Section 14
OTHER CONSIDERATIONS

Contents

Tables

Figures

Glossary

Term	Definition
Atkins Global	Atkins is responsible for providing wind farm/turbine support services to the Telecommunications Association of the UK Water Industry (TAUWI), among other services.
British Horse Society	This is a registered charity which promotes and advances education, training and safety of the public in all matters relating to the horse.
British Telecom	A multinational telecommunications holding company and is a provider of fixed-line, mobile and broadband services in the UK, and also provides subscription television and IT services.
Buffer	An area which defines a theoretical zone of protection for a certain asset(s)
Candela	SI base unit of luminous intensity; that is, luminous power per unit solid angle emitted by a point light source in a particular direction.
Civil Aviation Authority	The public corporation which oversees and regulates all aspects of aviation in the United Kingdom.
Core Path	A public path forming part of a system of paths as identified by the local authorities. Core paths must cater for everyone and provide reasonable access throughout the relevant authorities' area.
Environmental Impact Assessment	The process by which information about the environmental effects of a project is evaluated and mitigation measures are identified.
Environmental Impact Assessment Report	Statutory obligation to provide environmental assessment of certain developments. The environmental impact assessment report is the collation of these assessments.
Fixed Radio Link	A wireless connection used to connect two fixed locations though the operation of wireless devices or systems
Geographic Information System (GIS)	A software system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
Hertz	The SI unit of frequency, equal to one cycle per second.
Ice Throw	The process whereby ice or snow built up on a wind turbine blade breaks off and is thrown to the ground during the operation of the wind turbine.
Joint Radio Company	JRC is an industry-owned spectrum management consultancy and spectrum management organisation with primary responsibility for the radio spectrum used by the UK Energy Industry.
Micro-Siting	The process of positioning turbines within a specified area for optimum performance and wind yield.
Ministry of Defence	The Ministry of Defence is the British government department responsible for implementing the defence policy set by the Government and is the headquarters of the British Armed Forces
Mitigation	Term used to indicate avoidance, remediation or alleviation of adverse impacts.
Nacelle	The housing unit at the top of the turbine tower, typically containing the generator and gearbox.
Office of Communications	The independent regulator and competition authority for the UK communications industry.
Omnidirectional	Receiving signals from, or transmitting in all directions
Power Curve	A graphical representation of the relationship between power output and an independent variable. For a wind turbine this variable would be wind speed.
Radar	A system for detecting the presence, direction, distance, and speed of aircraft, ships, and other objects, through use of radio waves.
Right of Way	A specific route through grounds or property belonging to another, with legal rights established by usage or grant.
ScotWays	A voluntary organisation, charity and a company limited by guarantee whose aims are the preservation, defence, restoration and acquisition of public rights of access for the public benefit in Scotland.
Screening	To conceal, protect, or shelter (someone or something) with a screen or something forming a screen (e.g. buildings, vegetation, fences)
Shadow Flicker	The flickering effect caused when rotating turbine blades periodically cast a shadow over neighbouring properties as they turn, through constrained openings such as windows.
Tip Height	The maximum height of the turbine above ground level, when any given blade is aligned vertically.
Wind Turbine	The structure comprising the tower, nacelle and blades that generate power from the wind by the rotation of the blades.

Abbreviations

Abbreviation	Description
ATC	Air Traffic Control
AI	Additional Information
ANO	Air Navigation Order
BHS	British Horse Society
BT	British Telecom
CAA	Civil Aviation Authority
cd	Candela
CTBT	Comprehensive Nuclear Test Ban Treaty
CROW	National Catalogue of Rights of Way
DGC	Dumfries and Galloway Council
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMC	Electromagnetic Capability
GIS	Geographic Information System
GPA	Glasgow Prestwick Airport
HGV	Heavy Goods Vehicle
Hz	Hertz
IFP's	Instrument Flight Procedures
JRC	Joint Radio Company
km	Kilometres
m	Metres
MoD	Ministry of Defence
NATS	National Air Traffic Services
NERL	NATS (En Route) plc
NMCC	North Milk Community Council
NVG	Night Vision Goggle
NPF4	National Planning Framework 4
OFCOM	Office of Communications
OnWARD 2030	Onshore Wind Aviation Radar Delivery 2030 Group
PRMS	Primary Radar Mitigation Scheme
ScotWays	Scottish Rights of Way and Access Society
TAUWI	Telecommunications Association of the UK Water Industry
TV	Television
UHF	Ultra-High Frequency
VFR	Visual Flight Rules

Section 14: Other Considerations

14.1 Introduction

14.1.1 This section incorporates updates and new information for the proposed Scoop Hill Community Wind Farm following design changes, as detailed in Section 2: Detailed Project Description of this Additional Information (AI), and further consultation with consultees. This section provides updates on the following:

- Civil and Military Aviation
- Eskdalemuir Seismological Recording Station
- Telecommunications
- Shadow Flicker
- Public Rights of Way and Core Paths.

14.1.2 This section should also be read in conjunction with Section 14 of the original Environmental Impact Assessment Report (EIAR) submitted in November 2020.

14.2 Guidance and Policy

14.2.1 Since the original EIAR was submitted in November 2020, there have been a number of policy changes that are relevant to this section of the AI.

14.2.2 The Scottish Government National Planning Framework 4 (NPF4) was adopted in February 2023. Policy 11 states that all development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported including wind farms.

14.2.3 Additionally, NPF4 guidance states that project design and mitigation will demonstrate how any potential impacts of the proposed development on aviation and defence interests, including seismological recording will be addressed. The project design and mitigation will also demonstrate how the impacts on telecommunications, public access on walking and cycling routes and shadow flicker are addressed.

14.2.4 The Onshore Wind Policy Statement, published in December 2022, sets out the Scottish Governments aim to have a minimum installed capacity of 20GW of onshore wind by 2030. The Onshore Wind Policy Statement recognises that wind turbines have the potential to impact aviation operations, including the impact on aviation radar.

14.2.5 Bespoke solutions which alleviated objections have been deployed successfully over the last decade but it is important to develop solutions that alleviate these impacts in an effective, efficient, timely and cost effective manner. Therefore, the Onshore Wind Aviation Radar Delivery 2030 Group (OnWARD 2030) has been formed to build upon the co-existence between the onshore wind and aviation sectors through policy delivery and the implementation of technical solutions.

14.2.6 It is recognised that aviation lighting is becoming a more prominent issue as tip heights for onshore wind turbines continue to increase and work is underway on technical and airspace-related solutions to these issues. The Scottish Government has set up the Aviation Lighting Working Group (AvLi) to develop practical guidance on the assessment of the aviation lighting aspects of wind farm proposals.

14.2.7 The Onshore Wind Policy Statement also provides an update in relation to ongoing work with the MoD on the Eskdalemuir Seismic Array. As the current 'noise budget' has been reached, the MoD's policy for budget allocation is due to be reviewed and the Scottish Government remains engaged with the MoD regarding this. Unlocking further capacity will require decisive and meaningful action from the Scottish Government and the MoD to ensure the Eskdalemuir Seismic Array is not compromised while maximising the potential for renewable energy development.

14.3 Aviation

Introduction

14.3.1 This section provides an update in relation to aviation facilities in the area following consultation with the Ministry of Defence (MoD), National Air Traffic Services (NATS) and the Civil Aviation Authority (CAA).

Consultation

14.3.2 Consultation as part of the Section 36 application process has been conducted with the Civil Aviation Authority (CAA), Defence Infrastructure Organisation (DIO)/Ministry of Defence (MoD), National Air Traffic Services (NATS) and local airports. A summary of the comments received to date are set out below in Table 14.1.

