SP TRANSMISSION

Beauly-Denny Replacement Transmission Line Project

Appendix 22
Noise Management Plan

for the Section from Wharry Burn to Denny Substation

Revision: 1

January 2013

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1 INTRODUCTION

1.1.1 This Project Noise Management Plan is designed to provide guidance to the SPT and IEC Project Management Team and Contractors on the roles, responsibilities and actions required for managing noise on the Beauly-Denny project. SPT and IEC have developed this Noise Management Plan in compliance with Conditions 26 and 27 of the Planning Consent and mitigation measures detailed in the Environmental Statement.

1.1.2 Management of noise on site will be the responsibility of the relevant Contractors (listed in Table 1). There are also responsibilities and actions that will lie with SPT and IEC, to ensure compliance with the Planning Consent, Committed Mitigation Measures and the Environmental Statement.

1.1.3 This Noise Management Plan applies to the following activities:

- Forestry operations and the haulage of timber.
- Public Road Improvements.
- Section site compounds and satellite offices.
- Access track construction and removal.
- 400kV overhead line construction.
- 132kV line dismantling.
- Restoration and re-instatement associated with the above.

2 LEGISLATIVE BACKGROUND

2.1.1 Noise may cause a statutory nuisance under Section 79 of the Environmental Protection Act 1990. Local Authorities have the power to stop construction activities, or limit working hours or the use of noisy plant and equipment where a nuisance has been reported.

2.1.2 Condition 26 of the Planning Consent stipulates site working hours in proximity to Noise Sensitive Properties which must be adhered to during the project.

2.1.3 Condition 27 of the Planning Consent requires the submission of a Noise Management Plan covering areas identified in Table 29.13 of the Environmental Statement.

2.1.4 The Environmental Statement includes a number of specific noise mitigation measures which are also to be incorporated into the project works.

3 ROLES AND RESPONSIBILITIES

3.1.1 The main roles and responsibilities for noise management are defined in Table 1 below:

Table 1: Noise Roles and Responsibilities

Title	Role
SPT and IEC	• Develop appropriate and effective noise management plans as required by the S.37 Consent. • Develop effective community liaison and respond to enquiries and complaints in an appropriate manner in relation to noise. • Review detailed noise plans from contractors and ensure compliance with the ES / CPH. • Investigate complaints in relation to noise.
Contractors (Preliminary Works, 132kV Line Enabling Works, 400kV Overhead Line (OHL), Distribution OHL Works, Cable – Denny North Substation, Wirescape rationalisation, Public Road improvements)	• Develop and implement detailed noise plans for those locations and areas, as set out in this plan, already identified in the environmental impact assessment, and public inquiry process, and update these where necessary. • Consider noise implications when undertaking works and meet the commitments set out in the Environmental Statement (ES) and elsewhere. • Liaise with SPT and IEC on noise issues. • Train staff on noise issues and how to feed back to the SPT/IEC Community Liaison Officers/Project Team, on programmed activities, that have the potential to create significant noise impacts. • Provide assistance to the SPT/IEC Community Liaison Officers in resolving noise issues. • Provide adequate information to SPT/IEC on issues affecting the community.

4 RELATED DOCUMENTATION

4.1.1 The following CPH Appendices provide further information on noise management and related issues:

- Indicative Legislation Register (Appendix 2) – in relation to statutory nuisance i.e. noise, dust, odour etc.
- Community Liaison Scheme (Appendix 6) – in relation to potential impacts on the community and how they are managed.
- Traffic Management Plans (Appendix 22).
- Beauly-Denny Project Committed Mitigation Measures (Appendix 1).
- Planning Consent Conditions (Appendix 1).

5 ACTIVITIES THAT HAVE THE POTENTIAL TO CAUSE NOISE

5.1.1 During the Environmental Impact Assessment (EIA) process and Public Local Inquiry, certain construction activities, and their associated enabling works, were highlighted as having the potential to cause noise impacts. These are not exhaustive, but include, from Chapter 19 of the Environmental Statement:

- Construction of vehicular access.
- Construction of substations.
- Tree cutting activities.
- Construction of tower foundations.
- Tower assembly and erection.
- Conductor stringing.
- Dismantling of the existing 132kv line.
- General road improvements and other works.

