Appendix 6D
Night Time Assessment

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Night-time Assessment

1.1 Introduction

1.1.1 This report provides a Night-time Assessment for aviation warning lights which would be required on all 35 turbines of the Proposed Development, assuming these would be in excess of 150m in height to blade tip. The assessment has focused on five Night-time Assessment viewpoints which have been selected and agreed during the scoping exercise with CnES.

1.1.2 The results of this assessment have been used to assist the design and further define the scope of the baseline information and detailed reporting of the Landscape and Visual Impact Assessment (LVIA) in **Chapter 6**.

1.2 Aviation Lighting Requirements

1.2.1 The requirements for turbine lighting are dictated by Civil Aviation Authority (CAA) policy and the Ministry for Defence (MOD) to ensure aviation safety in accordance with Article 222 of the UK Air Navigation Order (ANO) 2016. In addition, the proposed turbines would be located within the CAA / NATS and MOD safeguarded area for Stornoway Airport. Further guidance is provided in the CAA policy statement '*Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level*' which interprets the regulations in relation to wind turbines and the need for aviation warning lights.

1.2.2 The CAA policy statement advises that steady medium intensity (2000 candela) red, aviation warning lights are fitted as close as possible to the top of all fixed structures which have a total height of ≥150 meters above ground level as follows:

- "*(a) The person in charge of the wind turbine generator must ensure that it is fitted with a medium intensity (2000 candela) red light, positioned as close as practicable to the top of the fixed structure. A second light serving as an alternative should be provided in case of failure of the operating light.*
- *(b) The lights required by paragraph (a) must be so fitted to show when displayed in all directions without interruption.*
- *(c) Additionally, at least three (to provide 360 degree coverage) low-intensity Type B6 lights (32 candela) lights should be provided at an intermediate level of half the nacelle height.*
- *(d) Subject to sub-paragraphs (e) and (f), the person in charge of a wind turbine generator must ensure that any light required to be fitted by this article is displayed.*
- *(e) Lights should be operated by an acceptable control device (e.g., photocell, timer, etc.) adjusted so the lights will be turned on whenever illuminance reaching a vertical surface falls below 500 LUX. The control device should turn the lights off when the illuminance rises to a level of 500 LUX or more.*
- *(f) In the event of the failure of any light which is required by this policy statement to be displayed, the person in charge of a wind turbine generator must repair or replace the light as soon as practicable. For any outage that is expected to be or is greater than 12 hours, the operator shall request a NOTAM to be issued by informing the NOTAM section (operating 24*

hours) of the UK Aeronautical Information Service (AIS) by telephoning +44(0) 1489 61 2488 / 2489 as soon as possible. This NOTAM is to specifically state (with justification) if the repair/replacement of the light will exceed 72 hours. AIS will copy the details of the NOTAM to the operator and to the CAA.

- *(g) If the horizontal meteorological visibility in all directions from every wind turbine generator in a group is more than 5km, the intensity for the light positioned as close as practicable to the top of the fixed structure required to be fitted to any generator in the windfarm and displayed may be reduced to not less than 10% of the minimum peak intensity specified for a light of this type."*

1.2.3 The ANO also requires aviation warning lighting are fitted to cranes, which could be relevant to the construction period.

"Away from the immediate vicinity of an aerodrome and where the maximum crane height is less than 150 meters aviation warning lighting is not a legal requirement. However, given the likelihood that such cranes will be amongst the tallest structures in any given location the CAA recommends that, in order to ensure that the crane operator fulfils his duty of care towards others, the crane user (contractor) considers using aviation warning lighting in line with the following: - Cranes that are between 90 meters and 150 meters (approximately 300 – 500 feet) high being equipped with medium intensity steady red lighting positioned at the highest point and both ends of the jib, such that the lighting will provide an indication of the height of the crane and the radius of the crane jib. Such lighting, which should be displayed at night, should be positioned so that when displayed it is visible from all directions. - Cranes that are 60 meters to 90 meters (approximately 200 – 300 feet) high being equipped with low intensity steady (generically 32 candela) red lighting positioned as close as possible to the highest point and, for tower cranes, to the top of the fixed structure. Such lighting, which should be displayed at night, should be positioned so that when displayed it is visible from all directions."

Specific Lighting Requirements for the Proposed Development

1.2.4 In accordance with the ANO requirements, and assuming that the turbines are ≥150m in height to blade tip, all turbines of the Proposed Development would require aviation warning lights.

1.2.5 The CAA advise, in respect of wind turbines, that aviation warning lights should be positioned on top of the turbine nacelle or hub (highest practical point), rather than on the blade tips. They also advise that three low intensity lights are positioned on three sides of the tower at half hub height.

1.2.6 The specific aviation warning light requirements for the Proposed Development are therefore as follows:

- Aviation warning lights fitted to each of the 35 turbines would comprise four lights as follows:
  - One medium intensity lighting unit (2000 candela) at hub height (105m and 88m AGL); and
  - Three low intensity lighting units (32 candela) at half hub height (52.5m and 44m AGL).
- It is assumed the lighting would be operated by an automatic control device which reliably allows the lighting to be activated when the threshold falls below 500 LUX in accordance with the requirements of the CAA policy statement and Article 222 of the UK Air Navigation Order (ANO) 2016.

1.2.7 The above lighting specification has been used to model the effects of the aviation warning lights for the Night-time Assessment and is illustrated in all of the Night-time Assessment figures (**Figures 6D.1 to 6D.9d**).

Mitigation Measures for Aviation Lighting

1.2.8 No mitigating alternative is currently available for aviation warning lights compliant with Article 222 of the UK ANO 2016, for turbines ≥150m in height to blade tip.

1.2.9 The Night-time Assessment has been based on a precautionary 'worst case' and the possibility for no lighting, or reduced intensity lighting (under Article 222, CAA policy statement, clause 'g') has not been consulted on with the CAA at this stage.

Radar Proximity Activated Lighting and Light Sheilds

1.2.10 The use of Radar Proximity Activated Lighting is however preferred and SNH has advised that this could result in the lights being activated for less than 2% of the time. Although used in Europe and elsewhere, it is not currently permitted in the UK.

1.2.11 SNH also suggests that the turbine lighting could potentially be shielded to reduce the prominence of the lighting. This option however is not currently permitted in the UK in respect of aviation warning lights.

1.3 Methodology

1.3.1 The Night-time Assessment follows the same methodology used for the assessment of landscape, visual and cumulative effects, set out in **Appendix 6A**. The difference is that it is conducted during periods of dawn or dusk and assesses the baseline night-time environment against the proposed aviation warning lights, fitted to all of the turbines which form part of the Proposed Development.

1.3.2 Importantly, the Night-time Assessment is not a technical lighting impact assessment based on quantitative measurement of light levels, rather the assessment relies on professional judgement of what the human eye can reasonably perceive. As with the landscape and visual assessment, the sensitivity of the receptor to the Proposed Development (aviation warning lights) and the magnitude of change are combined to determine the level of effect likely to result from the aviation warning lights. The evaluation of significance and the nature of these effects is also described following the methodology set out in **Appendix 6A**, used for the assessment of landscape, visual and cumulative effects.

Defining the Study Area

1.3.3 The Night-time Assessment Study Area has been agreed through consultation and is a 15km buffer (or distance) from the outer proposed turbines as illustrated in **Figure 6D.1**.

Zone of Theoretical Visibility Plots

1.3.4 The Night-time Assessment is supported by Zone of Theoretical Visibility (ZTV) plots that illustrated the areas from where, in theory, the aviation warning lights would be visible. The ZTV does not take account of the screening effects of buildings, localised landform and vegetation. As a result, there may be roads, tracks and footpaths within the study area which, although shown as falling within the ZTV, are screened or filtered by built form and vegetation, which preclude visibility.

