The Scottish Government

Report to the Scottish Ministers

SECTION 36 OF THE ELECTRICITY ACT 1989 AND SECTION 57 OF TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997

Report by David Liddell and Alison Kirkwood, reporters appointed by the Scottish Ministers

- Case reference: WIN-370-2
- Site Address: Arecleoch Wind Farm Extension, three kilometres south west of Barrhill, South Ayrshire, KA26
- Application by Scottish Power Renewables (UK) Limited
- Application for consent (section 36 of the Electricity Act 1989) and deemed planning permission (section 57 of the Town and Country Planning (Scotland) Act 1997)
- The development proposed: construction and operation of Arecleoch Wind Farm Extension
- Dates of inquiry/hearing sessions: 11 - 15 January 2021; 1 - 5 February 2021; 9 - 10 February 2021

Date of this report and recommendation: 3 August 2021

Planning and Environmental Appeals Division

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Planning and Environmental Appeals Division

Summary of Report of Inquiry into application under section 36 of the Electricity Act 1989 and deemed application for planning permission under section 57 of the Town and Country Planning (Scotland) Act 1997 (as amended)

The construction and operation of Arecleoch Wind Farm Extension on land approximately three kilometres south west of Barrhill in South Ayrshire

Case reference	WIN-370-2
Case type	Application for consent (S36 Electricity Act 1989) and deemed planning permission (S57 Town and Country Planning (Scotland) Act 1997)
Reporters	David Liddell and Alison Kirkwood
Applicant	Scottish Power Renewables (UK) Limited
Planning authorities	South Ayrshire Council Dumfries and Galloway Council
Other parties	New Luce Community Council Bardrochart & Knockdolian Estates Mr Christopher Andrews Ms Susan Crosthwaite Ms Harriet Ellis Ms Pat Spence Mr Struan Stevenson
Date of application	12 June 2019
Date case received by DPEA	07 May 2020
Method of consideration and date	Inquiry sessions: 13 – 15 January 2021; 1 – 3 February 2021; 9 – 10 February 2021 Hearing sessions: 12 January 2021; 4 - 5 February 2021 Written Submissions Accompanied and unaccompanied site inspections

Date of report	3 August 2021
Reporter's recommendation	Grant section 36 consent and deemed planning permission

Summary Report

The site:

The site is located approximately three kilometres south west of the village of Barrhill in South Ayrshire. It covers 1,440 hectares and sits to the north east of the existing Arecleoch Wind Farm. The site comprises a plateau moorland landscape, covered mainly by commercial forest.

The majority of the site is located within the South Ayrshire Council area. However, the access to the site from the A714 road is within the Dumfries and Galloway Council area.

The site is not covered by any national landscape designations, or any ecological or historic designations.

Background to the proposal:

Scottish Power Renewables (UK) Limited seeks consent under section 36 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 to construct and operate what would be Arecleoch wind farm extension.

South Ayrshire Council objected to this application resulting in it being the subject of this inquiry.

Description of the development

The proposal comprises 13 turbines with a maximum tip height of 200 metres; associated transformers; foundations and crane hardstandings; new and upgraded access tracks including water crossings where necessary; underground electric cabling; substation compounds; one permanent anemometer mast, up to four temporary power performance masts, close circuit television and communication masts; search areas for up to six borrow pits; and one temporary construction compound. The wind farm would have an installed capacity of around 72.8 MW, which would produce between 200 GWh and 230 GWh of electricity annually.

The applicant's case

There are benefits of the proposal in relation to low carbon energy generation and storage, construction and operational jobs, a package of community benefits, the provision of additional woodland and the efficient use of existing tracks and infrastructure. The proposal has an agreement to connect to the grid network in 2023 and can quickly start contributing towards renewable energy targets.

The proposal has been carefully designed with regard to a wide range of environmental and commercial constraints and opportunities. Any adverse impacts should be considered

alongside the benefits of the proposal and within the context of the climate change emergency, energy policy and the planning policy framework.

The applicant has complied with its duties in terms of Schedule 9 of the Electricity Act 1989 and, through the EIA, has had full regard to the matters mentioned in paragraph 3(1)(a) of the schedule and identified suitable mitigation.

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 brings forward key target dates, which provides an intensified need to decarbonise Scotland. There is support for onshore wind development in the Scottish Government's updated climate change plan and the UK Government's energy white paper, published in December 2020.

Whilst the proposal would have some significant landscape and visual effects, these would be acceptable and would not result in non-compliance with the South Ayrshire Local Development Plan. In terms of the effects of aviation lighting, the mitigation measures proposed would provide a workable and acceptable system now, with a requirement for the applicant to adopt a better system when it becomes available.

The proposal would not have significant adverse effects on the amenity of Barrhill village and the effects on the residential visual amenity of Kilrenzie and Wheeb Farms would not reach the level of it being in the public interest to refuse consent.

The importance of the economic benefits from the construction of the wind farm are enhanced as being part of the recovery from the Covid-19 pandemic. Concerns raised about impact on tourism are not backed by substantive evidence regarding the adverse effects of existing windfarms in the area.

Of the three witnesses giving evidence at the inquiry on private water supplies, only Mr Robb, on behalf of the applicant, has professional qualifications relating to hydrology and hydrogeology. The council's position that "any risk" to private water supplies is too great is not supported by national or local policy or by law. The EIA Report and Private Water Supply Risk Assessment comply with the requirements of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

In terms of noise effects, the proposal can be constructed and operated in accordance with the criteria contained in ETSU-R-97. The applicant's evidence on noise effects is supported by South Ayrshire Council's noise consultants. Concern regarding the health effects of infrasound exposure from wind farms is a matter for the Scottish Government to address through new policy guidance, rather than an issue to be resolved in any individual application.

South Ayrshire Council's case

South Ayrshire Council, the planning authority for the majority of the site, objects to the proposal. Its grounds of objection relate to landscape and visual impact, impact on residential amenity and risk to private water supplies. The proposal would be contrary to the adopted South Ayrshire Local Development Plan and its associated supplementary guidance on wind energy.

Within the context of schedule 9 of the Electricity Act 1989, the proposal does not address the desirability of conserving natural beauty or apply appropriate mitigation. The

development would not contribute to sustainable development because it is not the right development in the right place.

The proposal would have an unacceptable impact on the character of the Duisk valley and Glen Tig, due to the scale and positioning of the proposed turbines. It would also have an unacceptable impact on views from the Duisk valley and the village of Barrhill. Although the site is within the least sensitive of the landscape character types, the development would have a major overbearing effect on the settled lower Duisk valley, and to a lesser extent, on the Stinchar valley. The turbines would be too tall in this location, and, far from fitting comfortably into the open moorland, they would dominate it and its surroundings.

Insufficient evidence has been provided on aviation lighting, as the proposal would introduce eye catching and prominent lights in an area important for its dark skies. As a result, it would have an adverse impact upon views from the Merrick Wild Land Area and the core area of the Galloway Forest Dark Sky Park.

The proposal would have a significant and overbearing impact on the residential amenity of the dwellings at Kilrenzie Farm and Wheeb Farm.

The applicant has provided insufficient evidence regarding potential adverse effects on private water supplies. Any risk to private water supplies is too great, as the effects would be potentially catastrophic and could result in homes being condemned.

Overall, the adverse consequences of this development outweigh any claimed benefit.

The case for the objectors

New Luce Community Council, Bardrochart & Knockdolian Estates (a local landowning and business interest) and five local residents took part in the inquiry proceedings. Between them, the objectors provided oral evidence on a range of matters including policy context, socio-economic impacts, landscape and visual impact, ecology, peatland, private water supplies, noise, transport and other infrastructure.

New Luce Community Council was represented at the inquiry by Alistair Buckoke. Its main concerns relate to landscape and visual effects, the policy context for onshore wind and other doubts and uncertainties regarding energy storage, funding priorities, grid constraints and unimplemented wind farm consents.

Bardrochart & Knockdolian Estates (represented at the inquiry by Ian Kelly) consider that residents, workers and visitors to the estates would experience significant visual impacts as a result of the proposal. The cumulative effect of the Arecleoch wind farm extension, together with the proposed wind farm at Clauchrie, is a concern.

Planning policy is explicit that support for onshore wind is not unconditional whatever weight is attached to energy/climate policy. Recent government documents relating to the climate change emergency and supporting renewable energy development do not diminish the weight to be attached to landscape quality.

In terms of the tests set out in schedule 9 of the Electricity Act 1989, the applicant has neither preserved natural beauty and flora, nor secured reasonable mitigation. The proposal is not in accordance with the development plan and would not accord with national planning policy on account of its inappropriate siting, significant adverse visual effects and adverse effects on landscape, ornithology and relative wildness.

Susan Crosthwaite, together with expert witnesses on her behalf, took part in the inquiry sessions on noise and private supplies and the hearings on policy matters and conditions.

Helen McDade, on behalf of Ms Crosthwaite, submitted evidence on transmission grid problems, constraint payments and lack of transmission capacity in south west Scotland. Costs to the public purse as a result of constraint payments is a relevant consideration in relation to the net economic effects of the proposal. The applicant's estimated load factor for the proposal of between 31% and 36% has not been evidenced, within the context of a load factor of just 23% at the current Arecleoch wind farm.

The focus for UK renewables policy is now offshore wind, which will have implications for funding priorities. The proposal would not accord with the key policy considerations set out in paragraphs 28 and 29 of Scottish Planning Policy. There is evidence to indicate that by 2015, windfarm development has resulted in a 1.72% reduction (£6.17 million annually) in tourism expenditure in Dumfries & Galloway.

Dr Rachel Connor represented Ms Crosthwaite on private supply matters. Her evidence raised concerns regarding the adequacy of the Private Water Supplies Risk Assessment, within the context of the EIA regulations and other legislation, and in terms of addressing the risk to individual private water supplies. She considers that all private water supplies with the potential to be affected have not been properly assessed, a monitoring scheme has not been provided, mitigation measures are unclear and contingency plans, in the event of an emergency, are inadequate. As a result, there is a risk that the proposal may result in adverse harm to human health.

Susan Crosthwaite and her expert witnesses (Dr John Yelland and Professor Mariana Alves-Pereira) gave evidence on noise matters. The noise limits in ETSU-R-97 are inadequate for the protection of human sleep and health. The use of A-weighted noise in measurements does not take account of all the noise created, as it fails to consider infrasound and low frequency noise.

Infrasound and low frequency noise is a cause of ill-health for some people living the vicinity of wind turbines, with symptoms including nausea, dizziness, ear pain, and sleep disturbance. Larger turbines inherently produce lower frequency sound and a one kilometre set-back from residential properties is too little for turbines of the size proposed.

The locations selected for further background monitoring in and around Barrhill are not representative of those locations most likely to experience adverse noise effects. The applicant's assessment of cumulative noise effects should be updated to include the effects from the proposed Clauchrie wind farm.

Pat Spence, who lives approximately three kilometres from the nearest turbine, is concerned about landscape and visual effects (including in terms of residential amenity and aviation lighting) and noise impacts, in particular the effects on her health of infrasound and low frequency noise. In relation to both these matters, the cumulative effects of the proposed development together with other existing and proposed windfarms surrounding her home are relevant. Ms Spence also gave evidence on transport effects and attended the conditions hearing.

Christopher Andrews raised concerns about the landscape and visual effects of the proposal on the village of Barrhill and the Duisk valley. As the future of wind farm electricity generation is offshore, the proposal is technologically redundant and out of date. The

Covid-19 pandemic will not last forever and is not a valid reason to grant consent. Mr Andrews is also concerned about the large scale and industrial nature of infrastructure associated with wind farms, including battery storage containers.

Harriet Ellis considers that the proposal would not be set far enough back into the interior of the plateau moorland, away from the edges of the Stinchar and Duisk valleys and Glen Tig. As a result, the development would be contrary to the policy on wind energy in the South Ayrshire Local Development Plan and the guidance set out in the South Ayrshire Landscape Wind Capacity Study. The proposal would have significant adverse visual impacts on these valleys, and from routes and other locations within the Ayrshire Scenic Area, all of which would outweigh the energy-related and economic benefits.

Struan Stevenson objects to the proposal on visual impact, environmental, ecological and traffic & access grounds. He considers that this area of South Ayrshire is already saturated with industrial wind turbines. The significant landscape and visual effects, including cumulative effects, are more than just limited in extent.

Mr Stevenson considers that the proposal would have a residential visual amenity effect on Dochroyle Farm, the home of Ms Spence. The proposed aviation lighting would be visible from the dark sky park and threaten the protected status of the Galloway and Southern Ayrshire Biosphere. The proposed mitigation, in the form of an aircraft–fitted transponder system, is speculative in nature and should not be relied on.

Mr Stevenson also gave evidence in relation to concerns regarding the effects of the proposal on bat mortality, the local road network and peatland.

Other matters

In addition to the matters considered at the inquiry, written representations to the application raised other issues. These are covered in chapters 6 and 7 of the report and include SF6 gas, impact on wildlife (other than bats) and the effects of shadow flicker.

Reporters' conclusions

In balancing the factors for and against the proposal, the contribution that the proposal would make towards meeting climate change objectives and emission reduction targets is recognised. It would also have benefits in terms of economic effects and by sharing existing access routes and other infrastructure.

The proposal would result in some significant landscape and visual effects. Whilst the turbines would be taller than those associated with existing wind farms in the area, the proposal would not detract from the overall landscape character of the adjacent Duisk and Stinchar valleys or Glen Tig.

The identified significant visual effects would not affect any particularly sensitive locations in terms of national designations. At a distance of 20 kilometres, there would be no significant effects on daytime views from the Merrick Wild Land Area and significant visual effects on local settlements have been avoided.

Whilst there would be significant visual effects at two individual properties, these are considered to be acceptable when taking account of the scale and location of the turbines, impact on direct views from principal elevations and the extent and nature of the wider field of vision.

Concerns regarding the visual effects of aviation lighting, including on the Merrick Wild Land Area, can be satisfactorily addressed through embedded mitigation measures. Potential future mitigation measures, secured by condition, have the potential to further reduce impacts.

Sufficient evidence has been provided to demonstrate that, subject to mitigation measures, there would be no significant adverse effects in relation to private water supplies or noise. There is no policy basis or evidence specific to this proposal to justify refusal on the basis of concerns regarding health effects of infrasound and low frequency noise.

With embedded mitigation measures proposed as part of the development, and others secured by condition, there would be no significant residual effects in relation to peatland, bats, transport and access, associated infrastructure or any other matters.

The benefits of the proposal would outweigh the adverse landscape and visual effects. It meets the criteria listed in Schedule 9 of the Electricity Act 1989, would comply overall with the adopted South Ayrshire Local Development Plan and its associated supplementary guidance on wind energy and accord with Scottish Planning Policy.

Recommendations

That section 36 consent be granted and that planning permission be deemed to be granted, subject to conditions listed in Appendix 1.

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DPEA reference: WIN-370-2

The Scottish Ministers
Edinburgh

Ministers

In accordance with our minute of appointment dated 1 July 2020, we conducted a public inquiry in connection with an application to construct and operate the Arecleoch Wind Farm Extension on land approximately three kilometres south west of Barrhill in South Ayrshire. South Ayrshire Council, as planning authority, has lodged an objection to the proposal which has not been withdrawn.

We held two pre-examination meetings on 8 September and 20 November 2020 to consider the arrangements and procedures for the inquiry. It was agreed that the following issues would be addressed at inquiry sessions: landscape and visual impact; private water supplies; and noise. In addition, it was agreed that there would be hearing sessions on the following issues: policy matters; bats; peatland; transport; an overview of effects and associated infrastructure; and conditions. Further written submissions were provided in relation to sulphur hexafluoride gas.

The inquiry sessions were held on 13 – 15 January 2021; 1 – 3 February 2021; and 9 – 10 February 2021. The hearing sessions took place on 12 January 2021 and 4 - 5 February 2021. Closing submissions were exchanged in writing, with the final closing submission (on behalf of the applicant) being lodged on 26 March 2021.

We conducted unaccompanied inspections of the application site, its surroundings and other locations referred to in evidence on 3 September 2020, 4 November 2020 and 12 May 2021. Accompanied site inspections took place on 13 May 2021. We also undertook an unaccompanied night time site visit on 27 May 2021, to view existing aviation lighting at Middleton Wind Farm in East Renfrewshire from various locations suggested by the applicant, and agreed by other parties.

Our report, which is arranged on a topic basis, takes account of the precognitions, written statements, documents and closing submissions lodged by the parties, together with the discussion at the inquiry and hearing sessions. It also takes account of the Environmental Assessment and other environmental information submitted by the parties, and the written representations made in connection with the proposal.

David Liddell *Alison Kirkwood*

Reporter Reporter

Abbreviations used in the report

ALLVI	Aviation Lighting Landscape and Visual Impact
BGS	British Geological Society
CAR	The Controlled Activities Regulations
CD	core document
CEMP	Construction and Environment Management Plan
dB(A)	decibels (A-weighted)
EIA	Environmental Impact Assessment
ECoW	Ecological Clerk of Works
ETSU-R-97	The Assessment & Rating of Noise from Wind Farms Report
GW	Gigawatts
GWh	Gigawatt hours
HGV	heavy goods vehicle
Hz	Hertz
ILFN	infrasound and low frequency noise
LCT	landscape character type
LDP	local development plan
MW	Megawatts
NATS	National Air Traffic Services
m/s	metres per second
PMO	Planning Monitoring Officer
PWS	private water supplies
PWSRA	Private Water Supplies Risk Assessment
RVAA	Residential Visual Amenity Assessment
SALWCS	South Ayrshire Landscape Wind Capacity Study
SEPA	Scottish Environment Protection Agency
SF6	sulphur hexafluoride
UK	United Kingdom
VP	viewpoint
WHO	World Health Organisation
ZTV	zone of theoretical visibility

CHAPTER 1: BACKGROUND, CONSULTATIONS AND REPRESENTATIONS

Site location and description

EIA Figure 1.1 Site Context
EIA Figure 1.2 Application Boundary

1.1 The site is located about three kilometres south west of Barrhill, 3.5 kilometres to the south of Colmonell and 3.3 kilometres south of Pinwherry. It covers 1,440 hectares and sits to the north east of the existing Arecleoch Wind Farm. It comprises a plateau moorland landscape, covered mainly by commercial forest with a number of small tributaries and three larger water courses. High points within the site range between 202 metres to 230 metres, which form a series of gently rounded hill summits on the plateau.

1.2 The majority of the site is located within the South Ayrshire Council area. However, one of the access points to the site, from Wheeb bridge on the A714 road, is within the Dumfries and Galloway Council area. The land is owned by the Scottish Ministers and managed by Forest and Land Scotland.

1.3 The immediate surrounding area is rural in nature, with land predominantly used for commercial forestry purposes and agriculture. The River Stinchar runs to the north west of the site close to the B734 road and the River Duisk runs to the north east of the site next to the A714 road. There are existing and proposed wind farms in the area, located to the south, west and northeast of the site.

Description of the development

EIA Figure 3.1 Proposed Site Layout

1.4 Scottish Power Renewables (UK) Limited submitted an application for consent under section 36 of the Electricity Act 1989 and deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 on 12 June 2019 to construct and operate an extension to Arecleoch Wind Farm.

1.5 The proposal comprises 13 turbines with a maximum tip height of 200 metres; associated transformers; foundations and crane hardstandings; new and upgraded access tracks including water crossings where necessary; underground electric cabling; substation compounds; one permanent anemometer mast, up to four temporary power performance masts, close circuit television and communication masts; search areas for up to six borrow pits; and one temporary construction compound. The wind farm would have an installed capacity of around 72.8 MW, which the applicant expects would produce between 200 GWh and 230 GWh of electricity annually.

Environmental Impact Assessment Report

1.6 The application is accompanied by an Environmental Impact Assessment (EIA) Report, as publicised on 16 July 2019.

1.7 Some objectors raised concerns that the cumulative assessments of landscape and visual impacts and noise effects contained in the EIA Report were not updated, to take account of subsequent applications for Clauchrie wind farm and Kilgallioch wind farm extension. The applicant's response was that the Clauchrie and Kilgallioch extension

proposals came after Arecleoch extension and their cumulative effects with Arecleoch extension would be considered in the course of these applications. The landscape and visual impact assessments for the proposed Clauchrie and Kilgallioch extension wind farms were lodged as inquiry documents and hard copies provided to relevant parties. A cumulative noise contour map extracted from the Clauchrie EIA Report was submitted in evidence by one of the objectors.

1.8 Regulation 19(1) of the EIA regulations requires that "in order to ensure the completeness and quality of the EIAR" we must "seek from the developer supplementary information about any matter" that in our opinion is "directly relevant to reaching a reasoned conclusion on the significant effects of the development on the environment". We agree with the applicant that there is no requirement for us to consider the potential cumulative effects with application-stage development that is behind the Arecleoch extension in the consenting process. However, the submitted extracts from the EIA documents for Clauchrie and Kilgallioch extension have allowed us to address matters raised in objections, particularly in relation to the Clauchrie proposal.

1.9 Should Clauchrie and Kilgallioch extension get ahead of Arecleoch extension in the consenting process, Ministers would need to consider whether an update of the EIA Report for Arecleoch extension would be necessary, within the context of regulation 19(1). However, we have found nothing in the information before us, on landscape and visual impact (chapter 3) and noise (chapter 5), to indicate that Arecleoch extension alongside Clauchrie and/or Kilgallioch extension would result in significant cumulative effects.

1.10 Towards the end of the inquiry process, a document relating to a recent court decision "Raymond Pearce v Secretary for State for Business, Energy and Industrial Strategy 2021" (the Pearce case) was submitted by an objector. Parties were given the opportunity to include comments in their closing submissions on the applicability of the Pearce case, in so far as relevant, to the present application.

1.11 The Pearce case relates to two offshore wind farm proposals (Norfolk Vanguard Limited and Boreas) in Norfolk, with the Vanguard proposal approved in advance of Boreas. Whilst the Vanguard Environmental Statement found significant cumulative effects, the decision maker deferred evaluation of cumulative effects to the Boreas examination. The court found the decision not to evaluate the cumulative effects, when determining the Vanguard application, to be a breach of the EIA Regulations and therefore unlawful.

1.12 The Norfolk Vanguard and Boreas developments were separate but linked proposals. Part of the justification for the site selection for the Vanguard substation was that a site was needed for co-location with the Boreas substation, specifically to achieve synergies between the two projects, such as reducing the installation work on cable ducts. There is no such link between the Clauchrie and Arecleoch extension proposals. Whilst both wind farms (if granted consent) would connect to the same substation (Mark Hill), they are not linked proposals. We do not consider that the Pearce case has any direct relevance for the present application.

1.13 Rachel Connor on behalf of Susan Crosthwaite has raised concerns about the adequacy of the environmental impact assessment undertaken in relation to private water supplies. Dr Connor considers that the private water supply risk assessment does not meet the requirements of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

1.14 Regulation 5 in the 2017 Regulations sets out the requirements for the EIA Report. The EIA Report must be based on the scoping opinion where one is adopted, account must be taken of the available results of other relevant assessments and the report must be prepared by competent experts. We have reviewed volumes 1 - 4 of the EIA report which comprises the non-technical summary, the topic chapters, figures and visualisations and technical appendices. None of the statutory consultees who submitted comments on the application have raised any concerns regarding the adequacy of the EIA process and information. We consider Dr Connor's criticisms in more detail in chapter 4. Neither the EIA Report nor Ministers in their reasoned conclusions are required to address every item of environmental information relevant to the proposal. We consider that the evidence before us provides sufficient information to reach a reasoned conclusion on the significant effects of the proposal, and that our report addresses all the substantive matters which are relevant to the proposal.

1.15 Dr Connor considers that the additional information on private water supplies provided in the applicant's inquiry report should have been published and interested parties given the opportunity to comment, in accordance with the 2017 Regulations. We are of the opinion that this information was provided to the inquiry for the purposes of verification of existing findings of the EIA Report's section on private water supplies. It did not provide substantive new information on a matter to be included in the EIA Report, and further advertisement and consultation was not required. We consider this matter in more detail in chapter 4.

The positions of the councils

1.16 South Ayrshire Council's initial objection to the proposal is contained in its report to the Regulatory Panel dated 24 March 2020. The development would result in significant adverse effects on landscape character and views from the Duisk valley, Glen Tig and the settlement of Barrhill. It would also have a significant and overbearing visual impact on the residential amenity of nearby dwellings at Kilrenzie Farm and Wheeb Farm. Aviation lighting would have significant adverse impacts in terms of dark skies and views from Merrick Wild Land Area and the applicant has not demonstrated that the lighting impacts can be mitigated appropriately. Consideration of these matters is covered in chapter 3 (landscape and visual impact) of this report.

1.17 Subsequent to its initial objection, South Ayrshire Council indicated that it also objected to the proposal on the grounds of impact on private water supplies. Consideration of this matter is covered in chapter 4 of this report.

1.18 Dumfries and Galloway Council does not object to the proposal and did not take part in the inquiry. The site access and approximately 60 metres of access road are located within Dumfries and Galloway Council area. It recommends conditions relating to transport matters, if consent is granted.

Consultation and representations

1.19 A number of bodies commented on the application. Below provides a short summary of those who raised objection, provided information relevant to the proposed mitigation and conditions or otherwise made commentary.

1.20 Community councils: Barrhill Community Council and Colmonell and Lendalfoot Community Council object to the proposal but did not take part in the inquiry. Concerns

include cumulative impact due to existing wind farms, the height of the turbines and visual and landscape impacts, impact on residential amenity, impact on tourism and the local economy, noise, shadow and flicker effects and impact on wildlife. New Luce Community Council did not submit an objection to the application but took part in the inquiry, as a follow up to its comments at the EIA scoping stage.

1.21 NatureScot (Scottish Natural Heritage) does not object. There would be no adverse impact on nearby natural heritage interests of international and national importance. Conditions would be required to mitigate the impact on goshawk, bats and peatland. There is potential for significant landscape effects on the Duisk valley but these would be moderated by existing forestry and woodland. The proposal would be widely visible, but iwell contained. It would result in minimal additional horizontal spread when viewed alongside existing and consented schemes. The proposal would introduce prominent lighting into an area important for its dark skies and could result in significant adverse impacts on views from the Merrick Wild Land Area and the core area of the Galloway Forest Dark Sky Park.

1.22 Marine Scotland does not object. It requests a condition requiring the fish monitoring plan and water quality monitoring programme to follow Marine Scotland guidelines.

1.23 Scottish Environment Protection Agency withdrew its original objection following the submission of additional information on water crossings, private water supplies, peat reuse, borrow pit restoration and forestry waste. The construction environmental management plan should be covered by a condition. Water crossings would be assessed as part of a licence application.

1.24 Historic Environment Scotland does not object. The proposal would not raise any issues of national significance. It would have an impact on the setting of Cairn Kenny scheduled monument, but not on the key characteristics of the setting.

1.25 Transport Scotland does not object. There would be no significant impact on the trunk road network. Two conditions are suggested in relation to delivery routes of abnormal loads during the construction period.

1.26 Scottish Water does not object. There are no drinking water protection areas in the vicinity of the site.

1.27 Scottish Forestry does not object. Conditions would be required in relation to tree felling and compensatory planting.

1.28 Defence Infrastructure Organisation (Ministry of Defence) does not object. Aviation lighting should be fitted to the turbines. Notification should be received of the start and end dates of construction, the maximum height of construction equipment and the exact location of each turbine.

1.29 Network Rail does not object. It requires the developer to discuss and agree proposed construction traffic movements using the railway underbridge at Bents Farm.

1.30 Visit Scotland does not object. It asks that potential detrimental impacts on tourism are considered in full.

1.31 RSPB Scotland does not object. It wishes to see a Habitat Management Plan focussing on peatland restoration.

1.32 Scottish Wildlife Trust does not object. It states that identified mitigation measures and monitoring commitments should be mandatory.

1.33 Scotways does not object. There are no rights of way affected.

1.34 British Horse Society does not object. It indicates that the wind farm site should be open to access for all.

1.35 Crown Estates Scotland does not object. The proposal would not affect its assets.

1.36 British Telecommunications does not object. The proposal would not interfere with its current or planned radio network.

1.37 Joint Radio Company does not object. The proposal would result in no interference with radio systems.

1.38 NATS Safeguarding does not object. The proposal would not conflict with its safeguarding criteria.

1.39 Glasgow Prestwick Airport does not object. The proposal would have no impact on radar systems.

1.40 Fisheries Management Scotland does not object. It recommends that relevant guidelines are fully considered and that proposals are conducted in full consultation with local fishery boards and rivers and fisheries trusts.

1.41 Galloway Fisheries Trust does not object. The proposal does not lie within the River Cree catchment area.

1.42 Ayrshire Rivers Trust does not object. It identifies the need for mitigation and monitoring in relation to water quality and the movement of fish.

Representations

1.43 A total of 41 representations were received, 12 in support of the application and 29 objections. The letters of support referred to

- economic benefits including job creation and training opportunities;
- local community benefits; and
- provision of green energy and contribution to renewable energy targets.

1.44 The objections raised concerns in relation to

- the visual and landscape impact of the proposal, in particular in relation to the height of the turbines. This includes the impact on the dark sky park and Merrick Wild Land Area.
- the cumulative impact of the proposal, taking account of other existing and proposed wind farms in the area. There is considered to be an over saturation of turbines in the area;
- the proximity of the proposal to the village of Barrhill;
- impact on residential amenity in nearby settlements and individual properties in close proximity to the site;
- impact on wildlife;

- impact on tourism and the local economy, including the visual impact of the turbines from tourist and walking routes and the loss of jobs;
- impact on hydrology and geohydrology, including river pollution and effects on private water supplies;
- noise and vibration from turbines and health implications;
- damage to roads and road safety; and
- the need for the proposal.

1.45 The requirement for a public inquiry is triggered by the objection from South Ayrshire Council. A letter was sent to all parties who had previously commented on the proposal explaining that the case had been transferred to the Scottish Government's Planning and Environmental Appeals Division (DPEA) for examination. This invited confirmation as to further involvement in the public inquiry process.

1.46 The following parties took part in the inquiry: the applicant; South Ayrshire Council; New Luce Community Council; Christopher Andrews; Susan Crosthwaite; Harriet Ellis; Pat Spence; Struan Stevenson and Bardrochart & Knockdolian Estates.

CHAPTER 2: LEGISLATIVE AND POLICY CONTEXT

2.1 Section 36 of the Electricity Act 1989 requires that the construction or operation of a generating station whose capacity exceeds 50 MW shall only be undertaken in accordance with a consent granted by Scottish Ministers.

2.2 Schedule 8(2) of the Act requires the Scottish Ministers to serve notice of any section 36 application on the relevant planning authority, in this case South Ayrshire Council and Dumfries and Galloway Council. As South Ayrshire Council objected to the application, Scottish Ministers were required to hold a public inquiry and to consider the objection and the report of the inquiry before deciding whether to give consent.

2.3 Schedule 9, paragraph 3(1) of the 1989 Act requires that in formulating proposals the licence holder "(a) shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest"; and "(b) shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects". The applicant, Scottish Power Renewables, has confirmed that it is a licence holder, within the context of schedule 9 of the Act.

2.4 In considering such applications under section 36 of the Act, Scottish Ministers are required to have regard to (a) the desirability of the matters mentioned in paragraph 3(1)(a) and (b) the extent to which the person by whom the proposals were formulated has complied with his duty under paragraph 3(1)(b).

2.5 In exercising any relevant functions, the licence holder and the Scottish Ministers "shall avoid, so far as possible, causing injury to fisheries or to the stock of fish in any waters" (Schedule 9, paragraph 3(3)).

2.6 The power of the Scottish Ministers, on granting consent under section 36 of the Electricity Act 1989 for an operation that constitutes development, and to direct that planning permission for that development shall be deemed to be granted, is reiterated in section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended).

2.7 Scottish Ministers' decision notices are required to provide, amongst other things, a reasoned conclusion on the significant effects of the development on the environment. In the event that consent is to be granted, the decision should also state that the reasoned conclusion on significant effects is up to date. For ease of reference, chapter 9 includes a table which provides a summary of the relevant matters in this respect.

Energy legislation and policy context

2.8 Chapter 4 of the EIA Report sets out the legislative and policy context for the proposal, as at June 2019. However since then there have been further recent developments in energy-related legislation and policy, and various related documents published. The main international, UK and national energy context referred to by the applicant and objectors in their evidence to the inquiry are listed below.

International context

- United Nations 'Adoption of the Paris Agreement', December 2015
- The United Nations Gap Emissions Report 2019

UK context

- Climate Change Act 2008
- Committee on Climate Change, 'Net Zero The UK's contribution to stopping global warming', May 2019
- UK Government, 'Contracts for Difference for Low Carbon Electricity Generation consultation on proposed amendments', March 2020
- Committee on Climate Change, 'The Sixth Carbon Budget The UK's path to Net Zero', December 2020
- UK Government, 'The UK Energy White Paper, Powering our Net Zero Future', December 2020
- UK Government, 'The Prime Minister's 10 point plan', November 2020

Scottish Context

- Climate Change (Scotland) Act 2009
- Scottish Government, 2020 Routemap for Renewable Energy in Scotland, 2015 update
- Letter from Chief Planner to all Heads of Planning in relation to energy targets and Scottish Planning Policy, November 2015
- Scottish Government, Scottish Energy Strategy, December 2017
- Scottish Government, Onshore Wind Policy Statement, December 2017
- Scottish Government, The Climate Change Plan, February 2018
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019
- Letter from the Committee on Climate Change to the Scottish Government on recovery from the Covid-19 crisis, May 2020
- Report of the Climate Emergency Response Group to the Scottish Government, July 2020;
- Scottish Government, Programme for Government, September 2020
- Scottish Government, Energy Statistics bulletin, September 2020
- Committee on Climate Change, 'Reducing emissions in Scotland Progress Report to Parliament', October 2020
- Scottish Government Update to the Climate Change Plan 2018-2032 'Securing a Green Recovery on a Path to Net Zero', December 2020

National planning policy and guidance

2.9 National Planning Framework 3, from June 2014, and Scottish Planning Policy, provide the national planning policy context for the proposed development. As the December 2020 version of Scottish Planning Policy was quashed on 21 July 2021, Scottish Planning Policy 2014 applies. Section 3 in National Planning Framework 3 refers to an ambition to achieve at least an 80% reduction in greenhouse gas emissions by 2050. Paragraph 3.7 recognises that in some locations there are concerns regarding the scale, proximity and impacts of onshore wind development. Whilst paragraph 3.9 identifies a desire to continue to capitalise on wind resources, the pace of onshore wind energy development is expected to be overtaken by other renewable energy technologies.

2.10 Paragraphs 161 – 174 in Scottish Planning Policy provide guidance of relevance for wind farm proposals. Paragraph 169 refers to the need to take account of the planning authority's spatial framework for wind farms and provides a list of considerations for the assessment of proposals.

2.11 National Planning Framework 4 will incorporate Scottish Planning Policy and form part of the development plan. The Scottish Government's position statement on National Planning Framework 4, published in November 2020 indicates that the current National Planning Framework and Scottish Planning Policy remain in place until National Planning Framework 4 is adopted.

The development plan

2.12 The development plan for the site comprises the South Ayrshire Local Development Plan 2014 and associated supplementary guidance and the Dumfries and Galloway Local Development Plan 2019.

2.13 The majority of the site lies within the area covered by the South Ayrshire Local Development Plan. Its Wind Energy Policy sets out a list of criteria against which wind farm proposals will be assessed. It refers to effects on landscape character areas identified through the South Ayrshire Landscape Wind Capacity Study 2013 and the further details provided in supplementary guidance on wind farms. Other relevant local development plan policies include those on sustainable development and renewable energy.

2.14 The South Ayrshire supplementary guidance on wind energy was adopted in December 2015. It establishes a spatial framework for wind energy development as required by Scottish Planning Policy. There are no national designations (group 1 areas) in South Ayrshire where wind farms would not be acceptable. It identifies areas of significant protection (group 2 areas) where there may be some limited opportunities for development, if it can be demonstrated that the significant effects on the qualities of these areas can be overcome, and areas which are identified as having potential for wind energy development (group 3 areas). Part of the site lies within a group 2 area due to the presence of peatland. The remainder is in a group 3 area with potential for windfarm development, subject to detailed consideration against policy criteria.

2.15 The supplementary guidance on wind farms also provides more detail on how the criteria contained in the LDP policy on wind energy will be applied. It includes a landscape strategy set out in table 2, which has been informed by the landscape character types identified in the South Ayrshire Landscape Wind Capacity Study 2013. It refers to the extensive scale of upland landscapes, which can better accommodate larger scale turbines, but also the need for proposals to be set well back into the upland interior. Reference is also made to the need to protect the Stinchar and Lower Duisk valleys and their setting, and to minimise cumulative impacts from the A714 and the Duisk River, the Stinchar valley and Knockdolian.

2.16 The South Ayrshire supplementary guidance on dark sky lighting was adopted in August 2016. The site lies within the 10 mile transition zone of the Galloway Forest Dark Sky Park boundary. The transition zone is advisory and guidance notes have been prepared to help protect the dark skies night environment within the dark sky park from light pollution emanating from this zone.

2.17 The modified proposed South Ayrshire Local Development Plan 2 was submitted to Scottish Ministers for examination in December 2020. The examination had not been concluded at the time of completion of our report.

2.18 Parties have made reference to the updated South Ayrshire Landscape Wind Capacity Study 2018 (SALWCS) and the South Ayrshire Local Landscape Designations Review 2018. Whilst these technical documents do not form part of the development plan, they have informed the modified proposed Local Development Plan 2 and are referred to in its wind energy policy. Furthermore, the wind energy policy in the adopted local development plan refers to subsequent updates of the landscape wind capacity study.

2.19 The SALWCS 2018 updates the 2013 report and includes a detailed assessment of the capacity of the South Ayrshire landscape to accommodate larger turbines, such as those proposed in the Arecleoch Extension. The site lies within landscape character type area 18c (plateau moorland with forestry/wind farms) which is identified as having some very limited scope to accommodate turbines taller than 130 metres in height as part of repowering schemes for existing wind farms.

2.20 The local landscape designation review was undertaken in line with NatureScot guidance and involved a 'blank canvas' review of all landscapes across South Ayrshire. Land to the south east of Barrhill, which is located within the scenic area designation in the adopted local development plan, has not been included in candidate local landscape area F "The Stinchar Valley".

Renewable energy targets

2.21 Table 1 in the applicant's planning and energy policy statement of case summarises current Scottish renewable targets and the sources of these. The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, which has updated targets initially introduced in the Climate Change (Scotland) Act 2009, requires net zero greenhouse gas emissions against 1990 levels by 2045. It also includes a series of interim targets for 2020, 2030 and 2040. The Scottish Energy Strategy sets a target of 50% of all energy use (not just electricity) from renewables by 2030.

2.22 Section 44 of the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 states that public authorities are obliged to exercise their functions to help achieve the targets and implement the climate change plan. According to the Energy Statistics for Scotland bulletin published in September 2020, 21.3% of total Scottish energy consumption was from renewables in 2018 (compared to 50% target by 2030).

2.23 The Routemap for Renewable Energy in Scotland Update 2015 states that the 2020 target of 100% electricity from renewables equates to the equivalent of around 16 GW of installed renewable energy capacity. At June 2020, there was 11.9 GW of operational renewable energy capacity, 4.6 GW in planning, 7.9 GW awaiting construction and 1.5 GW under construction.

Reporters' conclusions

2.24 Our assessment of the relevance of the legislative and policy context and development plan position is covered in chapter 9.

2.25 We consider that the main issues in this case, bearing in mind the relative legislative and policy context are:

- the significant landscape and visual effects (chapter 3)
- potential significant effects on the amenity of local residents, particularly in terms of visual impact and noise (chapters 3 and 5)
- potential significant effects on private water supplies (chapter 4)
- the proposed mitigation (chapters 3 – 8)
- potential benefits of the proposal (chapter 6)
- contribution to national energy policy and consistency or otherwise with national and local planning policy, (chapter 9)
- overall conclusion weighing all of the above (chapter 9).