6 SENSITIVE NOISE RECEPTORS

6.1 IMPACTS FROM CONSTRUCTION ACTIVITIES

6.1.1 The Environmental Statement predicts noise from static source construction activities will result in significant daytime effects to properties located within 50m of the works in urban areas. In quiet rural areas, significant noise effects are predicted at properties within 200m to 300m of the construction working areas, without mitigation, depending upon the type of activity being undertaken.

6.1.2 Proposed noise mitigation in the ES states that if implemented, significant residual noise effects in rural areas would only be predicted for properties located within 100m of the proposed transmission line and substation construction working areas. These effects are predicted to be limited to periods of short duration (usually less than a few weeks) and would affect a small number of properties (less than 10 in total) at several isolated locations between Manor Powis and Denny.

6.2 IMPACTS FROM CONSTRUCTION TRAFFIC

6.2.1 Noise impacts from construction traffic using public roads have been assessed for roadside properties along key routes to be used for access to the transmission line corridor and substation sites. No significant roadside noise effects have been predicted along routes such as trunk roads and well trafficked A and B routes, based on the assumptions made in the ES about construction. According to the criteria adopted for the assessment, significant changes in roadside noise levels have been predicted for public roads which currently carry very little traffic and therefore have low ambient noise levels.

6.2.2 The following table with information taken from Table 29.13 in the ES, lists the following routes for which roadside properties are likely to be affected:

Table 6.1 Residual Noise Effects Predicted in the Environmental Statement

Locations Affected	Construction Activities and Noise Effects	Estimated Duration of Effects
• 2km north east of Denny (fewer than ten properties)	• Construction of Denny North Substation and associated traffic and transformer oil processing • Significant daytime effects for up to 10 properties within 100m of the transmission line at isolated locations between Manor Powis and Denny • No noise sensitive properties within 300m of substation or main access road form A872 near Dunipace via Dales Wood. • Significant noise effects may be experienced by roadside properties along alternative access road through West Plean and Muirmailing if used for vehicular access to the transmission line.	• Approximately 18 months for substation works • Approximately 4 months for line works with busiest period for traffic of 2 months

6.3 SPECIFIC NOISE MANAGEMENT PLANS

6.3.1 SPT and IEC are required to develop Noise Management Plans for those properties and locations listed in 6.1 and 6.2 above and detailed in Table 29.13 of the ES (in compliance with Planning Consent Condition 27) found in Annex B, which outline specific mitigation measures to be implemented by Contractors to reduce the potential for noise nuisance.

6.3.2 These plans have been developed for those properties / locations in Stirling Council area, in consultation with the appropriate department.

6.3.3 The Plans include the proposed schemes for mitigating noise impacts at these locations and are included in Annex B.

7 WORKING HOURS

7.1.1 Planning Condition 26 states that with the exception of those areas covered by a Noise Management Plan, no works associated with the Development that are audible from the boundary of any Noise Sensitive Property shall take place except between the undernoted working hours:

- During October to March, between 07.30 and 17.00.
- During April to September, weekdays 07.00 and 19.00 and weekends between 07.00 and 17.00.

7.1.2 Works outside of these hours are required to be agreed with the relevant local planning authority at least 48 hours in advance.

7.1.3 The specific Noise Management Plans (detailed in Section 6.3) may contain other working hour restrictions relating directly to Noise Sensitive Properties. Contractors are required to incorporate these into their programme of works.

8 COMMITTED NOISE MITIGATION MEASURES

8.1.1 The following are Committed Mitigation Measures stated in the ES, which should be incorporated into relevant method statements by Contractors:

- CV1 Any compressors brought on to site would be silenced or sound reduced models fitted with acoustic enclosures.

- CV2 All pneumatic tools would be fitted with silencers or mufflers.