1.3.5 The ZTVs provide a starting point in the assessment process and accordingly tend towards giving a 'worst case' or greatest calculation of the theoretical visibility.

Night-time Assessment

1.3.6 The Night-time Assessment is also supported by baseline photography, wireframes and photomontages from selected viewpoints. These visualisations help to assess the level of night-time visual impact for particular receptors. A range of viewpoints are examined in detail and analysed to determine whether a significant visual effect would occur. By arranging the viewpoints in order of distance it is possible to define a threshold or outer limit, beyond which there would be no further significant effects.

1.3.7 The night-time viewpoint analysis involves visiting the viewpoint locations during periods of dawn or dusk and viewing visualisations prepared for each viewpoint location. The fieldwork is conducted in periods of fine weather with clear skies and considers seasonal changes such as reduced leaf cover or hedgerow maintenance.

Establishing the Baseline Night-time Environment or Darkness Survey

1.3.8 During site visits a baseline night-time environment survey or 'darkness survey' is carried out at each viewpoint location. The purpose of the darkness survey is to establish the existing light levels perceived by the landscape architects at the viewpoints and determine their sensitivity to change. The following observations are recorded:

- Areas of darkness with no artificial light;
- Direct artificial lighting (where the light source is directly visible from the viewpoint);
- Indirect artificial lighting (where the light source is not visible but the light emanating from the light source is visible as in the case of 'sky glow');
- Static lighting, for example emanating from a residential property or street light; and
- Mobile or transient lighting, for example associated with moving vehicles, trains or aircraft.

1.3.9 Baseline photographs at each of the Night-time Assessment viewpoints are recorded.

Photography and Photomontage

1.3.10 The methodology used for viewpoint photography and photomontage accords with the SNH guidance *The Visual Representation of Wind Farms, Version 2.2*, February 2017, although SNH recognise that Night-time Assessment and the production of night-time photomontages this is an emerging area of study. Further guidance is provided by the Landscape Institute as follows:

- *Photography and Photomontage in Landscape and Visual Impact Assessment*, Technical Note January 2011 and the consultation draft, dated 1st June 2018; and
- *Visual Representation of Development Proposals*, Technical Note February 2017.

1.3.11 The objective for night-time viewpoint photography is to represent, as far as is practical, the lighting levels as they would be perceived by the human eye. Accordingly, camera settings should be used which best meet this requirement, and settings which artificially brighten the image should not be used. Photography which includes temporary light sources that are not typical or representative, such as passing vehicles on quiet country lanes, should be avoided.

1.3.12 The baseline photography is recorded at either dawn, up to approximately 30 minutes before sunrise or dusk, up to approximately 30 minutes after sunset.

Night-time Photomontage: Rendering of Aviation Warning Lights

1.3.13 SNH recognise that the illustration of technically accurate lighting proposals is difficult to achieve and that the photomontages rely on professional judgement and an 'artistic impression' due to the limitations in being able to model light intensity over distance in variable atmospheric conditions of light / darkness. Nevertheless, the photomontages are considered useful when combined with objective data illustrated in the ZTV plots and wireline figures.

1.3.14 The rendering or visual representation of the proposed aviation warning lights has been achieved using Adobe Photoshop and a comparative study of photography of actual turbine lighting in similar lighting conditions and viewing distances, based on the night-time observation of the following lit structures in the landscape:

- E01: Beinn Ghrideag Wind Farm, within the Development Site boundary:
  - There are 3 turbines, 125m to blade tip height, all of which are lit and appear to be the brightest of the existing turbine aviation warning lights, appearing as direct, static, red, medium intensity lights (≥2,000 candela).
- E02: Pentland Road Wind Farm, immediately to the northwest of the Proposed Development:
  - There are 6 turbines, 121.2m to blade tip height, all of which are lit and appear to be direct, static, red, medium to low intensity aviation warning lights (between approximately 32 and 2,000 candela).
- E03: Arnish Moor Wind Farm, approximately 1km to the southeast of the Proposed Development:
  - There are 3 turbines, 76m to blade tip height, all of which are lit and appear to be direct, static, red, medium to low intensity aviation warning lights (between approximately 32 and 2,000 candela).
- E04: Creed Wind Turbine, approximately 1km to the east of the Proposed Development:
  - This single turbine is 61.14m to blade tip height, and is lit with a direct, static, red, medium to low intensity aviation warning lights (between approximately 32 and 2,000 candela).
- Eitseal Transmitter Mast, near Achamore, off the A858, to the southwest of the Proposed Development is 223m AOD and the height of the mast is 172.3m. It is lit by medium intensity aviation warning lights (≥2,000 candela) at 2 positions on the tower as illustrated in Viewpoints N7, N9 and N14.

1.3.15 Collectively the lights from these five existing structures (15 lights in total) appear as a significant feature (Substantial, Substantial / Moderate, and Moderate levels of effect) in the night-time landscape and views, when seen from within approximately 4km distance of these structures to the north, south and west. When viewed from the east, these lights although visible, appear subsumed within the lit environs of Stornoway and would tend to appear as significant when viewed from within 1-2km.

1.3.16 Other lit structures within 15km include lights associated with settlement and core settlement of Stornoway (industry / business and commercial lighting, residential lights and street lighting), lighting associated with Stornoway Airport, the main roads and mobile lighting associated with different modes of transport (road traffic, ferries and aircraft). The Lewis War Memorial is a flood lit structure, 26m tall, that is clearly visible in Viewpoint N9. A further, smaller mast at Beinn Hulabaidh, 153m AOD, in the northern part of the Proposed Development (south of proposed turbines T25) and some other smaller masts and micro-gen wind turbines (<50m to blade tip) in the surrounding area do not appear to be lit.

1.3.17 All of these structures are located within the safeguarded area for Stornoway Airport.

1.3.18 In order to consistently replicate the aviation light intensity in the photomontages, four colours are overlaid with each other with decreasing brush sizes for each colour (base layer: pink [CMYK 0/89/51/0], second layer: orange [CMYK 7/73/95/1], third layer: yellow [CMYK 10/0/75/0] and top layer: white [CMYK 0/0/0/0]). The dots representing the hub or nacelle lights have 95% opacity, whilst the proposed tower lights have a reduced 80% opacity. The scale of the dot has been guided by the scale of the existing turbine lights on Beinn Ghrideag, Pentland Road, Arnish Moor and Creed, which have been rendered on to each baseline photograph where visible to create the photomontages.

1.4 Consultation

1.4.1 Consultation feedback on night-time lighting was received CnES as summarised in **Chapter 6: Landscape and Visual**, Table 6.3. CnES agreed with the proposed Night-time Lighting Assessment, set out in the Scoping Report, including the proposed 15km Study Area and the five Night-time Assessment viewpoint locations.

1.4.2 SNH have not commented on the Night-time Lighting Assessment, although it is noted that they have developed draft guidance (*Turbine Lighting – SNH Emerging Standard Approach to Landscape and Visual Impact Assessment'* 20 April 2018 draft report) and this assessment accords with this guidance and broadly follows the approach agreed with SNH in relation to other wind farms where there is a requirement for aviation warning lights.

Night-time Viewpoint Selection

1.4.3 Night-time viewpoint selection has sought to present the Proposed Development as experienced by a range of receptor groups, from a spread of different directions, and over varying distances. It is to be noted that the viewpoint selection has also been based on where people are most likely to be at night to experience these views. In total 5 night-time viewpoints were selected for illustration from the 27 day-time assessment viewpoint locations, within the 15km Night-time Assessment Study Area. A further 4 day-time assessment viewpoint locations (Viewpoint Nos 15, 16, 17 and 18) were also included in the assessment to further confirm the extent of significant night-time visual effects. A list of the Night-time Assessment viewpoints is set out in **Table 6D.1**.

