement criteria, demonstrating the sustainable re-use of the soil resource (e.g., agricultural reinstatement, habitat creation, landscaping, and public open space), in accordance with best practice guidance, as informed from the soil resource survey. The following issues should be considered and, where appropriate, included as part of the Environmental Statement: • The degree to which soils could be disturbed or damaged as part of the development due to construction and decommissioning, for example extent of any construction compounds, topsoil and subsoil removal, trenches, concrete pads, concrete footings or other hardstandings, access tracks etc. • The ES should set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning, and areas for green infrastructure or biodiversity net gain. The aim will be to minimise soil handling

	and maximise the sustainable use and management of the available soil to achieve successful after-uses and minimise off-site impacts. • The Environmental Statement should include a Soil Management Plan (SMP). The SMP needs to clearly demonstrate how the soil types will inform soil handling and restoration based on site specific soil information, setting out the site specific mitigation measures with reference to the best practice guidance (Defra Construction Code of Practice), i.e. secondary mitigation measures. This information is required for consultees and decision makers to understand the extent (ha) and likely long-term impacts on the soil resource.

From: Diane Clarke on behalf of Town Planning NWC
To: Lostrigg Solar
Subject: planning inspectorate EN0110004 - Lostrigg Solar winscales rd - EIA Scoping Network Rail comments
Date: 21 June 2024 11:48:17
Attachments: image001.png
image002.png
image004.png
image003.png
image006.png
image007.png
image008.png
Lostrigg Letter to stat cons_Scoping & Reg 11 Notification.pdf

OFFICIAL

FAO Planning Inspectorate

Network Rail notes the proposal below & given the red line boundary is some distance from the railway there are no comments or objections at this stage. However, we will be undertaking internal consultation & if there are further comments/updates/amended comments we will submit the comments prior to the 19th July.

Land bound by the A595 and Winscales Road to the west, and Clifton Green and Oldfield Road to the east. 450m south of Little Clifton, 800m north west of Brainthwaite and 220m north-east of Lillyhall Industrial Estate at its nearest point.

The Proposed Development consists of a proposed solar farm with an electrical generating capacity over 50MW, Solar photovoltaic (PV) modules and associated mounting structures, inverters, transformers, switch gear and control equipment, a substation, point of connection, energy storage equipment and underground on and off-site cabling. The Proposed Development's planning boundary (draft Order Limits), covering an area of approximately 480ha, is located in the north-west of England within the administrative boundary of Cumberland Council. The total area covered by solar panels is 228ha

Rail 17.5.3.9 Workington railway station is located approximately 5km from the draft Order Limits. Northern services from Workington provide links to Carlisle, Whitehaven, Barrow-in-Furness and Lancaster. 17.5.3.10 Harrington Railway station is also located approximately 5km from the draft Order Limits. Northern services from Harrington provide links to Carlisle, Whitehaven, Barrow-in-Furness and Lancaster.

From

Diane Clarke
Town Planning Technician NW&C
AssocRTPI
Network Rail
Email: TownPlanningNWC@networkrail.co.uk

From: Lostrigg Solar <lostriggsolar@planninginspectorate.gov.uk>
Sent: Friday, June 21, 2024 10:49 AM
To: TownPlanning [redacted]
Subject: EN0110004 - Lostrigg Solar - EIA Scoping Notification and Consultation

Dear Sir/Madam

Please see attached correspondence on the proposed Lostrigg Solar.

Please note the deadline for consultation responses is **19 July 2024** and is a statutory requirement that cannot be extended.