CHAPTER 3: LANDSCAPE AND VISUAL IMPACT

3.1 Over three days of inquiry sessions, evidence on landscape and visual effects, including residential amenity and aviation lighting, was heard from James Welch for the applicant, Carol Anderson for South Ayrshire Council, Alistair Buckoke for New Luce Community Council and four local residents (Harriet Ellis, Christopher Andrews, Pat Spence and Struan Stevenson). Ian Kelly, on behalf of Bardrochart and Knockdolian Estates was present during the inquiry sessions but decided not to give oral evidence and chose instead to rely on his written submissions.

The EIA Report and additional information

Chapter 7 of the EIA report
TA 7.1 Landscape and Visual Assessment Methodology
TA 7.2 Residential Visual Amenity Assessment
TA 7.3 Visual Assessment of Turbine Lighting

3.2 The extent of the study area and methodology for the landscape and visual impact assessment were agreed with NatureScot and South Ayrshire Council. The assessment included effects on landscape character and considers the visual effects from 22 viewpoints which were selected in consultation with South Ayrshire Council and NatureScot. Information on landscape character types (LCT) and landscape designations relevant to the site and the 22 viewpoint locations is provided in figures 7.3 – 7.5 of the EIA Report. The site itself lies within LCT 18c (plateau moorlands with forestry and wind farms) defined in SALWCS.

3.3 A cumulative assessment considered the landscape and visual effects of the proposal within the context of a baseline position of operational, consented and application stage wind energy developments, at a cut-off date of 18 April 2019. The applicant also provided copies of the cumulative landscape and visual assessments undertaken for more recent wind farm proposals at Clauchrie and Kilgallioch extension, both of which include the proposed turbines for the Arecleoch wind farm extension.

3.4 Appendices 1 and 2 in James Welch's inquiry report provide additional illustrations to address matters raised in objections and provide greater clarity on the location and nature of likely receptors. These have been prepared using GIS information which is already illustrated within the 2019 EIA Report figures and has been overlaid/combined to aid interpretation.

3.5 Technical Appendix TA 7.3 provides information on the effects of aviation lighting. Each of the thirteen turbines would have red, medium intensity lights mounted on the nacelle and three 32 candela lights mid-way up the turbine tower. An assessment of the effects of lighting at both 2,000 candela and 200 candela intensity from four representative viewpoints is provided. Whilst the assessment concludes that the lighting would have significant effects at all four viewpoints for the 2,000 candela intensity, paragraph 13.58 of the applicant's inquiry report states that the report should have read "not significant" for viewpoint B. The 200 candela intensity lighting would have no significant effects at any of the viewpoints.

3.6 The effects of aviation lighting from the Merrick Wild Land Area were not assessed in detail for this proposal, given the lack of night time receptors and health and safety concerns. However the information provided by the applicant on the cumulative

assessment for the Clauchrie wind farm shows night time visualisations from Benyellary in the Merrick, which includes lighting on the proposed Arecleoch extension turbines.

3.7 The Residential Visual Amenity Assessment has been prepared in accordance with the Landscape Institute's Technical Guidance Note 2/19 'Residential Visual Amenity Assessment'. It assesses the likely effects on the visual amenity of individual residential properties within a study area of two kilometre radius of the turbines.

3.8 A statement of agreed matters between South Ayrshire Council and the applicant was submitted prior to the start of the inquiry sessions. The matters on which there is agreement between these parties include the following:

- the methodologies and visual representations (zones of theoretical visibility, wirelines and photomontages) used in the assessment of landscape and visual effects accord with relevant guidance;
- SALWCS 2018 concludes that there is some scope for very large (over 130 metres high) turbines in LCT 18c (plateau moorland with forestry and wind farms);
- significant landscape character effects would be confined to three landscape character types - LCT 18c, LCT 13 (intimate pastoral valleys) and LCT 14 (upland glens);
- no internationally or nationally important landscape designations would be affected. However, the proposed development would give rise to localised significant effects on the South Ayrshire Scenic Area;
- significant effects on views would extend to a maximum of approximately seven kilometres from the proposed development;
- with the exception of Viewpoint 4 (Wallace Terrace, Barrhill) which is disputed, the significant visual effects identified in the EIA Report are agreed. The EIA Report identifies significant visual effects at seven viewpoints: VP1 (Chirmorrie Cairn); VP2 (SA61 Core Path/Craignell Road); VP3 (minor road to the south of Barrhill); VP5 (A714 road near Blairhall Farm); VP7 (minor road south of Pinwherry); VP13 (A714 road near Corwar House); and VP14 (Knockdolian);
- the residential properties that are relevant in terms of significant effects on residential amenity are Kilrenzie Farm and Wheeb Farm;
- the requirement by the Civil Aviation Authority for medium intensity visible aviation lighting has the potential to be mitigated by a range of solutions proposed by the applicant; and
- the 2,000 candela lights represent a worst-case position, as in periods of poor visibility the 2,000 candela lights would appear less intense.

3.9 The applicant and the council do not agree on the degree to which the proposal reflects the guidance relating to LCT 18c, LCT 13 and LCT 14 contained in the SALWCS and the importance of these significant effects. There is also disagreement on:

- the degree to which the visual amenity of Barrhill may be affected;
- the degree to which the visual amenity of residents living at Kilrenzie Farm and Wheeb Farm may be affected;
- the nature of cumulative effects of the proposed development with operational wind farms; and
- the degree to which visible aviation lighting may give rise to significant visual effects.

The main points for the applicant

Statement of case on landscape and visual impact Inquiry report Precognition Closing Submissions

Overview

3.10 A significant effect doesn't necessarily mean that a proposal is unacceptable. Based on his professional judgement and taking account of the nine factors in paragraph 2.17 of his inquiry report, James Welch considers that the significant effects identified in the EIA Report are acceptable from a landscape and visual perspective. Whilst there would be some significant landscape and visual effects from the proposal, including cumulative effects, these would be relatively limited in extent. Views of the wind farm would be experienced in the context of a relatively large-scale, broad upland landscape setting which has capacity to absorb the changes proposed. This is demonstrated by the existing wind farm development which is a defining characteristic of the area.

3.11 As the proposal is located within LCT 18c (plateau moorland with forestry and wind farms), it benefits from some in-principle support from the SALWCS. In responding to the detailed guidance in the SALWCS, the proposal:

- is set back from sensitive skylines and avoids a conspicuous or overbearing presence from within the Duisk valley and Glen Tig;
- has been designed to limit visibility from within the Stinchar valley;
- has been set back from the A714 road by almost three kilometres;
- minimises visibility from within LCT 13 and LCT 14; and
- would be perceived as being set back into the core uplands of LCT 18c, and not encroaching into the edge of the settled landscapes.

3.12 The proposed development does not lie within the core or buffer area of the Galloway and Southern Ayrshire Biosphere. Whilst not directly related to landscape and visual effects, renewable energy from wind farms would be compatible with the objectives of the biosphere.

Landscape effects

3.13 The Duisk valley part of LCT 13 is distinct from the larger scale plateau moorland with forest and wind farms (LCT 18c) that surrounds it. However, the southern parts of the Duisk valley are part of a transitional landscape that is more upland in character.

3.14 SALWCS identifies opportunities for the development of wind turbines up to 50 metres tall within the less settled upper slopes of LCT 13, which is inconsistent with the council's objection to this proposal.

3.15 A large area of the southern part of the Duisk valley, which currently lies within the South Ayrshire Scenic Area, is not included in the candidate local landscape area designation identified through the South Ayrshire Local Landscape Designations Review 2018. This document indicates that "extensive operational and consented wind farm development influences character in the upper Duisk valley south west of Barrhill".

3.16 Whist the landscape effect on the Duisk valley would be significant, it would be acceptable. The proposed development is located at least two kilometres from the boundary of LCT 13, which would be "well set back", in accordance with the council's guidance. The site itself has a sense of expansive scale and simplicity in character which distinguishes it from the more intimate and intricate settled Duisk valley in LCT 13. Being set back doesn't mean hidden. The setting of the turbines within the forestry signifies a landscape beyond the small scale, settled valley.

3.17 The proposal avoids the more sensitive escarpment between LCT 18c and LCT 13 and screening of the development by existing tree cover would reduce the degree to which the landscape character of the Duisk valley is affected. The locations where tree screening would be less effective are from the eastern side of the valley, where there are more elevated views across LCT 13 (including viewpoints VP5, VP6, VP7 and VP13).

3.18 In two of these views (VP6 and VP13), the proposal would be seen in the context of the operational Arecleoch wind farm, which has a baseline influence on landscape character. Viewpoint VP5 (A714 road near Blairhall Farm) is the only location where the proposal would be seen close to its full height in the context of the valley, without a baseline wind farm influence. Whilst no existing wind farms are visible from viewpoint VP7 (minor road south of Pinwherry), the turbines would only be seen at partial height, due to being set back from the escarpment that encloses the valley.

3.19 LCT 14 (upland glens) is within the South Ayrshire Scenic Area and is locally valued for the sense of remoteness in the underlying landscape of Glen Tig. However given that the existing Arecleoch wind farm is visible from LCT 14, the proposed development would only result in a relatively moderate additional influence on the glen landscape.

3.20 The only part of LCT 14 which would experience significant effects is at the eastern end of the glen, where it is surrounded by LCT 18c. This part of the upper end of Glen Tig marks the transition into the adjoining uplands, which blurs the distinction between the LCTs. The southern slopes of upper Glen Tig are dominated by large areas of forestry punctuated by power lines, pylons and existing turbines. These factors would help to assimilate the proposed development into the adjoining landscape and reduce the apparent influence on this part of Glen Tig.

3.21 The proposed development would not be seen from the floor of the Stinchar valley.

Visual effects

3.22 Given the relatively close proximity of the proposed development to the Duisk valley, some significant visual effects are to be expected. Visibility from within LCT 13, which also includes the Stinchar valley, would be varied, with views from much of the valley floors screened by trees and the escarpment. With increased elevation, up the south west facing side of the Duisk valley in particular, longer range views would show the proposal in the uplands above the valley, in conjunction with the existing wind farms at Kilgallioch and Arecleoch.

3.23 The relationship of the proposal with the Duisk valley landscape is mirrored on the eastern side by the presence of Mark Hill wind farm. The presence of commercial plantation and other mature trees reduce the degree to which the proposal would be a prevailing influence.

3.24 The applicant disagrees that the development has the potential to give rise to a significant visual effect at viewpoint VP4 (Wallace Terrace, Barrhill). Likely visibility from here is only three small blade tips and two turbines with hubs sitting close to the horizon, some of which is forest covered. Viewpoint locations A - F in Figure JW5a and the additional wireline analysis[1] in JW9 show that the visual effects at viewpoint VP4 are representative of the highest levels of visibility in Barrhill, with lower visibility along the main street.

3.25 Significant visual effects on the Duisk valley would be limited to the 2.5 kilometre section of the A714 between viewpoints VP13 (Corwar House) and VP5 (Blairhall Farm), to the south east of Barrhill. In these views, the contrast in scale between the proposed turbines and existing wind farms would be notable. However, the foreground position of the proposed development in views from the east would aid the perception of differences in scale, through the natural perspective of closer turbines appearing larger in size. The same natural perspective of larger turbines in the foreground also occurs within the existing wind farms in the area, due to their large footprints and distances between foreground and background turbines (Kilgallioch and Arecleoch in particular). The contrast in turbine scale in views of wind farms in the area is therefore a familiar feature of the wind farm characteristic of this plateau landscape.

3.26 Overall, the effects of the proposal would not be dominant or overbearing in visual terms.

Cumulative effects

3.27 The extent of cumulative landscape and visual effects generated by the Arecleoch extension and existing operational and consented wind farms would be relatively limited in geographical extent and severity. The addition of the proposed development to the baseline wind farm context would reinforce the existing impression of a "landscape with windfarms" where wind farms are perceived as one of a number of key characteristics. Overall, the cumulative effects of the proposal would not be significant.

Aviation lighting

3.28 An aviation lighting assessment is included in annex 3 of Mr Welch's inquiry report and a windfarm lighting strategy paper considers the potential for alternative lighting systems. Figure JW10 updates the lightning intensity map provided in EIA technical appendix TA 7.3 to show the boundaries of the dark sky park and wild land area, in response to comments by NatureScot.

3.29 Four lighting mitigation options are identified, two of which are embedded in the development design (reduce intensity of lights from 2,000 candela to 200 candela where visibility conditions permit; and directional intensity). Consultation is underway with the Civil Aviation Authority and airspace users on the other two options (aircraft detection lighting system and reduced lighting scheme). The aviation lighting assessment takes account of the two embedded mitigation measures. The potential for further mitigation, involving the two additional measures which are not currently available, would further reduce the visual effects of lighting.

[1] Both appended to Mr Welch's Inquiry Report

3.30 Civil Aviation Authority guidance allows for 2,000 candela aviation lights to be dimmed to 10% of their intensity (200 candela) where visibility is greater than five kilometres. Based on meteorological records, the aviation lights are likely to operate in a dimmed mode for 90-95% of the time they are switched on. In poor visibility conditions, when the lighting is operating at 2,000 candela, it is unlikely to be seen beyond five kilometres distance due to the inherent reduction in visibility. It is extremely unlikely that 2,000 candela lighting would ever be experienced at its full intensity as it would only operate when visibility is reduced by climatic conditions.

3.31 Whilst the exact specification of aviation lighting is not known, the assessment assumes the use of a model which offers a reduced light intensity below the horizontal and above +3 degrees, as described in the windfarm lighting strategy paper.

3.32 Figure JW10 demonstrates the beneficial aspects of the mitigation embedded in light fitting design. The parts of the study area where the lights may be seen at their maximum intensity are limited, and confined to areas of higher ground. At lower elevations between -1˚ and -2˚, which includes viewpoints C and D, the intensity of light drops to between 80 and 750 candela in poor visibility and to between 8 and 75 candela in clear conditions. Below -2˚ from the horizontal, which includes viewpoints A and B, the intensity of light drops away to a maximum of 80 candela in poor visibility and 8 candela in clear conditions.

3.33 There would be particularly low intensities of light in the area around the site where settlements and residential properties are located. Furthermore, in Barrhill village street lights provide a brighter degree of baseline lighting at night.

3.34 In terms of alternative mitigation, the Civil Aviation Authority is in the process of preparing a new policy statement on aviation detection lighting systems for wind turbines for industry consultation. This proposes that visible aviation lights would only need to be illuminated when an aircraft is within a volume bounded by four kilometres (horizontal distance) from the perimeter of a group of turbines and between 150 metres above ground level of the lowest turbine and 300 metres above the highest turbine tip. The applicant considers that a lighting detection system activated by an aircraft transponder is likely to be in operation by 2025.

3.35 If interim mitigation is required pending regulatory adoption of an aircraft detection lighting system, a reduced lighting scheme would be introduced, whereby only the cardinal or selected peripheral turbines would be lit. The lighting of cardinal or selected periphery turbines is a mitigation option that has been approved by the Civil Aviation Authority at onshore wind energy developments elsewhere. This measure would typically reduce the density of lights at a site, which may reduce the visual effects.

3.36 The principal consideration in relation to visible aviation lighting effects is the concern expressed by NatureScot and objection from South Ayrshire Council about the visual effects that could arise in the Merrick Wild Land Area and the Galloway Forest Dark Sky Park, whereby they consider that some harm could result to the wildness qualities/dark sky qualities that can be perceived from within those locations.

3.37 There would be no visibility of the Arecleoch extension turbines from any of the ten viewpoints identified in the dark sky park visitor leaflet. The parts of the wild land area where turbines would be visible are the least accessible. None of the wildness qualities

cited in the wild land description for the Merrick Wild Land Area mention dark skies, darkness or night-time experience as qualities of the area.

3.38 The western escarpment of the wild land area and dark sky park, where the turbines are likely to be visible, is located over 20 kilometres from the development. In clear conditions, when the turbines would be most visible, the lights would be operating at a reduced intensity of 200 candela. Based on an inspection of the 200 candela test light at Crystal Rig windfarm, the levels of impact would be minor at distances of 20 kilometres. The lights at Middleton and Neilston wind farms, referred to by South Ayrshire Council, do not have the directional and dimming technology to be used at Arecleoch extension.

3.39 Overall, the environmental effects of aviation lighting require to be considered within the context of the small number of people who are ever likely to experience them, in particular from remote locations within the Merrick Wild Land Area. The suggested planning condition on aviation lighting would ensure that an optimal solution, in visual and safety terms, is secured.

Residential visual amenity

3.40 Most commercial wind farm developments give rise to some locally significant visual effects. Where there are residential properties in close proximity to a proposed wind farm, it is not uncommon for a residential visual amenity assessment to acknowledge that there would be significant effects on the private visual amenity of some residents. However, any significant visual effects need to be balanced against the other benefits of the development.

3.41 It is helpful to consider the factors and thresholds of acceptability which have guided decision makers in previous appeals, including those which gave rise to the “Lavendar test”.

3.42 There would be significant visual effects for two properties, Kilrenzie Farm and Wheeb Farm, located across upper Glen Tig from the proposed development at distances of 1.26 km and 1.58 km respectively. Views from both properties would be partially screened by the blanket commercial forestry plantation along the southern escarpment of Glen Tig and would be seen lying beyond the transmission line that runs through the valley. The valley itself lies between the residential properties and the turbines which are located within the upland plateau landscape.

3.43 The proposed turbines would be experienced in the context of the operational Arecleoch turbines, albeit these are much smaller in size in these views. The proposed development would occupy a relatively small percentage of the panoramic views available from each property.

3.44 Within the context of the “Lavendar test”, neither of the two properties would be visually impacted to such an overbearing or dominant degree that its residential visual amenity might widely become regarded as an unattractive place in which to live. The visual amenity at neither property would be impacted to such a degree that the presence of the proposed development in one part of the available views would be overbearing or dominant.

3.45 The small number of properties that would be significantly affected by the Arecleoch extension is notable for a development of the scale proposed.

NatureScot's position

Consultation response dated 29 August 2019 Consultation response dated 7 February 2020

3.46 NatureScot does not object to the proposal and did not participate in the inquiry. Its initial consultation response did not include comments on landscape and visual impacts and advised that the proposal does not raise landscape issues of national interest, including in terms of the qualities of any wild land area. Advice on matters relating to landscape and visual impact was provided in February 2020, at the request of the Energy Consents Unit.

Landscape effects

3.47 There is potential for significant effects on the Duisk valley within LCT 13 (intimate pastoral valley). However, the actual visibility of the proposed development from within the Duisk valley would be moderated by the substantial amount of forestry at the edges of the LCT and smaller woodlands and tree groups which restrict open views across the LCT.

Visual effects

3.48 Overall, the proposal is widely visible but would result in minimal additional horizontal spread, when seen in addition to existing and consented schemes. In general, the layout is relatively compact with minimal outliers, and from most viewpoints it would be perceived as an extension to Arecleoch.

Aviation lighting

3.49 There is the potential for a range of turbine lights of different intensities to be seen from the Duisk valley, where currently no red lights are visible on or above the south western skyline. This would have an impact on views and on the character of the valley.

3.50 A night time assessment should have been undertaken from the Merrick Wild Land Area. Information provided in the landscape and visual impact assessment for the Clauchrie wind farm shows that turbine lighting from the Arecleoch extension would be seen from the Benyellary viewpoint and that the baseline view is virtually free of night time lighting.

3.51 The proposal would introduce eye catching and prominent lights into an area important for its dark skies and in particular to a part of the view which contributes strongly to the dark sky experience. This could result in likely significant adverse impacts on views from the wild land area and core area of the dark sky park, as well as adverse impacts on the wild land qualities of the wild land area. The implementation of radar mitigation should be required as a condition to any consent.

The main points for South Ayrshire Council

Committee report
Inquiry report
Precognition
Closing Submissions

Landscape effects

3.52 SALWCS identifies LCT 18c as the only LCT with potential for turbines higher than 130 metres. However, it also states that "capacity is close to being reached in the parts of this landscape character type which lie to the south of the Duisk valley. Development should be sited within the simpler basins and low hills lying in the interior of this upland plateau and set well back to avoid intrusion on adjacent smaller scale settled valleys and glens".

3.53 This proposal site, which lies to the south of the Duisk valley, is the wrong location for a development comprising 200 metre high turbines. Many of the turbines are either too large and/or located too close to the more settled lower Duisk valley. Attention is drawn to a previous appeal decision for Altercannoch wind farm, which was refused in March 2019. The Altercannoch proposal has some similarities to the Arecleoch wind farm extension as both lie at the transition between the plateau moorland LCT and the intimate pastoral valley LCT.

3.54 The susceptibility of this part of LCT 13 (intimate pastoral valley) to wind farms of this size would be high. This is due to the small scale of the Duisk valley in the area between Barrhill and Pinwherry, where it is narrow and strongly contained by the steeper slopes, and within the rolling valley floor located to the south east of Barrhill. The proposal would also have a high magnitude of change on the Duisk valley part of LCT 13.

3.55 The proposal would have significant landscape effects on LCT 14 covering Glen Tig to the west of the site. The glen is of high susceptibility because of its intimate scale and land cover of broadleaved woodland and small pastures. Sensitivity would be high because of the proximity of the very large turbines which would be visible close to the head of the glen.

Visual effects

3.56 Significant adverse effects would principally occur on views from the upper slopes and hills either side of the Stinchar Valley, on part of the Duisk valley and on views to Glen Tig. The proposal would introduce views of wind turbines into the area between Barrhill and Pinwherry, where none currently exist.

3.57 The visual effects from viewpoint VP4 in Barrhill have been underestimated. The turbines would be visible in close proximity to the village at 3.95 kilometres and the blades would be clearly seen to be moving. The turbines would not appear as part of the upland landscape because the view is strongly contained with steep slopes and forest edge. Also, the large scale of the turbines would contrast with the smaller scale rolling valley sides. There would be significant adverse visual effects at viewpoint VP4.

3.58 In views from the Stinchar valley (represented by viewpoints VP10, VP14 and VP16), the proposal would appear noticeably larger than the existing Arecleoch turbines and increase the extent of turbines visible on the skyline.

3.59 From the Duisk valley, the turbines would appear discordant in contrast with the smaller turbines at the Kilgallioch, Arecleoch and consented Chirmorrie wind farms. The proposal would introduce new views of turbines juxtaposed with the more scenically diverse lower section of the Duisk, as demonstrated in view point VP5.

3.60 Key visual effects on Glen Tig would be glimpsed views to the glen from minor roads and tracks, where the proposal would detract from its scenic character. Turbine 4 would be particularly intrusive. Although the operational Arecleoch turbines can be seen at viewpoint VP8, the proposal would introduce larger turbines closer to the top of the steep slopes which contain the glen.

Cumulative effects

3.61 In considering the cumulative effects of the proposed development alongside existing wind farms, this proposal is a "step change" in that it would increase prominence and intrusion on surrounding settled valleys, including introducing new views of development into parts of the Duisk valley.

3.62 Potential cumulative effects with more recent wind farm proposals, which are now at application stage (Clauchrie) and scoping stage (Carrick and Craiginmoddie) should be addressed. The greatest potential for significant cumulative effects of these proposals is associated with the combined effect of turbine lighting on the dark sky park and the wild land area.

Aviation lighting

3.63 Both 2,000 candela and 200 candela lighting would have significant visual effects in views from parts of the Duisk valley, parts of the Stinchar valley and surrounding uplands. Both 2,000 candela and 200 candela lighting would also be likely to adversely affect the Dark Sky Park and Merrick Wild Land Area. These conclusions were reached with the benefit of having considered the intensity and extent of lighting effects at existing wind farms in Moray and Renfrewshire.

3.64 Some of the proposed turbines lie within the Dark Sky Park transition zone as defined in the council's Supplementary Guidance: Dark Sky Lighting August 2016. Within the transition zone, it is advised that new external lighting should be "dark sky friendly" where possible, in order to help safeguard and enhance the quality of the Dark Sky Park.

3.65 In terms of the mitigation proposed by the applicant, the adoption of an aircraft detection lighting system would alleviate the council's concerns due to the likely low level of flight activity which would considerably reduce the duration of visible lighting.

Residential visual amenity

3.66 The proposal would have significant adverse effects on residential amenity at Kilrenzie and Wheeb farms because the principal orientation of both properties is towards the proposal. While the operational Arecleoch turbines are already seen on the skyline, together with a transmission line aligned within the upper Tig valley, the much closer

proximity and larger size of the proposed turbines would dominate views from the properties and their curtilage, such that they would be an overbearing feature.

The main points for New Luce Community Council

Statement of case on landscape character types and cumulative effects Precognition Closing Submissions

3.67 New Luce is located within Dumfries and Galloway council area, to the south of the application site. The proposal lies to the north west of the C class road which runs between Barrhill and New Luce.

3.68 The five turbines along the top of the ridge above Barrhhill village and the Duisk valley would have a significant visual impact on the residents of the valley below. The site layout may have efficiency benefits but it represents an unnecessary impact on the community.

3.69 The reference to wind farms in the description of LCT 18c (plateau moorlands with forestry and windfarms) legitimises the accumulation of further wind farms. The community council objects to how LCTs and the cumulative effect baseline are used in the assessment of landscape and visual impacts by the applicant and the local councils.

The main points for Bardrochart and Knockdolian Estates

Outline statement of case Precognition Closing Submissions

3.70 Bardrochart and Knockdolian Estates lie to the north, west and north-west of the proposal, close to the village of Colmonell. Two procedural matters were raised by the Estates, firstly that NatureScot did not participate in the inquiry and secondly that the applicant did not update the cumulative landscape and visual impact assessment to take account of the proposed Clauchrie wind farm.

3.71 Current visualisation techniques and assessment methodologies are considered to be inadequate for proposed turbines of 200 metres in height located close to existing smaller turbines.

3.72 The proposal would result in a material adverse change in the view from viewpoints VP2, VP8, VP10 and VP14 and there would be significant cumulative impacts from Knockdolian (VP14). Taking account of the information on cumulative landscape and visual impacts contained in the EIA reports for Clauchrie wind farm and Kilgallioch extension, the development would have significant cumulative adverse effects from Knockdolian and Colmonell, when assessed with the Clauchrie proposal.

The main points for other inquiry participants

Pat Spence - outline statement of case and closing submissions Harriet Ellis - outline statement of case, statement of case and precognition Christopher Andrews - outline statement of case and closing submissions Struan Stevenson - statement of case, response statement, precognition and closing submissions

3.73 Pat Spence lives at Dochroyle Farm, which is accessed via a private track running south east from the minor road between Barrhill and New Luce. Much of the land in the immediate vicinity of the house is commercial forestry. The house is located about three kilometres east of the closest proposed turbine and about 4.5 kilometres east of the closest turbine at the existing Arecleoch wind farm. Kilgallioch wind farm lies to the south of Dochroyle, with its closest turbine at around three kilometre distance. The consented Chirmorie wind farm would lie to the southwest of Dochroyle (filling the gap between Arecleoch and Kilgallioch), with the location of the closest consented turbine being a little over 3 kilometres from the house. Mark Hill wind farm lies around six kilometres to the north of Dochroyle

3.74 Ms Spence states that the views from her property are dominated by existing and proposed wind farms, which would be made worse by the proposal. The aviation lighting on the turbines would be an unacceptable intrusion in the dark aky park and Galloway and Southern Ayrshire Biosphere, and for residents and wildlife. The technology for aircraft detection lighting does not exist yet and, if introduced, would cause a ripple/winking effect because of the distancing of the turbines.

3.75 Harriet Ellis is a resident of Colmonell, which lies immediately to the north of the River Stinchar and approximately five kilometres to the north of the nearest turbine.

3.76 She considers that the site is not suitable for 200 metre high turbines, which would be almost twice as high as the existing Arecleoch turbines and would consequently have a far greater visibility in the local area. Within the context of the guidance contained in the SALWCS, the proposed turbines are not sufficiently set back, as they would impact on the Duisk and Stinchar valleys and on Glen Tig. The proposal may set a precedent for future re-powering applications for 200 metre high turbines at existing wind farms and their effects on pastoral valley landscapes.

3.77 In addition to the evidence provided by South Ayrshire Council with regard to the Duisk valley and Glen Tig, the proposal would also affect the Stinchar valley, being visible from many points and introducing views of turbines where there hadn't been any before.

3.78 The cumulative visual impact from Knockdolian (viewpoint VP14) and the core path from Colmonell to Sixpence has been downplayed, particularly when the Clauchrie proposal is also taken into account. Lightened images[2] of the applicant's night time photomontage at viewpoint D show the visual effects of the proposal from the minor Lendalfoot to Colmonell road. An additional wireline and photograph show that there would be "hub height" views from the A714 just north of Pinwherry and intermittently through the village, which would introduce wind development to views which at present have no turbines.

[2] CD19.4, CD19.5

3.79 The proposed development would have an adverse impact on the Merrick Wild Land Area and the dark sky park, due to the increase in turbine numbers and the red aviation lighting.

3.80 Given the extent of existing and proposed wind farm development in south west Scotland, those few areas still unaffected should be given protection, especially in the South Ayrshire Scenic Area. The capacity for further large-scale development on South Ayrshire's plateau moorland has been reached.

3.81 Christopher Andrews is a resident of Barrhill, which is located to the north of the River Duisk and approximately four kilometres to the east of the nearest turbine. Proposals for 200 metre high turbines exceed the expectation of existing policy guidance, which refer to turbines over 130 metres in height. This proposal may set a precedent for 200 metre high turbines. The proposal does not protect the Duisk valley.

3.82 Struan Stevenson lives near Ballantrae, which is located around nine kilometres to the west of the nearest turbine. He considers that the proposal would threaten the protected status of the Galloway and Southern Ayrshire Biosphere and have an unacceptable impact on the dark sky park. The cumulative impact of the proposal would increase the "landscape with windfarms" characteristic.

3.83 In terms of impact on the residential visual amenity at nearby properties including Dochroyle Farm, the "Lavendar test" has not been met. The proposed aircraft detection lighting system would not provide adequate mitigation for the visual effects of the aviation lighting on turbines, because it has not yet been fully developed.

The main points for other parties

3.84 Dumfries and Galloway Council does not consider that the proposal would have any notable effect on its area in terms of visual or landscape impact, by virtue of the site's distance from the region, the proposal's relationship to other wind farms in the vicinity, the intervening topography and the amount of forestry in the area.

3.85 Other objectors, including Barrhill Community Council, Colmonell and Lendalfoot Community Council and a number of local residents and visitors to the area, expressed concern about the landscape and visual impacts of the proposal. The points raised in their written representations to the application were similar to those covered during the inquiry sessions.

Reporters' conclusions

3.86 The following sections set out our findings and conclusions on landscape effects, visual effects, residential amenity and the night time effects caused by aviation lighting. Each section takes account of the cumulative effects of the proposal with operational, consented and application sites.

Landscape effects

3.87 The site lies within LCT 18c (plateau moorland with forestry and wind farms) as defined in SALWCS. This is the only LCT within South Ayrshire in which SALWCS supports wind turbines over 130 metres in height. The site and immediate surrounds are not covered by any national, regional or local landscape designation.

3.88 Given the limited footprint of the proposal compared to the existing Arecleoch and Kilgallioch wind farms and its location immediately to the north east of the Arecleoch turbines, we do not consider that the proposal would alter the character of LCT 18c to the extent that it would become a "windfarm" landscape. In terms of the effect on LCT 18c, we consider that, even with the taller turbines, there would be sufficient landscape capacity to accommodate the development.

3.89 The significant landscape effects of the proposal on the adjacent LCT 13 (intimate pastoral valleys) and LCT 14 (upper glens) require careful consideration. We note that SALWCS 2018 states that wind farm development should be sited in the interior of this upland plateau and set well back to avoid intrusion on adjacent smaller scale settled valleys and glens.

3.90 The Arecleoch extension turbines would sit around two kilometres from the boundary of LCT 13 and LCT 14. Opinions differ between South Ayrshire Council and some objectors and the applicant as to whether the location of the proposal would accord with the requirement to be "set well back".

3.91 We find, from the evidence provided and our site inspections, that there would be little visibility of the proposal from the lower sections of the Stinchar valley. The additional wireline and baseline photograph provided by Harriet Ellis show the effects of the proposal on the Stinchar valley, when viewed from the A714 road at Pinwherry. Whilst the proposal would introduce turbines into this view, the extent of the intrusion would be limited and would not detract from the overall character of the valley landscape. More generally along this stretch of road, topography and roadside vegetation means that other views of the turbines would be very limited.

3.92 Within the Duisk valley part of LCT 13, theoretical visibility of the proposal is varied. The council considers that significant adverse effects would occur on the part of the Duisk valley extending from approximately two kilometres to the south east of Barrhill (at Artnoch) to Pinwherry.

3.93 Viewpoint VP5 (A714 at Blairhall Farm), located to the south east of Barrhill, provides a representative view of the settled valley with commercial forestry along the skyline. In this view, the operational Arecleoch turbines are generally screened by the forestry and as such the proposal would introduce turbines in views where existing visibility is limited. However, we consider that the proposed turbines, though clearly visible, would be perceived as being set back within the area of forestry which sits beyond the intimate pastoral valley.

3.94 Viewpoint VP7 (minor road south of Pinwherry) shows the proposed turbines in views across the undulated pastoral landscape of the northern part of the Duisk valley. The turbines are perceived as being located beyond the top of the ridge, the majority of which would only appear as blades. Views north and south along the Duisk valley would not be interrupted. Based on this viewpoint, we do not consider that there would be a significant effect on the landscape character of the northern section of the Duisk valley.

3.95 We agree with the applicant that southern parts of the Duisk valley form a transitional landscape that is more upland and less settled in character. This is evident in the views from viewpoints VP3, VP11 and VP13. These characteristics, together with existing tree cover and the presence of existing turbines, where visible, would lessen the effect of the proposal on this part of the Duisk valley.

3.96 We find overall that there would be limited locations within the Duisk valley where the visibility of the proposed turbines would affect the intimate pastoral character of the valley, due to the rising topography to the north and south of the river and existing tree cover.

3.97 We do not consider the previous appeal decision for Altercannoch wind farm to be of direct relevance to our assessment of impact on the landscape character of the Duisk Valley. The Altercannoch site straddles LCT 18c and LCT 13 and the proposed turbines were to be located much closer to the Duisk valley than the Arecleoch extension would be.

3.98 The baseline description of Glen Tig in the EIA Report refers to the steep valley sides with a sense of enclosure, extensive native woodlands and small scale, secluded nature of the glen. We agree that the effects of the proposal on the character of the eastern end of the glen would be significant due to the proximity and scale of the turbines and their juxtaposition with the intimate and secluded character of the upper glen. However further west, as shown in viewpoint VP8, the landscape is more open in character and the influence of the proposal would be diluted by the effects of the existing Arecleoch turbines. Figure 7.19a in the EIA Report shows that the part of LCT 14 where the proposal would be viewed on its own is limited to the head of the glen. As a result, we consider that the significant effects on the landscape character of Glen Tig would be localised in extent.

Visual effects

3.99 There is considerable agreement between the professional witnesses regarding the visual effects of the proposal. Of the 22 viewpoints included in the landscape and visual assessment, there is agreement that there would be significant effects on seven of these (VP1, VP2, VP3, VP5, VP7, VP13 and VP14). South Ayrshire Council considers that there would also be significant visual effects on viewpoint VP4 at Wallace Terrace, Barrhill. Ian Kelly, on behalf of Bardrochart and Knockdolian Estates, considers that the proposal would adversely change the views from viewpoints VP8 (minor road Glen Tig) and VP10 (minor road north east of Colmonell).

3.100 We visited each of these viewpoints and our findings are noted below.

VP1 Chirmorrie Cairn (2.47 kilometres from the closest turbine)

3.101 The proposal would be clearly visible from this rounded hill within the forested plateau. It would extend the horizontal spread of turbines east of the operational Arecleoch wind farm. However, the proposed Chirmorie turbines (if built) would be located in the foreground and appear much larger at a distance of only 280 metres from the viewpoint. The proposal would site within a landscape where wind farm development is a key feature. However it would not affect views of the Merrick range to the east. Overall, within the context of existing and proposed development, we consider the visual effects from viewpoint VP1 would be limited.

VP2 SA61 Core Path/Craignell Road (2.51 kilometres from the closest turbine)

3.102 From the viewpoint on the core path, the proposal would appear much larger and prominent than the operational Arecleoch wind farm due to its closer proximity and taller turbines. There would also be multiple stacking and overlapping blades. The sections of the core path in the vicinity of the viewpoint VP2 are within the South Ayrshire Scenic Area as shown in the adopted local development plan. However, the South Ayrshire Local

Landscape Designations Review does not include this area in candidate local landscape area F Stinchar Valley.

3.103 Whilst we agree that the visual effects would be significant, the proposal would occupy only peripheral views for those walking along the path in either direction. When walking in an eastwardly direction, it is the existing Mark Hill turbines sitting below the Merrick range which draw the eye, even though they are located much further away.

3.104 Some objectors have raised concerns about the cumulative effect of the proposal and the proposed Clauchrie wind farm, which would be located to the north east of Mark Hill wind farm. This viewpoint is not included in the landscape and visual assessment for the proposed Clauchrie wind farm and therefore cumulative visualisations are not available. However, any view of the Clauchrie wind farm would be to the north and east of the core path and beyond the Mark Hill windfarm. The effects of the Arecleoch extension proposal would be experienced in views to the south of the core path. We therefore conclude that there would be no significant cumulative visual effects from this viewpoint.

VP3 minor road to the south of Barrhill (2.83 kilometres from the closest turbine)

3.105 Existing turbines at Kilgallioch and Mark Hill are clearly visible in panoramic views, albeit on a smaller scale and at a greater distance than the proposal. The operational Arecleoch turbines are screened by forestry planting. We note that road users would have a clear view of the hubs and blades of at least six of the turbines on the skyline, rising above the commercial forestry. However given the presence of a communications tower in the foreground and the moorland character of the intervening landscape, we do not consider these views to be particularly sensitive.

VP4 Wallace Terrace, Barrhill (3.95 kilometres from the closest turbine)

3.106 Viewpoint VP4 represents views from Barrhill village. In response to concerns raised by South Ayrshire Council and other objectors about the visual effects of the proposal on residents of the village, the applicant submitted additional wirelines to allow a comparison of the visibility of the proposal at viewpoint VP4 with six other locations in Barrhill.

3.107 The only additional viewpoint which would have greater visibility of the proposal than viewpoint VP4 is viewpoint A in the additional wirelines, which is from the upper end of Wallace Terrace. From viewpoints B - F which are located at intervals along the Main Street, visibility would be reduced.

3.108 Figure 7.25c in the EIA Report shows only three turbines (two of which are blades only) from viewpoint VP4. Table 7.7.4.4 in the EIA Report refers to actual visibility of three very small blade tips and two turbine hubs. Regardless of which is the more accurate, we agree with the applicant that the scale of the visible turbines in this view would be diminutive, when compared to the vertical scale of the intervening valley slopes. Given that the majority of locations within the village would have a lesser view of the turbines, we conclude that the visual effects from Barrhill would not be significant.

VP5 A714 road near Blairhall Farm (4.51 kilometres from the closest turbine)

3.109 The proposed turbines would be clearly visible to road users travelling north bound on this section of the A714. We have concluded previously that the proposal would be perceived as being set back from the valley landscape, which would reduce its effect on the

landscape character of LCT 13. However we are in no doubt that, due to the size of the turbines and the unrestricted views across the Duisk valley, the visual effects of the proposal from viewpoint VP5 would be significant.

3.110 Whilst not a recognised tourist route, the A714 is one of the busiest roads in the area, connecting Girvan and Newton Stewart. This significant visual effect on the approach to Barrhill is therefore likely to be experienced by a relatively large number of road users.