Table 6D.1 Night-time Viewpoint Selection

Viewpoint Selection	Distance (m)*	Comments
N3. A859, north of Liurbost	2,856	Also, day-time assessment Viewpoint 3, from the main road north of Luirbost and southeast of the Proposed Development
N7. A857 between Stornoway and Barvas	3,541	Also, day-time assessment Viewpoint 7, from the main road north of Stornoway and the Proposed Development. For health and safety reasons, the location of the night-time viewpoint has been re-located to a layby slightly to the south of the day-time location which is located on a verge.
N9. Tunga (Tong)	5,721	Also, day-time assessment Viewpoint 9, from the settlement of Tunga to the northeast of Stornoway and the Proposed Development.
N11. Ranais (Ranish)	6,954	Also, day-time assessment Viewpoint 11, from the settlement of Ranais to the southeast of Stornoway and the Proposed Development.

Viewpoint Selection	Distance (m)*	Comments
N14. An Rubha – An Cnoc (Eye Peninsula – Knock)	10,866	Also, day-time assessment Viewpoint 14, from the settlement of Cnoc on the Eye Peninsula to the east of Stornoway and the Proposed Development.

*Note: Distance to nearest proposed turbine within the Proposed Development.

1.5 Night-time ZTV and Viewpoint Analysis

1.5.1 The Night-time ZTV and viewpoint analysis is used to assist the design and further define the scope of the assessment process. In particular, a threshold or 'limit' indicating the distance from the Proposed Development, within which significant effects may be likely, has been identified. The viewpoint analysis has been supported by observations in the field of other existing examples of aviation warning lights at four existing wind farms and the Eitseal Transmitter Mast. This has informed judgements about the likely intensity of aviation warning lights and how these would diminish over increased distance from the light source.

Night-time ZTV Analysis

1.5.2 Night-time ZTVs of the proposed aviation warning lights were calculated using ReSoft WindFarm computer software to produce an area of potential visibility of the aviation warning light source, calculated at hub height and half hub height. These ZTV plots provide an indication of the areas from where the aviation warning lights may be theoretically visible. They do not indicate the intensity of the lights or take account of intervening screening from localised landform, buildings or vegetation. The ZTVs therefore provide a starting point in the assessment process and accordingly tend towards giving a 'worst-case' or over-estimated scenario of the potential visibility.

1.5.3 Two ZTV plots have been provided as follows:

- **Figure 6D.2**: illustrates the ZTV calculated to hub height (representing theoretical visibility of aviation warning lights positions on the turbine hub / nacelle) at 1:130,000 scale across the 15km Study Area. The locations of the Night-time Assessment viewpoints are also shown.
  - The ZTV coverage of the hub height aviation warning lights accounts for most of the land area within 5km of the Proposed Development with further swaths of ZTV coverage occurring on high ground to the north, and the areas of Stornoway, Stornoway Airport and part of the Eye Peninsula to the east. Theoretical visibility from the sea areas is widespread with very low numbers of receptors, occurring in the east and covering much of the Broad Bay / Loch Tuath and the main ferry route. Elsewhere within the 15km Study Area, ZTV coverage is more fragmented and indicative of partial theoretical visibility of the Proposed Development (mainly the nacelle lights from between 1-8 turbines).
- **Figure 6D.3**: illustrates the ZTV calculated to half hub height (representing theoretical visibility of aviation warning lights positions on the mid-point of the turbine tower) at 1:130,000 across the 15km Study Area, with night-time viewpoints also shown.
  - The ZTV coverage of the turbine tower aviation warning lights is much more limited and focused on the area within 2km and 5km of the Proposed Development with further swaths areas of ZTV coverage occurring on high ground to the north, and the areas to the east of Stornoway, Stornoway Airport and part of the Eye Peninsula as well as much of the sea areas of Broad Bay / Loch Tuath and the main ferry route. Elsewhere within the 15km Study Area and including the main settlement area of Stornoway, ZTV coverage is much more fragmented and indicative of partial theoretical visibility of the Proposed Development (mainly the nacelle lights from between 1-8 turbines).

1.5.4 A cumulative ZTV has been provided to illustrate the cumulative ZTV coverage for the existing aviation warning lights on the four existing wind energy developments and the Proposed Development as follows:

- **Figure 6D.4**: illustrates the cumulative ZTV calculated to hub height (representing theoretical visibility of aviation warning lights positions on the turbine hub / nacelle) at 1:130,000 scale across the 15km Study Area. The locations of the Night-time Assessment viewpoints are also shown.
  - The vast majority of the cumulative ZTV coverage (shown in yellow) indicates that where theoretically visible, the Proposed Development would be seen in association with the existing aviation warning lights already present in this landscape. This area of ZTV coverage is focused on the central part of the Study Area within 5km and high ground to the north, and to the east of Stornoway, Stornoway Airport and part of the Eye Peninsula as well as much of the sea areas of Broad Bay / Loch Tuath and the main ferry route;
  - Areas where the aviation warning lights from only the Proposed Development (shown in pink) would be theoretically visible are much more limited and affect areas of open moorland and part of the Pentland Road to the west, north and south and areas of sea to the southeast (excluding the ferry route); and
  - Areas where the aviation warning lights from only the existing wind energy developments (shown in green) would be theoretically visible are also very limited and affect areas of open moorland and part of the A858 near Bragar to the west, north and south and areas of sea to the north (excluding the ferry route).

Night-time Viewpoint Analysis

1.5.5 The night-time viewpoint analysis has been conducted from a total of nine viewpoint locations, five of which are illustrated in **Figures 6D.5-9**. The night-time views from these locations are illustrated at 53.5° FoV and 90° FoV as wirelines and photomontages. A summary of the night-time viewpoint analysis is provided in **Table 6D.2** and each viewpoint is analysed further in **Table 6D.3**, which includes a darkness survey describing the baseline night-time environment. This assessment has been further supported by the rest of the viewpoints which illustrate wirelines and photomontages of the day-time visual effects.

Table 6D.2 Summary of Night-time Viewpoint Analysis

Viewpoint Selection	Distance (m)*	Sensitivity	No. of visible lights: Hub (Nacelle) Light / Tower Light**	Magnitude	Level of Effect
N3. A859, north of Luirbost	2,856	Medium	35 / 35	High	**Substantial / Moderate**
N7. A857 between Stornoway and Barvas	3,541	Medium	35 / 33	High to Medium	**Substantial / Moderate**
N9. Tunga (Tong)	5,721	High	34 / 17	Low	Moderate
N11. Ranais (Ranish)	6,954	High	31 / 6	Low	**Moderate**
N14. An Rubha – An Cnoc (Eye Peninsula – Knock)	10,866	High	35 / 35	Medium to Low	**Substantial / Moderate to Moderate**

Viewpoint Selection	Distance (m)*	Sensitivity	No. of visible lights: Hub (Nacelle) Light / Tower Light**	Magnitude	Level of Effect
15. Gearraidh Bhaird (Garyvard)	10,780	High	13 / 3	Low	Moderate
16. Stornoway to Ullapool Ferry Route B	13,329	High - Medium	35 / 35	Low	Moderate
17. Standing Stones of Calanish	13,282	High	0 / 0	Zero	No effect / No View
18. An Rhubha – Sulaisiader (Eye Peninsula – Shulishader)	14,164	High	35 / 35	Low	Moderate

*Note: Distance to nearest proposed turbine within the Proposed Development.
**Note: Number of visible turbine aviation warning lights counted from the photomontage (from a maximum number of 35 turbines).

