

ELECTRICITY ACT 1989

KINTORE TO TEALING 400kV OHL reference TRL-120-1

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RESPONSE TO REPORTERS' DIRECTION OF 7 JULY 2026 - FURTHER SUBMISSION BY GALBRAITH ON BEHALF OF FARMING CLIENTS IN RELATION TO SSEN's ANSWERS TO THE REPORTERS REQUEST OF 14 MAY 2026

7 August 2026

1 EXECUTIVE SUMMARY

1.1 The party introducing a new hazard into a locality bears the primary responsibility for designing that hazard so that the existing lawful and foreseeable use of the land can continue safely.

1.2 The issue before the Reporters is not whether the proposed overhead line satisfies statutory minimum clearance requirements, but whether the Applicant has demonstrated that the design process began by identifying the foreseeable agricultural use of the land and then determining the conductor clearance necessary to accommodate that use safely, rather than selecting a generic clearance first and assessing agriculture afterwards.

1.3 The Applicant's Agricultural Operations Assessment Report only partly addresses the issues identified by the Reporters. It does not provide an adequate assessment of the likely significant effects of the proposed development on human health or agricultural land use. The Reporters therefore still have insufficient information to satisfy themselves as to:-

- the safety of the Applicant's proposals in respect of existing Health & Safety legislation; or
- the impact on future agricultural operations in respect of NPF4.

1.4 In its latest assessment the Applicant has acknowledged that the engineering design was developed by reference to statutory and EMF clearance requirements which do not give specific consideration to the particular land use, including agricultural and/or forestry use. At Appendix B SSEN themselves confirm the design requirement stating:-

ENA TS 43-8 does not prescribe a specific clearance for OHLs over arable land and delegates the responsibility for determining an appropriate clearance to the relevant ENA Member Company (ENAMC) – in this case the Applicant

1.5 The DECC EMF Code of Practice is a voluntary code. SSEN's design is therefore statutory floor plus a voluntary code, with land use considered in neither despite the requirements of the Electricity Safety, Quality and Continuity Regulations 2002 ("ESQCR").

1.6 ENA Technical Specification 43-8 ("TS 43-8") is intended to ensure that ENAMC meet statutory obligations under ESQCR. The Applicant's design has not addressed the further requirement of ENA TS 43-8 which sets out the scope of that document:-

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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. 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 useful¹.

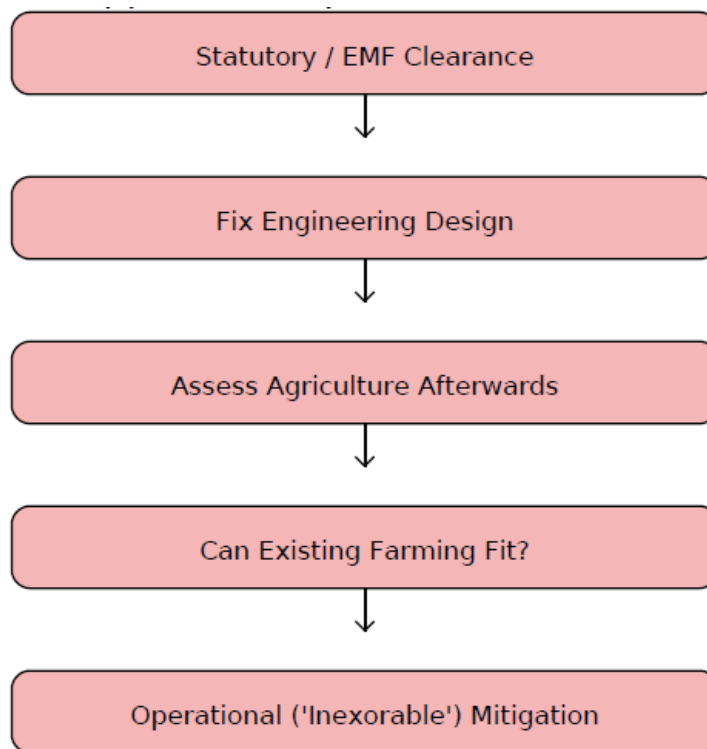
1.7 The issue for the Reporters is whether the Applicant subsequently undertook a project-specific engineering assessment to demonstrate that the adopted statutory and EMF clearances are capable of safely accommodating the foreseeable agricultural and forestry operations that will continue beneath the proposed overhead line. That is the central engineering question raised by the Reporters' request for further information.

1.8 The key question is therefore not how the statutory minimum or EMF clearance was calculated. Rather, it is whether the Applicant has demonstrated that the final design is appropriate for the environment in which it will operate and for the foreseeable activities that will take place beneath it.

1.9 The Applicant's latest submission depends upon treating foreseeable agricultural operations as though they involve only **passing vehicles** operating at a fixed height beneath an existing overhead line. Modern agriculture does not operate in that manner. Agricultural machinery is, by its very nature, frequently **not of fixed height**. The Applicant relies upon machinery being put into transport mode under the proposed line when normal agricultural operations are often not possible in such a mode.

1.10 SSEN's approach to the design for TKUP therefore appears to be:-

¹ Annex A defines 'normal' and 'passing' clearances.



1.11 The Applicant's case is that the *'proposed conductor height minus clearance equals permitted machinery height'* that can be used under the line. There is no attempt to design out foreseeable risk.

1.12 ENA TS 43-8, which sets out the requirements of ESQCR, the design principles reflected within CDM 2015 and the recognised mitigation hierarchy all adopt the same logical engineering sequence: identify the foreseeable activity; determine the engineering measures necessary to accommodate that activity safely; incorporate those measures into the design wherever reasonably practicable; and rely upon operational controls only for residual risks.

1.13 That sequence provides an objective benchmark against which the Applicant's engineering methodology falls to be assessed. The issue for the Reporters is therefore not confined to statutory minimum clearances, but whether the design itself was developed by first identifying foreseeable agricultural operations and then determining the conductor clearances necessary to accommodate those operations safely.

1.14 The design of an overhead line crossing agricultural land should be assessed against the foreseeable normal agricultural operation of machinery, not against whether that machinery can be temporarily reconfigured into transport mode to fit beneath a predetermined conductor height.

1.15 If conductor clearances were determined before foreseeable agricultural operations were specifically considered, the subsequent agricultural assessment cannot demonstrate how those operations informed the design. It can only explain how existing activities must be adapted to operate beneath a design already established. The adaptations necessary as a consequence of SSEN's design choices bear directly on the policy considerations in NPF4, yet the Applicant has not provided sufficient information to assess the impact of its design approach.

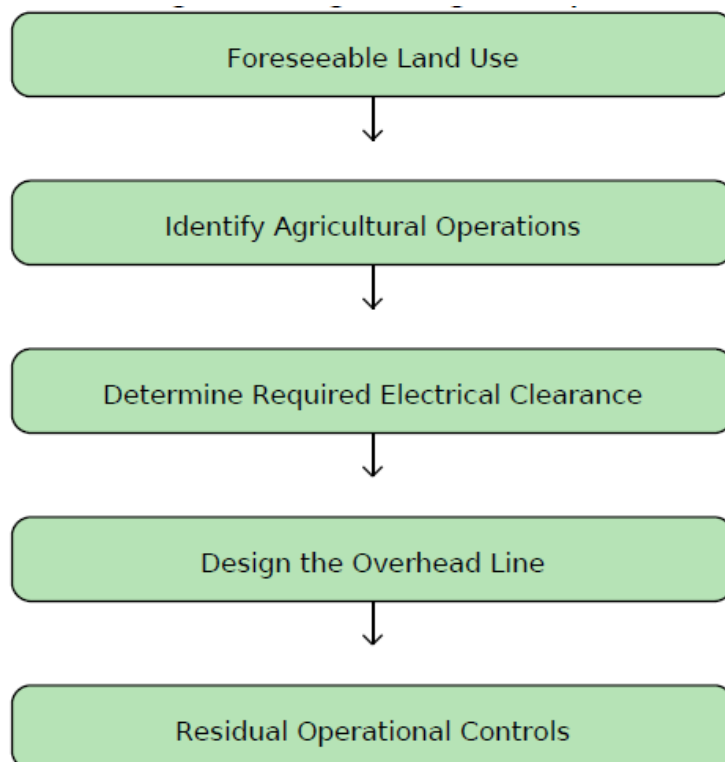
1.16 The Reporters must consider whether the Applicant has demonstrated that the proposed conductor clearances were derived using the engineering methodology in ENA TS 43-8, taking proper account of the foreseeable agricultural environment and the dynamic characteristics of modern agricultural machinery.

1.17 It is our submission that the Applicant has not taken this approach. Rather, it has inverted the methodology and relies upon 'inexorable mitigation' to address the risks inherent in its engineering design choice.

1.18 The purpose of mitigation within the EIA process is not merely to manage adverse effects after the design has been fixed. It is first to avoid or reduce foreseeable effects through the design of the development itself wherever reasonably practicable. Operational restrictions, warning systems and safe systems of work should address only the residual risks remaining after design mitigation has been considered — not substitute for that consideration, as the Applicant seeks to do.

1.19 It will be for the Applicant to satisfy the Reporters that ESQCR or CDM requires or permits that departure. Had the Applicant followed the legislative requirements properly, there would be no need for such mitigation; the mitigation is not, therefore, 'inexorable' but a direct and inevitable result of its design choices.

1.20 It is our submission that the correct design approach, which addresses these requirements (and in particular ESQCR Regulation 3 and the DTI guidance of 22 October 2002), is as follows:-



1.21 To date the Applicant has failed to demonstrate that the proposed design meets all legislative requirements, as it asserted in the section 37 application. If the Reporters cannot

be satisfied that the Applicant's design approach meets the legislative requirements of ESQCR and CDM 2015, then consent should be refused.

1.22 Appendix A shows the Applicants sequence changes during the design phase; from the March 2025 additive assessment (6.5 m plus 5.3 m equals 11.8 m) to the later subtractive methodology (9.0 m minus 4.3 m equals 4.7 m) adopted by the Applicant.

1.23 A consequence of the Applicant's design approach is to impose an unsafe design on landowners farmers and contractors, leaving them to entirely manage foreseeable health and safety risks that could have been eliminated by design. The Applicant has thereby failed in its duties under the CDM 2015 Regulations. The Principal Designer cannot lawfully transfer its risk or statutory duties to third parties in this way: those duties are non-delegable.

1.24 A further consequence of the Applicant's design approach is that it fails to minimise the impact of the project on land classified as prime agricultural land ('PAL'), contrary to the requirements of NPF4. The Applicant's own paragraph 3.5.2 defines arable by reference to LCA classes 1 to 3.2, while PAL is defined by classes 1, 2 and 3.1 only. The Applicant does not separate the two, so the classification used makes it impossible to identify effects on prime land at all. The Applicant's design choice does not minimise the effect of the project on PAL; let alone arable land.

2 Context of the Reporters request

2.1 It is necessary to put into context the Reporters' request for further information from the Applicant.

2.2 On the 14 May 2026 the Reporters advised that, in order to accord with Regulation 19(2) of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, supplementary information on the proposed development's effects (including cumulative effects) on agricultural operations would be required, to enable the Reporters and Scottish Ministers to reach reasoned conclusions on the significant effects of the development. The Reporters concluded that, notwithstanding the terms of the scoping opinion issued on 19 December 2024 by the Scottish Government's Energy Consents Unit on behalf of the Scottish Ministers, the evidence before them relating to potential effects on human health (electrocution risk) and agricultural land use was such that it is necessary for this matter to be fully assessed as part of the Environmental Impact Assessment ('EIA') for the proposed development.

2.3 SSSEN were therefore required to provide an assessment of the entirety of the proposed overhead line, to identify whether the proposed clearance heights of each span of the line would, individually or cumulatively, result in significant effects on human health and/or land use. SSSEN's Assessment is erroneously dated June 2025².

2.4 By a Procedure Notice dated 7 July 2026 the Reporters sought further written submissions regarding the additional information prepared and submitted by the Applicant, in response to the request for additional information made by the Reporters on 14 May 2026. This submission sets out our response to this Notice.

2.5 EU Directive 2011/92/EU, as amended by Directive 2014/52/EU, codified EU law to ensure that the likely significant environmental impacts of any qualifying project are properly considered and assessed before permission for development is granted:-

- The preamble to the 2011 Directive emphasises that effects on the environment *"should be taken into account at the earliest possible stage in all the technical planning and decision making processes."*
- Article 3(1) provides that every environmental impact assessment ("EIA") shall *"identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project" on a range of environmental factors*". There is included specific reference to population and human health.
- The case of *Commission -v- Spain* (Case C-227/01) [2005] Env LR 20; [2004] ECR I-8253, addressed the basic objective of the 1985 Directive. In assessing lawful implementation of the 1985 Directive, it held that it was *"the significant effect that a particular project is 'likely' to have on the environment"* that had to be considered. To scope out the main factor, namely the environmental effects relating to the use of Agricultural Land, in the manner that the Applicant sought is to offend against this principle.

² <https://www.dpea.scotland.gov.uk/Document.aspx?id=1207108>

- Regulation 3 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (SSI 2017/101) ("the 2017 Regulations") implements the 2011 Directive in Scotland. It provides that the Scottish Ministers, "*must not grant planning permission for EIA development unless an environmental impact assessment has been carried out in respect of that development and in carrying out such assessment the planning authority or the Scottish Ministers, as the case may be, must take the environmental information into account.*" The Part 8 (Regulations 24-27) derogation regarding multistage consents does not apply.
- The Electricity Act 1989 states that Transmission Operators have a statutory duty under Schedule 9 (3), "*when formulating proposals to generate, transmit, distribute or supply electricity*" to:
 - *Have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and*
 - *Do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.*

This includes the effect on Agriculture. The TKUP is Schedule 1 development in terms of the 2017 Regulations and the Applicant *must* therefore comply with Schedule 9.

2.6 As set out in our submission dated 8 May³ SSEN's TKUP proposal was considered by the ESO to be '*extremely challenging*' in terms of environmental impact in 2020. This is significant given SSEN sought to scope out key environmental receptors in the consent process for this resurrected project.

2.7 SSEN's justified the need for a new 400kV connection between Kintore and Tealing, connecting into proposed 400kV substation sites at Fetteresso Forest and at Tealing because "*the existing overhead line between Kintore and Tealing, currently operating at 275kV, cannot be upgraded to 400kV as the conductors would not be able to **achieve safe clearance distances** due to the size of the towers*". That line runs across arable land. Despite being aware that the pylon size on the legacy line did not provide adequate clearance SSEN have designed a new line which is also unable to provide safe clearances for existing farm machinery.

2.8 Regulation 5 prescribes the information that must be included in the EIA report, and Part 5 of the Regulations details the requisite publicity and procedures to be implemented on their submission. As set out in *Raeshaw Farms*⁴, it is essential to the validity of any decision that, before it is made, there has been a systematic and comprehensive assessment of the project's likely significant effects on the environment. Public participation is integral to the process of assessment. By seeking to scope out certain matters, the Applicant has sought to deny affected parties (not just those participating in this PLI) the opportunity to consider the impact of the project; in particular, we suggest, those parties from whom a Necessary Wayleave is being sought in parallel proceedings.

³ <https://www.dpea.scotland.gov.uk/Document.aspx?id=1186749>

⁴ *Raeshaw Farms -v- Scottish Ministers* [2026] CSIH 10

2.9 Agriculture is the dominant land use along the proposed route. Excluding it from the EIA:

- Contravenes EIA Regulations by omitting a major receptor.
- Denied farmers and landowners the ability to submit informed responses to the Application timeously.
- Denies statutory consultation bodies and the public the chance to submit informed comment.
- Does not allow proper consideration of the full impact of SSEN's proposal under NPF4 and local planning policies
- Obscures reasonably foreseeable safety risks under ESQCR, CDM, ENA 43-8 and HSE GS6.
- Prevents socio-economic assessment of yield loss, sterilisation of land, and food security impacts.
- Undermines transparency and due process.

2.10 Land use was purportedly assessed in Volume 2, Chapter 7 of the EIA. In summary, the Applicant asserted that the potential for significant effects was limited to the loss of agricultural land associated with development of the OHL tower bases and permanent access tracks, and temporary disruption to agricultural operations during construction.

2.11 Evidence now suggests that this is not the case. SSEN acknowledges there is no design mitigation at all. SSEN have admitted that the clearances for the design were based on the greater of minimum clearance requirements and an EMF guidance without specific regard to farming activities. Forestry has not been assessed anywhere. SSEN's own figures reveal that safe machinery heights fall below requirements on a number of spans.

2.12 The socio-economic impact report, appended separately to the section 37 application, does not address such impacts from the loss of PAL other than to record, in Table 4.3, that agriculture, forestry and fishing represent 5.1% of the employment market.

2.13 The scoping omission has distorted the baseline and may render the EIA procedurally deficient unless fully corrected.

2.14 The *Raeshaw Farms* decision makes clear that the decision-maker must assess the project as it will in fact be constructed and operated. If the development as assessed does not safely accommodate foreseeable land use, and material modifications would be required to work safely under the proposed OHL as designed, then that must be fully considered (particularly given NPF4).

2.15 In an e-mail dated 11 November 2024, SSEN's Head of Land Assembly stated:-

'These [Health & Safety] obligations will of course be tested, but through the planning and statutory land rights process'

The Applicant however scoped out of the EIA process Health & Safety issues, again with the agreement of Scottish Ministers, despite being demonstrably aware from consultations of safety concerns arising from their design and choice of route.⁵

2.16 Conductor clearance is a fundamental design parameter which determines the future ability to operate machinery, the extent of land sterilisation, and the nature of the safety risk. The Scottish Ministers cannot grant consent for a project that fails to conform to existing legislation.

2.17 Throughout this application SSEN have made a series of conflicting statements with regard to Health & Safety issues. A timeline of these is at **Appendix A** to assist the Reporters. In the absence of a lawful clearance assessment, the environmental baseline adopted in the EIAR is materially flawed. This is not merely a missing topic, but a structural defect in the assessment.

2.18 The failure of the Applicant to scope Health & Safety back into the section 37 application, despite the Minister having made clear the importance of this in the Reporters' decision-making progress⁶, would seem to amount to a serious breach of the EIA Regulations. This is even more so given that it is now evident that SSEN have been demonstrably aware of such impacts.

2.19 By letter dated 29 September 2025, Galbraith made a formal request under Regulation 19(2) to scope agriculture back into the EIAR. This was reiterated on the 19 February 2026, with details setting out environmental issues arising from the Applicant's proposals, including Health & Safety setting out concerns raised with the industry Regulator, OFGEM. The Applicant responded on 13 March 2026, justifying the scoping out of key environmental issues by reference to the Scottish Ministers' decision to scope out agriculture. These documents are referred to for their content.

2.20 In that the EIA has not adequately assessed the impact on agriculture or Health & Safety, nor properly examined socio-economic impacts, the argument can be made that the decision-maker is not properly informed to decide the section 37 application. In these circumstances, the environmental effects of the development cannot be assessed in respect of the project as it would actually operate, contrary to the approach required in *Raeshaw Farms*. If no reasonable decision-maker could be satisfied that it had the information necessary to make the decision, that may represent a *Tameside*⁷ failure to inquire.

2.21 Given the circumstances, it is clear that, until a full EIA covering agriculture in all its ramifications, together with Health & Safety, is submitted, the application cannot be

⁵ This failure to conscientiously take account of matters raised at consultation may amount to a breach of "the Gunning Principles" set out in *R -v- London Borough of Brent ex parte Gunning* (1985) on the part of the Applicant.

⁶ Letter dated 19 March 2025 to Dr Jenny Scudder written on behalf of Gillian Martin acting Cabinet Secretary for Net Zero and Energy which stated "*The Transmission Owner's approach to the overhead line must consider the statutory requirements in relation to the minimum heights of overhead lines and ground clearance and the position, insulation and protection of OHLs to ensure compliance with Electrical Safety Quality and Continuity Regulations 2002*"

⁷ *Secretary of State for Education and Science -v- Tameside MBC* [1977] AC 1014 per Lord Diplock at 1065B "*the question for the court is, did the Secretary of State ask himself the right question and take reasonable steps to acquaint himself with the relevant information to enable him to answer it correctly?*"

determined except by refusal, in that the Reporters still have insufficient information upon which to consider matters properly and upon which to base a judgement.

3 Matter 1 - SSEN's response to the issues raised.

3.1 Baseline position

3.1.1 The Reporters' Direction of the 14 May required the Applicant to provide the following:-

The precise baseline position relating to statutory clearances and the factors to be taken into account in establishing necessary clearances on each OHL span, including the ESQCR, ENA TS 43-8, ENA 'Look Out, Look Up - bespoke guidance for agricultural sector' and any other relevant legislation or guidance.

3.1.2 The Applicant correctly identifies ESQCR, ENA TS 43-8, HSE GS6, HSE AIS8, HSE Farmwise, the Health and Safety at Work etc., Act 1974, the Management Regulations and the Electricity at Work Regulations 1989 as relevant and accepts that some of these apply during the planning stage of the project⁸.

3.1.3 A central issue arising from the Applicant's response to this Direction is the sequence by which the engineering design of the Proposed Development was undertaken. This is not merely a question of whether the proposed conductors achieve statutory minimum clearances, nor whether the arithmetic used to derive those clearances is correct. Rather, it concerns whether the engineering design itself was developed by first identifying the foreseeable use of the land and then determining the conductor clearances necessary to accommodate that use safely.

This distinction is important because the effect of the approach adopted by the Applicant is that existing land use must adapt to the proposal rather than that the foreseeable use should inform safe engineering design.

3.1.4 The Applicant, in its publication *Procedures for Routeing Overhead Lines and Underground Cables of 132kV and above* (PR-NET-ENV-501)⁹ states (our emphasis):-

- *Health and Safety Considerations: Health and Safety considerations are fundamental to the design, construction and operation of new overhead line projects. The chosen route should seek to eliminate, reduce or control foreseeable risk. **Health and Safety considerations are intrinsically linked to technical design and implementation. These should therefore be considered as part of the technical assessment at each routeing stage.***
- *The ESQC Regulations specify safety standards to protect the general public and electricity consumers from danger. In addition, the Regulations specify power quality and supply continuity requirements to ensure an efficient and economic electricity supply service for consumers. **The ESQC Regulations will be considered as part of our technical assessment at each stage of the routeing process** and full compliance with our Procedure for evaluating and*

⁸ For example HSWA section 3 (1) falls to be considered in the design stage. HSE's published guidance on CDM, L153 - *Managing health and safety in construction* makes it clear that Client duties begin at the earliest stages of project development, during the 'pre-construction phase.

⁹ <https://www.dpea.scotland.gov.uk/Document.aspx?id=1211947>

*recoding risk assessments on overhead lines, substation and underground cables
(PR-PS-311)*

3.1.5 In its response dated 24 April 2026¹⁰ to the Reporters *Matter 1: Effects on Agricultural Operations* question 3 the Applicant was unable to provide evidence of any risk analysis. The Principal Designer is required under Regulation 12 of CDM to maintain a Health & Safety file from the inception of the scheme. The Applicant stated:-

In its response of 13 March 2026, the Applicant stated that the clearances specified in the design of the proposed overhead line are reviewed against TS 43-8. This was intended to be a reference to the continuing review of the design against the TS 43-8 specification as part of the design process itself. It was not intended to refer to any specific stand-alone review conducted after that design had been completed. The embedding of TS 43-8 within the design process itself ensures that relevant factors are considered and risks minimised as part of that process.

It will be for the Reporters to satisfy themselves that this has indeed been the case and to determine whether the Applicant has made any meaningful attempt to design out risk or comply with its statutory requirements under TS 43-8 or indeed other legislation.

3.1.6 Statutory minimum ground and structure clearances defined in regulation rules (such as ESQCR Regulation 17) apply directly to all new overhead lines. It is our submission that the Applicant's design fails to properly address the clearance required by foreseeable agricultural land use under the new line. The DTI Guidance of 22 October 2002 in respect of Regulation 3 (1) (b)¹¹ clearly identifies arable farmland as an example of one of a number of 'areas of risk' and reinforces the requirement under that regulation to assess risk having regard to the use of surrounding land.

3.1.7 This process requires foreseeable hazards to be addressed through design wherever reasonably practicable, rather than transferring responsibility for controlling those hazards to those who must subsequently work within the completed development (as the Applicant seeks

¹⁰ <https://www.dpea.scotland.gov.uk/Document.aspx?id=1183860>

¹¹ ESQCR Regulation 3 provides (our emphasis):-

- (1) Generators, distributors and meter operators shall ensure that their equipment is—
 - (a) sufficient for the purposes for and the circumstances in which it is used; and
 - (b) **so constructed, installed, protected (both electrically and mechanically), used and maintained as to prevent danger, interference with or interruption of supply, so far as is reasonably practicable.**
- (2) Generators and distributors shall—
 - (a) for each of their overhead lines or part thereof and for each of their substations, **assess the foreseeable risk of danger from interference, vandalism or unauthorised access, having regard to both the nature of the equipment and use of the surrounding land, and classify the degree of the risk;**
 - (b) enter details of the result of the classification of risk in a register or other permanent record kept updated for the purpose; and
 - (c) take measures to safeguard the equipment commensurate with the nature and class of risk to which it gives rise.
- (3) **Generators and distributors shall take reasonable steps to ensure that the public are made aware of dangers which may arise from activities carried out in proximity to overhead lines, and to indicate the means by which those dangers may be avoided.**
- (4) Generators and distributors shall take precautions to prevent, so far as is reasonably practicable, danger due to the influx of water, or any noxious or explosive liquid or gas, into any enclosed space, arising from the installation or operation of their equipment.

to do here). This engineering philosophy is reflected, in different ways, within ESQCR Regulation 3, ENA TS 43-8, CDM 2015, ISO 45001 and the EIA mitigation hierarchy.

3.1.8 ENA TS 43-8 is the principal engineering methodology for determining overhead line clearances in accordance with ESQCR requirements. The design specification does not begin with the statutory minimum conductor clearance; rather, it begins by requiring the use of the surrounding land and the foreseeable activities beneath the overhead line to be identified before the appropriate conductor clearance is determined.

3.1.9 Accordingly, the engineering sequence envisaged by ENA TS 43-8 may be summarised as follows:

- Identify the foreseeable use of the land.
- Identify the activities and equipment reasonably expected to operate beneath the overhead line.
- Determine the conductor clearance required to accommodate those activities safely.
- Design the overhead line to provide that clearance.
- Manage any remaining residual risks through operational controls.

This design sequence is entirely consistent with established engineering practice and the wider statutory framework governing health and safety by design. It follows SSEN's own design requirements as set out in PR-NET-ENV-501¹² and TG-NET-OHL-011¹³

3.1.10 In its design for TKUP, the Applicant sets out at Appendix B of its Further Environmental Information the methodology adopted in determining conductor clearances. The following statement appears at the heart of the Applicant's explanation of its design process:

"ENA TS 43-8 does not prescribe a specific clearance for OHLs over arable land and delegates the responsibility for determining an appropriate clearance to the relevant ENA Member Company (ENAMC) – in this case the Applicant."