Table 14.1 – Aviation Consultee Responses

Consultees	EIAR Response	CWL Response
DIO/MoD 18/12/2020	**No objection** in relation to low flying and aviation safety lighting, subject to conditions being applied: In the interests of air safety, should consent be issued for this development the MOD require that conditions be applied requiring the submission for approval of an aviation safety lighting scheme, and requiring the submission of data to allow the wind farm to be appropriately charted. Conditions are attached at Annex A. **Objection** in relation to the development site being located within the statutory safeguarded area for the Eskdalemuir Seismological Recording Station.	Agreed. See Section 14.5 for more information
NATS 20/11/2020	**Object** to the proposal. Predicted impact on Lowther Radar - terrain screening available will not adequately attenuate the signal, meaning that a technical impact is anticipated. No impact is anticipated on NATS' navigation aids.	CWL remain in discussions with NATS to reach a mitigation agreement for the proposed development. Mitigation measures are available and CWL have reached agreements with NATS in relation to our other wind farms.

	No impact is anticipated on NATS' radio communications infrastructure.	
Glasgow Airport 04/12/2020	Out of consultation zone.	N/A
Glasgow Prestwick Airport 18/12/2020	**No objection** The proposed turbines are fully terrain shielded from our primary radars, and extremely unlikely to have any impact on our published Instrument Flight Procedures (IFP's).	No mitigation measures required.
Edinburgh Airport 23/11/2020	Out of consultation zone.	N/A

Assessment of Effects

14.3.3 Wind turbines may affect aviation in the following ways:

- Turbines located in areas close to airfields, or where certain types of low flying training are carried out, may pose a physical vertical hazard and obstruction to aircraft and air traffic movements.
- Turbines located within line of sight and operational range of air traffic control or air defence radar equipment, can present a similar appearance to aircraft on the radar screen. Also, there is potential for a reduction of a radar's ability to detect and track aircraft in the area above and behind a wind farm; and
- Aeronautical radio navigation aids may be affected by wind turbines due to reflection or scattering of the signal by the blades and towers.

Ministry of Defence

14.3.4 In December 2020, the MoD objected to the proposed Scoop Hill Community Wind Farm as it is located within the statutory safeguarding area for the Eskdalemuir Seismological Recording Station. More information on this is set out in Section 14.5.

14.3.5 The MoD also highlighted that the proposed development is within a low flying area, however they have not raised an objection in relation to this. The proposed wind farm is located within the Tactical Training Area 20T (TTA 20T) in which military fixed wing aircraft can engage in operational low flying training down to 30.5m above terrain features. However, TTAs cover large areas of Scotland and wind farms are operational within them. Furthermore, the Wind Energy and Aviation Interests Interim Guidelines (2002) produced by the Defence & Civil Aviation Interests Working Group confirms that there is no blanket ban on developing wind farms within TTAs. Due to the low flying training the MoD requests to be consulted regarding aviation lighting for the proposed development.

14.3.6 CWL and the Applicant have consulted with the MoD regarding aviation lighting at the proposed development and further information on this can be found below in Section 14.4.

14.3.7 Scoping consultation responses can be viewed in Section 14 of the original EIAR.

NATS En Route plc (NERL)

14.3.8 In November 2020, NATS confirmed its objection to the proposed Scoop Hill Community Wind Farm due to the predicted impact on Lowther Radar. No impact is anticipated on NATS' Navigation Aids or on NATS' radio communication infrastructure.

14.3.9 It is understood that NATS have recently installed a new advanced 3D Primary Surveillance Radar system at Lowther Hill, that is able to mitigate against the impact of wind turbines. Therefore, mitigation measures are available. CWL have reached agreements with NATS in the past regarding our other wind farms, and remain in discussions with NATS regarding the Scoop Hill Community Wind Farm proposal, and are confident that this objection will ultimately be overcome.

Mitigation

14.3.10 CWL remain in discussions with NATS in relation to concerns on the impacts of the proposed development on Lowther Hill radar. However, with the installation of the new advanced 3D primary Surveillance Radar System, CWL is confident in reaching a mitigation solution with NATS.

14.4 Reduced Aviation Lighting Scheme

Introduction

14.4.1 This section provides an update in relation to the aviation lighting that will be installed on the wind turbines in the interests of aviation safety.

14.4.2 Wind turbines may affect aviation in the following ways and require to be fitted with aviation lighting:

- The increasing height of wind turbines means that in the interests of safety, aviation lighting is required to be fitted to all turbines over 150m in height to ensure that they are visible to all aircraft at times of low light levels and darkness.

- As all the turbines in the proposed development exceed 150m in height, the Air Navigation Order (ANO) Article 222 requirement is for medium intensity red lights to be fitted to the turbines.

14.4.3 Within the original EIAR, the worst-case scenario was depicted for each turbine. All of the 75 original turbines were modelled to be fitted with a 2000 candela red light on the nacelle, and a further 3 low intensity (32cd) lights fitted half way up each turbine tower. This resulted in a total of 300 of visible aviation lights that would have been attached under the worst-case scenario that was depicted in the original EIAR.

14.4.4 Concerns were raised by consultees such as Community Councils, Dumfries and Galloway Council (DGC), NatureScot and the MoD at the number of aviation lights and subsequent visual impact. A summary of the concerns is included in Table 14.2 below.

14.4.5 Following the concerns that were raised by consultees in relation to the visual impact of the aviation lighting on the proposed development, CWL commissioned an independent aviation consultant, Aviatica, to prepare a reduced lighting scheme that could significantly reduce the number of aviation lights required if approved.

Consultation

14.4.6 Consultation as part of the Section 36 application process has been conducted with statutory and non-statutory consultees and a summary of the comments received in relation to aviation lighting are set out below in Table 14.2

Table 14.2 – Aviation Lighting Consultee Responses

Consultees	EIAR Response	CWL Response
Nature Scot 17/12/2020 21/07/2021	Nature Scot requested that CWL provide a night time photomontage to assess the lighting impacts on the landscape. Notes that the aviation lighting would result in significant impacts on the perception of wildness attributes at dusk and throughout the night within the wild land areas. Additionally, there would be significant and adverse visual impacts from the assessed viewpoints due to the number of turbines requiring aviation lighting. Although NatureScot welcomes the applicants intention to reach a mitigation solution to reduce the number of aviation lights.	CWL provided the additional information on the 7th May 2021. CWL has significantly reduced the impact of aviation lighting through the redesign of Scoop Hill and through the agreement of a reduced lighting scheme with the CAA. Updated night time visualisations are available in Volume 3 of the AI. The reduced lighting scheme is illustrated in AI Figure 4.4.
North Milk Community Council (NMCC) 25/01/2021	**Objects** to the proposal Raises concerns that the aviation lighting will have a visual impact on the character of the existing rural landscape, giving the area an industrial appearance and that the wind farm will be visible from a great distance. Concerns that areas which are absent of light pollution will be lost, putting any future dark skies designation at risk.	CWL has reduced the number of turbines through the layout redesign and has worked to agree a reduced lighting scheme that significantly reduces the number of required aviation lights ensuring a minimal impact and that there will not be an industrial appearance to the landscape. Updated night time visualisations are available in Volume 3 of the AI. The reduced lighting scheme is illustrated in AI Figure 4.4.
Dumfries & Galloway Council (DGC) 03/09/2021	The aviation lighting would impact the dark skies conservation area at Moffat and reduce the much valued part of the landscape. Concerns raised at the number of aviation lights that would be visible from certain viewpoints and cultural heritage receptors. AT VP9, Moffat high Street, If the existing forestry is removed during the wind farms lifecycle, this will increase the visual impact as the number of visible aviation lights will increase.	CWL has reduced the number of turbines, resulting in a reduction in the number of aviation lighting. Additionally, CWL have worked to agree a reduced aviation lighting scheme that will significantly reduce the visual impacts. Updated night time visualisations are available in Volume 3 of the AI. The reduced lighting scheme is illustrated in AI Figure 4.4.
MoD 18/12/2020	**No Objection** Proposed condition: Prior to commencing construction of any wind turbine generators, or deploying any construction equipment or temporal structure(s) 50 metres or more in height (above ground level) the undertaker must first submit an aviation lighting scheme for the approval of the Scottish Government in conjunction with the Ministry of Defence defining how the development will be lit throughout its life to maintain military aviation safety and determined necessary for aviation safety by the Ministry of Defence.	CWL has worked with an aviation consultant to produce a reduced lighting scheme that has was approved by the MoD on 10th January 2023, therefore the condition proposed by the MoD in their original consultation response is no longer required. A revised aviation lighting condition is proposed in section 14.4.15.