- CV3 Care will be taken when erecting or striking scaffolds (and steelwork) to avoid impact noise from banging steel. All operatives undertaking such activities would be instructed on the importance of handling the scaffolds to reduce noise to a minimum.

- CV4 Deliveries would be programmed to arrive during daytime hours only. Care would be taken when unloading vehicles to minimise noise. Delivery vehicles would be routed so as to minimise disturbance to local residents. Delivery vehicles would be prohibited from waiting within or close to the site with their engines running, where possible.

- CV5 All plant items would be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise. All plant will be sited that the noise effect at nearby properties is minimised.

- CV6 Local hoarding, screens or barriers (including temporary/permanent bunds) would be erected as necessary to shield particularly noisy activities.

- CV7 Restrictions on periods of operation and locations of specific construction activities would be agreed by the contractor with Stirling Council.

- CV8 Problems concerning noise from construction works can sometimes be avoided by taking a considerate and neighbourly approach to relations with the local residents. Works will only take place during given time periods e.g. during daytime and not at night.

ANNEX A:

GLOSSARY OF ACOUSTIC TERMINOLOGY

Noise

Noise is defined as unwanted sound. Human hearing is able to respond to sound in the frequency range 20Hz (deep bass) to 20,000Hz (high treble) and over the audible range of 0dB (the threshold of perception) to 140dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used, which reduces the importance of lower and higher frequencies in a similar manner to human hearing.

The weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or LAeq, LA90 etc, according to the parameter being measured. The Glossary explains the acoustic terminology that is used in this report.

The decibel scale is logarithmic rather than linear, and hence a 3dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels found commonly in the environment is given in Table A1.

Table A1 - Typical sound levels found in the environment

Sound Pressure Level, dB(A)	Location
0	Threshold of hearing
20 to 30	Quiet bedroom at night
30 to 40	Living room during the day
40 to 50	Typical office
50 to 60	Inside a car
60 to 70	Typical high street
70 to 90	Inside factory
100 to 110	Burglar alarm at 1m away
110 to 130	Jet aircraft on take off
140	Threshold of pain

The subjective response to a noise is dependent not only upon the sound pressure level and its frequency, but also its intermittency. Various indices have been developed to try and correlate annoyances with the noise level and its fluctuations. The indices and parameters used in this report are defined below:

Equivalent Continuous Sound Pressure Level (LAeq): The A-weighted sound pressure level of a steady sound that has, over a given period, the same energy as the fluctuating sound under investigation.

LN: the A-weighted sound level exceeded for N% of the measurement period. LA10 and LA90 being the A-weighted sound level exceeded for 10 and 90% of the measurement period, respectively.

LAmax: The maximum 'A' weighted noise level recorded during the measurement period.

Terminology Relating to Noise

Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure.
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20μPa (20x10-6 Pascals) on a decibel scale.
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20μPa.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
Leq,T	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
Lmax,T	A noise level index defined as the maximum noise level during the period T. Lmax is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L90,T	A noise level index. The noise level exceeded for 90% of the time over the period T. L90 can be considered to be the "average minimum" noise level and is often used to describe the background noise.
L10,T	A noise level index. The noise level exceeded for 10% of the time over the period T. L10 can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m.
Façade	At a distance of 1m in front of a large sound reflecting object such as a building façade.
Fast/Slow Time Weighting	Averaging times used in sound level meters.
Octave Band	A range of frequencies whose upper limit is twice the frequency of the lower limit.

