

Creich Community Council

Comments on the SSEN Proposal for a 400 kV Overhead Transmission Line Spittal/Loch Buidhe/Beauly



INTRODUCTION

This Document

1. This document is a response by Creich Community Council to a proposal by Scottish and Southern Electricity Networks Transmission (SSEN Transmission) for a 400 kV overhead transmission line from Spittal to Beauly. The proposal is described in SLBB 400 kV OHL Connection Scoping Report Final V01

Who We Are

2. Creich Community Council represent the people in arguably one of the most scenic and scenically diverse areas of the highlands, encompassing the north shore of the inner Dornoch Firth, the Kyle of Sutherland and the north bank of the Oykel to the watershed at Assynt in the West. There are straths, rivers, mountains, and the tidal waters of the Kyle. Views can be intimate or panoramic with wide skies and colours and textures that change with the seasons. Particularly iconic are the views of Carbisdale Castle from all directions.
3. The people we represent are, almost without exception, opposed to the intrusion of this transmission line proposal as an object in itself and as an addition to the multiple and proliferating wind farms that litter our parish.

The Basis of Our Objection

4. The overarching basis of our objection is that this proposal is inequitable.
5. We suffer all the loss, intrusion, commercial and cultural damage, but with no benefit.

6. Whereas, if power transmission must proceed, alternative, feasible and proven methods can be used to deliver the power south without more lines of pylons crossing our area and the Kyle.
7. In a wider sense the export of power south and onwards gives the North of Scotland nothing.
8. In fact, it is a disbenefit to us as our power is distributed to benefit Government policies that already charge us premiums on the power we get.
9. The idea that standing charges are higher in Scotland to maintain the transmission lines that are being built entirely to feed other areas is obscene. We produce an excess for our needs, but it is exported and then we have to buy it back.

Our Position

10. Creich Community Council, representing the people of Creich and sharing in the representation of others affected in the area consider that:
 - The power generated in the North of Scotland should be used to benefit the people of the North of Scotland. This scheme offers nothing but disbenefit whereas we have local transmission systems that need to be strengthened, and we have users who struggle to afford power.
 - If, as seems likely, the purpose of this line is to deliver power considerably further south then a subsea line is optimal.
 - If a transmission system is imposed on us then it should not be by overhead transmission, but by burial along its length.
 - If burial along the whole length is refused, then burial through the most sensitive scenic areas is essential. This applies in particular to the crossing of the Kyle of Sutherland.
11. It is wrong that we cannot be fully informed on the need for this line, its purpose and relationship to existing power lines and the information that underlies decision making about the methods and technologies of the transmission line.

THE PROPOSAL BY SSEN

The Scoping Report Section 1

12. Information about the proposal is set out in a report titled 'Spittal to Loch Buidhe to Beaully 400 kV OHL Connection EIA Scoping Report' [Scoping Report].
13. The report has the name SLBB 400 kV OHL Connection Scoping Report Final V01.
14. Two maps 'Appendix A Figure 4.3 Section C' and 'Appendix A Figure 4.4 Section D' are relevant to our area. The first is the map that shows the crossing of our Community Council area and the Kyle of Sutherland and the second the proposed route for the pylons to the south that will visually intrude on our landscape
15. The issues the applicant invites us to consider are set out in Section 1.5.2 and the issues they wish to be ignored are set out in 1.5.3 of the Scoping Report.
16. These are:
 - 1.5.2 Environmental topics identified for assessment in the EIA Report are:

Landscape and Visual Amenity;	Ecology and Nature Conservation;
Ornithology;	Cultural Heritage;
Geological Environment (Soil, Peat and Geology);	Water Environment (Hydrology and Hydrogeology);
Traffic and Transport;	Noise and Vibration;
Forestry;	Recreation and Tourism;
Climate Change (Land Use Change Carbon).	

17. Other Issues that the Applicant considers can be Scoped out of the EIA Report are in 1.5.3 as follows:

Land Use;	Air Quality;
Material Assets and Waste;	Major Accidents and Disasters;
Electric and Magnetic Fields;	Radio and TV Interference;
Population and Human Health;	Socio Economics;
Climate Change (Life cycle/embodied Carbon).	