Kind regards

Todd Brumwell

Todd Brumwell | EIA Advisor
The Planning Inspectorate

[redacted]
@PINSgov The Planning Inspectorate planninginspectorate.gov.uk

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DPC:76616c646f72

From:	Before You Dig
To:	Lostrigg Solar
Subject:	RE: EXT:EN0110004 - Lostrigg Solar - EIA Scoping Notification and Consultation
Date:	24 June 2024 13:23:51
Attachments:	~WRD3979.jpg image007.png image008.png image009.png image011.png image012.png image013.png image001.png

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Good afternoon,

NGN has a number of gas assets in the vicinity of some of the identified “site development” locations. It is a possibility that some of these sites could be recorded as Major Accident Hazard Pipelines(MAHP), whilst other sites could contain High Pressure gas and as such there are Industry recognised restrictions associated to these installations which would effectively preclude close and certain types of development. The regulations now include “Population Density Restrictions” or limits within certain distances of some of our “HP” assets.

The gas assets mentioned above form part of the Northern Gas Networks “bulk supply” High Pressure Gas Transmission” system and are registered with the HSE as Major Accident Hazard Pipelines.
Any damage or disruption to these assets is likely to give rise to grave safety, environmental and security of supply issues.

NGN would expect you or anyone involved with the site (or any future developer) to take these restrictions into account and apply them as necessary in consultation with ourselves. We would be happy to discuss specific sites further or provide more details at your locations as necessary.

If you give specific site locations, we would be happy to provide gas maps of the area which include the locations of our assets.
(In terms of High Pressure gas pipelines, the routes of our MAHP’s have already been lodged with members of the local Council’s Planning Department)

Kind regards,

Lucy McMahon

Administration Assistant
Before You Dig
Northern Gas Networks
1st Floor, 1 Emperor Way
Doxford Park
Sunderland
SR3 3XR

My working days are Monday, Tuesday & Wednesday 08:00am – 16:30pm

Direct line: +44 (0) [redacted]
Before You Dig: 0800 040 7766 (option 5)
www.northerngasnetworks.co.uk
facebook.com/northerngasnetworks
twitter.com/ngngas
Alternative contact:
beforeyoudig@northerngas.co.uk

From: Lostrigg Solar <lostriggsolar@planninginspectorate.gov.uk>
Sent: Friday, June 21, 2024 10:26 AM
Subject: EXT:EN0110004 - Lostrigg Solar - EIA Scoping Notification and Consultation

Dear Sir/Madam

Please see attached correspondence on the proposed Lostrigg Solar.

Please note the deadline for consultation responses is **19 July 2024** and is a statutory requirement that cannot be extended.

Kind regards

Todd Brumwell

[redacted]

Todd Brumwell | EIA Advisor
The Planning Inspectorate
T [redacted]

@PINSgov The Planning Inspectorate planninginspectorate.gov.uk

Ensuring fairness, openness and impartiality across all our services

Northumberland
County Council

The Planning Inspectorate
Temple Quay House
2 The Square
Bristol
BS1 6PN

Your Ref: EN0110004
Our Ref: 24/02151/CNA
Enquiries to: Kevin Tipple
Direct Line: [redacted]
Email: [redacted]
Date: 18 July 2024

FAO: Katherine King - Senior Environmental Impact Assessment Advisor

Dear Katherine King

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 – Regulations 10 and 11

Application by RWE Renewables UK Solar and Storage Ltd for an Order granting Development Consent for Lostrigg Solar

Scoping consultation

I write in response to your letter (dated 21 June 2024) regarding the Scoping Report for the proposed development above.

I confirm that Northumberland County Council does not have any comments.

Yours sincerely

[redacted]

Kevin Tipple
Senior Planning Officer
Northumberland County Council

UK Health Security Agency

Environmental Hazards and Emergencies Department
Seaton House, City Link
London Road
Nottingham, NG2 4LA

nsipconsultations@ukhsa.gov.uk
www.gov.uk/ukhsa

Your Ref: EN0110004
Our Ref: 66221CIRIS

Ms Kathrine King
Senior Environmental Impact Assessment Advisor
The Planning Inspectorate
Temple Quay House
2 The Square
Bristol BS1 6PN

12th July 2024

Dear Ms King

Nationally Significant Infrastructure Project
Lostrigg Solar - EIA Scoping Notification and Consultation EN0110004
Scoping Consultation Stage

Thank you for including the UK Health Security Agency (UKHSA) in the scoping consultation phase of the above application. ***Please note that we request views from the Office for Health Improvement and Disparities (OHID) and the response provided below is sent on behalf of both UKHSA and OHID.*** The response is impartial and independent.