VP7 minor road south of Pinwherry (4.66 kilometres from the closest turbine)

3.111 Viewpoint VP7 represents views along an elevated section of a minor road south of Pinwherry. But properties within Pinwherry do not share these views. Existing turbines at Kilgallioch wind farm are largely screened by forestry and therefore the proposal would introduce turbines into the view along the ridgeline. We consider that the intervening landform reduces the level of visibility and the scale of the turbines would not have a dominating effect on views of the Duisk valley in the foreground. Given the relatively limited amount of traffic on this minor road, we conclude that there would be only localised significant effects at this location.

VP8 minor road Glen Tig (5.31 kilometres from the closest turbine)

3.112 Figures 7.29 a - c in the EIA Report show the extent to which operational turbines at Arecleoch can be seen in the view from viewpoint VP8. The proposed turbines would be larger in scale and would extend the horizontal spread of development. However, only four of the proposed turbines at Arecleoch extension would be visible and, of these, only one would be seen at hub height. We consider that the proposal would not result in a marked change from the existing view and agree with the findings of the EIA Report that the visual effects from viewpoint VP8 would not be significant.

VP10 minor road north east of Colmonell (5.76 kilometres from the closest turbine)

3.113 Viewpoint VP10 was not included in the detailed landscape and visual assessment, as the views are not representative of Colmonell village. The existing view and wireline drawing provided in Figure 7.31a of volume 3b of the EIA Report suggest that only the Arecleoch extension turbines would be visible from this viewpoint. The operational Arecleoch turbines are effectively screened by existing landscape features. As the view is one of an upland rather than valley landscape, we consider that there would be no significant effect from viewpoint VP10.

VP13 A714 road near Corwar House (6.82 kilometres from the closest turbine)

3.114 The existing panoramic view from this location on the A714 includes the operational wind farms of Kilgallioch and Arecleoch, positioned above the upper slopes of the Duisk valley. The existing gap between Arecleoch and Kilgallioch wind farms would be filled by the consented schemes at Stranoch and Chirmorie (if built).

3.115 The proposed Arecleoch extension would extend the horizontal spread of development to the east and introduce turbines in closer proximity and on a larger scale than at present. The proposal would also result in considerable stacking of turbines. However, we note that stacking of turbines is a common feature of the existing and proposed schemes, when viewed from viewpoint VP13.

3.116 We do not consider this view to be particularly sensitive, given the expansive moorland in the foreground. However, the proposal would have a significant effect in terms of the prominence of turbines within the view and the complexity of varying turbine heights and scales, when viewed alongside other wind farms.

VP14 Knockdolian (7.13 kilometres from the closest turbine)

3.117 Walkers reaching the summit of Knockdolian would have elevated views of the proposal and other operational wind farms in an arc sweeping from the north east to the south east. Wind farms are therefore a familiar characteristic of existing views. The proposal would be perceived as forming part of the operational Arecleoch wind farm, albeit with an extended horizontal spread to the east which would affect views to the Galloway Hills. Whilst the turbines would be larger than the existing Arecleoch turbines, they would appear similar in size from viewpoint VP14, due to perspective and greater distance which would reduce the visual effects.

3.118 Some objectors have raised concerns regarding the cumulative visual effects of the proposal and the proposed Clauchrie wind farm from this viewpoint. EIA Report volume 3b for Clauchrie includes the Arecleoch extension in the cumulative visualisations from Knockdolian. These show the Clauchrie turbines located to the north east of the operational Mark Hill wind farm. Figure 6.31c in the Clauchrie report shows that together the Clauchrie and Arecleoch extension proposals would extend the horizontal spread of turbines in views from Knockdolian to the Galloway Hills. However given the extent of the remaining gap between Mark Hill wind farm and Arecleoch extension to the south east, we do not consider that the cumulative effect would be significant.

Visual effects from other locations

3.119 We viewed the site from other locations in the local area, including two other locations specifically referred to by Harriet Ellis in her evidence – the minor road to the north east of Colmonell and Bargain Hill. The lightened images for viewpoint D are taken from a point on the road around two kilometres further north and at a higher altitude than viewpoint VP10. These show clear skyline views of the proposal and the operational Arecleoch turbines for road users travelling south on the minor road from Lendalfoot. As the road drops down into the Stinchar valley at Colmonell, visibility decreases until turbines would not be seen at all. From viewpoint D, the proposal represents a significant extension of the horizontal spread of turbines. Whilst located at a similar distance as the operational Arecleoch turbines, they would appear much more dominant due to their increased height.

3.120 At Bargain Hill, we noted that there is a farm track up to the hilltop but no signposts or other obvious indications that this location is well used by walkers. As one climbs the hill the existing Arecleoch (and other wind farm) turbines become visible when looking back to the south. The proposed turbines would extend the turbine array to the west from this view, and would appear larger than the existing turbines. They would perhaps fill the narrow gap between Arecleoch and Kilgallioch, although the consented Chirmorie scheme would (if built) also seem likely to do so when viewed from this location. The hilltops along the north of the Duisk valley are at a similar distance to the turbines from Knockdolian and we conclude that there would also be likely significant visual effects from these locations. The evidence does not suggest, however, that they are well visited by walkers.

3.121 Bardrochart and Knockdolian Estates are concerned about the cumulative effects of the proposal and the proposed Clauchrie wind farm when viewed from Colmonell.

Figure 7.9 the EIA Report indicates that the proposed turbines would not be visible from the B734 road where it passes through Colmonell. Figure 6.41a in the Clauchrie EIA Report shows that, whilst its turbines would be visible from Colmonell village, there would be no visibility form the minor road to the north east of Colmonell, where the Arecleoch extension turbines would be visible. We conclude that the Arecleoch extension and Clauchrie wind farm proposals would not have significant cumulative effects when viewed from Colmonell.

Conclusions on visual effects

3.122 We agree with the EIA Report that the majority of significant visual effects would occur within approximately five kilometres but would extend to seven kilometres along the A714 and from Knockdolian and some other elevated locations around the site. Whilst speculative in terms of the future height of woodland blocks, the information provided by the applicant in figure JW8, appended to Mr Welch's inquiry report, demonstrates the potential for visibility of the turbines to be further reduced over time as existing trees grow taller.

3.123 We recognise that much of the existing commercial forestry will be harvested over the next two to three decades. That will affect views to the wind farm, making it more visible from some locations. On the other hand, Figure 3.2.5 in technical appendix TA 3.2: Forestry shows that most of these areas would be restocked, which would over time reduce the visibility of the wind farm.

3.124 We conclude that the proposal would not have significant visual effects on any of the nearby settlements as there would be limited or no visibility of the turbines. At a distance of 20 kilometres, there would be no significant effects on daytime views from the Merrick Wild Land Area.

3.125 We find that the most prominent views of the proposal would be experienced by road users travelling north on the A714 before reaching Barrhill and on some minor roads, and by walkers along the SA61 core path and at higher viewpoints such as Knockdolian and Chirmorie Cairn. However, in many instances the additional visual impact of the proposal would tend to be diluted by the presence of existing turbines.

3.126 Figure 7.18 of the EIA Report indicates that there are limited locations where the proposal would introduce new views of turbines. Two such locations are the Duisk valley between Pinwherry and Barrhill and the eastern end of Glen Tig. The information provided in figure JW2 suggests that in these locations there would generally only be visibility of one to three turbines, which we consider would reduce the severity of visual effects.

3.127 There are sections of the A714 where the proposal would introduce turbines into the views across the Duisk valley for the first time, as shown in figure 7.20b. However, as road users travel along the A714, other wind farms would come into view.

Aviation lighting

3.128 The applicant's wind farm lighting strategy paper sets out the regulatory framework governing lighting requirements on wind turbines. We note the following requirements for turbines over 150 metres above ground level set out in the Civil Aviation Authority Policy statement 2017:

- a 2,000 candela steady red light on top of the nacelle of each turbine;

- at least three 32 candela steady red lights (to provide 360° horizontal coverage) positioned on the turbine tower at half the nacelle height;
- lights to be operated by a control device which switches the lights on when illuminance falls below 500 LUX;
- 2,000 candela lights may be dimmed to 10% of peak intensity when horizontal meteorological visibility exceeds five kilometres

3.129 As required by current regulations, the proposal includes 2,000 candela lights on each of the 13 turbines. Dimming technology would be employed to dim the lights to 200 candela intensity in clear conditions, when visibility exceeds five kilometres. The visual assessment of turbine lighting in technical appendix 7.3 shows the visual effects of turbine lighting at 2,000 candela and 200 candela at four representative viewpoints. However we note the difficulties in providing accurate representations of different light intensities at varying distances.

3.130 To aid our assessment, we undertook an unaccompanied night time site visit to view lighting at Middleton wind farm in East Renfrewshire, from viewpoints suggested by the applicant and agreed with other parties. The turbines were turning during our visit, and we saw the effects caused as the lights on a turbine were intermittently obscured by its turning blades. Whilst it was useful to view the effects of 2,000 candela and 200 candela lighting at various distances, we note that the lighting at Middleton does not include the technology proposed at Arecleoch extension for reduced light intensity below the horizontal and above +3 degrees. We also travelled along the A714 and some adjacent minor roads during the hours of darkness as part of our consideration of the effects of aviation lighting.

3.131 Based on the information before us and informed by our site inspections, we consider that the light intensity from 2,000 candela turbine lights would in theory have a significant visual effect in the vicinity of the site, as represented by viewpoints A – D. However, we note that due to the changes in light intensity as a result of the vertical elevation angle, the nacelle lights would be perceived as 40 candela in viewpoint A and 300 candela in viewpoints B – D. We observed on our site inspections that in viewpoint A at Wallace Terrace there are street lights in the foreground of the views of the turbine lights. In views across the settled Duisk valley from the east of Barrhill and south of Pinwherry, lights emanating from houses could also be seen. We consider that the presence of other lights in the view would reduce the visual effects of turbine lighting.

3.132 The applicant has indicated that the aviation lights are likely to operate in a dimmed mode for 90-95% of the time they are switched on. We find from our observations of Middleton wind farm and the visualisations for viewpoints A – D that there is a marked reduction in the brightness and visibility of 200 candela lights compared to 2,000 candela. Furthermore, we note from table 3 in Technical Appendix 7.3 that the lighting technology to be used would reduce the intensity of 200 candela lighting to between 4 and 30 candela at the four viewpoints.

3.133 Figure JW10 in the appendix to Mr Welch's inquiry report shows that the lighting intensity when viewed from the Stinchar and Duisk valleys, which sit below the horizontal angle of the lights, would be less than 80 candela for the 2,000 candela lights and less than 8 candela for the 200 candela lights. Subject to the mitigation proposed in the form of the dimming technology and directional lighting, we conclude that there would be no residual significant effects from the main turbine lighting.

3.134 We note that the three 32 candela lights to be positioned at half the nacelle height would not be dimmed or directional like the main lights. However, given the lower intensity and height of these lights we do not consider these would give rise to significant visual effects.

3.135 South Ayrshire Council and other objectors have raised concerns about the impact of aviation lighting on the Galloway Forest Dark Sky Park and the Merrick Wild Land Area, on its own and cumulatively with the proposed Clauchrie wind farm.

3.136 Whilst not objecting to the proposal, NatureScot considers that the introduction of eye catching and prominent lights could have significant adverse effects on the dark sky park and the wild land area. We note that the applicant did not provide a night time visualisation from the Merrick, as requested by NatureScot, due to concerns about the personal safety of surveyors at such a remote night-time location. We consider that the visualisations from viewpoint 24 Benyellary submitted as part of the Clauchrie EIA report are sufficient to enable us to consider the effects of aviation lighting at Arecleoch extension on the dark sky park and wild land area.

3.137 The proposal would be located at a distance of nearly 22 kilometres from viewpoint VP24. Figure JW10 indicates that the western part of the Merrick Hills sits at a similar elevation and therefore there would be no reduction in lighting intensity arising from the vertical angle of view. The 2,000 candela lights would therefore be perceived at that level (albeit from 22 kilometre distance), unless dimmed due to clear meteorological conditions.

3.138 The applicant's evidence states that in poor visibility conditions, when the lights would be operating at 2,000 candela, they are unlikely to be seen beyond five kilometres distance, due to the inherent reduction in visibility. No other party has provided evidence to the contrary on this matter. We therefore conclude that when the lights would be operating at 2,000 candela, there would be no (or at worst very limited) visibility in the wild land area or dark sky park core area, which are located over 20 kilometres away, or in the dark sky park buffer zone which is between eight and 20 kilometres from the proposed turbines.

3.139 Figure 6.50j in the Clauchrie EIA Report shows the visual effects of 2,000 and 200 candela lights at the proposed Arecleoch extension and Clauchrie wind farms from viewpoint 24. The lights at Arecleoch extension appear below the silhouette of the skyline and would, on the basis of the visualisation provided, be much less visible than those at Clauchrie, which are located at a distance of 10 kilometres from the viewpoint.

3.140 In assessing the significance of the effects on the wild land area and dark sky park, we also find it relevant to consider the number of people who would experience the effects. The proposed turbines would not be visible from large parts of the wild land area including the identified dark sky viewing points. Given the remoteness of the areas from where the lights would be visible (and the likelihood that only a very small number of people would visit such locations during hours of darkness), we would expect the number of people who would be affected by turbine lighting in these areas to be minimal.

3.141 We have assessed the aviation lighting effects of the proposal on the basis of currently available mitigation measures, that is the dimming of nacelle lights during good meteorological visibility and nacelle light fittings which emit light horizontally. The applicant has invited us to also consider the scope for two further means of mitigation which are not currently available.

3.142 The windfarm lighting strategy paper considers the scope for the Civil Aviation Authority to amend its existing rules on aviation lighting to reduce environmental impacts within the context of regulations set by the International Civil Aviation Organisation. It concludes that development of a transponder Aircraft Detection Lighting System (ADLS) has the greatest potential to resolve the challenges identified.

3.143 The use of radar mitigation would mean that the nacelle lights would not be activated until aircraft are detected by the surveillance system. We note that NatureScot has indicated that the implementation of radar mitigation should be required as a condition to any consent and South Ayrshire Council states that the use of such a system would overcome its concerns.

3.144 The applicant has indicated that the Civil Aviation Authority is in the process of consulting on a new policy statement on aviation detection systems for wind turbine lighting and that an aircraft detection lighting system could be in place by 2025. We have not been provided with a copy of this consultation or any written confirmation from the Civil Aviation Authority on the likely implementation date. We note from the table on pages 35-36 of the windfarm lighting strategy paper that there are a range of stakeholder who would be affected by the introduction of an aircraft detection lighting system and various risks which need to be considered.

3.145 Based on the evidence before us, we consider that the use of an aircraft detection lighting system would significantly reduce the visual effects of the proposal on the area surrounding the proposed wind farm. However, at this time it is not known if or when this mitigation measure would be available to the applicant. The condition suggested by the applicant addresses this uncertainty by requiring an aviation lighting landscape and visual mitigation plan to be prepared and kept under review to allow for adaptation and modification to take account of changes in technology and policy. The matter is covered further in chapter 8 on proposed conditions.

3.146 The applicant intends to prepare a reduced lighting scheme, if interim mitigation is required pending regulatory adoption of an aircraft detection lighting system. No further details have been provided. However, we note that the Civil Aviation Authority has approved lighting schemes which substantially reduce the number of turbines fitted with visible aviation lighting for other onshore windfarms in Scotland. We agree with the applicant that a reduced lighting scheme would have the potential to lessen the visual effects of the turbine lights and that this matter could be covered by condition.

3.147 We conclude that, as a result of the mitigation measures proposed by the applicant, the significant visual effects of aviation lighting would be limited in extent. If the turbine lighting is more visible than predicted, the effects would be experienced by only a small number of people in the most sensitive locations. Subject to changes in aviation policy and technological advances, the visual effects of lighting would be likely to lessen over time.

Residential visual amenity

3.148 We note that the applicant's residential visual amenity assessment (RVAA) has focussed on a study area of two kilometres radius from the turbines. Some objectors have questioned whether the study should have covered a greater area, including the effects on Dochroyle Farm, which is located three kilometres from the closest turbine.

3.149 Paragraph 4.4 in the Landscape Institute guidance states that "there are no standard criteria for defining the RVAA study area nor for the scope of the RVAA, which should be determined on a case-by-case basis taking both the type and scale of proposed development, as well as the landscape and visual context, into account". The guidance advises against disproportionately extensive study areas and stresses that a significant landscape and visual effect is not the same as considerations relating to the residential visual amenity threshold.

3.150 Based on the information provided in the RVAA and our site inspections, we are satisfied that the scope of the study is appropriate. However, we have also considered the potential effects on the residential visual amenity of Dochroyle Farm in our assessment.

3.151 There are no residential properties within one kilometre of any of the turbines. We agree that of the four residential properties within the study area, there would be significant visual effects at Kilrenzie and Wheeb farms. There would be no visibility from Farden Farm and at the property at Glenour, which is currently vacant, visibility would be limited to the blades tips of one or two turbines.

3.152 South Ayrshire Council objects on the grounds that the proposal would have significant adverse effects on residential visual amenity at Kilrenzie and Wheeb farms. We note that Wheeb farm is currently vacant and that the occupiers of Kilrenzie Farm have not formally objected to the proposal. We visited both properties during our site inspections.

3.153 The Landscape Institute guidance uses the term "residential visual amenity threshold", which it defines as "the threshold at which the visual amenity of a residential property is changed and adversely affected to the extent that it may become a matter of residential amenity". Parties appear to agree that, when assessing whether a proposal would breach this threshold, it is necessary to consider whether it would result in an unacceptable or overbearing effect and whether the property would become widely regarded as an unattractive place in which to live. However, we note that there is a difference in opinion between parties as to whether or not this would occur in this instance.

3.154 Appendix 1 of the Landscape Institute guidance and the applicant refer to previous appeal decisions relating to residential visual amenity. Whilst it is useful to consider how others have reached their decisions, this is a matter on which we, and ultimately the Ministers, need to exercise a judgement based on the available evidence.

3.155 Looking first at the effects on Kilrenzie, we note that the proposed turbines would be positioned directly in line with views from the south facing windows and rear garden of the property and would occupy 35 degrees of the field of view. The applicant's assessment indicates that the proposed turbines would appear two to three times taller in the view than the existing Arecleoch wind farm. We consider this difference in scale to be significant in the views from Kilrenzie.

3.156 We agree that the screening provided by the intervening forest would reduce the level of visibility. However, the most northerly three or four turbines would sit high on the horizon and would have an overbearing effect on the most direct views from the house and garden at Kilrenzie. We also note from Figure 3.2.6 of technical appendix TA 3.2 that (at least on current plans) most of the forestry between Kilrenzie and the northernmost turbines would be felled between 2033 and 2042. This would tend to have the effect of increasing the visibility of the turbines, until any replacement planting matures.

3.157 The nacelle lights on some the turbines are likely to be visible in direct views from Kilrenzie. However figure JW10 shows that the perception of lighting intensity would be a maximum of 10 candela because the property would sit at a vertical angle of more than 4 degrees below the proposed lights. We anticipate that there would be limited visibility (if any) of the 32 candela lights positioned at half nacelle height because of the screening effects of the trees. Whilst visibility would tend to increase as a result of the planned felling of trees, we consider that the visual effects of 32 candela lighting would not be significant.

3.158 Given the scale, proximity and direct views of the turbines, we consider that there is the potential that people would regard the property at Kilrenzie as an unattractive place to live. However, we note that the views along the glen to the east and west of Kilrenzie would not be affected by the proposal and would continue to offer considerable amenity for the occupiers. Furthermore in the most direct views from Kilrenzie, the upland glen landscape in the foreground and the positioning of the turbines beyond the ridgeline would help mitigate the impact. Whilst recognising the significant visual effect that the proposal would have at Kilrenzie, we do not consider overall that the residential visual amenity threshold would be breached.

3.159 The proposal would also have a significant effect on the outlook from Wheeb farm, which is located 1.58 kilometres from the nearest turbine. Similar to the effects at Kilrenzie, the proposed turbines would appear much taller than the existing turbines at Arecleoch and the most northerly turbines would be clearly visible above the horizon and intervening forest (prior to any felling). Turbine lighting would also result in similar effects.

3.160 However at Wheeb farm, the turbines would occupy a lesser proportion of the field of view (26 degrees) and would be located away from the direction of view of the principal elevation of the property. We consider that the visual effects at Wheeb, whilst still significant, would be less severe than at Kilrenzie. We therefore conclude that the residential visual amenity threshold would not be breached at Wheeb farm, if it were to become occupied again.

3.161 There are no visualisations showing anticipated views from Dochroyle Farm, which lies three kilometres to the south east of the proposed development. We observed on our site inspection that existing turbines at various directions and distances can be viewed from the private road to the west of the house, as mentioned in Ms Spence's landscape and visual statement of case.

3.162 The principal elevation of Dochroyle Farm faces away from the proposed turbines. Given the enclosed nature of the front and side gardens, we anticipate that the proposed development would not be readily visible from the garden ground of Dochroyle Farm. It may be visible from upstairs dormer windows, but at an oblique angle. We understand that Ms Spence is concerned about the cumulative visual effects of existing and proposed wind farm development in the vicinity of her property. However in assessing the impact of the Arecleoch extension proposal, we conclude that there would be no significant effects on residential visual amenity at Dochroyle Farm.

Other matters

3.163 Ian Kelly on behalf of Bardrochart and Knockdolian Estates raised concerns regarding the decision by NatureScot not to take part in the inquiry and the evidence submitted by the applicant. South Ayrshire Council and other objectors also made

reference to the scope of the cumulative landscape and visual assessment undertaken by the applicant.

3.164 Whilst indicating the proposal could result in likely significant adverse impacts on views from the wild land area, NatureScot did not object to the application. We have reviewed NatureScot's consultation responses and further correspondence with the applicant. We understand NatureScot's position on the application and did not consider it necessary to request that it submit further written information or take part in the inquiry.

3.165 No evidence has been submitted to suggest that the visualisation techniques used by the applicant to demonstrate the landscape and visual effects are not in accordance with current guidance. Mr Kelly considers that new guidance is required for the assessment of wind turbines taller than 200 metres high. However he has not explained why he considers that the current approach would lead to an underassessment of effects.

3.166 In the absence of updated guidance or objections from NatureScot or South Ayrshire Council on this matter, we have no reason to questions the adequacy of the visualisations provided by the applicant. The limitations of the visual representations are explained in section 7.9 of technical appendix TA 7.1 landscape and visual assessment methodology.

3.167 The cumulative landscape and visual impact assessment undertaken by the applicant considers the effects of the proposal in combination with existing, under construction, consented and application stage wind farms awaiting determination as at 18 April 2019. We note that this approach is in line with NatureScot and Landscape Institute guidance. As indicated in paragraph 1.8, we do not consider it necessary for the EIA Report to be updated to include the cumulative effects with application-stage development that is behind the Arecleoch extension in the consenting process.

3.168 The Guidelines for Landscape and Visual Impact Assessment state that proposals that are at scoping stage are not generally considered in the assessment of cumulative effects because firm information on which to base the assessment is not available. We do not consider it necessary or appropriate for the wind farm proposals at Craiginmoddie and Carrick (both currently at scoping stage and located at a distance of at least 20 kilometres) to be included in the cumulative assessment for this application.

Reporters' overall conclusions on landscape and visual impact

3.169 Mr Welch indicated that, in his professional judgement, the landscape and visual impacts of the proposed development would be "acceptable". Ms Anderson used the term "inappropriate" in her assessment of the proposal. Reaching a view on the acceptability or appropriateness of the proposal will ultimately be a matter for Ministers in the planning balance, which we consider in chapter 9.

3.170 In terms of landscape effects, the addition of the Arecleoch extension would be consistent with the character of LCT 18c, which recognises wind farms as one of the key characteristics of the moorland plateau. The proposal would not, in our view, change this character to a wind farm landscape. Due to the 200 metre height of the turbines and their position close to the boundaries with LCT 13 and LCT 14, the proposal would have a greater effect on the landscape character of these areas than existing developments. However significant effects would be localised in extent and we find that the turbines would be sufficiently set back to avoid eroding the intimate, settled character of the Duisk valley or the secluded nature of Glen Tig.

3.171 It would be unusual for a windfarm of the scale proposed not to have some significant visual effects on the surrounding area. The proposed turbines would be taller than existing turbines in the surrounding area. However it does not necessarily follow that the effects of the proposal, in terms of increased prominence and visual intrusion, are also a "step change".

3.172 We find that the identified significant visual effects do not affect any particularly sensitive locations in terms of national, regional or local designations, and significant visual effects on local settlements have been avoided.

3.173 Roads users on the A714 and some minor roads, and walkers on the SA61 core path and at higher viewpoints such as Knockdolian and Chirmorie Cairn, would experience significant visual effects. However in many of these locations existing turbines can also be seen, and when moving through the landscape the effects would only be experienced for a temporary period. Whilst the proposed turbines are taller than existing wind farms and more prominent in some views, in other locations they would appear similar in scale due to the effects of distance and perspective.

3.174 In order to adhere to current aviation regulations, the increased height of the proposed turbines would require lighting where none is currently present on neighbouring wind farms. As turbine heights increase and repowering schemes are submitted, turbine lighting is likely to become a common issue in wind farm inquiries. We note that the wind farm industry and civil aviation authority are seeking to address this matter, to avoid the need for the identification and assessment of potential solutions on a case by case basis.

3.175 The embedded mitigation measures proposed by the applicant would significantly reduce the intensity of the aviation lighting and also the distances and locations at which there would be visibility. The anticipated future changes in aviation policy and lighting technology provide the opportunity to further reduce the visual effects of aviation lighting. We therefore support the approach suggested by the applicant to require a regular review of lighting mitigation options and allow for adaptation and modification through the lifetime of the development.

3.176 Whilst the proposal would have significant visual effects on the properties at Kilrenzie and Wheeb farms, we do not consider that the residential visual amenity threshold would be breached at either property. We conclude that the effects on these properties would not be so great as to raise issues of public interest.

3.177 Our conclusions on adverse landscape and visual effects require to be balanced alongside other considerations in coming to a conclusion on the proposal in chapter 9. Consideration is given in chapter 8 to what matters relating to landscape and visual impact would require to be covered in conditions, if consent was to be granted.

CHAPTER 4: PRIVATE WATER SUPPLIES

4.1 We held three days of inquiry sessions on effects on private water supplies (PWS). We heard from Gordon Robb (from SLR consultants) on behalf of the applicant, Connie Lobban on behalf of South Ayrshire Council and Dr Rachel Connor on behalf of Susan Crosthwaite.

The EIA Report

Chapter 10 of the EIA Report - Hydrology, hydrogeology, geology and soils Private Water Supplies Risk Assessment

4.2 Changes to public and private water supply yields as a consequence of changes to run-off rates are scoped out of Chapter 10 of the EIA Report, as no significant alterations to run-off rates/infiltration or drawdown of the water table are anticipated. Effects on surface water from forest felling are scoped out as felling would be carried out in accordance with good practice guidance.

4.3 Section 10.2.6.2 of the EIA Report explains how the field surveys for the Private Water Supplies Risk Assessment (PWSRA) were carried out. It states that properties which have (or may have) a recorded PWS downstream of the site were visited, and where possible the source of the PWS was verified and confirmed. Where this was not possible a questionnaire was left with the occupiers of the property. This, it is stated, has ensured that a thorough assessment of PWS has occurred.

4.4 Five PWS are identified as potentially at risk. Subject to good practice measures, the risk of pollution to PWS and other receptors in the water environment is assessed as negligible, and not significant (10.4.2.1). All other potential effects considered in chapter 10 of the EIA Report are also considered to be negligible, and not significant.

4.5 The PWSRA says that it presents (following a request by South Ayrshire Council) a site-specific hydrogeological and hydrological report which considers potential effects on the quality and quantity of PWS. A conceptual site model considers the proposed activities which might impair water supplies, including the potential for borrow pits to generate leachant. The conceptual model uses a source-pathway-receptor linkage to assess the risk to each PWS.

4.6 A total of 31 PWS were identified within one kilometre of the application boundary and/or potentially downgradient of the surface and ground water catchments that drain from the site (Figure 10.1 of the EIA Report). Where a potential source-pathway-receptor linkage (a hydraulic connection) is identified, a risk assessment is carried out for that PWS. The five PWS which were risk assessed are Arnimean (PWS02), Burnside (PWS04), Laggish Farm (PWS10), Barrhill Station and Ferngate Cottage (both served by PWS14).

Consultation responses

4.7 SEPA made several consultation responses. The first of these was from September 2019. This objected to the application due to a lack of information on water crossings, PWS, peat reuse and borrow pit restoration.

4.8 In its first consultation response, SEPA intimated that if any PWS was within 100 metres of proposed access track upgrades then a detailed site-specific

qualitative and/or quantitative risk assessment would be required. One mapped PWS (Craigalbert) appeared to be within such a buffer area. The applicant subsequently indicated that there is no PWS at Craigalbert, and SEPA then confirmed (in its second response in January 2020) that its "issues with respect to private water supplies have now been addressed". All proposed development was said to be outwith the buffer zones around groundwater abstractions from Land Use Planning System SEPA Guidance Note[3] (LUPS-GU31) Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependant Terrestrial Ecosystems. A further consultation response from SEPA on 16 March 2020 says that water crossings would be addressed by SEPA as part of its regulatory/licensing functions.

4.9 Scottish Water's consultation response raised no objection. There was sufficient capacity at that time for the supply of public water to the site, although private treatment of waste water would be required. There are no Scottish Water drinking water catchments or water abstraction sources designated as Drinking Water Protected Areas under the Water Framework Directive which may be affected.

Post-inquiry correspondence

4.10 We issued a request on 20 January 2021 to the applicant to provide:

- A copy of the document Scottish Renewables et al (2019) 'Good Practice during Windfarm Construction' and any comments on this document.
- Clarification on the questionnaires used to inform the applicant's PWSRA, including a list of the properties where a questionnaire was left and a list of the properties for which a questionnaire was completed.
- The dates at which the site design was a) "chilled" and b) "frozen".

4.11 The council and Susan Crosthwaite then had the opportunity to comment on the applicant's response, although the council elected not to do so. The applicant then responded to comments from Dr Connor (on behalf of Ms Crosthwaite).

4.12 Subsequent to these exchanges, because the veracity of SLR's 2019 PWS questionnaires was still contested, we asked to be sent copies of the questionnaire returns which SLR stated it had received. These were provided (for information) to the council and Ms Crosthwaite in redacted form and, at our request, were also to be forwarded (as a courtesy) by the applicant to the owners of the properties concerned.

[3] CD23.19

The main points for the applicant

Statement of Case Inquiry Report Precognition Response to information request of 29 January 2020 Further response following information request of 29 January 2020 Closing submissions

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations')

4.13 Dr Connor misunderstands how the regulations operate. Regulation 5(3) requires the EIA Report to be based on a scoping opinion, where one exists. In relation to effects on PWS, the EIA Report is clearly based on the scoping opinion as set out in chapter 10 of the Report. There is no requirement to "comply" with a scoping opinion.

4.14 Chapter 1 of the EIA Report (paragraph 24 and table 1.1) confirms the identity (Gordon Robb and his colleague Mr Duncan) of the authors of chapter 10 and their relevant expertise and experience.

4.15 In her closing submissions, Dr Connor misunderstands the significance of the term "relevant assessment" insofar as it applies to the EIA Regulations. Regulation 5(4) states: "With a view to avoiding duplication of assessments, account is to be taken of the available results of other relevant assessments in preparing the EIA report". In other words, if an assessment had already been "carried out pursuant to national legislation" then an applicant can have regard to it in preparing an EIA Report. That is in fact what the applicant did in taking account of EIA Reports produced for other wind farms.

The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017[4] ('the PWS Regulations')

4.16 Risk assessments referred to in the PWS Regulations are to be undertaken by the council and not by the applicant. Dr Connor has not interpreted the legislation properly.

The Water Framework Directive

4.17 The Directive is given effect through the Water Environment and Water Services (Scotland) Act 2003 and the Controlled Activities Regulations. SEPA oversees the operation of these regulations. The applicant would need a licence from SEPA to undertake any construction that might cause adverse effects to controlled waters. SEPA does not object to the application and there is nothing to suggest that it would not grant such a licence.

The PWSRA

4.18 Gordon Robb confirms that he oversaw the preparation of chapter 10 of the EIA Report and the PWSRA. A very comprehensive desk-based assessment was completed.

[4] CD14.9

The findings of this were then verified by an extensive programme of field investigations. All PWS were assessed as highly sensitive.

4.19 To inform the assessment of impacts, the source of PWS were confirmed by site investigation and potential impacts to individual PWS were assessed. This included delineating the source of the abstractions and the water catchments to these water sources, speaking with residents and assessing each water source individually. The findings of this assessment were agreed with statutory consultees. The conceptual site model is a description of the geology, hydrology and hydrogeology. It is brought together in the PWSRA to demonstrate source-pathway-receptor relationships.

4.20 Table 2-1 of the PWSRA shows that the majority of PWS do not lie in surface or groundwater catchments that drain from the areas where new wind farm infrastructure is proposed. For these, there is no pathway between source and receptor and no potential effect. Tables 7.1 and 7.2 of Mr Robb's Inquiry Report provide a summary for each supply mentioned in the council's Statement of Case, with more detailed notes in Table 7.3. Of those, most were assessed in the PWSRA and no pathway was found to exist. Those which were not assessed are all more than one kilometre up-gradient from new wind farm infrastructure, and so there is unlikely to be a pathway between source and receptor.

4.21 The PWSRA concluded that the effects on PWS would be negligible. There was no need to consider in more detail the potential effects on the volumes of water which could be abstracted for such supplies.

4.22 An initial assessment of PWS sources was undertaken prior to completing the field work as part of the "design chill" and then "freeze". The field work confirmed the desk based assessment and as a consequence there was no need to alter the design to mitigate potential impacts on the PWS sources as part of the design chill.

4.23 The structure and content of the EIA Report is the same as many previous reports that SLR (and their peers) have prepared. These have been assessed by statutory consultees, including council environmental health departments with responsibility for the protection of PWS sources, without requests for further information or without the content or the structure of the report being queried. It is in accordance with industry good practice.

4.24 The mapping in the EIA Report was prepared with cognisance of guidance published by SEPA, in particular LUPS-GU31. Figure 10.7 of the EIA Report shows the buffers used. In fact much larger buffers (one kilometre from the site boundary) have been used in determining whether the risk to a PWS needs to be assessed.

4.25 Version 4 of Good Practice During Wind Farm Construction was published in 2019. Version 3 of the guidance was current when the wind farm design was being developed. There are no relevant material differences between these versions. Not every part of the guidance is relevant to the process of preparing an EIA Report.

<u>Risks to Groundwater</u>

4.26 The PWSRA considered potential effects on surface water and groundwater. It concluded that, with the proposed safeguards, surface water and groundwater would be protected, and the requirements of the Water Framework Directive would be met. SEPA, which is responsible for implementing the requirements of the Directive, does not object to

the proposed development. The council's position, that any risk to PWS is too great, is not supported by policy or legislation.

4.27 The Kirkcolm Formation lies beneath all of the proposed turbines and borrow pits. The geology is well understood. The British Geological Society classifies the Kirkcolm Formation as a low productivity aquifer with groundwater present in a near surface weathered zone and in secondary fractures. Groundwater flow typically follows surface topography and flows from high ground and discharges to springs and larger watercourses.

4.28 Permeability is very low. Water can move, but not a lot, and slowly – tens of years or more (probably hundreds) to reach fissures and fractures. It will travel more quickly in fissures, but only at the rate it is being recharged at. Water in deep boreholes will be very old. The main control is provided by the upper surface which is very weathered and behaves like a gravel. Water preferentially travels through this upper surface, hence why using watercourses and surface topography is a good proxy for modelling groundwater.

4.29 Since the low permeability of the Kirkcolm Formation (and of the peat and glacial till) does not readily allow water movement, excavations do not result in significant inflows of water or dewatering. This is evident at the existing borrow pits where little water ingress is witnessed. The surfaces of the borrow pits dry out, not because water seeps through them, but because they are built at a slight grade to a drain at the edges of the borrow pit.

4.30 As a consequence of the overall low permeability, the extent of any temporary dewatering required to establish turbine foundations would be very small and limited to the immediate area of the foundation. Following construction, no dewatering would be required, and any limited drawdown which might have occurred would rebound to pre-development levels. Turbine foundations and borrow pits are unlikely to intercept significant quantities of groundwater.

Cumulative effects

4.31 The effects of forest felling has been considered in the EIA Report and in Mr Robb's Inquiry Report. To establish the windfarm, 135 hectares of advance felling would be required. This compares to a commercial forest extent of 5,155 hectares. Technical Appendix TA 3.2 confirms that the development would be 'key holed' into the existing forest crop. Therefore, with established best practice and controls, there would be little potential for felling associated with the development to affect ground or surface water resources or PWS. Keyholing is the same approach used when the existing Arecleoch wind farm was constructed. Other felling in and around the site will occur regardless of whether or not the wind farm extension is constructed. The cumulative effects with the Chirmorie wind farm have also been considered.

Monitoring and mitigation

4.32 To protect the water environment, many safeguards are proposed in the EIA Report. Site-specific drainage plans and pollution prevention plans are to be agreed with statutory consultees prior to construction taking place. These could be secured by planning conditions. The applicant would also require a Construction Site Licence from SEPA under the Controlled Activities Regulations.

4.33 Safeguards are put in place to minimise the chances of a problem occurring but that cannot be ruled out, for example as a result of heavy rainfall. However the water control

measures are designed to cope in a 1 in 200 year event – so there is sufficient redundancy and spare capacity built in.

4.34 The safeguards proposed are similar to those used by the applicant at the Arecleoch, Mark Hill and Kilgallioch wind farms and there were no environmental incident reports or public complaints in relation to PWS during the construction of these wind farms, nor during their operation to date. These wind farms lie in a similar hydrological and hydrogeological context to the proposed development.

4.35 To ensure PWS are safeguarded, a programme of confirmatory water quality sampling is proposed in the EIA Report. The programme includes a period of baseline monitoring (e.g. prior to construction) and construction monitoring to allow for any changes in water quality to be identified.

4.36 Emergency plans for replacement water supplies (in the event of disruption to a supply) would be agreed with the council before construction commenced. If a pollution event did occur it would likely be transient, and a different source would be able to be found. If there was a delay in finding a permanent solution, a water tanker could be used.

Details of each PWS

4.37 To identify the locations of PWS, the applicant submitted data requests to South Ayrshire Council and SEPA. These were supplemented by a review of EIA Report material and PWSRA for neighbouring wind farm proposals. In addition, Ordnance Survey mapping and aerial photography was reviewed. Finally, there were two programmes of site investigation to identify any further properties and confirm the location of PWS sources.

4.38 A standard questionnaire was used during the field surveys to collect details of PWS sources. Where access was permitted, surveyors took photographs of the sources and surrounding ground. If residents were not present, questionnaires and a stamped addressed envelope were left to allow residents to provide information regarding the location and use of their PWS.

4.39 The exercise undertaken to establish the source of each potentially affected PWS was perfectly adequate and based on available information. Mr Robb updated his assessment based on further information provided during the Inquiry. That is permissible. None of this information has changed his conclusions in relation to the effects of the proposal. In completing such an assessment to support an Environmental Impact Assessment, the quantity of water abstracted does not need to be established.

4.40 Dr Connor refers in her closing submission to the fact that the electronic copies of the questionnaire responses submitted to the Inquiry have a date tag of 14 January 2021. This is simply when a pdf version of the hardcopy responses was produced for the Inquiry. The veracity of the questionnaires has not been challenged by any of the recipients.

4.41 Questionnaires were only left at PWS which might be at risk, based on distance from and topographical relationship with the development. Where a source is “unconfirmed”, this means information has been gathered from third parties but has not been verified in the field. If SLR thought more investigation of an unverified PWS was required, they would have investigated further.

PWS02 Arnimean

4.42 The location of the source identified by Dr Connor following Susan Crosthwaite's questionnaire survey is the same location considered in the PWSRA. This is a different location from the one identified in the council's Statement of Case and used for Mr Robb's Inquiry Statement. In any event, this does not change the risk assessment for this supply.