18. Of this second set we consider that, at least, those highlighted in bold and underlined should be considered.
19. Land use is intimately connected not only to the socio-economic structure of our community with its heavy emphasis on tourism and farming but also to the well-being of our community in general and individuals in particular who will suffer (further¹) trauma from the despoliation of the visual amenity.
20. This visual amenity must not be thought of as only a tourist 'sightseeing' element – although that underpins commercial benefit. The view of the land and the relationship of the population to the land and the waters is close. It is part of our understanding as a community.
21. We do not accept that EMF may be 'scoped out' for HVAC overhead and buried lines – it remains a concern for many people. It can, however, be almost entirely avoided if DC transmission is used.
22. We are concerned that overhead power lines will face an increasing issue in future from presently unlikely events. This brings with it the risk of moor and woodland fire caused by clashing cables or pylon collapse. This can be mitigated by burying the cables.

Subsea Cable as an alternative

23. Section 1.6 of the Scoping Report discusses Corridor, Route and Alignment Selection. We take issue with the 'Corridor' and consider that, if power export from the North to distant areas of need in the South is a national target, then the route should be by sea rather than by land.
24. There are several other transmission lines that are subsea that demonstrate feasibility. Indeed, SEN are involved in the deployment of up to five HVDC electricity transmission

¹ An incredible number of wind farms exist, are in the process of development or are being proposed in our area. See Table A at the end of this document. The community's experience of these and other grid developments means we are very well aware of the disruption caused by, for example an extension to the Loch Buidhe sub-station.

superhighways to enable renewable power to be transported from northern Scotland to areas of higher consumption in the south².

25. We also consider that a subsea route could carry levels of power that would give the existing grid lines more flexibility to take future load. That is, we suggest a subsea route would not have upper-level power constraints and would relax pressures on existing high-voltage lines.

HVDC as an alternative

26. Nowhere in the Scoping Report is the option of High Voltage Direct Current [HVDC] transmission discussed³. If export of power over considerable distance to the south is necessary, then HVDC is an ideal and established option⁴.
27. We refer not only to various subsea lines worldwide but also to the HVDC line from the Western Isles to Beaulieu that is (obviously) subsea from the islands but is also proposed to be buried thereafter.
28. A totally buried line would be the only variation from a subsea connector that we would consider.
29. It is interesting that elsewhere in the world – in Europe and in the USA - HVDC transmission is part of ‘long term strategic grid plans including key roles for multi-terminal HVDC overlay grids as the bulk electrical energy carrier of choice⁵.’
30. The UK has also commissioned the 1400 MW 765 km HVDC Viking Link the world’s longest interconnector and National Grid have a Framework worth £21.3 billion for HVDC cable.
31. We wonder if we missed the consultation where the various power transmission options were considered/compared and parameters affecting decisions made transparent.
32. It is unfair that we have to accept as the sole arbiter of method, the organisation that will most benefit from minimum costing.

The Scoping Report Section 2

33. The proposal itself is described in Section 2 of the Scoping Report, but the rationale is given in the Executive Summary of the Scoping Report as:
34. In order to support the continued growth in onshore and offshore renewables across the North of Scotland, supporting the country’s drive towards Net Zero, further investment in electricity transmission infrastructure is needed to connect this renewable power into the grid **and transport it from source to areas of demand across the country.**
35. We have highlighted the last phrase as it is important to us. We are not an ‘area of demand’ although we have a local medium/low voltage grid that requires very major strengthening and modernisation, and which inhibits some other, equally valuable, renewable development.

² <https://www.powerengineeringint.com/smart-grid-td/td-infrastructure/five-hvdc-stations-to-transmit-power-from-scotland-to-the-south/>

³ There is reference to smaller scale links at some locations but no consideration of main links HVDC.

⁴ <https://www.dnv.com/article/2023-was-a-pivotal-year-for-HVDC/>. This article by DNV considers the growing enthusiasm for HVDC as a cost-efficient transmission system. It gives a good review of the projects in the UK, Europe and the USA.

36. This project is not for our benefit – we are a stretch of inconvenient ground that must be crossed to serve the need to attack climate change and to serve the power demands of other parts of the UK.
37. We completely accept the need to attack climate change. We do not accept that we should give up so much for a minimum cost transmission system.
38. The Scoping Report sets out some ‘formalised’ questions for us to address.
39. At this point in our submission, we wish to address three questions from the Scoping Report :

Have we adequately explained the need for this project?