3.1.11 TS 43-8 at 4 states (our emphasis):-

*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 clearances is required the application factor.**

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

¹² <https://www.dpea.scotland.gov.uk/Document.aspx?id=1211947>

¹³ Overhead Line Clearances, LV to 400kV – Design standard (December 2021) 6.1.1

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

3.1.12 SSEN's Director of Asset Management and Operations acknowledged the need to address land use in his email of 29 January 2025:-

"We [SSEN] have a process of bilateral engagement with land owners who are directly affected by the line to gain better understanding of land use and the types of activities we need to factor into our clearance calculation and where necessary increase the height of the line even further in line with clearance requirements in both tables [tables 1 & 2]¹⁴"

3.1.13 This statement is of central importance to the issues before the Reporters. The conductor clearances adopted for the proposed development were determined by reference to statutory and electromagnetic field requirements, without specific consideration of the agricultural or forestry use of the land beneath the proposed overhead line or following 'bilateral engagement', contrary to these statements.

3.1.14 As evidence before the Reporters shows, SSEN were aware of clearances required to meet the requirements of modern machinery before making this application. They have failed to demonstrate that the requirements of TS 43-8 were met or that the design has been reviewed in the light of further such evidence. It would seem the Applicant is using TS 43-8 to inform mitigation rather than engineering design.

3.1.15 The issue is not whether the Applicant was entitled to consider statutory minimum clearances or EMF requirements; those are plainly relevant engineering considerations. The question is whether foreseeable actual agricultural land use was properly considered by the Applicant in its design process before the engineering design was fixed.

3.1.16 This latest report, at Appendix B, defines 'minimum clearance' as the greater of the ESQCR statutory clearance and that needed to comply with EMF constraints. That definition omits any additional clearance required by foreseeable land use¹⁵. This does not appear to demonstrate compliance with ESQCR and the CDM Regulations and demonstrates a failure to adhere to SSEN's own design criteria.

3.1.17 Compliance with Regulation 3 and ENA TS 43-8 Table 8 is critical to health and safety considerations. On page 6 of its Assessment, SSEN accepts that compliance with ESQCR may, depending on the circumstances, require clearance greater than the statutory minimum specified in Regulation 17 and Schedule 2. It would appear, however, that SSEN has failed to address this requirement in the design process. We address failures in SSEN's approach to ENA TS 43-8 further at **Appendix B**.

3.1.18 In its response to the Reporters request for further information the Applicant sought that the Scottish Ministers grant consent on the basis that it was open for SSEN to address safety under limits of deviation. As pointed out in our evidence of the 8 May in answer to

¹⁴ Galbraith evidence 8 May Appendix C

¹⁵ SSEN 3.5.3, the glossary definition of Minimum Clearance Design Requirements, and Appendix B ("the greater of" the ESQCR statutory clearance and the EMF Code of Practice clearance).

Reporters question 7 the Applicant has not sought to apply the *Rochdale Envelope* in this Application. If the design set out in the s37 application is unsafe then it should be refused.

3.1.19 If agricultural land use was not specifically considered when conductor clearances were determined, TS 43-8 could not have informed the design of those clearances. Its role becomes one of assessing whether agricultural operations can subsequently be accommodated beneath a design already fixed. This goes directly to the engineering methodology which the Reporters requested the Applicant to explain.

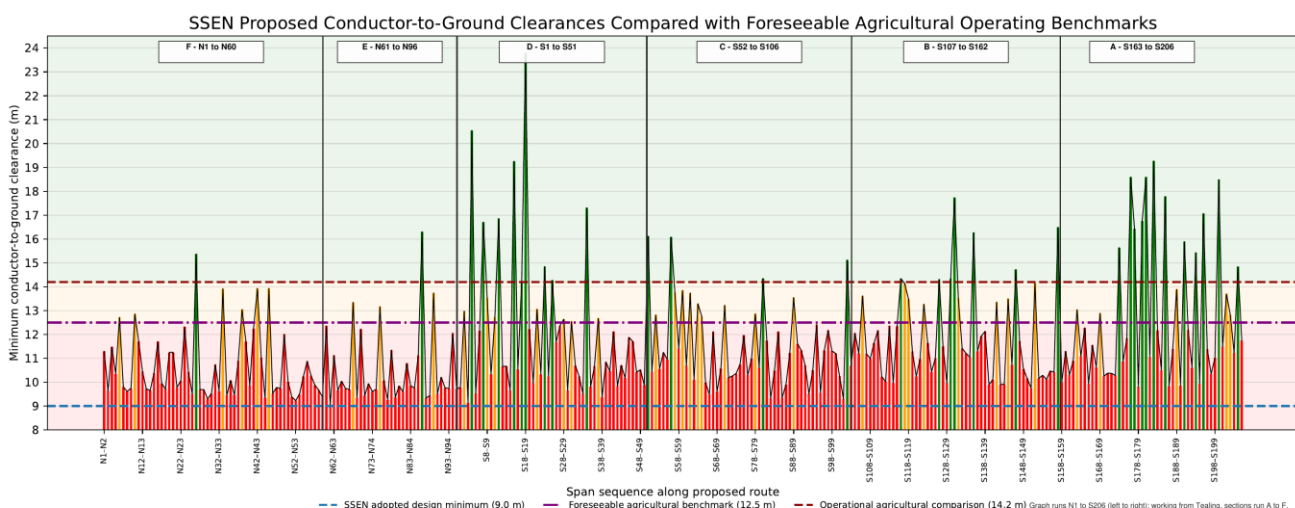
3.1.20 Under the CDM Regulations, designers must “*eliminate foreseeable health and safety risks to anyone affected by the project (if possible) take steps to reduce or control any risks that cannot be eliminated.*” The evidence before the Reporters demonstrates that increasing conductor clearance is one engineering means by which foreseeable risk may be reduced through design. Whether such an increase is reasonably practicable for this project is precisely the engineering judgement the Applicant was required to undertake.

3.1.21 Notwithstanding SSEN’s own criteria in PR-NET-ENV-501 set out above, the Applicant appears to have designed its project and submitted it for approval without proper consideration of this and now seeks to justify these design failings.

3.1.22 SSEN Transmission has now provided span-by-span conductor-to-ground information for the proposed Kintore–Tealing 400 kV overhead line in their Appendix D – Proposed Development Span Clearance Details. This new information permits the agricultural clearance issue to be considered using the Applicant’s own PLS-CADD outputs, rather than relying upon assumed span lengths, estimated sag profiles or indicative modelling.

3.1.23 Appendix D provides the first opportunity to compare the adopted engineering design with foreseeable agricultural requirements. Until this information became available, neither affected landowners nor the Reporters were able to undertake that comparison.

3.1.24 Analysis of SSEN’s Appendix D illustrates the quantum of spans which are likely to result in effects on agricultural operations (the reference lines are comparative agricultural safety / engineering benchmarks; falling below a line is not presented as an automatic finding of statutory non-compliance).



This indicates lower clearances over the flatter sections of the route where taller machinery is habitually in use.

3.1.25 These figures do not establish, by themselves, that every span below 14.2 m is legally non-compliant; it is for the Applicant to satisfy the reporters that the design is compliant. Appendix D does demonstrate that the difference between SSEN's adopted 9 m minimum and the clearance required to use a 7.2m machine applying the industry's 7 m agricultural safety advice or ENA TS 43-8's 5.3m is not confined to a few exceptional or isolated locations. It is a route-wide and recurrent feature of the Applicants design.

3.1.26 The Applicant's Appendix D contains two distinct forms of information:

- **Table 1** gives the minimum conductor-to-ground clearance within each span, together with the coordinates of that minimum point.
- **Table 2** gives the percentage of each span said to be above selected heights of 9 m, 10 m, 11 m, 11.5 m, 12 m, 13 m, 14 m and 15 m.

This is therefore the most relevant project-specific dataset currently available for considering the physical relationship between the proposed conductors and foreseeable agricultural machinery.

3.1.27 The Appendix D data appears to demonstrate that SSEN has designed the proposed line to achieve its selected minimum clearance criterion, but crucially does not demonstrate that the design accommodates the full range of foreseeable agricultural operations beneath it. That distinction is fundamental.

3.1.28 The Applicant's analysis begins with the completed conductor profile and asks what percentage of the resulting spans lies above selected heights. The agricultural design question should instead begin with:

1. the foreseeable use of the land;
2. the machinery and persons involved;
3. the maximum foreseeable operating envelope;
4. the applicable electrical safety distance;
5. any necessary allowance for movement and uncertainty; and
6. the conductor height required to maintain that separation.

Only after that exercise can the adequacy of the proposed conductor profile be assessed. Where the design has already been fixed at a generic 9 m minimum, the subsequent percentage exercise risks becoming an assessment of how agriculture must be adapted to fit beneath the line, rather than an assessment of what conductor clearance is required to reduce foreseeable agricultural risk through design.

3.1.29 The Reporters expressly required that the 7 m harvesting guidance in the ENA "*Look Out, Look Up*" agricultural guidance be addressed¹⁶. The Applicant cites this publication but then states that its working clearances are "*not adopted in normal agricultural operations.*" The fact

¹⁶ As admitted by SSEN it is an ENA Member Company.

that guidance may not be widely observed is not a good reason to design without regard to it¹⁷. Given that the Applicant thereby rejects or discounts current guidance expressly designed for its industry and the likely area of work beneath the lines, the Applicant should be required to give a reasoned technical and legal explanation for that departure.

3.1.30 The Applicant uses passing clearances in recent assessments. It will be for the Reporters to consider if this is the correct approach. ENA TS 43-8 at Appendix A identifies the difference between normal and passing clearances. Passing clearances are lower and are *"intended for objects which are moving, and on which no person may be able to stand relative to the line"*.

The Applicant bases its calculation of maximum safe machinery height by subtracting a 3.1 m passing clearance and a 1.2 m allowance for variation in machine height or uneven ground¹⁸. These figures are not even the latest ENA advice. If affected landowners are given specific guidance to provide 7 m of safe clearance over the highest point of machinery in working mode, then, for consistency, that should be the figure applied in analysing SSEN's design.

3.1.31 THE ENA publication *Look out, Look up* sets out bespoke guidance for the Agricultural sector regarding clearances¹⁹. It makes two specific points that conflict with the Applicants design approach:-

- SSEN apply passing clearances whereas the ENA advice clearly states:-

For Harvesting: Passing clearances can be applied provided that everything on the machine is operating at a fixed height and the conditions at ground level will not inadvertently reduce clearances to the overhead power lines.
If there is any doubt, working clearances should be applied.

- In respect of its advice for harvesting the ENA advice clearly sets out clearance greater than ENA 43-8:-

Clearances for Harvesting		
Voltage	Working near overhead power lines Working Clearance	Passing under overhead power lines Minimum Passing Clearance
230/415V	1 metres	1 metre
1kV - 33kV	3 metres	1.5 metres
132kV	6 metres	2.6 metres
275kV	7 metres	3.6 metres
400kV	7 metres	4.3 metres

3.1.32 The Applicant is suggesting that affected parties need to change working practices but uses passing clearances rather than working clearance (see their Appendix B). It will be for the

¹⁷ One likely reason it is not adopted may be that the guidance is not well known or been circulated in the industry.

¹⁸ SSEN 3.5.4 states the maximum safe machinery height *"is calculated based on the minimum clearance within each span"*, with the 3.1m passing clearance and 1.2m allowance *"subtracted from the minimum clearance within each span"*. This is the inversion of ENA 43-8 in SSEN's own words.

¹⁹ See also [https://www.energynetworks.org/assets/images/2025/look-out,-look-up!-agriculture-guidance-eversion-\(1\).pdf?1754579672](https://www.energynetworks.org/assets/images/2025/look-out,-look-up!-agriculture-guidance-eversion-(1).pdf?1754579672)

Applicant to satisfy the Reporters that the lower figures that they use rather than the 7m latest stay-clear distance is correct.

3.1.33 In analysing SSEN's proposed clearances set out in their Appendix D there appear to be several potential benchmarks for analysis:-

Benchmark	Apparent derivation	Spans below it
9 m	As used by SSEN. Derived from the greater of the statutory minimum clearance for 400kV (7.3m) and the ASTI requirement based on EMF. As SSEN acknowledge this does not address the use of the land as required by ESQCR	0 of 298
12.5 m	7.2 m manufacturer-derived Dewulf working height 7.2 m + 5.3 m per ENA TS 43-8 normal clearance. This benchmark is built on the 5.3 m normal clearance in ENA TS 43-8 itself, which is the standard the Applicant says it has complied with and from which it says there is no deviation (see 3.5.11 below).	226 of 298 (75.8%)
13.3 m	8.0 m field-measured working height plus 5.3 m ENA TS 43-8 normal clearance. This figure is derived from video evidence of a Dewulf working in field conditions	245 of 298 (82.2%)
14.2 m	7.2 m manufacturer-derived working height plus the 7.0 m Look Out, Look Up harvesting distance	264 of 298 (88.6%)

The lowest minimum clearance disclosed is 9.07m, while the highest is 23.78m. The median minimum clearance is approximately 10.87m.

3.1.34 The Applicant may suggest that the minimum clearance point in a span often sits over a boundary, track or road, so the agriculturally relevant clearance is higher than the minimum (its Report para 4.1.2). It will be for the Applicant to show how many of the 226 spans have their lowest point outside a worked field.

3.1.35 SSSEN are relying on a deduction from ESQCR to suggest safe working clearance for machinery operating under the line but ignored the Look Out, Look Up publication. It seems to us that a clearance of 14.2 m is the suitable worst case scenario benchmark derived from:

1. the demonstrated working height of machinery foreseeably used beneath the proposed line; and
2. the safety distance communicated to agricultural operators through electricity-industry guidance.

3.1.36 These benchmarks therefore assist the Reporters in understanding the difference between:

- demonstrating compliance with a generic minimum conductor-to-ground design criterion; and
- demonstrating that foreseeable agricultural operations can be undertaken consistently with the safety advice given to the persons expected to perform them.

3.1.37 SSSEN's Table 2 expresses the proportion of each span that lies above a series of selected heights. SSSEN itself acknowledges that this percentage exercise is "*not a standard design check typically carried out on OHL projects*". It says that this analysis was produced to demonstrate the variation in sag and the limited total length at the adopted minimum clearance; ie it is retrospective. That statement is important.

3.1.38 The Applicant's percentage analysis may describe the geometry of the conductor profile, but it does not necessarily describe the risk created for agricultural operations. A machine crossing beneath an overhead line does not experience the average clearance of the span. It encounters the clearance at the actual point where it passes. Where a machine must travel beneath the conductors, a short section of inadequate clearance cannot be neutralised by greater clearance elsewhere in the same span. Nor can a low section in one span be offset by a much higher span elsewhere on the route.

The safety question is therefore not simply "*what percentage of the line is above a selected height?*" The more relevant questions are:

- Where is the minimum clearance?
- What operation is undertaken at that location?
- What is the maximum foreseeable working height of the machinery?
- Are people carried on the machinery or on an elevated platform?
- Is the machinery of fixed height?
- Is there foreseeable vertical movement, bounce, self-levelling or conveyor movement?
- How frequently must the operation take place?
- Can the field be worked without passing beneath the conductors?
- Would avoiding the low point require sterilisation of land, restricted machinery use or a materially altered farming system?

These are issues that require to be addressed in any baseline position. A percentage figure cannot answer those questions.

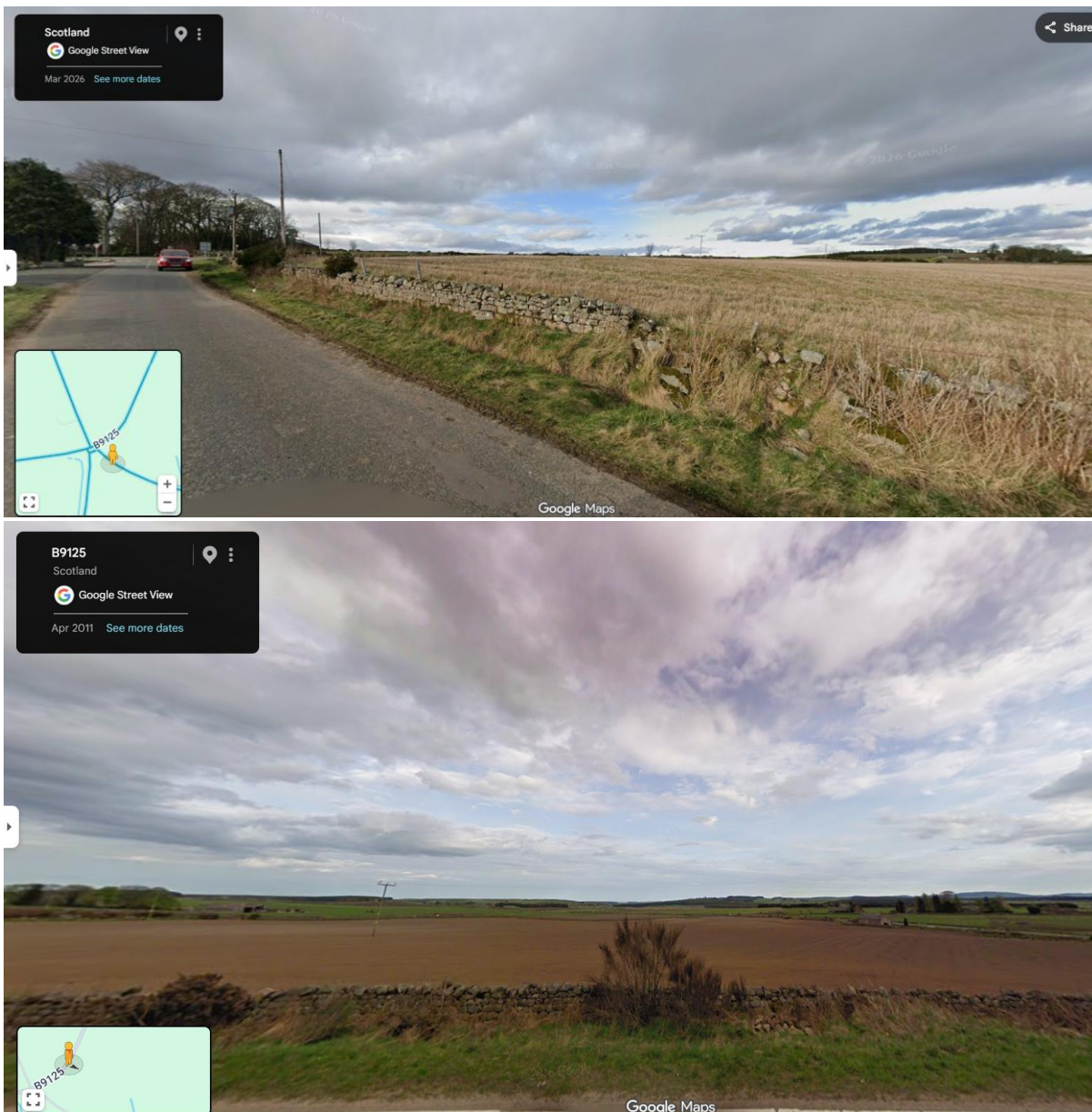
3.1.39 The Applicant at paragraph 3.4.1 records site visits in June 2026 while footnote 22 to the same paragraph states that individual landholdings were not visited. Table 1.2 lists a single named expert, an agricultural consultant and valuer, so a report answering an engineering question about 400 kV clearance design contains no electrical safety opinion at all.

3.1.40 **At no point within Appendix B has the Applicant demonstrated a worked engineering calculation showing how foreseeable agricultural operations were translated into the adopted conductor height**

3.1.41 The information at Appendix A of the Applicant's latest report appears to contain errors. For example, N40 – N41 are described as grazing land whereas Google street view suggests otherwise:-



The same is true for N41 – N42:-



S5 – S6 is described as permanent pasture whereas SSEN’s own Table C confirms otherwise:-



3.1.42 SSE is ISO 14001 (Environment) and ISO 45001 (Health & Safety) registered. ISO 45001:2018 clause 8.1.2 requires organisations to establish, implement and maintain processes to eliminate hazards and reduce occupational health and safety risks using a structured hierarchy

that emphasises hazard removal over reliance on behaviour or other forms of mitigation. The Applicant's approach to the TKUP design does not appear to follow these requirements.

3.1.43 The Proposed Development also includes reconductoring works to existing 132 kV and 275 kV OHLs, of approximately 13.84 km in total. It will be for the Applicant to show that adequate clearances, reflecting the increased risks associated with the higher voltage, have been provided in respect of these proposed upgrades²⁰. It is understood that SSEN have issued instructions to their own workforce regarding the use of vehicles under the reprofiled line. It will be for SSEN to show that they have given the same advice to affected landowners²¹.

²⁰ At <https://www.dpea.scotland.gov.uk/Document.aspx?id=1186978> uploaded 11 May the Applicant acknowledged "For example, in relation to upgrading the existing lines, there are different requirements for internal (to conductors, structures, etc) and external (to ground, objects, etc) clearances required at the differing voltages. 400kV requires higher clearances than at 275kV or 132kV".

²¹ The Reporters will note the requirements of ESQCR Regulation 3 (3).

3.2 Foreseeable risk

3.2.1 The Reporters' Direction of 14 May required the Applicant to provide the following:-

A detailed assessment of the foreseeable risk of danger to agricultural workers, having regard to the proposed clearance height of each conductor span (together with predicted variance in sag), the use of the over-sailed and immediately surrounding land, use of modern farm machinery including vehicles and necessary working clearances, use of rain guns / spray systems and any agricultural equipment or operations, which present a foreseeable risk of danger due to the proximity of the OHL.

3.2.2 In previous evidence to the Reporters, the Applicant stated that the "*embedding of TS 43-8 within the design process itself ensures that relevant factors are considered and risks minimised as part of that process*"²². The inability of the Applicant to provide evidence of risk assessments carried out during the design process appears to be at odds with both ESQCR and SSSEN publication TG-NET-OHL-011²³ which requires an Applicant to take into consideration the "*design ground clearance applicable to the usage of the land beneath the conductor*"

3.2.3 The Reporters' direction requires assessment of modern farm machinery and necessary working clearances. This request follows ESQCR and HSWA which require assessment of foreseeable risk, not only risk after operations have been altered.

3.2.4 In terms of CDM regulation 11 prior to construction the Principal Designer has the following duties (our emphasis):-

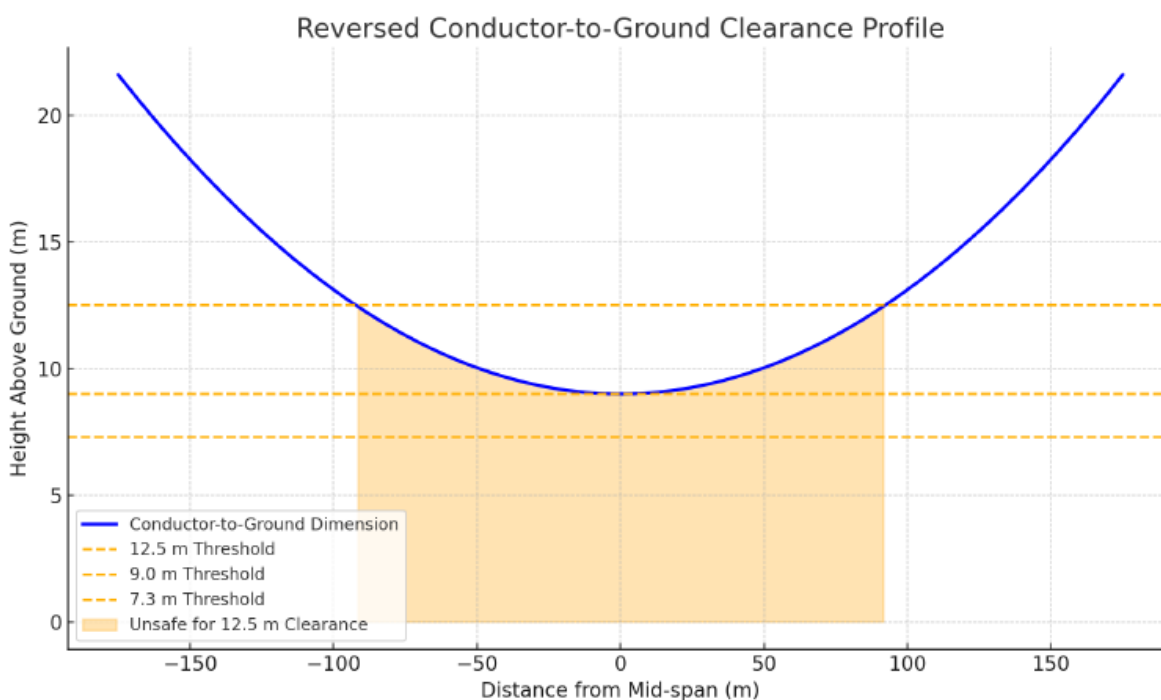
- (1) *The principal designer must plan, manage and **monitor the pre-construction phase and coordinate matters relating to health and safety during the pre-construction phase to ensure that, so far as is reasonably practicable, the project is carried out without risks to health or safety.***
- (2) *In fulfilling the duties in paragraph (1), and in particular when—*
 - (a) *design, technical and organisational aspects are being decided in order to plan the various items or stages of work which are to take place simultaneously or in succession; and*
 - (b) *estimating the period of time required to complete such work or work stages,**the principal designer must take into account the general principles of prevention and, where relevant, the content of any construction phase plan and any health and safety file.*
- (3) *In fulfilling the duties in paragraph (1), the principal designer must identify and eliminate or control, so far as is reasonably practicable, foreseeable risks to the health or safety of any person—*
 - (a) *carrying out or liable to be affected by construction work;*
 - (b) *maintaining or cleaning a structure; or*
 - (c) *using a structure designed as a workplace.*

²² <https://www.dpea.scotland.gov.uk/Document.aspx?id=1183860> – 3 (a)

²³ Overhead Line Clearances, LV to 400kV – Design standard (December 2021) 6.1.1

The Principal Designer has the main responsibility of preparing a Health & Safety file for construction projects; a legal document that is required by CDM Regulation 12 (5) on all notifiable construction projects.

3.2.5 The Applicant relies on percentages to set out clearances but has not addressed the issue of risk between spans and how this might affect agricultural operations as required by the Reporters. A failure to address the requirement to design out risk by engineering throughout the line introduces a potential safety issue between spans. Analysing by percentages of the length fails to address this. Assuming a benchmark of 12.5m (see table above) as a safe clearance and a sag of 9m at the lowest point the effect extends over about 180m as illustrated below:-



On the basis of SSEN's own guidance the width of this zone extends some 14m either side of the outermost conductor²⁴; a width of some 51.2m thereby sterilising up to 0.9 ha (2.2 acres) per span. This is considerably more than the footprint of the pylon.

3.2.6 SSEN refer to HSE guidance which sets out requirements to identify cordons and safe routes around such risk areas but have not addressed this foreseeable additional infrastructure in their Assessment.