1.6 Night-time Assessment

1.6.1 The threshold (in spatial terms) for significant effects resulting from aviation warning lights would be restricted to areas within approximately 10km, with the greatest potential for distant night-time visual effects experienced from the Eye Peninsula to the east. Elsewhere the night-time visual effects would be mitigated by the higher volumes of existing lighting in and around Stornoway (Viewpoints N9, 16 and 18) and from more distant views by intervening topography (Viewpoints 15 and 17). Within 10km significant visual effects would arise as a result of greater volume and extent of proposed aviation warning lights in comparison to the existing baseline, particularly where the existing landscape is either 'un-lit' or has low levels of existing lighting (Viewpoint N3, N7 and N11). In views from the east and the Eye Peninsula the proposed aviation warning lights also have the potential to look 'elevated' appearing above much of the ground-based lighting visible in the baseline when viewed in the context of more well-lit areas (Viewpoint N14).

Predicted Night-time Landscape Effects

1.6.2 *Boggy Moor 1* is the landscape character type (LCT) for most of the Study Area, west of Stornoway and the LCT that characterised the Development Site area, with the exception of some localised patches of *Plantation Forestry* and areas of *Industry*. The night-time character of the *Boggy Moor 1* LCT currently contains 15 lights, of varying intensity that emanate from the four existing wind energy developments and the Eitseal transmitter mast, located close to the Proposed Development. Viewing towards the Proposed Development the night-time character of the *Boggy Moor 1* LCT appears 'partly lit' and during periods of dusk and dawn, the shapes of the turbines are visible in the landscape. Numerous lights are visible close by at Stornoway and within is immediate surroundings, resulting from industry / business and commercial lighting, residential lights and street lighting as well as lighting associated with Stornoway Airport, the main roads and mobile lighting associated with different modes of transport (road traffic, ferries and aircraft). This also has an influence on the night-time character of the *Boggy Moor 1* LCT, with the area around Stornoway appearing as a 'lit' landscape. These existing lights characterise the *Boggy Moor 1* LCT within approximately 4km of the light sources, such that this area, including the Development Site has a 'lit' and 'partly lit' night-time character that is markedly different to the 'unlit' night-time character of the *Boggy Moor 1* LCT which occurs in most other areas of the Isle of Lewis.

1.6.3 The Proposed Development would introduce up to 70, additional aviation warning lights that would be visible when viewing towards the Proposed Development at night. The magnitude of change

would range from High within approximately 3km, reducing to Medium within approximately 5km and resulting in a Substantial / Moderate and **significant** effect on the night-time appearance of the *Boggy Moor 1* LCT within 3-5km of the proposed turbines. The duration of these effects would be 25 years, until decommissioning and the nature of these effects would be long-term (reversible), direct, cumulative and negative.

1.6.4 During the construction and decommissioning periods, some limited health and safety lighting would be required at the site entrance office and temporary construction compounds and there would also be lights from vehicles moving around the site during periods of darkened daylight hours such as heavy rain / dark skies. Cranes may also carry aviation warning lights in accordance with Article 222 of the UK ANO 2016. The effects of these temporary lights on the night-time landscape character *Boggy Moor 1* LCT would be Substantial / Moderate and **significant** but limited to a more localised geographical area, extending out to approximately 2km from the light source locations due to their lower light intensity and fewer number (it is assumed that there would be 1-2 cranes with aviation warning lights operating on site during this period). The nature of these effects would be temporary, direct, cumulative and negative.

1.6.5 Other LCTs within 5km including *Gently Sloping Crofting, Rocky Moorland* and *Cnoc and Lochan* are already affected by various light sources within and immediately around the landscapes and would not be significantly affected by lighting from the Proposed Development during any of the construction, operation or decommissioning periods.

1.6.6 No other areas of landscape character or the South Lewis, Harris and North Uist NSA would be significantly affect by lighting from the Proposed Development during any of the construction, operation or decommissioning periods.

Predicted Night-time Visual Effects

1.6.7 During the construction and decommissioning periods, some limited health and safety lighting would be required at the site entrance office and temporary construction compounds and there would also be lights from vehicles moving around the site during periods of darkened daylight hours such as heavy rain / dark skies. Cranes may also carry aviation warning lights dependent upon their height and it has been assumed that up to two cranes would be present on site during the construction period. The visual effects of these lights would be Substantial / Moderate and **significant**, extending out to approximately 2km from the light sources within the Development Site. The nature of these effects would be temporary, direct, cumulative and negative.

Visual Effects on Stornoway during Operation

1.6.8 There would be no significant night-time visual effects from the proposed aviation warning lights on the views from the majority of Stornoway Core Settlement, due to the lower lying nature of the settlement and the extent of intervening screening from buildings and landform (Viewpoints A and B, **Appendix 6E**). However, there would be **significant** (Substantial / Moderate to Moderate) night-time visual effects from a small number of elevated areas on the eastern edges of Stornoway Core Settlement (Plasterfield and Oliver's Brae). Similarly, there would be no significant effects on the majority of views from Lews Castle and grounds, including the Lady Lever Park GDL and the Core Paths in this area (CP6 and CP4 on **Figure 6.18**) in this area.

1.6.9 **Significant** (Substantial / Moderate to Moderate) night-time visual effects would however be experienced from elevated areas of the Stornoway Golf Club and Gallows Hill in the Lews Castle / Lady Lever Park GDL. The nature of these effects would be long-term (reversible), direct, cumulative and negative.

1.6.10 Some **significant** night-time visual effects would be experienced from elevated areas of the Greater Stornoway Main Settlement - North, including Newmarket and Upper Newvalley (and western parts of Marybank and Maryhill) and the views from the Lewis War Memorial as indicated by Viewpoint N7 which is at a similar distance, although to the north of the settlement. **Significant** night-time visual effects would also be experienced from elevated areas of Stornoway East (including Steinis, Sanndabhaig, and Mealabost) and the views from the Iolaire Memorial. The level of these effects would be Substantial / Moderate to Moderate and the nature of these effects would be long-term (reversible), direct, cumulative and negative.

Visual Receptors on the Eye Peninsula / An Rubha to the East

1.6.11 A **significant** (Substantial / Moderate to Moderate) night-time visual effect was identified at Viewpoint N14: An Rubha – An Cnoc on the Eye Peninsula at 10,866m distance. The significant night-time visual effect was due to the elevated nature of the lights which mostly appear above the ground-based lighting associated with Stornoway and in the sky, contrasting with the baseline, even though this is well lit and some of the existing light sources in Stornoway appear brighter. A similar **significant** (Substantial / Moderate to Moderate) night-time visual effect would affect the views experienced by people on the western part of the Eye Peninsula including residents at An Cnoc (Knock including Suardil and Aiginis and the cemetery). It is also likely that tourists and people walking or cycling (High sensitivity) on the A866 and riding the ferry within approximately 10km would also experience a **significant** (Substantial / Moderate to Moderate) night-time visual effect from at least part of they route when viewing west. The nature of these effects would be long-term (reversible), direct, cumulative and negative.

1.6.12 The travellers on the A866 and residents in settlements further to the east at Garrabost, Pabail Iarach, Pabail Uarach and Sulaisaidar (Shulishader) and Tiupman Head Lighthouse would not be significantly affected due to the increased distance from the Proposed Development and some partial landform / built-form screening.

1.6.13 There would be no significant night-time visual effects from the settlement of Tunga (Tong) including Aird Thunga and the B895, although the proposed aviation warning lights would be visible as illustrated in Viewpoint N9. This is due to the visibility of existing lighting from numerous sources at Stornoway and Greater Stornoway, which appears across the view and the horizon, in front of the Proposed Development. Similarly, there would be no significant night-time visual effects from the settlements of Col (Coll) (including Col Uarach, Cnoc an t-Solais, Bac and Griais) which are located further to the northeast, beyond Tunga.