4.43 The track has been surveyed and is considered to be adequate for construction purposes, so it is not expected to experience degradation. The track is upgradient of the well at Arnimean but the greater fall is down the track itself. It drains into a ditch beside the track and then into the watercourse (after treatment in check dams). It is likely that there would need to be a wheel wash facility near to the public road here – the detailed location would be agreed with the council and SEPA.

PWS04 Burnside

4.44 Burnside was visited for the PWSRA but the occupants were not present. Details of the PWS source were provided by the occupants who returned the questionnaire which had been left there. The risk to this PWS was then completed in good faith based on the information received. In any event, the additional information provided by the council and Dr Connor does not alter Mr Robb's findings. The competed questionnaire would have been received shortly after the visit on 6 February 2019.

PWS10 Laggish Farm

4.45 The resident confirmed that water levels in the well fall in the summer. Since the nearby watercourses (Laggish Burn and Haw Burn) are relatively large and would not dry up entirely in the summer, surface water is therefore unlikely to make a significant contribution to this supply. In any event, the surface and groundwater catchments would be comparable. The source is about one kilometre east of the existing access track, and it is proposed to upgrade a short length of track within the catchment. The risk assessment remains the same for this property.

PWS14 Barrhill Station, Ferngate Cottage, PWS16 Cairnlea

4.46 SLR surveyors spoke to staff at Barrhill Station who advised that the PWS there had been deemed by the council to be not fit for purpose. However it was still considered as highly sensitive, since it might be used again in the future. As the staff provided information about the PWS, no questionnaire was left. Mr Robb visited the source of supply. It is an excavation, which results in the water channel being widened to allow water to pond and feed the holding tank. At the closest distance, the abstraction point would be 580 metres downstream from an upgraded water crossing and upgraded stretch of track.

4.47 In addition to Barrhill Station and Ferngate Cottage, it is noted that there is an additional property (Cairnlea – PWS16) served by the same supply. South Ayrshire Council did not have this data when SLR requested it. This new information does not change the risk assessment. The podzols near WX01 are mapped in Figure 10.2 of the EIA Report. These don't change the risk assessment. They are surrounded by lower permeability soils.

PWS07 Knockycoid

4.48 In his evidence in chief, Mr Robb said that a spring was the surface water supply so the catchment is likely to be the same as the surface water catchment. The water course

between this supply and the site creates a break between pollution source and receptor. So no further assessment was required. There do not appear to have been any issues with this PWS during the construction of the Kilgallioch and Arecleoch wind farms.

PWS11 Dochroyle Cottage, PWS12 Dochroyle Farm

4.49 The geological log for the borehole at Dochroyle records a fault or fissure over 50 metres below ground level, not a surface fault. There is high ground around Dochroyle to nearly 200 metres AOD. This catchment area is considered to be more than capable of driving an artesian supply. Water in the borehole from the fissure will have gone through the surrounding ground and the fissure slowly. The nearest new wind farm infrastructure would be more than three kilometres from the borehole.

PWS17 White Cairn

4.50 At Whitecairn, there is a boundary between two greywacke units. It is not a fault, nor would it have the characteristics of one. It does not follow that there is a preferential pathway for groundwater.

PWS30 Woodpark Cottage

4.51 In respect of concerns about the previous effects of blasting on this supply, it is unlikely there is a pathway between the pollution source and receptor. Borrow pits 2 and 3 are above the water table and at distances of 2.4 kilometres and four kilometres respectively from the borehole. So it would be expected to take tens of years for ground water to travel between the borrow pits and the PWS. There is also a watercourse between the borrow pits and borehole[5]. The borrow pits were not in fact in use during 2016 in support of the construction of either the Arecleoch or Kilgallioch wind farms, so the reported problems could not have been due to wind farm construction.

The main points for South Ayrshire Council

Outline Statement of Case
Inquiry Report
Precognition
Closing submissions
Annotated map

4.52 The council did not object to the application on the basis of potential effects on PWS. However at the second pre-examination meeting, the council intimated that it now objected on the basis of the risk of adverse effects on PWS. This is because the council's environmental health department, which had initially took the view that there would be no adverse impacts, has changed its mind following further reflection. The council decided to object when it became aware of the range of properties potentially affected by pollution of PWS. Ms Lobban is an environmental health officer with South Ayrshire Council. She has been working full time on PWS issues since 2014 and is an authorised officer for Scottish PWS legislation.

[5] See Figure GR-IR6 from Gordon Robb's Inquiry Statement

4.53 The development raises the potential to have adverse and possibly irreversible effects, and be unacceptable or incompatible with maintaining effective PWS and their catchment areas for a number of residences and businesses. It is likely to pose a threat, and be seriously detrimental, to PWS.

4.54 There are some very vulnerable PWS around the site. Their sources are often taken from surface water and natural spring mix, though surface water appears to be prevalent, with some bore wells. This makes the catchment areas extremely vulnerable to introduced change, especially from borrow pits (including their blasting), construction and laying down of new access roads and the upgrade of old access roads.

4.55 Ms Lobban's inquiry report lists 21 properties where the proposed development is "potentially extremely harmful, and potentially destructive to the PWS catchment areas." She lists a further 14 properties whose catchment areas are further from the development or are unknown, and for which the proposals are also potentially dangerous. There are a number of PWS missing from the EIA Report.

4.56 Any risk to PWS is too great. It has not been demonstrated that PWS, their sources and the catchments that feed them will not be damaged or destroyed. There needs to be proof of this. Should a PWS be damaged beyond repair, for most properties around the site, there would be no possibility of recourse to connect to mains water given the distances involved. If a property fails to have a suitable potable water supply it may be deemed to be below tolerable standard, and uninhabitable. Environmental health officials may then take action to have such properties closed or demolished. The introduction of bowsers is not acceptable mitigation, so certainty is required.

4.57 It appears that the main part of the PWSRA has been desk-based, with limited on-site studies. Finding where the water comes from in old supplies is very difficult. There is not enough evidence in the desk study or from the site visits, for which three days does not seem sufficient. The PWSRA does not identify the catchment area for each PWS. There is no conceptual site model. There is not enough evidence (either in the PWSRA or Mr Robb's inquiry report) to prove that there would be no harm, or in many cases for the assertion that there is no pathway between pollution source and receptor.

4.58 The PWSRA should have been more thorough given the extent of development proposed. A visit to each property would have been expected, perhaps with a council official so that the assessment is done jointly. Alternatives should have been looked at, for example removing borrow pits or turbines from the proposed design.

4.59 The description of the development misses crucial detail about all the additional infrastructure which is involved. Turbines 9-13 and their access tracks are of particular concern, as is the requirement to fell sections of forest. Borrow pits 1, 4 and 5 could affect PWS served by surface water. Borrow pits 2 and 3 could affect supplies from bore wells. There is not enough proof that there would be no de-watering of borrow pits. Turbine foundations would be deep and they could divert the way water currently flows. The amount and type of construction traffic (including cumulative effects with the construction of the Chirmorie wind farm and forestry extraction) is also of concern.

4.60 SEPA's buffer zones in LUPS-GU31 are not always sufficient protection. Ms Lobban has been involved in wind farm proposals where this would have been the case. There are a myriad of factors like topography, soil, deforestation, machinery, climate change, drought conditions and heavy rainfall which need to be considered.

4.61 South Ayrshire Council is the enforcing authority under the PWS Regulations. Regulation 16 says that "a person must not take any action which has the effect of allowing deterioration of the quality of the water". Non-compliance is an offence, and enforcement action can be taken.

4.62 At Arnimean (PWS02), the PWSRA is incorrect to say that the supply is not used for human consumption. It is used for the dwelling and planned to be used for new tourist accommodation which has received planning permission. This is the property where there is perhaps the greatest concern.

4.63 The grid reference for the source uptake is about 800 metres south of the property sitting in forest. It is a seep well. In wet weather the area around the property becomes saturated. This source uptake and the assumed catchment area sits adjacent and downgradient from the main access road that would be used for construction traffic. This track would also be used for construction of the Chirmorie wind farm, and for forestry felling.

4.64 The source (PWS14) for Barrhill Station and Ferngate Cottage is not unconfirmed, as stated in the PWSRA. It is fed from the Cross Water. The concern for these supplies is the borrow pits and the extensive nature of the new turbines and other infrastructure proposed in the catchment upstream of the extraction point, and the lack of information about the effects of these. Also the cumulative effects with Chirmorie. If oil was to enter the supply it might never become usable again. To propose a boom across the watercourse to intercept pollutants is not acceptable as mitigation. The pollution should be prevented in the first place, if necessary by removing some elements of the proposed development.

4.65 Woodpark Farm (PWS30) takes water from a bore well sunk to 55 metres. According to the owner of this property, during blasting at borrow pits 2 and 3 in 2016, the water from this supply ran cloudy, grey and with silt through it after each blast, but cleared up after about 24 hours afterwards. This happened numerous times.

4.66 At Burnside, PWS04 serves a residential dwelling and a holiday let. At Laggish, PWS10 appears to draw on surface water ingress and from a well. The catchment area appears to be very wide. The proposed use of the Bents Farm site access raises concerns for water sources which may feed PWS in this area. This track runs through land above the water supply for Whitecairn (PWS17). High Altercannoch (PWS28) takes its water from Loch Alty, which is fed by a very large catchment area.

The main points for Susan Crosthwaite

Outline Statement of Case Inquiry Statement Precognition Response to information request of 20 January 2021[6] Closing submissions

4.67 The evidence on behalf of Ms Crosthwaite was presented by Dr Rachel Connor, a retired medical doctor and radiologist. She has personal experience of the effects of wind farm development on PWS and has researched this subject for nine years. She has been

[6] See also appendix 3 and appendix 4 to that response.

involved in several wind farm applications where this has been an issue, including at the operational Whitelee and consented Sneddon Law wind farms near her home.

4.68 In addition to Dr Connor's inquiry report and precognition, Ms Crosthwaite submitted a number of additional documents[7]. Amongst these were

- An annotated version of Figure 10.1 from the EIA Report.
- Third party PWS notes, maps and photographs.
- Third party borehole map and borehole logs.
- Knockroon third party borehole map and survey.
- Susan Crosthwaite's questionnaire for PWS owners and the responses received to this.

The EIA Regulations

4.69 The PWSRA does not comply with the scoping opinion issued by South Ayrshire Council insofar as effects on PWS are concerned, for example the lack of coverage of volumes of water abstracted and of the potential for leaching from borrow pits. Therefore it does not comply with Regulation 5(3). Even if an EIA Report only needs to be "based" on the scoping opinion, it is difficult to see how that requirement has been met.

4.70 The PWSRA is a "relevant assessment" under Regulation 5(4). It is evident (with reference to paragraph 26 of Circular 1/2017 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017) that the PWSRA and its subsequent amendments do not meet this definition.

4.71 The PWSRA relies heavily on information from previous EIA Reports which is not contemporary and not presently publicly available. This does not comply with the EIA Regulations since the public are unable to view and comment upon this evidence.

4.72 Regulation 4 requires a description and assessment of the significant effects of a proposed development on factors including (amongst other things) human health and water. The likely significant effects of a development must be identified before a decision to grant consent is given. It is not clear from Chapter 10 of the EIA Report where these requirements are addressed.

4.73 Chapter 10 of the EIA Report and the PWSRA did not follow the methodology set out in chapter 5 of the EIA Report. The magnitude of effect on each PWS is not defined, so the "low" significance of effect is unsupported.

4.74 Regulation 5(5) requires that an EIA Report is prepared by competent experts, and must be accompanied by a statement outlining the relevant expertise or qualifications of such experts. Since the identity of the PWSRA author is not stated, this requirement has not been met. With reference to paragraph 24 and table 1.1 of the EIA Report, PWS are different to "the water environment".

4.75 The applicant proposes that, if consent is granted, information required to discharge the conditions of consent would, in effect, update the PWSRA. Mr Robb's Statement of

[7] Including CD23.32, CD23.33, CD23.34, CD23.39, CD23.40, CD23.55

Case and inquiry report contain important new environmental information which requires public notification, including a new "at risk" surface water supply at PWS16.

4.76 Provision of updated or new environmental information would need to be publicly notified with six weeks given for public comments. It is not appropriate or lawful to use conditions to remedy deficiencies in the environmental information, after consent is granted,. It should not be the case that correct information only becomes apparent at the inquiry and post-inquiry stages from information provided by third parties and the council.

4.77 The 2017 EIA Regulations now require all the environmental information to be available prior to consent being issued. This was a significant change from the previous regulations. It is now, in the light of all the conflicting and (from the applicant) changing evidence to the Inquiry, almost impossible to establish the real risks and to provide a coherent rebuttal to the applicant's evidence or to know what information the decision on this application is to be based on.

4.78 The PWSRA does not provide a recognised standard for a scheme of monitoring. To allow assessment of potential impacts on human health (Regulation 4(3)), a scheme of monitoring must be provided within an EIA Report, taking into account the level of risk, the use and quantity of abstraction for each PWS potentially affected. Paragraph 6(d) of Circular 1/2017 confirms that information on monitoring requires to be presented before consent is issued. Sampling should be both at the water source and the point of consumption (if permitted by the user), as required by the PWS Regulations.

4.79 Regulation 22 guides the imposition of monitoring measures which are required to take into account matters specified in the PWSRA. If a suitable outline scheme of PWS monitoring is not provided in the EIA Report or included in the decision notice, then this may lead to a situation where subsequent planning conditions are not agreed or they are contested by the developer post consent – or even removed entirely under future planning applications or appeals. Should Ministers be minded to grant consent subject to planning conditions for monitoring, then it is their responsibility (Regulation 22) to ensure compliance with those conditions attached to the consent.

The PWS Regulations

4.80 These Regulations provide statutory requirements for conducting a risk assessment to an approved standard for PWS, and for monitoring and mitigation measures, dependent on assigning a level of risk according to criteria approved by the Drinking Water Quality Regulator[8]. Regulation 10(4) sets out requirements for how risk assessment for PWS must be carried out. The Regulations apply to the PWSRA, and have not been complied with.

The Water Framework Directive

4.81 The Water Framework Directive does not allow for deterioration of groundwater status. Drinking waters are afforded special status as "controlled waters". The development site is in a statutory designated drinking water protected area, and therefore entitled to such protection. SEPA currently assigns the status of groundwater, and the surface water catchments of the Tig and Duisk, as "good".

[8] CD23.17, CD23.18

4.82 The Directive (Article 7 – transposed by Section 6 of the Water Environment and Water Services (Scotland) Act 2003) has special measures for the protection and monitoring of water bodies which have abstraction of more than 10 cubic metres per day or where they serve more than 50 persons. The PWSRA does not provide this information, which is essential for mitigation in the event of disaster. It fails to define whether a designated water body is present.

4.83 When making a determination under Section 40(4) of the Town And Country Planning (Scotland) Act 1997, Scottish Minsters must consider the effects of this development on the water environment in accordance with EU Directives and with Section 6 of the Water Environment and Water Services (Scotland) Act 2003.

Failings in the PWSRA

4.84 The PWSRA is remarkably brief. Only a few PWS appear to have been visited. Since it does not identify the volumes of water used, it is not clear how the potential impacts of the development on water quantity can be assessed. It is unclear how some PWS can be judged to be at minimum risk when their catchment areas are not identified.

4.85 Nowhere in the PWSRA is a conceptual site model provided. It seems highly unlikely that a 'source-pathway-receptor' model can be usefully engaged if no water catchment areas are identified for any supply, some water sources are unknown and many are not located. The PWSRA had a large number of unconfirmed and erroneous types of water sources, and locations which were not confirmed by field studies.

4.86 The PWSRA states that it complies with industry standards, but none are referenced. Whatever they are, they should be credible, transparent and at least as stringent as those required by the PWS Regulations. The poor quality of the PWSRA can be contrasted with those for the applicant's current Clauchrie wind farm application and the previously consented Sneddon Law wind farm. In these, PWS catchment areas are provided as standard and mapped alongside locations of construction elements of the windfarm, whether or not those PWS are ultimately considered to be at risk. This allows all parties to understand the basis of the risk assessment.

4.87 Some PWS were excluded from further investigation purely on the basis of wind farm EIA Reports over ten years old. It seems unbelievable that out of date information would be preferred to contemporary, accurate information from PWS owners. Other PWS were excluded simply on the basis that they were upgradient of an access track, even though they were downgradient of borrow pits or from the main development site.

Risks to groundwater

4.88 There is little treatment in the PWSRA of the potential for leaching from borrow pits. This is of concern because the groundwater in the area is confined to weathered zones and fractures near the surface, and therefore close to construction activity. Groundwater dependant PWS are susceptible to borrow pit and turbine foundation dewatering, the effects of blasting and the potential diversion of groundwater flows. These risks should have been assessed for each groundwater-dependant PWS.

4.89 In low productivity aquifers, such as is present in this case, borehole abstractions often rely on fractured zones. There is concern that polluted water leaches from the

fractured and weathered rock in the borrow bits down to fractured areas relied on by borehole abstractions. The PWSRA takes no cognisance of this danger.

4.90 The applicant's own borehole records[9] show folds/faults and fragmented bedrock. Technical Appendix TA 10.5 Borrow Pit Screening Assessment describes secondary fractures tending southwest to northeast. These may be potential conduits for groundwater to PWS at distance to the development. They may account for the effects on the PWS at Woodpark Farm during previous blasting which are referred to in the council's evidence. British Geological Society maps and topographic reconstructions[10] show bedrock contours sloping northeast and west to east from the windfarm site towards the Duisk river.

4.91 The geohydrological flow pathways depicted for this bedrock, copied from British Geological Society publication Scotland's Aquifers & Groundwater Bodies[11] into Mr Robb's Inquiry Report, show clearly that groundwater flows at around 50 metres is fracture flow from areas of higher elevation. This is the depth of abstraction for most of the PWS boreholes for which information is available for this area.

4.92 Mr Robb agreed under cross-examination that across the site there is broken and fractured rock in a superficial weathered zone. This could be seen in the existing borrow pits and in the SPR borehole logs. Mr Robb agreed with the BGS groundwater modelling on this site. There is therefore a model of the travel of water from weathered zones of broken rock at higher elevations to travel into deeper groundwater in fissures to lower elevations. In cross examination, Mr Robb finally provided a site-specific conceptual site model of groundwater flow in answer to a question about boreholes. He described how surface water moves through the surface of borrow pits and other exposed, broken rock, mostly into superficial and to a lesser extent into deeper groundwater which may then feed through fissures to borehole dependent PWS, or to emergent springs. This should have been incorporated into the PWSRA for those PWS dependent on emergent springs.

4.93 The statement in chapter 10 of the EIA Report that no leachant would be created is not supported by evidence. It seems clear from Mr Robb's oral evidence that there was no monitoring of PWS adjacent to the main access track during the construction of the Arecleoch and Kilgallioch wind farms. Statements that surface water run-off from the track had good water quality or that PWS nearby suffered no deterioration in quality are therefore unfounded. The contradictions within Mr Robb's evidence throws doubt on its credibility.

4.94 Chapter 10 of the EIA Report (at 10.3.4.1) discusses groundwater vulnerability. Figure 10.6 provides a small map of groundwater vulnerability status across the site. These show areas of the highest level of vulnerability in some parts of the site. However in cross-examination Mr Robb denied this, stating that "there are no such classified high risk areas across the site".

SEPA guidance LUPS-GU31

4.95 The applicant refers to LUPS-GU31. But SEPA has no statutory responsibility for PWS. The study which underpinned this guidance did not assess borehole PWS or the impact of deep excavations upon deep or superficial groundwater supplies. It used case studies from Aberdeenshire which has different geohydrological and rainfall conditions to

[9] CD23.31
[10] CD23.28
[11] CD23.38

those of the appeal site. Other UK PWS guidance and geohydrological authorities recognise[12] the potential for groundwater PWS to be affected at significant distance from the source of pollution. Monitoring at the Whitelee wind farm showed evidence of change in groundwater abstractions well beyond SEPA's buffer distances.

4.96 The EIA Report and the PWSRA do not, in any event, comply with LUPS-GU31. It requires that groundwater sources are identified and mapped (paragraph 2.4). No buffer zones are mapped for any PWS groundwater abstractions, even when abstractions are clearly within 100 metres of a pollution risk – for example Arnimean (PWS02) at 65 metres and downgradient from the main access track. The foundations for turbine 10 are less than 250 metres from two tributaries of the Cross Water. Eight PWS are unknown/unspecified in type and 18 have unknown or approximate source locations stated in the PWSRA. On that basis, it would not possible to apply any prescribed buffer zone distances to those PWS.

Good practice during windfarm construction

4.97 Had this advice been followed, more intrusive ground investigation works relating to PWS should have been undertaken. Design chill on 6 February 2019 occurred before any PWS questionnaires were left with owners. Design freeze on 22 February was prior to any subsequent visits to PWS which may have occurred in April 2019. The EIA Report does not record any design meetings after 29 January 2019. It seems very unlikely that information gained from PWS site visits or questionnaires informed or altered the site design. It is therefore disingenuous for Mr Robb to have referred to the intrinsic site design as providing mitigation for PWS. The use of a generic CEMP does not accord with this guidance. The kind of detail envisaged in section 10 of the guidance has not been provided.

Cumulative effects

4.98 Tree felling required for the wind farm (and unrelated forestry felling) will further increase the risk to PWS, but this is not considered in the PWSRA. Nor are cumulative effects with traffic from the consented Chirmorie wind farm.

Monitoring and mitigation

4.99 Construction mitigation measures and appointing an Ecological Clerk of Works would not guarantee that there would not be adverse effects on the water environment. Mr Robb acknowledged this when he said that heavy rainfall could overwhelm mitigation measures. Mitigation measures have in the past failed to work properly at wind farm sites. Dr Connor referred to several documents[13] at the inquiry which show where this has happened.

4.100 A clear scheme for the rapid identification and notification of abnormal results from monitoring of PWS is required on public health grounds. The PWSRA proposes monitoring in only two superficial existing groundwater wells (PWS02 and PWS10 - both distant from the main construction site) and only for test parameters which are so limited that they would do little to provide reassurance to PWS owners that their water is safe to drink. These wells

[12] CD23.37
[13] CD23.26, CD23.36 (4.2.9-4.5.1), CD23.41 (page 4 paragraph 4), CD23.46, CD23.50, CD23.51 (page 83 of 88), CD23.52 (pages 78,90)

will not be representative of groundwater closer to the main concentration of construction on the development site.

4.101 All monitoring results for PWS should be notified to the environmental health officer of the relevant council, who would then have responsibility for sending results to PWS owners and ensuring appropriate action is taken if necessary. PWS owners are entitled to know the results of tests on their own water.

4.102 Since abstraction volumes are not known, the mitigation measures for provision of alternative water supplies are inadequate. More information is needed about how much water each household or business would require. Contamination and pollution of groundwaters can last for months or years, so long term planning may be required. A few bottles of water at the site office is not sufficient.

Details of each PWS

4.103 Susan Crosthwaite sent a questionnaire to properties who had a PWS at risk from the development. The responses obtained show significant discrepancies from the information reported in Table 2.1 of the PWSRA. Only one property owner confirmed receipt of the applicant's questionnaire and nobody remembered a site visit having taken place, suggesting the PWSRA was largely a desk-based exercise. Following the applicant's response to the 20 January 2021 information request, Dr Connor provided signed statements from PWS owners refuting the information contained in the PWSRA and in the applicant's response to the above request. These disparities[14] are not exhaustive of all the PWS potentially affected, and suggest that a more thorough review is required.

PWS02 Arnimean

4.104 Contaminants from the access track, for example oil spills from construction vehicles, would drain with gravity and could get into the PWS, especially when the water table is high. The groundwater at this location is of high vulnerability.[15] A wheel-wash facility would need to be located near the end of the track. Its location could not be identified by Mr Robb, but it could also present a contamination risk if it is within the PWS catchment area. The proposed traffic calming would extend the transit times for vehicles on this stretch of track, resulting in more pollution.

PWS04 Burnside

4.105 The PWS recorded in the PWSRA is of the wrong type and in the wrong location. It is a well to the northwest of the property. The residents state that they never had a site visit or received a questionnaire. This is at odds with Mr Robb's evidence, where he stated that he had spoken to the property owners on 6 February 2019 and received a questionnaire from them. Mr Robb identifies the questionnaire as having been received in the post the same day it was left at the property. The electronic copy of the returned SLR questionnaire for PWS02 was, according to embedded metadata, created on 14 January 2021.

[14] Table 2 of Dr Connor's response to the information request
[15] EIA Report Figure 10.6

PWS14 Barrhill Station & Ferngate Cottage, PWS16 Cairnlea

4.106 It is not common sense to have six turbine foundations, three borrow pits, two new water crossings, new access roads and a substation building in the catchment area upstream of these PWS. The proposed oil boom as mitigation of effects on these PWS ignores the fundamental principle of protecting the water environment in the first place.

4.107 There is no regard in the PWSRA to the podzol deposit at the headwaters of the Cross Water near water crossing WX01. Polluted surface water run off to the podzols around WX01 could pose a risk to the Cross Water and to groundwater. This podzol area is upgradient of two SPR boreholes, one of which corresponds to borrow pit 4. Mr Robb agreed at the Inquiry that the SPR borehole logs showed broken, water-stained bedrock adjacent and extending to the southeast to northwest trending intrusions of bedrock into the site. Could polluted surface water from the podzol area more easily reach groundwater and travel downgradient in that area of broken and jointed rock shown in the borehole log for borrow pit 4, causing additional risk for the Cross Water catchment?

PWS15 Ward of Cairnlea

4.108 Dr Connor refers to Mr Robb's evidence when he was asked about this PWS, and states that the water feeding it will have come from higher up within the Cross Water catchment. She presumes[16] that the spring source (which feeds a burn which supplies a well/holding tank) is groundwater.

PWS03 Corwar Farm

4.109 SLR have disregarded the risk to this borehole PWS without considering factors such as the origin of deep fracture flow groundwater from higher elevations, mapped areas of high groundwater vulnerability and a mapped podzol area between the main access road and the borehole.

PWS07 Knockycoid

4.110 The PWSRA uses the holding tank location as a proxy for the water source. The actual source has not been identified and no buffer zone has been mapped. It is likely the catchment is to the south, downgradient from the main access road. There are also two upgradient borrow pits (2 & 3) which may impact on this PWS.

4.111 In evidence, Mr Robb felt that identification of a pipe emerging from the ground to feed the holding tank was satisfactory evidence that this supply came from a spring towards the south. He said that a surface water course intervening between the assumed location of the spring and the access road would cut off any pollution into the spring. This differs from the description in the PWSRA, where the source is between two springs. There is no evidence of such a mapped water course on the map of PWS in Figure 10.1 of the EIA Report. Without knowing the location and nature of the spring source, it is impossible to say if a surface water course could provide such "protection".

[16] CD23.57

PWS11 Dochroyle Cottage, PWS12 Dochroyle Farm

4.112 There is no explanation of how groundwater reaches the Dochroyle spring and borehole at depth. There is no catchment area provided to explain how Knockshin hill has the capacity to provide a big enough catchment with enough hydraulic pressure to create an artesian well at Dochroyle.

4.113 Mr Robb accepted that the borehole had intercepted a fissure supplying groundwater, and that 'Scotland's Aquifers and Groundwater Bodies' says fracture pathways were not more than two kilometres, so he did not believe excavations from the site would interrupt flow to Dochroyle borehole. This is misleading. The main issue is pollution, primarily from blasting and excavation travelling in groundwater. Mr Robb misquoted the document. It states groundwater pathways are "0.1 – 1 km +, and usually follow local surface water catchments."[17] So pathways may be short or very long.

PWS17 White Cairn

4.114 The BGS records show evidence of fractured rock and intrusions in a southwest to northeast direction towards White Cairn. This could present a risk to this borehole supply.

PWS30 Woodpark

4.115 Woodpark has had previous pollution events which may have been related to construction works and blasting during construction of the Arecleoch wind farm. These seem to have occurred after construction at Arecleoch ceased, but this may be accounted for by the time it would have taken for the groundwater to travel to this receptor.

Reporters' conclusions

4.116 Although Dr Connor's inquiry statement and accompanying documents contain some detailed evidence related to certain of the PWS, much of her case on these effects only emerged as she gave evidence in chief, and subsequently. Mr MacLeod, on behalf of the applicant, raised concerns about the late nature of such evidence. However, it was confirmed in closing submissions that Mr Robb had considered all of this evidence and that it did not change his conclusions in the PWSRA.

4.117 Dr Connor considers that we were too restrictive in what we allowed in her evidence in chief, and that she was prevented from speaking about further individual PWS which may be at risk. We aimed to strike a balance between allowing a non-expert third-party witness to address us on matters of concern to her, and on following the important convention of early and full written disclosure of each party's case. Dr Connor's evidence in chief was delivered over a period of about three hours, the longest time for evidence in chief of any of the witnesses to the inquiry. In any event, we have had regard to all of Dr Connor's extensive written and oral evidence, including her closing submissions on behalf of Ms Crosthwaite.

<u>The EIA Regulations</u>

4.118 In relation to the necessary scope of an EIA Report, Regulation 5(3) is as follows:

[17] CD23.38 page 20 table 3

"Where a scoping opinion is adopted, the EIA report must be based on that scoping opinion and must include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment."

4.119 Regulation 2 defines a scoping opinion as "an opinion adopted by the Scottish Ministers as to the scope and level of detail of information to be provided in the EIA report". Chapter 6 of the EIA Report confirms (section 6.2) that the scoping opinion was received from the Energy Consents and Deployment Unit of the Scottish Government on 6 February 2019. The requirements of that scoping opinion are reproduced in Table 10.1

4.120 Dr Connor argues that the difference between requiring an EIA Report to be based on a scoping opinion (required by the Regulations) and having it complying (Dr Connor's word) is splitting hairs. We do not agree. We also note the remaining provisions of Regulation 5(3), which focus on what information is required to reach a reasoned conclusion on the significant effects of the development on the environment.

4.121 Chapter 10 of the EIA Report and the PWSRA, read together, are a site-specific hydrogeological report. They review the risks to PWS that have the potential to be affected. Water quantity issues are noted, but scoped out. The PWSRA says that it describes a conceptual site model which includes consideration of the potential for borrow pits to generate leachant. We appreciate that parties differ about whether the PWSRA is sufficiently comprehensive and accurate, and about the conclusions reached in it and in Chapter 10. However, although this is ultimately a matter for Ministers in respect of their own Scoping Opinion, we are satisfied that the EIA Report and PWSRA take as a basis the council's expectations as set out in Table 10.1.

4.122 Regulation 5(4) says that account is to be taken of the available results of other relevant assessments in preparing the EIA report. Regulation 2 defines a relevant assessment as "in relation to a proposed development, an assessment, or verification, of effects on the environment carried out pursuant to national legislation which is relevant to the assessment of the environmental impacts of the proposed development."

4.123 The stated purpose of the requirement in Regulation 5(4) is to avoid duplication of assessments. To this end, it requires that an EIA Report takes into account information already available, which could include previous EIA Reports. The EIA Report in the present case, by having regard to the EIA Reports for previous wind farm proposals in the area, is consistent with this. We are not aware of any requirement to only take into account information which can be found through an internet search. Regulation 5(4) says nothing about the accessibility of the information which can be used to inform an EIA Report. The PWSRA is, in effect, part of the EIA Report for the Arecleoch Extension application. It does not seem to us to fall into the category of "other relevant assessments".

4.124 Dr Connor queries where the information on the likely significant effects of the development (as required by Regulation 4) are to be found in Chapter 10 of the EIA Report. However, the conclusion in Chapter 10 is that there are no significant effects related to hydrology, hydrogeology, geology and soils.

4.125 Dr Connor goes on to assert that Chapter 10 of the EIA Report and the PWSRA do not follow the methodology set out in its Chapter 5. Paragraph 36 of Chapter 10 and its Table 10.3 explain how the magnitude of effects is assessed in that chapter. Section 10.4.2 then covers potential construction effects.

4.126 Under “pollution risk” (at paragraph 154), there is acknowledgement of the potential effect on PWS. The magnitude of potential pollution events is then considered to be negligible. The next potential effect considered is erosion and sedimentation. This would seem to be potentially of relevance for PWS (although they are not mentioned). Again the magnitude of effect is considered to be negligible. Reading further, the magnitude of potential effects from infrastructure and man-made drainage and from water abstraction are also both considered to be negligible. This seems to encompass (noting what has been scoped out of the assessment) the magnitude of potential effects which could affect PWS.

4.127 However, the PWSRA is presented as a technical appendix to provide a more detailed explanation of the assessment of potential effects on PWS as receptors in their own right. For those PWS where a potential link between pollution source and receptor was identified, it may have been more helpful to set out (as is done in the EIA Report for other receptors) the magnitude of the potential effect and thereafter its assessed significance, both with and without mitigation. However this is ultimately about methodology. We are clear that the EIA Report and the PWSRA conclude that there would be no significant effects on PWS. The key question for us to address is whether we agree on that point.

4.128 Table 1.1 in the EIA Report (in its Chapter 1) sets out the competencies of the EIA team. For ‘Soils, Geology and the Water Environment’ the expertise and experience of Mr Robb and his colleague Mr Duncan are listed. Mr Robb’s written evidence to the inquiry provides further information about his expertise and experience. He confirmed he was the lead author of the PWSRA.

4.129 Paragraph 25 of Chapter 1 says that “SPR confirm that the specialist organisations, including SLR, that have carried out the EIA and produced the EIA Report have the skills and relevant competency, expertise and qualifications to undertake the EIA for the proposed development.” Dr Connor did not agree that this was the case in relation to PWS, but she did not say what expertise or qualifications she considered were lacking. There is no clear evidence before us to suggest that the requirements of Regulation 5(5) have not been complied with in relation to Chapter 10 of the EIA Report and the PWSRA.

4.130 Dr Connor makes the same point about the Outline CEMP. This does not provide the names of its authors, although it does identify their roles. In any event, Regulation 5(5) requires that the EIA Report is prepared by competent experts and that it is accompanied by a statement outlining the relevant expertise or qualifications of such experts. Paragraph 25 of Chapter 1 of the EIA Report makes such a statement. We have no reason to conclude that the authors of the Outline CEMP did not have the necessary expertise. We would also highlight that, as Dr Connor points out, the Outline CEMP is a fairly generic document which might be expected to apply to most major wind farm developments. The proposed conditions would require a more detailed and bespoke CEMP to be prepared and agreed by the planning authority before development commences on site.

4.131 Dr Connor considers that some of the applicant’s evidence to the inquiry (including Mr Robb’s inquiry report, his oral evidence and the information we requested after the inquiry sessions) is new environmental information which requires notification, statutory consultation and the opportunity for the public to make representations upon it. That is not our understanding.

4.132 The requirements for an EIA Report in regulation 5 include that it should have a description of the significant effects of the proposed development. The report found that

there were no significant effects on PWS. It and the PWSRA set out reasons for that finding.

4.133 The objectors consider that there were would be significant effects, or at least that the evidence does not demonstrate that there wouldn't be. It was quite appropriate in the course of the inquiry that the applicant and objectors should submit evidence in support of their respective positions. We do not consider that evidence submitted at the inquiry by the applicant in support of its position amounts to substantive information on a matter to be included in the EIA report merely because it addresses submissions of objectors that allege there would be significant effects.

4.134 Had the evidence indicated to us that there was a substantive deficiency in the EIA Report as regards the assessment of the significant effects of the proposed development on PWS, we would have sought additional information under the EIA regulations. It should be clear from our reasoning in this chapter that we do not consider that there is such a deficiency.

4.135 In the context of a finding that the proposed development can proceed without significant environmental effects in some particular respect such as PWS, the use of conditions in order to obtain (and regulate) more detailed information about how the development would be undertaken and how this relates to its potential environmental effects would be in accordance with the law. The information to be provided is not for predicting whether the proposed development would have significant effects, but for monitoring such effects as it would have. In our experience such an approach is commonplace, both under the 2017 Regulations and their predecessors. We would not characterise this, especially given our conclusions below, as remedying deficiencies in the environmental information.

The PWS Regulations

4.136 Regulation 10(1) says that "An enforcing authority must carry out a risk assessment in relation to water introduced into, and supplied through and from, each private water supply system to premises in its area so as to establish if there is any risk that the water could pose a potential danger to human health." "Enforcing authority" is defined, subject to qualifications, in Regulation 3 as a local authority. Regulation 10(4) goes on to set out certain requirements for "the assessment".

4.137 As we read it, the reference to "the assessment" in 10(4) is clearly a reference to the risk assessment by "an enforcing authority" covered in 10(1). That is the natural reading of Regulation 10 as a whole. It does not have force for risk assessments carried out by other parties for other purposes. An interpretation that Regulation 10(4) has force for the PWSRA is in our view incorrect.

The Water Framework Directive

4.138 Section 6 of the Water Environment and Water Services (Scotland) Act 2003 requires the Scottish Ministers to identify certain bodies of water from which water is abstracted (or intended to be abstracted) for human consumption. It is not our understanding that Section 6 places any obligations on the applicant in this case. We note that the EIA Report records that all groundwater bodies in Scotland are designated as Drinking Water Protected Areas by an Order made in 2013. SEPA has not objected to the application on the basis of any concerns about effects on the status of any waterbodies.

4.139 Section 40(4) of the Town and Country Planning (Scotland) Act 1997 relates only to anything which is development by virtue of section 26(6) of that Act. That section relates only to fish farming. Therefore Section 40(4) does not appear to be applicable in this case.

The PWSRA

4.140 Both the council and Dr Connor criticise the PWSRA (and the applicant's subsequent evidence) as being insufficient, incomplete and inaccurate. We address below each of the PWS about which there is most dispute. However, there are a number of more general criticisms which we turn to first.

4.141 The first of these is that the PWSRA is too desk-based, with not enough site work and an insufficiently thorough consideration of the potential effects on a number of PWS. It is through our detailed consideration of individual PWS that the basis for this criticism can be tested. Regardless of differing views about how risks to PWS has informed the proposed development design, it is the effects on PWS which are the key consideration.

4.142 Dr Connor and Susan Crosthwaite have questioned the reliability of information which SLR said it had obtained from questionnaires returned by some of the PWS owners. Copies of the SLR questionnaires were sent to us (and to the PWS owners) after the inquiry sessions, and in redacted form to Ms Crosthwaite. We have no reason to doubt that these questionnaires show the information obtained by SLR from PWS owners following the site visits, nor to doubt that the other information noted in the PWSRA (for example following reported conversations with PWS owners on site) is provided in good faith.

4.143 Like Ms Lobban and Dr Connor, we expected that a "conceptual site model" would be illustrated graphically, perhaps with maps and cross sections. However we acknowledge Mr Robb's experience and expertise in PWS risk assessment. We are content to accept the explanation that it is the characterisation of the geology, hydrology and hydrogeology of the site, and the risk to PWS using a source-pathway-receptor approach, which comprises the conceptual site model. We agree that use of mapped PWS catchment areas would have better assisted all parties in considering the evidence in the PWSRA. However, we repeat that the main consideration is the conclusions to be reached about the potential for significant effects on PWS.

4.144 Where we find that there would not be a significant effect on a PWS, we agree that it would not be necessary to ascertain the volumes of water abstracted for that supply.

4.145 Ms Lobban says in her outline statement of case that the description of the development omits details about the ancillary infrastructure associated with it like new tracks, hardstandings and cabling. We do not find that this is the case – the EIA Report is clear about what ancillary infrastructure is proposed.

Risks to groundwater

4.146 In respect of the potential for borrow pits to generate leachant, we accept the expert evidence from Mr Robb which is that the low weathering potential of the minerals in the Kirkcolm Formation (because of their hard nature) and their low reactive potential means that leaching does not readily occur. It is said that no leachant generation has been recorded from the borrow pits used for the existing wind farms. Regardless of how much detailed monitoring has been done of this, we have not been shown any evidence of leaching having caused any adverse effects.