3.2.7 The Applicant has failed to consider the extent of sterilised areas or to adequately address how affected parties can identify such zones when operating across the length of the proposed line. For example the Applicant at 4.3.10 refers to extensive LED lighting but fails to point out that such lighting is directed down on the harvesting system leaving in darkness the areas above where the conductors are planned. It will be for the Applicant or its agricultural consultant to set out how a machine operator concentrating on the work being undertaken is

²⁴ This accords with ENA TS 43-8 Table 7.

able to accurately judge the height of a cable over the machine as SSEN's design choice will require.

3.2.8 As has been pointed out in evidence to the Reporters, existing lines built in the 1950s rely upon derogations. SSEN is relying on HSE advice to farmers in respect of legacy lines to ameliorate design flaws in a new line. That derogation does not apply to new OHLs, as has been acknowledged in correspondence by the Applicant²⁵. No evidence has been provided to demonstrate that SSEN have obtained derogation for this project.

3.2.9 The Applicant at 3.7.1 expressly states **that it has not obtained** site-specific information about the particular machinery in use along the route. It has been given examples of such machinery. The Applicant's reference to "typical machinery" is a critical failing; the Reporters have evidence of actual machinery and actual machinery operating heights which have not been fully addressed in this latest "assessment".

3.2.10 The Reporters refer to 'working clearances' but the Applicant's assessment relies upon transport height or 'minimum operating height' rather than the height of machinery in ordinary and foreseeable working configurations²⁶. As set out by Galbraith in earlier submissions, this is particularly important for combines, forage harvesters, root and vegetable harvesters, sprayers, telehandlers, tippers, rain guns and irrigation equipment. The Applicant's assumptions amount to an operational restriction, not a risk assessment based on existing agricultural practice. The Applicant's latest assessment fails to evaluate such restrictions and the effect on harvest logistics or to address the socio-economic consequences.

3.2.11 At Appendix A the Applicant identifies foreseeable issues with ordinary agricultural/forestry operations, including use of machinery, access routes, field boundaries and storage/structures. It identifies spans where the derived maximum safe machinery height is as low as 4.77 metres (at N61-N62), 4.85 metres (at S3-S4), 4.93 metres (at N52-N53). It shows maximum machinery heights of 5.0 to 5.3 metres across numerous arable, forestry, grazing, and boundary locations. It does not explain why such risks were not designed out.

3.2.12 At their Appendix B the Applicant refers to **no** consented or permanent structures on the route. They therefore discount the requirement for normal clearances in the TKUP engineering design. SSEN design standard TG-NET-OHL-011 at 8.5.1 states:-

The clearances in Table 8.1 item 8.1.2 are passing clearances and are therefore not applicable in areas where vehicles are stationary. In these areas, a lorry driver can climb onto the top of the lorry and the vehicle can be deemed to be a stationary object. Table 8.2 gives the minimum clearance required in lorry parks (with a maximum lorry height of 5 m).

It is reasonably foreseeable that agricultural vehicles could be stationary under the line during normal agricultural operations. As illustrated by evidence before the Reporters many of these

²⁵ See for instance Will Kirk's letter dated 25 September 2024 at Appendix B of our submission dated 8 May numbered paragraph 6. Regulators will only grant a derogation if the network operator can prove that the variance does not present a heightened risk to grid security, public safety, or line maintenance workers. As we understand it a derogation application will be rejected if the operator can easily fix the issue via standard methods (such as increasing pylon height to provide a safe clearance. SSEN would have to establish that complying with the standard is disproportionately expensive or technically unfeasible.

²⁶ As has been identified this is contrary to ENA advice such as Look Out, Look Up and TS 43-8

have ladders etc. to access the top of the vehicle. For voltages of 400kV table 8.2 of the Applicant's own publication provides for a minimum clearance of 10.3m. It will be for the Applicant to explain why it has not considered this (an issue identified at Appendix G p61 of our 8 May submission). This illustrates the Applicant's continued failure to properly consider normal agricultural operations in the design of the OHL.

3.2.13 The Applicant's own Table 4.5 cites the Claas Lexion 760-8900 range with an operating height of 4.5–5.0 m when the grain tank is open. The site-specific figure given to the Applicant in February 2025 for a machine within that range is 5.35 m (discharge auger height). The Dewulf potato harvester (7.2 m working height) and Fendt Rogator sprayer (10.5 m maximum boom height when folding such as is required to manoeuvre round pylons), raised directly with the Applicant and used on land affected by the proposed OHL, do not appear anywhere in the Applicant's tables of "typical" machinery²⁷.

3.2.14 The failure to assess the foreseeable risk of the Dewulf potato harvester is of particular concern, given that the Applicant itself sought and obtained information from the manufacturers of this machine in February 2025 (prior to making the s37 Application) and was demonstrably aware from landowner meetings and correspondence that it is used on the OHL route²⁸.

3.2.15 The Applicant is fully aware of the operating height of the harvesting conveyor of the Dewulf and its relevance to the assessment of foreseeable agricultural operations beneath the proposed 400 kV overhead line:-

Dimension	Manufacturer's value
Height to top of unloading conveyor (without fall breaker)	5,995 mm (≈ 6.0 m)
Standard fall breaker	755 mm
Hydraulic self-levelling movement	354 mm
Transport height	3,995 mm (≈ 4.0 m)
Picking platform floor height	$\approx 2,571$ mm (≈ 2.57 m)

Derived operating height calculation	Result
Basic conveyor height	5.995 m
Plus standard fall breaker	+0.755 m
Subtotal	6.750 m
Plus hydraulic self-levelling	+0.354 m
Derived operating height	≈ 7.104 m (approximately 7.1–7.2 m)

The information supplied to the Applicant by the manufacturer demonstrates that the quoted conveyor height of approximately 6.0 m is not the normal operational configuration. The standard fall breaker and the hydraulic self-levelling system form part of the machine's working

²⁷ <https://www.dpea.scotland.gov.uk/Document.aspx?id=1186749> Appendix G (page 57 & 58)

²⁸ See Galbraith evidence 8 May at Appendix A

configuration and increase the effective operating height to approximately 7.1–7.2 m. Subsequent field measurements undertaken during harvesting recorded the machine at approximately 8.0 m while in operation²⁹.

It will be for the Reporters to decide the weight to be placed on the manufacturer's specification or on the observed field measurements; both are however materially higher than the 5.2 m assumption adopted in the Applicant's latest evidence.

3.2.16 This failure is material because, rather than use this to inform design at earlier stages, the Applicant has adopted substantially lower operational assumptions, including a working height of approximately 5.2 m in the specialist agricultural evidence. It would seem that the Applicant failed to take account of information from consultations in its design phase.

3.2.17 The significance of this failure is therefore not simply the absolute height of the machine, but the evolution of the assumptions used throughout the design process. This forms part of the wider chronology demonstrating the development of the Applicant's explanation of foreseeable agricultural operations and the failure in the engineering methodology said to underpin the design.

3.2.18 At 4.3.2 the Applicant asserts that agricultural machinery operators are protected by the "*Faraday cage effect*"³⁰. No supporting evidence is provided for this crucial assertion. Such a claim should also be considered against ENA TS 43-8, which does not address this proposition in its guidance. The Applicant is called upon to support its assertion and to show that the operator is safe from secondary effects of a 400kV electrical strike such as fire etc.

3.2.19 It is the combination of minimum height and foreseeable land use that ultimately determines the safety of an OHL design. ESQCR and ENA do not refer to mitigation; indeed, the ENA documentation referred to on page 24 of Galbraith's May report suggests that administrative management of this kind is inappropriate in the circumstances. Without a formal risk register, the Reporters cannot determine whether the Applicant has assessed foreseeable danger to agricultural workers in the design process, or whether the proposed safeguards are commensurate with the risk (particularly taking account of the risk of multiple fatalities).

3.2.20 ENA's "*Look Out, Look Up: Bespoke guidance for agricultural operations*" specifically states that 7 m clearance is required above the working height for safe operation of machinery during harvest. We have already identified that the average sag clearance in Section B of the line, the majority of which is PAL, is 11.41 m, and that of Section C (almost all PAL) is 11.04 m³¹.

3.2.21 The Applicant has also previously suggested that, in designing the line, it relied upon NFUS information that the tallest machinery was 6.5 m³². The Applicant does not appear to have considered this (or demonstrations of large machinery in operational mode hosted by NFUS) in the generic risk assessments set out in this assessment or to inform its design. At

²⁹ See ENA TS 43-8 Table 8 Item 2 Note 2

³⁰ A Faraday cage is an enclosure made of conductive material, such as copper or aluminium, that blocks external electromagnetic and electrostatic fields. In their Assessment SSEN themselves hedge "*will in some cases, provide protection*". This undercuts the weight SSEN place on this assertion.

³¹ Galbraith response 8 May Appendix E

³² Galbraith response 8 May Appendix C

5.2.9–5.2.12 the Applicant makes assertions regarding operational practice without supporting evidence. These assertions are contrary to evidence already before the Reporters³³ and cannot be accepted without further testing.

3.2.22 ENA TS 43-8 draws a distinction between 'passing' clearance (a moving object, assumed not climbable) and the higher 'normal' clearance of 5.3 m (an object upon which a person can stand). The Applicant's own Figure 3 illustrates this distinction using a person standing on a static object. Galbraith, in February and April 2025, provided the Applicant with specific evidence of machinery in use on the route with elevated personnel platforms. Neither the Applicant's main report nor Appendix A engages with this evidence, and no explanation is given for why the passing clearance, rather than the normal clearance, is the correct basis for machinery of this type³⁴. Such machinery can reasonably be expected to be static in a field, and it will be for SSEN to address this and its own design standard TG-NET-OHL-011 paragraph 8.5.1 in this respect. It is noted that Will Kirk of SSEN in his letter of the 25 September 2024 also identifies the importance of normal clearances³⁵.

3.2.23 The Applicant at Table 4.5 of its latest assessment identifies a combine harvester **transport** height of up to 3.5 to 4 m³⁶. At 5.2.9 the Applicant asserts:-

To permit safe passage beneath OHLs, operators routinely lower grain covers or grain tank extensions. While this may marginally reduce grain carrying capacity, modern combines are capable of travelling significant distances before unloading becomes necessary. Although the unloading auger may extend higher than the body of the machine, operators would not ordinarily discharge grain while passing beneath an OHL, particularly on undulating ground where additional caution is required. When the grain cover and tanks extensions are lowered, the machines height is reduced to it's transport height which is the lowest height the machine can operate.

It is however noted that SSEN at 4.3.5 concedes that "there are some older models which cannot operate with the lids lowered", quantified only as "a limited number". That concession supports our previous evidence. It is for the Applicant to quantify that number.

3.2.24 The Applicant's evidence repeatedly relies upon the proposition that modern agricultural machinery can be operated at its transport height when passing beneath the proposed overhead line. Respectfully, that proposition requires considerably more evidential support than has been provided. There is an important distinction between a machine that can travel in transport mode and one that can undertake harvesting operations in its normal working mode as is illustrated above.

3.2.25 The Applicant refers to the 'lowest height the machine can operate'. That phrase should not be treated as synonymous with the lowest height at which the machine can undertake normal agricultural operations. Transport mode exists primarily to facilitate movement between fields and on the public highway. Operational mode is the manufacturer's

³³ See for instance Galbraith response 8 May Appendix G

³⁴ At 4.3.7 SSEN identifies a transport height of up to 4m for forage / silage machinery but a 5.5m working height. SSEN fail to explain how such a machine can operate under the OHL in transport mode. Applying the latest ENA advice such a machine would require a cable clearance of at least 12.5m

³⁵ Galbraith's evidence 8 May Appendix B

³⁶ This is at odds with Galbraith risk assessments for machinery in use on the route already before the Reporter

intended configuration for carrying out agricultural work. Those are fundamentally different operating conditions with different engineering purposes.

3.2.26 The Applicant's evidence is that modern combines are able to operate with lids open while some legacy models cannot. It will be for the Applicant to explain what steps were taken to research this (and when) before making such an assertion.

3.2.27 When closed, the combine lids block incoming grain from the clean grain (or Bubble-up) auger; it is for this reason that most combines lids are open during field work and are closed only when the tank is empty for storage or transport. In the context of the Applicant's evidence the Reporters should be aware that our own research indicates:-

- the Claas Lexion range (from the legacy 400 series up to the modern 5000–8000 series³⁷) if lids are closed while there is grain inside, can result in the internal grain distribution levelling augers being damaged or twisted. Claas dealers Sellars has confirmed that folding in of the hopper lids is only to be used for a very short distance and the hopper must be empty before this is done and re-emptied again before unfolding the lids to prevent damage to the bubble auger which fills the tank.
- We understand that the operator's manual for the New Holland range specifically states that their combines should not be operated with the lids closed. Operating a New Holland combine (such as the conventional CX series, twin-rotor CR series, or Next-Gen CR11) with closed lids results in severe mechanical blockages and software warning. On New Holland combines, the clean grain elevator transfers grain to a central loading auger that pushes the crop upward into the tank. If the lids are closed, this auger immediately deadheads against the undersides of the covers. When the top auger is blocked by the closed lids, grain backs up down the entire clean grain elevator. This causes the slip clutch on the elevator drive to engage immediately, or it will snap the drive belts and shear drive pins
- John Deere combine harvester cannot harvest with its grain tank lids closed. The power-folding grain tank extensions and covers must be fully extended to the open position during harvesting so the loading auger can freely deposit crop into the tank. Operating a John Deere combine (such as an S-Series or X9 Series) with closed covers causes immediate mechanical failure and triggers electronic safety lock.
- Likewise, operating a Massey Ferguson combine (such as the standard MF Activa/Beta series or the flagship IDEAL series) with closed lids will result in severe mechanical damage and electronic error locks. If the lids are closed, the crop hits the underside of the panel, packs tightly, and jams the top auger.
- Operating Fendt combines (such as the conventional Corus, C-Series, L-Series or the high-capacity IDEAL series) with closed lids the manufacturer warns will lead to severe component stress and software lockouts. This is because, when closed, lids leave very little clearance, deadheading the auger, compacting the grain, and causing the clean grain elevator belt to slip or break its shear pins.
- Operating Case IH combines (including the legacy 1600 / 2300 series, the standard Axial-Flow 150/250 series, or the flagship AF9, AF10, and AF11 models) with closed lids leads to instant grain restriction and component damage. Case IH Axial-Flow combines use a high-capacity vertical fountain auger in the center of the tank to distribute the grain. If the lids are closed, the grain has nowhere to

³⁷ This includes the Claas Lexion 760 which has been drawn to the attention of SSEN and the Reporters

escape, causing the crop to pack tightly inside the tube and instantly plug the auger

3.2.28 During harvesting, the clean grain elevator continuously transfers crop into the grain tank via loading augers. Grain tank extensions have to be open to permit the normal flow and distribution of crop within the tank. Manufacturers' operating manuals commonly indicate that grain tank covers can only be closed for transport or storage once the grain tank has been emptied; this is because the bubble auger will be damaged if raised or lowered when there is grain in the tank. Some manufacturers also provide operator warnings, fault messages or operating restrictions if harvesting is attempted outside the intended operating configuration.

3.2.29 This emphasises the need for the engineering clearance design to be based on the normal working height (lids open, discharge auger out) rather than the transport mode in that normal harvesting operations cannot be carried out in transport mode as SSEN assert.

3.2.30 At 4.3.7 SSEN refers to forage harvesters at a **transport** height of 4 m but an **operational** height of 4.5 to 5.5 m; the Applicant fails to explain that a forage harvester cannot operate without the means to discharge into a trailer.

3.2.31 Similarly, the Applicant states that modern root and vegetable harvesters are now commonly designed with on-board storage capacity and that elevated operator platforms are becoming less typical. Those assertions may be correct in relation to certain machines and operations, but no supporting evidence has been produced. The Applicant has not identified:-

- The manufacturers consulted
- the models assessed;
- the agricultural sectors examined;
- the proportion of machines said to operate without elevated platforms; or
- the evidential basis upon which those conclusions have been reached.

Without such information, the Reporters cannot readily determine whether the Applicants' assertions accurately reflect the foreseeable agricultural operations undertaken along the proposed route.

3.2.32 At 5.2.10 SSEN assert that it "*is becoming ever less typical for operators to be carried on open elevated rear platforms during harvesting operations, with most workers operating at trailer level instead*". It will be for the Applicant to provide evidence to support this statement.

From our research the use of picking tables is commonplace for the growing of seed potatoes (a common land use along the proposed route as SSEN are aware). The Reporters already have evidence of machinery operating on the line with elevated rear platforms which appears to be overlooked in the Applicant's latest assessment and review of their design.

3.3.33 Our research with Grimme indicates that SSEN's advisor is wrong in saying that the majority of these machines have staff working on them at "trailer level" there is only a very few of the machines would have pickers at low level (specifically OXBO harvesters). The vast majority of potato harvesters are of the Grimme brand, which if pickers are required, are up high on top of the machines.

3.2.34 The Applicant's assessment refers to a Grimme Varitron with an operator height of 5.2m, but fails to take into account that such machinery is usually operated with a fall breaker,

which can add to the height. Grimme UK's Tom Bannon has informed us that their machines with the holding bunkers will not operate whilst in "transport mode" as the elevators use the empty bunker space to fold into for going into "transport mode". Also, the harvesters will not run with the fold down roof collapsed where the pickers would normally work from on top of the machines. This undermines SSEN's position with regard to their use of transport mode.

3.2.35 The Applicant suggests that this Grimme is a representative machine but fails to assess the Dewulf harvester which is also in use on the route. SSEN itself sought and obtained manufacturers data for this machine in February 2025. It will be for them to explain to the Reporters why they have now chosen to ignore it in this latest assessment.

3.2.36 At p12 of our report of the 8 May we set out the latest ENA advice note '*Look out look up*' regarding spraying. The OHL design before the Reporters is of pylons situated in the middle of fields requiring booms to be folded to negotiate round the obstacle and the risk this poses. Common tramline spacings are 12m, 24m, and 36m, which match the working widths of standard sprayers and fertilizer spreaders. The ENA guidance specifically states:-

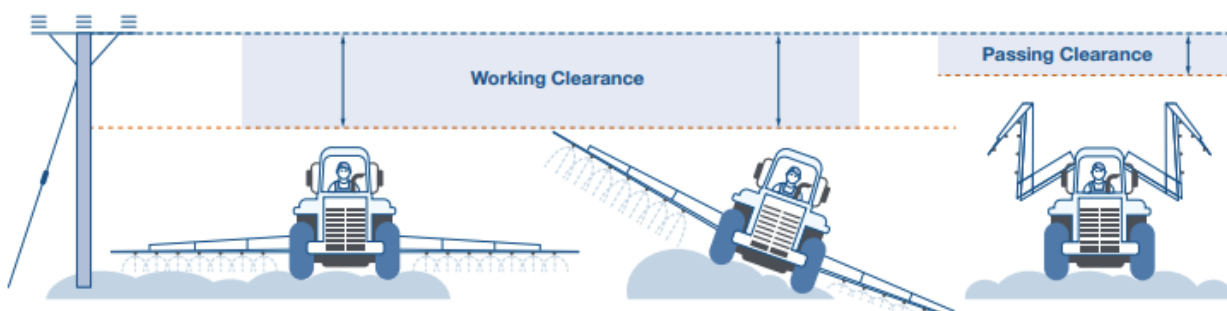
For Spraying:

Working clearances should be applied for any activity taking place where the booms are extended in the vicinity of overhead power lines (e.g. in operation). Passing clearances only apply when the booms are folded, inoperable and of fixed height.

It will be for the Applicant to satisfy the Reporters that they have correctly addressed the issue of sprayers **working** in close proximity to the OHL in their engineering design for the new OHL.

Clearances for Spraying

Voltage	Working near overhead power lines Working Clearance	Passing under overhead power lines Minimum Passing Clearance
230/415V	3 metres	1 metre
1kV - 33kV	3 metres	1.5 metres
132kV	6 metres	2.6 metres
275kV	7 metres	3.6 metres
400kV	7 metres	4.3 metres



This latest ENA guidance also states that stowing and folding/unfolding of the booms must be carried out at least 10 metres away from overhead power lines which has practical implications that the Applicant has not addressed.

3.2.37 At 4.3.8 of their latest assessment assert that “*modern booms fold horizontally rather than vertically*”. It will be for the Applicant to explain that assertion. The usual folding sequence is:-

- **Raise the Boom:** The operator first lifts the entire spray structure to its maximum height using cab controls to clear the body, wheels, and fuel tanks.
- **Retract Outer Tips:** Outer breakaway wingtips or end-sections fold or telescope inward first to reduce overall leverage and length.
- **Vertical Tilt and Swing:** Hydraulic rams tilt the main left and right wing sections vertically upward or swing them forward/backward.
- **Staggered Clearance:** Systems often fold one side slightly ahead of the other (or use a slow-fast-slow profile) to prevent physical contact with parts like fuel caps or the cab.
- **Lock and Rest:** The booms lower securely into cradles, engaging mechanical or hydraulic locks for transport.

3.2.38 The Fendt Rogator is demonstrably used by agricultural contractors on the route and when folding has a maximum height of 10.5m. The Applicant was made aware of this in a letter dated 24 February 2025 following a site meeting (**Appendix C**). It will be for the Applicant to explain why they have not considered this in their design.

3.2.39 **The relevant question is whether the proposed overhead line has been designed to safely accommodate foreseeable agricultural machinery during its normal agricultural operation.**

That is fundamentally different from establishing whether machinery can temporarily reduce its height by folding components into a transport configuration. Transport mode exists solely to facilitate movement on public roads or between fields. It is not the manufacturer's intended working configuration for agricultural operations.

3.2.40 The importance of the Reporters' direction cannot be overstated. They are not merely requesting clarification of an engineering detail. The Reporters require supplementary environmental information because the issue has become material to the reasoned conclusion which Scottish Ministers must reach on the likely significant effects of the proposed development.

3.2.41 SSEN's publication PR-NET-ENV-501 acknowledges that “*Health and Safety considerations are intrinsically linked to technical design and implementation.*” It would appear that the Applicant has not applied this basic proposition to the proposed design. SSEN relies on generic assumptions about agricultural practice, existing overhead line infrastructure, landowner compliance with safe systems of work, and compensation mechanisms, rather than designing out risk. The Reporters' direction is not satisfied by such a conclusion, nor by a statement that agricultural operations already occur beneath existing overhead lines (or examples such as Appendix E of the Applicant's report).

3.2.42 Examples of arable farming taking place under an OHL are not evidence of safe practice – particularly where it appears that the Applicant may be lax in addressing the requirements of ESQCR Regulation 3(3). The Reporters required a detailed assessment by reference to each conductor span, each relevant land use, modern farm machinery, working clearances, rain guns and spray systems, mitigation, residual risks and agricultural land-use implications. This has not been provided.

3.2.43 The purpose of compliance with the requirements of CDM, ESQCR and ENA TS 43-8 is to ensure that overhead lines are designed to safely accommodate the foreseeable normal use of the land beneath them.

3.2.44 Accordingly, where the foreseeable use of the land is agricultural production, the relevant engineering assessment should be based upon normal agricultural operation, including the manufacturer's intended working configuration of machinery during harvesting and field operations. It should not be based upon transport mode, which is a temporary configuration intended solely for movement between locations and is not the normal operating condition in which agricultural work is undertaken.

3.2.45 If the proposed design can only accommodate machinery when it is reconfigured into transport mode, that does not of itself demonstrate that the design is capable of safely accommodating the foreseeable agricultural use of the land.

Rather, it suggests that the agricultural operation has to be modified to fit the design, rather than the design being determined by the foreseeable agricultural operation. That is precisely the issue which the Reporters requested the Applicant to address through its further information on agricultural operations.

3.2.46 High clearances next to pylons do not address operational interference elsewhere within the span. SSEN relies upon tertiary mitigation but fails to address how affected parties are able to identify safe clearance routes between spans. For example, the Applicant has not addressed the requirement for 'goal posts', or their impact and effect.

3.2.47 The Reporters need to know what restrictions are required to make ordinary working operations safe, and what consequences those restrictions have, in order to satisfy themselves that the design complies with existing legislation and that the engineering design minimises the impact on PAL, as required by NPF4.

3.3 Mitigation required

3.3.1 The Reporters requested that SSEN provide:-

In each location (i.e. for each conductor span) where a foreseeable risk of danger exists, the precise mitigation measures proposed in each location should be identified to eliminate or otherwise minimise significant effects.

3.3.2 The question posed by the Reporters was whether the proposed clearance heights in each location would themselves, individually or cumulatively, give rise to significant effects, and what precise mitigation would be required where risk exists. Where mitigation requires changes to agricultural practice, those changes themselves had to be assessed qualitatively and quantitatively (see Section 3.4 below).

3.3.3 The Reporters required the Applicant to identify, for each conductor span where a foreseeable risk of danger exists, the precise mitigation measures proposed to eliminate or otherwise minimise significant effects. This Direction requires more than a general statement that farmers, contractors and landowners remain subject to health and safety legislation. It requires the Applicant to explain:

- whether the risk can be avoided through the engineering design;
- whether it can be reduced through additional project-specific measures;
- what residual risk would remain;
- what operational controls would then be required; and
- what effects those controls would have upon agricultural land use and agricultural businesses.

The distinction among these stages is fundamental. A measure which prevents or reduces an effect through the design of the overhead line is materially different from a measure which requires the farmer to alter an existing agricultural operation after the line has been constructed. The former changes the development, whereas the latter changes the use of the land.

3.3.4 The Applicant has failed to address the Reporters' Directions. The Applicant's Assessment does not identify, for each relevant span, whether risk exists, whether the risk is eliminated by clearance, whether it is managed by operational restrictions, what those restrictions are, **or whether engineering mitigation** was considered. As illustrated at 3.1.33 most spans have risk in that SSEN's design has not engineered this out.

3.3.5 Moreover, the Applicant has failed to show why such engineering mitigation has been rejected during the design process.

3.3.6 The Applicant's assessment instead appears to proceed upon the basis that the adopted conductor clearances do not require modification and that foreseeable agricultural risks can instead be addressed through existing legal obligations and changes to agricultural practice³⁸.

³⁸ This application does not proceed on the basis of the *Rochdale Envelope* (cf Galbraith evidence 8 May). The Applicant's counsel appeared to rule out extensive use of LODs at the Conditions Hearing of the 26 June.

3.3.7 In EIA methodology, mitigation measures are typically classified into three tiers:

- primary (or 'embedded/designed-in') mitigation, which forms part of the project design itself;
- secondary (or 'additional') mitigation, which comprises measures specifically proposed to address identified significant effects; and
- tertiary mitigation, referred to as 'inexorable' mitigation (defined below).

3.3.8 Primary (embedded or designed-in) mitigation consists of measures incorporated into the design of the development from the outset. In the present context, primary mitigation could include:

- route or alignment refinement;
- selection of tower positions that avoid particularly sensitive agricultural operations;
- increased conductor clearances;
- taller towers;
- altered span geometry;
- changes to tower type
- undergrounding at locations where adequate operational clearance cannot otherwise be achieved; and
- designing the overhead line by reference to the foreseeable working height and configuration of machinery used beneath it.