Visual Effects on Receptors to the South during Operation

1.6.14 A **significant** (Moderate) night-time visual effect was identified at Viewpoint N11 in the south due to the impact of the proposed aviation warning lights on what is generally a dark / very partly lit night sky. Viewpoint N11 is located in elevated part of Ranais, close to the water tower and as such is not representative of the views from the settlements of Griomsidar (Grimshader) and Liurbost (Leurbost), Crosbost and Ranais which would generally have a Negligible effect or No View of the proposed aviation warning lights. Similarly, there would be a Negligible effect or No View of the proposed aviation warning lights from Glib Cheois (Keose Glebe) and other settlements further to the south, and No View from Acha Mor (Achamore) on the A858 to the southwest and Lacasaigh (Laxay) to the south.

1.6.15 **Significant** (ranging from Substantial to Moderate) night-time visual effects would be experienced by people travelling on roads and footpaths within approximately 5km of the Proposed Development. In particular tourists, walkers and cyclists (High sensitivity) travelling on the A859 south of Stornoway (see Viewpoint N3); the B897, which is aligned directly towards the Proposed Development as it passes the Arnish Moor Wind Farm; and the route of the Hebridean Way and the

Timeless Way, which overlap with the A858 and Pentland Road and pass through the Proposed Development. The nature of these effects would be long-term (reversible), direct, cumulative and negative. Beyond 5km distance the ZTV coverage is very fragmented and the views would not be significantly affected.

1.6.16 Views from the Sustrans Cycle Route 780 and the B8060 would not be significantly affected due to the more limited ZTV coverage along the route, most of which is outwith the ZTV.

Visual Effects on Receptors to the North and West during Operation

1.6.17 **Significant** (Substantial / Moderate) night-time visual effects would be experienced by people travelling on the A857 to the north of Stornoway (see Viewpoint N7) from limited short sections of the road, due to the fragmented nature of the ZTV, within approximately 5km of the Proposed Development. The nature of these effects would be long-term (reversible), direct, cumulative and negative. Beyond this distance the ZTV coverage is very fragmented and the views would not be significantly affected.

1.6.18 There would be a Negligible effect or No View of the proposed aviation warning lights from settlements to the north and west, all of which are beyond 10km distance from the Proposed Development, including Barabhas (Barvas), Bragar and Calanais (Callanish). Similarly, there would be no significant night-time visual effects would be experienced by people travelling on the A858 (also the Sustrans Cycle Route 780) which also coincides with the Timeless Way, or the Core Path 3 most of which is outwith the ZTV.

1.6.19 In particular it may be noted that there would be no visibility of proposed aviation warning lights from the Standing Stones of Calanais.

Conclusion

1.6.20 Aviation warning lights would be required for all 35 turbines of the Proposed Development with one light positioned on each of the turbine nacelles and three further lights positioned on three sides of the tower, at mid-point of the tower. No mitigating alternative is currently available for the proposed aviation warning lights within the UK.

1.6.21 The threshold (in spatial terms) for significant visual effects resulting from aviation warning lights would be restricted to areas within approximately 10km, with the greatest potential for distant night-time visual effects experienced from the Eye Peninsula to the east. The night-time visual effects would be mitigated by the higher volumes of existing lighting in and around Stornoway, and from more distant views by intervening topography. Within 10km, **significant** visual effects would arise as a result of the greater volume and extent of proposed aviation warning lights in comparison to the existing baseline, particularly where the existing landscape is either 'un-lit' or has low levels of existing lighting (Viewpoint N3, N7 and N11). In views from the east and the Eye Peninsula the proposed aviation warning lights also have the potential to look 'elevated' appearing above much of the ground-based lighting visible in the baseline when viewed in the context of more well-lit areas (Viewpoint N14).

1.6.22 To conclude, there would be a **significant** effect on the night-time character of the *Boggy Moor 1* LCT within 3-5km of the Proposed Development. This landscape is currently affected by the lights from four existing wind energy developments, the Eitseal transmission mast and the numerous lights at Stornoway and environs that result from industry / business and commercial lighting, residential lights and street lighting, Stornoway Airport, and the main roads and mobile lighting associated with different modes of transport (road traffic, ferries and aircraft). The *Boggy Moor 1* LCT is not currently valued (in terms of designation or tourist / visitor guides) and its 'partly lit' night-time character that is markedly different to the 'unlit' night-time character of the *Boggy Moor*

1 LCT which occurs in most other areas of the Isle of Lewis. No other areas of landscape character or the South Lewis, Harris and North Uist NSA would be significantly affect by lighting from the Proposed Development during either the construction, operation or decommissioning periods.

1.6.23 **Significant** night-time visual effects would affect the views from the following receptor locations:

- Elevated areas of the Stornoway Core Settlement, Greater Stornoway Main Settlement including elevated areas of the Stornoway Golf Club, Gallows Hill in the Lews Castle / Lady Lever Park GDL and the Lewis War Memorial;
- Stornoway East and the Iolaire Memorial;
- The western part of the Eye Peninsula including the settlements of An Cnoc and views from the A866 and ferry route within approximately 10km; and
- Part of the routes of the A859, A857, B897 and the Hebridean Way and Timeless Way long distance recreational routes (overlapping with the A858 and Pentland Road) within 5km of the Proposed Development.

1.6.24 All of these visual effects would be experienced in the context of existing light sources at Stornoway the Eitseal transmission mast and four existing wind energy developments within this same area.

1.6.25 There would be no significant night-time visual effects on views from the majority of Stornoway Core Settlement, much of the Lews Castle / Lady Lever Park GDL and no visibility of proposed aviation warning lights from the Standing Stones of Calanais.

1.6.26 **Table 6D.3** Sets out the Night-time Viewpoint Analysis below.

Table 6D.3 Night-time Viewpoint Analysis

Figure 6D.5a-d	**Viewpoint N3: A859, north of Liurbost** (The assessment takes account of a 90° angle of view from this location as illustrated). The FoV on the photomontage and wireline has also been extended from the standard 53.5° template (planar projection) to a wider 60° FoV with the permission of SNH[1], in order that the full extent of the wind farm (the Proposed Development) is shown.	
Description	This viewpoint is located at a layby on the A859 to the north of Loch Sanndabhat and Liurbost (outwith the ZTV). The nearest turbine is Turbine 3 at 2,856m distance. The view is orientated north / northeast, viewing across gently undulating moorland broken up areas of plantation forestry and lochs. The summit of Beinn Mholach is visible in the distance. Man-made elements present in the view include post and wire fencing (primarily extending along the roadside), parallel rows of telegraph poles running in tandem with the road, plantation forestry, transmission masts at Loch Airigh na Lic and the existing wind farms at Beinn Ghrideag, Pentland Road and Bridge Cottages.	
Cumulative Baseline (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Medium to Low* Aviation warning lights at Pentland Road (Low magnitude) and Beinn Ghideag wind farms (Medium-Low magnitude) would be visible to the northeast between approximately 7.7km and 5.1km distance, appearing within a largely unlit landscape setting. **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change for other wind farms would be *Medium to Low*.	
Summary of Day-time Assessment	**Sensitivity**	Medium
	Magnitude	High-Medium
	Level of Effect	**Substantial / Moderate to Moderate** and **significant**
	Type of Effect	Long term (reversible), direct and negative to neutral
Darkness Survey	The existing landscape, viewed in this direction is largely unlit, and the existing aviation warning lights at Pentland Road and Beinn Ghideag wind farms are visible along with other ground-based lighting associated with development on the fringes of Stornoway. These lights appear as direct static lights, but there are also mobile direct light sources from passing traffic on the A859. The baseline levels of lighting are assessed as *Medium to Low*.	
Night-time Sensitivity	The viewpoint is not located in an area designated for its scenic qualities or dark skies. The value of the viewpoint is therefore considered to be Medium. The viewpoint would be experienced by road users (vehicles and occasional cyclists) approaching Stornoway from the south. The susceptibility is considered to be predominantly Medium with most night-time receptors travelling in vehicles and experiencing at speed as part of a transient sequence of views. The overall sensitivity is assessed as *Medium*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** All of the proposed aviation warning lights would be visible. The nature of the proposed aviation warning lights would be direct and partly intermittent lighting as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The *Boggy Moor 1* LCT in this area already contains existing light sources from other wind turbines and development, but the majority of this area is largely unlit. The Proposed Development would unify the existing light sources but would also introduce a High level of change with aviation warning lights extending across approximately 58° of the horizontal FoV. Overall, the magnitude of change would be *High*. **Whilst Under Construction and Decommissioning:** There would be some partial views of ground-based construction, cranes and turbine lighting during construction. The magnitude of change would range from *Zero to High*.	
Summary of Night-time Assessment	**Sensitivity**	Medium
	Magnitude	High
	Level of Effect	**Substantial / Moderate** and **significant**
	Type of Effect	Long term (reversible), direct, cumulative and negative

[1] Email correspondence dated 4 February 2019.