The health of an individual or a population is the result of a complex interaction of a wide range of different determinants of health, from an individual's genetic make-up, to lifestyles and behaviours, and the communities, local economy, built and natural environments to global ecosystem trends. All developments will have some effect on the determinants of health, which in turn will influence the health and wellbeing of the general population, vulnerable groups and individual people. Although assessing impacts on health beyond direct effects from for example emissions to air or road traffic incidents is complex, there is a need to ensure a proportionate assessment focused on an application's significant effects.

Having considered the submitted scoping report we wish to make the following specific comments and recommendations:

Environmental Public Health
We believe the summation of relevant issues into a specific section of the report provides a focus which ensures that public health is given adequate consideration. The section should

summarise key information, risk assessments, proposed mitigation measures, conclusions and residual impacts, relating to human health. Compliance with the requirements of National Policy Statements and relevant guidance and standards should also be highlighted.

In terms of the level of detail to be included in an Environmental Statement (ES), we recognise that the differing nature of projects is such that their impacts will vary. UKHSA and OHID's predecessor organisation Public Health England produced an advice document *Advice on the content of Environmental Statements accompanying an application under the NSIP Regime*', setting out aspects to be addressed within the Environmental Statement[1]. This advice document and its recommendations are still valid and should be considered when preparing an ES. Please note that where impacts relating to health and/or further assessments are scoped out, promoters should fully explain and justify this within the submitted documentation.

Recommendation

Our position is that pollutants associated with road traffic or combustion, particularly particulate matter and oxides of nitrogen are non-threshold; i.e., an exposed population is likely to be subject to potential harm at any level and that reducing public exposure to non-threshold pollutants (such as particulate matter and nitrogen dioxide) below air quality standards will have potential public health benefits. We support approaches which minimise or mitigate public exposure to non-threshold air pollutants, address inequalities (in exposure) and maximise co-benefits (such as physical exercise). We encourage their consideration during development design, environmental and health impact assessment, and development consent.

Yours sincerely

On behalf of UK Health Security Agency
nsipconsultations@ukhsa.gov.uk

Please mark any correspondence for the attention of National Infrastructure Planning Administration.

[1] https://khub.net/documents/135939561/390856715/Advice+on+the+content+of+environmental+statements+accompanying+an+application+under+the+Nationally+Significant+Infrastructure+Planning+Regime.pdf/a86b5521-46cc-98e4-4cad-f81a6c58f2e2?t=1615998516658

United Utilities Water Limited
Grasmere House
Lingley Mere Business Park
Lingley Green Avenue
Great Sankey
Warrington WA5 3LP

unitedutilities.com

Planning.Liaison@uuplc.co.uk

By email only: lostriggsolar@planninginspectorate.gov.uk

Your ref:	EN0110004
Our ref:	DC/24/1563
Date:	19-JUL-24

Dear Sir / Madam

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11
Application by RWE Renewables UK Solar and Storage Ltd (the Applicant) for an Order granting Development Consent for Lostrigg Solar (the Proposed Development)

Scoping consultation and notification of the Applicant's contact details and duty to make available information to the Applicant if requested

Thank you for allowing United Utilities Water Limited (UU) the opportunity to comment on the EIA Scoping consultation for the proposal to build Lostrigg Solar Farm as part of an application for a Development Consent Order (DCO).

UU wishes to make the following comments at this early stage regarding the scope of any EIA. We request continued engagement to ensure our concerns are adequately addressed and to ensure appropriate protective provisions are agreed. In the interim, we wish to provide the following initial comments for your consideration.