These measures alter the physical project so that adverse effect or risk are eliminated or reduced at source. Primary mitigation normally provides the most reliable form of mitigation because it is physically incorporated into the design and does not depend upon continuing human intervention.

3.3.9 Secondary mitigation consists of additional measures developed in response to an identified effect which has not been adequately avoided through the embedded design. Depending upon the circumstances, such measures could include:

- span-specific engineering alterations;
- local raising or reconfiguration of conductors;
- engineered crossing points;
- physical protective measures such as line insulation;
- permanent access or operational arrangements designed for a specific location;
- switching off lower conductors to reduce risk during harvest etc.
- project-funded modification or relocation of affected infrastructure; or
- other enforceable measures directed at the particular effect identified.

Secondary mitigation remains mitigation provided by, or forming part of, the development. It is not simply a restatement of the independent legal duties of those affected by it.

3.3.10 The Applicant's Assessment states that no primary mitigation is applicable and proposes no additional secondary mitigation. The Applicant instead relies upon "tertiary

mitigation" comprising, SSEN considers, legal obligations on farmers, landowners and contractors to assess risks and operate safe systems of work.

3.3.11 The key aspect of the Applicants latest assessment is at 5.2.5 which states (our emphasis):-

*This Tertiary Mitigation would result in machinery height being reduced to a height that is safe for continued operation around the Proposed Development by ensuring that it does not infringe on the minimum electrical clearance of 3.1 m, which may also require the inclusion of an additional 1.2 m to allow for movement across uneven ground or where there are likely to be variations in machinery height due to its operational status. **This allows continued safe operation in proximity to the Proposed Development and therefore does not impact on existing land use.***

3.3.12 Tertiary (standard or "inexorable") mitigation generally refers to measures that would arise anyway through ordinary legal compliance, established practice or standard procedures, whether or not they were identified through the EIA process³⁹. Examples relied upon in the Applicant's assessment appear to include:

- farmers and contractors undertaking their own risk assessments;
- preparation of safe systems of work;
- lowering machinery;
- stowing augers, elevators or other components;
- restricting the use of irrigation equipment;
- avoiding particular operations beneath conductors;
- warning signage and barriers;
- supervised crossings;
- consultation with the Applicant's Asset Management team; and
- reliance upon the general duties imposed by health and safety legislation.

3.3.13 Reliance upon a farmer's legal obligation to work safely cannot, by itself, establish that the Applicant first examined whether the introduced risk could reasonably be engineered out. There is evidence from SSEN to show that increases in pylon height were considered in correspondence but no evidence has been provided to demonstrate that such mitigation by design were considered in the design phase or why such an option was discounted.

3.3.14 The Applicant's argument at paragraph 3.5.7 (repeated at 5.1.1)⁴⁰ is that such '*mitigation would be delivered in any event, and therefore any effects which would arise without it do not need to be identified as potential effects...*'

³⁹ It is notable that SSEN have structured this as 'tertiary mitigation' to enable them to argue that no compensation should be payable by them for such mitigation because it is nothing to do with their design choice but imposed by third parties in that it is 'inexorable' (hence they have scoped this out from socio economic impacts). There is a clear causal link between the Applicants design choice and the requirement for affected farmers to modify Agricultural operations.

⁴⁰ In both cases citing IEMA (since 2025 the Institute of Sustainability & Environmental Professionals ('ISEP') "*Implementing the Hierarchy from Concept to Construction*" (August 2024 page 30). This publication is only available for payment. The Applicant is called upon to lodge this document given its reliance upon it. It is potentially significant that, in relation to this document, on their website ISEP state :-

Too often, our members have reported inadequate implementation of construction phase mitigations, and insufficient monitoring and enforcement of environmental conditions agreed upon at the assessment and consenting phase. Furthermore, our construction phase environmental managers have reported inadequate information being transferred to the construction phase teams, and often inflexible or impractical conditions or mitigation measures leading to costly and lengthy delays to the discharge of planning conditions, giving environmental management a negative reputation for introducing costly 'red tape'.

3.3.15 SSEN overlook the fact that the route has no such burden at the moment in that the hazard has not been introduced. Such a requirement would not arise if the Applicant had addressed such risks in reaching its design as the legislation requires.

3.3.16 CDM regulations clearly require the Principal Designer, when preparing or modifying designs, to eliminate, reduce or control foreseeable risks that may arise during construction and the maintenance and use once it is built. It will be for the Reporters to ascertain whether the Principal Designer was aware of such duties under CDM and what steps were taken to eliminate foreseeable health and safety risks to anyone affected by the project during the design phase.

3.3.17 Identification of a farmer's obligation as 'inexorable' mitigation in such circumstances is entirely inappropriate where engineering design by the Applicant (such as increasing clearances) would design out risk and negate the requirement for such mitigation.

3.3.18 The proposition that this mitigation is 'inexorable' requires careful examination in the circumstances of this development. The operational controls relied upon would not arise in their present form but for the introduction of the proposed overhead line across agricultural land and the failure to design out such risks. For example:

- a combine operator would not otherwise be required to close a grain tank or alter unloading arrangements because of a 400 kV conductor;
- a root-crop harvester would not otherwise be required to lower or refrain from using essential working components because of conductor clearance;
- an irrigator would not otherwise require a new exclusion zone extending from the overhead line;
- a farmer would not otherwise require a supervised route, warning system or consultation with the transmission operator before carrying out an ordinary agricultural operation;
- productive land would not otherwise be constrained by a machinery-height limit derived from the height of electrical infrastructure introduced above it.

These are therefore not simply background controls operating independently of the Proposed Development. They are operational consequences created by the interaction between the Proposed Development and the foreseeable use of the land beneath it. There is a clear causal link between these impositions on affected parties and the proposed design

3.3.19 The hierarchy is not merely a matter of terminology. It reflects a substantive difference between:-

- eliminating or reducing an effect through the design of the development and
- requiring those affected by the development to manage that effect through changes to their own conduct.

3.3.20 This is particularly significant where the foreseeable consequence of error is contact or flashover involving a 400 kV overhead line and potentially several persons working on or around agricultural machinery. As the ENA risk matrix for a 400 kV line makes clear, this is a

Red / Intolerable situation and cannot be managed administratively, as the Applicant seeks to do.

3.3.21 The greater the foreseeable severity of the consequence, the stronger the reason for examining whether the risk can first be removed or reduced through engineering design.

3.3.22 The obligation to create safe conditions falls upon the Applicant, not upon affected parties. SSEN **could** have designed out such risk but has chosen not to do so. It now seeks to justify that approach by passing the risk to affected parties. This is not permissible under the requisite legislation.

3.3.23 The SSEN website⁴¹ states:-

*We enter into agreements with landowners and occupiers to enable us to install and maintain our assets on their land. These arrangements detail our rights and responsibilities to landowners and occupiers **but also set out any restrictions that enable us to meet safety standards and protect our asset integrity.** These may include constraints on development, planting or other works in the vicinity of our assets.*

3.3.24 The wayleave sought in the Necessary Wayleave process for this line by the Applicant clearly seeks to pass on SSEN's failure to design out risk by passing this responsibility onto the land owners affected:-

7. The Company shall indemnify the Owner and occupier of the lands and any other person deriving title from the Owner or occupier against all loss, injury and damage caused to the Owner, occupier and such person and to their property reasonably foreseeable by reason of or in consequence of the electric lines except so far as any such loss, injury and damage may be due to, or caused by, the wrongful act, neglect or default of the Owner, occupier or such person and provided that the Owner and/or occupier of the lands and/or any other person deriving title from the Owner or occupier must mitigate any such loss, injury or damage where it is reasonable for the Owner, occupier and such person to do so.

3.3.25 In such documentation the Applicant refers to Regulation 17 and ENA TS 43-8 (which is available only upon payment). Throughout this application the Applicant has not made the impact of its proposals readily ascertainable by affected parties⁴².

3.3.26 ESQCR, HSWA and the Electricity at Work Regulations require the prevention of danger so far as is reasonably practicable, including the suitable placing of conductors. Section 3 of HSWA requires an employer to conduct its undertaking so as to ensure, so far as is reasonably practicable, that persons not in its employment are not exposed to risks to their health or safety, and the Management Regulations require suitable and sufficient risk assessments and preventive and protective measures. The Applicant's duties therefore require it to consider whether risk can be eliminated or reduced at source through design, including increased conductor heights, altered tower positions, route adjustments or other engineering measures. The Reporters required a clear schedule showing how each identified risk is eliminated or minimised.

⁴¹ [Helping you work safely near our network - SSEN Transmission](#)

⁴² SSEN continue to do so by using a pylon numbering system which means nothing to parties subject to Necessary Wayleave applications which use a different numbering system. SSEN have declined requests to provide a translation between the numbering used in correspondence with landowners and that used in the application and this latest report.

3.3.27 The existence of duties on farmers and contractors does not displace the Applicant's legal duties, as the promoter, owner and operator of high-voltage electrical infrastructure, to eliminate risk at source through design. That statutory duty to ensure safety is non-delegable and non-transferable.

3.3.28 It is not sufficient to pass the operational burden to farmers and then treat their compliance with that burden as an environmental mitigation measure. As set out above, the present 400 kV design embeds a foreseeable multiple-fatality hazard which the ENA risk matrix classifies as Red / Intolerable, and which cannot be managed administratively as the Applicant appears to propose.

3.4 Qualitative and quantitative assessment

3.4.1 The Reporters sought the following from SSEN:-

Where a residual foreseeable risk of danger is identified across a span, or where mitigation would involve changes to the use of land beneath and/or near to the overhead line span, a detailed qualitative and quantitative assessment of the agricultural land use implications of the proposed development is required (for example, whether land, including prime agricultural land, would become sterilised or less productive, or where agricultural land use practices would need to be altered in order to be undertaken safely). Any consequential socio-economic effects should also be identified.

3.4.2 The Reporters' direction required detailed qualitative and quantitative assessment where mitigation involves changes to land use or agricultural practices. The Reporters expressly identified sterilisation, reduced productivity and altered agricultural practices as matters requiring assessment.

3.4.3 The Applicant has not fully addressed this requirement and its conclusion that land use is not affected in the circumstances is not supported by the evidence in its own Report.

3.4.4 The Applicant's Table 3.2 defines a significant land use effect as land '*sterilised by vertical clearance heights*' and Not Significant as land '*not affected by them*'. The Direction says sterilised or less productive. Under the Applicants approach, reduced productivity, the outcome the Direction expressly named, has no category to fall into, so the assessment was structurally incapable of returning a significant land use finding short of total sterilisation whatever the evidence showed⁴³.

3.4.5 The restrictions arising out of the Applicant's design are acknowledged by them as including:

- Changing use to lower machinery;
- preventing the use of working components;
- prohibiting elevated platforms;
- restricting irrigation;
- requiring additional headlands or sterile areas;
- altering harvesting routes;
- creating supervised crossing points;
- waiting for the transmission operator's advice;
- excluding contractors unfamiliar with the location; or
- replacing modern machinery with smaller or less efficient equipment

⁴³ The qualification '*not affected by them*' suggests that the deliberate design choice made by the Applicant is not responsible for such productivity consequences. This is a matter the Reporters need to carefully consider.

3.4.6 The Reporters expressly requested a detailed qualitative and quantitative assessment where mitigation would involve changes to land use or agricultural practice, including potential sterilisation, reduced productivity and consequential socio-economic effects. These may themselves give rise to significant environmental, agricultural and socio-economic effects which have not been properly addressed by the Applicants.

3.4.7 A measure cannot be treated as an answer to an environmental effect without assessing the consequences created by that measure. Accordingly, even where an operational control is considered acceptable from a safety perspective, the EIA must still examine:

- the land area affected;
- the frequency and duration of the restriction;
- the agricultural operations affected;
- the crops and machinery affected;
- productivity and yield consequences;
- additional labour and contractor costs;
- delays during weather-sensitive operations;
- implications for crop quality and storage;
- loss of flexibility to adopt future machinery or farming technology; and
- whether the residual effect remains significant.

3.4.8 The Applicant's assessment of land take is based on the pylon footprint and permanent access. SSEN have failed to take into account ENA guidance that no agricultural operations take place within 7m of 400kV structures ⁴⁴.

3.4.9 The Applicant refers generally to affected parties altering existing farming practices. Its suggestions of lowering machinery, stowing augers, avoiding certain irrigation practices, warning signage, barriers, supervised crossings and contacting the Applicant's Asset Management team plainly involve changes to the existing use and operation of the land, giving rise to additional time and cost. No attempt has been made to assess the effect on harvest logistics, trailer movement, time loss and productivity. These restrictions may affect productivity, time, labour, crop handling, contractor operations and business viability, yet they have not been properly assessed. They cannot be assumed to be insignificant.

3.4.10 The Reporters' direction expressly identifies rain guns and spray systems. The Applicant's report at 5.2.13 acknowledges that it recommends irrigators are not used within 30 m of the nearest conductor but fails to address the impact of such a restriction⁴⁵. Irrigation restrictions may materially affect potatoes, vegetables, soft fruit and other high-value crops, particularly in light of climate change. The report fails to identify the area and extent of crops affected, or to quantify the productivity and socio-economic consequences. At 5.2.26 the Applicant e mitigation required. SSEN refers to compensation, effectively acknowledging that

⁴⁴ SHEPD are enforcing an exclusion zone of 3m round individual poles on the basis of ENA TS 43-8 albeit wayleaves payments are based on a 1m radius round poles. SSEN base their assessment of land take on a 16 x 16m pylon with a land take of 256m². This takes no account of the potentially wider exclusion zone. The latest ENA guidance requires a 7m exclusion zone in addition to this – ie 30 x 30m; an area of 900m² per pylon

⁴⁵ ENS TS 43-8 6.2 and Table 2 goes further. It states that the 30m clearance for irrigators, slurry guns and high pressure hoses "*shall not be infringed*". At its widest point the line on average 23.1m wide (the middle cross member). Allowing for the 30m either side this affects about 490ha (1,211 acres) of PAL along its length.

there is an impact. Financial compensation is not mitigation and, in any event, if not agreed, falls to be assessed as a one-off claim and not as envisaged in this Assessment.

3.4.11 A field is not “unaffected” simply because it remains physically capable of being farmed in some form. Arable land where a combine cannot be used safely will mean that crops habitually grown along the route can no longer be grown where there is insufficient clearance. SSEN are demonstrably aware that steps have to be taken to identify such unsafe zones. TG-NET-OHL-011 gives guidance for safety-zone barriers at 18.2:-

Barriers erected in accordance with GS6 to establish a safety zone parallel to the overhead line shall have a minimum horizontal separation measured from the outermost conductor of the overhead line in accordance with Table 18.1.

Table 18.1 specifies the requirement for barriers 14m from the outermost conductor. The Applicants latest assessment fails to fully identify the areas between such spans where this may occur or, despite identifying the need for such barriers, the impact of these.

3.4.12 Reduced productivity, reduced crop choice, increased operating time, increased labour costs, altered rotations, reduced irrigation capacity, contractor constraints and machinery replacement costs are all land-use implications.

3.4.13 The Reporters expressly required a detailed qualitative and quantitative assessment of land use implications and consequential socio-economic effects which should extend to food security. Appendix F (AECOM) is SSEN's answer to that limb. Appendix F makes three points:-

- paragraph 1.1.5 admits: *"No additional analysis has been undertaken to inform this statement or to verify the findings of the above-mentioned evidence."* Appendix F therefore stands or falls entirely with the Agricultural Operations Assessment. If that assessment is flawed, so is F.
- paragraph 1.1.6 again scopes out *"effects arising solely from the particular circumstances of individual land holdings"*. Site-specific loss is excluded for a second time, in the very document meant to quantify it.
- paragraph 3.1.10 dilutes the impact to 0.004% of the regional PAL resource and 0.001% of Scotland's, but counts only the 4.97ha of permanent tower base and track take. This framing conceals concentrated local effects (sterilisation, reduced cropping flexibility, irrigation restriction) and does not engage the risk to the seed potato industry at all.

3.4.14 At 5.2.5 the Applicant claims that reducing machinery height *"does not impact on existing land use"*. This is contradicted later in the same section, at 5.2.21, which contemplates compensation for *"adapted operations"*, *"varied machine use or loss or reduction of agricultural production"*.

3.4.15 The Applicant's report acknowledges that compensation may be considered where adapted operations cause loss or reduced production — an acknowledgement inconsistent with a conclusion that no land-use effect requires assessment. Design for safety to ALARP would have reduced the impact on agricultural operations to a level of acceptable risk, and reduced the impact on agriculture in terms of NPF4.

3.4.16 The Applicant refers to '*recommended wayleave rates*' and makes assertions regarding these. The Anderson Centre works with the ENA to produce wayleave rates based on England & Wales. It is based on the '*obstructing feature*' which is seen as the pylon or pole. As the Applicant will be well aware from the attached notes area loss payments calculation "*has regard to the footprint of the structure and accounts for the land area that is not farmed because of the structure being there and the additional wheelings and tramlines created.*"⁴⁶ It does not address issues such as sterilisation of land due to clearance heights. SSEN also fail to point out that these payments rates are not endorsed by NFUS.

3.4.17 The possible availability of compensation does not remove the need to follow the mitigation hierarchy. Compensation may address some financial consequences after loss has occurred. It does not:

- remove the electrical hazard;
- increase conductor clearance;
- enable machinery to operate safely;
- restore operational flexibility;
- prevent disruption during time-critical harvesting;
- replace lost productive capacity; or
- demonstrate that the adverse effect was first avoided or reduced through design.

Compensation is not a substitute for primary mitigation, nor does it convert an unassessed operational restriction into an insignificant environmental effect⁴⁷.

3.4.18 As the Reporters will be well aware, in environmental law and impact assessment developers are required to follow a strict, step-by-step framework to address ecological damage (the 'mitigation hierarchy'):

Avoid: Modify the project design or location to entirely prevent environmental damage from occurring (e.g., avoiding PAL or ancient woodland).

Mitigate (or minimize): Implement measures to reduce unavoidable harm to the lowest possible level (e.g., increasing clearances to reduce effect on agricultural operations or future impact on PAL).

Compensate (or offset): Address the remaining, unavoidable "residual harm" after all avoidance and mitigation efforts have been exhausted.

3.4.19 This hierarchy is consistent with the requirements of NPF4. Compensatory measures are a last resort. There is a clear distinction between the terms 'mitigation' and 'compensation'. In an EIA, '*mitigation*' means '*measures taken to avoid or reduce negative impacts*', as distinct from '*compensation*', meaning '*measures taken to make up for the loss of, or permanent damage to, resources through the provision of replacement areas*'. Replacement areas should seek to offset as many of the features lost as possible, but this is not available in respect of PAL, which is a finite resource. Monetary compensation is not environmental mitigation.

⁴⁶ <https://www.energynetworks.org/assets/images/Publications/2025/occupiers-guidance-wayleave-rates-2025-26.pdf?1783707676>

⁴⁷ Acknowledged by SSEN in its EIA

3.4.20 Compensation does not identify, avoid, reduce or assess likely significant environmental effects. Nor does it enable Scottish Ministers to reach a reasoned conclusion on the environmental consequences of the proposal. If agricultural operations must change to remain safe, the EIA must identify and assess that change.

3.4.21 The Applicant's admission that compensation may be payable is evidence that an effect may exist; it is not, as is being asserted, evidence that the effect is insignificant.

3.4.22 At SSEN 3.7.2 assert that "*OHL clearances are part of the design of the Proposed Development and are not considered as mitigation*". This is the same move as treating design as fixed: it removes clearance increases from the mitigation analysis by definition. The Applicant's assertion in this respect sits awkwardly with the mitigation hierarchy, under which increased clearances are the paradigm primary mitigation. The Reporters need to be able to assess the extent of mitigation required and its potential impact when considering this application. Despite affording the Applicant the opportunity to address this they lack the complete information to do so properly.

3.5 Residual significant effects

3.5.1 The Reporters required:-

Identification of the residual significant effects (if any) upon human health by virtue of electrocution risk to agricultural workers, and by virtue of any required changes to agricultural land use.

3.5.2 The Applicant identifies residual effects but its conclusion that they are "Not Significant" is inadequately reasoned. That is for three reasons.

First, it assumes the result of the risk assessment by treating third-party compliance with safe systems of work as eliminating significance. That is circular rhetoric. It does not qualify as 'reasoning'. The significance of the effect cannot be determined by assuming either forced or voluntary compliance with the very "mitigation" whose adequacy is in question.

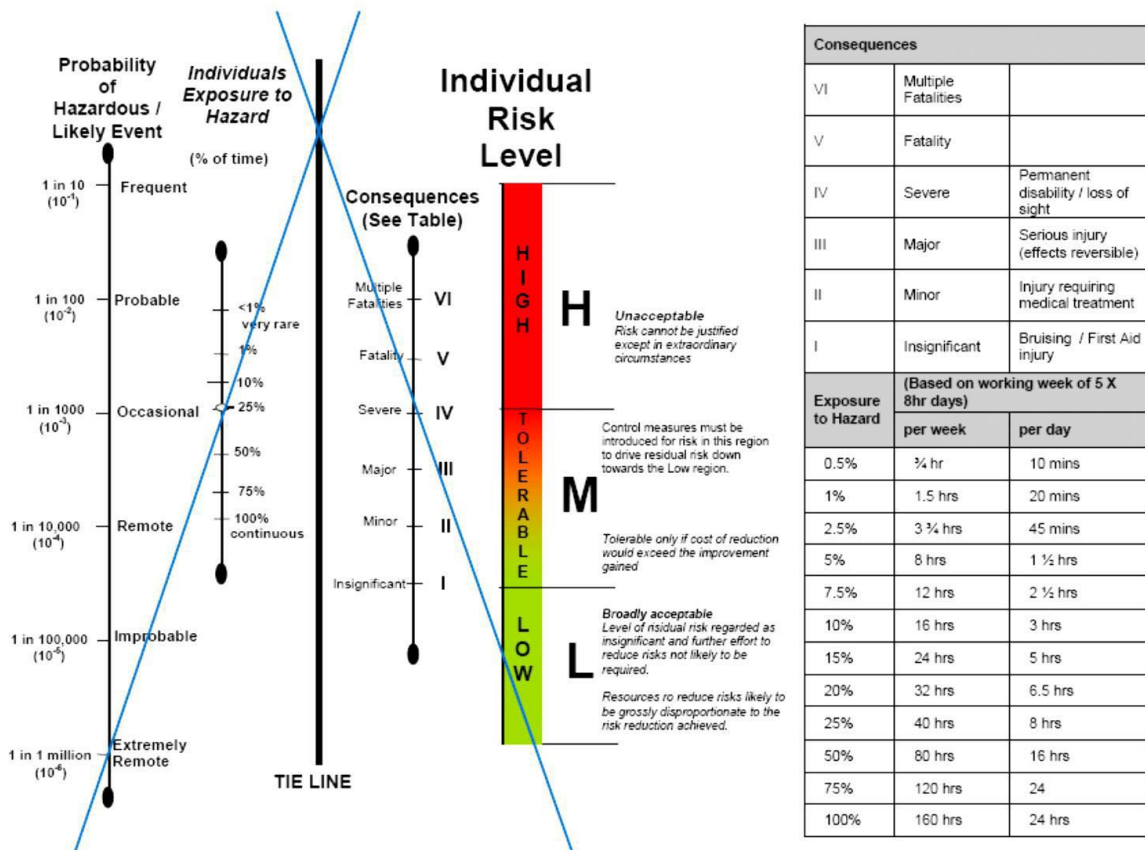
Second, it relies on the existence of other overhead lines (noting that 79% of landholdings already have such existing OHL infrastructure) without demonstrating equivalence in voltage, clearance, location, conductor profile, risk exposure or operational restriction. Existing lines may benefit from Regulation 33 derogations. Their existence does not, of itself, establish the safety or adequacy of the proposed 400 kV line

Third, it ignores the land-use consequences of the restrictions which the Report itself identifies as necessary for safe operation.

3.5.3 SSSEN point out that 79% of landholdings already have OHL infrastructure and farming continues beneath it⁴⁸. These are predominantly at lower voltages requiring lower safety clearances. This is evidenced by SSSEN's own Table 4.4, which lists the existing infrastructure and its statutory clearances: 5.2m for low voltage, 11kV and 33kV distribution; 6.7m for 132kV; 7.0m for 275kV. The overwhelming majority of the comparator population is 5.2m wood pole distribution lines.

3.5.4 The proposed new line is 400kV. ENA SHE Standard 07 provides a set of generic rules that Electricity Companies may use as the foundation of their safety management system for operations on their networks. These are considered by the ENA to be a good practice safe system of work when considering the requirements of the EWR:-

⁴⁸ 4.2.3, 6.1.2, 6.1.3, echoed in Appendix F 3.1.4



The Applicant's proposed 400kV design therefore embeds a foreseeable multiple fatality hazard and the resultant ENA risk matrix suggests this is **Red / Intolerable** and cannot be managed administratively as SSSEN seek to do by earlier reference to HSE Guidance Note GS6 and ENA AIS8. The Applicant has failed to address this when asked to identify residual significant risks.

3.5.5 SSSEN points to arable operations taking place under such legacy lines. That such operations occur does not, of itself, demonstrate that the law has been complied with. SSSEN have not exhibited that they have applied for and obtained derogation for their TKUP proposal. It will be for the Applicant to satisfy the Reporters that ESQCR Regulation 3(3) has been met and that it has provided farmers with the information necessary to make them aware of the dangers arising from the overhead line.

3.5.6 SSSEN point, at 4.2.1, to there having been "a single conductor strike on the transmission OHL infrastructure, in 2011, by any of the incumbent operators on the land surrounding it since electronic records began in 1986". The Applicant's figure at its 4.2.1 is confined to transmission OHL, to incumbent operators on surrounding land, to strikes, and to electronic records since 1986. This is in stark contrast to our evidence dated 5 June 2026 which, at Appendix B, set out information from HSE recorded under ESQCR. This identifies 28 fatalities, 67 injuries and 69 'near misses' over the whole UK network due to machinery being operated near OHLs since 2010⁴⁹.

⁴⁹ An article in the Scottish Farmer on the 1 August 2026 identified the issue with machinery clearances stating that across their networks SP Energy Networks recorded more than 1,000 safety incidents on farms and rural land during 2025 including a fatality when a vehicle-mounted crane came into contact with an 11kV OHL.

3.5.7 SSEN fail to address the fact that most 400kV lines in Scotland do not cross land where large modern machinery is habitually in use. As now evidenced from the Applicant's own assessment most lines crossing arable land are lower voltage and arcing / impact is less likely to result in a fatal incident.

3.5.8 There is awareness of the risk of machinery contacting an OHL, but not of arcing. The absence of historic fatal incidents does not prove absence of foreseeable risk.