Do you have any other comments or concerns in relation to the transmission infrastructure requirements or about the preferred overhead line route/substation locations?

Are there any factors, or environmental features, that you consider may have been overlooked during the preferred overhead line route and/or substation location selection process?

40. There is a sad dearth of background information on strategic decisions and discussion of engineering options in the Scoping Report. It is as if the concept of overhead transmission came fully formed to the developers.
41. We would like answers to these questions:
 - Why is this proposed OHL required? Is it capacity only? Can subsea cables not transmit the required power to the ‘areas of need’?
 - Would the present transmission system be adequate if substantial power were transmitted subsea? What are the perceived weaknesses in the existing system that have not been explained?
 - What benefits does this new line give to the national grid system **in the Highlands** that would not be gained by a subsea route?
 - Why has HVAC transmission been selected as opposed to HVDC which, we note, has been selected for the Western Isles link. The distance from generation to ‘area of need’ for this transmission is ideal for HVDC and not for AC.
 - If there is a need that has not been specified for intermediate connections of renewable energy would this not be better served by a DC link as the renewable generators on land are mainly DC providers?

The Scoping Report Section 5

42. In line with these basic questions, we move to Section 5.2 which appears to be the ground on which the proposal is based. In Section 5.2 the underpinning for the proposal is apportioned to the Scottish Government National Planning Framework.
43. It is worth setting out how SSEN frame their rationale for the engineering of their proposal

National Planning Framework 4

5.2.1 NPF provides a framework for long-term spatial development in Scotland. The fourth National Policy Framework (NPF4) was adopted by the Scottish Ministers on

13 February 2023, following approval by the Scottish Parliament in January. It sets out how planning and development will help Scotland to achieve a ‘net zero, sustainable Scotland by 2045.’ It confirms the necessary shift required to achieve net zero-emissions by 2045. It will also ‘play a critical role in supporting nature restoration and recovery’ and will be followed by a Scottish biodiversity strategy which will set targets for 2030.

44. There is nothing objectionable in a drive for Scotland to meet its own needs and develop an efficient, modern, low loss transmission system. It is, however, objectionable to use the target highlighted in bold as a mechanism for generation and then transmission outwith Scotland. They continue:

5.2.2 NPF4 confirms that a concerted effort to work together with communities will be required so that the transition to net zero and nature recovery is fair to all. One of the four key actions identified for Scotland’s north and west islands and coastal communities is to Strengthen Resilience and Decarbonise Connectivity by improving grid connections. This will actively facilitate decarbonised heating and electricity generation and distribution.

45. Now we enter into targets that we can agree with, but which we do not see as being met. ‘Fair to all’ is not an outcome of these proposals. The burdens fall unfairly on our community without any benefits.
46. Equally, these proposals do not improve grid connections. In fact, they duplicate existing power lines and offer nothing new. At the least HVDC transmission would simplify connections for new generators, would reduce energy losses and would comfort those who are concerned with EMF issues.

47. SSEN continue:

5.2.3 Moreover, the NPF4 identifies the need for a significant increase in electricity generation from renewable sources to meet the net zero emissions targets and that the electricity transmission grid will need substantial reinforcement and additional infrastructure to achieve this. Developments that fall within one or more of the following categories will be designated as National Development:

- “Electricity generation, including electricity storage, from renewables of or exceeding 50 megawatts capacity;
 - New and/or replacement high voltage electricity lines and interconnectors of 132 kV or more;
- and
- New and/or upgraded infrastructure directly supporting high voltage electricity lines and interconnectors including converter stations, switching stations and substations.”

48. The SSEN interpretation of this seems to be ‘the scheme we first thought of’ – that is, essentially more of the same old overhead pylon lines.
49. On the other hand, in other situations – notable, the Western Isles Interconnector we have a similar problem attacked very differently. The Spittal to Beaully scheme is high voltage overhead lines while the Western Isle Interconnector is buried HVDC. We are entitled to ask - what are the differences that drive such different engineering topologies?
50. The crux of SSEN’s argument lies in the 5.2.4 of their document and is highlighted here in bold.