4.147 Similarly, we accept that the generally impermeable nature of the Kirkcolm Formation and the peat and glacial till above mean there would be limited potential for dewatering of excavations for turbine foundations and other infrastructure. We also note the good practice construction methods, to be controlled through the CEMP, which would aim to further limit any dewatering.

4.148 We acknowledge that some water will permeate through the peat and glacial till into and through the more weathered upper parts of the Kirkcolm Formation and into fractures and fissures in the rock. Some of this groundwater, if the development proceeds, may have come from seepage through borrow pit floors. But on the evidence before us this would be a very small proportion of the groundwater, and seems unlikely to contain significant amounts of leachant. It seems that the typical times which water would take to reach and travel through a fissure (and ultimately perhaps to a borehole) is tens of years or more. We consider below the potential for specific boreholes to be fed by groundwater affected by the development.

Guidance from SEPA and Scottish Renewables *et al*

4.149 LUPS-GU31 advises that foundations, borrow pits and linear infrastructure can disrupt groundwater flow and, by removing soil and subsoil, make groundwater more vulnerable to pollution from leaks or spills. This can have an effect on nearby groundwater abstractions for PWS. SEPA requests that the information supplied to it includes maps showing all proposed infrastructure overlain with details of the extent and depths of all proposed excavations, groundwater abstractions and the relevant buffer zones (100 metres for excavations down to one metre deep, 250 metres for deeper excavations).

4.150 Mr Robb points to Figure 10.7 of the EIA Report as showing the buffer zones used. This figure does not show the depths of any excavations or the PWS abstraction locations. In any event it seems from its consultation responses that SEPA was ultimately satisfied that there were no groundwater abstractions for PWS within these buffer zones. Therefore the information for a detailed assessment did not have to be supplied to it.

4.151 Neither Dr Connor nor Ms Lobban identify that the buffer zones between groundwater abstractions and new excavations would be breached. However Dr Connor points out that the locations of some PWS sources are unknown, and both argue that such buffer zones cannot be relied upon to protect PWS groundwater abstractions.

4.152 The SEPA guidance says that following its approach to assessment "delivers a consistent, proportional and streamlined approach based on tiered risk-assessment." That seems consistent with an approach aimed at identifying likely risk, not demonstrating an absence of any risk which the council appears to be seeking. Regardless of the research which underpins SEPA's guidance, it applies across the whole of Scotland and we would expect Ministers to have confidence in the advice of their own statutory advisors. Although we consider below the risk in relation to individual PWS, compliance with the SEPA buffer zones in each case (for groundwater abstraction) provides a further measure of comfort.

4.153 The guidance prepared by Scottish Renewables and others is for wind farm development more generally, and aimed at the construction phase. Therefore we do not find it especially helpful in considering the sufficiency of the PWSRA.

Cumulative effects

4.154 The potential effects from forestry felling are scoped out of detailed assessment in the EIA Report. This is because it is expected that such felling would be done in accordance with Scottish Forestry good practice guidance.

4.155 Dr Connor refers to Figure 3.2.2 of Technical Appendix TA 3.2 which shows the age of the trees in the forested areas in and around the site. Figure 3.2.4 in fact shows the anticipated dates (when known) for felling of the forestry areas (without the wind farm). Figure 3.2.6 shows proposed wind farm-related felling. Comparing the latter two figures shows that some of the felling would take place earlier than would otherwise be the case if the wind farm did not proceed. We address this matter in chapter 7 and recommend an additional planning condition covering woodland felling, replanting and management. In any event, if felling proceeds in accordance with good practice guidance, we see no reason to conclude that the different phasing of felling and replanting which would be required to accommodate the wind farm would lead to additional significant environmental effects.

4.156 Cumulative effects on the water environment with other wind farm developments are considered at section 10.4.3.7 of Chapter 10 of the EIA Report. Since the magnitude of any potential pollution or sedimentation event at any of the wind farms is considered to be negligible, and the probability of two such events occurring at the same time is assessed as low, the cumulative effects on hydrological receptors overall are considered to be low. We do not have detailed information about the environmental effects of all these other wind farms, some of which are operational. However we have not seen detailed evidence which calls us to question the assumptions made about their effects. In the light of our conclusions, below, about the effects on PWS of the Arecleoch Extension, we are satisfied that there would not be significant cumulative environmental effects on PWS when considering the effects of these other wind farms.

Consideration of individual PWS

4.157 We address these individually, focussing on those where the level of risk and/or the sufficiency of the evidence is particularly contested.

PWS02 Arnimean

4.158 On the basis of a site visit and discussions with the then resident, the PWSRA locates the well for this property at 10 metres distance from the existing access track, with the precise location unconfirmed. It was described to SLR surveyors as being about 10 metres deep. Groundwater catchment to the spring is likely to extend beneath the track. At that time it was thought the well was not used for human consumption but it has since been clarified that it is. In any event, the PWSRA identifies it as a sensitive receptor.

4.159 The council's evidence is that the well is in the forest about 800 metres south of the property. A document[18] prepared by the new owners of Arnimean also shows the well to the south of the property, but seemingly at lesser distance to it. It says the well is only 1.8 metres deep, drawing on very shallow groundwater, and some 65 metres from the access track. It refers to "proposed works" in this area, including the widening of the track.

[18] CD23.56

4.160 We take the information from the owners of Arnimean to be the most reliable as to the nature and location of their PWS. Contrary to their understanding, no upgrades to this section of the existing access track are proposed. It is of relevance that the track has been used for previous wind farm construction and its use has been consented for construction use for the Chirmorie wind farm. In this context, and subject to the kind of monitoring and mitigation measures proposed in the PWSRA, there is not a strong case for concluding that its use for a further proposed wind farm would create unacceptable risks for the PWS at Arnimean. We think that careful vehicle management is likely to reduce the risk of pollution incidents, not increase it.

4.161 We note that there might require to be a wheel-washing facility near the Wheeb Bridge end of this track, although the proposed planning conditions do not specify a facility at this location. We are not aware if there would be such a requirement for the Chirmorie wind farm. Ultimately the location and details of any such facility for Arecleoch Extension would be included in the CEMP, required by condition 13 and to be approved by the council (in consultation with SEPA). The potential effects (if any) of any wheel washing facility on the PWS at Arnimean would fall to be considered in detail at that time.

PWS04 Burnside

4.162 The PWSRA indicates that the PWS is from a watercourse 200 metres west of the existing access track, and to the north of the property. This is on the basis of the questionnaire return. In closing submissions, the applicant confirms that the residents of Burnside were not at home during the site visit of 6 February 2019. As well as the main house, the council advises that this PWS also supplies a holiday let. Susan Crosthwaite provided additional information[19] showing a watercourse crossing underneath the access road with a well and pumphouse downgradient of that, near the house.

4.163 Like Arnimean, the existing track and watercourse crossing would be utilised for the proposed development as it has been (and could be) for other operational and consented wind farm development. No upgrading to the track or crossing are proposed. The difference in this case is that it appears to be the watercourse which is the main pathway to the PWS source rather than surface water. In any event, for essentially the same reasons as for Arnimean, subject to the mitigation measures proposed in the PWSRA, including (as at Arnimean) water quality monitoring, we are satisfied that there would not be significant effects on this PWS.

PWS10 Laggish Farm

4.164 The PWSRA describes the PWS source as a well. The word borehole is also used but there is no suggestion that the source is from other than a mixture of surface and shallow groundwater. In any event, the existing track comes, at closest, to about one kilometre from the abstraction location. Again, no works are proposed to the track at this location. The track is to be upgraded further to the north. At the nearest point, this is about two kilometres from the PWS source, beyond existing stretches of the track, on the other side of the minor road to Glenluce and well away from the Laggish and Haw Burns which might contribute some surface water to the PWS. Again, therefore, subject to the mitigation

[19] CD23.34, CD23.39, CD23.57

measures proposed in the PWSRA, including water monitoring before, during and after construction, we are satisfied that there would not be significant effects on this PWS.

PWS14 Barrhill Station, Ferngate Cottage, PWS16 Cairnlea

4.165 The PWSRA identified the same abstraction point on the Cross Water as serving Barrhill Station and Ferngate Cottage. It has subsequently been established that it also serves Cairnlea.

4.166 Both the council and Dr Connor identify concerns about the amount of wind farm infrastructure proposed within the Cross Water catchment area upstream of the abstraction point. This includes several borrow pits, turbine foundations, construction compound, laydown areas and stretches of new and upgraded track. There would be two new and three upgraded water crossings.

4.167 We appreciate that there is a significant amount of infrastructure proposed upstream of the abstraction point for these PWS. However, we see nothing inherently exceptional or concerning in this. It does not seem unusual that a wind farm would be proposed within the catchment of a watercourse from which, downstream, water may be abstracted. The abstraction point on the Cross Water has been assessed because it is fairly close to the upstream works. But there may be other PWS abstractions on the Cross Water further downstream. There might also be PWS abstractions further downstream on the Water of Tig and the Duisk Water. It seems to us that what is important is that the construction proceeds in accordance with good practice guidance, including standard mitigation measures. Subject to these, we see no reason why the infrastructure proposed upstream of the abstraction point would be likely to have significant effects on any downstream PWS abstractions. The presence of podzols in the vicinity of crossing WX01 (which is to be upgraded) does not alter our conclusions.

4.168 With regard to mitigation, we do not understand the suggested boom across the watercourse to be the extent of what is proposed. It appears to be proposed as a final safeguard, should there be an event and other mitigation measures fail. This seems entirely sensible.

PWS15 Ward of Cairnlea

4.169 The PWSRA assumed that the supply here was the minor watercourse near the property, which flows from the west rather than from the direction of the site. However Dr Connor's evidence identifies it as a spring fed by groundwater. We agree that if the spring is supplied from groundwater then some of this might travel from high enough up the Cross Water catchment to the area covered by the application site. However the nearest wind farm infrastructure would be borrow pit 4 (at a formerly quarried area) at about two kilometres distance. Water crossing WX01 would be at a similar distance. Subject to good practice and mitigation measures which would be controlled through conditions, we have no reason to conclude that there would be a risk to this PWS at such a distance.

PWS03 Corwar Farm

4.170 As this borehole is about eight kilometres from the main wind farm site, we do not foresee any risk to it from that part of the development. It lies 400 metres south of the existing access track, which is not to be upgraded at this location and which is already consented as the access track for the Chirmorie wind farm. Subject to good practice and

mitigation measures, we do not consider there to be a significant risk to the PWS from construction traffic.

PWS07 Knockycoid

4.171 The PWSRA says that the questionnaire returned by the residents of Knockycoid[20] identifies the supply here as a spring at the forestry track south of the properties. It is assumed that the holding tanks at that location are served by a spring in the field to the south, about 600 metres north of the existing access track. This location lies between two headwater catchments of Pollgowan Burn and not in surface or groundwater catchments shared with the development.

4.172 We see from the OS map base that there is a tributary of the Lavery Burn which lies to the east of the field referred to above. The search area for borrow pit 2 lies beyond that (on the other side of the existing access track). The search area for borrow pit 3 lies about 1.5 kilometres to the southwest, with several small watercourses intervening. So we accept Mr Robb's evidence that there is not likely to be a pathway between these parts of the development and PWS07. This stretch of the existing access track and its watercourse crossings are not proposed to be upgraded.

PWS11 Dochroyle Cottage, PWS12 Dochroyle Farm

4.173 Mr Robb confirms that site visits were undertaken for these PWS, and we accept that this was the case. The PWSRA identifies that Dochroyle Farm is supplied by a spring to the southeast of the property, as confirmed by the resident during a site visit. It says that the groundwater in this area is from a sub-catchment of the Laggish Burn, which receives its flow from the west up to the summit of Knockshin. The Knockshin ridge separates this PWS from the site.

4.174 Figure 10.1 of the EIA Report shows the PWS source to be within the Duisk catchment rather than those of the Cross and Tig, where all the turbines and most of the other proposed construction works are located. Dr Connor is sceptical of Mr Robb's evidence, and questions whether there is sufficient groundwater capacity upstream to supply the spring (and the borehole for Dochroyle Farm). In respect of the spring, on the basis of the topography and surface water catchment in which the PWS sits, it seems to us far more likely that it is indeed supplied by higher up groundwater within the same catchment, rather than there being any significant amounts of groundwater reaching it from the separate catchment of the Cross Water.

4.175 The PWSRA says that South Ayrshire Council confirmed the location of the borehole for Dochroyle Cottage. Groundwater feeding the borehole is said to be likely to flow from the west, following local topography. As with Dochroyle Farm, the intervening Knockshin ridgeline means there is no hydraulic connectivity with the development site.

4.176 Dr Connor's concerns are that the fissure above which the Dochroyle Cottage borehole sits could be a source of polluted groundwater from wind farm-related construction and blasting. Borrow pit 6 is highlighted in particular. Figure 13 from Dr Connor's third party PWS notes, maps and photographs[21] appears to show a bedding plane running

[20] This PWS serves three properties, and we were supplied with copies of the SLR questionnaire returns from Knockycoid Cottage, Craigance and Knockycoid Farm, c/o Chirmorie Farm.
[21] CD23.39

southwest to northeast, and through Dochroyle. However this feature (at least as mapped in the document) remains within the Duisk catchment. At closest, it is about two kilometres from the search area for borrow pit 6, which straddles the Tig and Cross catchments. Turbines 10 -13 (and most of their associated new and upgraded access tracks) are within the Cross catchment.

4.177 An extract Dr Connor quotes in her closing submissions from Scotland's Aquifers and Groundwater Bodies says that groundwater "usually follows local surface water catchments". Nevertheless, we allow the possibility that deep underground fissures or faults might provide for the transfer of groundwater from one surface water catchment area to another. But the evidence before us does not indicate any particular reason to think that this is likely at Dochroyle. If this does occur, it seems likely that the distances the water would need to travel through (three kilometres minimum) would likely take many years, with this time and distance providing an opportunity for the attenuation of pollution.

4.178 The existing access track, where it is not to be upgraded, at closest distance would be about 800 metres upgradient from Dochroyle. A section of this track which is to be upgraded comes, at closest, to 1.5 kilometres distance. Subject to good construction practice and mitigation measures to be controlled through conditions, we do not identify a significant risk to the PWS for Dochroyle Cottage or Farm.

PWS17 White Cairn

4.179 The PWSRA identifies that this PWS is a borehole, likely to be near the property itself. It is said to be separated from the application site by the shoulder of Shiel Hill, and therefore not in hydraulic connectivity.

4.180 White Cairn lies just to the east of the railway line, about one kilometre to the north of Barrhill Station. The existing access track (not proposed to be upgraded) is upgradient of it, at closest at around 1.7 kilometres distance. We do not think there is likely to be a significant risk to this borehole supply from the use of the existing track.

4.181 White Cairn sits within the Duisk catchment, whereas the nearest construction works would be in the Tig and Cross catchments. We note that Figure 13 from Dr Connor's third party PWS notes, maps and photographs[22] identifies a liner geological feature extending southwest from Whitecairn. In fact it appear to us that the Whitecairn borehole (at least as mapped in Figure 10.1 of the EIA Report) is slightly further north than as mapped by Dr Connor. In any event, the liner feature extends southwest to the borrow pit 4 search area. This would be over two kilometres distance from this PWS, and in a different surface water catchment (the Cross) from the PWS. Similar to our conclusions for PWS12, we accept the possibility of deep groundwater travelling from the vicinity of VP6 to the vicinity of White Cairn, but we do not think there is strong evidence for a significant effect on this supply.

PWS30 Woodpark Cottage

4.182 The PWSRA could not confirm the type or location of this PWS, although the council subsequently confirms it as a borehole. The Arecleoch wind farm was already operational in 2016 at the time the problems with this supply occurred. Dr Connor suggests that this may be explained by the time-lag for the polluted groundwater to reach Woodpark but the effects are described as being intermittent and occurring at the same time as blasting

[22] CD23.39

events. Whatever the problem was, there is not strong evidence that it was linked to the Arecleoch wind farm or that the proposed development would cause similar problems.

PWS28 High Altercannoch

4.183 The PWSRA identifies this as a spring, but the location is unconfirmed. The property lies between the Alty Burn sub-catchment and the catchment of a tributary of the Duisk, so it is considered that it would not be fed from groundwater beyond these catchments. These are separated from the catchment of the Pollgowan Burn by Eyes Hill to the south, so there would not be any hydraulic connectivity with the development.

4.184 The council's evidence is that this supply is fed from Loch Alty, which is consistent with the above. This has a different catchment from the Cross Water to the west. Higher ground to the south and southwest of Loch Alty intervenes between it and the existing access track, which is not to be upgraded. We do not consider that there is a significant risk to this PWS from the development.

Other PWS

4.185 The council lists other PWS which it says were not considered in the PWSRA, and others for which it says the PWSRA does not demonstrate the absence of risk. Dr Connor makes a similar point. All of the PWS identified by the council were in fact covered in the PWSRA, but it was considered that there was no pathway between pollution source and receptor, and therefore not likely to be an effect. We have considered all of the PWS on which the council and/or Dr Connor submitted substantive evidence and do not find there would be any significant effects. Whilst we note the commentary on some other PWS in the material supplied by Ms Crosthwaite, there is an absence of strong evidence challenging the conclusions of the PWSRA in respect of all the other PWS. We therefore accept its conclusions for these, which is that there is unlikely to be pathway between pollution source and receptor.

<u>Monitoring and mitigation</u>

4.186 Our conclusions above, that there would be no significant effects on PWS, are reached in the context of a reliance on the mitigation measures proposed in the EIA Report and in our proposed planning conditions. This includes agreement of a detailed CEMP, water quality monitoring arrangements and a scheme for the protection of PWS. But we agree that no cast-iron guarantee can be given that no incident could occur which would affect PWS, hence why an emergency action plan is required.

4.187 We note the mitigation measures suggested in section 3 of the PWSRA for those PWS where a potential pathway between pollution source and receptor was identified. At Arnimean, these include an extended no-refuelling/vehicle maintenance zone, vehicle speed limits, spill kits and other traffic management measures between watercourse crossing WX01 and Dornal Hill. We think it would be also be prudent (as is identified for Burnside) to require that any silt management features on this stretch of road are regularly checked. It would also be prudent for a similar package of all these measures to be put in place for the stretches of the track where there is a pathway from the track to the PWS at Burnside and Laggish. The mitigation measures suggested for PWS15 (& now PWS16) should also be ensured through the conditions. We suggest changes to condition 31 Private Water Supplies to clarify that these measures are required.

CHAPTER 5: NOISE

5.1 We held three days of inquiry sessions covering noise effects. At these we heard evidence from Dr Matthew Cand (for the applicant) and from Pat Spence and Susan Crosthwaite (objectors). Dr Angela Armstrong also gave evidence for Ms Spence and Ms Crosthwaite was also represented by two further witnesses – Dr John Yelland and Professor Mariana Alves-Pereira. Dr Yelland was unwell whilst giving his evidence, and was unable to be cross-examined.

The EIA Report

Chapter 13 of the EIA Report Chapter 13 - Noise Technical Appendix TA 13.1 Environmental Noise Assessment[23].

5.2 Chapter 13 of the EIA Report purports to follow the guidance in The Assessment and Rating of Noise from Windfarms (ETSU-R-97), informed by the further advice in the Institute of Acoustic's Good Practice Guide to applying ETSU-R-97. It is concluded that there would be no significant adverse environmental effects as a result of noise emissions during the construction or operation of the wind farm. There would be no significant cumulative effects with other operational, consented or proposed wind farms.

5.3 Historic noise monitoring (to avoid the influence of current noise from operational turbines) was used to derive background noise levels. This was supplemented by new monitoring in locations in and around Barrhill where there was no representative background data. Tables 13.1 and 13.2 of chapter 13 show the noise monitoring locations. Table 13.4 of chapter 13 lists the noise-sensitive locations used in the assessment, intended to be representative of noise levels typical of those receptors closest to the site. Figure 13.1 of the EIA Report shows these noise monitoring and assessment locations.

5.4 The proposed noise limits, in line with ETSU-R-97, are 5 dB(A) above the best fit curve for background noise levels. In line with the existing Arecleoch, Kilgallioch and Mark Hill consents, the fixed lower daytime noise level is proposed to be 40 dB(A), at the top end of the 35-40 dB range provided in ETSU-R-97. The equivalent night-time lower limit is 43 dB(A). These are cumulative limits for all the wind farms in the study area.

5.5 The assessment takes account of the noise effects from the operational wind farms noted in the paragraph above, as well as those from the consented Chirmorie wind farm. The potential contribution to noise effects in the study area from other more distant wind farms was considered to be negligible.

5.6 Tables 13.6 and 13.7 in chapter 13 of the EIA Report show the proposed cumulative noise limits for the noise survey properties. Tables 13.8 and 13.9 show the maximum allowable combined noise immissions at these properties from the existing Arecleoch and the proposed extension turbines so as to ensure the overall limits from tables 13.6 and 13.7 would be achieved. It is the limits in tables 13.8 and 13.9 which would be imposed by the proposed noise condition.

5.7 Table 13 of Technical Appendix TA 13.1 shows the predicted combined noise effects at the noise-sensitive properties of the proposed turbines along with those of the existing

[23] Part 1 Part 2 Part 3

Arecleoch Wind Farm. Tables 15 and 16 of the technical appendix show that the ETSU-derived limits for Arecleoch and the proposed extension are predicted to be achieved at all wind speeds and at all assessment locations. Table 14 of the technical appendix shows the predicted cumulative noise effects from all of the wind farms in the study. Tables 17 and 18 show that the ETSU-derived cumulative limits are predicted to be achieved at all wind speeds and in all assessment locations.

5.8 Technical Appendix TA 13.1 (in particular its Appendix A) discusses low frequency noise and vibration, and amplitude modulation. It refers to several published sources which state that there is little or no risk (or no evidence of such) to human health from infrasound or low frequency sound from wind turbines.

South Ayrshire Council's position

5.9 ACCON provided advice[24] to the council on the noise effects of the proposal. Its advice was that the methodologies used represent good practice, and are in line with the advice in ETSU-R-97 and the Good Practice Guide. ACCON agreed with the approach to background measurements. It agreed that the noise limits in the proposed noise condition are acceptable, and properly in line with the guidance in ETSU-R-97. It agreed that these would be effective at controlling noise emissions, and would protect sensitive receptors from being exposed to noise levels above the relevant ETSU-R-97 limits. ACCON also agreed that the effects from construction noise would not be significant. The council's Environmental Health Service recommended a number of planning conditions relevant to noise effects.

5.10 Subject to the adoption of the proposed noise limits, ACCON's advice was that there would be no over-riding reason for refusal in respect of noise. In their advice to the meeting of the council's Regulatory Panel of 24 March 2020, council officials concur with this conclusion. Elected members accepted this advice and, accordingly, the council has no objection in relation to the noise effects from the proposal.

The main points for the applicant

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5.11 The assessment of operational noise accords with ETSU-R-97 and the Good Practice Guide, as recommended in Scottish Government planning advice. This approach, as well as the location of noise monitoring locations, was agreed with South Ayrshire Council and their consultants ACCON.

5.12 Dr Cand personally supervised the choice of new monitoring locations and he is satisfied that they were chosen in line with the requirements of the above guidance. For example, the chosen location at Whitecairn was in the rear garden to maximise separation from the trees to the front. Monitoring at Queensland caravan park was in November and December, during a period of low activity. There was no significant contribution from the

[24] CD2.24a

noise from Mark Hill, including during northerly winds. It is not clear why Ms Crosthwaite's proposed alternative monitoring locations should be preferred.

5.13 The conclusion of the assessment was that noise levels arising from the existing Arecleoch turbines together with the proposed extension would comply with the requisite noise limits at all properties and all wind speeds, with a margin of 4 dB or more. The noise assessment concluded that cumulative impacts were either negligible or were such that cumulative levels remained below the applicable limits, regardless of whether Chirmorie was constructed or not. The predictions are conservative because they assume each receptor would be downwind of all turbines, which cannot be the case at some receptors.

5.14 ETSU-R-97 provides the appropriate balance between the impact of noise from wind farms on residential amenity and the provision of renewable energy generation. Compliance with it means that, although noise may be audible in some conditions, noise levels would be considered to have an acceptable impact on existing communities and will therefore accord with the requirements of both national and local planning policy.

5.15 The Good Practice Guide states that if the contribution to noise immissions from another wind farm is more than 10 dB below that of the development being assessed, this would represent a negligible contribution which can be discounted.

5.16 The Clauchrie wind farm application was made after the EIA Report was completed, and so therefore is not taken into account. In any event, the nearest Clauchrie turbine would be more than six kilometres away from the nearest receptors (in Barrhill) considered for the current application. Noise levels from that development at these properties would likely be substantially below 25 dB(A) (more than 10dB below the lowest ETSU-derived noise limit for proposal) and therefore represent a negligible contribution at these properties relative to that of the existing Mark Hill wind farm. The noise contour lines in the Duisk valley shown on the map in Susan Crosthwaite's precognition are from the Mark Hill turbines. Dr Cand's understanding is that the cumulative assessment for the Clauchrie application does not take into account any effects from the proposed Arecleoch extension turbines because of the distance between the two proposals.

5.17 Objectors raise concerns about the adequacy of the ETSU-R-97 methodology without proposing an alternative approach. Such concerns have been raised before, but neither the UK nor Scottish governments have sought a revision of the guidance.

5.18 There is no scientific evidence that noise or vibration of the character and level of that produced by wind farms (including infrasound and low frequency Noise – "ILFN") will cause any direct health effects. In this context, Dr Cand refers to the Health Canada Study and a study[25] by the UK Health Protection Agency. Research has repeatedly shown that levels of infrasound produced by wind turbines are below the perception threshold and comparable to other ambient noise sources, and that, at these levels, no adverse effects would be expected. There is no objective evidence to support Ms Spence's claims as to the cause of her ill-health.

5.19 A number of myths and misunderstandings about wind turbine infrasound and health effects are circulated. Part of the confusion arises from the higher levels of infrasound generated by the early "downwind" turbine designs. References cited by Ms Crosthwaite

[25] CD11.1

and her witnesses are selective, and often misunderstand or misrepresent the evidence. Modern turbine designs, with blades upwind of the tower, generate much lower levels of infrasound, several orders of magnitude below the level at which they would be perceptible.

5.20 At section 5.5 of his inquiry report, Dr Yelland misinterprets (and therefore misrepresents) the test report he refers to. With reference to Dr Yelland's Figure 13, Dr Cand's calculations of the power in watts at the low frequencies are many times lower than Dr Yelland's.

5.21 The conclusions on potential sleep impacts reached by Dr Hanning[26] are at odds with the conclusions reached in the research referenced in the review of the World Health Organisation (WHO) 2018 guidelines and in the Health Canada study. This stems in part from Dr Hanning's misunderstanding of different noise levels discussed in the literature. In any case, the potential for sleep disturbance for wind turbine noise is recognised in ETSU-R-97 and this is the basis for setting night-time noise limits.

5.22 Whilst a proportion of people living near wind farms may experience annoyance and/or stress caused by audible noise that may be associated with impacts on health, this is no different from any other development that generates noise. The theories of Professor Pereira on 'vibro-acoustic disease' have been widely discredited.

5.23 Noise emission levels from turbines have remained broadly similar despite increases in blade length. Table 10 of Technical Appendix TA 10.3 shows that the candidate turbine used in the assessment has similar levels of sound power output to other smaller turbines considered. In any case, the EIA Report shows that noise levels would be controlled in accordance with the ETSU-R-97 guidelines.

5.24 Wind turbine blades are designed to be flexible so they do indeed vibrate, but there is no evidence that they do so to the extent that they create high levels of infrasound. The main source of infrasound comes from interactions with the tower. It is not clear why longer blades would mean more infrasound is produced. But even if this was the case, it would still be well below the levels at which it could be perceived by people or create health effects.

5.25 The WHO 2018 guidelines do not support the objectors' cases. Apart from annoyance associated with increased noise levels, no evidence for other health effects was found in the studies reviewed by the WHO.

5.26 The Health Canada study reached a similar conclusion. Although the WHO guidelines encourage further research, they do not recommend any moratorium on windfarm development or specify that effects are likely within a certain distance. It is not uncommon for reports such as this one to recommend more research, and Dr Cand agrees that this would be beneficial, especially longitudinal studies.

5.27 The WHO document did not raise the potential for infrasound or other health syndromes caused by wind turbine noise, despite these claims having been widely circulated, and it notes that evidence on health effects from wind turbine noise (apart from annoyance) is either absent or rated low/very low quality. Dr Yelland is wrong to interpret the WHO description of research as "low quality" as criticism of the guidance and regulation

[26] CD23.79

of wind turbine noise in the UK. The WHO has not given credence to the theories on infrasound which are being promoted by Ms Alves-Pereira and others.

5.28 The 2018 WHO guidance is to inform policy on noise at the population and strategic level. The only recommendation made regarding wind turbine noise (on a conditional basis) is for stakeholders to consider restricting turbine noise to certain levels to avoid significant levels of annoyance. ETSU-R-97 already does this on a broadly similar basis. Since publication of the WHO guidelines, there has been no indication from the UK or Scottish Governments that they intend to revise their guidance on the control of wind turbine noise.

5.29 Compliance monitoring[27] at Dochroyle Farm, undertaken in line with protocols agreed with South Ayrshire Council and ACCON, was carried out for almost a year and demonstrated compliance with the relevant noise limits for the existing wind farms. There was not enough data at some higher wind speeds, but it was agreed that this did not affect the reliability of the conclusions. Vibration monitoring was also carried out, and confirmed that no perceptible vibration levels associated with wind farm operations could be measured at the property. Ms Spence's suggested location would likely have been more exposed to wind on the microphone and reflections from a nearby dry-stone wall.

5.30 Noise modelling took topography into account, in line with good practice. It is not expected that noise immissions would differ substantially between Dochroyle Cottage and Dochroyle Farm, albeit subjective perspectives of noise might differ and the masking effects of background noise may also differ.

5.31 Dr Cand concludes that "vibrations" referred to by Ms Spence represent her description of features of the noise she perceives rather than perceptible ground-borne vibration affecting the property. He believes she is being wrongly advised that her experience is due to infrasound rather than audible noise. Reactions to audible noise sources can vary very strongly between individuals. It is the audible wind turbine noise at Dochroyle that Ms Spence is affected by.

5.32 The presentation of Ms Crosthwaite's noise monitoring[28] is unclear and the small foam microphone windshield used at Kilrenzie is inappropriate for meaningful measurement of outdoor low-frequency noise. These points notwithstanding, the measurements show only relatively low levels of infrasound, and nothing unexpected or concerning. The fact that linear measurements of noise show higher overall levels than A-weighted measurements does not necessarily mean that infrasound is a problem. There is no obvious harmonic pattern in her figures 8 and 9. Ms Crosthwaite's tables 18 and 19 appear to show an infrasound signature consistent with wind turbine noise but not at a significant level, and significantly below perception levels.

5.33 The reporter who determined the appeal in relation to the Hunterston turbines did not conclude that evidence of adverse effects on the health of the local population was sufficient to justify dismissing the appeal. The anecdotal evidence provide by Ms Crosthwaite does not outweigh this. The consent was a temporary one and the turbines were not decommissioned because of alleged health effects.

[27] CD11.8
[28] CD23.97

The main points for Pat Spence

Statement of case Precognition Closing submission

5.34 Ms Spence's statement of case and precognition were supported by a number of additional documents. These include photographs and other documentation related to previous noise monitoring at Dochroyle, and Ms Spence's noise diary. Also included are Dr Armstrong's statements[29] from 2017 and 2021, which Dr Armstrong read out at the inquiry.

5.35 Pat Spence lives at Dochroyle Farm, the location of which is described in chapter 3 above. She has a practical understanding of acoustics through her work as a musician. She chose to live at Dochroyle because it was peaceful, and relatively isolated. However Dochroyle is now surrounded by wind farms.

5.36 The existing wind farms near Dochroyle Farm are audible from the property. However, the principal concerns are the adverse health effects Ms Spence suffers due to infrasound from these wind farms. These frightening effects include severe physical discomfort and pain, and sleep deprivation. They occur both outwith and inside her house and office. This has consequential effects on Ms Spence's quality of life and her ability to operate her businesses as a performer, teacher and publisher of music.

5.37 These health effects began to emerge around 2015 after the first of the nearby wind farms (Mark Hill and Arecleoch) were constructed and became operational. The effects became worse after Kilgallioch became operational in 2016. The effects on her subside when she travels away from the property, and during any extended periods when the wind farms are not operating (for example for a time during the summer of 2020). Scottish Power Renewables simply dismisses her evidence of these effects.

5.38 Previous noise monitoring at Dochroyle Farm has not been satisfactory and has not resolved Ms Spence's complaints. Internal noise monitoring used equipment which was old and either faulty or not fit for purpose, and the data collected has not been shared with Ms Spence or South Ayrshire Council. Other data provided to her could not be analysed. External monitoring equipment should have been better located on higher ground within her garden to more accurately capture wind farm noise. The location she suggested was sufficiently far away from her garden wall to avoid it having an effect on noise readings.

5.39 The infrasound from the proposal would exacerbate the health effects on Ms Spence. The adverse visual effects, and the sense of further encirclement by turbines, would combine with and compound these noise-related effects. It is unlikely, if the further proposed wind farms in the area are consented and become operational, that she would be able to continue living at Dochroyle. A revised cumulative noise assessment should be provided.

5.40 The applicant's predictions of noise effects do not take into account the elevated position of Dochroyle Farm – the turbines are notably quieter at Dochroyle Cottage.

[29] CD21.9 and CD21.10

Dr Armstrong

5.41 Dr Armstrong is a retired general practitioner with considerable experience in occupational medicine. She has had an interest in "wind turbine syndrome" in recent years, since retiring. Even though she has demonstrated against the placing of wind turbines in inappropriate locations, her professional opinions in this case are valid.

5.42 Having seen a summary of Ms Spence's medical records and following discussions with her about her symptoms (regularly since 2017), in Dr Armstrong's opinion she is experiencing classical wind turbine syndrome. Continuing to live at Dochroyle Farm would be detrimental to her health. Dr Armstrong does not agree with Dr Cand's statement (at paragraph 4.8 of his precognition) that it is implausible that the effects Ms Spence is experiencing are due to low frequency sound or infrasound. Her symptoms are consistent with exposure to infrasound from nearby wind turbines.

The main points for Susan Crosthwaite

5.43 We summarise Susan Crosthwaite's evidence, then the evidence of her witnesses Dr Yelland and Professor Alves-Pereira. Ms Crosthwaite's three letters of objection[30] also refer to noise effects.

Susan Crosthwaite

Outline statement of case Inquiry Report Precognition Closing submissions

5.44 There is no evidence that turbines of the proposed size and power output are safe. The applicants should have evidenced this. The noise limits in ETSU-R-97 are inadequate for the protection of human sleep and health. The use of A-weighted noise does not take account (as should be done under EIA regulations) of all the noise created. The 2018 WHO guidelines[31] have been ignored or misrepresented by the applicant's noise consultants, who instead refer to earlier out of date guidance.

5.45 The work Ms Crosthwaite and others are doing on wind turbine noise is consistent with the fourth principle of the WHO guidelines, which is to inform and involve communities (and in turn governments) that may be affected by changes in noise exposure. It is about investigating the effects from wind farms and getting in touch with communities to do so, rather than "campaigning" or being part of a protest group.

5.46 IFLN is a cause of ill-health for some people living in the vicinity of wind turbines. Extracts from the Independent Noise Working Group's review of amplitude modulation[32] studies shows that complaints about wind turbine noise have not been adequately addressed. There is strong evidence for adverse health effects but this is just dismissed by Dr Cand. He does not properly understand the potential for infrasound effects from wind

[30] Representations 26, 42 & 43.
[31] CD11.2
[32] CD23.80

farms, nor back up his claims that there is a lot of evidence to show that no significant effects can occur. The Health Canada study[33] referred to by the applicant, which claims to dismiss the evidence for such effects, is propaganda, and shown[34] to be of dubious status.

5.47 Witness statements show the effects on people from ILFN from turbines previously operated from the Clydeport Hunterston terminal. These were generally not objectors to that proposal, but people who were adversely affected by it once it was operational. These effects went away when the turbines were removed.

5.48 Noise monitoring[35] at Dochroyle shows the vast difference between the amount of acoustic energy captured using A-weighting compared to unweighted measurements. This is because of the amount of infrasound. Measurements at Kilrenzie show the same phenomenon. The harmonic nature of the data, whereby the peaks in the sound fall in a mathematical sequence, reveals that infrasound is emanating from nearby wind turbines.

5.49 The locations selected for further background monitoring in and around Barrhill are not representative[36] of those locations most likely to experience adverse noise effects. They are shielded by topography. The monitoring equipment for these was not located in the best quiet amenity area and did not produce a true level of ambient background noise.

5.50 At Whitecairn, the chosen location was not the best amenity location as it is north facing and too close to a wall, telegraph pole and trees. A more appropriate location within the garden, south facing and more sheltered, should have been chosen. Queensland Holiday Park is not representative of a quiet family home, and the monitoring position there was close to the A714 road. Some of these new locations already experience noise nuisance from the Mark Hill wind farm.

5.51 There should have been new monitoring at the locations from which the applicant used historical noise monitoring. Other properties which have experienced noise nuisance, including Dochroyle, should have been obvious choices.

5.52 The applicant's assessment of cumulative noise effects should be updated to include the effects from the proposed Clauchrie wind farm. The noise contour maps for the proposal show effects extending across the Duisk valley, beyond Barrhill, overlapping with the cumulative noise contours for Mark Hill and Clauchrie.

5.53 It is of significant concern that, in addition to the significant adverse effects on visual residential amenity at Kilrenzie and Wheeb Farms, there would be adverse effects at these properties from audible noise and from infrasound. This is a similar situation as formed the grounds for dismissing an appeal for a wind farm at Louth Canal in England. The owners of Kilrenzie have reported[37] health problems since the Arecleoch Wind Farm was built. They foster children, some of whom can have medical conditions which could be exacerbated by the noise and rotating movement of turbine blades. Noise effects would compound visual effects elsewhere, for example at Core Path SA61 to the north of the site.

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[33] CD11.3
[34] CD23.73
[35] CD23.97
[36] CD23.83
[37] CD23.84

John Yelland

5.54 Dr Yelland prepared an inquiry report, much of which is a generic discussion of physics, ETSU-R-97, WHO advice, amplitude modulation, how turbine blades create infrasound and the effects of this on human health. Dr Yelland was unwell during the run up to the inquiry, and Susan Crosthwaite and Melvin Grosvenor submitted a precognition on his behalf, outlining what he would cover in oral evidence.

5.55 When ETSU-R-97 was published in 1997, its authors recommended that it be reviewed after two years. No such review has taken place. However, rigorous compliance with it, and with the good practice guide, usually provides adequate protection from audible noise. Such rigorous compliance is, however, unusual in wind farm applications. Errors that overstate background noise tend to outnumber errors that understate it.

5.56 Dr Yelland acknowledged that he does not provide any specific criticism of the noise assessment in the EIA Report with reference to the requirements of ETSU-R-97 or the Good Practice Guide. This was due to the limitations of time (exacerbated by pandemic restrictions) and the software he uses for analysis. In any event, it is the low frequency noise rather than audible noise which is the greater concern.

5.57 Adverse health effects suffered by those living too close to wind turbines are mostly caused by ILFN rather than by audible noise (although this can still cause sleep disturbance and annoyance). ETSR-R-97 should not have used A-weighted sound measuring. Because that is based on what is audible to the human ear, it does not assist in measuring infrasound or its effects on other parts of the human body. The absence of policy guidance on such noise does not mean there are no such effects.

5.58 Turbines produce infrasound because of wind shear and the flexible nature of wind turbine blades. Turbine test data, for example for turbine model MM2 as shown in section 5.5 of Dr Yelland's inquiry report, shows the amount of infrasound produced and the associated power in watts which is greater at lower frequencies but negligible above 20 Hz. This relates to an upwind turbine and it is misleading to characterise the problem as relating only to earlier downwind designs which have not been used for decades now.