3.5.9 The Applicant has not demonstrated, through a robust span-specific assessment, that the residual risk is not significant. A single retrospective incident is not a substitute for prospective risk assessment, and the figure itself is unverified as to definition, scope and reporting.

3.5.10 As we have pointed out clearance heights relating to arcing risks are set out in publications behind a paywall and not readily available to landowners. We are not aware of ever having received from SSEN advice relating to the dangers posed by OHL on any of our own properties, and, given their reliance on existing practices and the likes of their Appendix E it is submitted that it is reasonable for them to provide evidence of adherence to ESQCR Regulation 3 (3) in this respect.

3.5.11 SSEN at Appendix B Table 1 state "*There is no deviation from ESQCR through ENA TS 43-8*". The Applicant is correct that TS 43-8 does not deviate from ESQCR and it is for that reason that SSENs departure from the Clause 4 summation method cannot be justified from that Specification. ENA TS 43-8 Clause 4 states that, in general, the clearances should be obtained by the summation of:

- the basic electrical clearance; and
- an application factor representing the physical allowance required for the normal use of the ground or object beneath the overhead line.

This is not the approach taken by the Applicant.

3.5.12 The AIS8 row on the same Table states: "*Temporary height increasing operational arrangements should be avoided in proximity to the line.*" SSEN concede an operational restriction on land use in the same document in which the Applicant concludes land use is not significantly affected. It will be for the Applicant to explain that contradiction.

3.5.13 SSEN at 6.1.1 reasons that the assessment "*must therefore proceed on the basis that landowners and farmers will comply*" with their duties, therefore risk is reduced to ALARP, therefore the effect is not significant. This is circular rhetoric. Significance cannot be determined by assuming compliance with the very mitigation whose adequacy is in question. The same assumption is exported by the Applicant into Appendix F at 3.1.3, so the same circular argument adopted by the Applicant infects the socio-economic conclusion too.

4 Wider agricultural operational effects not identified or addressed

4.1 The Reporters also directed the Applicant to consider any other relevant matters identified through the course of the assessment, having regard to the evidence (including further written submissions made by parties). It would appear that there has been little or no attempt to address this requirement.

4.2 For example the land affected by this scheme is extensively used to grow seed potatoes and daffodils; both crops where Potato Cyst Nematode ("PCN") is critical. Likewise Global Navigation Satellite Systems ("GNSS") are an existing feature of modern farm machinery and the potential exclusion of the use of autonomous machinery are effects on future agricultural land use over the operational life of the line which have also not been addressed by the Applicant.

4.3 Biosecurity

4.3.1 Biosecurity was identified from the onset by affected parties⁵⁰ but the Applicant has conspicuously failed to address this in its EIA. This is particularly important given the proposed line is going through land used for seed potato production.

4.3.2 The Applicant seeks consent for an OHL route across prime agricultural land with a history of potato production. As set out in the NOTKUP single objection document and other objections, the most concerning soil-based pathogen is PCN, a species of tiny roundworms, is one of the most important threats currently facing the UK seed potato industry. It is primarily spread by moving infested soil that contains cysts; these persist in soils, making potato cultivation economically unviable for up to two decades after discovery and attempts at elimination. Spread of PCN from one field to another occurs via infested soil attached to machinery, vehicles or clothing. Linear projects, such as the OHL, exponentially increase the risk of pathogen spread along the route, leading to lateral contamination; they represent a "super spreader" event. There are no chemical treatments available, making prevention and biosecurity the only realistic control measure.

4.3.3 Clubroot is an infection of the roots of brassicas and related plants by *Plasmodiophora brassicae*, a soil-dwelling micro-organism. Growth and yield are severely reduced, and very badly affected plants may die. There is no chemical control to kill off clubroot; there are, however, preventative measures growers can take, such as adequate biosecurity.

4.3.4 The Applicant has been implicated in the spreading of PCN and Clubroot in previous projects as a consequence of inadequate biosecurity protocols.

4.3.5 In the past 10 years, PCN-infected land across the UK has risen by 30%. When land infected by PCN is used for growing potatoes, yield can be reduced by around 35%.

⁵⁰ Evidence can be provided of:-

- Correspondence to SSEN and site visits during consultations (example at Appendix C)
- Discussions between SSEN, CAAV, SAAVA and NFUS regarding biosecurity
- Documents lodged in representation
- NOTKUP single objection document

4.3.6 Seed potatoes cannot lawfully be grown on infected land. Seed potato production contributes around £26.2 million GVA per year to the Scottish economy and supports around 478 jobs. The Scottish sector accounts for around three-quarters of UK seed potato production, making it critically important to UK potato production⁵¹. Studies show that around 15% of land suitable for potato growing in the UK is already infested by the PCN pathogen, and it is estimated that infestation is spreading at a rate of around 5% of the infected area per annum. If this trend continues, there may be no Scottish seed potato industry within a few years. We do not exaggerate, and offer to adduce expert evidence on this topic.

4.3.7 Scottish-grown seed potato underpins the UK's £4.5 billion potato supply chain. The threat posed by PCN has been recognised by the Scottish Government, which has allocated £2.3 million to address the issue⁵².

4.3.8 This issue was identified by Galbraith's clients and raised with the Applicant as early as June 2023, in meetings with the Applicant and Dalcour Maclaren. The Applicant has been demonstrably aware of landowner concerns regarding biosecurity to protect against the spread of PCN following such meetings.

4.3.9 The biosecurity protocol proposed by the Applicant's contractors, Balfour Beatty, in August 2023 failed to refer directly to PCN or Clubroot, despite their being aware of landowner concerns. This generic agricultural protocol is set out at **Appendix D**.

4.3.10 The Applicant has previously stated that it is not prepared to agree to more rigorous biosecurity measures such as those sought by affected landowners, stating *"SSEN will not agree to this as we are already adhering to biosecurity protocol as per Balfour Beatty's document reattached for your records"* (as an example see Appendix C page 4). Balfour Beatty acknowledge in that protocol that *"a landowner may also request that biosecurity measures are put in place without there being a disease outbreak"*. The Applicant has not set out the reasons why it is not prepared to agree to a biosecurity protocol that addresses the potential risks of its proposals.

4.3.11 The Applicant has asserted that a biosecurity protocol has been agreed with NFUS. That has not been borne out by our own enquiries of that organisation.

4.3.12 The Applicant has proposed W-pattern sampling every 100 m along the route. SASA have commented that this methodology is only appropriate to give a rough idea of what pathogens are present, and is used in situations where farmers are perhaps renting fields and seeking a basic idea of levels such as pH, P, K and Mg. We understand that, although samples will be taken at regular intervals, SSEN's contractors propose to test only one sample per field. We have pointed out that this does not appear to accord with SASA PCN testing standards, nor is it consistent with our clients' experience.

4.3.13 Science and Advice for Scottish Agriculture ('SASA') has pointed out that trials show W-pattern sampling, as proposed by SSEN, to be only 35% accurate, compared with 85% accuracy for grid sampling at 4 samples/ha (50 m grid). To put this into context: if one W-pattern sample is taken for PCN across a 10 ha corridor that already has PCN in it, the W

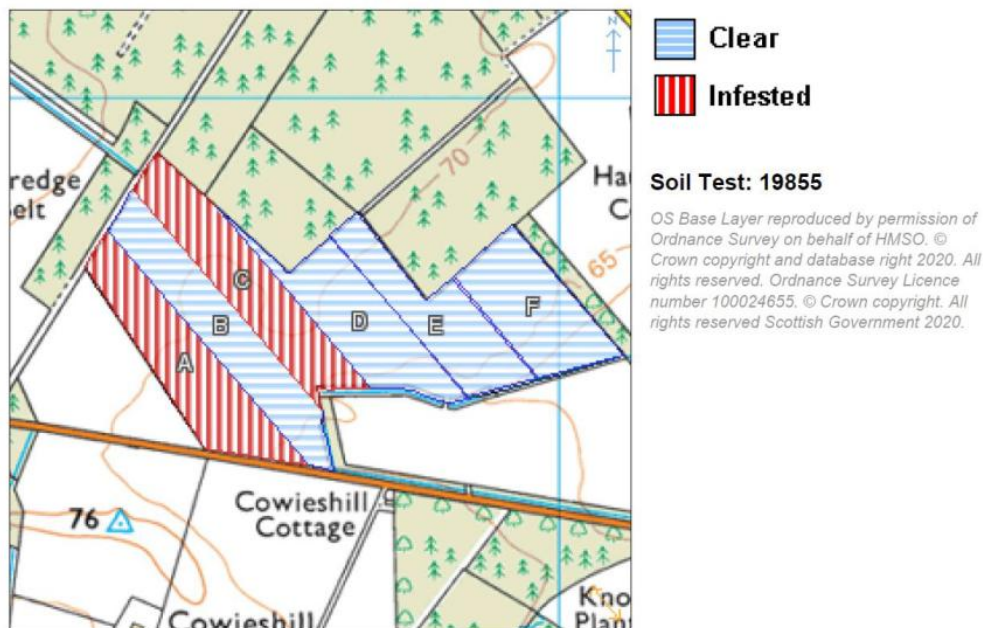
⁵¹ Source – Hutton Research Institute

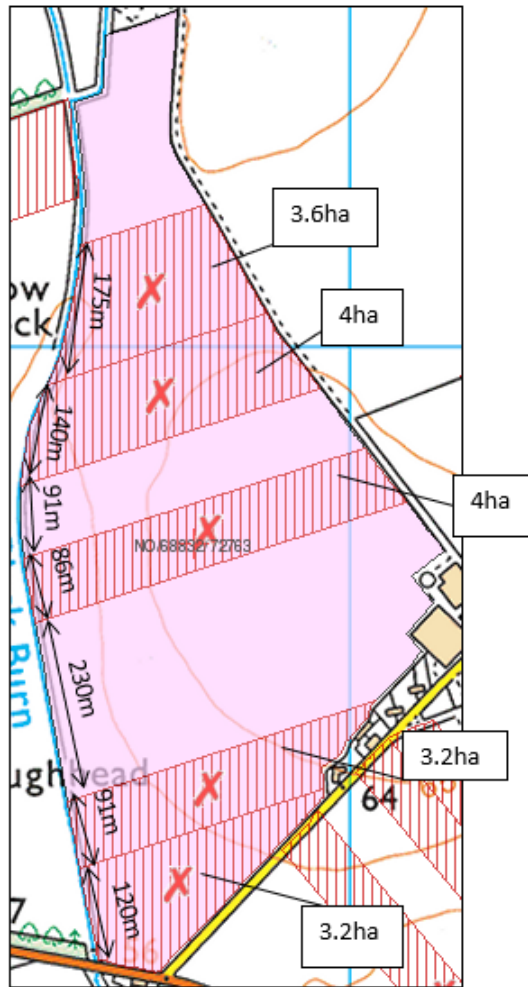
⁵² <https://www.pcnhub.ac.uk/>

pattern might miss the PCN on the first sampling; when the field is sampled a second time, after works have been completed, the W pattern might then detect the PCN that was there in the first place. With a grid sampling strategy, PCN can be found and areas zoned as PCN positive or negative, making it far easier to compare the two data sets.

4.3.14 SASA use grid-pattern sampling for PCN testing to ensure that the entire field is uniformly covered, reducing the risk of missed high or low spots. Geo-referenced grid-pattern sampling also enables easier comparison across different data sets. In their grid-pattern approach, at the reduced rate of soil sampling, SASA take 400 ml of soil from each 1 ha area in the field, and each 400 ml bag consists of in the region of 100 individual cores. The distance between each core is, on average, below 10 m.

4.3.15 The plans below are examples of SASA sampling within a single field (the Applicant has been in possession of such data since March 2024 but has failed to take account of it in its EIA to date). In our experience, areas of infected and 'clean' land within the same field are commonplace:-





In both of the above examples the proposed OHL runs east to west across the middle of the field, with access from the south, giving rise to potential spread of soil pathogens.

4.3.16 The Applicant's current biosecurity approach is to sample immediately before entry, rather than to rely upon sampling results to inform its biosecurity methodology. This is contrary to Balfour Beatty's own protocol dated August 2023: *"In order to understand the potential risks our work poses to biosecurity, the presence of biosecurity threats must be identified in advance of works starting on site."*

4.3.17 Test samples are drawn from the whole field, rather than in accordance with seed potato sampling methodology (which informed the results above). The Applicant's methodology may result in the fields shown above being recorded as infected when they are not, or as clean when they are not; this could adversely affect both the Applicant and the landowner. It is our submission that an intensive survey is necessary across the whole line, both prior to entry being taken (to identify risks) and after reinstatement has taken place. The latter will show whether infection has occurred as a consequence of the scheme.

4.3.18 It appears that the Applicant intends to take vehicles back to a depot (such as that proposed at Edzell, approximately five miles along public roads from the fields set out above) for thorough cleaning before returning to enter adjoining land. This gives rise to the risk of soil deposits on the public road, and thus potential contamination of areas well outwith the proposed route.

4.3.19 In other projects across arable land, strict protocols have been agreed as part of the conditions for taking entry. Sampling was carried out in accordance with SASA seed potato testing standards, the results were obtained prior to entry, and wash-down areas were established at entry points to the public road system and between infected and 'clean' areas. Records of vehicle movements and wash-downs were kept, and all washings were collected and disposed of so as to prevent contamination.

4.3.20 Despite this knowledge and the Reporters' directions, the Applicant has not adequately considered, and has certainly not addressed, this agricultural productivity issue.

4.3.21 At **Appendix E** we set out the protocols agreed with Seagreen for the Monifieth to Tealing underground cable route which addresses the environmental impacts of that scheme affecting agriculture and illustrates issues not covered by the Applicant in its EIA.

4.3.22 Given the importance of the seed potato industry to the agricultural economy and the potential risk this project represents as a 'super spreader' event the Reporters will have to carefully consider this potential in any granting of consent.

4.4 Future technology

4.4.1 While at 4.4 the Applicant has considered the future of farming due to climate change it fails to address or even mention future technology already in use within the agricultural sector. NPF 4 requires that developers should support continued economic diversification and innovation.

4.4.2 The Applicant was demonstrably aware of concerns regarding future technology from landowner visits and feedback for alternative route proposals⁵³ but this is not addressed in the EIAR.

4.4.3 The Applicant does not appear to consider the effect of HVAC power lines in positioning accuracy essential to modern farm machinery (such as auto steer machinery) and to the use of future autonomous vehicles. Such machinery (already in use on some farms) and aerial drones completely rely on high accuracy and high reliability GNSS over a long timescale. This is mission and safety critical; with no operator present, the use of such equipment is completely reliant on electronic systems. GNSS, magnetometers, INS and wiring / sensor integrity.

4.4.4 Such machinery relies upon positional accuracy of ± 2 cm over a long timescale (the length of time it takes to cultivate or plant the field; potentially multiple days). When working a field, such machinery could be crossing under the proposed OHL every 10 mins through the day; a really challenging environment for interference. Error sources are affected over that time scale by changing satellite numbers, satellite constellations, individual satellite positions, 4G availability, etc.

4.4.5 In August 2017, an experienced tractor driver at Flawborough Farms (near Grantham) escaped unharmed after his Claas Xerion tractor, running on GPS auto-steer, crashed into a 132kV electricity pylon:-



⁵³ Eg proposed route B12

4.4.6 OHL are likely to result in several possible adverse effects.

- On the number / interference on GNSS satellites which affect gross positional accuracy.
- the effect of interference on 4G correction services or a radio transmitter.
- Most systems use magnetometers / inertial measurement systems to provide continuity and smooth GNSS readings. The magnetic fields from conductors are likely to affect such machinery.
- Induced currents from EMF in the system electrical wiring and sensors are a high risk. These systems are designed to reject interference to pass registrations but the environment close to a conductor is extreme.
- Also, weather conditions will change over the working period, in particular humidity levels.
- With no operator present, farmers are completely reliant on electronic systems, GNSS, magnetometers, INS and wiring / sensor integrity.
- So, potentially, the autonomous tractor could stop due to interference every round and require operator attendance. This obviously isn't practical. Their whole purpose is to work unsupervised over long periods of time.

4.4.7 Autonomous vehicles weigh 8 tonnes plus and are in the order of 220 hp – see <https://www.agxeed.com/>. The Applicant needs to consider the risk to its infrastructure of such vehicles working under the line. Given the risk of an unsupervised tractor navigating around the 400kv pylons while subject to EMI, the Applicant is likely to wish to restrict the use of autonomous vehicles in the future around such infrastructure so denying the use of such machinery to affected farmers. The impact of this has not been considered.

4.4.8 Autonomous UAV's require the same accuracy but pose other high risk factors. They are smaller (up to 100 kg currently) – <https://autospraysystems.com/applications/>. They fly autonomously around 6m to 9m from the ground while applying. As they are not grounded there is less risk of a flashover but they are closer to the conductors so potentially closer to much stronger interference. They potentially could be carrying registered pesticides.

4.4.9 The issue with use of drones near infrastructure requires Civil Aviation Authority consent. This requires drones to stay more than 50m away from objects / people etc. This may effectively rule out the use of autonomous UAV's in the future near OHL denying such technology to landowners.

4.4.10 The Applicant has failed to consider this potential impact on agricultural operations in their Agricultural Operations Assessment.

5 Major Accident Hazard gas pipelines

5.1 In addition to consideration of whether a condition might be required in relation to Major Accident Hazard Pipelines ('MAHP') gas pipelines, the Reporters, in their direction of 7 July 2026 at paragraph 5.5, sought further clarification on the possible interactions between the planning system's consenting regime and regulations relating to minimising risk including the Pipeline Safety Regulations 1996 ('PSR 1996') and the Control of Major Accident Hazards ('COMAH') Regulations 2015.

5.2 NPF4 policy 23(g) expressly requires that development proposals within the vicinity of a major accident hazard pipeline "*will consider the associated risks and potential impacts of the proposal and the major accident hazard site/pipeline of being located in proximity to one another*". By scoping out health and safety, the Applicant sought to avoid scrutiny of this factor.

5.3 The Applicant's publication dated December 2025 sets out its methodology for crossing pipelines⁵⁴:-

Where we cross pipelines and underground cables we look to do so as close to 90 degree angles as possible whilst also placing towers out-with the assets safeguarded area to minimise any interaction.

This applies mainly to cables and metallic pipelines and the reason for this is where we run in parallel or cross a metallic pipeline at a shallow angle there is a risk of alternating current (AC) interference. This can have an impact on the safe operation of the pipeline or underground cable and needs to be managed to ensure the health and safety of personnel working on the asset as well as the integrity of the asset itself.

An existing utility search has been carried out for each of the projects identifying any below ground assets. Where crossings or paralleling of these are not avoidable further AC interference studies are carried out and mitigations investigated along with the asset owners, where required, to ensure both assets can operate together in the area.

It will be for the Applicant to satisfy the Reporters that it has complied with its own guidance, and to provide evidence of this

5.4 The Health and Safety Executive ('HSE') oversees compliance with PSR 1996, providing guidance, inspections and enforcement action where necessary. HSE's Pipelines Division was not on the list of organisations consulted in the EIA scoping process. As has been drawn to the attention of the Reporters, the HSE has expressed concerns. The HSE Land Use Planning Support Team made the following representation to the ECU:

The proposed development red line site boundary may cross a large number of major accident hazard pipelines. There is potential to initiate a major accident at the major accident hazard pipelines, for example during the development construction phase and potentially the operational phase, because the development area intersects the route of the major accident hazard pipeline.

⁵⁴ <https://www.ssen-transmission.co.uk/globalassets/projects/2030-projects/2030-project-documents/tower-crossing-considerations.pdf>

5.5 The Applicant was made fully aware of this issue during consultations and early representations⁵⁵ but failed to address it in accordance with the EIA Regulations.

5.6 Like conductor clearances, this is a health and safety issue, and it has been scoped out by the Applicant despite its being aware that the proposed route crosses high-pressure gas mains.

5.7 It is our experience that landowners with such pipelines on their property receive communication each year from the pipeline operator setting out the risks and requiring the landowner and occupier to acknowledge those risks by signing and returning an acknowledgement. Failure to do so results in follow-up action from the pipeline operator. This is in marked contrast to the position adopted by the likes of the Applicant; we are not aware of receiving any such advice from it, despite the requirements of Regulation 3(3) of ESQCR. Affidavits can be provided from affected parties as to the extent of contact from SSEN and SHEPD regarding such legacy OHLs.

5.8 As a consequence of such advice, farmers are aware of resources such as '*Click before you Dig*'. The Applicant is clearly aware of such requirements, as it provides similar advice⁵⁶. It would appear, however, that it did not follow such an elementary risk assessment in its choice of route. For example, pylons N38–N40 are very close to the MAH pipeline, as illustrated below:-



Likewise at Monboddoo the proposed OHL runs parallel to the MAH pipeline despite an alternative route being available:-

⁵⁵ See <https://www.energyconsents.scot/ApplicationDetails.aspx?cr=ECU00005225&T=4> Representation 969 sections 8 and Appendix 3.

⁵⁶ [Over 22,000 of SSEN's safety-conscious customers 'click before they dig'. Do you? - SSEN](#)



5.9 In respect of pylon N40, in September 2025, following use of *Click before you Dig*, National Grid Transmission emailed stating:-

An assessment has been carried out with respect to National Gas Transmission plc's apparatus and the proposed work location. Based on the location entered into the system for assessment the area has been found to be within the High Risk zone from National Gas Transmission plc's apparatus and you **MUST NOT PROCEED** without further assessment from Asset Protection.

5.10 The Proposed Development also includes crossing works, temporary diversions and permanent realignment works. The Applicant will have to underground various existing distribution lines ('cable dips'), in that they cannot be worked safely with the 400 kV line energised. The requirement for such undergrounding was reasonably foreseeable but does not appear to have been addressed in the EIA to date. As a consequence of the choice of route, some of these cable dips will interact with the MAH pipelines.

5.11 In the UK, high-pressure gas mains are typically buried with a minimum depth of cover of 1.1 m. It is believed that these mains operate at 70 bar, but depths can vary due to ground conditions or previous site alterations (and the movement of soil over time). While ploughing depths are 200–300 mm (8–12"), subsoilers can operate to a depth of 450 mm (18"). We believe that such distribution cables will need to be installed at a minimum depth of 600 mm to 1,000 mm to avoid damage from deep-ploughing machinery and to allow for soil movement over time. It will be for the Applicant to satisfy the Reporters that this can be safely achieved.

5.12 The apparent lack of consideration to MAH pipelines in this project is further evidence of complacency within SSEN (and its Principal Designer) to statutory duties under Health & Safety legislation.

6 Conclusion

6.1 In their application SSEN categorically state that:-

SSEN Transmission develops, builds and operates infrastructure to meet all applicable health and safety legislation, and guidance set by relevant bodies, principally the UK Government, Scottish Government, the Health and Safety Executive and the industry regulator, Ofgem. The requirements include those associated with EMFs⁵⁷.

6.2 This assertion is being challenged by objectors. It is our position that the Applicant has not properly followed the requirements of the legislation in reaching the design for which they are seeking S37 consent.

6.3 Under the Health and Safety at Work etc. Act 1974, the central obligation is for a duty holder to reduce risk so far as is reasonably practicable in carrying out their undertaking in relation to those in their employment and those affected by their undertaking (such as landowners carrying out normal agricultural operations along the proposed route).

6.4 HSE's published guidance on CDM, *L153 - Managing health and safety in construction* makes it clear that the Applicants duties begin at the earliest stages of project development, during the 'pre-construction phase'. SSEN to date have been unable to provide any evidence that this requirement has been met. For example the Health & Safety file that the Principal Designer is required to create in terms of CDM Regulation 12 (5) has not been provided. This would have documented the residual hazards identified and mitigation measures applied during the design process.

6.5 SSEN have acknowledged in correspondence and its own publications the relevance of ESQCR and that this should be considered at each stage of the 'routing process'⁵⁸. On the 24 April 2026 the Applicant told the Reporters that it was undertaking "continuing reviews of the design against TS 43-8 specification" and that the "embedding of TS 43-8 within the design process itself ensures that relevant factors are considered and risks minimised as part of that process". It has yet to provide evidence of such reviews.

6.6 In correspondence dated 29 January 2025 SSEN's Director of Asset Management and Operations acknowledged the need to address land use. ENA TS 43-8 requires the use of the surrounding land and the foreseeable activities beneath the OHL to be identified before conductor clearance is determined. The Applicant at Appendix B of its latest assessment now acknowledges that ENA TS 43-8 does not prescribe specific clearances over arable land. SSEN acknowledge that land use was a matter that fell to be considered as part of their design process however at Appendix B the Applicant's own evidence is that their design disregarded risks associated with land use.

6.7 SSEN have asserted to the Reporters that they have reviewed the design against ENA TS 43-8. Compliance with ESQCR, EMF guidance and TS 43-8 may establish a general safety baseline, but because TS 43-8 does not prescribe a specific arable-land clearance and leaves judgement to the network operator, SSEN's admission that the adopted criteria did not specifically consider agriculture or forestry land use is significant.

6.8 The Applicant has referred to transport mode and has clearly failed to take onto account the requirement to address normal use. It will be for the Applicant to satisfy the

⁵⁷ At 6.7.3 of SSEN's EIA in this Section 37 application

⁵⁸ Which logically would include the initial choice of route as well as any deviations

Reporters that by using transport heights they have applied the appropriate clearance criteria for the particular agricultural operations foreseeable under the proposed line.

6.9 Whereas SSEN have referred to increasing clearances early in the project they failed to do so in the design before the Reporters. The Applicant has lodged a design that does not address foreseeable land use and not engineered out foreseeable risks. The application does not seek the design leeway afforded by the *Rochdale envelope* to address the clearances necessary over the whole line necessary to address this failing. The Limits of Deviation sought apply in limited circumstances.

6.10 During the design process SSEN appears to have moved directly from a generic clearance calculation to operational mitigation, rather than undertaking a meaningful assessment of the risks posed by each span of the project. Their Appendix B identifies the 4.3 m clearance requirement and then points to AIS8, SSEN third-party guidance and agricultural operators' safe systems of work. That is consistent with the Applicant's wider approach: where risks arise, they are to be managed through third party operator behaviour, machinery-height reduction, risk assessment by others, consultation and safe systems of work rather than through engineering design.

6.11 The Applicant's methodology appears to treat the issue primarily as a clearance-to-moving-vehicle calculation. Clearances based on transport mode may be suitable for generic agricultural vehicle passage, but it does not obviously address more complex foreseeable operations such as unloading, lifting, irrigation, use of telehandlers, crop harvesting, forage-harvester discharge, timber harvesting, forwarding, timber stacking, roadside loading, or forestry access-track use along the line

6.12 The Applicant asserts that normal agricultural operations such as combining can be carried out in transport mode. That is not the case as manufacture's recommendations for a wide range of combine harvesters illustrates.