5.2.4 NPF4 identifies 18 National Developments described as: "significant developments of national importance that will help to deliver the spatial strategy". Developments proposed as National Developments are acknowledged as projects expected to provide substantive support to the economy of Scotland in terms of direct and indirect employment and business investment, with wider economic benefits. It adds that: "**Their designation means that the principle for development does not need to be agreed in later consenting processes, providing more certainty for communities, businesses and investors.**"

51. SSEN seem to interpret 'the principle does not need to be agreed in the consenting process' as 'only one engineering solution can be considered and it is the one we first thought of.' That is not correct and we very much doubt that the Scottish Government framework has any opinion on technological choices.
52. Equally, we see no evidence presented that this is indeed within the class of "... projects expected to provide substantive support to the economy of Scotland in terms of direct and indirect employment and business investment, with wider economic benefits."
53. We insist that we get to see the arguments about this support to employment and benefits to business. On the other hand, we can very clearly see that it benefits the organisations involved in assisting the commercial use of power. If this was truly a power route that would benefit Scotland, then HVDC would allow 2- way transmission for when Scotland needs it. As configured it is a one-way route to market.
54. Section 5.2.5 says:

5.2.5 The Proposed Development is a National Development under NPF4. The Proposed Development falls within the category of National Development 3 (ND3) "Strategic Renewable Electricity Generation and Transmission Infrastructure...support renewable electricity generation, repowering, and expansion of the electricity grid. The location for ND3 is set out as being all of Scotland and in terms of need it is described as: "Additional electricity generation from renewables and electricity transmission capacity of scale is fundamental to achieving a net zero economy and supports improved network resilience in rural and island areas."

55. Nothing in the SSEN proposal follows from this paragraph. The Spittal to Beaulieu line does not improve network resilience in our rural area. In fact, the proposal passes through our area without adding anything to our local grid and, on the other hand, undercuts our tourism industry . . . and yet it does not have to be like that – feasible engineering alternatives exist.
56. The following paragraph makes plain that on or offshore transmission falls within the Framework and at no point does it specify overhead AC transmission.:

5.2.6 The designation and classes of development which would qualify as ND3, are: "A development contributing to 'Strategic Renewable Electricity Generation and Transmission' [in the location described], within one or more of the Classes of Development described below and that is of a scale or type that would otherwise have been classified as 'major' by 'The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009', is designated a national development: (a) on and off shore electricity generation, including electricity storage, from renewables exceeding 50 megawatts capacity; (b) new and/or replacement upgraded on and offshore high voltage electricity transmission lines, cables and interconnectors of 132kV or more (emphasis added); and (c) new and/or upgraded Infrastructure directly supporting on and offshore high voltage electricity lines,

cables and interconnectors including converter stations, switching stations and substations.

57. Section 5.3, discussing 'Local' Planning Policy would not be relevant except at route terminations if a subsea connector were built instead of the overhead line.
58. Local Policy would, however, apply to a buried line and to various works at connection points.
59. Local Policy 69 provides support for proposals which are assessed as not having an '*unacceptable significant impact on the environment, taking into consideration mitigation measures.*' No mitigation measures have been set out by SSEN for the impact the overhead lines will have on Creich Community, our visual amenity, our community and our critical tourism industry.
60. Section 6 gives detail that assumes overhead transmission will be the answer.
61. It does, however, at 6.2.2 note that 'Underground cables could be required in association with the Proposed Development.' If 'could be required' became 'are required' then the proposal becomes more acceptable.
62. SSEN have not made a real case for selecting HVAC on overhead lines over buried HVDC or a subsea HVDC cable and consulted with the community affected.

SAFETY, RELIABILITY AND POWER LOSS

63. Denmark decided in 2009 to underground their entire 132kV and 150kV transmission systems to improve energy security⁶. Their concern was with weather changes and ice and wind loading on overhead lines.
64. Such weather damage tends to affect overhead lines in the same spatial area which often fail at same time causing large 'common cause' disturbances.
65. Overhead transmission lines are also susceptible to deliberate damage.
66. In the Highlands of Scotland, moor and woodland fires started by molten particles released from conductor clashing or conductor contact with vegetation or ground could be an additional hazard.
67. Buried cables mitigate these effects and, in particular, the uncertain impacts of climate change.
68. In fact, underground cables have superior overall reliability to overhead lines, lower line losses, lower operating costs and are essentially immune to storms and icing.
69. According to ⁷ with regard to reliability, the failure rate of a buried line drops from 14 failures per 100 km/year to ~0.3 failures – a reduction factor of around 50.
70. Reliability is reduced at DC/AC conversion sites but that is changing as higher efficiency two-way inverters are developed. It is also the case for the proposed line that the number of converter stations could be minimised to improve reliability as it seems the end user for the power is a great distance away.