Figure 6D.6a-d	**Viewpoint N7: A857 between Stornoway and Barvas** (The assessment takes account of a 90° angle of view from this location as illustrated). *Due to health and safety reasons, the location of this night-time viewpoint has been relocated slightly further to the south on a layby compared to the day-time viewpoint (7) which is located on a verge.*	
Description	This viewpoint is located near Loch Roisneabhat on the A857 between the settlements of Stornoway and Barvas, northeast of the Proposed Development. The nearest turbine is at 3,541m distance. The view is orientated southwest and views across open moorland with a few scattered lochs, bisected by the A857 which extends southwards towards the horizon. The summit of Beinn Bharabhais is visible to the right of the view. The North Harris Mountains are visible in the far distance. Man-made elements present in the view include a row of telegraph poles that run parallel to the A857, the road itself, and the existing wind farms at Pentland Road, Beinn Ghrideag, Bridge Cottages, Creed, Arnish Moor, Baile an Truiseil and North Tolsta.	
Cumulative Magnitude (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Medium to Low* Pentland Road Wind Farm would be visible to the right of the Proposed Development at approximately 5.3km distance and Beinn Ghrideag Wind Farm would be visible to the southwest at approximately 7.4km distance (both Medium to Low magnitude). The lights on the existing wind farm at Arnish Moor would not be visible and the light on the single turbine at Creed would be of Negligible magnitude. **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change for other wind farms would be *Medium to Low.*	
Summary of Day-time Assessment	**Sensitivity**	Medium
	Magnitude	Medium
	Level of Effect	Moderate and not significant
	Type of Effect	Long term (reversible), direct and negative to neutral
Darkness Survey	The existing landscape, viewed in this direction is largely unlit, and the existing aviation warning lights at Pentland Road and Beinn Ghrideag wind farms are visible along with the Eitseal transmitter mast in the far distance (approximately 13km distance). These lights appear as direct static lights, but there are also mobile direct light sources from passing traffic on the A857. The baseline levels of lighting are assessed as *Medium to Low*.	
Night-time Sensitivity	The viewpoint is not located in an area designated for its scenic qualities or dark skies. The value of the viewpoint is therefore considered to be Medium. The viewpoint would be experienced by road users (vehicles and occasional cyclists / walkers) approaching Stornoway from the north. The susceptibility is considered to be predominantly Medium with most night-time receptors travelling in vehicles and experiencing at speed as part of a transient sequence of views. The overall sensitivity is assessed as *Medium*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** All of the proposed aviation warning lights on the nacelles would be visible and 33 of the 35 tower lights would be visible. The nature of the proposed aviation warning lights would be direct and partly intermittent as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The *Boggy Moor 1* LCT in this area already contains existing light sources from other wind turbines, but the majority of this area is largely unlit. The Proposed Development would unify the existing light sources but would also introduce a High to Medium level of change with aviation warning lights extending across approximately 30° of the horizontal FoV. Overall, the magnitude of change would be *High to Medium*. **Whilst Under Construction and Decommissioning:** There would be some partial views of ground-based construction, cranes and turbine lighting during construction and decommissioning. The magnitude of change would range from *Zero increasing to High to Medium*.	
Summary of Night-time Assessment	**Sensitivity**	Medium
	Magnitude	High to Medium
	Level of Effect	**Substantial / Moderate** and **significant**
	Type of Effect	Long term (reversible), direct, cumulative and negative

Figure 6D.7a-d	**Viewpoint N9: Tunga (Tong)** (The assessment takes account of a 90° angle of view from this location as illustrated).	
Description	This viewpoint is located southwest within the settlement of Tunga (Tong). The nearest turbine is Turbine 34 at 5,721m distance. The view is orientated southwest and views across dispersed residential properties in the foreground and open moorland towards the settlement of Stornoway. The landscape is predominantly moorland with some areas of rough grassland in the foregound with areas of plantation forestry and scattered trees. The settlement of Stornoway is visible in the middle distance, where the War Memorial extends above the horizon. The summit of Beinn Bharabhais is visible to the right of the view whilst the North Harris Mountains are visible in the far distance to the left of the view. Man-made elements present in the view include post and wire fencing, telegraph poles, dispersed residential properties, industrial buildings, street lighting, vehicle movements associated with the B895, the War Memorial, transmission masts and existing wind farms at Arnish Moor, Creed, Beinn Ghrideag, Pentland Road and Bridge Cottages.	
Cumulative Magnitude (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Low* Aviation warning lights at Pentland Road Wind Farm would be visible to the right of the Proposed Development at approximately 7.8km distance (Negligible magnitude) and at Beinn Ghrideag at approximately 8.3km distance (Low magnitude). Aviation warning lights at Arnish Moor and Creed would also be visible to the left of the Proposed Development (both Negligible magnitude). **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change of other wind farms would be *Low*.	
Summary of Day-time Assessment	**Sensitivity**	High
	Magnitude	High-Medium
	Level of Effect	**Substantial to Substantial / Moderate** and **significant**
	Type of Effect	Long term (reversible), direct and negative to neutral
Darkness Survey	The existing aviation warning lights at Pentland Road and Beinn Ghrideag wind farms are visible along with the Eitseal transmitter mast in the far distance (approximately 13km distance). Further lighting associated with Stornoway is visible along the coastline and extending inland from a variety of sources (industry / business and commercial lighting, residential lights and street lighting), lighting associated with Stornoway Airport, the main roads and mobile lighting associated with different modes of transport (road traffic, ferries and aircraft) is also visible within the wider views. The Lewis War Memorial is also prominently visible as a flood lit structure. These lights appear as direct static and mobile lights. The baseline levels of lighting are assessed as *High to Medium*.	
Night-time Sensitivity	The viewpoint is not located in an area designated for its scenic qualities or dark skies. The value of the viewpoint is therefore considered to be Medium. The viewpoint would be experienced by local residents and whilst there are relatively high levels of lighting the receptor sensitivity of local resident who will value this view is considered to be High and the overall sensitivity is assessed as *High*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** 34 of the 35 proposed aviation warning lights on the nacelles would be visible and 17 of the 35 tower lights would be visible (the rest screened by intervening landform). The nature of the proposed aviation warning lights would be direct and partly intermittent as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The view in this direction is characterised by a variety of lighting sources and the Proposed Development would unify with these existing light sources, whilst there would be a noticeable level of change, the night-time character of this view as a lit landscape / settlement would not be significantly changed. Overall, the magnitude of change would be *Low*. **Whilst Under Construction and Decommissioning:** There would be some partial views of cranes and turbine lighting during construction and decommissioning. The magnitude of change would range from *Zero increasing to Low*.	
Summary of Night-time Assessment	**Sensitivity**	High
	Magnitude	Low
	Level of Effect	Moderate and not significant
	Type of Effect	Long term (reversible), direct, cumulative and neutral to negative