6.13 SSEN's Appendix D is important because it replaces speculation with its own engineering data. That data shows that the proposed line achieves the adopted 9 m minimum, but it also demonstrates that the overwhelming majority of spans contain a minimum point below agricultural comparison benchmarks. Of the 298 spans disclosed:

- 226 spans, or 75.8%, have a minimum below 12.5 m;
- 245 spans, or 82.2%, have a minimum below 13.3 m;
- 264 spans, or 88.6%, have a minimum below 14.2 m.

This does not establish automatic non-compliance in every such span. It does however establish that the agricultural operations issue is neither marginal nor confined to two or three isolated locations.

6.14 The Applicant's presentation of data as percentages does not identify whether normal agricultural operations can be performed safely at the lowest relevant crossing points. It also does not account for the consequences of a single constrained crossing for the operation of the wider field or holding.

6.15 The Appendix D data strengthens the case for a project-specific, span-by-span agricultural assessment and for SSEN to provide a worked PLS-CADD output at the exact clearance benchmarks relevant to foreseeable agricultural operations.

6.16 The Applicant's Appendix D also reinforces the need for the Reporters to examine whether agricultural land use informed the design before it was fixed, or whether agriculture was assessed only afterwards and made subject to operational restriction.

6.17 SSEN's Agricultural Operations Report signposts the guidance published by the Institute of Sustainability and Environmental Professionals, *'Implementing the Mitigation Hierarchy from Concept to Construction'* and states that *"there is no primary mitigation applicable to this assessment"*⁵⁹. SSEN fail to address pre-construction phase duties under CDM 2015 or the relevant HSE guidance to design out risk. SSEN has not demonstrated that foreseeable agricultural and forestry risks have been addressed through engineering design before reliance is placed on operational measures to be implemented by affected parties.

6.18 The material provided suggests that the Applicant has treated ESQCR minimum heights and EMF compliance as the design solution and then treated agricultural and forestry risk as something to be managed operationally by others. That sits uneasily with the statutory risk-control framework, which generally requires foreseeable risks to be addressed at source where reasonably practicable **before** reliance is placed on procedural controls and the human element is introduced. SSEN have not explained why they have not designed out risk by increasing clearances or other engineering solutions.

6.19 The assessment of residual risk in Appendix A relies substantially on tertiary mitigation by landowners and operators, rather than showing a structured, span-specific design response to the risks created by the proposed overhead line. It places the practical burden resulting from SSEN's design choice on landowners and agricultural operators requiring them to update risk assessments, implement safe systems of work, reduce machinery heights and comply with AIS8.

6.20 Effectively the Applicant is passing the risk of its design onto affected landowners contrary to the requirements of CDM to design out such risk. It will be for the Reporters to consider whether SSEN, as designer, developer and operator of the OHL, with duties under HSWA, ESQCR and CDM has reduced foreseeable risks through engineering design so far as reasonably practicable.

6.21 Contrary to the Reporters requirement that *"detailed qualitative and quantitative assessment of the agricultural land use implications of the proposed development"* be provided this has not been addressed by the Applicant. The Reporters are therefore not able to consider the proposal in the light of the requirements of NPF4.

6.22 The Applicant while relying on what they terms as tertiary mitigation has not considered the impact of their design failings on agricultural operations; this is not inexorable mitigation, it arises from SSEN's design failings.

⁵⁹ SSEN Agricultural Operations Report, paragraph 5.1.1. Primary mitigation being described as 'Embedded or Design Mitigation' within the report.

6.23 The relevant engineering and safety question is therefore not how much of the route lies above a selected height in aggregate; it is:

Has the Applicant demonstrated, at each relevant agricultural crossing, that the proposed conductor profile was designed having regard to foreseeable land use, machinery height, dynamic movement, persons carried on machinery and the required electrical safety separation?

6.24 On the information currently provided, that question remains unanswered. The onus is on the Applicant to satisfy the Reporters with regard to the impact of their proposals. They have been given the opportunity to so. In the absence of such information being provided by the Applicant, we submit that the Reporters have sufficient information before them to be satisfied that the proposed OHL design gives rise to significant risk to human health.

6.25 There is evidence that the Applicant's proposed design has not designed out risk as required by the legislation. The Applicant is seeking consent for a design that passes the risk inherent in that design falling onto affected parties thereby affecting existing agricultural operations. The Applicant's design does not reduce the impact on PAL as required by NPF4.

6.26 For these reasons we submit that the Application should be refused on the grounds that the design for which consent is being sought is contrary to the requirements of section 38 and Schedule 9 of the 1989 Act, CDM regulations 9, 11 and 25, ESQCR, HSWA and Regulation 7 of EWR.

6.25 Should the Reporters disagree and conclude that they still do not have sufficient baseline information to decide the matter then this is a matter that requires examination at an oral hearing, where the Applicant's engineers and Principal Designer can explain the design sequence, the selected clearance methodology, the treatment of foreseeable machinery and the practical meaning of the Appendix D percentages.

Ian Thornton-Kemsley TD MRICS FAAV DipFBOM HDA
For Galbraith for and on behalf of its clients

Appendix A – Timeline of SSEN’s position

A1 Introduction

A1.1 In their application SSEN categorically state that:-

SSEN Transmission develops, builds and operates infrastructure to meet all applicable health and safety legislation, and guidance set by relevant bodies, principally the UK Government, Scottish Government, the Health and Safety Executive and the industry regulator, Ofgem. The requirements include those associated with EMFs⁶⁰.

A1.2 This Appendix provides a chronological review of the documentary evidence relating to the development of SSEN Transmission's engineering position concerning conductor-to-ground clearances, agricultural machinery, electrical safety clearances and associated engineering methodology for the proposed Kintore to Tealing 400 kV overhead line.

A1.3 It has been prepared in order to assist the Reporters by bringing together, in a single document, the principal statements made by SSEN representatives during consultation, complaint correspondence, engineering discussions and the subsequent DPEA process.

A1.4 Throughout consultation and the subsequent examination process, numerous figures have been quoted relating to minimum statutory conductor-to-ground clearances, adopted project design clearances, electrical exclusion distances, agricultural machinery heights, operational assumptions and the methodology used to relate these quantities.

Conductor / design heights	Clearance dimensions	Machinery / operating heights
7.2 m; 7.3 m; 7.6 m; 9.0 m	3.1 m; 4.3 m; 5.3 m; 7.0 m	~4.0 m; 4.7 m; 5.2 m; 5.4 m
11.8 m; 12.5 m; 13.3 m	10 m comparator	6.5 m; 7.2 m; ~8.0 m; >10 m
14.2 m; 15.3 m		

A1.5 Viewed individually, these figures can appear inconsistent. Viewed chronologically, they illustrate SSEN’s development of the engineering discussion and the different contexts in which individual dimensions were introduced.

⁶⁰ At 6.7.3 of SSEN’s EIA in this Section 37 application

A2 Documentary Chronology

A2.1 Principal SSEN personnel appearing in the chronology

Name	Role / context
George Leggat	Head of Land Assembly
Jillian McNicol	Lead Land Manager
Christianna Logan	Director of Customers and Stakeholders
Dave McKay	Director of Asset Management and Operations
Norman MacIver	Agricultural consultant engaged by SSEN
Lewis Stokes	Correspondence on behalf of Dave McKay
Gemma Macmillan	Head of Dispute Resolution
Will Kirk	Asset Management
Lauren Simpson	Senior Land Manager
Peter McKessick	Project / land engagement

A2.2 Chronology:-

Date	Principal person(s)	Engineering issue	Key dimensions	Significance
18 Dec 2023	Objector / SSEN	Agricultural clearance concerns first raised	—	Early notice of engineering concern.
Spring–Summer 2024	Project / land teams	Machinery heights and conductor clearances	3.1 m; 5.3 m	Beginning of dimensional discussion.
Sep–Oct 2024	Will Kirk / George Leggat	Project minimum increased to 9 m	7.2 m (early reference); 7.6 m; 9.0 m	EMF / conductor selection identified as design driver.
6 Nov 2024	George Leggat	Design still under review; possible raising of conductors	9.0 m	Conductor height remained a design variable but seemingly not addressed.
19 Nov 2024	Jillian McNicol requested	Complete worked engineering questions	platform; levelling; movement	Methodology expressly sought.
7 Jan 2025	Jillian McNicol	Formal response after safety/project consultation	7.3; 9.0; 3.1; 5.3 m	Inputs supplied; complete worked method not supplied.
7–28 Feb 2025	Dave McKay	Chief Engineer/design team review; MacIver engaged as agricultural consultant	—	Issue escalated to senior engineering review.
Early Mar 2025	Dave McKay / Norman MacIver	Recorded agricultural design discussion	6.5; 5.3; 11.8 m; 78%/22%	Apparent additive assessment and possible design mitigation.
28 Mar–10 Apr 2025	Dave McKay / Lewis Stokes /	General compliance assurance and	9.0 m / statutory	Specific 6.5/11.8/78/22 points

	Gemma Macmillan	future mitigation	minimum	not expressly resolved.
2026 DPEA	SSEN	Later agricultural methodology	4.3; 4.7; 5.2; 5.4 m	Operational/subtractive assessment becomes prominent.

A2.3 Initial identification of the engineering issue – December 2023

Later contemporaneous correspondence records that the conductor-clearance and agricultural-machinery issue was first raised on 18 December 2023.

The significance is that questions relating to conductor clearance, foreseeable agricultural machinery, electrical safety clearance and engineering design issue were raised at an early stage during consultations on the project. It will be for SSEN to satisfy the Reporters why this was not considered in the design process.

A2.4 Spring–Summer 2024 – early engineering discussion

During early correspondence, discussion centered on agricultural machinery dimensions, conductor-to-ground clearance, ENA TS 43-8, statutory clearances and the practical operation of harvesting machinery. Figures including 3.1 m and 5.3 m appeared, together with later derived values of 3.7 m and 5.9 m.

The correspondence repeatedly distinguished working configuration from transport configuration, including raised conveyors, elevators and personnel platforms. It will be for SSEN and their agricultural consultants to explain to the Reporters why this was not considered as part of the design process.

At this stage no single project machinery datum had been identified.

A2.5 September–October 2024 – movement to a 9.0 m project minimum

Correspondence records that the proposed minimum conductor height had increased from an earlier design value to 9.0 m. An early September record refers to approximately 7.2 m, while later SSEN correspondence more clearly identifies 7.6 m as the earlier project/design figure.

The increase to 9.0 m was explained principally by conductor selection and electromagnetic-field considerations.

Agricultural machinery was not identified as the primary reason for that increase.

A2.6 6 November 2024 – conductor height remains adjustable

In an email set out in Galbraith's 8 May report at Appendix F George Leggat conveyed the project team's position that tower designs remained under review, discussions had taken place with the NFU, and there was scope to raise conductor heights further to accommodate combines.

The response also acknowledged that it appeared unlikely every type of high agricultural

machinery would be accommodated. No reason was given for this

This is a significant documentary point: conductor height remained an active design variable and agricultural machinery was relevant to the design discussion.

A2.7 19 November 2024 – formal request for a complete worked answer

A comprehensive was sought from SEN for published minimum conductor-to-ground dimension, applicable clearance for agricultural machinery without a platform, resulting maximum machinery height, platform/personnel clearance, hydraulic levelling, vertical movement over uneven ground and the resulting safe machinery height in each scenario.

The request sought the engineering sequence itself, not simply isolated dimensions.

A2.8 7 January 2025 – formal engineering response

Following discussion with SSEN's Operational Safety Manager, safety team and wider project team, Jillian McNicol identified four principal dimensions:

Dimension	Description in the January response
7.3 m	Statutory minimum conductor-to-ground clearance
9.0 m	Adopted TKUP project minimum conductor clearance
3.1 m	Clearance for fixed-height plant
5.3 m	Clearance for plant not of fixed height / relevant accessible or platform circumstances

The response identified important engineering inputs but did not provide a complete worked calculation showing the machinery height used during design, the treatment of dynamic movement, or the sequence by which the 9.0 m conductor height had been selected.

A2.9 January–February 2025 – derived consequences and continued questions

The dimensions stated by SSEN lead to derived consequences in respect of maximum machinery height:-

- 9.0 m less 5.3 m produces 3.7 m;
- 9.0 m less 3.1 m produces 5.9 m.

At the time SSEN were demonstrably aware of higher machinery in use on the proposed route. The underlying design methodology therefore remained unresolved.

A2.10 February 2025 – senior engineering review

Dave McKay became directly involved. On 14 February he recorded that he had met SSEN's Chief Engineer and would meet the project design team to discuss overhead-line clearances.

On 28 February, Dave McKay advised that Norman MacIver had been engaged to improve SSEN's understanding of farm plant operation and to support a review of current overhead-

line standards as they related to agriculture.

A2.11 Early March 2025 – emergence of a machinery datum and additive assessment

A contemporaneous written record of the subsequent discussion/site meeting states that Dave McKay explained that SSEN had used 6.5 m as the datum for the highest agricultural machinery, reportedly following NFU/NFU Scotland input.

The same record states that approximately 78% of line sags exceeded 11.8 m, calculated as 6.5 m machinery height plus 5.3 m clearance, with the remaining approximately 22% being examined for possible increases in height, including additional tower legs, subject to landowner discussion.

$$6.5 \text{ m machinery height} + 5.3 \text{ m clearance} = 11.8 \text{ m required conductor height}$$

These statements are treated as a contemporaneous record of an oral engineering discussion. They were subsequently put to Dave McKay in writing with an invitation to correct the record. The later correspondence does not contain a specific correction of the principal 6.5 m, 11.8 m or 78% / 22% points.

A2.12 28 March–10 April 2025 – return to general assurance

Dave McKay subsequently stated that SSEN remained confident the project would comply with ESQCR, that the full line would exceed the specified minimum ground clearance, that clearances would be significantly higher over the route, and that affected land users would be engaged regarding further mitigation before construction.

The response did not expressly confirm or deny the 6.5 m datum, 11.8 m assessment, 78% / 22% split, or provide the span data said to underpin those figures. Lewis Stokes and Gemma Macmillan subsequently maintained the same general corporate position.

A2.13 Conclusion

The documentary emphasis suggests the Applicant moved from specific engineering review and possible design alteration to general assurance of statutory compliance and future mitigation. Whether that reflects a change in methodology or a change in how the position was explained is a matter for the Reporters.

A3 Formal Engineering Questions and Response (Nov 2024 – Jan 2025)

A3.1 The engineering sequence sought

The November questions deliberately distinguished machinery without a platform, machinery incorporating a working platform, hydraulic self-levelling machinery, operation over uneven ground, and machinery with raised conveyors or elevators. The purpose was to establish whether SSEN had undertaken a complete engineering assessment for the foreseeable range of agricultural operations likely to occur beneath the proposed line.

Agricultural circumstance	Engineering consideration sought
Machinery without personnel platform	Basic applicable electrical clearance
Integral personnel platform	Clearance applicable to persons / accessible platform
Hydraulic self-levelling	Additional movement/application factor
Uneven ground	Dynamic vertical movement
Raised conveyor/elevator	Working configuration rather than transport configuration

A3.2 What the January response provided

- The statutory minimum conductor clearance.
- The adopted project minimum conductor clearance.
- Principal electrical clearance dimensions.
- A general explanation that ENA TS 43-8 provides clearance criteria rather than machinery-specific permitted heights.

A3.3 What remained unanswered

- The machinery height used as a design input.
- A worked maximum machinery height.
- A complete platform/personnel calculation.
- Treatment of hydraulic levelling and dynamic vertical movement.
- Treatment of raised conveyors/elevators in normal working configuration.
- The sequence by which the 9.0 m project minimum had been selected.

The provision of engineering inputs is not the same as explaining the design methodology used by SSEN.

A 9.0 m conductor height and a 5.3 m clearance identify do not establish whether conductor height was derived from foreseeable machinery or whether machinery compatibility was assessed after the conductor height had been selected.

A4. Senior Engineering Review and evolution of the Methodology (Feb–Mar 2025)

A4.1 Escalation to senior engineering management

By February 2025 the issue had moved beyond routine consultation. Dave McKay, the Chief Engineer and the project design team were involved. This is important because it demonstrates that the questions were being treated internally as engineering/design matters, not solely (as later) operational working-practice issues.

A4.2 Agricultural consultant and standards review

Norman MacIver became involved with regard to farming practice. Dave McKay expressly referred to Mr MacIver reviewing current overhead-line standards as they related to agriculture.

This indicates that the relationship between SSEN's engineering standards and agricultural

operations remained under active review.

A4.3 The 6.5 m datum and 11.8 m calculation

The contemporaneous meeting record introduces the first identifiable project-specific agricultural machinery datum: 6.5 m as the height of agricultural machinery (recorded by SSEN as being the highest point of agricultural machinery used in the area). It also records the combination of that datum with 5.3 m clearance to produce 11.8 m.

The significance of this position lies less in the precise numbers than in the engineering sequence: machinery height + clearance = required conductor height.

A4.4 The 78%/22% route assessment

The same record states that approximately 78% of line sags exceeded 11.8 m and approximately 22% remained under assessment, including possible physical height increases. If accurately recorded, this indicates that primary/design mitigation remained under consideration where the adopted geometry did not satisfy the stated agricultural assessment.

A4.5 Subsequent shift in emphasis

Later correspondence no longer developed the detailed calculation. It relied instead on assertions of confidence in ESQCR compliance, conductor clearances above statutory minimum, continued engagement and future mitigation.

There appears to be no record as to why this shift in emphasis occurred.

A5 Evolution of Conductor-to-Ground Design Heights

A5.1 Consolidated matrix

Height	Context	Status / source	Cross-reference significance
7.2 m	Early reported minimum sag/design figure	Early consultation record	Treat cautiously; later material identifies 7.6 m as earlier project/design figure.
7.3 m	Statutory minimum for 400 kV identified in later SSEN material	Written SSEN position	Statutory floor; not the same as the adopted project design.
7.6 m	Earlier project/design or historic 25-foot practice figure	SSEN correspondence	Preceded movement to 9.0 m.
9.0 m	Adopted TKUP project minimum	Written SSEN position	Increase principally explained by EMF/conductor selection rather than agricultural calculation.
11.8 m	6.5 m machinery + 5.3 m clearance	Recorded March 2025 engineering discussion	Apparent additive agricultural

			assessment.
12.5 m	7.2 m for Dewulf harvester + 5.3 m (alternatively 7.2 m + 4.3 m + 1.0 m for uneven ground)	Later illustrative analysis	Tests foreseeable machinery against ENA categories/dynamic allowance.
13.3 m	8.0 m + 4.3 m + 1.0 m, or 8.0 m + 5.3 m	Illustrative / field-based analysis	Tests measured/observed working configuration.
14.2 m	7.2 m machinery + 7.0 m harvesting guidance	Illustrative operational comparison	Shows relationship to ENA agricultural guidance; not asserted as statutory design requirement.
15.3 m	10.0 m machinery + 5.3 m	Earlier illustrative calculation	Upper working-height example advanced during correspondence.

A5.2 Interpretation

The chronology should not be read as a sequence of competing statutory minima. It distinguishes the statutory floor, earlier project/design figures, the adopted 9.0 m project minimum, and later calculations used to test whether foreseeable agricultural operations can be accommodated.

The Reporters will note that the 9.0 m increase was explained principally by EMF/conductor selection, whereas the 11.8 m discussion appears later and begins with a machinery datum.

A5.3 Conclusion

The same numerical concept – conductor-to-ground height – served different purposes at different stages: statutory compliance, project design, agricultural assessment and illustrative testing. Those purposes should not be conflated.

A6 Evolution of Electrical Clearance Dimensions

A6.1 Consolidated matrix

Clearance	Engineering context	Documentary treatment	Cross-reference
3.1 m	Basic electrical / fixed-height plant clearance in correspondence	Written SSEN position	Used in earlier discussions and subtraction examples.
4.3 m	ENA TS 43-8 vehicle not of fixed height passing clearance at 400 kV	Later DPEA/engineering material	Central to later 9.0 – 4.3 = 4.7 m methodology.
5.3 m	Plant not of fixed height / accessible or personnel-platform	Written SSEN position; category description evolves	Used in recorded 6.5 + 5.3 = 11.8 m assessment.

	circumstances in earlier correspondence		
7.0 m	ENA "Look Out, Look Up!" harvesting separation guidance	Later agricultural guidance	Operational guidance comparator, not presented here as statutory clearance.
10 m	AIS8 precautionary distance in comparative distribution context	Comparator only	Illustrates that different operational contexts use different precautionary distances.

A6.2 Classification rather than contradiction

The clearance figures are not best characterized as mutually contradictory. They relate to different engineering categories and purposes. The central question is which category applies to the foreseeable agricultural operation under consideration, including machinery that changes configuration, carries personnel, self-levels or moves dynamically over uneven ground.

A6.3 Relationship to design

The same 9.0 m conductor height produces materially different operational consequences depending upon whether 3.1 m, 4.3 m or 5.3 m is the relevant clearance. The engineering classification therefore cannot be separated from the design methodology.

A7 Evolution of Foreseeable Agricultural Machinery Heights

A7.1 Consolidated matrix

Height	Context / source	Status	Engineering significance
~4.0 m	Typical tractor/cab or transport comparison	Agricultural consultation evidence	Illustrates that transport/cab height is not necessarily working height.
4.7 m	9.0 m – 4.3 m = 4.7m	Later derived project/inquiry figure	Operational consequence of treating 9.0 m as fixed.
5.2 m	Later specialist agricultural estimate	Later evidence	Smaller representative working height introduced.
5.4 m	Later Agricultural Operations material	Later SSEN evidence	Representative operational assumption used in later case.
6.5 m	Recorded March 2025 engineering datum	Contemporaneous meeting record	First identifiable project-specific agricultural machinery datum in the

			chronology.
7.2 m	Dewulf manufacturer/specification evidence	Manufacturer evidence	Foreseeable specialist machinery operating dimension.
~8.0 m	Field measurement / observation	Field evidence	Working configuration under actual agricultural conditions.
>10 m	Earlier harvesting configuration example	Illustrative agricultural evidence	Used to test adequacy of smaller representative assumptions.

A7.2 Transport versus working configuration

A recurring theme is the distinction between transport height and working height.

The Applicant relies upon transport height.

Foreseeable agricultural operations can involve raised conveyors, elevators, unloading equipment, personnel platforms and hydraulic self-levelling. Certain machines cannot operate in transport mode contrary to assertions made by the Applicant's agricultural consultant.

The engineering relevance is therefore the configuration in which machinery actually works beneath or near the line, not simply the dimension in road transport mode.

A7.3 Cross-reference with conductor and clearance figures

Machinery height	Associated conductor-height example	Associated clearance / methodology
4.7 m	9.0 m	Derived by 9.0 – 4.3 m
5.2–5.4 m	9.0 m later project context	Later specialist/operational assessment
6.5 m	11.8 m	Recorded 6.5 + 5.3 m additive assessment
7.2 m	12.5 m illustrative	4.3 m + 1.0 m, or 5.3 m platform case
8.0 m	13.3 m illustrative	4.3 m + 1.0 m, or 5.3 m platform case
>10 m	15.3 m illustrative	5.3 m clearance example

The table records documentary associations and illustrative calculations. It does not imply that each pairing was formally adopted by SSEN.

A8 Evolution of SSEN Transmission's Engineering Methodology

A8.1 Stage One – initial statutory/project design

The earliest evidence centres on statutory conductor-to-ground clearance and project design. Earlier figures of approximately 7.2 m and 7.6 m precede the adopted 9.0 m project minimum.

The documented reason for the increase principally concerns conductor selection, EMF requirements and project engineering. No project-specific agricultural machinery datum is documented at this stage.

A8.2 Stage Two – agricultural operations become an engineering consideration

Consultation increasingly addresses harvesting machinery, conveyors, personnel platforms, hydraulic levelling, uneven ground and working configuration. Agricultural operations therefore become a substantive engineering consideration, although the complete design methodology remains undocumented.

A8.3 Stage Three – conductor height recognised as a design variable

The November 2024 response confirms that tower design remained under development, conductor heights might increase and not every agricultural machine might be accommodated. This demonstrates that conductor height remained capable of design modification prior to the application in late 2025.

A8.4 Stage Four – engineering components identified

The January 2025 response identifies the statutory minimum, adopted project minimum and electrical clearance dimensions. It provides the inputs but does not identify the machinery datum used in design or the sequence by which those inputs were combined.

A8.5 Stage Five – senior engineering review

During February 2025 the Director of Asset Management and Operations, Chief Engineer, project design team and agricultural consultant become involved. The issue is plainly being examined as an engineering/design question.

A8.6 Stage Six – apparent additive assessment

The March 2025 record introduces a sequence beginning with representative agricultural machinery height, adding electrical clearance and arriving at required conductor height: $6.5 + 5.3 = 11.8$ m. It also records a route-wide 78%/22% assessment and possible physical design changes for the remaining spans.

A8.7 Stage Seven – return to general assurance

Subsequent correspondence emphasizes ESQCR compliance, clearance above statutory minimum, land-user engagement and future mitigation. The detailed additive calculation is not repeated.

A8.8 Stage Eight – later DPEA operational methodology

Later material lodged by the Applicant with the DPEA increasingly presents the adopted conductor height as the starting point and derives an allowable machinery height by deducting

the applicable clearance.

In simplified form: $9.0 \text{ m} - 4.3 \text{ m} = 4.7 \text{ m}$; subtraction rather than summation.

A8.9 Conclusion

The documentary record appears to move from statutory/project design, through agricultural consultation and an apparent additive design assessment, to a later operational assessment derived from an adopted conductor height. Whether this is successive refinement of one methodology or an evolution in approach is a matter for the Reporters.

A9 Overall conclusions

A9.1 Principal conclusions from the documentary record

The chronology demonstrates that the discussion developed from statutory conductor clearance and project design, through agricultural machinery and operational configuration, to senior engineering review and later methodology as put to the DPEA.

It further demonstrates that conductor height remained capable of alteration during the design period, that senior engineering personnel became involved, and that an agricultural consultant was engaged to assist in reviewing the relationship between agriculture and overhead-line standards.

The March 2025 record is particularly significant because it appears to document an additive sequence: representative machinery height plus electrical clearance equals required conductor height. Later material from the Applicant places greater emphasis on deriving allowable machinery height from an already-adopted conductor height.

A9.2 Matters the chronology may assist the Reporters to clarify

- The stage at which the 9.0 m project minimum was fixed and the engineering assumptions used in selecting it.
- The machinery-height datum or data used during design.
- The ENA TS 43-8 categories applied to foreseeable agricultural operations.
- The treatment of personnel platforms, hydraulic levelling, dynamic movement and working configuration.
- The relationship between the early-2025 senior engineering review and the later methodology adopted by the Applicant.

Appendix B – Application of ESQCR

B.1 SSEN specifically assert that the guidance in ENA TS 43-8 has been followed and that the OHL is designed in accordance therewith. SSEN in their Position Statement of 12 December 2025 confirmed that the design of the project exceeds the statutory minimum (of 7.3 m at 400 kV) as defined in the ESQCR legislation.