Mitigation

14.4.7 CWL commissioned independent aviation consultant, Aviatica, to review the aviation activities around the proposed development and to produce a reduced lighting scheme that would simultaneously reduce the number of aviation lights required on the proposed development while ensuring safety standards were maintained for any aviation activities in the area.

14.4.8 ICAO Annex 14 provides for objects 150m or more above ground level not to be regarded as obstacles – and therefore not be lit – if a special aeronautical study indicates that they do not constitute a hazard to aeroplanes. In addition, Article 222 (7) of the ANO allows the CAA to grant permissions for lighting other than as stipulated in ANO article 222.

14.4.9 A review of the potential users of the night-time low level airspace in the vicinity of the Scoop Hill site shows that the low level civil Visual Flight Rules (VFR) traffic in the area is likely to be rare and the majority of users are Night Vision Goggle (NVG) equipped.

14.4.10 The review found that visible spectrum LED lights are of limited or no visibility to aircrew wearing NVGs. Since night-time airspace users in the area are predominantly NVG-equipped, visible lighting provides little or no additional safety benefit over infra-red lighting.

14.4.11 A reduced lighting scheme was subsequently produced by the consultant for CWL. CWL and their consultant have subsequently, reached an agreement on a reduced lighting scheme with the CAA. Additionally, the MoD has also approved the reduced lighting scheme for the proposed development which is located within Tactical Training Area 20T (TTA 20T).

14.4.12 The reduced lighting scheme for the proposed development aims to identify the corners and perimeter of the wind farm by using 2000 candela visible red lights and infra-red lighting on 17 of the 60 proposed turbines. A further 17 turbines marking the perimeter of the wind farm will be fitted with infra-red lighting only. The reduced lighting scheme is illustrated in AI Figure 4.4.

14.4.13 As a result, the number of visible, medium intensity, nacelle lights has reduced from 75 in the Proposed Development to 17 in the revised Proposed Development, together with the removal of all 225 low intensity tower lights.

14.4.14 The report, written by Aviatica, was submitted to the CAA and MoD for approval prior to the submission of this AI. CWL received approval for the reduced lighting scheme from the CAA on 21st December 2022 and the MoD on 10th January 2023.

14.4.15 The reduced lighting scheme will bring a level of mitigation that has been successfully achieved at other wind farm developments in Scotland and therefore CWL suggest the implementation of the following condition:

(1) Aviation lighting shall be installed in accordance with the aviation lighting scheme described in the document "Scoop Hill Community Wind Farm, Dumfries and Galloway: Proposal for Reduced Lighting Scheme" (Report No. 20/869A/CWP/7) dated November 2022 as approved by the CAA on 21 December 2022 (the Aviation Lighting Scheme).

(2) The Aviation Lighting Scheme shall be fully implemented throughout the lifetime of the development, unless any change to the Aviation Lighting Scheme is approved in writing by the Scottish Ministers.

14.5 Eskdalemuir Seismological Recording Station

14.5.1 The Eskdalemuir Seismological Recording Station is located near the village of Eskdalemuir, which is east of the proposed Scoop Hill Community Wind Farm. The station is used to monitor compliance with the Comprehensive Nuclear Test Ban Treaty (CTBT), to identify illicit nuclear explosions and record earthquakes. The array is made up of two perpendicular lines of sensors approximately 9 km in length, and two control buildings which control these sensors. The station is located approximately 10 km to the east of the nearest Scoop Hill wind turbine.

14.5.2 The MoD have objected to the proposal on the grounds that the development would have a significant and detrimental impact on the capability of the Eskdalemuir Seismic Array as the noise budget has already been reached.

14.5.3 CWL is currently working closely with the MoD and informed seismologists to better understand the potential impact of the proposed development to the Eskdalemuir Seismological Recording Station. Dialogue with experienced seismologists suggests that an acceptable mitigation solution, which reassures all interested parties that the proposed development will not adversely impact the operation of the Seismological Recording Station, will be established. The Applicant will continue to consult with the MoD to mitigate the potential impact of Scoop Hill Community Wind Farm while not compromising the detection capabilities of the seismic array. In the context of that consultation process, the Applicant considers that a suspensive condition is an appropriate way to progress the application.

14.5.4 Our suggested wording for a planning condition is presented below for consideration:

(1) No later than [12] months from the date of issue of this consent the Developer shall submit for the approval in writing of the Planning Authority in consultation with the Ministry of Defence a scheme for the further investigation of the effects of the Development on the detection capabilities of the Eskdalemuir Seismological Array (the Scheme). Prior to seeking confirmation from the Planning Authority in terms of part (2) of this condition, the Developer shall submit a report of the results of the implementation of the approved Scheme to the Planning Authorities and the Ministry of Defence.

(2) No part of any turbine shall be erected unless the Planning Authority in consultation with the Ministry of Defence have confirmed in writing that the Planning Authority is satisfied that the predicted seismic ground vibration from the Development would not result in an exceedance of 0.336 nanometres of seismic ground displacement when measured at the Eskdalemuir Seismological Array (or such alternative maximum threshold of seismic ground vibration as may be established at the time of confirmation) such that the Development (individually or cumulatively) would have an unacceptable adverse effect on the detection capabilities of the Eskdalemuir Seismological Array.

Reason: To ensure that seismic ground vibrations generated by the wind turbines in the Development do not unacceptably affect the detection capabilities of the Eskdalemuir Seismological Array.

14.6 Telecommunications

Introduction

14.6.1 This section provides an update in relation to fixed radio links and scanning telemetry systems that are used by communication companies, utility companies and the emergency services.

Consultation

14.6.2 Consultation as part of the Section 36 application process has been conducted with the Joint Radio Company (JRC), British Telecom (BT) and Atkins Limited. Table 14.3 provides a summary of the responses received from these organisations following the application of the proposed Scoop Hill Community Wind Farm. As no objections or concerns were raised or identified, no mitigation is required.

14.6.3 For details on responses received during the scoping process, please refer to Section 14 of the original EIAR.

Table 14.3 – Telecommunications Consultee Responses

Consultees	EIAR Response
JRC 17/11/2020	The proposal was cleared with respect to radio link infrastructure operated by Scottish Power and Scotia Gas Networks. JRC does not foresee any potential problems based on known interference scenarios and the data provided during the original EIAR. If any details of the wind farm, particularly the disposition or scale of any turbine(s), changed, it would be necessary to re-evaluate the proposal.
BT 24/11/2020	BT confirmed that there will be no interference to BT's current and presently planned radio network.
Atkins Limited 30/11/2020	Atkins confirmed that they had no objection in relation to UHF Radio Scanning Telemetry communications. However, this not in relation to any Microwave links operated by Scottish Water.

14.6.4 The Consultees will be reconsulted following the submission of this AI due to the revised layout proposal, however CWL expects all the responses to remain the same and that no objections will be raised. Therefore, no mitigation will be required.

14.7 Shadow Flicker

Introduction

14.7.1 The term 'shadow flicker' refers to the flickering effect caused when rotating wind turbine blades periodically cast a shadow over neighbouring properties as they turn, through constrained openings such as windows. The magnitude of the shadow flicker effect varies both spatially and temporally and depends on a number of conditions coinciding at any particular point in time, including, the position and height of the sun, wind speed and direction, cloud cover, landscape topology, and proximity of the turbine to a sensitive receptor.