5.59 Larger turbines inherently produce lower frequency sound. Doubling the rotor diameter means a halving in frequency. Studies on infrasound from wind turbines generally relate to much smaller turbines than the 150 metre diameter turbines proposed in this application. A one kilometre set-back is too little for turbines of this size.

5.60 Dr Cand is wrong to assert that it is implausible that wind turbine infrasound can cause health effects. In fact it has been exhibited. Noise can cause physiological effects even if it is not audible. Various cavities within the human body have resonant frequencies which fall within the 1-20 Hz band, the same frequency as infrasound. Masking by background noise levels is not relevant for infrasound.

5.61 When sufferers leave their homes, or when turbines cease turning, symptoms subside. For acousticians to suggest that these kind of symptoms are psychosomatic is speculative and inappropriate. Studies of farm animals also show adverse health and behavioural reaction to the operation of nearby wind farms.

5.62 The 2018 WHO report identifies the poor state of evidence on the effects of noise (including ILFN) from wind turbines. It recommends further research into the health impacts

from wind turbine noise. It rated the evidence for no substantial effect of wind turbine noise on quality of life, well-being or mental health as very low quality. The WHO report requires the wind energy industry to provide evidence of safety, rather than requiring those suffering adverse health effects from wind turbine noise to provide evidence of harm.

Mariana Alves-Pereira

Statement of Fact Precognition

5.63 ILFN is not merely a wind turbine problem. It has been a public and occupational health issue for several decades. Professor Alves-Pereira's team, based in Portugal, has seen an increasing number of complaints about ILFN, including from wind farms.

5.64 Wind turbines emit pulses of acoustic energy, frequently 10 dB or more over the background noise. This is not comparable to the type of infrasound that exists naturally. Inaudibility does not mean infrasound has no effect on the human body or is not processed by the brain, and various studies have been undertaken showing the physiological effects of exposure to infrasound.

5.65 Although infrasound levels from turbines within the home may be at relatively low levels (compared to some workplace environments), it is the constant exposure (including periods of sleep) in the home which is critical to the adverse health effects. This is because there are no periods when the infrasound is absent, so no time for the body to recover. The effects of infrasound on the fabric of buildings, causing minute variations, can add to its adverse effects within the home.

5.66 Professor Alves-Pereira is unaware of any scientific papers which discredit her work. She agrees that there is a paucity of research on this subject, but this is because of a lack of interest by government agencies responsible for public health. There is no scientific basis for Dr Cand's statements that infrasound from wind turbines can have no effect on the human body or that it is not the cause of Pat Spence's ill-health. Her symptoms, and those of others living nearby, are the same as those of other people worldwide living next to large wind turbines. These statements are outwith Dr Cand's area of expertise.

5.67 Professor Alves-Pereira has conducted ILFN measurements at the home of Pat Spence. We were told, at the time of the inquiry sessions, that this project was ongoing. An assessment based on ETSU-R-97 would be irrelevant to her approach to ascertaining any health effects from infrasound. To protect people's health, the application should be refused.

The main points for other objectors

5.68 Other objectors expressed concern about noise effects in their written objections to the development. These included Barrhill Community Council, Colmonnel & Lendalfoot Community Council, Queensland Holiday Park and several individual representations. Concerns expressed included effects on Barrhill (including its holiday parks), effects from infrasound, cumulative noise effects and lack of compliance with the WHO 2018 guidelines.

Reporters' conclusions

5.69 Parties make reference to other appeal decisions, for example Louth Canal and at Hunterston. However we reach our own conclusions on noise effects on the basis of the evidence before us, as it relates to the present application.

5.70 There are two themes which emerge from the evidence on noise. The first of these is whether the noise assessment follows the correct approach based on ETSU-R-97 and the Good Practice Guide, and a consideration of the predicted noise effects in this context. The second relates to objectors' concerns about the adequacy of ETSU-R-97 in considering all noise effects. This includes consideration of the degree to which wind turbines create infrasound, the extent to which this may be harmful to human health, and what that means for our consideration of the proposal before us.

Compliance with ETSU-R-97 and the Good Practice Guide

5.71 It is stated in the EIA Report that the noise assessment follows ETSU-R-97 and the Good Practice Guide. It is notable that ACCON, on behalf of the council, agrees that this is the case. Dr Yelland advised that he takes no particular issue with the approach followed, although we acknowledge that he was not able to undertake a detailed appraisal of it. For objectors, then, the main issues raised in respect of methodology appear to be the selection of monitoring locations, whether topography was taken into account, and the omission of the proposed Clauchrie wind farm from the cumulative assessment. Our reading of the guidance documents, the environmental information and the evidence from objections does not indicate to us any other significant questions or concerns in relation to methodology.

5.72 In the context of the advice in ETSU-R-97 and the Good Practice Guide, we do not agree that locations which have experienced "noise nuisance" (in Susan Crosthwaite's words) from wind turbines should have been selected for further background noise monitoring. It is clear from the guidance that the effects of wind turbine noise is to be assessed compared to background noise levels in the absence of turbines. Taking new measurements in locations where there is already a notable contribution from operational turbines would not have assisted in this endeavour.

5.73 The purpose of background noise monitoring is to quantify the background noise levels at a range of wind speeds. The locations are to be representative of background noise at nearby properties. The reason the additional locations were chosen was because the applicant did not possess measured background noise levels for the area in and around Barrhill, and it was felt necessary to obtain these for the assessment. The fact that these properties, being in the valley, may be less exposed to noise from the turbines than other locations does not invalidate the background noise measurements which were obtained, or the reasons for obtaining them.

5.74 We agree that, on their own, these additional monitoring locations are not representative of all the receptors close to the site. That is why they are supplemented by the historic recordings from other locations. Together these provide background noise levels from locations in an arc from to the north of the site (Kilrenzie) clockwise though the new Barrhill monitoring locations to Ward of Cairnlea, Laggish and to Chirmorie to the south. We are satisfied, as was ACCON, that these are sufficiently representative of the potentially affected noise sensitive properties in the area.

5.75 Turning to the precise positioning of the monitoring equipment at some of the Barrhill locations, we viewed the photographs of these provided in Technical Appendix 13.1 and the comments on this in the evidence from Susan Crosthwaite. This was supplemented by our accompanied visits to some of these properties.

5.76 At Whitecairn, we accept Dr Cand's explanation that monitoring was at the rear to minimise effects on the readings from noise from the trees to the front of the property. The location referred to by Ms Crosthwaite may be a more natural location for the residents to enjoy their garden, but there is no technical evidence as to why the background readings obtained would not be representative of the background noise around the property.

5.77 We recognise that, when busy, Queensland Caravan Park may not best represent the background noise in a rear garden. But Dr Cand explains that the park was quiet during the winter monitoring period, which is what we would expect. The monitoring equipment appears to have been no closer to the road than would be the gardens of many properties along it in Barrhill. Likewise at the other new noise monitoring locations, we see no compelling evidence that the choice of location or the precise positioning of the equipment was inappropriate. Overall, we are satisfied with the applicant's approach to and use of historic and new background noise monitoring.

5.78 The applicant did not update the cumulative assessment to take account of the Clauchrie wind farm application which reached application stage (and for which a public inquiry has now in fact been held) after the EIA Report was completed. The applicant's position is that it is through consideration of the Clauchrie proposal that the cumulative effects of it with Arecleoch Extension would fall to be considered.

5.79 In any event, we note Dr Cand's professional opinion that the noise effects from Clauchrie (at six kilometres distance) would be well below the relevant noise limits for Barrhill receptors (the nearest ones in the study area to Clauchrie) and of negligible cumulative significance. Noting the greater potential for cumulative noise effects with the closer (and intervening) Mark Hill turbines, which have of course been factored into a cumulative assessment which does not predict any significant adverse cumulative effects, we concur with the view that there would be no significant adverse effects arising from cumulative noise effects with Clauchrie.

5.80 We note Pat Spence's evidence that the elevated nature of her property makes it more exposed to wind turbine noise. In any event, and keeping to methodological issues at the moment, Dr Cand confirmed in his written evidence that the modelling undertaken took account of topography. Section 5.4 of Technical Appendix TA 13.1 describes the noise propagation model used (ISO-9613-2), and states that it accounts for attenuation due to geometric spreading, atmospheric absorption, and barrier and ground effects.

5.81 The effect of topography on the model outputs can be seen by looking at Figure 13.2 of the EIA Report where, for example, the influence of the topography of Glen Tig on the shape of the 35 dB noise contour is evident, as is the valley of the Burn of Lig on the 30 dB contour. Another example is the western slope near the high point at Chirmorie Cairn being within the 35 dB contour whereas the lower land around it is within the 30 dB contour.

5.82 We find, therefore, that the noise impact assessment has been undertaken in accordance with ETSU-R-97 and the Good Practice Guide. According to that assessment, the wind farm could operate without giving rise to noise effects at any noise-sensitive properties which, alone or cumulatively, would be above the properly derived noise limits.

In this respect we agree with the conclusion that there are no likely significant adverse environmental effects from noise which would result from the operation of the wind farm.

5.83 Noting the evidence in the noise impact assessment, and subject to the identified mitigation measures and compliance with conditions, we reach the same conclusion (that there would be no significant adverse effects) for noise from the construction period.

The sufficiency of ETSU-R-97 on considering noise effects

5.84 As for wider concerns about the sufficiency of an approach based on ETSU-R-97, we note the concerns expressed by Ms Crosthwaite and her witnesses. Leaving ILFN aside for the moment, concerns include that ETSU-R-97 does not take proper account of the potential for excessive amplitude modulation, that following it means setting noise limits which are too high (and at levels which have been shown to cause annoyance and adverse health effects) and that it has not kept pace with increases in turbine size (or indeed been updated at all since it was written in 1997).

5.85 Amongst the documents[38] cited in support of these concerns, we have noted the contents of The Independent Noise Working Group's Work Packages, the SLR/Hoare Lee Wind Farm Impacts Study for Climate Change (2015) and the paper by Steven Cooper. Although also covering ILFN, the recent investigation by American cardiologist Dr Johnson and the 2017 article by Alun Evans from the Centre for Public Health, Belfast, also cover some of this ground.

5.86 In relation to ILFN (and in particular infrasound), the concern is that infrasound from turbines (especially large ones as are proposed here) is under-appreciated, that an assessment of noise effects based on the A-weighting does not capture infrasound, that the health effects of infrasound from wind turbines are real but are being ignored, and that more research in this area is required.

5.87 Dr Yelland's inquiry report seeks to explain some of the basis for these concerns. The contributions of Dr Johnson and Alun Evans, noted above, also cover some of this ground. We have also noted the contents of additional material[39] cited in support of these arguments, including the 2003 journal article by Hazel Guest, Appendix A to the paper by Martina Lenzen-Schulte and Maren Schenk, the paper by Jerry Punch and Richard James, the testimony of Dr Malcolm Swinbanks to the Australian Senate in 2015 and his paper for a conference in Glasgow in the same year.

5.88 Professor Alves-Pereira argues that her work shows the symptoms of vibro-acoustic disease which can be brought on by the continuous exposure to infrasound in the home, including from wind turbines. As do others, she highlights a lack of evidence as to the potential for infrasound to cause health effects. As well as Professor Alves-Pereira's Statement of Fact and her precognition (and her oral evidence), we note the contents of her two conference papers[40] about the ill-health suffered by a family living close to a wind farm in Portugal, her testimony in relation to a wind farm proposal in South Dakota and the article (not specifically about wind turbine noise) which she co-authored on acoustical and biological structures.

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[38] CD23.81, CD23.79, CD23.71, CD23.90, CD23.72, CD23.98
[39] CD23.74, CD23.92, CD23.91, CD23.95, CD23.96
[40] CD23.87, CD23.89, CD11.9, CD23.102

5.89 We do not ignore the many concerns and questions which are raised in this evidence. However our remit is to consider the effects of the proposal before us. We do so having regard to all of the evidence presented to us, but also in the context of the prevailing Scottish Government policy and advice in relation to the consideration of noise effects from wind farm developments.

5.90 The Scottish Government online policy advice[41] on onshore wind turbines says that ETSU-R-97:

"should be followed by applicants and consultees, and used by planning authorities to assess and rate noise from wind energy developments, until such time as an update is available. This gives indicative noise levels thought to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable burdens on wind farm developers, and suggests appropriate noise conditions."

5.91 The online advice also highlights the Good Practice Guide, which is accepted as current industry good practice. We note that the online advice dates from May 2014. Some of the evidence from Ms Crosthwaite predates this, but much of it is from after this date. Nonetheless, the advice remains extant, and Ministers have not, to date, elected to update or amend it. We note the concerns about the deficiency of an approach using ETSU-R-97, but that is the approach that the Scottish Government currently advises should be taken. It is therefore the approach we follow.

5.92 Most of the evidence presented by Ms Crosthwaite in relation to ILFN is not related to an assessment of the specific effects of the proposal before us. We have no technical evidence which seeks to predict or model the levels of ILFN at noise-sensitive receptors in the vicinity of the proposed wind farm.

5.93 The most detailed and project-specific evidence we have is from the applicant's noise impact assessment, and we conclude above that this satisfies the requirements of ETSU-R-97 and the Good Practice Guide. We do not dismiss the wider concerns raised. But they do not, in the context of the policy and advice which we already refer to, provide us with a firm basis for recommending that the application be refused on the basis of likely effects from noise.

5.94 At this point we think it is worth noting the contents of the WHO 2018 guidelines. These set out specific recommendations for noise from roads, railways, aircraft, wind turbines and leisure. A "strong" recommendation can be adopted as policy in most situations. A "conditional" recommendation requires a policy making process with substantial debate and involvement of various stakeholders. There is less certainty for conditional recommendations.

5.95 Section 3.4 of the WHO report deals with wind turbine noise. There is a conditional recommendation of reducing average noise exposure levels from wind turbines to below 45 dB L_{den}, as exposure above this level is associated with adverse health effects. A further conditional recommendation is that policy makers take measures to reduce noise exposure for people exposed to levels above this guideline value.

[41] CD7.3

5.96 There is no recommendation in relation to an average night noise exposure (to address sleep disturbance) because the quality of available evidence was too low to allow a recommendation.

5.97 Section 3.4.2.3 of the WHO report considers "additional contextual factors" related to wind turbine noise and the recommendations in the report. It is stated there that very little evidence is available about the adverse health effects of continuous exposure to wind turbine noise and that the evidence on this (apart from in relation to annoyance) is absent or rated low/very low quality.

5.98 In relation to ILFN, the report states that "wind turbines can generate infrasound or lower frequencies of sound than traffic sources. However, few studies relating exposure to such noise from wind turbines to health effects are available."

5.99 It is interesting that, despite the very large amount of studies quoted in the evidence to us, the WHO often characterises evidence for the health effects of wind turbine noise as either poor quality or lacking altogether. Whilst we take account of all of the evidence cited, we place some weight on the view of an international body such as the WHO as to the extent to which it can rely, in making its own recommendations in 2018 in relation wind turbines and noise recommendations, on the evidence available to it.

5.100 In any event, it is important to bear in mind the purpose of the WHO guidelines. It would ultimately be for the Scottish Ministers to consider if and how the guidelines should inform future legislation, policy and advice relevant to wind turbine noise. At the present time, the guidelines (and noting what they have to say about the lack/poor quality of relevant evidence, and indeed the conditional nature of the recommendations on wind turbine noise) do not lead us to depart from an approach to the consideration of noise effects which is based on ETSU-R-97 and the Good Practice Guide.

Noise effects at Kilrenzie

5.101 Although they did not object to the application or submit representations in response to the appeal, we note the statement of concern from Mr and Mrs Aubad, the owners and residents of Kilrenzie. We deal with residential visual amenity at chapter 3 and shadow flicker at chapter 7. In respect of noise, as we note above, the predicted noise levels from turbines at all noise-sensitive locations (including Kilrenzie) are predicted to be below the ETSU-R-97-derived limits.

5.102 Mrs Aubad refers in the statement to certain health effects she and her husband have been suffering, seemingly prompted by a question about this from Ms Crosthwaite. Mrs Aubad does not explicitly link these effects to noise from the existing wind farm though that may be the implication. In any event, we have no firm evidence base on which we could conclude that these effects would be exacerbated by the proposed extension.

Noise effects at Dochroyle Farm

5.103 We recognise that Pat Spence is dissatisfied with the conduct of and outcome of previous noise compliance monitoring at Dochroyle. However these investigations relate to the effects of the existing wind farms, in respect of which we have no jurisdiction.

5.104 The results of the external monitoring showed, to the council's satisfaction, that immissions were within the consented limits. For low and medium wind speeds this was

achieved "by a large margin"[42]. Although data at higher wind speeds was not complete, the results for lower speeds were such that, seen in the context of the predictive model used, noise levels at higher levels were also expected to be compliant. ACCON and the council accepted these conclusions.

5.105 At our accompanied site inspection, we saw where the monitoring equipment was located, and where Ms Spence had suggested as an alternative. These locations were near to each other within the same area of garden. We have no reason to find that the location chosen (agreed by ACCON) was not suitable for its purpose.

5.106 In this context, the results of the monitoring do not cast into doubt the ability of the proposed Arecleoch extension to operate whilst ensuring ETSU-derived overall cumulative noise limits at Dochroyle, and elsewhere, are not breached.

5.107 We keep in mind Ms Spence's own experience of noise at her property from the existing wind farms, and the association she makes between that and her ill-health. We also acknowledge Dr Armstrong's views on that subject. However, whether or not that association is correct (and, if so, whether or not it is a function of audible sound or infrasound, or both combined), we must return to an assessment based on ETSU-R-97. Noting what it says about offering "a reasonable degree of protection to wind farm neighbours, without placing unreasonable burdens on wind farm developers", and noting the Scottish Government's endorsement of that approach, Ms Spence's experiences do not lead us to recommend that the application be refused on the basis of the predicted noise emissions at Dochroyle Farm.

Other matters

5.108 In her third letter of objection Susan Crosthwaite refers to a judgement of the Irish Supreme Court which she relates to the inadequacy of ETSU-R-97. We address the position of ETSU-R-97 above.

5.109 In her Inquiry Report, Ms Crosthwaite refers to a journal article[43] which reports that the European Court of Justice delivered a judgement which clarified that orders and circulars of EU Member States that regulate the installation and operation of wind turbines should be subject to Strategic Environmental Assessment. Ms Crosthwaite's position appears to be that any consent for a development where the EIA Report relied on a plan or programme which ought to have been subject to SEA (but was not) would be unlawful. We have not been provided with the relevant court judgement or any detailed legal argument as to how it might affect Ministers' consideration of the application. As things stand, however, we have not seen compelling evidence that this judgement casts into doubt the EIA Report prepared by the applicant.

[42] CD11.8
[43] CD23.93

CHAPTER 6: OTHER INQUIRY MATTERS

6.1 Evidence on a number of other matters was presented during various hearing sessions. For these matters, the applicant's main evidence is made mostly in response to the objectors' positions and we therefore summarise the applicant's position after the summaries of other parties' positions. For the purposes of this chapter, these other matters have been grouped into the following headings, with a link to relevant submissions provided where first mentioned:

- Transport and access
- Other infrastructure, including battery storage and grid issues
- Socio-economic and financial issues including tourism effects and constraints payments
- Bats
- Peatland
- Carbon balance

6.2 A hearing session on sulphur hexafluoride (SF6) gas was arranged but did not take place at the request of the objector (Susan Crosthwaite). Parties relied on written evidence on this matter instead. This topic is also covered in this chapter.

Transport and access

6.3 The applicant and two objectors (Struan Stevenson and Pat Spence) gave oral evidence on transport and access matters in two separate hearing sessions on 4 February 2021.

The EIA Report

Chapter 12 of EIA Report

6.4 Access to the site of the proposed development is principally from the A714 road which connects Newton Stewart and Girvan. The main access to the site would be taken via an existing forestry track at Wheeb Bridge located south east of Barrhill. An existing forestry track at Bents Farm to the north east of Barrhill would provide secondary access.

6.5 The EIA Report states that there is substantial spare capacity on the A714 and the total traffic would not increase by more than 8% close to the two access points during the construction phase. The number of Heavy Goods Vehicles (HGV) would not increase by more than 25% in the vicinity of Wheeb Bridge or by more than 10% in the vicinity of Bents Farm. The construction phase is expected to last for 18 months during which a traffic management plan would be in place.

6.6 In terms of volume of traffic, the assessment sets out a worst case scenario, as it is based on all rock material being transported onto the site. If on-site borrow pits are used, then traffic levels would be lower.

Position of the Roads Authorities and Transport Scotland

6.7 The main part of the site is located within South Ayrshire, with the access at Wheeb Bridge lying within Dumfries and Galloway. Transport Scotland has considered the effects of the proposal for the trunk road network. Subject to suggested conditions, there are no

objections to the proposal on transport grounds from South Ayrshire Council, Dumfries and Galloway Council or Transport Scotland.

The main points for Struan Stevenson

Statement of case
Response statement of case
Precognition
Closing Submissions

6.8 Mr Stevenson has concerns regarding the impact of the volume and nature of traffic on the local network of narrow and winding rural roads, which do not currently have a lot of HGV traffic on them. It would not be feasible for a Traffic Management Plan and any subsequent traffic control system to cover the volume of traffic associated with the construction period of 18 months. Blocked public roads, damaged highways, walls and bridges and impeded traffic have been a common feature of previous wind farm construction. At Wheeb Bridge, construction traffic would have an adverse effect on the residential property at Arnimean, and could scupper the planned tourist business there.

6.9 It is unclear whether the Bents Farm access could be used by HGVs, given the need to pass under the railway bridge.

6.10 The applicant should be required to deposit a financial bond to fund remedial work and cover the salary of an independent inspector to address transport related problems. There are also concerns over damage to private roads and driveways, as evidenced in the damage caused to the access track to Dochroyle.

The main points for Pat Spence

Statement of case
Precognition
Closing Submissions

6.11 Ms Spence lives at Dochroyle Farm which is accessed from a private road off the Barrhill to New Luce road. Some of her concerns overlap with those raised by Mr Stevenson in terms of disruption to local residents and damage to roads and other infrastructure during the construction of previous wind farms.

6.12 Ms Spence provided extracts from meetings of Barrhill Community Council which refer to complaints regarding lack of signage at the Kilgallioch wind farm site entrance and driving-related incidents involving wind farm workers.

6.13 Directional signs were put up very late, after several incidents of damage had already occurred. On one occasion power cables over the road were knocked over, causing an outage at Dochroyle. There was damage to her own access track at Dochroyle but this also happened elsewhere and was not put right. One repair made at Dochroyle used the wrong roadstone, which damaged tyres. She also raised the issue of compensation for damage caused to private roads.

6.14 When the wind farms were connected to the grid, the road was closed for seven weeks, and the detour meant a 100 mile round-trip from her home to Barrhill. It was in fact

open at weekends but she was never told about this. Grid connection is required by the wind farms, so it is artificial to argue that this was a different development project.

The main points for the applicant

Response statement of case
Hearing statement
Closing Submissions

6.15 Paragraph 71 of Chapter 12: Access, Traffic and Transport of the EIA Report states that there would be two two-way HGV movements each hour on a typical weekday (between 07:00 and 19:00 hours), based on the worst-case assumption that all aggregate would be imported into the site. This represents a negligible impact and would be imperceptible in the daily fluctuations of existing vehicle movements on the local road network. The A714 is neither narrow nor winding, and already has a reasonable volume of HGV traffic using it. It was used for access during the construction of the existing Kilgallioch and Arecleoch wind farms.

6.16 Appropriate measures and monitoring mechanisms to ensure there would be no adverse impacts on local residents and other users of the local road network would be identified in the construction and environment management plan (CEMP) and traffic management plan. This would include traffic routing, signage and the identification of a nominated person to whom any road safety issues can be referred. Some of the concerns raised related to a road closure required for works undertaken by Scottish Power Energy Networks and not to wind farm construction.

6.17 Around 20% of HGV traffic is expected to use the Bents Farm access, which is already used by forestry vehicles. This has been agreed with Network Rail and measures will be put in place to prevent vehicles striking the rail bridge.

6.18 The CEMP would make provision for a road condition survey including assessment of existing structures (as appropriate) to be undertaken before and after the construction period. This would identify any damage, as a result of construction traffic, which would need to be restored to the previous condition by the applicant.

6.19 Arrangements for securing compensation payments for any damage caused to public roads would be agreed with the roads authority under the terms of the Roads (Scotland) Act 1984 (sections 96 and 151). There is an arbitration process if agreement cannot be reached. In any event, this is a matter between the applicant and the roads authority, and does not require to be the subject of a planning condition. Signage on the verge of a public road would be a matter to be agreed between the applicant and South Ayrshire Council or Dumfries and Galloway Council, as appropriate roads authority.

6.20 Any damage to private roads should be reported to the developer to be dealt with on a case by case basis.

Reporters' conclusions

6.21 The information presented in chapter 12 of the EIA Report demonstrates that, in terms of traffic volume, the A714 road is operating well below capacity. Provided HGVs use the identified access points from the A714 road, the evidence provided suggests that the effects would not be significant. The surrounding road network was deemed suitable for

previous wind farms and there have no objections from the two relevant councils in their remit as roads authority or Transport Scotland. Subject to appropriate conditions, including a traffic management plan, we conclude that satisfactory road access can be provided.

6.22 It would appear from the evidence presented by Mr Stevenson and Ms Spence that the main cause of problems in the past has been as a result of HGVs using the minor Barrhill – New Luce road, either as a result of inadequate signage or signage being missed/ignored.

6.23 The fact that there may have been incidents in the past demonstrates the need for good signage and good construction practice, but it is not a strong reason to recommend refusal. Following discussion at the hearing, the applicant suggested that the provision of signage on private roads could be included in the condition covering the traffic management plan. There was also agreement that communications regarding the arrangements for reporting incidents and problems should be improved.

6.24 Roads legislation provides a mechanism for recouping expenses from the developer to repair any roads (including verges and bridges) damaged by vehicles associated with the wind farm. Compensation for damage to private roads is a civil matter and not a relevant consideration in our assessment of the proposal.

6.25 The site entrances at Bents Farm and Wheeb Bridge are currently used by wind farm and forestry vehicles and were used during the construction phase of existing wind farms. Any adverse effects of increased HGV traffic levels on the property at Arnimean would be restricted to the construction phase, and the number of vehicle movements would be less than predicted if borrow pits within the site are used.

6.26 We conclude overall that any adverse effects of the proposal on the road network, road users and local residents can be satisfactorily mitigated through appropriate conditions.

Associated infrastructure

6.27 Evidence relating to infrastructure associated with the proposal, including grid connections and capacity, and battery storage was discussed at the policy hearing on 12 January 2021 and also at the overview and infrastructure hearing on 4 February 2021.

EIA Report

6.28 The infrastructure associated with the proposed development is listed in section 3.2.1 of the EIA Report, with further details provided in subsequent sections. This includes battery storage within a substation compound, cabling and powerlines and new and upgraded access roads.

6.29 Battery storage has been assessed as part of the EIA and details provided in the EIA Report section 3.2.14 and Figure 3.1. Up to 20 MW of battery storage would be provided within the proposed ancillary services compound. The batteries would store excess power and release this to the grid when the output from the proposed development fails due to the decreased wind speed.

6.30 The facility may also offer other services to the National Grid, such as restarting the electrical grid in the event of a major power failure – so called “black start”.

6.31 The grid connection point for the proposed development is subject to confirmation by the network operator/owner. It is likely to require consent under section 37 of the Electricity Act 1989, which would be the subject of a separate consenting process.

The main points for Christopher Andrews

Statement of case
Closing Submissions

6.32 Mr Andrews' evidence relates to on-site components and off-site access during the construction phase; impact and implications of an enlarged site; cabling and powerlines; sub-stations; and battery storage containers.

6.33 The infrastructure associated with wind farms raises significant issues which are not given sufficient prominence. Wind farms are becoming more industrial in nature, due to all the attendant infrastructure.

6.34 In relation to the effects during the construction phase, stringent mitigation, control and remedial measures are needed, including independent inspectors and a sum of money to be used for compensation purposes. There needs to be clear lines of communication so that local residents know who to report issues to as they arise.

6.35 The expansion of the existing Arecleoch wind farm will result in a mega-site. The existing development should not set a precedent for the extension. The cumulative effect of this proposal, nearby wind farms and the planned extension to Mark Hill substation will result in an industrialisation of the area around Barrhill. The permanent nature of the proposal is at odds with the ethos of the UNESCO Biosphere reserve.

6.36 The application should have provided details of the route and nature of cabling connections from the site to the Mark Hill substation. This omission is an abrogation of responsibility. It is an important part of the overall project which is just ignored. Overhead powerlines could have huge effects on the Barrhill community (for example effects on private water supplies), and this kind of information should be available up front.

6.37 The lack of detailed information in relation to on-site battery storage is a cause of concern. This aspect of the development requires careful examination to assess whether the components are appropriate for the site in terms of safety, size and requirement, and to evaluate their effect on the landscape. The proposed batteries are very large and tree felling at a later date could make them more widely visible. It might be better if the battery element of the proposal was subject to a separate consenting process.

6.38 The term 'battery' is misleading. What is proposed is not a means of storing energy (other than for a very short duration) but rather a means of modulating the amount of energy being delivered by the wind farm, and also a possible aid to black start of the grid.

The main points for New Luce Community Council

Hearing statement Closing Submissions

6.39 Alistair Buckoke, representing New Luce Community Council, is of the opinion that the EIA Report uses incorrect units for the measure of energy storage. Watt hours rather than watts should be used to provide information on storage capacity.

6.40 Batteries installed as part of wind farm projects are a smoothing device to help stabilise the grid and are not really energy storage units. This should be made clear in the description of the proposal. The applicant has not addressed the need for medium and longer term storage.

The main points for Susan Crosthwaite

Statement of case Hearing statement Closing Submissions

6.41 Evidence provided by Helen McDade, on behalf of Susan Crosthwaite, covers matters relating to grid capacity, the performance of existing wind farms in the area and the potential for the proposal to offer additional grid related services. The matters raised overlap with concerns regarding constraint payments which are addressed later in this chapter.

6.42 There is insufficient capacity in the grid network to accommodate further wind farm development, particularly in the south west of Scotland. The proposal would add further strain to the efficient functioning of the national grid. The Western Link subsea cable between Hunterston and Deeside, which was built primarily to address grid constraint problem in south west Scotland, has been costly and unreliable. Constraints payments due to grid capacity problems have continued to rocket in this area.

6.43 The fact that the applicant has an agreement for connection to the grid does not mean that the grid would have adequate capacity for efficient transmission. Arecleoch and the neighbouring windfarms have very poor load factors compared to the average load factor for UK onshore windfarms of over 26%. Recorded load factors are in the region of 23% for Arecleoch; 26% for Kilgallioch and 21.5% for Mark Hill.

6.44 The applicant has provided insufficient information on its black start project at Dersalloch and the suggestion that the proposal could offer additional services to the National Grid is only hypothetical.

The main points for the applicant

Statement of case Response statement of case Hearing statement Closing Submissions

6.45 Where applicable, infrastructure that would be constructed as a result of this application for consent has been assessed and forms part of the information presented in

the EIA Report. Some elements of associated infrastructure would be subject to separate consenting processes.

6.46 The proposal would be just over half the size of the existing Arecleoch wind farm footprint (14.4 square kilometres compared to 24 square kilometres) and would add 13 turbines to the existing 60. This does not represent a "mega-development". The proposal utilises existing infrastructure (tracks, construction compound, other existing hardstandings and some existing borrow pits) of the original Arecleoch wind farm where possible, in order to reduce environmental impacts. The applicant agrees that the development has to be considered and assessed on its own merits.

6.47 The grid connection for the development would be subject to a separate design and consent process undertaken by National Grid and Scottish Power Energy Networks. This is an entirely normal approach. However, the applicant has confirmed its intention that cabling connections between the proposed development and Mark Hill substation are to be underground. The use of Mark Hill substation would require less in the way of dedicated infrastructure than a new scheme of a similar scale. This helps to make the development deliverable and cost effective, and lessens the overall environmental impact. The grid connection can be achieved in 2023.

6.48 Battery storage is a fast progressing technology and its use in conjunction with onshore wind farm developments is considered vital in enabling excess power generated to be stored and then released on to the grid when output falls due to decreased wind speed, thereby increasing the sustainability of the power generated. It is newer technology than wind farms, but it is not experimental. Batteries are proven to work and are already deployed elsewhere. They modulate the frequency of the grid and help to stabilise the grid and the output of the wind farm.

6.49 Taller turbines can increase the load capacity of a wind farm, with the load factor for the Arecleoch extension anticipated to be between 31% and 36%. However, paragraph 22 of the Onshore Wind Policy Statement states that efficiency is not a material consideration in the section 36 consenting process.

6.50 Paragraph 165 of Scottish Planning Policy states that grid capacity is not a material consideration for windfarm proposals. There has been significant recent investment in the grid through the south west Scotland connections project and high-voltage direct current power links to north Wales. New or upgraded infrastructure associated with high voltage electricity transmission is identified as a national development in National Planning Framework 3. The problems with the Western Link connection are for National Grid to manage, not individual projects.

Reporters' conclusions

6.51 In order for the wind farm to connect to the grid, additional infrastructure would be required that is outwith the scope of this application submitted under section 36 of the Electricity Act. We accept that this infrastructure, on its own or cumulatively with the wind farm proposal, has the potential to have effects on local communities and the surrounding area.

6.52 There is no requirement for the applicant to provide information on associated infrastructure which is covered by a separate consenting regime or falls within the definition

of “permitted development”. However, its confirmation that grid connections to Mark Hill sub-station would be underground may alleviate some of the concerns of local residents.

6.53 We consider that the information provided in the EIA Report and supporting documents is sufficient to enable us to fully assess all relevant aspects of the proposed development. It falls to other consenting regimes to consider the effects of other associated infrastructure.

6.54 The opportunity to make use of existing infrastructure associated with the Arecleoch wind farm and other wind farms in the area is a benefit of the proposal. However the proposal requires to be assessed on its own merits, taking account of all relevant considerations.

6.55 Paragraph 169 in Scottish Planning Policy identifies opportunities for energy storage as one of the considerations to be taken into account in assessing proposals for energy infrastructure developments. We understand that the battery storage associated with this proposal is for short term purposes only to help stabilise supply. Comments made regarding medium and long term energy storage and units of measurement for energy storage do not have a significant bearing on the key issues we need to consider in our assessment.

6.56 A considerable amount of evidence has been submitted by objectors on matters relating to the load factors of existing wind farms in the area and grid capacity. Whilst these are matters which may be of wider relevance in relation to the generation, distribution and supply of electricity, they are not directly relevant to our assessment of the case for consenting (or not) the proposed development. Paragraph 165 of Scottish Planning Policy and paragraph 22 of the Onshore Wind Policy Statement make clear that grid capacity and the efficiency of a proposal are not material considerations in the section 36 consenting process.

6.57 Grid related services such as “Blackstart” are not identified in The Electricity Act 1989 and Scottish Planning Policy as a consideration to be taken into account in our assessment of this application. Whilst this may be a potential benefit of the proposed development, we have very little evidence in relation to it and we give no weight to this matter.

Socio-economic and financial matters

6.58 Evidence on socio-economic matters was presented at the policy hearing on 12 January 2021. Paragraph 169 of Scottish Planning Policy includes net economic impact as one of the considerations to be taken into account in relation to wind farm proposals. It has been suggested by some parties that constraint payments to wind farm operators is a financial cost which should be considered within the context of “net economic impact”.

EIA Report

Chapter 14 of EIA Report TA 14.1 socio-economic data sources

6.59 The applicant’s assessment considers a range of potential effects including employment, supply chain and procurement benefits during the construction phase, impact on formal and informal tourism and recreation assets and community benefit payments. It

concludes that adverse and beneficial effects have been assessed as not significant during both the construction and operational phases.

6.60 In terms of effects on tourism and visitor economy, a review of relevant studies was undertaken. The most recent is a report by Biggar Economics (2016) 'Wind Farms and Tourism Trends in Scotland'[44] which includes the area around the existing Arecleoch wind farm as one of the sample study areas.

6.61 Constraints payments are not specifically addressed in the EIA Report.

The main points for supporters

6.62 Written representations in support of the application refer to the benefits it would bring to the local economy, including benefits to local suppliers and job creation.

The main points for New Luce Community Council

6.63 Alistair Buckoke, on behalf of New Luce Community Council, stated that construction phase jobs are limited and short term, and tend to go to people outwith the local area. Local contractors would have to commit considerable investment to get involved in what would only be an 18 month project. As a result of the existing wind farms, the area is less attractive to tourists.

6.64 Mr Buckoke also commented that the economic framework in which wind energy is situated is in need of root and branch review, which may substantially alter political and public perceptions of these technologies.

The main points for Susan Crosthwaite

6.65 Helen McDade on behalf of Susan Crosthwaite indicated that information on negative economic impacts should be provided as part of an assessment of net economic benefit. One negative economic impact is the likelihood that considerable constraints payments will be paid out almost immediately from the public purse, due to insufficient grid capacity in south west Scotland.

6.66 This system, which relies on operators agreeing prices with the National Grid, enables the supplier to receive more money back when constrained off than the total of the amount which would have been received for the power plus the associated subsidy, if the wind farm had been operating. Constraints already paid to Arecleoch and the two adjacent wind farms, Kilgallioch and Mark Hill, total approximately £73 million.

6.67 The proposal would have an adverse effect on tourism in the area. The Moffat report[45] puts an average value of £6 extra per night which hotel guests would pay for not having a view of a windfarm. Previous studies which suggest that wind farms do not affect tourism in an area predate the onset of 200 metre high turbines. In any event, each part of Scotland has its own attributes and the local effects of developments need to be considered rather than relying on previous studies.

[44] CD13.5
[45] CD13.1

The main points for Bardrochart and Knockdolian Estates

Statement of case Hearing Statement Closing Submissions

6.68 Ian Kelly on behalf of the Estates also raised the issue of net economic benefits. A net economic impact assessment (required by paragraph 169 of Scottish Planning Policy) has not been provided by the applicant. To reach a "net" conclusion, it is necessary to cost negative externalities, for example constraints payments, as well as positive benefits. The applicant's evidence is all about the positive economic effects, not any negatives. The potential economic benefits will be relatively minor within the context of the South Ayrshire and wider area economies.

The main points for Christopher Andrews

6.69 Mr Andrews raised concern about the impact of the proposal on tourism and the economy in Barrhill. Impacts on local holiday parks were also mentioned by other parties in written objections to the proposal.

The main points for the applicant

6.70 The economic benefits of the proposal are summarised as follows:

- construction expenditure in Scotland of £18 million;
- construction peak employment of 120 jobs – 141 full time equivalent;
- operational value of £42 million in South Ayrshire; and
- operational jobs 10-14 FTE in South Ayrshire and Dumfries and Galloway.

6.71 These benefits can be delivered without risk to existing economic activity in the area and their importance is enhanced as being part of the recovery from the Covid-19 pandemic.

6.72 It is accepted that some people do not like wind farms and would be less inclined to visit areas where they are present. But the Biggar Economics study did not find any evidence that employment levels in areas in the immediate vicinity of wind farms were adversely affected. The available evidence gives no reason to expect any negative impact on the tourism sector as a result of the proposed development.

6.73 The applicant has not undertaken a net economic impact assessment and is not aware of any examples of such an assessment having ever been undertaken for a wind farm proposal.

6.74 Constraints payments are not unique to windfarms. They apply to all forms of energy generation which can be constrained. They reflect a loss of income to the operator, not a financial gain. The issues associated with grid constraints are complex. The reason for the significant constraints payments at Kilgallioch is due to wider grid constraints not local ones, and because that wind farm is cheaper to switch off than other wind farms. A solution to the constraints payment issue is to increase the capacity of the network through the construction of more power lines to accommodate the energy being produced.