B2 SSEN assert that these clearances were then reviewed against ENA TS 43-8, to ensure relevant factors are considered and risks are minimised. They stated that this resulted in a minimum clearance of 9.0m, which they point out is exceeded in all areas of the OHL. No evidence of such review has been provided. As has now been admitted the 9.0m standard is as a consequence of EMF effects not electrical clearance.

B3 SSEN assert that a clearance of 9m enables the safe passage of agricultural machinery of up to 4.7m underneath the line⁶¹. SSEN are however demonstrably aware from landowner consultations of taller machinery operating along the route as evidenced in our previous submissions.

B4 The Applicant's Further Environmental Information relies extensively upon ENA Technical Specification 43-8 as the engineering basis for demonstrating that the proposed conductor clearances are suitable for modern agricultural operations. ENA 43-8 exists precisely because statutory floors are insufficient for vehicles not of fixed height⁶².

B5 ENA TS 43-8 is relevant not merely because it contains minimum numerical clearances. It provides a methodology by which the foreseeable use of the land, the nature and height of objects and machinery, the presence of persons and the required electrical separation are used to determine the clearance required.

B7 Clause 4 of ENA TS 43-8 explains how the clearances throughout the Specification are derived. It states that, in general, the clearances contained within the specification are obtained by the summation of:

the basic electrical clearance; and
an application factor representing the physical allowance required for the normal use of the ground or object beneath the overhead line.

B6 Properly applied, that process informs the physical design clearance required for the overhead line:

Height of machinery + required electrical separation = design clearance

B8 The Specification further explains that departures from this summation methodology occur only where:

statutory requirements dictate otherwise; or

⁶¹ Contrary to ENA 43-8 SSEN do not appear to have made any rounding allowance or an allowance for undulating ground etc in accordance in reaching this figure. Ultimately, whether the clearance is 7.3 m or 9 m, the key is ensuring compliance with ENA guidance that requires a 5.3 m buffer to the nearest point a person can stand.

⁶² ENA TS 43-8 is relied upon by Transmission Owners, including SSEN, as the principal industry methodology for demonstrating compliance with statutory safety obligations, including the Electricity Safety, Quality and Continuity Regulations and the Health and Safety at Work etc. Act 1974 ("HSAW"). Where an operator elects to rely on ENA TS 43-8 for that purpose, the standard must be applied correctly and in a manner consistent with statutory duties. The standard is not discretionary guidance in this context: it is the compliance mechanism by which statutory duties are asserted to be met.

particular external agreements exist, such as railway crossing agreements.

B9 The Specification does not identify agricultural machinery, or vehicles not of fixed height, as an exception to that general methodology. The scope of ENA TS 43-8 states that the clearances are based upon the **normal use of the land**.

B10 TS 43-8 further explains that unusual situations require local assessment and may require increased clearances or other engineering measures.

B11 Clearances are therefore to be determined having regard to the use of the surrounding land.

B12 The Specification defines "normal use of land" simply as:

"type of work or activity which is likely to occur on or over a particular piece of land."

This definition would include machinery in use on that land (and foreseeable in the lifetime of the project). It refers to work or activity and would therefore naturally include normal agricultural operations, including harvesting, spraying, irrigation, loading, manoeuvring, turning at headlands and other routine farming activities.

B13 The reference to work and activity should be considered in the light of the Applicants decision to use transport heights to derive clearances.

B14 ENA TS 43-8 provides engineering guidance for determining the clearances required beneath overhead electrical lines. Its significance lies not simply in the numerical values prescribed, but in the methodology by which those values are derived.

B15 ENA requires assessment of the foreseeable object, not merely the conductor. Clause 5 reinforces this engineering philosophy. Amongst other matters, ENA requires consideration of:

- conductor creep throughout the life of the line;
- future maintenance activities;
- the maximum height of vehicles likely to use laneways;
- increased clearances where work is undertaken beneath the line; and
- movement of site traffic.

B16 These provisions demonstrate that ENA TS 43-8 is not solely concerned with static dimensions. Instead, the engineering assessment is required to consider how land will actually be used and foreseeable future use. It is our position that this will also need to account for autonomous vehicles since these are already being trialled across the UK.

B17 Dynamic movement is expressly recognised elsewhere within ENA TS 43-8. Perhaps most importantly, Table 2, Note 4 requires account to be taken of the possible movement of objects. The Specification expressly gives as an example:

"a mobile crane jib travelling over uneven ground."

B18 This is an important engineering principle. ENA therefore expressly recognises that the effective height of equipment is not always represented by its static dimensions. The same engineering principle applies equally to modern agricultural machinery operating over uneven agricultural ground. The attention of the Reporters is drawn to video footage of a potato harvester operating.

B19 The Objectors have undertaken an indicative frame-by-frame assessment of video evidence showing a Dewulf RA3060 potato harvester manoeuvring around an existing overhead line pole during ordinary harvesting operations. Using the manufacturer's published cab height of 3.995 metres as the calibration reference, the highest point of the raised unloading conveyor exhibits approximately 0.9 metres of vertical movement during the manoeuvre. Allowing for the limitations of handheld video, perspective and image resolution, a reasonably supportable indicative range is approximately 0.6 to 1.3 metres. This demonstrates an important engineering fact. Modern agricultural machinery is **not of fixed height** during foreseeable agricultural operation. This video will be uploaded to the website separately.

B20 Furthermore, the manoeuvre recorded in the video does not represent the most severe agricultural ground conditions likely to be encountered. The footage therefore demonstrates that dynamic movement is an ordinary and foreseeable characteristic of modern agricultural operations.

B21 Rather than determining the conductor height required to accommodate foreseeable machinery, the Applicant appears to begin with the proposed conductor height and derive a maximum permissible machinery height by subtraction. Expressed simply, SSEN's design approach relies upon:

Proposed conductor height – clearance = permitted machinery height.

B22 This appears fundamentally different from the engineering methodology described in Clause 4 and consistently applied throughout the remainder of ENA TS 43-8.

B23 ENA TS 43-8 does not support the Applicant's design. If the SSEN considers that Table 8 requires such an inversion of methodology solely for vehicles not of fixed height, it will be for them to establish in evidence the specific provision within ENA TS 43-8 that expressly creates that exception.

B24 Conductor clearance is therefore the outcome of an engineering assessment rather than the starting point of a design. ENA TS 43-8 distinguishes between different categories of activity because each presents different engineering and safety considerations.

B25 ENA table 8 illustrates this methodology by identifying a range of foreseeable activities beneath overhead lines and specifying the electrical safety clearances appropriate to each. Different activities require different separation distances because they present different engineering problems.

B26 The methodology begins with the foreseeable activity, establishes the appropriate electrical safety separation and derives the conductor clearance. The principal issue is whether the Applicant adopted the same engineering sequence.

B27 The engineering philosophy reflected within ENA TS 43-8 is consistent with the principles embodied in CDM 2015. Designers are expected, so far as reasonably practicable, to consider foreseeable hazards during the design process and eliminate or reduce them through design before reliance is placed upon operational controls.

B28 Engineering design represents the principal opportunity to reduce risk because decisions taken at that stage determine the physical characteristics of the completed development.

B29 The recognised hierarchy of mitigation distinguishes between risks eliminated or reduced through engineering design and those managed operationally after completion of the design. Embedded or primary mitigation forms part of the physical characteristics of the completed development. Operational controls, training and safe systems of work are then used to manage only residual risks. This hierarchy is consistent with both ENA TS 43-8 and CDM 2015.

B30 The Applicant has failed to address the issues raised in our May report at Appendix G regarding ENA TS 43-8 and in particular the application of Table 8.

Appendix C – Letter to SSEN following landowners meeting



Daniel Johnston
SSEN Transmission
Inveralmond House
200 Dunkeld Rd
Perth

24 February 2025

By email: Daniel.Johnston@sse.com

Dear Daniel,

Brian Carnegie - Gossesslie
Dwg 227509-PLN-PAP-20250115-1 dated 23 January 2025 – first issue

I refer to Grace Campbell's letter of the 24 January 2025 with regard to the report on consultation and in respect the above drawings provided in her letter and to our meeting of the 31 January at Steelstrath.

Please also provide by return shape files (SHP) of the hard copy maps you have provided. In the event that these are not provided then there will be a cost of reproducing the information in digital format which will form part of the claim.

Health & Safety

We discussed the heights of the 3 pylons across Gossesslie and Scott Holloway of Balfour Beattie was readily able to set out heights and clearances; for which we are most grateful.

We note that the maximum clearances is 12.6m (between UE 72 and UE 73) and the minimum 9.2m (between UE 70 and UE 71)

As SSEN should be well aware the TKUP project will fall within the Construction (Design and Management) Regulations 2015 ("CDM"). I understand that Balfour Beatty are the principal designer and have been instructed to provide a minimum 9m clearance by SSEN. As per HSE's guidance note on the role of the principal designer they have a duty "work with any other designers on the project to **eliminate** foreseeable health and safety risks to anyone affected by the work and, where that is not possible, take steps to **reduce or control** those risks" (HSE emphasis). This appears to reflect ENA TS 43-8 which clearly states "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." (my emphasis).

At no point have either SSEN or the principal designer sought information as to the height of machinery operated on the farm to inform on risk as would seem

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necessary as part of that process.

To learn (and only then because we specifically asked) at this late stage of the project of the heights of the pylons and the proposed clearance is of significant concern to our clients. Design decisions made during the planning phase of the project significantly influence the health and safety of those affected by the overhead line. We would be grateful for an explanation from SSEN as to how this situation has been allowed to develop and why during consultation the heights of the line have not been raised with affected parties.

Heights of farm machinery have increased considerably over the years as both you and James ought to be aware. The client's combine with its discharge auger out (normal practice at harvest) has a top height of 6.5 metres. Electricity safety regulations seem to suggest a minimum clearance from the highest point of the machinery to the lowest point of the line of 5.3m requiring a minimum clearance height of 11.8m. Our client operates a 36m Fendt rogator self-propelled sprayer which, when folding to get round obstacles, has a maximum height of 10.5m. We are also aware that SSEN in its recent round of enquiries with machinery manufacturers following our raising of this issue are aware of potato harvesters with operating heights in excess of 8m. Based on these figures most of the clearances you have provided appears unsafe and will leave significant risk with those working the land.

You seemed to suggest that the reasons for not increasing height was due to increased tower base and therefore the loss of more prime agricultural ground. You also pointed out that taller towers increase visibility and the costs of the project. We do not accept this as a valid argument for not following CDM from the onset and designing out risk; this all should have been addressed as part of the route selection process from the onset. In any event if the project proceeds on such heights land underneath the pylons may not be utilisable.

We were informed that SSEN were designing to a minimum of 9m as "*discussed with NFUS*". Please confirm with whom and when you spoke with NFUS and indicate whether they expressed any concerns regarding these design parameters. Whilst our clients are members of NFUS they have not authorised that body to take decisions affecting their property rights on their behalf.

Pylon locations

In SSEN's scoping report you seek to scope out agriculture on the basis that you will minimise pylons on prime agricultural land and utilise field margins. This does not seem to accord with your proposals for siting here (or indeed elsewhere on the route).

- UE 66 – appears to be located some 50m from the field edge / road
- UE 67 – appears to be located 38m from the field edge
- UE 71 – located 112m from the internal access whereas it would seem that it can be located immediately adjacent to that access.
- UE 72 – located 25m from field boundary

We look forward to a substantive response setting out the reasoning for these siting decisions and, if you are not willing to agree to our suggestions for micro siting on the field boundary in accordance your scoping report, the reasoning for not doing so.

Access routes

You confirmed that permanent access tracks to pylons (even tension pylons) would not be required.

I understand however that you propose to upgrade the existing farm access to provide a higher specification of access to be used in the future.

Please confirm what security measures would be put in place on to prevent the use of such new access for parking etc.

Airstrip

James was demonstrably made aware of the grass airfield on Gossesslie in October last year linked with the small hanger. The proximity of unlit pylons in close proximity of this landing strip is of concern.

Soil sampling

SSEN have been made well aware of the importance of daffodils and seed potatoes in agricultural rotations throughout the length of the TKUP project. Our client has expressed this concerns from the launch of this project. It is of serious concern that these concerns still have not been adequately addressed.

PCN and clubroot tests will inform as to the necessary biosecurity protocols and so our clients are not prepared to agree to access until we have such test results. Any suggestion that you have to meet deadlines is of no importance to our clients – you have been made aware of these concerns from the onset of the project and failed to address these timeously. Our clients are entitled to protect their business and property interests.

I have raised this before with SSEN and pointed out that this does not appear to accord with SASA PCN testing standards. James at our meeting suggested that your proposed sampling methodology had been discussed with SASA. Please set out when and with whom such discussions took place.

As has been confirmed by SASA, W pattern samples are only really used to give a rough idea of what the soil nutrient levels are and are used in situations where farmers are maybe renting fields and looking to get a basic idea of levels such as PH, P, K and Mg. On the other hand, grid pattern sampling, as used in PCN testing by SASA, ensures that the entire field is uniformly covered reducing the risk of missed high/low spots. Grid Sampling also enables easier comparisons when looking at different data sets.

SASA's trials show that W patterns, as you propose, are only 35% accurate compared to 85% accuracy with grid sampling at 4 samples Per/ha (50m Grid). To put this into context, assume you take one W pattern sample for PCN across a 10ha corridor that already has PCN in it the W pattern might miss the PCN in the field on the first time of sampling and when you come to sample the second time round after work has been completed the W pattern might pick up the PCN which

was there in the first place. When sampled with a Grid sampling strategy PCN can be found and areas can be zoned as PCN positive or negative making it a lot easier to compare the two data sets.

For comparison, SASA in their grid pattern approach, at the reduced rate of soil sampling, take 400 ml of soil from each 1 ha area in the field and each 400ml bag consists of about 100 individual cores. The distance between each core is on average 10m apart. SASA are concerned that your sampling approach as explained to us with distances of 100 m between cores and only one sample per field could result in PCN hotspots being missed.

At our meeting we provided you with an example where only part of a field was scheduled which again illustrates the weakness in your proposed sampling methodology.

Despite my requests SSEN have yet to clarify the soil sampling protocol and to set out why intrusive surveys are proceeding before results are obtained. Does the intent for SSEN to carry out works before results are obtained to inform on the necessary protocol conform to the advice provided by Agrii and SAC?

In accordance with Balfour Beatty's protocol dated August 2023 *"In order to understand the potential risks our work poses to biosecurity, the presence of biosecurity threats must be identified in advance of works starting on site."* It is our position that an intensive survey is necessary to identify risks as there is risk of spread from infected areas to clean areas within fields.

Since testing will provide the base line for any potential compensation claim against SSEN Mr Carnegie is not prepared to accept this methodology and is considering instructing SOYL to carry out georeferenced PCN & Clubroot sampling to SASA standards over the whole route within the Indicative Limit of Deviation shown on your map. You are seeking rights over about 15 ha on the property. SOYL have given an indicative cost of about £14,000 (which we will confirm upon receipt of the SHP files and before instructing the work). This will form part of the claim against SSEN (to be determined by the LTS if not agreed).

Such costs would not have been necessary had SSEN engaged with landowners properly and timeously to discuss and agree protocols in advance as suggested by CAAV in February 2024..

Proposed biosecurity protocols

Landowners raised a proposed biosecurity protocol in 2023 in that they considered that the protocol dated August 2023 following initial consultations was far too general and did not address the need to protect the Clubroot / PCN status on one of Scotland's most important seed potato and daffodil growing areas.

We set out our own protocol with Grace Campbell in an email dated 29 January 2024. On the 14 February Ms Campbell stated *"SSEN will not agree to this as we are already adhering to biosecurity protocol as per Balfour Beatty's document reattached for your records"*. Balfour Beatty acknowledge in that protocol that *"a landowner may also request that biosecurity measures are put in place without there being a disease outbreak"*. SSEN still have not set out the reasons why they are not prepared to agree to our protocol or why the Balfour Beattie August

protocol fails to directly refer to PCN or Clubroot despite them being aware of landowner concerns.

The issue of soil testing in advance of any access and biosecurity was raised in meetings with the Scottish Agricultural Arbiters and Valuers Association and the Central Association of Agricultural Valuers in February 2024. There has been ample opportunity to engage and resolve this in the past 12 months and it is disappointing that landowners are now faced with demands for invasive works under threat of legal action given this failing.

My clients have been told by others on the route that SSEN have asserted that a biosecurity protocol has been agreed with NFUS. That has not been borne out by our own enquiries. Please set out what was agreed, by whom and when. Please also note that while our clients may be members of NFUS that organisation has no authority to agree protocols which affect individual businesses.

Our concerns regarding the biosecurity measures being proposed stand until these points are fully addressed.

Summary

It is of concern that many of these issues have been raised previously with SSEN and not been addressed in your consultation process.

We trust that the points we set out will now be addressed before design freeze and final consultations. It will need to be addressed before any further works are permitted on our client's property.

Yours sincerely,



Ian Thornton-Kemsley
For Galbraith

Tel: 07951 536 351

Email: ian.thornton-kemsley@galbraithgroup.com

Appendix D – Biosecurity protocol

Balfour Beatty

Biosecurity Measures
Reference Material: ENV-RM-0021a

Introduction

This reference material specifically covers biosecurity measures when working through farmland and other open areas in relation to animal diseases, plant diseases and invasive & injurious species.

Biosecurity is a set of measures put in place to prevent the introduction and spread of disease, harmful organisms and invasive species that are a threat to other plants, animals and humans. The introduction or spread of diseases, organisms or invasive species may occur through working in or walking through areas and clothes, boots, vehicles and equipment becoming contaminated and carrying diseases and plant material from one area to another.

Where a risk has been identified through site surveys or there is a disease outbreak, biosecurity measures must be put in place.

Below are just some plants, animals, pests and diseases that require biosecurity measures to prevent the spread of such organisms.

Animal Diseases	Plant Diseases	Invasive Species
Foot and mouth	Ash dieback	American Signal Crayfish
Avian influenza (bird flu)	Phytophthora sp.	Japanese Knotweed
Bluetongue		Himalayan Balsam
BSE (mad cow disease)		
Bovine TB		

Injurious Species	Injurious (harmful) weeds
Giant Hogweed	Common ragwort
Wild Parsnip	Spear Thistle
Oak Processionary Moth	Creeping or field thistle
Poison Hemlock	Curled dock
	Broad leaved dock

Abbreviations / Definitions

Invasive species	A species of plant or animal not native to the UK that has a tendency to spread rapidly. Non-native invasive plants are those species which have become established in the wild after their introduction to the UK, for example as ornamental garden plants. Invasive species (both plants and animals) have the ability to reduce biological diversity by out-competing native species for space, light and resources.
Injurious species	A species of plant not native to the UK that has a tendency to spread rapidly and can cause injury to humans and wildlife.
Injurious (harmful) weeds (as classified in	Native species which have been deemed to cause a problem to farming productivity and are classified under the Weeds Act: common ragwort, spear

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the Weeds Act)	thistle, creeping or field thistle, broad-leaved dock and curled dock.
APHA	Animal and Plant Health Agency

Legislation and Regulation

England, Wales, Scotland & Northern Ireland (EN) (W) (S) (NI)

The Plant Health (England) Order 2015, The Plant Health (Wales) Order 2006 (as amended), The Plant Health (Scotland) Amendment Order 2015 and The Plant Health (Amendment) Order (Northern Ireland) 2015 implements EU legislation requiring that plant passports may be needed where:

- Plants that can host quarantine pests and diseases are being moved within the UK
- Plants that can host quarantine pests and diseases are being moved within the EU
- Plants that can host quarantine pests and diseases are being moved in Protected Zones

Plants that are certified at the place of production are free to move within the home market and the EU without additional inspections. An identification label called a 'plant passport' must accompany certain plants which identifies the grower, the origin and verifies that the plant is eligible to move within the EU.

England, Wales & Scotland (EN) (W) (S)

The Animal Health Act 1981 (as amended) requires the Secretary of State to have a disease control (slaughter) protocol to prevent the spread of Foot and Mouth Disease, Cattle Plague; Pleuro Pneumonia; Swine fever and Diseases of poultry.

If there is an outbreak of disease, the Government will establish protection, surveillance and biosecurity zone/s and issue guidelines outlining the biosecurity measures which must be implemented.

The Wildlife and Countryside Act 1981 (schedule 9) details species which it is illegal to spread. These include Japanese Knotweed, Giant Knotweed, Himalayan Balsam, Giant Hogweed and Rhododendron.

The Weeds Act 1959 covers 5 injurious (harmful) weeds:

- Common ragwort (*Senecio jacobaea*)
- Spear thistle (*Cirsium vulgare*)
- Creeping or field thistle (*Cirsium arvense*)
- Curled dock (*Rumex crispus*)
- Broad leaved dock (*Rumex obtusifolius*)

The Act allows the Secretary of State to take action to control the spread of the five weeds by serving notice on an occupier of any land on which the weeds are growing, requiring them to take action to prevent the weeds from spreading. The Ragwort Control Act creates a code for managing Ragwort and amends the Weeds Act.

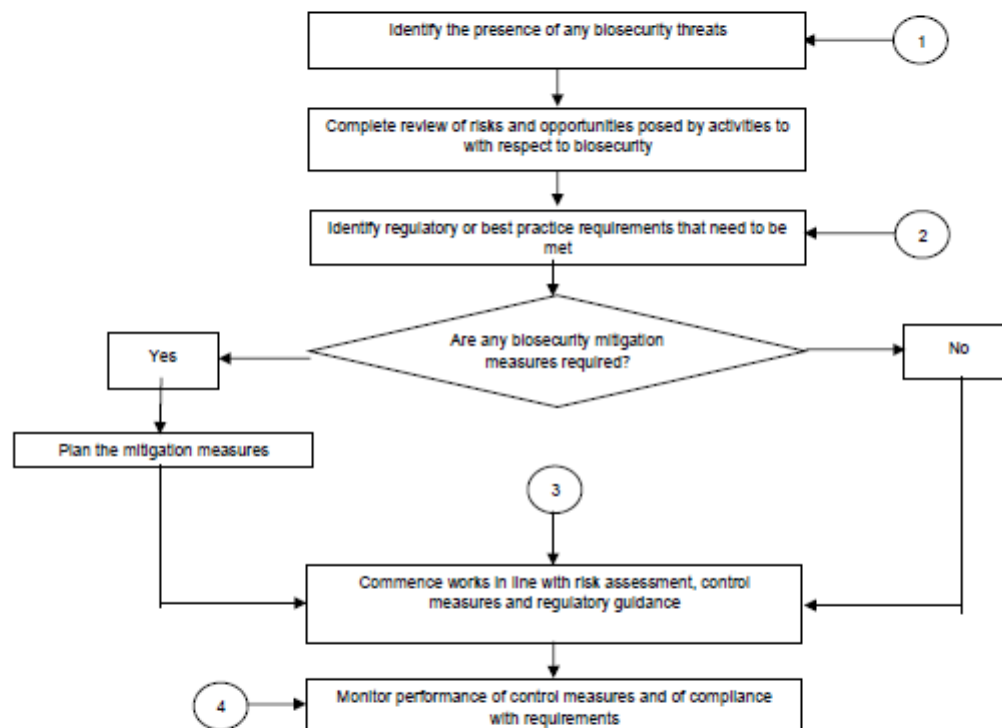
Northern Ireland (NI)

The Disease of Animals Order (Northern Ireland) 1981 provides the enabling powers for the legislation that deals with the control of disease.

If there is an outbreak of disease, the Government will introduce enhanced biosecurity measures and issue guidance outlining what is required.

The Wildlife Order 1985 states that it is an offence if anyone plants or allows to escape into the wild any species of plant listed on Schedule 9 Part II. This includes Japanese Knotweed, Giant Knotweed, Himalayan Balsam and Giant Hogweed. Where species such as Japanese knotweed are spreading from one private property to another, it constitutes a civil matter between the two landowners.

What you need to do



Note 1 - Identify the presence of any biosecurity threats

In order to understand the potential risks our work poses to biosecurity, the presence of biosecurity threats must be identified in advance of works starting on site.

Invasive & injurious species

This may include information received from the client, specialist surveys and external consultation with environmental/conservation regulators and local wildlife trusts/bodies etc. landowner and from site walkovers. Any information passed to the project team must be assessed for completeness, including how recently surveys and reports were carried out. Any ecological data (including surveys) which are a year or older may be out-of-date and must be reviewed with an ecologist to determine their accuracy and validity and whether they need to be updated.

If works/activities are demobilised and will be remobilised after 3 months or more, the environmental risks and opportunities assessment must be re-visited and updated as necessary in advance of works re-commencing. Ecological mitigation requirements must be revisited with specific attention paid to the lifecycle of invasive and injurious species and any seasonal restrictions.

As invasive and injurious species can spread/are mobile and may move into an area, or work is being carried out at a different time of year from when it was originally planned, additional surveys may be required and must be obtained. Any mitigation measures must be implemented prior to works/activities commencing. Ecological mitigation requirements must be re-briefed to site personnel in advance of works re-commencing.

A landowner may also request that biosecurity measures are put in place without there being a disease outbreak.

For more information refer to [ENV-RM-0021c Invasive and Injurious Species Handbook](#).

Animal and plant diseases

The UK Government will issue specific guidance if there are disease outbreaks such as foot and mouth disease, BSE, bird flu and bovine TB which require biosecurity measures to be put in place.

A landowner may also request that biosecurity measures are put in place without there being a disease outbreak.

Bovine TB

Checks for areas where there have been recent Bovine TB outbreaks can be made on-line at <https://www.ibtb.co.uk/>.

Note 2 - Identify regulatory or best practice requirements that need to be met

Invasive & injurious species

Refer to [ENV-RM-0021c Invasive and Injurious Species Handbook](#).

Animal and plant diseases

If there are known outbreaks, refer to the specific guidance issued by the UK Government. Where there is a specific threat it must be clearly marked on site plans and signs put in place stating "Biosecurity. No Access Beyond This Point" (or using wording advised by the UK Government).

It is good practice to put in place biosecurity measures when working in or near a watercourse, woodland or farmland even when a specific threat has not been identified.

- Biosecurity measures must be included in method statements and site inductions, and briefed to all site staff and subcontractors
- Wash points must be clearly signed and marked on site maps
- Biosecurity measures must be located at least 30m from a watercourse and 50m from a sensitive site and private water supply
- Keep vehicular access to a minimum: do not enter areas unnecessarily and, where practicable, keep to established access tracks
- If vehicles are taken on to the premises they must, wherever possible, be parked on hard standing away from farm animals and must be visibly free of animal excreta, slurry etc. The wheels and wheel arches must be clean and sprayed with disinfectant prior to entry and exit
- Wheel washes and biosecurity mats must be put in place and have a minimum length the same as the circumference of the largest tyre which will be used on site.
- Ensure footwear is clean prior to accessing a site (visually free from loose soil and plant debris). If necessary brush or wash in soapy water and disinfect before the visit.
- Wear waterproof PPE and waterproof boots so that they can be easily be cleansed and disinfected immediately when leaving the area
- This cleaning procedure must be complied with even if you are only walking across the land and do not expect to come into contact with animals or their by-products
- With gloves and glasses on, boots and equipment must be sprayed before entering the premises
- Before leaving site ensure all manure, mud or other visible animal product is removed from PPE, footwear and all equipment by thoroughly spraying with disinfectant. If required, soak boots in a basin and use a firm brush to clean. Clean and disinfect brush and basin after use.
- Bag any contaminated clothing or equipment that needs to be washed more thoroughly.
- Ensure that vehicles are cleaned regularly to remove any mud, especially from wheels and wheel arches.
- Disinfectant must be approved by Defra and be stored and handled as per relevant COSHH requirements and diluted as per the manufacturer's recommendations
- The wheel wash and mats must be topped up with disinfectant on a weekly basis to ensure it remains effective. Every 4-6 weeks the entire setup must be cleaned and recharged. The water pumped out must be removed off site as a waste product (see [ENV-RM-0035a Waste Management](#)).