14.7.2 Where shadows are cast over the ground, rather than on a building, this is known as 'shadow throw'. There are no guidelines to quantify these effects and there is no requirement to assess shadow throw. Therefore, shadow throw has not been considered any further.

14.7.3 The potential for shadow flicker events has been calculated and assessed in relation to the proposed Scoop Hill Community Wind Farm and is detailed below. The shadow flicker analysis has been rerun in the AI due to the revised layout and reduction in number of turbines from 75 to 60.

Guidance

14.7.4 Within the UK there is no standard assessment or set limits for exposure to shadow flicker. However, the Scottish Government Online Advice Sheet *'Onshore Wind Turbines: Planning Advice'* (Scottish Government, 2014) provides guidance to planners and developers in relation to this.

14.7.5 The guidance states that developers should provide calculations to quantify the effect. It confirms that within 130 degrees either side of north, is considered acceptable for the assessment. It also states that where a separation distance of 10 rotor diameters or more between the turbines and neighbouring properties is provided, shadow flicker should not be a problem.

14.7.6 In the absence of exposure limit guidelines in Scotland, it is useful to benchmark against international good practice. For example, Northern Ireland's Department of the Environment's Best Practice Guidance (2009) provides an indication as to the acceptable limits for shadow flicker duration, stating that:

'It is recommended that shadow flicker at neighbouring offices and dwellings within 500m [of the turbines] should not exceed 30 hours per year or 30 minutes per day.'

14.7.7 CWL consider that this is best practice and the most relevant criteria to follow for the shadow flicker assessment. A maximum shadow flicker exposure of 30 hours per year has been adopted in this shadow flicker assessment and has been applied when reviewing the calculation results.

Potential Impacts

14.7.8 Shadow flicker occurs only within buildings where:

- The shadow appears through a narrow window opening;
- They are located within 130 degrees either side of north relative to a turbine; and
- They are within 10 rotor diameters of the wind farm.

14.7.9 A property must fall within all three criteria if shadow flicker is likely to occur and have an effect, and only when climatic conditions allow.

14.7.10 It is possible to calculate the number of hours per year that shadow flicker may occur at a particular property, by analysing the relative position of a turbine to a dwelling, the geometry of the wind turbine and the latitude of the wind farm site. The operating frequency of a wind turbine will be relevant in determining whether or not shadow flicker can cause health effects in humans.

14.7.11 The Epilepsy Society advises that photosensitive epilepsy affects around 3% of people with epilepsy which is triggered by certain patterns. Studies show that for shadow flicker to be a potential problem, a number of factors have to occur at the same time:

- Turbine blades need to rotate more than 3 times per second, or 3 hertz (Hz);
- The sun would need to be bright enough, and in just the right position and angle from the horizon in relation to the turbine, to cast shadows of enough intensity and length. The weather and atmospheric conditions in the UK for most of the year greatly reduce this probability; and
- The individual with photosensitive epilepsy would need to be looking towards the turbine, with the sun behind.

14.7.12 The frequency at which photosensitive epilepsy may be triggered varies from person to person but generally it is between 3 and 30 Hz. Photosensitive epilepsy is not common under a frequency of 3Hz. Most commercial wind turbines in the UK rotate much more slowly than this, at between 0.3 and 1.0 Hz *(Epilepsy Society, 2023)*.

14.7.13 Therefore, health effects arising from shadow flicker will not have the potential to occur other than the unlikely scenario where the operating frequency of a particular turbine is more than 3 Hz and all the other pre-conditions which cause shadow flicker effects are present.

Methodology

14.7.14 Shadow flicker analysis has been conducted using ReSoft WindFarm modelling software. By considering the position of the sun throughout the year, and the position of the residential properties relative to the wind turbine locations, calculations of the occasions when, and for how long, shadows of the turbine blades will cast over neighbouring properties can be calculated. The landscape topology and curvature of the Earth is also included in the calculations.

14.7.15 All residential properties located within 130 degrees either side of north relative to a turbine, and within 10 rotor diameters of the proposed turbines were considered and surveyed as part of the investigation. A 'worst case' scenario was calculated using the following assumptions:

- The dimensions of the windows are 2 m by 2 m, and centred 1.5m above ground level. This is larger than the average size of a house window and will therefore encounter shadow flicker for an extended period of time;
- Each property is assumed to have four windows orientated north, east, south, and west respectively;
- A bare earth is assumed, therefore screening effects from objects such as trees, buildings or fences have been disregarded;
- The sun always shines in a clear sky i.e. no account of average cloud levels or fog;
- The turbine rotors are always aligned perpendicular to the incident direction of sunlight, providing the maximum shadow area; and
- The rotor is always turning, i.e. no account has been taken of calms or shut-down periods due to gale force winds or scheduled maintenance.

14.7.16 Given this 'worst case' scenario, it is possible to calculate a more realistic assessment of shadow flicker effects by accounting for quantifiable environmental factors such as cloud cover. Average cloud cover varies throughout the year, therefore an appropriate cloud cover factor has been applied on a monthly basis.

14.7.17 Furthermore, in the UK, sunshine typically occurs for around 30% of daylight hours per annum, therefore the worst-case model is still likely to significantly overestimate the duration of effects. Data captured from the Met Office website and the TimeandDate.com website, enables a monthly cloud cover factor to be calculated based on the ratio of 'hours of sunshine' to 'daylight hours'.

14.7.18 The monthly daylight hours are based on sunrise and sunset times for Eskdalemuir in 2018. These values can be considered constant for a given latitude. The hours of sunshine are more subjective and may fluctuate year-on-year, therefore an average estimate has been calculated using data from the nearest weather station (Eskdalemuir Climate Station) between the years of 1991 and 2020. Table 14.4 shows the monthly cloud cover factor calculations.

Table 14.4 – Cloud Cover Factor Calculations

Month	Daylight Hours	Hours of Sunshine	Cloud Cover Factor (%)
January	243	38	15.64
February	271	61	22.51
March	368	87	23.64
April	425	133	31.29
May	402	169	42.04
June	520	138	26.54
July	520	138	26.54
August	463	128	27.65
September	382	101	26.44
October	324	73	22.53
November	251	49	19.52
December	224	37	16.52

Baseline Environment

14.7.19 AI Figure 14.1 shows the maximum theoretical area susceptible to shadow flicker effects, which is based on 10 rotor diameters from each of the proposed turbines and within 130 degrees about the North.

14.7.20 Maximum tip heights of 250m for 23 turbines, 225m for 2 turbines, 200m for 29 turbines and 180m for the remaining 6 turbines were used to produce the shadow flicker analysis.

14.7.21 There are 6 residential properties which have been identified within this area, and therefore potentially at risk of shadow flicker effects. This is a reduction of 11 properties from the original EIAR due to changes in a number of turbines tip heights, habitation of properties, and the reduction in the overall number of turbines.

Assessment of Effects

14.7.22 There are 6 properties which lie within the maximum theoretically susceptible area. Properties 4, 12, 13, 14, 15, 16 and 17 that previously experienced shadow flicker in the original EIAR, will no longer be impacted by any potential shadow flicker as they are now outside of the 10x rotor diameter area.

14.7.23 The total maximum hours of shadow flicker effects potentially covering the 6 properties has been calculated and is illustrated on AI Figure 14.1.

14.7.24 A likely value for the total shadow flicker time on each house can be calculated by multiplying the maximum monthly shadow flicker times by the corresponding cloud cover factor, then summing the results to provide an annual estimate. Table 14.5 indicates a summary of the maximum and likely annual shadow flicker times on each house.