ANNEX B:

TABLE 29.13 OF RESIDUAL NOISE EFFECTS FROM ENVIRONMENTAL STATEMENT

TABLE 29.13: RESIDUAL NOISE EFFECTS

Locations Affected	Construction Activities and Noise Effects	Estimated Duration of Effects
Beauly – Eskadale – Loch Neaty		
Properties in Balblair adjacent to proposed location for Beauly Substation (approximately 20 properties)	Construction of new section of Beauly Substation, associated HGV movements and processing of transformer oil. No significant daytime noise effects from substation works or construction traffic on A831. Significant night time effects for up to 5 properties within 100m of substation for up to 3 nights	Up to 30 months of substation construction works, though noisiest phases likely to be for periods of a few days at a time
Roadside/near roadside properties along unclassified road past Kiltarlity Cottages and Hughton (approximately 45 properties)	HGV and plant movements supplying transmission line and access roads from Kiltarlity Cottages to Eskdale Moor, including improvements to existing road; transmission line construction near Hughton; dismantling of existing line Significant daytime effects for properties within 100m of the transmission line at isolated properties at Kiltarlity Cottages and Hughton Significant (major) noise effects for roadside properties from construction traffic using road	Approximately 12 months Periods of busiest construction activity limited to a few weeks within this timescale 4 months for busiest traffic phase
Loch Neaty – Millness – Guisachan		
Roadside/near roadside properties between Cannich (including school) and Fasnakyle Substation (approximately 100 properties in Cannich) One residential property (Old Manse) adjacent to substation	Construction of passing places and increased HGV traffic for new Fasnakyle Substation; substation construction and processing of transformer oil; construction traffic servicing line construction between Fasnakyle and Guisachan Significant daytime noise effects at Old Manse during busy stages of construction. Significant night time effects at Old Manse for three nights from oil processing Significant (major) noise effects from transmission line construction traffic for roadside properties along road and in Cannich village	9 months for substation construction Noise from passing places construction less than 4 weeks Significant noise effects for property next to substation for periods of a few weeks during site establishment Approximately 5 months of road traffic for line construction, with busiest phase lasting 3 months
Isolated properties in Millness (fewer than 5 properties)	Construction traffic accessing transmission line corridor via access roads to be formed south and north of Millness; dismantling of existing line Slight daytime noise effects for properties at Millness during construction works to adjacent towers. Significant (moderate) noise effects for roadside properties at Millness and along A831 from construction traffic movements during worst case periods, otherwise slight (non-significant) noise effects	Construction works limited to a period of a few weeks close to Millness Approximately 18 months of road traffic activity for vehicles accessing route corridor north and south from A831, with busiest phase lasting 6 months
Guisachan - Glen Moriston – Inchnacardoch		
Group of roadside properties at Dundreggan and Torgyle Bridge on A887 (fewer than 10 properties)	Construction traffic upgrading existing access track (which meets the A887 at Dundreggan) and subsequent tower construction/dismantling Significant daytime noise effects for isolated property at Torgyle Bridge during construction works on towers adjacent to properties	Construction works limited to a period of a few weeks close to properties at Dundreggan and Torgyle Bridge
Inchnacardoch – Fort Augustus – Corrieyairack		
Roadside properties along unclassified road from Fort Augustus to Auchteraw, via Jenkins Park residential area (approximately 80	Upgrading of road for Fort Augustus Substation transformer access and passing places; construction traffic would follow this route to reach substation at Auchteraw. Substation construction and processing of transformer oil	Approximately 12 months Noise from passing places construction less than 4 weeks. Slight noise effects for properties