Reporters' conclusions

6.75 Within the context of 'net economic benefit', objectors have raised matters in relation to UK fiscal incentives and constraints payments. Whilst we recognise that the availability of government funding may be an important factor for wind farm developers, and more widely for delivering climate change objectives, we do not consider these to be a material consideration in the assessment of the proposal before us. Concerns regarding grid capacity have also been raised. However, paragraph 165 in Scottish Planning Policy is clear that grid capacity should not be taken into account in wind farm applications.

6.76 We note the reference in paragraph 169 Scottish Planning Policy to "net economic impact". However, whilst the first bullet point includes examples of relevant socio-economic benefits, it does not provide a steer on the potential "costs" to be take into account. Impact on tourism is listed in a separate bullet point.

6.77 No party was able to refer us to a previous wind farm application where a net economic impact assessment had been provided. It would seem that Ministers have consented numerous wind farms without a net economic impact assessment having been carried out. On the basis of the information before us, we have no reason to dispute the predicted economic benefits set out in chapter 14 of the EIA Report. We do not consider that any prospective financial arrangements between the wind farm operator and National Grid, including constraints payments, are relevant considerations in our assessment of this application.

Bats

6.78 The effects of the proposal on bats were discussed at a hearing on 4 February 2021 attended by the applicant and Struan Stevenson. Other ecology and ornithology effects are covered in chapter 7 of this report.

The EIA Report

6.79 Impact on bats is included in chapter 8 of the EIA Report with further information on bat surveys and a mitigation and monitoring plan provided in technical appendices. The assessment of ecological effects includes Nyctalus and Pipistrelle bats (other bat species were scoped out of the assessment). The EIA Report concludes that there would be negligible effects on bats, subject to identified mitigation measures.

Position of NatureScot

6.80 NatureScot has no objection to the proposed development regarding impact on bats. It supports the mitigation measures proposed for bats (as detailed in the Technical Appendix TA 8.4 Bat Mitigation and Monitoring Plan and Chapter 16 Schedule of Commitments of the EIA Report).

The main points for Struan Stevenson

Statement of case Response statement of case

6.81 Mr Stevenson's concerns relate mainly to impacts on Leisler's (Nyctalus) bats; the collision risk to bats from red aviation lights; and the effectiveness of mitigation to address bat collisions with turbines.

6.82 Leisler's bats are a rare species and there has been little research undertaken on them. They have been found nesting in the nearby Galloway Forest and flying in the immediate area. Mr Stevenson is concerned about the risk of collision with turbines for Leisler's bats and also common pipistrelle bats.

6.83 A report by Voigt (and others) indicates that bats are attracted to red lights, similar to those proposed on the turbines. Voigt is a more recent study than the Spoelstra study quoted by the applicant. If there is any risk to bats then care should be taken. It is clear that more research is required.

6.84 The mitigation measures proposed by the applicant are inadequate, as these will not entirely prevent bat mortality. If monitoring information shows a high number of bat fatalities, it will be too late for mitigation. Since the killing of a bat is a criminal offence, it may be unlawful for Ministers to grant permission for a proposal which would result in bats being killed.

6.85 In relation to previous tests of the proposed curtailment regime, it is not surprising that no bat carcasses have been found at turbine bases, since these would have been found by scavenging animals beforehand. No indication was provided as to whether these tests have been undertaken at Arecleoch or Kilgallioch wind farms.

The main points for the applicant

Statement of case
Response statement of case
Hearing statement

6.86 The assessment of impact on bats has been undertaken using the methodology set out in the document 'Bats and Onhshore Wind Turbines: Survey, Assessment and Mitigation, January 2019' prepared by NatureScot and others.

6.87 Based on the activity rates of Leisler's bat on the site, the predicted pre-mitigation mortality rate for this species is 0.598 per year. This is considered to be negligible in the context of a population of at least 5000 Leisler's bats in Scotland and England. This figure is expected to be reduced further as a result of the proposed mitigation measures.

6.88 The Voigt study on the impact of red aviation lighting, referred to by Mr Stevenson, relates to long distance migratory bats. Bats use light for migrating but echo-location for foraging. Leisler's bats are known to be migratory elsewhere in Europe, but not in Britain. So the Voigt study is not relevant to the Arecleoch wind farm extension. A study by Spoelstra et al (2017) found that bats were not attracted to red lights. It concluded that red lighting generally causes less disturbance to bats than green or white lights.

6.89 The proposed bat mitigation and monitoring plan includes a scientifically proven turbine curtailment regime during conditions when bats are at a higher risk of collisions and supported by carcass monitoring. Previous assessments of the effectiveness of curtailment included built in assumptions about scavenging of carcasses. With these mitigation measures, the total number of bat fatalities would be zero or close to zero.

Reporters' conclusions

6.90 The survey data on Leisler's bat and other species provides information on activity rates, which can be used to predict mortality rates. We note that the methodology used in the bat assessment and the proposed mitigation measures in the form of turbine curtailment and carcass monitoring are in line with NatureScot guidance. The explanation provided by the applicant aided our understanding of the turbine curtailment regime and carcass monitoring, which forms the basis of the mitigation measures.

6.91 We accept the applicant's explanation that the bats in this area are non-migratory and there is no evidence to indicate that they would be attracted to red aviation lights. This suggests that greater weight should be given the Spoelstra study, rather than the Voigt study.

6.92 The concerns raised by Mr Stevenson, regarding the potential for bat mortality as a result of colliding with turbines, are understandable. However, we consider that the evidence provided by the applicant demonstrates that the residual effects on bats, including the rare Leisler's bat, would be negligible. The implementation of the proposed mitigation measures can be secured through conditions.

6.93 We conclude that there would be no reason to refuse the application on the grounds of its impact on bats.

Peatland

6.94 The effects of the proposal on peatland were discussed at a hearing on 4 February 2021 attended by the applicant and Struan Stevenson.

The EIA Report

Chapter 10 of EIA Report TA 10.1 Peat Landslide Hazard Risk Assessment TA10.2 Peat Management Plan

6.95 The EIA Report indicates that the site design has avoided areas of deep peat and the limited amounts of peat affected by the proposal can be managed without significant environmental impact. Good construction practice and methodologies to prevent peat instability within areas that contain peat deposits are identified in the landslide hazard and risk assessment.

6.96 A two stage technical review of the peat and landslide hazard risk assessment was undertaken for the Scottish Government's Energy Consents Unit by Ironside Farrar Limited. Following queries raised at stage one, additional information was submitted by the applicant. The stage two checking report indicates that no further response is required. The peat and landslide hazard risk assessment would be updated post-consent to determine appropriate mitigation through relocation or redesign.

Position of NatureScot and SEPA

6.97 NatureScot has no objection to the proposed development regarding impact on peat. In a letter dated 29 August 2019, it asked that the position of turbine 9 be confirmed and

indicated that the micrositing of all turbines should be on areas of peat less than one metre deep.

6.98 SEPA has indicated that any surplus peat should be treated as waste and disposed of appropriately. This matter should be addressed in the CEMP which would be the subject of a condition.

The main points for Struan Stevenson

Statement of case Response statement of case

6.99 Mr Stevenson requested clarification regarding the survey information relating to peatland. There seems to be discrepancies in the applicant's information as to the amount of peat depth probes which were undertaken. The EIA Report mentions 1,804 surveys but the risk assessment identifies a lesser number.

6.100 The turbine foundations and access road installations could cause damage to peatland, resulting in carbon release and the loss of a critical carbon sink. In particular, the proposed floating tracks may subside and cause damage to hydrology and surrounding peatland.

6.101 A report by Richard Lindsay on the Lewis Wind Farm proposals in May 2005[46] indicates that damage to peat can extend as much as 250 metres on either side of turbine foundations and access-road installations. A briefing note by the IUCN [47] acknowledges that subsidence of floating tracks into the peat is unavoidable, and that the peat becomes compressed and eventually displaced to the sides. A recent peat slide at Meenbog in Ireland highlights the need for caution.

The main points for the applicant

Response statement of case Hearing statement

6.102 Detailed information on the 1,700 peat probes undertaken on behalf of the applicant can be found in technical appendix TA 10.1 (peat landslide hazard and risk assessment). The risk assessment does not rely on all the peat probe surveys, some of which were done for other purposes. There is no discrepancy in the survey information.

6.103 In response to the comments from NatureScot, the applicant confirmed that turbine 9 would be sited on 0.63 metres of peat and all of the turbines would be located on less than one metre of peat. The average depth of peat at each turbine is 0.57 metres and the average depth of peat along the access track is 0.72 metres. There is no peat on site greater than 30 metres (as indicated in Mr Stevenson's statement of case). There are areas on site greater than 3 metres but these have been avoided and account for less than 7.5% of the total points collected. This all shows the efforts made during the design of the development to avoid deeper peat.

[46] CD22.13
[47] CD22.14

6.104 The applicant disagrees that damage to peat can extend as much as 250 metres on either side of turbine foundations. Mr Duncan, who represented the applicant at the hearing, indicates that modelling of drawdown of groundwater in peat (by SLR consulting) for over 20 years on numerous wind farm sites is rarely greater than 15 metres and generally as little as 5 metres from the infrastructure.

6.105 The example quoted by Mr Stevenson from the Lindsay Report related to the effects on drainage ditches at 250 metres distance. That is a very different circumstance to the current proposal, where the technique is to excavate and backfill quickly in order to avoid de-watering. There would be no drainage ditches taking water away from the areas of peat around the turbine foundations.

6.106 The use of "floating roads" on peat is a proven technology and has been used successfully throughout Northern Europe and Canada for decades. The track does not actually float but, if constructed carefully, will reach a state of equilibrium between the weight of the stone and the inherent strength of the peat, thereby maintaining pre-existing drainage conditions and hydraulic connectivity. There is a difference between subsidence and settlement. If construction is managed properly a track will settle, creating its own strength. The design of the floating tracks is built to accommodate the typical abnormal loads associated with turbine construction and for follow up maintenance. In this case, only 1.5 kilometres of floating track will be required. Examples of where tracks have failed have been due to poor construction.

6.107 In response to the concerns raised regarding the peat slide in Ireland, the peat on the application site has a high fibrous content giving it a greater inherent strength which makes it less susceptible to landslide risk. In comparison, Irish wind farm sites tend to have a higher water content and be more decomposed and therefore susceptible to bog bursts and peat slides. The EIA demonstrates a negligible to low risk of peat landslide risk.

Reporters' conclusions

6.108 We consider that the information provided in the EIA Report and accompanying technical appendices demonstrates that the proposed development can be undertaken in a manner that would not pose a significant risk to peatland. The site layout avoids areas of deep peat and the technical evidence points to low risk of peat slide. We give weight to the fact that NatureScot and SEPA have considered the effects of the proposals on peatland and have no objections. Likewise the consultation response by Ironside Farrar. Peat slide is a known risk, hence why a risk assessment is required. It is possible that a peat slide could occur, as it did in the site in Ireland referred to by Mr Stevenson. But the technical evidence before us does not indicate that there is a significant risk of a similar event occurring in this case.

6.109 In our experience, the use of floating tracks is a common approach in areas of peatland. We note that protection of peatland would be addressed in conditions covering micro-siting, the working and restoration of borrow pits and a construction and environmental management plan.

6.110 Losses of peat have been factored into the carbon calculator, the results of which are set out in the EIA Report. We deal with carbon balance immediately below.

6.111 We conclude that there would be no reason to refuse the application on the grounds of its impact on peatland.

Carbon Balance

EIA Report

6.112 Section 15.6 of the EIA Report states that it is expected to take around 26 months to repay the carbon exchange to the atmosphere arising from the construction of the windfarm.

6.113 We note some inconsistencies in the carbon dioxide emission savings figures provided in section 15.6 of the EIA Report and section 3.5.3 of the applicant's planning statement. The figures used in the planning statement align with those in technical appendix TA15.1 Carbon Calculator[48] and these were used as the basis of discussions at the hearing. The potential savings in carbon dioxide emissions due the proposed development replacing other electricity sources over a 40 year period is between 1.48 million tonnes and 4.85 million tonnes (depending on the nature of the replaced electricity sources).

The main points for Bardrochart and Knockdolian Estates

6.114 There is a consensus among scientists that the replacement of fossil fuel electricity generation by renewables reduces greenhouse gas emissions and is an important factor in addressing climate change. However, there is an absence of evidence as to the emissions reductions performance of individual wind farms when actual load factors and outages (due to being constrained off etc.) are taken into account. The evidence in the EIA Report is only an assumed calculation.

The main points for the applicant

6.115 The information provided in the carbon calculator is in the standard format required by the Energy Consents Unit for the purposes of environmental impact assessment. The proposal gains significant advantage from the fact that it has an easy grid connection that is available within a relatively short period of time. It can start contributing to the climate change response faster than other options which require resources and will take longer to demonstrate net carbon reductions.

Reporters' conclusions

6.116 The information provided in technical appendix TA 15.1 demonstrates that the carbon calculator provided by the applicant relates specifically to the Arecleoch extension proposal. We have no reason to question the detailed information and assumptions used, including those relating to grid mix and capacity factor.

6.117 A capacity factor of between 31% and 36%, has been applied in the calculations. Whilst existing wind farms in this area have a capacity factor of between 21.5% and 26%, the applicant has indicated that one of the benefits of taller turbines is that the capacity factor would be greater than existing technology. However we consider that, even if the actual load factors of the operational wind farm are lower than 31%, the proposal would still result in a significant reduction in carbon dioxide emissions.

[48] CD1.5

Sulphur hexafluoride (SF6) gas

Main Points for Susan Crosthwaite

Letter of objection

6.118 SF6 gas is more than 23,500 times more damaging that carbon dioxide. Each individual wind turbine has four separate switches each with its own supply of SF6 gas.

6.119 As wind turbines in Scotland are often sited in upland areas, any gas leaks would flow downhill to gather in low-lying areas where people live. In terms of environmental impact assessment, the impact of SF6 gas needs be considered in terms of damage to species and habitats, damage to water, land damage and human health. The local authority has legislative duties in relation to air pollution.

The main points for the applicant

Statement of case
Technical report prepared by Threepwood Consulting
Hearing statement

6.120 SF6 gas is not specifically referred to in the EIA Report. The use of SF6 gas is regulated under the Fluorinated Greenhouse Gases (EU Regulation 517/2014) and is transposed in the UK under the Fluorinated Greenhouse Gases Regulations, 2015 as amended. Whilst the regulations introduce the phasing out and ban of certain fluorinated gases in various types of equipment, these do not currently include the phasing out or ban of SF6 in switchgear.

6.121 SF6 gas is used in switchgear to extinguish the electrical arc generated when the equipment is operating, which is important to ensure the safe operation of electrical equipment. The applicant indicates that its equipment is subject to a regular service and maintenance regime, and various environmental controls are in place to monitor performance of such equipment

6.122 The applicant is committed to seeking an innovative alternative to SF6 to further protect the environment. But there is currently no equivalent option with the same properties that is available for use on 33 kilovolt systems.

6.123 The use of SF6 gas within the switchgear for this proposal would not cause a risk to public health because:

- the switchgear is contained within a unit which is not accessible to the public;
- SF6 gas is contained within a sealed compartment which is designed to prevent leakages from occurring; and
- any leakage would be notified immediately to a control room and the response would be carried out by in accordance with the F-gas Regulation 517/2014.

6.124 The applicant states that the use of SF6 is not a matter to be considered on an individual project basis, but instead under wider government regulation.

Reporters' conclusions

6.125 We note the general concerns expressed by Ms Crosthwaite regarding the potential risk to human health from leakage of SF6 gas from switchgear used in wind turbines. However, no evidence has been provided regarding the severity or likelihood of this risk in relation to the proposed development.

6.126 The information provided by the applicant explains the regulatory framework within which it is required to operate, the mitigation measures in place to prevent leakages occurring and the procedures to be followed if a leak were to happen.

6.127 There is currently no statutory basis to preclude the applicant from using SF6 gas in the switchgear at the proposed development. There is no evidence before us to indicate that its use in this wind farm would result in significant adverse health effects. On this basis, we agree with the applicant that it is not a matter for us to give detailed consideration to in our assessment of the proposal.

CHAPTER 7: OTHER CONSIDERATIONS

7.1 The following other potentially significant environmental effects are considered in this chapter, along with other matters raised in consultation responses or representations:

- Other ecology and ornithology interests
- Archaeology and cultural heritage
- Shadow flicker

7.2 Aside from these matters and those covered earlier in this report, we have also considered all the other matters covered in the EIA Report and include a summary of these matters in the latter sections of this chapter.

Other ecology and ornithology interests

7.3 The impact of the proposal on bats is covered in chapter 6. Potential effects on other ecology and ornithology interests, including comments made by NatureScot, are set out in this section of the report.

The EIA Report

7.4 Chapter 8 of the EIA Report covers ecology, with further information provided on habitats and protected species in various technical appendices. The site is not covered by any statutory ecological designations. Whilst it does lie within the peripheral zone of the non-statutory Biosphere Reserve designation, this was scoped out of the EIA because sustainable economic and community development is actively promoted within the peripheral zone.

7.5 The EIA Report concludes that there would be negligible effects on wet modified bog. All other habitats and species were scoped out of the assessment. Mitigation measures in relation to ecological interests would be secured through conditions, including a species protection plan, habitat management plan and fisheries monitoring. As a result, no residual significant effects on any ecological receptors have been identified

7.6 Ornithology is covered in Chapter 9 of the EIA Report and supported by technical appendices TA 9.1 – 9.3. The assessment has been undertaken under the assumption that mitigation in the form of a bird protection plan would be in place, prior to the onset of construction activities.

7.7 Goshawk, which are a species of high nature conservation importance, were found to have nested within a one kilometre buffer of proposed turbines in 2017 and 2018. If the nesting goshawk were disturbed, there is a strong possibility that the pair could establish another nest elsewhere in the forest. However, if this pair cannot relocate to a new nest location, the adverse impact on the regional goshawk population would be at worst medium-term and not significant under EIA regulations.

7.8 The EIA Report concludes that there would be no likely significant effects on any bird species.

The main points for NatureScot

7.9 There are natural heritage interests of international and national importance near the site, but these would not be adversely affected by the proposal.

7.10 The location of the breeding Goshawk in 2017 and 2018 was within 100 metres of the proposed location of Turbine 11. It is likely that the nest was also occupied in 2019. It is clear from the EIA that the nest site could be lost as a result of the construction of turbine 11. It is not known whether the breeding pair would move to a new site or be lost from the Western Southern Uplands and Inner Solway Natural Heritage Zone. There are currently about 31 breeding pairs of Goshawk within this zone and therefore the loss of one pair would constitute about 3% of the population.

7.11 NatureScot recommends that the bird protection plan should include specific measures to protect the Goshawk nest throughout any felling, construction activities and operation of the wind farm. However it accepts that, even without the wind farm proposal, the nest site may be lost permanently once the relevant section of forest has been felled. The developer should undertake post-construction ornithology survey work to monitor the presence (and breeding success) of goshawk within the general forest area.

The main points for other objectors

7.12 Some written representations raised concerns about the effects of the proposed development on wildlife, including red squirrels and goshawk.

Reporters' conclusions

7.13 We find no reason to dispute the findings of the EIA Report. We note that statutory consultees, including SEPA and NatureScot, are content that the proposed site design and mitigation measures are appropriate to address any potential impacts on ecology and ornithology interests. The specific recommendations made by NatureScot regarding goshawk can be addressed through conditions and the proposed bird protection plan.

7.14 Whilst no assessment of the likely effects on other species such as red squirrels was undertaken, the proposed species protection plan would address the provisions of relevant wildlife legislation.

7.15 Subject to conditions of consent (as set out in Appendix 1) relating to the appointment of an Ecological Clerk of Works (condition 11), the preparation of a construction and environment management plan, including a construction method statement (condition 13), the preparation of a habitat management plan (condition 18), a species protection plan (condition 19) and a bird protection plan (condition 20), we are content that there would be no significant residual effects arising from the proposed development.

Archaeology and cultural heritage

The EIA Report

7.16 Chapter 11 in the EIA Report and technical appendix TA 11.1 cover archaeology and cultural heritage. The assessment identified an inner study area which comprises land within the boundary of the proposed development and the existing Arecleoch wind farm,

with a buffer of 250 metres. It also incorporated an outer study area to assess potential long-distance setting effects.

7.17 There are no world heritage sites or inventory battlefields within 10 kilometres of the proposed turbines and there are no designated heritage assets within the proposed development area. There is a category B listed building (Glenour) within the inner study area and a scheduled monument (Cairn Kenny) located within 20 metres of the edge of the inner study area.

7.18 A total of 27 heritage assets are identified within the boundary of the site. The construction of the proposed development could have potential direct impacts on below ground archaeology, as a result of significant ground disturbance. Mitigation is proposed in the form of fencing off and avoidance of known assets and a watching brief of ground works which have the potential to have a direct impact on unrecorded buried archaeology.

7.19 Subject to the proposed mitigation, there would be no significant residual effects in relation to direct impacts from the construction of the proposed development.

7.20 There are potential indirect effects on the setting of heritage assets from the visibility of the turbines. As part of the design process, the location of turbines and other infrastructure have been adjusted where possible to reduce the potential for setting impacts on heritage assets. The assessment concludes that the effect for setting impacts would be of negligible to minor significance, and that no further mitigation is necessary.

The main points for Historic Environment Scotland

7.21 The proposed development would increase the extent to which Cairn Kenny is encircled by wind turbines. In particular, the proposed turbines would close the gap between the Chirmorie and Arecleoch wind farms, which lie to the north and north-east of the cairn. This increased encirclement would have an impact on the setting of the cairn. However, as it would not affect the key characteristics of its setting, the impact would not be significant.

Reporters' conclusions

7.22 The requirement to prepare and implement a programme of archaeological works prior to the commencement of development would ensure the protection or recording of any archaeological features on the site. Subject to this mitigation, we agree with the EIA Report and Historic Environment Scotland that the proposal would have no significant effects on archaeology and cultural heritage.

Shadow flicker

The EIA Report

7.23 Shadow flicker occurs when the sun passes behind the rotors of a wind turbine and casts a shadow over neighbouring properties. As the blades rotate, the shadow flicks on and off. This matter is included in Chapter 15 of the EIA Report.

7.24 There are three properties within the defined study area which could theoretically be affected by shadow flicker - Glenour, Kilrenzie and Wheeb. The EIA Report refers to a study on behalf of the Department of Energy and Climate Change (Parsons Brinckerhoff, 2011)

which suggests that a maximum of 30 hours of shadow flicker in a year and no longer than 30 minutes on any single occasion are suitable assessment thresholds.

7.25 The EIA Report indicates that only one property (Glenour) would be affected by shadow flicker. Whilst less than 30 hours of shadow flicker per year is predicted, the property may occasionally experience up to 35 minutes of shadow flicker in one day, which would be above the suggested threshold. No cumulative shadow flicker effects have been identified.

The main points for objectors

7.26 Shadow flicker was raised as a concern in the objection submitted by Colmonell and Lendalfoot Community Council. However, no information was provided on specific locations and properties which it considers would be affected.

Reporters' conclusions

7.27 The only property (Glenour) predicted to be affected by shadow flicker is currently vacant and in derelict condition. Up to 35 minutes of shadow flicker per day would be just above the 30 minute threshold suggested in the Parsons Brinckerhoff study referred to in the EIA Report, which we agree would not result in a significant effect.

7.28 A condition, requiring the applicant to prepare and implement a scheme for the avoidance or mitigation of any shadow flicker effects arising from the development is recommended. We consider this would satisfactorily address the concerns raised by the community council.

Other matters covered in the EIA Report

7.29 The EIA Report also considers the effects of the proposed development on forestry (chapter 3); other hydrology related matters (chapter 10); telecommunications and broadcasting (chapter 15); aviation and defence (chapter 15); air quality (chapter 15); and risk of accidents and other disasters (chapter 15);

7.30 We consider these remaining issues below, setting out our conclusions on the assessed effects, taking account of consultation responses, where relevant.

Forestry

The EIA Report

7.31 All the land within the site boundary is owned by Scottish Ministers and managed by Forest and Land Scotland. Felling and replanting of the forest is regulated by Scottish Forestry.

7.32 An assessment of the effects on forestry is provided in technical appendix TA 3.2 (forestry technical report) of the EIA Report. The proposed development would require some changes to the baseline felling plan (shown in Figure 3.2.6 of TA 3.2), including advanced felling on 135 hectares of the site. There would also be changes to the baseline restocking plan, resulting in a net loss of woodland area of 60.1 hectares.

7.33 The applicant is committed to provide appropriate compensation planting in line with the Scottish Government's control of woodland removal policy. This matter would be covered by a condition.

The main points for Scottish Forestry

7.34 Scottish Forestry accepts the proposed changes to the first phase of the approved felling plan (shown on figure 3.2.6 of technical appendix TA 3.2) and recommends that the phase 1 felling is approved as part of any planning consent. The plan shown in figure 3.2.6 should be amended to correct some inaccuracies.

7.35 The proposed restocking plan is in accordance with good forestry practice and complies with the UK Forestry Standard. To comply with the Scottish Government's Control of Woodland Removal Policy, the woodland loss must be compensated by planting an equivalent area of woodland elsewhere. In this instance the compensatory planting must include a minimum of 60.1 hectares planted as productive forest. The replacement planting must be no more than 75% of a single species, a minimum of 10% open ground (or other land primarily managed for biodiversity), and 5% native broadleaves. The total requirement for compensatory planting will therefore be greater than the net woodland loss.

7.36 The applicant has indicated that, subject to minor changes, Scottish Forestry is content with the wording of the suggested condition on forestry planting.

Reporters' conclusions

7.37 Given Scottish Forestry's position on the matter, we have no reason to question the proposed changes to the first phase of the approved felling plan. However, we note that there are some inaccuracies in the information provided in Figure 3.2.6 and that it is based on an assumption that construction would commence in 2021 and phase 1 of wind farm felling would cover the period 2018-22. As the phase 1 felling within the application site boundary would be approved as part of any planning consent (if granted), a condition would be required to ensure the information on felling proposals, associated restocking and forest management is current and accurate.

7.38 The proposed condition on replanting of forestry would require the compensatory woodland planting scheme to accord with forestry standards and guidance and be approved by the planning authority, in consultation with Scottish Forestry. We consider that these conditions would satisfactorily address any adverse effects on forestry.

7.39 Ian Kelly on behalf of Bardrochart and Knockdolian Estates has questioned whether Scottish Ministers would be conflicted in making a decision on this application because the site is in Scottish Government ownership. We consider this is a matter for Ministers to consider rather than being a matter on which we can provide advice.

Other hydrology related matters

The EIA Report

7.40 Chapter 10 of the EIA Report covers hydrology, hydrogeology, geology and soils. Objections were submitted in relation to the potential effects of the proposals on private water supplies and peatland. These are dealt with in chapters 4 and 6 of our report. Other hydrology-related matters covered in the EIA include the potential effects of pollution, erosion and sedimentation on surface water and ground water quality.

7.41 With the exception of access tracks, all infrastructure and hard standing areas are located more than 50 metres from any watercourses. Good practice measures would be applied in relation to pollution risk, sediment management and management of surface run off rates and volumes. Water quality monitoring plans and good practice measures in relation to pollution risk, erosion and sedimentation and fluvial flood risk would be included in the CEMP.

7.42 The EIA Report concludes that there would negligible effects on surface water and groundwater receptors during the construction and operation periods. These would be mitigated through good practice techniques and water quality monitoring.

The main points for consultees

7.43 There are no objections to the proposal in relation to the effects of pollution, erosion and sedimentation on surface water and ground water quality. Marine Scotland and various fishery interests identified the need for a fish monitoring plan. SEPA indicated that the CEMP should be covered by a condition.

Reporters' conclusions

7.44 We find no reason to dispute the findings of the EIA Report and its conclusions on the potential effects of pollution, erosion and sedimentation on surface water and ground water quality. We note that there have been no objections to the application from the relevant statutory consultees on these matters, including NatureScot, SEPA and Scottish Water. The applicant and the council have proposed conditions requiring the preparation of a CEMP, water quality monitoring plan and fish monitoring plan. Through these plans, the mitigation measures identified in the EIA Report could be secured.

Telecommunications, broadcasting and radar equipment

EIA Report

7.45 Wind turbines have the potential to adversely affect analogue television reception and cause interference to telecommunications and aircraft surveillance radar networks. These matters are covered in Chapter 15 of the EIA Report

7.46 The proposal is not within the radar line of sight of either Glasgow or Glasgow Prestwick airports. The proposal does not conflict with national air traffic services' (NATS) safeguarding criteria and, subject to the installation of aviation lighting, raises no issues for the Ministry of Defence. The landscape and visual effects of aviation lighting are dealt with in chapter 3 of our report.

7.47 Telecommunications operators have confirmed that the proposal would not interfere with telecommunications links. The area in which the proposed development is located is served by a digital transmitter and therefore television reception is unlikely to be affected.

The main points for consultees

7.48 British Telecommunications and Joint Radio Company have stated that the proposal would not cause interference to their networks. The Ministry of Defence has asked to be advised of further details of the proposal, prior to the commencement of construction to inform its flying charts.

Reporters' conclusions

7.49 We find no reason to dispute the findings of the EIA Report on these matters. We find that the proposal would be unlikely to have any effects on telecommunications networks or television reception. The suggested condition on aviation safety has been prepared to respond to the requirements of the Ministry of Defence. Subject to the inclusion of this condition, the proposed development would not give rise to any significant residual effects on aviation safety.

Risk of accidents and other disasters

EIA Report

7.50 The assessment of the vulnerability of the development to risks of major accidents and disasters cuts across a number of other factors included in the EIA Report. The potential effects of the proposal in this context are summarised in chapter 15 but are also included in other relevant chapters, for example the risk of environmental incidents and spillages is covered in chapter 8 (ecology), chapter 9 (ornithology) and chapter 10 (hydrology matters).

7.51 The nature of the proposals and the remoteness of the site mean that there would be negligible risks on matters such as population and human health, biodiversity, water and cultural heritage. There would be a higher risk of road traffic accidents, as a result of the increase to HGV traffic levels. But the effect is not considered to be significant. Potential accidents to the public and employees during the construction phase would be mitigated through good working practices.

Reporters' conclusions

7.52 We set out our findings in relation to the risk of accidents and other disasters on private water supplies (chapter 4) and peatland (chapter 6) in earlier chapters of our report. In terms of the risk of other accidents and disasters, we find no reason to dispute the findings of the EIA Report. A major incident at a wind farm, particularly involving large turbines, could have serious consequences. However, we consider that the likelihood of this happening is low. The proposed conditions relating to the preparation of a traffic management plan and CEMP would provide mitigation in relation to potential traffic and environmental accidents.

CHAPTER 8: PROPOSED CONDITIONS

8.1 In November 2020, the applicant prepared a draft schedule of proposed conditions in consultation with South Ayrshire Council. Where the applicant and the council were not in agreement on a particular condition, comments from both parties were provided. Other parties were then given the opportunity to comment on the proposed conditions. A revised version of the draft schedule was prepared in January 2020, responding to comments and questions from the reporters and objectors[49]. The hearing session on 5 February 2021 focussed on the conditions where parties were not in agreement.

8.2 Appendix 1 to this report contains a final schedule of proposed conditions, which we recommend be attached to the Section 36 consent and deemed planning permission, if Scottish Ministers decide to grant consent to the application. Conditions 1 to 5 should be attached to the Section 36 consent, while conditions 6 to 35 should be attached to the deemed planning permission. The schedule of proposed conditions is based on that prepared by the applicant, following our consideration of amendments suggested by the council and other parties and discussions at the hearing session. In addition, we have taken account of comments made on the wording of conditions submitted by various consultees in their responses to the Energy Consents Unit.

8.3 Owing to the deletion and addition of conditions, there are some differences in the numbering from that presented in the draft schedule; although they do tend to follow the same order. The numbers of the conditions we use below refer to the recommended conditions in Appendix 1.

8.4 The site lies wholly within the administrative boundaries of South Ayrshire Council, with the exception of the site access from the A714 road, at Wheeb Bridge, which is located within the Dumfries and Galloway council area. For the purposes of the conditions, the term "planning authority" refers to South Ayrshire Council. In conditions 15 -17 relating to transport matters, there would be a requirement to consult Dumfries and Galloway Council.

8.5 Condition 6 in the revised set of draft conditions presented to us relates to the implementation of the development. The applicant does not consider there is a need for this condition. The council considers that the wording as proposed is vague and that a detailed description of the development should be included.

8.6 The standard practice used by Scottish Ministers in previous consents has been to include the description of development in an annex to the schedule of conditions, as suggested by the applicant. We agree that this approach would be appropriate in this case.

Condition 1 Duration of the consent

8.7 Section 3.2.4 of the EIA Report states that the applicant is seeking consent in perpetuity. All technical assessments have been based on the assumption that there would be no time limits on the operational phase of the proposed development. If a time limit is required, the applicant considers that this period should be 40 years as this would reflect the expected lifespan of the proposed turbines.

8.8 South Ayrshire Council does not support an in-perpetuity consent because turbines are not permanent structures and the sensitivity of the landscape context may change over

[49] CD24.2

time. The council's position is that the permission should be 25 years or the life expectancy of the turbines.

8.9 Paragraph 170 in Scottish Planning Policy addresses this matter but does provide a definitive answer. It states that areas identified for wind farms should be suitable for use in perpetuity, but that consents may be time-limited. Paragraph 41 in the Scottish Government's Onshore Wind Policy Statement confirms that there are no current statutory or legislative limits to the duration of consent for wind energy developments.

8.10 The applicant indicates that some wind farms in Ireland have been granted consent in-perpetuity. However, we are not aware of any examples of this in Scotland.

8.11 In this case we consider that, if Scottish Ministers are minded to grant consent, a consent period of 40 years would be appropriate. This would allow the development to produce electricity for the anticipated life expectancy of the proposed turbines but still provide scope for a future review of the consent.

8.12 As a 40 year time period would relate to the date of final commissioning, condition 1 should require that written confirmation of this date is provided to South Ayrshire Council and Scottish Ministers.

Condition 4 Serious incident reporting

8.13 The applicant does not consider it necessary to notify the planning authority should a serious incident occur. We note that the purpose of condition 4 is to meet a requirement under the terms of the Electricity Act for Scottish Government monitoring. However, in the interests of local accountability and to assist the council in responding to queries from members of the public, we consider that the planning authority should also be notified of any serious incidents.

Condition 5 Aviation lighting

8.14 Condition 5 requires the submission and approval of an aviation lighting landscape and visual impact mitigation plan. This is to include the provision of an aircraft detection lighting system or a scheme which demonstrates minimisation of the visual impact of the proposed lighting system. Specific reference is made to the reduction of lighting intensity during good meteorological visibility and the use of cardinal or strategic lighting of selected turbines. However, no mention was made in the draft wording of the mitigation proposed by the applicant, relating to the use of light fittings which emit light horizontally in 360 degrees.

8.15 Evidence provided at the inquiry indicates that light fittings of this type would significantly reduce the intensity of both 2,000 and 200 candela lights when seen from locations above and below the horizontal plane. These light fittings are identified by the applicant as an embedded mitigation measure, which we consider to be necessary to minimise the visual effects of aviation lighting. Condition 5 therefore requires the mitigation plan to provide the technical specification of light fittings designed to emit light horizontally in 360 degrees.

Condition 6 Design and operation of turbines

8.16 We have combined draft conditions 7 to 9 and part of condition 10, which relate to the design and operation of the proposed turbines, into one condition.

8.17 The applicant indicated that the wind turbine blades would rotate in the same direction as the existing Arecleoch wind farm. We consider this should be included as a requirement of condition 6, in order to reduce the visual impact of the development.

Condition 7 Design of sub-station and ancillary development

8.18 We have brought the other part of draft condition 10 and condition 11, which relate to the design of the sub-station and other ancillary development, into one condition.

8.19 Susan Crosthwaite is concerned that the sub-station and ancillary development could have an adverse impact on private water supplies and suggests some additional wording for condition 7. The applicant has indicated that the substation would be unmanned and make use of rainwater. The environmental concerns raised by Ms Crosthwaite would be addressed in the CEMP (condition 13).

Condition 8 Micro-siting

8.20 Condition 8 combines draft conditions 12 and 13 on micro-siting into one condition

8.21 The council wishes to see the development in accordance with the submitted plans, and have minimal variation through micro-siting, due to the scale of the turbines and the potential wide ranging effects arising from any changes. It seeks to restrict the micro-siting distance to 30 metres, but has not provided any specific reason why 50 metres would not be acceptable for this development.

8.22 Section 2.8 of the EIA Report states that the assessments in the report have considered the potential for micro-siting, and that micro-siting within 50 metres would not create any new significant environmental effects. The micro-siting distance at Arecleoch and Kilgallioch wind farms was 50 metres. The requirement that all micro-siting proposals be approved by the Environmental Clerk of Works would ensure that areas of deeper peat are avoided.

8.23 We recognise that micro-siting is a well-established aspect of wind farm development, which allows flexibility in order to respond to environmental conditions which arise during the construction stage. Given the use of 50 metres in the consents at Arecleoch and Kilgallioch wind farms, and because the council has not explained why an allowance of 50 metres would not be appropriate in this instance, we see no reason to insist on a smaller micro-siting distance than covered in the EIA.

8.24 We agree with Ms Crosthwaite that it would be difficult to identify the exact location of watercourses on 1:100,000 scale maps. The location of water courses should therefore be provided on 1:50,000 scale digital maps, which the applicant has indicated that it can do.

Conditions 9 and 10 Borrow Pits

8.25 Susan Crosthwaite considers that condition 9 (Borrow Pits – Scheme of Works) should require detailed geohydrological mapping of existing groundwater flows to avoid loss of groundwater to private water supplies. In the light of our conclusions in chapter 4, we do not think that this is necessary.

8.26 We consider that the title of condition 10 should be “Borrow Pits – Blasting” to more accurately reflect its content. We can see no reason why blasting activities should be

restricted between 12.00 and 14.00 hours on week days and have therefore amended subsection 2 accordingly.

8.27 Ms Crosthwaite states that the monitoring scheme for borrow pit blasting should include provision for groundwater monitoring to measure the effects of blasting on groundwater quality. We agree with the applicant that matters relating to groundwater monitoring would be covered by condition 21, which requires a water quality monitoring plan to be submitted to and approved by South Ayrshire Council. Our suggested amendment to condition 31 on private water supplies, which requires the submission of an emergency action plan, would address Ms Crosthwaite's request that local residents have a number to call to report changes in the quality of their private water supply.

Condition 12 Planning Monitoring Officer (PMO)

8.28 The council has requested the appointment of a PMO to assist in monitoring compliance with the terms of the planning permission and conditions from commencement of development through to decommissioning, restoration and aftercare. This request is in line with the council's supplementary guidance on wind energy and is an approach which has been used in other windfarms in South Ayrshire.

8.29 The applicant does not consider the appointment of a planning monitoring officer to be necessary for a windfarm of this size and complexity, but would agree to it for the construction period.

8.30 We find that there would be some overlap between the role of the ecological clerk of works and the planning monitoring officer. However, some of the concerns raised in relation to matters such as impact on private water supplies and the local road network highlight the need for the local community to have confidence that, if granted, the development would be implemented in line with the permission and conditions. Within the context of limited council resources, we consider the appointment of a PMO, with monthly reporting to the planning authority, to be necessary for the construction period. Once construction is complete, monitoring duties would be less intensive and the requirement for a PMO would not be justified.

Condition 13 Construction and Environment Management Plan (CEMP)

8.31 Condition 13 relates to the submission and approval of a CEMP and provides information on matters for inclusion in the plan. Clause i) has been amended to avoid duplication of text at the start and end of the condition.

8.32 Susan Crosthwaite identifies a list of additional matters which she considers should be covered in the CEMP. We agree with the applicant that these matters are either already addressed in clauses of this condition, other conditions or are covered by other regulations. We do not consider it necessary to amend the wording of condition 13 in response to these comments.

Conditions 15 – 17 Transport matters

8.33 Given that one of the access points to the site lies within Dumfries and Galloway, conditions 15 -17 on transport matters have been amended to require that Dumfries and Galloway Council are consulted on the traffic management plan and measures relating to abnormal loads, signage and traffic control measures.