UUW has sought to provide our initial thoughts on the proposal. We request that the applicant takes account of the issues we have raised in the Environmental Statement (ES) so that they are appropriately assessed and mitigated. As such, we request that the applicant engages with UU to further discuss the proposal and the potential impact on our assets and operations.

1. Our Assets and Property

UU will not allow building over or in close proximity to a water main.

UU will not allow a new building to be erected over or in close proximity to a public sewer or any other wastewater pipeline. This will only be reviewed in exceptional circumstances.

We would expect to see plans showing the proposals in relation to any existing UU assets and infrastructure as part of the application for a DCO. We would be grateful if the applicant can provide the latest information for Lostrigg Solar Farm in a shp file format.

Water and Wastewater Assets

We would like to draw the applicant's attention to the various water assets that lie within and near to the proposed scoping boundary. For any proposals these would need to be given careful consideration, including during the construction process. The applicant should also be aware of various private water supply pipes within the identified scoping boundary.

We require access as detailed in our '*Standard Conditions for Works Adjacent to Pipelines*' Document Ref. 90048 (a copy of this document can be found on our website). The applicant must comply with this document and it should be taken into account in the final proposals, or a diversion may be necessary.

When working in the vicinity of our assets, developers must contact our Developer Services team prior to commencing any works on site, including (inter alia) site investigations, trial holes, site preparatory works, groundworks, remediation or demolition. Please see '*Contacts*' section below.

It is the applicant's responsibility to investigate and demonstrate the exact relationship between UU's assets and the proposed development.

A number of providers offer a paid for mapping service, including UU (see '*Contacts*' section below). The position of the underground apparatus shown on water and wastewater asset maps is approximate only and is given in accordance with the best information currently available. Therefore, we strongly recommend the applicant, or any future developer, does not rely solely on the asset maps to inform decisions relating to the detail of their site and instead investigates the precise location of any underground pipelines and apparatus. Where additional information is requested to enable an assessment of the proximity of proposed development features to UU's assets, the proven location of pipelines should be confirmed by site survey; an extract of asset maps will not suffice. The applicant should seek advice from our Developer Services team on this matter. See '*Contacts*' Section below. UU will not accept liability for any loss or damage caused by the actual position of our assets and infrastructure being different from those shown on asset maps.

Developer's should investigate the existence and the precise location of water and wastewater pipelines as soon as possible as this could significantly impact the preferred site layout and/or diversion of the asset(s) may be required. Unless there is specific provision within the title of the property or an associated easement, any necessary disconnection or diversion of assets to accommodate development, will be at the applicant/developer's expense. In some circumstances, usually related to the size and nature of the assets impacted by proposals, developers may discover the cost of diversion is prohibitive in the context of their development scheme.

Any agreement to divert our underground assets will be subject to a diversion application, made directly to UU. This is a separate matter to the determination of a DCO. We will not guarantee, or infer acceptance of, a proposed diversion through the planning process (where diversion is indicated on submitted plans). If an application to divert or abandon underground assets is submitted to UU and subsequently rejected (either before or after the determination of a DCO), applicants should be aware that they may need to amend their proposed layout to accommodate UU's assets.

Where UU's assets exist, the level of cover to UU's pipelines and apparatus must not be compromised either during or after construction and there should be no additional load bearing capacity on pipelines

without prior agreement from UU. This would include sustainable drainage features, ecological proposals, earth movement and the transport and position of construction equipment and vehicles.

Any construction activities in the vicinity of UU's assets, including any assets or infrastructure that may be located outside the applicant's Order Limits, must comply with national building and construction standards and where applicable, our '*Standard Conditions for Works Adjacent to Pipelines*'. The applicant, and/or any subsequent developer should note that our '*Standard Conditions*' document applies to any design and construction activities in close proximity to pipelines and apparatus that are no longer in service, as well as pipelines and apparatus that are currently operational.