14.7.25 The shadow flicker time on each house under the original layout can be viewed at Table 14.4 in Section 14 of the original EIAR.

14.7.26 Property 2, Old Garwaldshiels, that was present in the shadow flicker assessment of the original EIAR is derelict and not in residential use and therefore will not be assessed further.

14.7.27 Property 5, Finniegill, that was included in the shadow flicker assessment of the original EIAR is financially involved in the proposed development and if consented the property will not be inhabited for the operational period; it is therefore not assessed further.

14.7.28 Property 6, Wood Cottage, is financially involved in the proposed development. It is infrequently inhabited and if consented the property will not be inhabited for the operational period; it is therefore not assessed further.

14.7.29 Property 7, Braefield, that was present in the shadow flicker assessment of the original EIAR is uninhabitable. It is under control of the applicant and is not in residential use and therefore will not be assessed further.

Table 14.5 – Summary of Shadow Flicker Times for the Revised Layout

House No.	Easting	Northing	Total Annual Shadow Flicker Time (Hours: Minutes: Seconds)	
			Maximum	Likely
1	313778	603553	11:27:40	2:01:53
3	320562	596011	18:52:13	5:10:52
8*	313986	598278	60:45:00	16:53:11
9*	314039	598066	34:05:33	09:42:36
10*	313976	597660	60:21:42	17:31:21
11*	313876	597203	27:53:10	8:32:17

* Property is financially involved with Scoop Hill Community Wind Farm

14.7.30 It is important to note that the actual instances of shadow flicker will likely be less than that predicted by the model. The model assumes a worst-case scenario in terms of wind speed and direction, window dimensions and angles and also discounts screening effects from buildings and vegetation. As such, the adjusted results for cloud cover are still considered to be conservative.

14.1.25 The results show that all of the assessed properties are likely to experience less than 30 hours of shadow flicker each year which is in accordance with the guidance adopted by the Northern Ireland's Department of the Environment's Best Practice Guidance (2009).

Mitigation

14.7.31 Based on the assessment of effects, the impact of shadow flicker is considered to be insignificant for all of the assessed properties, therefore no further mitigation will be required.

14.7.32 The summary of shadow flicker times for the 6 properties surrounding the site can be found in Table 14.5.

Statement of Residual Significance

14.7.33 Shadow flicker will have limited impact on residential properties within the vicinity of the proposed Scoop Hill Community Wind Farm, and the effect is therefore deemed insignificant.

14.8 Public Rights of Way and Core Paths

Introduction

14.8.1 This section provides an update in relation to the Public Rights of Way and Core Paths in the immediate vicinity of the proposed Scoop Hill Community Wind Farm.

14.8.2 Consultation as part of the Section 36 application process has been conducted with a number of consultees. The consultees with comments regarding Public Rights of Way and Core Paths were DGC, ScotWays and NMCC. Table 14.6 provides a summary of the responses received from these consultees following the submission of the 2020 EIAR. Previous responses from the Scoping process can be viewed in Section 14 in the original EIAR.

Table 14.6 – Public Rights of Way and Core Path Consultee Responses

Consultee	EIAR Response	CWL Response
Dumfries & Galloway Council 19th November 2020	The Council response did not raise any objections in relation to Public Rights of Way or Core Paths	N/A
ScotWays 20th January 2020	**Objects** to this application for the following reasons: • The application is for a large number of turbines which will have a massive impact on the landscape. • With proposed turbine locations in close proximity to recreational routes and the requirement for a 100m micro-siting allowance. • Some of the paths identified on the plans are shown incorrectly.	The revised layout has significantly reduced the number of proposed turbines in the scheme (mitigation by design) and will have a reduced visual appearance. Detailed design changes can be viewed in Section 2 of the AI. Micro-siting will only be implemented if decided as essential by the ECoW due to other environmental or ecological considerations. The paths shown on AI Figure 14.2a and 14.2b have been updated following comments from ScotWays. In relation to the comment regarding proximity of turbines to recreational routes, it should be noted that Section 1 of the Land Reform (Scotland) Act 2003 provides everyone in Scotland with a right to roam for recreational or educational purposes over all land throughout Scotland with only a few exclusions, like the curtilage of buildings and farmyards, quarries, railway property and airfields subject to them behaving responsibly. It will therefore be open to the public to roam close to or right next to the turbines if they so wished despite the location of the Core Paths.

North Milk Community Council (NMCC) 21st January 2020	NMCC registered an objection for several reasons, with the relevant point related to Pubic Rights of Way detailed below: • Concerns that sight lines on several long-distance routes/paths that lie on the northern end of the proposal will be negatively impacted.	The changes to the layout and reduction in the number of turbines have resulted in significant positive changes to popular viewpoints and sight lines on long-distance routes and paths. Further details on the changes to the development and LVIA can be viewed in Sections 2 and 6 in the AI.

Baseline Environment

14.8.3 It was confirmed by ScotWays that there are a number of Public Rights of Way that fall within the boundary of Scoop Hill Community Wind Farm.

14.8.4 All known Public Rights of Way and Core Paths within close proximity of the proposed development are illustrated on AI Figure 14.2.

Assessment of Effects

14.8.5 In their consultation response, ScotWays again noted that there is very little guidance regarding the siting of turbines in relation to established paths and rights of way. Scotways have referenced the Welsh Assembly Governments Technical Advice Note on Renewable Energy (TAN 8) which advises that all wind turbines are set back a minimum distance, equivalent to the height of the blade tip, from the edge of any public highway.

14.8.6 However, there are a considerable number of operational turbines across Scotland which do not comply with this, and indeed the whole of Whitelee Wind Farm is accessible to the general public, subject only to specific and temporary restrictions relating to forestry and turbine maintenance operations.

14.8.7 There are four turbines on site which fall within the minimum distance to the nearest path, these turbines are T22, T26, T55 and T68. The distance of each turbine to the nearest path can be found in Table 14.7 below, as well as the distance to the closest path and the name of the closest path.

14.8.8 Any potential visual effects on (the users of) the rights of way and core paths that have changed as a result of the revised layout have been thoroughly assessed in Section 6: Landscape and Visual Impact Assessment within this AI.

Mitigation

14.8.9 Through the careful design of the final layout, the majority of Scoop Hill wind turbines will be set back from public rights of way and core paths, by a minimum separation distance which is equivalent to the blade tip height. AI Figures 14.3a and 14.3b illustrate that the majority of wind turbines exceed the relative recommended separation distance as recommended by ScotWays, Dumfries and Galloway Council and the British Horse Society (BHS).

14.8.10 The turbines that do not comply with ScotWays guidance have been positioned as such due to other environmental factors such as Groundwater Dependent Terrestrial Ecosystems (GWDTE), peat and ecology survey data. For these reasons, the turbines identified in paragraph 14.8.7 cannot be moved away from the core paths but CWL have sited the turbines in the most appropriate locations possible.