⁶ Comparison of High Voltage Cables with Existing Overhead Lines to Increase Energy Security in the Westfjords of Iceland. Metsco Report: P-17-205-R0, 2017

⁷ ibid

71. HVDC underground cables also score in terms of capability to take power and have lower power losses pre 1000km. Again, power losses at converter stations have to be factored in, but they can be comparable with transformer losses and HVAC cable losses dominate over longer distances as shown in the table below.⁸

	117MW							
	HVAC				HVDC			
%	Components			Total Loss	Components			Total Loss
Cable Length	T1	Cable	T2		CS1	Cable	CS2	
50 km	1.6	2.21	1.49	5.3	1.77	0.59	1.93	4.26
100 km	1.61	5.31	1.25	8.04	1.79	1.04	1.9	4.73
150 km	1.62	16.28	1.1	19	1.78	1.1	1.89	4.77

72. Power losses in HVAC overhead cables will always exist unless a step change in science takes place. Power losses in conversion equipment will fall in time as engineering improvements are made. This is especially true of high-voltage DC equipment which is being heavily investigated and funded. Every percentage saving in power loss is a gain for Scotland's attack on climate change.

SUMMARY

73. Creich Community Council represents the community in a special part of Sutherland that stretches almost across Scotland from the Cromarty Firth to Assynt.
74. Our community is being assaulted with multiple visual and safety intrusions from wind generators and battery storage systems from which we do not get benefit commensurate with our lost amenity and tourism income (see Table A at end for list of wind generators).
75. The benefit to the landowners, the developers and the financial speculators vastly and unfairly exceeds anything that is returned to the community
76. Power lines are a separate class of intrusion in that they are expected to be a 'national benefit'.
77. The SSEN proposal shows that they do not differ from the wind farm developers in their inequitable emphasis on return to the developer, operator, and financiers.
78. We expect better from a project that forms part of the nation's infrastructure.
79. Alternatives to high-voltage AC, overhead cables exist. In many ways – except cost of installation - they can be shown to be more efficient, safer, and less intrusive. In the long term they are better.
80. We, perhaps, do not expect random speculators to be fair to the community, but we do expect Government to honour their commitment to make . . . “a concerted effort to work together with communities . . . so that the transition to net zero and nature recovery **is fair to all**”.
81. We are totally opposed to overhead lines.
82. We will accept buried lines if they are for the purpose of supporting Scotland's contribution to reducing climate damage.

⁸ Comparative Evaluation of Power Loss in HVAC and HVDC Transmission Systems; Thu Win May, Yew Ming Yeap and Abhisek Ukil IEEE, 2016

83. We strongly urge alternative approaches in the transmission technology and location of the cables. HVAC overhead lines are cheapest and so contribute to speculator profits. They will, however, by their nature always lose energy. HVDC buried or subsea cables cost more in the short term but will lose less power in transmission, will become more efficient in time as conversion units improve and will mitigate the worst of the visual and commercial impacts on Highland communities.

TABLE A**WIND TURBINE GENERATION UNITS IN CREICH AND SURROUNDS**

A total of 18 windfarms all having or needing a grid connection exist or are planned within an approximate 15 km radius of Bonar Bridge.

Wind Farm Name	Status as of November 2024
Achany	Operational
Beinn Tharsuinn	Operational
Beinn nan Oighrean	Operational
Rosehall	Operational
Lairg Estate	Operational
Coire na Cloiche	Operational
Lairg II	Approved
Garvary	In planning
Achany Extension	Approved
Strathrory	Approved
Strath Oykel	In planning
Acheilidh (aka Lairg III)	In planning
Allt an Tuir	Scoping
Coille Beith	Scoping
Creachan	Scoping
Inveroykel	Scoping
Balblair	Scoping
Braelangwell	Scoping