It is the applicant's responsibility to ensure that UU's required access is provided within any proposed layout and that our infrastructure is appropriately protected. The developer would be liable for the cost of any damage to UU's assets resulting from their activity.

Vibration, Loading and Settlement

UU requests that the impact of the proposed development includes an assessment of any potential settlement and vibration on UU's assets. Similarly, any loading on UU's assets during operation or during construction requires further consideration with UU.

Storage of Equipment and Materials within Easements / Offset Areas for Access and Maintenance

UU has not undertaken a detailed assessment of where equipment and/or materials are proposed to be stored within a UU easement / area required for access and maintenance. As a general requirement, UU does not usually allow the easement area, easement width or the necessary offset distance from our assets to be obstructed or impeded in any way. This is due to, but not limited to:

- loading implications of the asset and probability of asset failure;
- implications on access and maintenance of the asset, especially for critical assets;
- security of supply; and
- health and safety implications.

UU reserves the right to instruct the removal of equipment and materials located within any easement / access and maintenance offset area. UU requires further consultation and supplementary information to discuss any affected assets.

Construction Compounds / Construction Traffic

We wish to emphasise that construction compounds should not be located on top of our apparatus. This is because we require unrestricted access for maintenance, repair and replacement to discharge our statutory duties. Similarly, detailed consideration will need to be given to any proposed construction traffic routes to assess the impact on our assets. It will be necessary to ensure that any approach to construction is the subject of a construction management plan to address a range of issues including the protection of our assets as well as any wider impact on our operations.

Ecological Mitigation and Biodiversity Net Gain

UU wishes to emphasise that ecological mitigation and the delivery of areas for biodiversity net gain should not be located on top of our apparatus. This is because we require unrestricted access for maintenance, repair and replacement to discharge our statutory duties.

Property Interests

According to our records there is an easement within the proposed development site which is in addition to our statutory rights for inspection, maintenance and repair. The easement dated 16/10/1936 UU Ref: N1302 has restrictive covenants that must be adhered to. It is the applicant's responsibility to obtain a copy of the easement document, available from United Utilities Legal Services or Land Registry. The applicant must comply with the provisions stated within the document.

Under no circumstances should anything be stored, planted or erected on the easement width. Nor should anything occur that may affect the integrity of the pipes or the legal right of UU to 24 hour access. The applicant should contact our Property team to discuss how the proposals affect our land interests and to ensure no detrimental impact. UU Property Services can be contacted at PropertyGeneralEnquiries@uuplc.co.uk.

Please note that within our wider asset base there are a number of assets, which although owned and operated by UU, are not always in our land ownership. For example, assets transferred under private sewers legislation.

2. Water Quality – Public Water Supply Catchment Land

UU wishes to highlight that the proposal falls on public water supply catchment land. Development proposals on water catchment land can have an impact on water supply resources and therefore we request that the applicant's ES appropriately considers the impact of the proposals on water supply catchment land.

3. Flood Risk

Existing drainage systems are often dominated by combined sewers. This method of sewer infrastructure is a result of the time it was constructed, with combined sewers taking both foul and surface water. If there is a consistent approach to surface water management, it will help to manage and reduce surface water entering the sewer network, decreasing the likelihood of flooding from sewers, the impact on residents and businesses, and the impact on the environment.

Whilst UU does all that it can to reduce the risk of flooding, there remains a residual risk, which is a source of flooding that should be considered in the ES. National policy is clear that flood risk from all sources, including sewers and reservoirs, must be considered in the delivery of new development. As such, it is important to ensure that the assessment of flood risk includes sewer and reservoir flood risk. It should be ensured that the proposed development does not result in an increase in flood risk from the public sewer or from reservoirs as a result of:

i) any proposed new drainage connections to the public sewer. This is considered in further detail below;

ii) as a result of any changes in land or property which could materially change existing flood risk, for example, by altering any existing exceedance flood paths of losses from the public sewer, surface water flows, or a reservoir exceedance path;

iii) by locating any above ground elements of the proposal in areas where there is an existing risk of sewer or reservoir flooding; or

iv) as a result of any diversions / works to watercourses or existing sewers which could materially affect hydraulic performance and therefore change / increase any risk of flooding,

Impact on Watercourses

UU wishes to liaise with you to confirm the impact on any watercourses that interact with our assets to ensure that there are no detrimental consequences of these works in terms of asset operation, flood risk and changes to fluvial geomorphological processes.