Table 14.7 – Turbine Separation Distance from Nearest Core Paths and Public Rights of Way

Turbine	Distance to nearest path(m)	Path number/name	In accordance with ScotWays
T11	1201.82	DA6	Yes
T12	732.72	DA6	Yes
T13	545.72	DA6	Yes
T14	525.13	DA15	Yes
T15	973.64	DA6	Yes
T16	532.41	DA6	Yes
T17	243.30	BORELAND TO SOUTHERN UPLAND WAY	Yes
T18	469.76	BORELAND TO SOUTHERN UPLAND WAY	Yes
T19	274.16	BORELAND TO SOUTHERN UPLAND WAY	Yes
T20	466.29	BORELAND TO SOUTHERN UPLAND WAY	Yes
T21	303.07	BORELAND TO SOUTHERN UPLAND WAY	Yes
T22	160.37	BORELAND TO SOUTHERN UPLAND WAY	No
T23	467.39	Laverhay to Southern Upland Way/DA6	Yes
T24	357.29	DA14	Yes
T25	658.32	DA14	Yes
T26	220.98	DA14	No
T27	532.33	DA14	Yes
T28	498.87	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T29	222.08	DA14	Yes
T30	250.10	DA14	Yes
T31	731.32	DA14	Yes
T32	295.30	DA14	Yes

Turbine	Distance to nearest path(m)	Path number/name	In accordance with ScotWays
T33	903.47	DA14	Yes
T34	1300.22	Laverhay to Southern Upland Way/DA14	Yes
T36	1711.21	Laverhay to Southern Upland Way/DA14	Yes
T39	1959.01	Milne Wood and Langside	Yes
T40	1500.40	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T41	1926.23	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T42	2061.66	BLAZE HILL PATH	Yes
T43	2180.25	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T44	1047.72	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T45	1138.35	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T46	478.55	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T47	456.77	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T48	328.73	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T49	1097.00	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T50	1453.67	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T51	1517.05	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T52	677.25	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T53	573.05	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T55	145.96	BORELAND TO SOUTHERN UPLAND WAY/DA14	No
T57	761.33	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T58	260.77	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T59	1140.96	DA13	Yes
T60	837.58	DA13	Yes
T63	272.08	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T64	918.76	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T65	991.35	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T66	730.15	BORELAND TO SOUTHERN UPLAND WAY/DA14	Yes
T67	365.24	DA11	Yes
T68	217.25	DA11	No
T69	1005.48	DA11	Yes
T70	1074.88	BORELAND TO SOUTHERN UPLAND WAY	Yes
T71	456.58	BORELAND TO SOUTHERN UPLAND WAY	Yes
T72	571.59	BORELAND TO SOUTHERN UPLAND WAY	Yes
T73	605.52	BORELAND TO SOUTHERN UPLAND WAY	Yes
T74	565.22	BORELAND TO SOUTHERN UPLAND WAY	Yes
T75	435.49	BORELAND TO SOUTHERN UPLAND WAY	Yes
T76	280.58	Laverhay to Southern Upland Way/DA6	Yes
T77	293.03	Laverhay to Southern Upland Way/DA6	Yes

14.9 Conclusion

14.9.1 This section of the Additional Information for the revised Scoop Hill Community Wind Farm proposal should be read in conjunction with Section 14 of the original EIAR which was submitted in November 2020.

14.9.2 This section has addressed consultee concerns in relation to Aviation, Aviation night-time lighting, Eskdalemuir Seismological Recording Station, Telecommunications, Shadow Flicker and Public Rights of Ways and Core Paths, by demonstrating how these concerns will be mitigated against primarily through design changes, and the beneficial outcomes that the changes to the design of the proposed development have brought.

References

Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy', Northern Ireland Department of the Environment (2009). Available at:

https://www.infrastructureni.gov.uk/sites/default/files/publications/infrastructure/Best%20Practice%20Guidance%20to%20PPS%2018%20-%20Renewable%20Energy_0.pdf [Accessed 23rd February 2023] 2020]

Civil Aviation Authority (2016) CAA Policy and Guidelines on Wind Turbines, CAP 764 (Online). Available at: https://publicapps.caa.co.uk/docs/33/CAP764%20Issue6%20FINAL%20Feb.pdf [Accessed 22nd February 2023]

Civil Aviation Authority (2016) The Air Navigation Order 2016 (ANO) and Regulations, CAP 393 (Online). Available at: https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=7523 [Accessed 22nd February 2023]

Wind Energy, Devence & Civil Aviation Interests Working Group (2002) Wind Energy and Aviation Interests – Interim Guidelines (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48101/file17828.pdf [Accessed 5th June 2023]

Dumfries and Galloway Council *Core Paths List* (Online). Available at: https://info.dumgal.gov.uk/mapviewers/pathsmap.aspx [Accessed 22nd February 2023]

Met Office – Eskdalemuir Weather Station - *Averages Table* (Online). Available at: https://www.metoffice.gov.uk/public/weather/climate/gcvdxj13y [Accessed 22nd February 2023]

Scottish Government (2017) Onshore Wind Policy Statement (Online) Available at: https://beta.gov.scot/publications/onshore-wind-policy-statement-9781788515283/ [Accessed 22nd June 2020]

Scottish Government (2023) National Planning Framework 4 (Online). Available at: https://www.transformingplanning.scot/national-planning-framework/adopted-npf4/ [Accessed 22nd February 2023]

Scottish Government (2022) Onshore Wind Policy Statement (Online). Available at: https://www.gov.scot/publications/onshore-wind-policy-statement-2022/ [Accessed 22nd February 2023]

Timeanddate.com (website) – Eskdalemuir Sunrise & Sunset Times (Online). Available at: https://www.timeanddate.com/sun/@2649898 [Accessed: 22nd February 2023]

Scottish Government (2023) Onshore wind turbines: planning advice (online). Available at: https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/ [Accessed 23rd February 2023]

Epilepsy Society (2023) Photosensitive epilepsy. (Online) Available at: https://epilepsysociety.org.uk/about-epilepsy/epileptic-seizures/seizure-triggers/photosensitive-epilepsy [Accessed 23rd February 2023]

374 Scoop Hill

Legend

- Site Boundary
- Potentially Affected Properties
- Theoretical Shadow Flicker Extent
- Wind Turbine (180m to Tip)
- Wind Turbine (200m to Tip)
- Wind Turbine (225m to Tip)
- Wind Turbine (250m to Tip)