Figure 6D.8a-d	**Viewpoint N11: Ranais (Ranish)** (The assessment takes account of a 90° angle of view from this location as illustrated).	
Description	This viewpoint is located at an elevated location in the settlement of Ranais (Ranish). It is representative of the '*worst-case*' views for local residents in the settlement as the majority of the houses in Ranais are at a lower elevation as seen to the left of the view. The nearest turbine is Turbine 7 at 6,954m distance. The view is orientated north / northwest and views across Loch Griomsiadair towards rocky headlands and the small settlement of Griomsidair. Beyond the loch in the foreground, the view predominantly comprises open moorland with rocky outcrops and small areas of plantation forestry. The hills of Beinn Mholach, Beinn Bhearnach and Beinn Bharabhais are visible in the distance. Man-made elements present in the view include telegraph poles, post and wire fencing, dispersed houses associated with Ranais and Griomsidair, small boats on the loch, a water tower and existing wind farms at Beinn Ghrideag, Pentland Road and Arnish Moor.	
Cumulative Baseline (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Low* The aviation warning lights at Pentland Road, Beinn Ghrideag and Arnish Moor would be visible behind the Proposed Development between approximately 4.5-11km distance (all Low magnitude). **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change for other wind farms would be *Low*.	
Summary of Day-time Assessment	**Sensitivity**	High
	Magnitude	Medium
	Level of Effect	**Substantial / Moderate** and **significant**
	Type of Effect	Long term (reversible), direct and negative to neutral
Darkness Survey	The existing landscape, viewed in this direction is largely unlit, and the existing aviation warning lights at Pentland Road, Beinn Ghrideag and Arnish wind farms are visible in the distance beyond the loch, along with some residential light sources in the mid-ground. These lights appear as direct static lights. The baseline levels of lighting are assessed as *Low*.	
Night-time Sensitivity	The viewpoint is not located in an area designated for its scenic qualities or dark skies. The value of the viewpoint is therefore considered to be Medium. The viewpoint would be experienced by local residents and the overall sensitivity is assessed as *High*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** 31 of the 35 proposed aviation warning lights on the nacelles would be visible and 6 of the 35 tower lights would be visible (the rest screened by intervening landform). The nature of the proposed aviation warning lights would be direct and partly intermittent as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The existing landscape contains some limited light sources from other wind turbines and local residents and low levels of lighting persist. The Proposed Development would unify the existing light sources but would also intensify this and introduce a Low level of change with aviation warning lights extending across approximately 35° of the horizontal FoV. Overall, the magnitude of change would be *Low*. **Whilst Under Construction and Decommissioning:** There would be some partial views of cranes and turbine lighting during construction and decommissioning. The magnitude of change would range from *Zero increasing to Low*.	
Summary of Night-time Assessment	**Sensitivity**	High
	Magnitude	Low
	Level of Effect	**Moderate** and **significant**, due to the low levels of existing light
	Type of Effect	Long term (reversible), direct, cumulative and neutral to negative

Figure 6D.9a-d	**Viewpoint N14: An Rubha - An Cnoc (Eye Peninsula - Knock)** (The assessment takes account of a 90° angle of view from this location as illustrated)	
Description	This viewpoint is located in the settlement of Knock (An Cnoc) on the Eye Peninsula (An Rubha) to the east of the settlement of Stornoway. The nearest turbine is Turbine 20 at 10,866m distance. The primary view from this location is out towards the Minch and coastline to the south. The view towards the Proposed Development is orientated west and views across the gently undulating farmland in the foreground, with the open water of Braigh na h-Aoidhe and Loch a' Tuath and the eastern coastline of the Isle of Lewis beyond. The summit of Beinn Mholach is visible to the right of the view whilst the North Harris Mountains are visible in the far distance to the left of the view. Man-made elements present in the view include post and wire fencing, geometric agricultural fields and dispersed residential properties in the foreground, the urban settlement of Stornoway and existing wind farms at Beinn Ghrideag, Pentland Road, Arnish Moor, Bridge Cottages and Creed.	
Cumulative Magnitude (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Low* Aviation warning lights from the Pentland Road, Beinn Ghrideag, Arnish Moor and Creed wind energy developments would be visible along with the Eitseal transmitter mast in the far distance (Low to Negligible magnitude). **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change for other wind farms would be *Low*.	
Summary of Day-time Assessment	**Sensitivity**	High
	Magnitude	Medium
	Level of Effect	**Substantial / Moderate** and **significant**
	Type of Effect	Long term (reversible), direct and negative to neutral
Darkness Survey	The existing aviation warning lights from the Pentland Road, Beinn Ghrideag, Arnish and Creed wind energy development are visible along with the Eitseal transmitter mast in the far distance. Further lighting associated with Stornoway is visible along the coastline and extending inland from a variety of sources (industry / business and commercial lighting, residential lights and street lighting), lighting associated with Stornoway Airport, the main roads and mobile lighting associated with different modes of transport (road traffic, ferries and aircraft) is also visible within the wider views. These lights appear as direct static and mobile lights. The baseline levels of lighting are assessed as *Medium*.	
Night-time Sensitivity	The viewpoint is not located in an area designated for its scenic qualities or dark skies. The value of the viewpoint is therefore considered to be Medium. The viewpoint would be experienced by local residents and whilst there are relatively high levels of lighting the receptor sensitivity of local resident who will value this view is considered to be High and the overall sensitivity is assessed as *High*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** All of the proposed aviation warning lights would be visible. The nature of the proposed aviation warning lights would be direct and partly intermittent as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The view in this direction is characterised by a variety of lighting sources and the Proposed Development would align with these existing light sources and extend across approximately 25° of the horizontal FoV appearing above the settlement of Stornoway. Much of the lighting would appear prominently above the skyline, resulting in significant change. Overall, the magnitude of change would be *Medium to Low*. **Whilst Under Construction and Decommissioning:** There would be some partial views of cranes and turbine lighting during construction and decommissioning. The magnitude of change would range from *Zero increasing to Medium to Low.*	
Summary of Night-time Assessment	**Sensitivity**	High
	Magnitude	Medium to Low
	Level of Effect	**Substantial / Moderate to Moderate** and **significant**
	Type of Effect	Long term (reversible), direct, cumulative and negative

Figure 6.38a-e	**Viewpoint 15: Gearraidh Bhaird (Garyvard)** (The assessment takes account of a 90° angle of view from this location as illustrated)	
Description	This viewpoint is located in the settlement of Gearraidh Bhaird (Garyvard) to the south of the settlement of Stornoway. The nearest turbine is Turbine 3 at 10,780m distance. The view is orientated north and views across Loch Eireasort surrounded by dispersed residential properties largely associated with Keose. Land cover predominantly comprises open moorland with occasional rocky outcrops, shelterbelts and individual trees. The summit of Beinn Mholach is visible in the distance. Man-made elements present in the view include telegraph poles, dispersed residential properties, commercial and farm buildings, post and wire fencing, transmission mast at Eitseal, and existing wind farms at Beinn Ghrideag, Pentland Road, Arnish Moor and Creed.	
Cumulative Magnitude (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Low* Aviation warning lights from the Pentland Road, Beinn Ghrideag, Arnish and Creed wind energy developments would be visible (all Low to Negligible magnitude). **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change for other wind farms would be *Low*.	
Summary of Day-time Assessment	**Sensitivity**	High
	Magnitude	Medium-Low
	Level of Effect	**Substantial / Moderate** and **significant** to **Moderate** and not significant
	Type of Effect	Long term (reversible), direct and negative to neutral
Darkness Survey	The existing landscape, viewed in this direction is largely unlit, and the existing aviation warning lights at Pentland Road, Beinn Ghideag and Arnish wind farms are visible in the distance beyond the loch, along with some residential light sources in the mid-ground. These lights appear as direct static lights. The baseline levels of lighting are assessed as *Low*.	
Night-time Sensitivity	The viewpoint is not located in an area designated for its scenic qualities or dark skies. The value of the viewpoint is therefore considered to be Medium. The viewpoint would be experienced by local residents so the overall sensitivity is assessed as *High*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** In total 13 of the proposed aviation warning lights on the nacelles would be visible and 3 of the 35 tower lights would be visible (the rest screened by intervening landform). The nature of the proposed aviation warning lights would be direct and partly intermittent as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The existing landscape contains some limited light sources from other wind turbines and local residents and low levels of lighting persist. The Proposed Development would unify the existing light sources but would also intensify this and introduce a Low level of change with aviation warning lights extending across approximately 20° of the horizontal FoV. Overall, the magnitude of change would be *Low*. **Whilst Under Construction and Decommissioning:** There would be some partial views of cranes and turbine lighting during construction and decommissioning. The magnitude of change would range from *Zero increasing to Low*.	
Summary of Night-time Assessment	**Sensitivity**	High
	Magnitude	Low
	Level of Effect	Moderate and not significant
	Type of Effect	Long term (reversible), direct, cumulative and negative