4. Drainage - Foul and Surface Water

We would be grateful if the applicant can provide details of any drainage proposals in respect of both foul and surface water. This should include rates of discharge, volumes of discharge, points of connection, the nature and extent of any contaminants, and details of any necessary pre-treatment prior to connection to the public sewer. We request that the applicant provides details of drainage during operation of the solar farm and during the construction period. We request further details of any approach for the storage and disposal of any hazardous fluids. We wish to understand whether there is any intention to connect such flows to our public sewerage network and to ensure any potential impact on water supply assets, including the groundwater environment, is fully considered and mitigated.

Surface Water Management Hierarchy

We wish to emphasise that consistent with the principles of the hierarchy for the management of surface water in national planning policy and the obligations of the Environment Act 2021, no surface water will be allowed to discharge to the existing public sewerage system. Surface water should instead discharge to more sustainable alternatives as outlined in the surface water management hierarchy. This will ensure the impact of development on public wastewater infrastructure, both in terms of the wastewater network and wastewater treatment works, is minimised. We adopt this position as surface water flows are very large when compared with foul flows. By ensuring that no surface water enters the public sewerage system, the impact on customers, watercourses and the environment will be minimised.

Please note, UU is not responsible for advising on rates of discharge to the local watercourse system. This is a matter for discussion with the Lead Local Flood Authority and / or the Environment Agency (if the watercourse is classified as main river).

There should be no land drainage, including dewatering proposals, discharged to the public sewer.

Rights to Discharge to Watercourse or Other Receiving Water Body

Given the importance of surface water discharging to an alternative to the public sewer, we request that all land that is necessary to facilitate a discharge to a watercourse is fully identified within the limits of the DCO. This will ensure the site benefits from the requisite rights to discharge to more sustainable alternatives than the public sewer for the management of clean surface water, e.g., a right to discharge to a watercourse or other water body. For clarity, the extent of land should be sufficient to facilitate a surface water discharge to a watercourse / water body for all elements of your proposal. Ensuring that the extent of land within the Order Limits is sufficient for the purposes of the discharge of surface water is important as a sewerage company has limited powers to acquire the right to discharge surface water to a water body under the Water Industry Act. Therefore you will need to ensure that this right is acquired via your proposed DCO.

Multi-functional Sustainable Drainage Systems (SuDS)

We request that surface water is managed via SuDS which are multi-functional and at the surface level in preference to conventional underground piped and tanked storage systems.

Wherever practicable, SuDS should be implemented in accordance with the CIRIA SuDS manual. Managing surface water through the use of SuDS can provide benefits in water quantity, water quality, amenity and biodiversity.

If the applicant intends to offer wastewater assets forward for adoption by UU, their proposed detailed design will be subject to a technical appraisal by our Developer Services team and must meet the requirements outlined in '*Sewerage Sector Guidance Appendix C – Design and Construction Guidance v2-2*' dated 29 June 2022 or any subsequent iteration. This is important as drainage design can be a key determining factor of site levels and layout.

Acceptance of a drainage strategy does not infer that a detailed drainage design will meet the requirements for a successful adoption application. We strongly recommend that no construction commences until the detailed drainage design, has been assessed and accepted in writing by UU. Any work carried out prior to the technical assessment being approved is done entirely at the developer's own risk and could be subject to change.