Total Maximum Hours of Shadow Flicker Per Year

Value

30 Hours

700 Hours

Notes: N/A
Revisions: N/A
Layout: 374-220912-9022-B

0 500 1,000 2,000 m

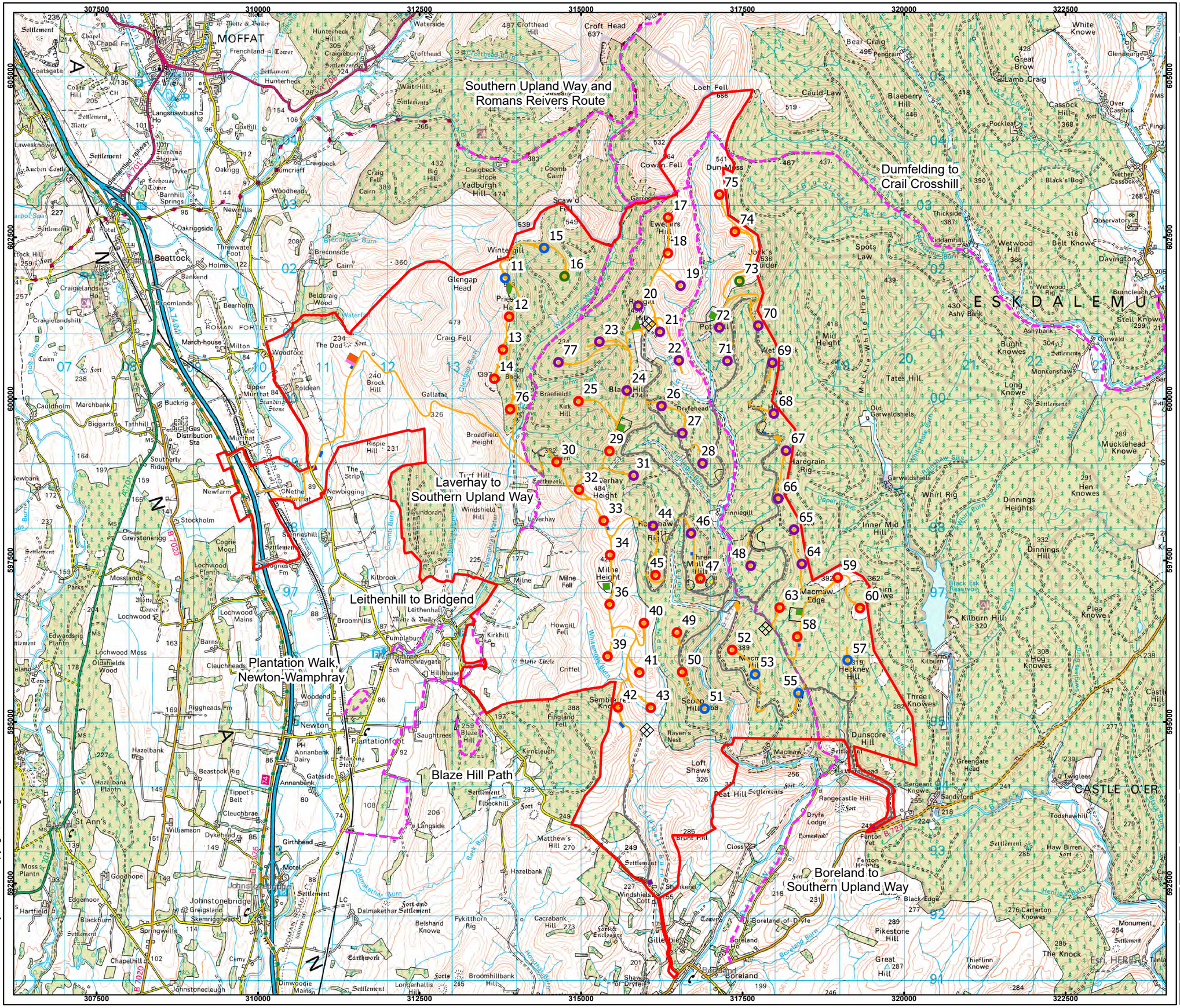
Scale: 1:50,000 @ A3

N

AI Figure 14.1 - Shadow Flicker Assessment

Date: 03/07/2023	Ref: 374-221123-7689	
Produced: BK	Reviewed: RE	Approved: GC

community windpower
Godscroft Lane
Frodsham - WA6 6XU
t: 01928 734544 f: 01928 734790
e: info@communitywindpower.co.uk w: www.communitywindpower.co.uk



374 Scoop Hill

Legend

- Site Boundary
- Wind Turbine (180m to Tip)
- Wind Turbine (200m to Tip)
- Wind Turbine (225m to Tip)
- Wind Turbine (250m to Tip)
- Permanent Met Mast
- Access Tracks
- Site Entrance
- Exisiting Access Tracks to be Upgraded
- Substation & Control Room
- Substation & Control Room Construction Compound
- Temporary Construction Compound
- Borrow Pit
- Existing Quarries or Borrow Pit
- Borrow Pit Area of Search
- Core Paths

Notes: N/A
Revisions: N/A
Layout: 374-220912-9022-B

0 625 1,250 2,500 m

Scale: 1:55,000 @ A3

N

AI Figure 14.2a: Core Paths

Date: 23/11/2022	Ref: 374-221123-7690	
Produced: BK	Reviewed: RE	Approved: GC

community windpower
Godscroft Lane
Frodsham - WA6 6XU
t: 01928 734544 f: 01928 734790
e: info@communitywindpower.co.uk w: www.communitywindpower.co.uk

374 Scoop Hill

Legend

- Site Boundary
- Wind Turbine (180m to Tip)
- Wind Turbine (200m to Tip)
- Wind Turbine (225m to Tip)
- Wind Turbine (250m to Tip)
- Permanent Met Mast
- Access Tracks
- Site Entrance
- Exisiting Access Tracks to be Upgraded
- Substation & Control Room
- Substation & Control Room Construction Compound
- Temporary Construction Compound
- Borrow Pit
- Existing Quarries or Borrow Pit
- Borrow Pit Area of Search
- Rights of Way
- Other Routes

Notes: N/A
Revisions: N/A
Layout: 374-220912-9022-B

0 625 1,250 2,500 m

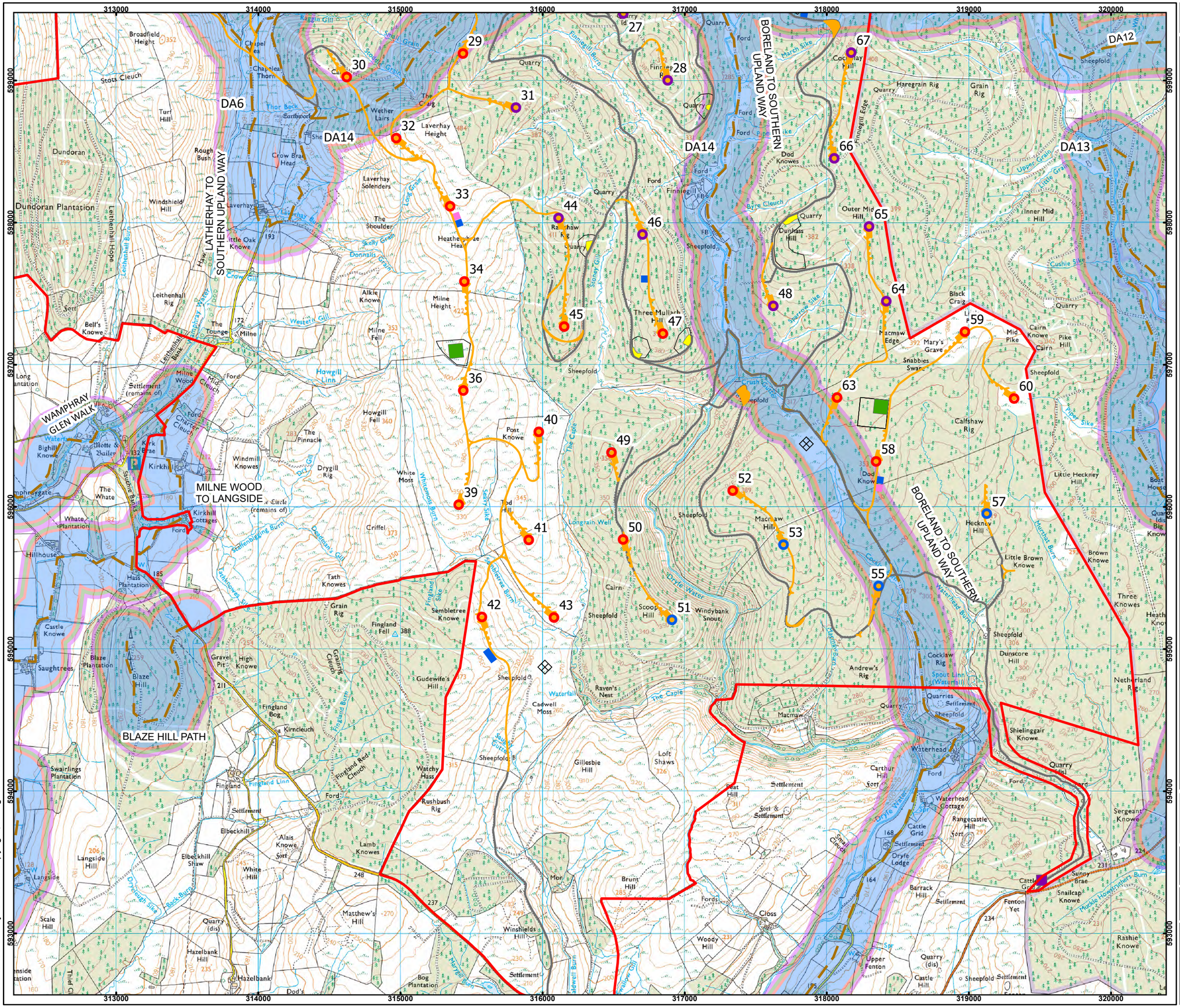
Scale: 1:55,000 @ A3

N

AI Figure 14.2b: Public Rights of Way & Other Routes

Date: 24/02/2023 Ref: 374-230224-7728
Produced: BK Reviewed: RE Approved: GC

community windpower
Godscroft Lane
Frodsham - WA6 6XU
t: 01928 734544 f: 01928 734790
e: info@communitywindpower.co.uk w: www.communitywindpower.co.uk