If there is notification of a disease outbreak or a requirement for additional control measures during the course of our works, e.g. a Foot and Mouth or Avian influenza (bird flu) outbreak in close proximity. All activity must stop and an assessment of the disinfectant being used will be reviewed to ensure its suitability



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For further information see [ENV-TB-0021h Biosecurity Measures](#).

Bovine TB

The Animal and Plant Health Agency (APHA) will impose Bovine TB restrictions on a case-by-case basis and Balfour Beatty must consult with the landowner/tenant regarding these restrictions. If the work can't be postponed and the restrictions allow work to be carried out, a safe system of work including relevant biosecurity measures needs to be carefully planned and implemented in line with the restrictions.

Note 3 - Commence works in line with risk assessment, control measures and regulatory guidance

Where biosecurity risks have been identified, appropriate working methods must be developed and implemented to prevent the introduction and spread of harmful organisms and invasive species that are a threat to other plants, animals and humans. Mitigation measures must be interrogated to ensure they are fit for purpose.

If works are being remobilised after 3 months or more, [BMC-SF-0001e Sales to Delivery Handover Checklist](#) must be completed again, ensuring that biosecurity risks are reviewed.

If there is an outbreak of disease and the Government has established protection, surveillance and biosecurity zones, these and any other relevant Government guidance must be followed and implemented.

Note 4 - Monitor performance of control measures and of compliance with requirements

An inspection of any mitigation measures and controls such signage and disinfectant use must be undertaken by the Management Environmental Representative (MER) and recorded on [ENV-TF-0004a Environmental Management Representative Inspection](#).

If the control measures fail, the emergency arrangements set for the activity must be followed if needed. The work must be stopped and the risk assessment and control measures reviewed and the landowner and other relevant parties notified.

Environmental incidents must be reported as per [HSES-PR-0005 Incident Reporting and Investigation](#).

Additional Information

Working through farmland

For information on choosing and making up a disinfectant, on-site disinfectant procedures, biosecurity mats and wheel washes refer to [ENV-TB-0021h Biosecurity Measures](#)

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Plant passports

If plants or plant products that can host quarantine pests and diseases are moved in the UK or within the EU they may need plant passports. Checks must be made to ensure that plant passports are in place for any plant or plant products that require them. For further information see the information for where your project is based:

- England & Wales – [Issuing plant passports to trade plants in the EU](#)
- Scotland – [Plant Health Guide to Plant Passporting and Marketing Requirements](#)
- Northern Ireland – [Import and Export of Plants](#)

Importing plants and plant products from outside the EU (phytosanitary certificates)

The import of many plant and plant products from non-EU countries is prohibited or restricted to prevent the introduction of pests. Importers must ensure that all consignments are accompanied by a phytosanitary certificate from the plant health authority of the country of origin. This will be checked by a plant health inspector before the consignment can be cleared by Customs. For further information see the information for where your project is based:

England & Wales

All consignments being imported must be notified using the [PEACH website](#) each time a consignment is brought into the UK. The requirements vary depending on how the consignment was landed i.e. by air or sea. For more information refer to [Importing plants, fruit, vegetables or plant material to the UK from outside the EU](#)

Scotland

All consignments being imported must be notified to the Horticulture and Marketing Unit at hort.marketing@gov.scot at least 3 days before arrival. For more information refer to [Plant Health Guide – Guide for Importers](#).

Northern Ireland

Business or individuals wishing to import plants from non-EU countries must register with DEARA. For more information see [Import and Export of Plants](#).

Treatment and disposal of invasive non-native plants

In England, if you comply with the conditions of [Regulatory Position Statement \(RPS\) 178](#) (treatment and disposal of invasive non-native plants) you can dispose of invasive non-native plant material and the substrate in which it is rooted without a permit. If you cannot comply with the conditions in this RPS and you want to dispose of invasive non-native plant material, you must apply for a permit.

For further information see the above link and HYPERLINK

"https://balfourbeatty.sharepoint.com/sites/BMS/_layouts/DocIdRedirect.aspx?ID=2KHUWT73P6SE-1572-8757" ENV-RM-0039b Common Regulatory Position Statements Waste Exemptions and Permits

Removal of arisings from site clearance

Before removal of arisings from site clearance, an assessment of biosecurity risk must be made and any necessary controls put in place. Some arisings may not be permitted to leave site if they present a biosecurity risk.

Further Information

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England - Forestry Commission – [Biosecurity e-learning resources](#) are available on the following:

- Biosecurity Awareness – Module 1
 - Explains the definition and principles of biosecurity
 - Explains why biosecurity is important from an environmental, social and financial perspective
 - Provides some examples of current and potential tree pests and diseases
- Biosecurity Dispersal Pathways – Module 2
 - Provides historical data on pest and disease introductions to the UK
 - Outline the various ways in which pests and diseases can be dispersed geographically
 - Explains the means of dispersal in the forestry, horticulture and arboriculture trades
- Biosecurity Measures Module 3
 - Explains some of the laws surrounding plant and tree movements
 - Explains how to plan a site visit from a biosecurity perspective
 - Explains how to dispose of infected materials
- Biosecurity Personal Controls – Module 4
 - Explains personal biosecurity measures
 - Identifies the contents of a biosecurity kit
 - Explains biosecurity measures for kit and vehicles
 - Explains how to report a potential tree pest or disease
 - Increases your understanding of your responsibilities in preventing the spread of pests and diseases by undertaking low or high risk biosecurity good practice
 - Informs you when and how to report pests and diseases
- Import and Export of Wood Packaging Material – Module 5
 - Explores the Import and export requirements of wood packaging material

Scotland – [Biosecurity and management of invasive non-native species for construction sites and Controlled Activities](#)

UK DOCUMENTATION

Reference	Type	Title
ENV-RM-0021c	Reference Material	Invasive and Injurious Species Handbook
ENV-SF-0021a	Standard Form	Japanese Knotweed Management Plan
ENV-TB-0021a	Toolbox Talk	Injurious Species
ENV-TB-0021b	Toolbox Talk	Japanese Knotweed
ENV-TB-0021c	Toolbox Talk	Giant Hogweed
ENV-TB-0021d	Toolbox Talk	Himalayan Balsam
ENV-RM-0021e	Toolbox Talk	Ash Dieback Disease
ENV-TB-0021f	Toolbox Talk	Rhododendron
ENV-TB-0021g	Toolbox Talk	Aquatic Invasive Species
ENV-TB-0021h	Toolbox Talk	Biosecurity Measures
ENV-TB-0021i	Toolbox Talk	False Widow Spider

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Biosecurity Measures
Reference Material: ENV-RM-0021a

ENV-TB-0021j	Toolbox Talk	Ticks
ENV-TB-0021k	Toolbox Talk	Insects and Rodents
ENV-TB-0021l	Toolbox Talk	Wild Parsnip
ENV-AD-0021a	Advice Note	Equine Flu

Appendix E - Seagreen Access Protocol

SEAGREEN WIND ENERGY LTD.

ONSHORE TRANSMISSION CABLE LAYING WORKS

CODE OF CONDUCT

INTRODUCTION

The information contained in this guidance has been prepared by a joint working group involving different representatives from Seagreen Wind Energy Ltd. (Seagreen) and the specialists contracted to carry out land referencing and procurement. It has been agreed with landowner representatives.

This code seeks to deliver good practice across all aspects of infrastructure works throughout the cable route corridor, from landfall to substation. These set out good practice and commitments in respect of any works taking place on the Landowner's ground.

All work is to be carried out in accordance with this Code of Conduct and Seagreen will ensure that any breach of this Code of Conduct will be addressed and rectified in a timely manner with the basis of any compensation due being calculated with reference to the attached Heads of Terms. In the absence of soil test results confirming the lack of pests or diseases Seagreen will adopt a precautionary principle to bio-security measures and will put in place such best practice measures as would have been adopted had soil tests confirmed that Potato Cyst Nematodes (PCN) or club root had been present in any areas of work.

Sections are included on:

- Pre-construction planning / Record of Condition.
- The use of Environmental Management Plans and Construction Method Statements (incorporating a Site Waste Management Plan)
- Habitat management and restoration
- Water management
- Traffic management
- Access tracks
- Site drainage / fencing / ditching
- Site infrastructure
- Seasonal considerations
- Sporting considerations
- Stock Retention
- Reinstatement / Compensation
- Post-works development, maintenance and inspection.

Seagreen will ensure that all their staff and contractors (including any sub-contractors) are aware of these procedures and understand why they are important.

GENERAL

Record of Condition

Before taking entry to the Subjects, a photographic Record of Condition (RoC) will be prepared at Seagreen's expense.. The Landowner will be permitted 10 working days to make reasonable representations on the RoC failing which it will be deemed to be an accurate record of the Subjects prior to entry.

Restrictions in force

At least one month before starting any earth movement Seagreen must contact the appropriate Scottish Government Representative to confirm any restrictions relating to the prevention of the spread of any notifiable animal, plant or poultry diseases which may be in force relating to the site and any surrounding land and access ways to which access is required for the purpose of the works.

Potato Cyst Nematode (PCN)

Seagreen acknowledge the importance of potatoes in the agricultural rotation along the route and in particular seed potato production. Potato Cyst Nematodes (PCN) is a major concern to the agricultural industry. PCN is potentially devastating to crops and the pathogen is exceptionally hardy: once established in a field, PCN is effectively impossible to eradicate in the short term, and because they persist as long-lived cysts in soils, growing potatoes may not be economically viable for up to two decades. PCN is primarily spread by moving infested soil that contains cysts. Spread from one field to another can occur on infested soil attached to machinery, and/or vehicles and be spread long distances in this way. The likelihood of this project spreading such pathogen along the route is therefore a major concern to landowners and is a major potential threat to future agricultural productivity in the area. Due to the difficulties in eradicating this nematode once introduced into soil, Seagreen acknowledge that sound preventive containment measures to avoid spread of PCN is essential and will take reasonable measures to ensure that such pathogens are contained.

Sampling

Seagreen acknowledges the importance of soil and soil structure to future agricultural productivity. Soil samples will be taken for laboratory determination of the presence and degree of infestation with PCN and Clubroot. Seagreen will take reasonable measures to ensure, as far as reasonably possible, that such pathogens are contained. As well as PCN and Clubroot samples of the pH, Potassium and Magnesium, phosphorous levels of the affected fields will be geo-referenced and tests undertaken to confirm the amount of organic matter and the texture of the soil prior to the commencement of any works. On completion of the works, PCN, Clubroot and pH Potassium and Magnesium, phosphorous and organic matter samples will again be taken to determine any change and a mitigation plan agreed at the expense of Seagreen to address any concerns.

Access

No less than 5 working days' notice will be given, prior to undertaking investigation works, advising as to the extent of the works and access routes to be taken. Prior to cable laying works commencing, contractors will give no less than 5 working days' notice in writing and

will liaise with you to ensure that, as far as reasonably practicable, disruption to land based operations is minimised.

Disturbance

Contractors will as far as reasonably practicable seek to minimise disruption of grounds and any land-based operations.

Compliance

Seagreen and any other associated / subsidiary companies, and Seagreen's Employees, agents or contractors undertake to comply with this Code.

If applicable, an electronic copy of the Environmental Management Plan, as approved by Angus Council as the relevant local planning authority, will be provided on request but it is accepted that where more rigorous standards are agreed in this Code of Conduct these will prevail.

PRELIMINARY

Seagreen will make reasonable endeavours to consult the Landowner before undertaking investigation works and take into account any reasonable concerns expressed with regard to maintaining future agricultural productivity. This will involve on farm discussions to inform landowners of the nature of the works, arrangements for access and any special measures eg biosecurity measures, advice on measures necessary for IACS / AECS / SSSI's etc

Seagreen will use any such consultation to ascertain, where appropriate: -

- The present condition of the land.
- Land ownership and occupancy.
- Existing utilities and services. Pipes, cables, equipment or other structures below the ground.
- Any indications of previous flooding over the land.
- The location of springs, wells, cess pools or septic tanks or land drains
- Any harmful materials, liquids or vegetation in the area or any contamination
- Any designated areas or grant schemes (such as SSSIs or SACs) affected by the proposal
- Any other issues that Landowners / Occupiers may raise during this period of discussion.

The Landowner will be notified in writing in the event of any change to the previously identified start date and, where appropriate, the sequence of works. Once the start date has

been determined Seagreen will give the Landowner a reasonable estimate of the duration of the works and keep them updated of any changes.

Seagreen shall use reasonable endeavours to complete any open cut trenching, ploughing and/or horizontal directional drilling (HDD) works required as part of the initial electricity cable installation works and to reinstate the surface of the property in accordance with this Code of Conduct within 3 years of the date of commencement of such works, subject to compliance with the approved phasing plan under the planning conditions applicable to the project. Please note however that completion of the initial installation of the electricity cables (including without limitation pulling of the electricity cables themselves within the trench or ducts) may be completed subsequently.

Seagreen may also need to carry out works in future to maintain, repair, replace, renew or remove the electricity cables as provided for in the Deed of Servitude. Cable installation shall be limited for the use in connection with the Seagreen windfarm only and for no use by other third party communication, transmission or connection.

Seagreen will provide the Landowner with a nominated 24hr point of contact. Names and contact details of project managers and onsite supervisors will be issued to the Landowner before works commence and Seagreen undertake to ensure that these are kept up to date throughout the period of the project.

Seagreen shall be responsible for the actions of all contractors present on the land on Seagreen's behalf.

DURATION OF WORKS

Potato Cyst Nematode (PCN) control measures

Seagreen will adopt the following general measures along the route with regard to PCN during the works:-

- Ensure equipment is available to conduct proper cleaning and disinfection of machinery and vehicles.
- Clean and disinfect all equipment before use on a farm and between holdings.
- Clean and disinfect all machinery, vehicles and other equipment before going between fields
- Only move vehicles and machinery from field to field or between areas where it is absolutely necessary. (In accordance with industry best practise the cable route should not be used as a convenient track for vehicles.)

In particular Seagreen are to ensure that:-

- Machinery must not be moved from a Potato Cyst Nematode "positive" field into a Clubroot "positive" field and vice versa without first being properly decontaminated.
- Machinery must not be moved from a Clubroot "positive" field into a Potato Cyst Nematode "positive" field and vice versa without first being properly decontaminated.

- Machinery moving from “positive” field to “none detectable” fields must be decontaminated. In this situation particular care should be taken as this is where the risk of infecting fields is highest.
- When moving from one farm to another, all machinery must be decontaminated.

Soil samples will be taken for laboratory determination of the presence and degree of infestation with PCN and Clubroot. No entry will be permitted until results have been assessed unless appropriate biosecurity measures in accordance with industry best practice are put in place in advance of works commencing. The sample locations must be accurately mapped. If any clubroot or PCN is identified on the route Seagreen are to prepare and implement a site specific biosecurity plan to ensure that such pathogens are not spread on personnel, machinery or vehicles within the control of Seagreen, their agents and contractors entering or leaving these areas.

Designated decontamination areas are to be established at boundaries between “positive” and “none detectable” fields. There should be decontamination areas at each site compound. The water used to clean machinery must be clean and not taken from a watercourse. Water should be supplied by a bowser, if it is not otherwise available to be extracted under a temporary license, and machinery washed down with a pressure hose. Seagreen are to ensure that all soil and water from such wash down areas etc is safely disposed of and not allowed into water courses or discharged in a manner where it might contaminate other agricultural land. A log book is to be kept for each machine, and the operator is responsible for recording the position along the route it is used and the location, time and date each time the machine is decontaminated. These records should be available for inspection by landowners and their agents.

Cable Installation

The electricity cables may be installed by way of one or more continuous operations and the developer shall (on request) keep the Owner informed of the progress of works relating to the initial installation of the electricity cables and the timescales within which the initial installation works are expected to be completed. Seagreen will take reasonable measures to ensure that accurate plans are provided of any areas that will be unavailable for harvest in that year for IACS purposes on written request by the Landowner.

Access

Where possible and safe to do so Seagreen will allow those who require it access across the cable corridor and will keep open existing means of access to areas severed by the works unless it would be more appropriate to provide an alternative or to compensate.

Where a common access is to be used by both Seagreen and the Landowners, Seagreen will take reasonable measures to keep that access clear from mud, dust and any debris arising from the works to the Landowners reasonable satisfaction.

Seagreen (and their contractors) will take access to their works through the cable corridor or such other route as may be permitted by the Deed of Servitude or separately, as agreed in writing by the Landowner.

Health and Safety / Security

Prior to commencing works Seagreen will meet the Landowner to discuss security issues including whether the working area needs to be fenced. Fencing and signage will also be considered for sites that may require it for safety reasons.

All staff working for Seagreen will be fully briefed on onsite health and safety rules and regulations and any visitors will be required to go through an induction in respect of said onsite rules and regulations.

Plant & Materials

During the period of any works carried out by Seagreen, plant and materials may be left within the working area for overnight periods. Seagreen will ensure that all plant will be secured overnight/ when not attended and suitable measures put in place to guard against the leakage of fluids.

Cable Depth

Seagreen acknowledge that the presence of the cables along the route may impede agricultural activity. To minimise the potential impact. Cables shall be laid at a depth so as to ensure a minimum of 1.3m of cover so as not (following installation and reinstatement) to interfere with or impede agricultural operations including drainage and sub-soiling.

Seagreen shall in all other respects comply with the terms of its planning permission.

Topsoil

Seagreen will take reasonable measures to maintain soil structure.

After the topsoil is stripped from the land it will be stored separately from other excavated materials avoiding further compression by machinery. When the works have been completed adequate sub-soil preparation will be undertaken prior to replacing top soil. Top soil is to be replaced into the area from where it was initially removed and must not be replaced onto other areas or fields. The excavated material will be replaced, as far as possible, to at least the condition it was prior to the works and in particular, topsoil will be replaced to no lesser depth than originally present.

All top soil will be retained at the location and sorted separately from any subsoil. Seagreen will ensure that there is no vehicle running on top soil storage areas and that topsoil is kept weed free during the storage period.

If for any reason Seagreen is unable to retain the same top soil that was removed from your land it will be replaced by a soil of similar nature, structure and quality which will be tested before purchase and the results will be shared from the Owner. The Owner shall have the right to reasonably reject any imported topsoil subject to (1) having reasonable ground to do so, and (2) notifying the developer without delay. For the avoidance of doubt the topsoil shall

not be replaced before its suitability has been agreed (parties acting reasonably)

Trees & Hedgerows

Trees and hedgerows will only be trimmed / cut where it is reasonably necessary to do so. Should any trees or hedgerows be subject to statutory designation Seagreen will consult with the appropriate authority and any action will be consistent with the conditions stipulated by that authority.

Any trees removed will be replaced in accordance with approved planning permission for the project and any associated conditions or landscape plans.

Drainage

Seagreen acknowledge the concerns of landowners regarding the potential effect of the works to natural drainage along the route and to land drains and watercourses.

Seagreen will take reasonable steps to ensure so far as practicable that the scheme does not affect the natural drainage or normal ground water levels along the route.

Prior to works commencing, Seagreen will liaise with the Landowner in order to establish the position of, and take records of, any existing land drainage. Such records should be made available to Seagreen at the earliest opportunity.

Where existing drainage requires to be disturbed, as a result of Seagreen's works, Seagreen undertakes to reinstate drainage or construct a replacement scheme to not less than the standard as existed prior to the works. Designs for any replacement schemes will be provided to the Landowner for approval (not to be unreasonably withheld) in advance of any work being carried out on the replacement scheme.

All drains cut during construction works will be promptly marked on both sides of the excavation for later reinstatement. These shall be geo-referenced and marked onto a plan, a copy of which will be made available to the Landowner. This shall be limited to drains that are to be exposed during cable installation only and the Landowner shall be given the option to inspect all drains prior to backfill.

If within a ten year period any drainage issue becomes apparent in proximity to the works, the Landowner should contact Seagreen immediately. If it is reasonably assessed that the damage occurred as a direct consequence of Seagreen's works then the issue will be addressed at Seagreen's cost together with the reasonable costs of any investigation requested by the Landowner and any associated reasonable professional costs arising.

Drawings (as both hard and electronic shape files) of all drainage works carried out, including all land drains intercepted, will be provided to the Landowner within three months of the completion of the onshore cable laying project.

Water Courses

Seagreen will use reasonable endeavours to avoid interference with any streams or ditching.

Cables that cross beneath watercourses will be laid in accordance with the requirements of SEPA, Internal Drainage Board and / or any other statutory body at a depth which does not prevent ditch maintenance. All banks and ditches damaged as a direct result of the works will be reinstated in accordance with good practice to a condition not less than before the commencement of the works as per RoC.

Water Supplies & Other Services

All reasonable precautions will be taken to protect watercourses, water supplies, septic tanks and soakaways against any interference / pollution.

If Seagreen interrupt or accidentally damage any water supply or other services within the working area Seagreen will repair the damage as soon as possible or provide an adequate alternative. Any troughs, standpipes or field supplies located within the working area will be moved to a new temporary location or an agreed permanent location at Seagreen's cost.

Seagreen shall ascertain from the various Public or Statutory Authorities, before works are commenced, the positions and depths of any mains, pipes, cables and other apparatus and shall take, at their expense, any and all measures reasonably required by such Authorities for the protection of such pipes, cables and others during the progress of the works.

Stock Retention

For any losses or injuries to livestock which are reasonably shown to be as a direct or consequential result of Seagreen's or its employees, agents or contractors actions, reasonable compensation will be paid.

Seagreen will take reasonable precautions to be taken to avoid the risk of animals escaping from fields.

No work to commence in fields with livestock in them until the 48-hour notification period has elapsed.

Sanitation / Areas affected by Disease

The Landowner is to advise Seagreen of any areas included within the working area which may be affected by disease notifiable under the Animal Health Act 1981 and of any environmental contamination that may reasonably be disturbed by works.

A Biosecurity Plan is to be agreed with the Owner prior to works commencing and all work is to be carried out in accordance with that Plan.

Seagreen are to comply with any farm biosecurity plan in force

Overnight Accommodation:

No staff agents, or contractors will bring onto site any mobile homes, caravans, or tents, or reside overnight save for security or safety reasons unless with the prior agreement in writing with the Landowner.

Traffic Management

Seagreen will comply with the approved Traffic Management Plan and provide copies to landowners on request.

Sporting Rights

The Landowner is to accept the terms of Shooting Code of Conduct appended to servitude.

Explosives

If ever the use of explosives is necessary, Seagreen will give the Landowner appropriate warning and advise with sufficient notice the periods when the explosions might be expected.

Fossils & Articles Discovered

Seagreen will inform the Landowner and the appropriate archaeological body should any coins, fossils or other artefacts be discovered during our work. Seagreen will not retain any such item or lay any claim to them. Any such item shall remain the property of the Landowner. Seagreen will be under a legal obligation to have regard to protection and conservation of objects of archaeological interest. Accordingly, Seagreen may employ or involve an archaeologist to examine the works as they progress.

Fencing and Water Provision

The working area within the agricultural fields will be securely fenced off with stock proof fencing as per the specification in Appendix 1. Gates to cross the working area shall be installed at agreed points to allow access to adjacent field areas.

Seagreen is to undertake all fencing at their cost. Fences shall be left in place until such time that the re seeded areas have become fully established and able to hold stock to the same level as would have persisted before the works commenced in order to prevent poaching.

Where fences are dismantled all materials must be removed from the fields and post/strainer holes filled in.

Where possible all existing fences and dykes will be left in place. Should there be a requirement to dismantle a section; Seagreen shall maintain the integrity and function of the remaining fence/dyke. Any subsequent repair or replacement must be carried out to the reasonable satisfaction of the Landowner.

Should a water trough or other area used to provide water to livestock, be cut off as a result of the working area or access track being fenced, Seagreen shall reimburse landowners for reasonable expenses incurred with providing an alternative supply subject to prior approval.

POST WORKS

Reinstatement

Due to the nature of the works and considering that it will largely comprise of excavation, the key elements of the reinstatement will centre around drainage, soil, water courses, crops and other agricultural enterprise.

If after the works take place there are any issues raised by or on behalf of the Landowner with regard to damage, this will be a priority for Seagreen who will comply with their obligations as set out in the Deed of Servitude.

In carrying out the works Seagreen will try to do as little damage as possible. Temporary damage, such as top soil stripping may take place in order to affect good working practice for reinstatement. At the completion of the works Seagreen will restore the area where works have taken place to at least the same condition that it was in before works commenced as identified in the record of condition. Grass fields will be re-seeded at Seagreen's expense as reasonably required by the Landowner using a grass seed mix to be determined by the Landowner (acting reasonably).

All tools and equipment and any contaminants brought to the site will be removed. Seagreen will take away any surplus excavation material unless asked not to or legally prohibited from doing so. The site will be left clean and tidy. Before the working area is handed back to the Landowner, Seagreen will arrange at their expense a revised RoC to ensure mutual satisfaction with the works.

Seagreen will repair or replace any damaged or removed fence, bank or wall and re-plant any damaged hedge with appropriate species and erect a secure protective fence to allow it to become established. Any areas of land where hedges/trees are replanted or that are re-seeded and that are typically occupied by livestock will be protected by stock fencing to the reasonable satisfaction of the Landowner and in accordance with the specification in Appendix 1.

Force Majeure

If Seagreen is prevented, hindered or delayed from performing any of its obligations under this Code of Conduct due to a circumstance or circumstances outwith the reasonable control of Seagreen (which shall include without limitation acts of God, flood, drought, earthquake or other natural disaster, epidemic or pandemic, terrorist attack, war, threat of or preparation for war, armed conflict, imposition of sanctions, embargo, or breaking off of diplomatic relations, nuclear, chemical or biological contamination, collapse of buildings, fire, explosion or any law or action taken by a government or public authority) then Seagreen shall not be in breach of this Code of Conduct or otherwise be liable for failure or delay in the performance of its obligations under this Code of Conduct for so long as such circumstances are continuing.

Seagreen will comply with any emergency legislation in force by the government of the day in order to contain, manage or otherwise deal with any epidemic or pandemic (eg foot and mouth)

Professional fees

Seagreen will reimburse the Landowners' reasonable professional costs in the implementation of this Code of Conduct.