Management and Maintenance of SuDS

Without effective management and maintenance, SuDS can fail or become ineffective. As a provider of wastewater services, we believe we have a duty to advise the determining authority of this potential risk to ensure the longevity of the surface water drainage system and the service it provides to people. We also wish to minimise the risk of a sustainable drainage system having a detrimental impact on the public sewer network should the two systems interact. We therefore recommend that you include details of a management and maintenance regime for any sustainable drainage system that is included as part of the proposed development.

Please note that UU cannot provide comment on the management and maintenance of an asset that is owned by a third party management and maintenance company. We would not be involved in the approval of the management and maintenance arrangements in these circumstances.

5. Water Supply Requirements

We request that you provide details of any water supply requirements for both construction and during operation as soon as possible. If you require a water supply, the information should include details on rates of water supply required in litres per second and anticipated points of connection to the public water supply network. The details of water supply required should include details for any fire response purposes that may be necessary. For temporary related activities, such as construction compounds and workers accommodation, early consideration of any water supply requirements will also be required. If reinforcement of the water network is required to meet potential demand, this could be a significant project and the design and construction period should be accounted for. The applicant will need to ensure that the ES considers any environmental impact of any water supply requirements.

6. Ground conditions

UU requests that the assessment of potential environmental impact from ground conditions including any contamination, hazardous materials or dewatering fully considers the impact on our assets, water

resources, water catchment land and water quality as a result of construction of the proposed development.

7. General Advice

If the applicant intends to receive water and/or wastewater services from UU they should visit our website or contact the Developer Services team for advice at the earliest opportunity. This includes seeking confirmation of the required metering arrangements for the proposed development. See 'Contacts' Section below.

If the proposed development site benefits from existing water and wastewater connections, the applicant should not assume that the connection(s) will be suitable for the new proposal or that any existing metering arrangements will suffice. In addition, if reinforcement of the water network is required to meet potential demand, this could be a significant project and the design and construction period should be accounted for.

In some circumstances we may require a compulsory meter is fitted. For detailed guidance on whether the development will require a compulsory meter please visit https://www.unitedutilities.com/my-account/your-bill/our-household-charges-20212022/ and go to section 7.7 for compulsory metering.

To promote sustainable development UU offers a reduction in infrastructure charges for applicant's delivering water efficient homes and draining surface water sustainably (criteria applies). For further information, we strongly recommend the applicant visits our website when considering any water or wastewater design https://www.unitedutilities.com/builders-developers/your-development/planning/building-sustainable-homes/

Business customers can find additional information on our sustainable drainage incentive scheme at https://www.unitedutilities.com/Business-services/retailers/incentive-schemes/

To avoid any unnecessary costs and delays being incurred by the applicant or any subsequent developer, we strongly recommend the applicant seeks advice regarding water and wastewater services, and metering arrangements, at the earliest opportunity. Please see 'Contacts' Section below.

Contacts

Website

For detailed guidance on water and wastewater services, including application forms and the opportunity to talk to the Developer Services team using the **'Live Chat'** function, please visit:

http://www.unitedutilities.com/builders-developers.aspx

Email

For advice on water and wastewater services or to discuss proposals near to pipelines, email the Developer Services team as follows:

Water mains and water supply, including metering - DeveloperServicesWater@uuplc.co.uk

Public sewers and drainage - SewerAdoptions@uuplc.co.uk

Telephone - 0345 072 6067

Property Searches (for asset maps):

A number of providers offer a paid for mapping service including UU. For more information, or to purchase a sewer and water plan from UU, please visit https://www.unitedutilities.com/property-searches/

Water and sewer records can be viewed for free at our Warrington Head Office by calling 0370 751 0101. Appointments must be made in advance. Public sewer records can be viewed at local authority offices. Arrangements should be made directly with the local authority.

Please contact me at planning.liaison@uuplc.co.uk so that the detail of this letter can be discussed further.