Locations Affected	Construction Activities and Noise Effects	Estimated Duration of Effects
properties)	Slight daytime noise effects for less than 5 properties located within 200m of the substation during busiest phases of construction works Significant (major) noise effects for roadside properties during busiest phase of substation construction and forest felling traffic movements	close to substation for a few weeks. Noise from HGV movements limited to a period of 8 weeks during busiest phases
Isolated properties at Culachy near Fort Augustus (fewer than 5 properties)	HGV and plant pass properties along access road to long section of transmission route to Corrieyairack Significant (major) noise effects from transmission line construction traffic for roadside properties along access track	Approximately 15 months Busiest period of traffic movements for 5 months
Spey Dam – Dalwhinnie – Dalnacardoch Lodge		
Isolated properties between Laggan and Spey Dam, including school in Laggan (fewer than 20 properties)	Upgrading of road for HGV and plant access to Spey Dam; construction traffic movements for access road to Spey Valley and eastern Corrieyairack Significant (major) noise effects for roadside properties from transmission line construction traffic and during busiest phase forest felling traffic movements	Approximately 18 months Noise from road upgrading works less than 8 weeks Busiest period of traffic movements for 5 months
Dalnacardoch Lodge – Appin of Dull		
Small settlement at Trinafour in Glen Errochty (approximately 10 properties)	Upgrading of road (passing places); tower construction close to Trinafour; construction traffic would follow the B847 and unclassified road from Trinafour to Tummel Bridge Slight daytime effects to properties at Trinafour within 300m of the transmission line for a few days during line construction works Significant (major) noise effects from transmission line construction traffic for roadside properties along roads between Trinafour and west of Tummel Bridge	Approximately 12 months Noise from road upgrading works for less than 8 weeks. Noise at Trinafour from construction for a few weeks. Busiest period for traffic noise on road to Tummel Bridge for 5 months
Properties in Tummel Bridge close to substation site (fewer than 10 properties)	Upgrading of access road to substation; construction of substation and associated traffic for substation and small section of overhead line construction; processing of transformer oil Slight noise effects for properties within 200m of substation during busiest phases of construction	Approximately 12 months Noisiest phases likely to be for periods of a few days at a time. Slight noise effects for properties close to substation for a few weeks. 8 weeks for busiest phase of HGV movements on access track to substation
Roadside properties along A827 from Croftmoraig to Aberfeldy (approximately 250 properties, mostly in Aberfeldy)	Construction traffic using A827 through Aberfeldy to service route corridor south of Croftmoraig Significant (major) noise effects from transmission line construction traffic for roadside properties along A827 between Croftmoraig and Aberfeldy	Up to 10 months of construction traffic, with busiest phase of traffic for 3 months
Appin of Dull – Glenalmond		
Roadside properties along unclassified route to south of Loch Freuchie (approximately 15 properties)	Upgrading of road (and bridge across River Quaich); construction traffic for access roads and tower construction Significant (major) noise effects from transmission line construction traffic for roadside properties along road following south side of Loch Freuchie between Wester Shian and Amulree	Approximately 9 months Periods of busiest construction activity limited to a few weeks within this timescale. Noise from road upgrading works less than 8 weeks. Busiest phase of HGV movements along road for 4 months

Locations Affected	Construction Activities and Noise Effects	Estimated Duration of Effects
Properties in close proximity to transmission line in Glenalmond (approximately 2 properties)	Significant daytime effects for two isolated properties within 100m of the transmission line east of Crieff	Periods of busiest construction activity limited to a few weeks
Glenalmond to Bridge of Allan		
Roadside properties along B827 in valley of River Knaick (approximately 10 properties)	Construction traffic for works to transmission line corridor at Coire Odhar Significant (major) noise effects from construction traffic for roadside properties along B827 between Glenlichorn and junction with A822 north of Braco	Approximately 5 months Busiest phase of HGV movements along road for 3 months
Easter Feddal, near Braco (fewer than 5 properties)	Access track construction; public road improvements; traffic associated with new Braco substation 3km west of Easter Feddal No noise sensitive receptors within 300m of substation. Properties along access track and B8033 to Braco subject to significant (major) noise effects from construction traffic during substation and transmission line construction	Approximately 12 months Busiest phase for construction vehicles would be 3 months for transmission line traffic and 4 months for substation traffic
Bridge of Allan to Denny		
2km north east of Denny (fewer than 10 properties)	Construction of Denny North Substation and associated traffic and transformer oil processing Significant daytime effects for up to 10 properties within 100m of the transmission line at isolated locations between Manor Powis and Denny No noise sensitive properties within 300m of substation or main access road from A872 near Dunipace via Dales Wood. Significant noise effects may be experienced by roadside properties along alternative access road through West Plean and Muirmailing if used for vehicle access to the transmission line	Approximately 18 months for substation works. Approximately 4 months for line works with busiest period for traffic of 2 months Periods of busiest construction activity limited to a few weeks within this timescale