Figure 6.39a-c	**Viewpoint 16: Stornoway – Ullapool Ferry Route B** (The assessment takes account of a 90° angle of view from this location as illustrated and is a wireline only).	
Description	This viewpoint is representative of views from the Ullapool to Stornoway ferry as it passes Lewis's, Eye Peninsula / An Rubha, southeast of the Proposed Development. The nearest turbine is Turbine 7 at 13,329m distance. The view is orientated west / northwest, viewing across the bay towards the settlement of Stornoway and eastern coastline of the Isle of Lewis. Man-made elements present in the view include the harbour and settlement of Stornoway, industrial buildings, woodland, and the existing wind farms of Beinn Ghrideag, Pentland Road, Creed, Arnish Moor and Bridge Cottages.	
Cumulative Magnitude (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Low* Aviation warning lights from the Pentland Road, Beinn Ghrideag, Arnish and Creed wind energy developments would be visible (all Low to Negligible magnitude). **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change for other wind farms would be *Low*.	
Summary of Day-time Assessment	**Sensitivity**	High-Medium
	Magnitude	Medium-Low
	Level of Effect	Moderate and not significant
	Type of Effect	Long term (reversible), direct and negative to neutral
Night-time Sensitivity	The viewpoint is not located within a designated area and the value of the viewpoint is therefore considered to be Medium. The view would be experienced by visitors and residents on the ferry with transitory views, whose attention or interest is likely to be focused on the surrounding landscape / seascape. Therefore, susceptibility to change is assessed as High-Medium and the overall sensitivity is assessed as *High-Medium*.	
Darkness Survey	The existing aviation warning lights from the Pentland Road, Beinn Ghrideag, Arnish and Creed wind energy development are visible along with the Eitseal transmitter mast in the far distance. Further lighting associated with Stornoway is visible along the coastline and extending inland from a variety of sources (industry / business and commercial lighting, residential lights and street lighting), lighting associated with Stornoway Airport, the main roads and mobile lighting associated with different modes of transport (road traffic, ferries and aircraft) is also visible within the wider views. These lights appear as direct static and mobile lights. The baseline levels of lighting are assessed as *Medium*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** All of the proposed aviation warning lights would be visible. The nature of the proposed aviation warning lights would be direct and partly intermittent as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The view in this direction is characterised by a variety of lighting sources and the Proposed Development would align with these existing light sources and extend across approximately 23° of the horizontal FoV appearing above the settlement of Stornoway and the skyline but experienced over a long distance. Overall, the magnitude of change would be *Low*. **Whilst Under Construction and Decommissioning:** There would be some partial views of cranes and turbine lighting during construction and decommissioning. The magnitude of change would range from *Zero increasing to Low*.	
Summary of Night-time Assessment	**Sensitivity**	High-Medium
	Magnitude	Low
	Level of Effect	Moderate and not significant
	Type of Effect	Long term (reversible), direct, cumulative and negative to neutral

Figure 6.40a-d	**Viewpoint 17: Standing Stones of Calanais** (The assessment takes account of a 90° angle of view from this location as illustrated).
Note: there would be no visibility of any of the proposed aviation warning lights from this location.	

Figure 6.41a-e	**Viewpoint 18: An Rubha - Sulaisiader (Eye Peninsula - Shulishader)** (The assessment takes account of a 90° angle of view from this location as illustrated).	
Description	This viewpoint is located on the western edge of the settlement of Sulaisiader on the Eye Peninsula / An Rubha. The nearest turbine is Turbine 34 at 14,164m distance. The view is orientated west and views across rough grassland and dispersed residential properties in the foreground and Broad Bay / Loch A Tuath in the middle distance towards the settlement of Stornoway and the eastern seaboard of the Isle of Lewis beyond. The North Harris Mountains are visible in the far distance to the left of the view whilst the summits of Beinn Bhearnach, Beinn Mholach and Beinn Bharabhais are visible to the right of the view. Man-made elements present in the view include post and wire fencing, street lighting, residential properties associated with Garrabost and the urban settlement of Stornoway, and existing wind farms at Beinn Ghrideag, Pentland Road, Arnish Moor, Bridge Cottages and Creed.	
Cumulative Magnitude (Wind farms within 15km with aviation warning lights)	**Existing Wind Farms:** *Low* Aviation warning lights from the Pentland Road, Beinn Ghrideag, Arnish and Creed wind energy developments would be visible (all Low to Negligible magnitude). **Consented Wind Farms:** *N/A* None The overall cumulative magnitude of change for other wind farms would be *Low*.	
Summary of Day-time Assessment	**Sensitivity**	High
	Magnitude	Medium-Low
	Level of Effect	**Substantial / Moderate** and **significant** to Moderate and not significant
	Type of Effect	Long term (reversible), direct and negative to neutral
Night-time Sensitivity	The viewpoint is not located within a designated area and the value of the viewpoint is therefore considered to be Medium. The view would be experienced by residents from the curtilage of their home. Therefore, susceptibility to change is assessed as High and the overall sensitivity is assessed as *High*.	
Darkness Survey	The existing landscape, viewed in this direction is largely unlit, and the existing aviation warning lights at Pentland Road, Beinn Ghideag and Arnish wind farms are visible in the distance beyond the Broad Bay / Loch Tuath. Further lighting associated with Stornoway and other settlement is visible along the coastline and extending inland from a variety of sources (industry / business and commercial lighting, residential lights and street lighting), lighting associated with Stornoway Airport, the main roads and mobile lighting associated with different modes of transport (road traffic and aircraft) is also visible within the wider views. These lights appear as direct static and mobile lights. The baseline levels of lighting are assessed as *Medium to Low*.	
Magnitude of Change (Proposed Development only)	**Whilst in Operation:** All of the proposed aviation warning lights would be visible. The nature of the proposed aviation warning lights would be direct and partly intermittent as the light source from one turbine is disrupted by the movement of its own blades or those from a neighbouring turbine. The view in this direction is characterised by a variety of lighting sources and the Proposed Development would align with these existing light sources and extend across approximately 18° of the horizontal FoV appearing above the settlement of Stornoway and the skyline but experienced over a long distance. Overall, the magnitude of change would be *Low*. **Whilst Under Construction and Decommissioning:** There would be some partial views of cranes and turbine lighting during construction and decommissioning. The magnitude of change would range from *Zero increasing to Low*.	
Summary of Night-time Assessment	**Sensitivity**	High
	Magnitude	Low
	Level of Effect	Moderate and not significant
	Type of Effect	Long term (reversible), direct, cumulative and negative to neutral