Yours faithfully

Andrew Leyssens
Planning, Landscape and Ecology Team
United Utilities Water Limited

From:	Workington Town Council
To:	Lostrigg Solar
Subject:	RE: EN0110004 - Lostrigg Solar - EIA Scoping Notification and Consultation
Date:	04 July 2024 14:54:58
Attachments:	image007.png image008.png image009.png image010.jpg image011.png image012.png

Hi Todd,

I can confirm that Workington Town Council does not have any objections to these plans and is supportive of the initiative.

Many thanks
Emma

Chief Officer/RFO
Workington Town Council
[redacted]

www.visitworkington.co.uk
www.workingtontowncouncil.gov.uk

From: Lostrigg Solar <lostriggsolar@planninginspectorate.gov.uk>
Sent: 21 June 2024 10:34
Subject: EN0110004 - Lostrigg Solar - EIA Scoping Notification and Consultation

Dear Sir/Madam,

We are contacting you at this time in relation to the proposed Lostrigg Solar which is a Nationally Significant Infrastructure Project (NSIP). NSIPs are defined in Part 3, Regulation 14 of the Planning Act 2008, and are projects of certain types, over a certain size, which are considered by the Government to be so big and nationally important that permission to build them needs to be given at a national level, by a responsible Secretary of State. A summary of the NSIP planning process can be found in the list of links at the bottom of this page. This project is currently in the pre-application stage.

To meet the requirements of the Infrastructure Planning Environmental Impact Assessment (EIA) Regulations (2017) ("the EIA Regulations"), NSIPs which are likely to have a significant effect on the environment are required to undertake an EIA and to provide an Environmental Statement (ES) to accompany the application. An ES will set out the potential impacts and likely significant effects of the Proposed Development on the environment. Schedule 4 of the EIA Regulations sets out the general information for inclusion within an ES. You can find out more detail on ES documents and the EIA process in the links at the bottom of this page.

To inform the scope and level of detail of the information to be provided within the ES, the Applicant has requested a Scoping Opinion from the Planning Inspectorate, on behalf of the Secretary of State under Regulation 10 of the EIA Regulations.

Before adopting a Scoping Opinion, the Inspectorate must consult the relevant 'consultation bodies' defined in the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (see link below). You have been identified as a consultation body for this project, please see attached correspondence. Both Local Planning Authorities and Parish/Town Councils play an important role in the planning process by providing area specific knowledge and representing local communities. The Applicant must have regard to comments made within the Scoping Opinion as the submitted ES must be based on the most recently adopted Scoping Opinion. Therefore, your comments at this stage are valuable at influencing the scope of the ES by reviewing the Applicant's approach to EIA as set out within their Scoping Report. Please note this consultation relates solely to the EIA Scoping process. Please rest assured that there are further opportunities for you to engage with and provide views on the project more generally, including

through the Applicant's own consultation. Applicants have a duty to undertake statutory consultation and are required to have regard to all responses to their statutory consultation.

Please note the deadline for consultation responses is **19 July 2024** and is a statutory deadline which cannot be extended. Responses submitted before the deadline will be considered, and published at the end of the Scoping Opinion, by the Planning Inspectorate.

For further information about the NSIP planning process, please click on the links below:

- Overview of the NSIP Planning Process
- Information on the stages, services and participation in NSIP planning
- FAQs relating to the Scoping process
- Information in relation to specific matters within the planning process, e.g. the role of local authorities, local impact reports, the EIA Process, Habitats Regulations Assessment (HRA), etc.
- Information on legislation, guidance, and National Policy Statements (NPSs)

The relevant legal framework and regulations include:

- The Planning Act 2008
- The Infrastructure Planning (Environmental Impact Assessment) Regulations (2017)
- Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

If you have any questions regarding any of this information, please do not hesitate to get in touch by way of return to this email address.

Kind regards,

Todd Brumwell

Todd Brumwell | EIA Advisor
The Planning Inspectorate
T [redacted]

@PINSgov The Planning Inspectorate planninginspectorate.gov.uk

Ensuring fairness, openness and impartiality across all our services

DPC:76616c646f72