374 Scoop Hill

Legend

- Site Boundary
- Wind Turbine (180m to Tip)
- Wind Turbine (200m to Tip)
- Wind Turbine (225m to Tip)
- Wind Turbine (250m to Tip)
- Permanent Met Mast
- Access Tracks
- Site Entrance
- Exisiting Access Tracks to be Upgraded
- Substation & Control Room
- Substation & Control Room Construction Compound
- Temporary Construction Compound
- Borrow Pit
- Existing Quarries or Borrow Pit
- Borrow Pit Area of Search
- Core Paths & Public Rights of Way

Core Paths Buffer

- 180m
- 200m
- 225m
- 250m

Notes: N/A
Revisions: N/A
Layout: 374-220912-9022-B

0 250 500 1,000 m

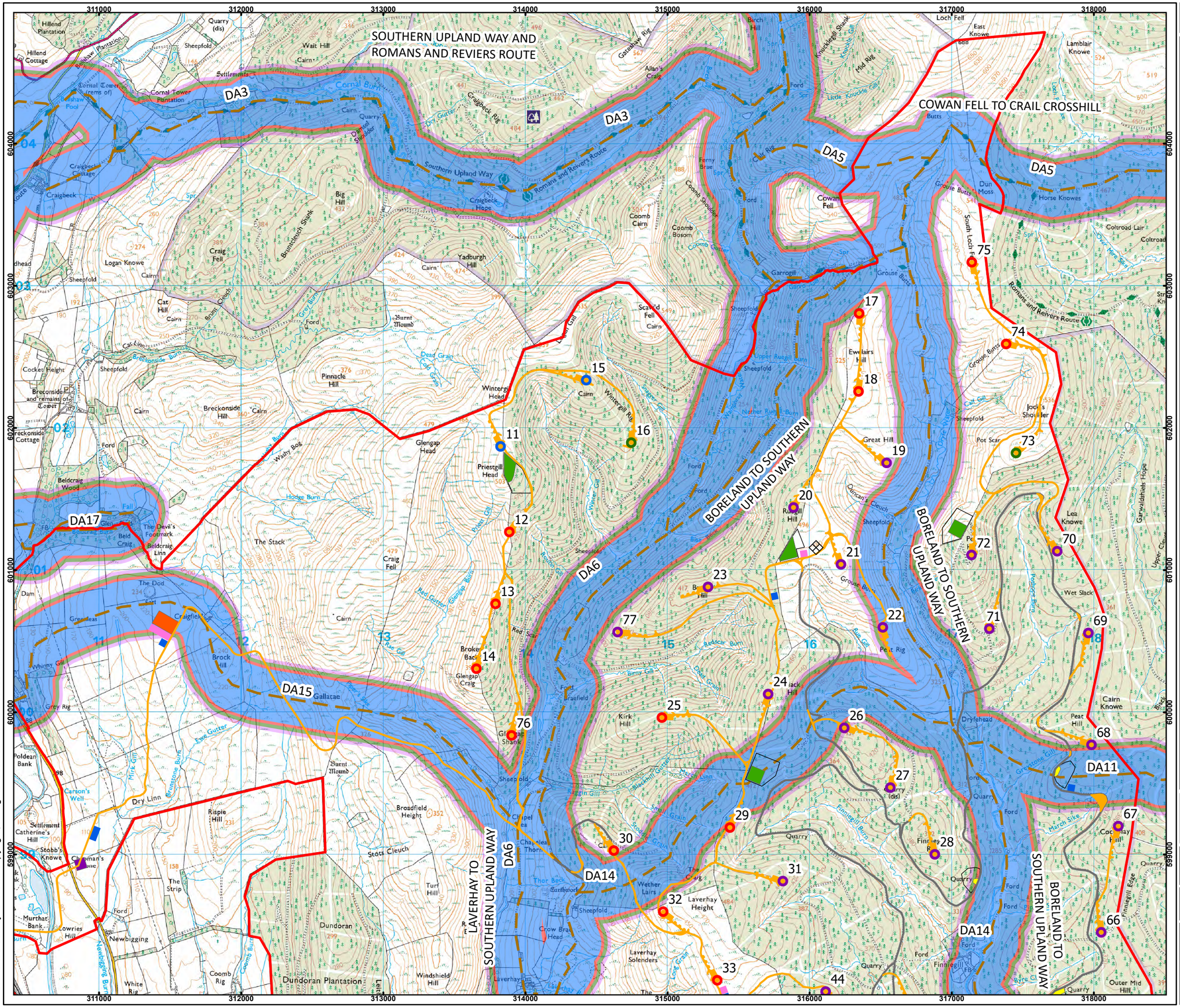
Scale: 1:25,000 @ A3

N

AI Figure 14.3a: Turbine Buffers From Core Paths & Public Rights of Way

Date: 23/11/2022	Ref: 374-221123-7691	
Produced: BK	Reviewed: RE	Approved: GC

community windpower
Godscroft Lane
Frodsham - WA6 6XU
t: 01928 734544 f: 01928 734790
e: info@communitywindpower.co.uk w: www.communitywindpower.co.uk



Ordnance Survey © Crown copyright, All rights reserved. 2022. Licence number 0100050146.

374 Scoop Hill

Legend

- Site Boundary
- Wind Turbine (180m to Tip)
- Wind Turbine (200m to Tip)
- Wind Turbine (225m to Tip)
- Wind Turbine (250m to Tip)
- Permanent Met Mast
- Access Tracks
- Site Entrance
- Exisiting Access Tracks to be Upgraded
- Substation & Control Room
- Substation & Control Room Construction Compound
- Temporary Construction Compound
- Borrow Pit
- Existing Quarries or Borrow Pit
- Borrow Pit Area of Search
- Core Paths & Public Rights of Way

Core Paths Buffer

- 180m
- 200m
- 225m
- 250m

Notes: N/A
Revisions: N/A
Layout: 374-220912-9022-B

0 250 500 1,000 m
Scale: 1:25,000 @ A3

N

AI Figure 14.3b: Turbine Buffers From Core Paths & Public Rights of Way

Date: 23/11/2022 Ref: 374-221123-7692
Produced: BK Reviewed: RE Approved: GC

community windpower
Godscroft Lane
Frodsham - WA6 6XU
t: 01928 734544 f: 01928 734790
e: info@communitywindpower.co.uk w: www.communitywindpower.co.uk

374 Scoop Hill

Legend

- Site Boundary
- 2000 candela visible and infra-red
- Infra-red only
- No lighting

Tip Height	Turbine Number
180m	11, 15, 51, 53, 55, 57
200m	12, 13, 14, 17, 18, 25, 29, 30, 32, 33, 34, 36, 39, 40, 41, 42, 43, 45, 47, 49, 50, 52, 58, 59, 60, 63, 74, 75, 76
225m	16, 73
250m	19, 20, 21, 22, 23, 24, 26, 27, 28, 31, 44, 46, 48, 64, 65, 66, 67, 68, 69, 70, 71, 72, 77

Notes: N/A
Revisions: N/A

0 0.5 1 2 km
Scale: 1:55,000 @ A3

N

AI Figure 14.4: Reduced Aviation Lighting Scheme

Date: 17/03/2023 Ref: 374-230316-7742
Produced: BK Reviewed: RE Approved: GC

community windpower
Godscroft Lane
Frodsham - WA6 6XU
t: 01928 734544 f: 01928 734790
e: info@communitywindpower.co.uk w: www.communitywindpower.co.uk