8.34 We consider that the additional conditions requested by Dumfries and Galloway Council in relation to the identification of off-site works and abnormal load deliveries would be covered by condition 15 in the traffic management plan.

8.35 We accept the evidence presented by the applicant that payments to repair damage to public roads by heavy vehicles are covered by section 96 of the Roads (Scotland) Act 1984. The conditions requested by Dumfries and Galloway Council on this matter are therefore not considered necessary.

8.36 Susan Crosthwaite has requested that condition 15 on the traffic management plan include a reference to the route for delivery of oil and chemicals and management of those deliveries on site. Clause a) of proposed condition 15 refers to the routing of all traffic associated with the development and we do not consider there is any justification to specifically mention deliveries of oil and chemicals to the site. Arrangements for the storage and management of oil and fuel on the site would be covered by the CEMP, required by condition 13. We do not consider it necessary to amend the wording of condition 15 in response to these comments.

Condition 21 Water Quality Monitoring Plan

8.37 This condition, agreed between the applicant and the council, provides for a water quality monitoring plan to be submitted to and agreed by the council, prior to the start of any development. Ms Crosthwaite considers that condition 21 should require monitoring of all groundwater bodies through construction, operation and decommissioning of the wind farm.

8.38 In the light of our conclusions in chapter 4, we do not see a need for this. We are content for the details of the water quality monitoring plan to be left to be agreed by the council. However, a sentence has been added to clarify that the Water Quality Monitoring Plan would be expected to identify the location, duration and frequency of monitoring to be undertaken within the watercourse catchment areas identified as being at risk of potential construction effects in the EIA Report.

Conditions 25 and 26 Forestry

8.39 The applicant has confirmed that Scottish Forestry is content with the wording of condition 25 relating to the 60 hectares of replacement planting required due to the net loss of woodland cover resulting from the wind farm felling and restocking plans. The condition requires that the replanting scheme complies with the UK Forestry Standard and guidelines and is approved by South Ayrshire Council, in consultation with Scottish Forestry. We consider these controls would ensure that the replanting is appropriate in terms of its location, specification and timescales.

8.40 As the phase 1 felling with the application site boundary would be approved as part of any planning consent, condition 26 requires the submission of a wind farm forestry felling plan to provide updated information on phase 1 felling, restocking proposals and forest management. The second and subsequent phases of the existing forestry felling plan are not directly affected by the construction and operation of the windfarm and would not require to be covered by this condition.

Condition 28 Operational Noise

8.41 There is no dispute between the applicant and South Ayrshire Council on the wording of proposed condition 28. No written comments on this condition were submitted by any other party in advance of the conditions hearing and no matters were raised at the noise inquiry.

8.42 However in her closing submission (section 3.11), Susan Crosthwaite has set out a number of additional matters to be included in condition 28. She considers that these are necessary to ensure that the development complies with the operational noise predictions set out in the noise assessment, in the interests of protecting local residents from non-compliant noise impacts and to maintain openness and transparency.

8.43 We note in chapter 5 that the noise impact assessment, which has been undertaken in accordance with ETSU-R-97 and the Good Practice Guide, indicates that noise effects from the wind farm would be below the properly derived noise limits. We are satisfied with the applicant's selection of noise monitoring locations, which were agreed with the council and consider that appropriate mitigation is provided through condition 28, should there be any complaints regarding noise disturbance. On this basis, we do not consider that there is any justification to require the applicant to undertake further monitoring of operational noise at agreed dwellings, including Kilrenzie and Dochroyle Farm.

8.44 It is the role of the planning authority to monitor compliance with conditions. We do not consider that a requirement for the applicant to share noise measurement data with a qualified acoustician representing local residents would be necessary or reasonable. Therefore this would not be in accordance with Planning Circular 4/1998: the use of conditions in planning permissions. It would also not be appropriate or reasonable to require the applicant to seek the agreement of a group of local residents on matters such as the appointment of an independent acoustician.

8.45 However if a complaint is made relating to noise disturbance from the wind farm, we consider it reasonable that the outcome of any assessment of the rating level of noise immissions should be communicated to the person affected (if requested). This has been included as a requirement of Clause f) in condition 28.

Condition 29 Shadow Flicker

8.46 The council has not provided any explanation as to why the standard wording provided by the Energy Consents Unit and favoured by the applicant would not be appropriate in this instance. We agree with the applicant that the details of the complaints procedure in relation to shadow flicker should form part of the mitigation scheme to be submitted to and approved by the council.

Condition 30 Television Reception

8.47 The area of dispute in relation to condition 30 on television reception relates to the requirements to submit the results of an engineer's investigation to the complainant as well as the council. Section 15.4 of the EIA Report indicates that as the area is served by a digital transmitter, television signals are unlikely to be affected. If problems do arise, we consider it reasonable that the outcome of any investigation into the disruption of television services is communicated to the person affected (if requested).

Condition 31 Private Water Supplies

8.48 The applicant's proposed condition would defer the details of a method statement (to ensure mitigation to secure the quality, quantity and continuity of PWS) to be agreed by the council prior to construction commencing. This would include details of and locations for water quality monitoring.

8.49 The council's alternative condition would require all PWS sources and catchments to be mapped and a site-specific hydrogeological report to be submitted. This should include an action plan, in the event that any emergencies arise.

8.50 Susan Crosthwaite supports the council's proposed condition, but also asks for the wind farm infrastructure to be mapped alongside the PWS details, more specific information on monitoring and reporting requirements, and details about the duration of monitoring. Dr Connor raised concerns that the proposed water quality monitoring methodology and locations set out in Technical Appendix TA10.3 Private Water Supply Risk Assessment (PWSRA) are insufficient to ensure protection for PWS.

8.51 The PWSRA suggests monitoring prior to and during construction at the four PWS locations which were risk assessed. We expect that monitoring may also be required for a period after construction. In addition, the PWSRA refers to the monitoring at a "control" surface water catchment location, and other sampling locations which would be representative of the Cross, Duisk, Cree and Tig catchments (covered in condition 21 on Water Quality Monitoring Plan). In the light of our chapter 4 conclusions, this appears to be a reasonable basis for selecting monitoring locations, although we are content that the exact requirements can be left to be agreed by the council.

8.52 In relation to sampling methods (including sampling parameters) and if/how the results are to be communicated to interested parties, these are matters which would rely on the expertise of the council's environmental health officials. Again, we think it is appropriate for such details to be left to be agreed by the council.

8.53 The council's proposed condition effectively asks for another PWSRA. We outline the council's criticisms of the submitted PWSRA in chapter 4. Ultimately we do not find that there is likely to be significant effects on any PWS and we therefore do not agree that the provision of a new PWSRA is warranted. However we do insert some additional text (consistent with our findings in chapter 4) to clarify the specific mitigation measures for certain PWS as set out in the PWSRA. In the interests of providing clarity for interested parties at this point, we also think the condition should make clear that an emergency action plan would need to be included in the method statement.

Condition 35 Financial Guarantee

8.54 Susan Crosthwaite considers that the financial bond required by condition 35 should include the costs of providing replacement water supplies, if there is any long term damage to the quality and quantity of private water supplies. We agree with the applicant that the purpose of the financial bond is to provide security for decommissioning, restoration and aftercare obligations. It would not be appropriate to use it to compensate for damage to private property including private water supplies.

8.55 Some additional conditions were suggested by parties to the inquiry and in written consultation responses. Our consideration of these matters is set out below.

Compensation for affected residents

8.56 Pat Spence has asked us to consider whether a condition requiring the applicant to buy out or compensate local residents adversely affected by the proposal would be appropriate. We are not aware of any provisions within current legislation to support such a condition, or any mechanism to determine what level of compensation would be appropriate. We agree with the applicant that, in terms of deemed planning permission, it would not meet the tests for conditions set out in Planning Circular 4/1998 on the use of conditions.

Traffic signage and control measures

8.57 Transport Scotland requested a condition requiring any additional signage or temporary traffic control measures deemed necessary due to the size or length of any loads being delivered or removed to be undertaken by a recognised QA traffic management consultant, approved by Transport Scotland before delivery commences. This was considered necessary to ensure that the transportation will not have any detrimental effect on the road and structures along the route.

8.58 We agree with the applicant and South Ayrshire Council that this matter would be adequately addressed through the traffic management plan required by condition 15.

Land Reform (Scotland) Act 2003 – signage

8.59 If access is required to be restricted at any time, NatureScot recommends the use of clear signage following the Scottish Outdoor Access Code branding guidelines. We asked the applicant and South Ayrshire Council whether an additional condition was required to cover this matter. We are satisfied that this matter can be adequately addressed through the CEMP required by condition 13.

CHAPTER 9: CONCLUSIONS

Evidence on legislative and policy matters

9.1 Evidence on legislative and policy matters was presented at a hearing session on 12 January 2021, with each party submitting a hearing statement and/or a statement of case in advance. Matters relating to socio-economic issues, including effects on tourism and constraints payments; grid connection and capacity issues; carbon balance and energy storage were also covered at this hearing session, but are included in chapter 6 (other considerations).

9.2 The legislative and policy context of the application is set out in chapter 2. Whilst there is general consensus amongst parties on the range of legislation and policy documents to be taken into account, opinions vary on the relevance of these and the weight to be given to them in Minsters' consideration of the proposed development.

9.3 During the policy hearing session, parties were invited to comment on the relevance of changes to Scottish Planning Policy, approved by the Scottish Government in December 2020. All parties were of the opinion that these changes had no bearing on our consideration of the application before us. We therefore do not consider it necessary to seek the views of parties on the court decision of 21 July 2021 to quash Scottish Planning Policy (December 2020).

The main points for the applicant

Statement of case
Hearing statement
Closing Submissions

Energy legislation and policy context

9.4 An application under section 36 of the Electricity Act 1989 is significantly different from an application for planning permission. This is because of the more strategic nature of generating stations with a capacity greater than 50 megawatts and the correspondingly greater significance of national energy policies.

9.5 Schedule 9 of the 1989 Act only includes provisions relating to the preservation of amenity and fisheries and a requirement to "have regard to the desirability" of specified matters. The EIA Report demonstrates that the applicant has fulfilled its duties in relation to the requirements of schedule 9 in the 1989 Act, has had full regard to the matters mentioned in section 3(1)(a) of the schedule and identified suitable mitigation measures.

9.6 There is no mention of the development plan in the 1989 Act. Whilst its provisions are a relevant consideration under section 36, the development plan does not enjoy the enhanced status that it would do under section 25 of the Town and Country Planning (Scotland) Act 1997.

9.7 There have been a number of recent changes in international, UK and national energy policy context which increase the weight to be given to tackling climate change and reducing greenhouse gas emissions. The 'United Nations Gap Emissions Report' 2019 states that it is clear from the emissions gap that a step change is required to meet the targets set out in the "Paris Agreement".

9.8 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[50], which amends the Climate Change (Scotland) Act 2009, sets new targets to reduce Scotland's emissions of all greenhouse gases to net-zero by 2045 at the latest, with interim targets for 2020, 2030 and 2040.

9.9 Onshore wind energy development is part of the solution to meet these targets. In March 2020, the UK Government confirmed that onshore wind energy development will be eligible to compete in the next round of Contracts for Difference payments, which is due to take place in 2021. The 'Sixth Carbon Budget'[51], published by the UK Climate Change Committee on 9 December 2020, reinforces the need to prioritise the development of renewable energy as part of the decarbonisation drive.

9.10 On 13th December 2020, the UK Government published its Energy White Paper, Powering our Net Zero Future[52]. This states that a four-fold increase in clean electricity generation would be needed to meet its net zero targets by 2050. Onshore wind and solar are identified as key building blocks of the future generation mix, along with offshore wind (page 45).

9.11 The Scottish Government's climate change plan has been revised to reflect the updated targets in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. The update published on 16th December 2020[53] states that "as Scotland transitions to net zero, a growing and increasingly decarbonised electricity sector is critical to enabling other parts of our economy to decarbonise – notably transport, buildings and industry". The plan supports onshore wind development and refers to the need for an updated energy strategy.

9.12 Green energy development can also make a valuable contribution to economic recovery following the Covid-19 pandemic. There is clear support in the Scottish Government's 'New Programme for Government'[54] for renewable energy development to be at the heart of the economic recovery and onshore wind is part of that. Just because onshore wind and hydro power are not specifically mentioned does not mean that the document is not supportive of them as part of the overall renewable energy mix.

9.13 The letter from the Scottish Committee on Climate Change to the Cabinet Secretary for Environment, Climate Change and Land Reform dated 6 May 2020[55] indicates that tackling climate change and reducing greenhouse gas emissions should play a key role in the recovery from the Covid-19 crisis. Similarly, the Scottish Government's Climate Emergency Response Group in July 2020[56] states that "the Covid-19 pandemic has created a public health and economic crisis, which has shifted the parameters of this response. A green recovery is a necessity, not an option".

National Planning Policy

9.14 National Planning Framework 3 and Scottish Planning Policy provide sound locational advice with respect to windfarm developments. However, they do not contain the

[50] CD14.7
[51] CD20.13
[52] CD8.31
[53] CD8.32
[54] CD7.4
[55] CD7.7
[56] CD8.27

current Scottish Government thinking on targets and the climate emergency, nor do they reflect the current situation on the green recovery post Covid-19.

9.15 The Scottish Government's position statement on National Planning Framework 4[57] makes a number of references to aligning the planning system with climate change objectives, in order to meet emission targets. It is expected that National Planning Framework 4 will confirm the government's view that the global climate emergency should be a material consideration in considering applications for appropriately located renewable energy developments. Recent UK and Scottish government policy has been clear that the role of onshore wind is demonstrably stronger than that stated in the current National Planning Framework and Scottish Planning Policy.

Development Plan

9.16 The proposal is in accordance with the South Ayrshire Local Development Plan (LDP) wind energy policy and the LDP overall. The wind energy policy in the emerging LDP is very similar to the policy in the adopted plan.

9.17 The council's supplementary guidance on wind energy shows the majority of the site within an area of significant protection, due to the presence of peat. The mapping data used in the supplementary guidance is not in accordance with table 1 in Scottish Planning Policy, which is based on NatureScot's Carbon and Peatland Map 2016. This shows considerably less peat on the site and, as a result, the majority of the site should be classified as an area with potential for wind farms.

9.18 The NatureScot guidance 'Spatial Planning for Onshore Wind Turbines – natural heritage considerations' states that the national level map information "cannot (and should not) be used in isolation to determine the impacts of a specific development proposal on peat." The location of a proposal in the mapped area of significant protection does not, in itself, mean that the proposal is unacceptable. South Ayrshire Council did not raise an objection in relation to peat.

9.19 The wind energy policy in the adopted LDP and the supplementary guidance on wind energy both make reference to the South Ayrshire Landscape Wind Capacity Study (SALWCS). Landscape capacity studies are strategic in nature and should not be used to determine applications without regard to the individual assessment of the proposal.

Renewable energy targets

9.20 The proposal can contribute towards meeting renewable energy targets. The Chief Planner's letter of November 2015[58] states that policy support for new on-shore renewable energy developments, including onshore wind farms, continues in the situation where renewable energy targets have been reached.

9.21 Section 4.4.18 of the EIA Report indicates that the 100% target of electricity from renewables by 2020 equates to approximately 16 GW of installed renewables capacity. Whilst the proposal would not be delivered in time to contribute to this target, it can make a valuable contribution to renewable energy targets post 2020.

[57] CD7.14
[58] CD8.6

9.22 The Scottish Government's statistics at March 2020 on the total renewable energy pipeline show that the "operational" and "under construction" figures together only equate to 13.2 GW. This represents a significant shortfall against the Scottish 2020 renewable electricity generation target of 16 GW. Many of the onshore wind farm schemes which are awaiting construction or in planning are no longer viable and will never be built, even if consented. While offshore wind farms will contribute to these figures in the next five years or so, onshore wind energy development will also be required.

9.23 The bringing forward of an interim target of 75% reduction by 2030 in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 Act demonstrates an intensified need to decarbonise Scotland. The 2019 Act also sets annual targets which show that Scotland is moving from a 1% reduction per annum to a new commitment of 1.9% reduction per annum. This near doubling of the response to the climate emergency provides a perspective on the scale of change that is likely to be required.

Conclusion

9.24 The applicant accepts that positive policy support for renewable energy does not automatically override consideration of environmental effects. Although there is a clear need for new projects to come forward as quickly as possible to meet the requirements for renewable energy, this does not mean that all projects should be consented.

9.25 The proposal offers an opportunity to contribute to both meeting the climate emergency and economic recovery post Covid-19 in a relatively short timeframe. The major shift in the need to tackle the climate emergency and promote green economic growth must be afforded significant weight in the decision making process.

The main points for South Ayrshire Council

Response to the applicant's statement of case Hearing statement Closing Submissions

Energy legislation and policy context

9.26 Whilst recognising the terms of the UN Gap Emissions Report 2019, there is no evidence that this proposal will have any effect on carbon or other harmful emissions or make any contribution or quantitative difference to the slowing of climate change.

9.27 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 is concerned with reporting carbon emissions reductions or increases, assessed nationally, and with the setting of reductions targets. It neither promotes nor inhibits renewable energy development in any form and is irrelevant to this application.

9.28 The Energy White Paper[59] signals the UK government's intentions but it is not an enactment yet. Onshore wind is only mentioned on one page of the document and it does not refer to locations for onshore wind farms.

[59] CD8.31

National Planning Policy

9.29 Paragraphs 1 and 2 of Scottish Planning Policy reflect the important balance to be met between the government's aspirations for sustainable economic growth and protecting and enhancing natural and cultural resources.

9.30 The council's objection is based on a balanced consideration between sustainable economic growth, reducing carbon emissions and safeguarding South Ayrshire's landscape and natural heritage resources. The proposed development is not the right development in the right place (paragraph 28 of Scottish Planning Policy).

9.31 Speculation as to the contents of National Planning Framework 4 is unhelpful, as the position statement published in November 2020 is not an indication of what will be agreed by Ministers.

Development Plan

9.32 The proposed development is contrary to the wind energy, sustainable development and landscape quality policies in the adopted LDP, the Supplementary Guidance on Wind Energy and the SALWCS. This is because of its unacceptable visual impact on the character of Duisk Valley and Glen Tig, due to the scale and positioning of the proposed turbines and unacceptable impact on views from the Duisk Valley and settlement of Barrhill.

9.33 It is also contrary to LDP policies on wind energy and air, noise and light because the potential introduction of eye catching and prominent aviation into an area important for its dark skies which would adversely impact upon views from wild land and core area of the dark sky park.

9.34 The LDP fully supports Scottish Planning Policy objectives in relation to the low carbon economy and renewable energy development. These objectives must also be in accordance with the principle of the "right development in the right place". The considerations for energy infrastructure developments set out in paragraph 169 of Scottish Planning Policy are reflected within the LDP policies.

9.35 The SALWCS is a technical report which informs the Supplementary Guidance on Wind Energy and is a material consideration in the strategic planning of wind energy development and in the determination of specific wind energy proposals. It fulfils the requirement in paragraph 162 of Scottish Planning Policy for planning authorities to identify where there is strategic capacity for wind farms.

Renewable energy targets

9.36 Within the context of a need for 16 GW renewable energy capacity, the sum of all the projects in the pipeline (operational, in planning, awaiting construction and under construction) is 25.4 GW, which is 64% above the target.

9.37 No evidence has been provided to demonstrate that any particular project is no longer viable or may never be built. In addition, offshore wind farm development, itself strongly supported by both the Scottish and UK governments, continues to make significant progress towards successful operation. Accordingly, Scotland is not failing to meet its

target of 100% electricity generation from renewables by 2020. Furthermore, if a target is an expression of need, and the target is reached, there can be no more need.

Conclusion

9.38 The benefits from the policy documents referred to by the appellant must be weighed in the overall planning balance. In this case, they do not override other considerations, such as the adverse environmental effects identified in this case.

The main points for Dumfries and Galloway Council

Development Plan

9.39 The site entrance located off the A714 at Wheeb Bridge lies within Dumfries and Galloway Council's administrative area. The council considered the application in terms of the principle of development and impact on the public road network and concluded that the proposals complied with the Dumfries and Galloway LDP. Dumfries and Galloway Council did not take part in the inquiry.

The main points for New Luce Community Council

Hearing statement
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9.40 Alistair Buckoke on behalf on New Luce Community Council stated that the UK Energy White Paper (published in December 2020) prioritises offshore wind because the UK government is looking for greater security and capacity to address uncertainties in scenario planning.

9.41 Mr Buckoke raised concerns about the way in which landscape character types and their description are used in the assessment of wind farm proposals. A reference to wind farms in a landscape character type description should not be used to legitimise the accumulation of further wind farms. Related to this, he questioned how the cumulative effects of proposals on local people were assessed.

9.42 The consented Stranoch Wind Farm is an example of the uncertainty caused to local communities when a wind farm is consented but has not been built.

The main points for Bardrochart and Knockdolian Estates

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Energy legislation and policy context

9.43 Ian Kelly, on behalf of the Estates, states that the tests in Schedule 9 of the Electricity Act 1989 are not met for this application. Given the significant specific and cumulative adverse landscape and visual impacts, which cannot be mitigated, and other potential adverse effects (including the likely adverse effects on protected bird species and associated habitats), the applicant has neither preserved natural beauty and flora, nor secured reasonable mitigation.

9.44 UK energy policy now appears to be entirely focussed on theoretically reduced costs for offshore wind farms, most of which have yet to commence construction. The UK government now provides significantly reduced fiscal support measures for onshore wind energy development.

9.45 The update to the Climate Change Plan, Scottish Energy Strategy and the Onshore Wind Energy Policy Statement set out the strategy and ambitions of the Scottish Government. But they do not call for the planning system to be set aside or support developments which were previously not acceptable, on account of their adverse impacts.

9.46 There has been no objective scientific or other expert evidence presented to any section 36 wind farm Inquiry in Scotland to establish a demonstrable and verifiable link between wind farms in Scotland (based on actual performance) and variations in climate parameters. No such evidence has been provided for this proposal.

National Planning Policy

9.47 Scotland's climate change targets of net zero by 2045 have not resulted in any associated changes to planning policy at national or local level. Until National Planning Framework 4 is adopted, the current policy provisions for the determination of wind farm planning applications remain as they are.

9.48 National Planning Framework 3 confirms that landscape and biodiversity are of national importance (as well as being of key importance in this particular case) meaning that a planned and balanced approach is needed in considering the location of renewable energy developments, notwithstanding the targets for renewable energy generation.

9.49 Within the context of Scottish Planning Policy, the proposal does not accord with the principles of sustainable development (paragraph 29) and the applicant has not carried out a net economic impact assessment (paragraph 169).

Development Plan

9.50 The correct approach to assessing the detailed acceptability or otherwise of the proposal is through the consideration of the development plan, followed by material considerations. The proposal does not accord with the wind energy policy in the South Ayrshire LDP.

Renewable energy targets

9.51 The applicant does not address the issue of excessive installed overcapacity in renewable energy developments. This is the scale of the theoretical installed capacity needed compared with maximum demand, in order to address intermittency. If the industry and the Scottish Government wish to increase the generation of renewable electricity, then the current output could be more than doubled (assuming grid capacity) by simply building out existing consents.

9.52 The implications of wind farms being consented but then not built needs to be taken into account. It cannot be sustainable to just keep consenting more turbines without addressing these wider infrastructure and energy generation considerations.

9.53 The assertions by the Scottish Government, that their renewable energy generation targets are not a cap, needs to be considered in the context of UK energy policy, Scottish Government renewable energy statistics, and established decision making processes.

The main points for Susan Crosthwaite

Statement of case Hearing statement Closing submissions

Energy legislation and policy context

9.54 Helen McDade, on behalf of Susan Crosthwaite, stated that international targets and commitments are not directly relevant as these are already taken into account and embedded in policy, legislation and regulation by UK and Scottish governments. The primary target of the Climate Change (Scotland) Act 2009[60] is reducing greenhouse gas emissions, with renewables being a secondary objective.

9.55 The UK Government's 10 point plan[61] (published in November 2020), which sets out the government's investment intentions, makes no mention of onshore wind development. Instead, it supports offshore wind and nuclear energy to provide the low carbon energy required in the UK. The Arecleoch extension does not fit with the updated UK policy and therefore is unlikely to receive any financial subsidy, which would be required to make it a commercial proposition.

9.56 The Sixth Carbon Budget published by the UK Government's Climate Change Committee is advice and does not have the status of policy. The opportunity to bid for Contracts for Difference funding does not guarantee that projects will go ahead. In the context of Covid-19, it is not clear how much public funding will be available to support onshore wind development, especially when offshore wind is the priority.

9.57 It is accepted that onshore windfarms will be part of a mix of renewable energy provision. But policy support for green energy does not necessarily justify further onshore wind development in this location. There are other available options, such as offshore wind developments and solar energy.

National Planning Policy

9.58 Paragraphs 28 and 29 in Scottish Planning Policy are relevant to considerations of grid constraints and constraints payments, with regard to sustainable development and net planning benefit. The risk of planning blight to the local area and impact on peatland should also be significant considerations.

Renewable energy targets

9.59 There are a significant number of "consented but not built" windfarms which could contribute to meeting renewable energy targets. There is therefore not a demonstrable need for the proposed development. Many of the already consented developments will be in more suitable locations than Arecleoch extension where there is not the grid constraint

[60] CD14.4
[61] CD23.9

that there is in south west Scotland. Many consented schemes will never be developed for financial reasons but will remain a threat of blight on the lives of those who live in the area.

The main points for Christopher Andrews

Statement of case
Closing submissions

9.60 The Covid-19 pandemic is not a relevant justification for the proposal, as the pandemic will not last forever. Given that the future of wind farm electricity generation is offshore, this application is technologically redundant and out of date.

Reporters' conclusions on the policy context

The Electricity Act 1989

9.61 Schedule 9 of the Electricity Act 1989 requires the applicant, as licence holder, and Scottish Ministers, in considering the application, to have regard to the desirability of preserving natural beauty, conserving flora, fauna and natural features of special interest and protecting sites and buildings of architectural, historic or archaeological interest. Consideration must also be given to the mitigation of any effects the proposal would have on these matters. However schedule 9 is not a policy test.

9.62 We have reviewed the information provided in the EIA Report and accompanying documents and are satisfied that the applicant has addressed the requirements of Schedule 9, in terms of having regard to the desirability of preserving, conserving and protecting the features listed. Chapter 2 of the EIA Report sets out the considerations taken into account in the site selection and design evolution. The schedule of commitments in chapter 16 of the EIA Report sets out mitigation measures to prevent, reduce or offset the effects of the proposal on the environment. These include mitigation relating to the matters listed in Schedule 9, where required for this proposal.

National energy policy

9.63 There is agreement amongst parties that both national and UK energy policies are material considerations. The main areas of dispute relate to the weight to be given to these policies; the relevance of fiscal incentives; the specific level of support provided for onshore wind proposals; and the need for the applicant to demonstrate what contribution the proposal would make to climate change objectives.

9.64 National energy policy provides a strong commitment to renewable energy and a reduction in greenhouse gas emissions. The Onshore Wind Policy Statement 2017 states that "our energy and climate change goals mean that onshore wind will continue to play a vital role in Scotland's future".

9.65 The Climate Change (Emissions Reduction Targets)(Scotland) Act 2019 sets a more challenging target (net zero by 2045) than the equivalent target for the UK as a whole (net zero by 2050). The recent update to the Climate Change Plan 2018 – 2032 (December 2020) provides a clear message from the Scottish Government that renewable energy has a key role to play in meeting emissions targets and supporting a "green recovery" from the effects of the Covid-19 pandemic. Specific mention is made of the contribution that onshore

wind energy (together with offshore wind capacity) will make to meeting the increased demand for electricity from renewable sources.

9.66 Recent developments in relation to UK energy policy also highlight the need for substantial increases in clean electricity generation to meet net zero targets, and identify onshore wind as part of the solution.

9.67 We find that, within the context of the climate change emergency and Covid-19 recovery, national and UK energy policy provide unequivocal support for renewable energy development, of which onshore wind farms are one component. We do not consider that this policy support is dependent on the applicant providing detailed evidence on the specific contribution the proposal would make to climate change objectives. Given that renewable energy targets are not a cap, we consider that this policy support applies even if (as indicated by some objectors), there is sufficient capacity in the pipeline of consented windfarms to meet current targets. In the same context, the fact that some consented schemes are not being implemented is not a relevant consideration for this application.

9.68 We conclude that the increasing importance of tackling climate change and strong policy support for renewable energy is a matter of significance in favour of the proposal.

National Planning Policy

9.69 National Planning Framework 3 and Scottish Planning Policy provide the current national planning policy context. Whilst the National Planning Framework 4 position statement provides some insight into the potential content of the next national planning framework, we agree with objectors that we should give little weight to this document. However, we do recognise that National Planning Framework 3 and Scottish Planning Policy predate the Climate Change (Emissions Reduction Targets)(Scotland) Act 2019. We agree with the applicant that the renewable energy and climate change context has changed since current national planning policy was formulated, with more demanding targets and a greater sense of urgency.

9.70 National Planning Framework 3 states that planning will play a key role in delivering climate change commitments. The expectation is that onshore wind energy development would be overtaken by offshore energy opportunities. However, it states that onshore wind will continue to make a significant contribution to diversification of energy supplies. The proposed Arecleoch extension would support the aims of National Planning Framework 3 to make Scotland “a low carbon place”.

9.71 National Planning Framework 3 also recognises the importance of protecting and enhancing environmental assets and supporting sustainable economic growth. It refers to Scottish Planning Policy to set out the required approach to spatial frameworks which will guide new wind energy development to appropriate locations, taking into account important features.

9.72 In indicating a presumption in favour of development that contributes to sustainable development, Scottish Planning Policy seeks to enable development that balances the costs and benefits of a proposal over the longer term. The aim is to achieve the right development in the right place. Whilst there is dispute amongst parties as to whether this proposal would contribute to “sustainable development”, there is agreement that not all wind farm proposals would necessarily contribute to sustainable development.

9.73 Scottish Planning Policy provides support for renewable energy and highlights the responsibility on the planning system to help meet climate change objectives. However, national planning policy also highlights the need for development to be sustainable. The requirement for the benefits of the proposal to be balanced against any adverse impacts on the landscape, wider environment and communities is of particular relevance to our assessment.

9.74 Paragraph 29 in Scottish Planning Policy states that planning decisions should be guided by a list of sustainable development principles. Not all of these are directly relevant to this proposal.

9.75 Our findings in chapter 3 on landscape and visual effects indicate that the proposal would have significant adverse landscape and visual effects, and in that sense would not be fully consistent with protecting and enhancing the landscape. We consider that the proposal would bring economic benefits, albeit we acknowledge that no analysis of net economic effects has been provided. The proposal would also make efficient use of existing capacities of land and avoid over development, support climate change mitigation and has considered the implications for water, air and soil quality. On the basis that some significant landscape and visual effects are almost inevitable for commercial wind farm developments, and taking account of the identified positive effects, we conclude that the proposal would contribute to sustainable development.

9.76 Paragraph 169 of Scottish Planning Policy identifies the range of considerations which must be balanced to reach an overall conclusion as to whether a particular wind farm proposal is acceptable. However it does not provide any indication as to the particular weight to be given to any of these material considerations, when balancing the positive and negative effects of a proposal.

9.77 Grid capacity is not included in this list and paragraph 165 of Scottish Planning Policy makes clear that this should not be a consideration in decisions on individual applications for wind farms. We also do not consider it relevant to take account of the economic implications of any particular contractual arrangements that wind farms may have for supplying electricity to the national grid.

9.78 We conclude that the proposal would bring benefits in terms of its contribution to renewable energy generation targets, reducing greenhouse gas emissions, opportunities for energy storage and economic impact. These require to be balanced against the landscape, visual and residential amenity effects of the proposal. In terms of the other considerations listed in paragraph 169, we conclude that appropriate mitigation secured by conditions would address any significant effects.

9.79 We conclude that the proposal would be supported by Scottish Planning Policy, provided the identified benefits outweigh the adverse impacts in the planning balance. We reach a view on this matter in our overall conclusions

Development Plan

9.80 For applications considered under section 36 of the Electricity Act 1989, the development plan does not have the status set out in section 25 of the Town and Country Planning (Scotland) Act 1997. However, we consider that the provisions of the development plan are a material consideration in our assessment of the proposal. In this instance, the South Ayrshire LDP 2014 and its accompanying supplementary guidance is of

most relevance. However, we have also had regard to the adopted Dumfries and Galloway LDP 2019 and the modified proposed South Ayrshire LDP 2020.

9.81 The LDP policy on wind energy supports proposals subject to a list of criteria, consistent with the considerations set out in paragraph 169 of Scottish Planning Policy.

9.82 Based on our earlier conclusions, in particular in chapter 3 landscape and visual impact and chapter 5 noise, we conclude that the proposal would accord overall with the LDP policy wind energy. Taking account of individual and cumulative effects, we consider that the proposal would be capable of being accommodated in the landscape in a manner which respects the character of LCT 18c, LCT 13 and LCT 14 as identified in the SALWCS 2018.

9.83 Whilst we recognise that there would be visual impacts from surrounding residential properties and settlements, public roads and paths, public viewpoints and the Wild Land Area, we consider these to be localised in extent and not significant overall. Other potential effects on residential amenity (such as noise and shadow flicker) and on protected species (including bats and goshawk) can be addressed through conditions. The proposal does not raise any particular issues in relation to effects on the historic environment, aviation and defence or broadcasting installations.

9.84 We also consider that the proposal would accord with the LDP policy on renewable energy as we have concluded that there would not be significant harmful effects on residential amenity, the appearance of the area and its landscape character, biodiversity and cultural heritage.

9.85 Matters such as impact on water quality, peat resources and the transport network are covered in the LDP policy on sustainable development. Based on our consideration of these and other relevant matters, we conclude that the proposal would also accord with the sustainable development policy.

9.86 South Ayrshire Council's Supplementary Guidance on Wind Energy (2015) also forms part of the development plan. It provides a spatial framework for wind energy development, in accordance with paragraph 161 and table 1 of Scottish Planning Policy. The majority of the site is included in an area of significant protection (group 2), due to the presence of peat and the remainder is identified as having potential for wind energy developments (group 3).

9.87 The guidance states that within the areas of significant protection there may be some limited opportunities for development, provided the significant effects on the qualities of these areas can be substantially overcome. Within this context and given the evidence submitted by the applicant regarding the accuracy of the peat mapping information and that the council did not object on the grounds of impact on peat, we do not consider that the identification of the site within an area of significant protection would in itself justify refusal. We consider the effects of the proposal on peatland in chapter 6 and conclude that these would not be significant. We conclude that the proposal would accord overall with the LDP and its supplementary guidance on wind energy.

9.88 No parties have drawn our attention to any aspect of the modified proposed South Ayrshire LDP which would alter our conclusions. We agree with Dumfries and Galloway Council that the proposal does not raise any issues in terms of the Dumfries and Galloway LDP.

Environmental Impact Assessment and significant effects

9.89 By virtue of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, Scottish Ministers' decision notices are required to provide, in the event that consent is granted, a reasoned conclusion on the significant effects of the development on the environment.

9.90 Our report sets out an assessment of the relevant environmental information and the required mitigation in so far as it applies to the main issues and significant effects. The EIA Report covers a range of matters with sections on landscape and visual, archaeology and cultural heritage, ecology, ornithology, traffic and transport, noise, and socio-economics.

9.91 Our conclusions on the significant effects, reflected in the earlier chapter of our report, are up to date at the time of submission of this report. The table below provides a summary of the relevant matters:

Report Chapter	Description	Comment
Chapter 1: Background	Description of the development, summary of consultation responses and representations.	The EIA Report was advertised and consulted on. There is nothing in the submitted information to indicate any insufficiency in the arrangements for the public to participate in the process. All of the relevant environmental information was considered as part of this assessment.
Chapter 3: Landscape and visual impacts	Environmental information and conclusions on potential effects and the potential for mitigation.	This chapter summarises the relevant effects drawing on the information contained in chapter 7 of the EIA Report (including visualisations and relevant technical appendices), submissions to the inquiry, consultation responses and representations. Our conclusions identify a number of significant residual effects as set out in Chapter 3.

Chapter 4: Private Water Supplies	Environmental information and conclusions on potential effects and the potential for mitigation.	This chapter summarises the relevant effects on private water supplies drawing on information contained in chapter 10 of the EIA Report and technical appendix 10.3 (private water supply risk assessment), submissions to the inquiry, consultation responses and representations. Our conclusions identify no significant residual effects.
Chapter 5: Noise	Environmental information and conclusions on potential effects and the potential for mitigation.	This chapter summarises the relevant noise effects drawing on the information contained in chapter 13 of the EIA Report and technical appendix 13.1 (environmental noise assessment), submissions to the inquiry, consultation responses and representations. Our conclusions identify no significant residual effects.
Chapter 6: Other inquiry matters	Environmental information and conclusions on potential effects and the potential for mitigation.	This chapter summarises the relevant effects on the other matters covered in the inquiry - transport and other infrastructure, socio-economic effects, bats, peatland and carbon balance. It draws on information contained in chapters 3, 8, 10, 12, 14 and 15 of the EIA Report and associated technical appendices, submissions to the inquiry, consultation

		responses and representations. Our conclusions identify no significant residual effects.
Chapter 7: Other considerations	Environmental information and conclusions on potential effects and the potential for mitigation.	This chapter covers the remaining information contained in the EIA Report and related consultation responses and representations. No significant residual environmental effects are identified.
Chapter 8: Planning conditions	Recommended mitigation to be secured by condition in the event that consent is granted.	This chapter draws on the conclusions elsewhere in the report regarding mitigation and monitoring. A number of the recommended conditions include provisions for monitoring.
Chapter 9 : Policy assessment and overall conclusions	Overall conclusions	This chapter takes account of the assessed environmental effects, the potential for mitigation, the relevant policy considerations and the benefits of the proposal to arrive at an overall conclusion and recommendation.

Reporters' Overall Conclusions

9.92 Having regard to the criteria listed in Schedule 9 of The Electricity Act 1989 and the measures to mitigate the impacts of the proposed development upon them, we conclude, that natural beauty, flora, fauna, geological or physiographical features of special interest, protected sites, buildings and objects of architectural, historic or archaeological interest would be preserved.

9.93 Drawing all considerations together, we also conclude that

- renewable energy development, including on-shore wind proposals, attracts considerable support from current UK and Scottish Government energy policy. Increased emission reduction targets and recent Scottish and UK government publications relating to the climate change emergency and post-covid economic response continue to provide a strong level of support for renewable energy proposals;
- the proposal would make a meaningful contribution towards meeting UK and Scotland's renewable energy and emissions reduction targets;
- the proposal would bring direct and indirect economic benefits and no tangible evidence has been provided to demonstrate that there would be significant adverse effects on tourism in the surrounding area;
- the proposal would be located within a moorland landscape already characterised by wind farm development. The turbines would be sufficiently set back within the upland plateau and would not detract from the overall landscape character of the adjacent Duisk and Stinchar valleys or Glen Tig;
- the identified significant visual effects do not affect any particularly sensitive locations in terms of national designations and significant visual effects on local settlements have been avoided. Where there are significant visual effects, these would be localised in extent and for those travelling along the A714 or on walking routes, the effects would be of a transient nature;
- the embedded mitigation measures proposed by the applicant would significantly reduce the intensity of the aviation lighting and also the distances and locations at which there would be visibility. The locations within the Merrick Wild Land Area and Dark Sky Park at which the lights would potentially be visible are remote and therefore unlikely to attract many people during the hours of darkness. The potential for further measures to reduce the visual effects of aviation lighting can be secured by condition;
- taking account of the scale and location of the turbines, impact on direct views from principal elevations and the extent and nature of the wider field of vision, the effects on residential visual amenity at Kilrenzie and Wheeb Farms would be significant, but not unacceptable;
- the proposal is not likely to result in audible noise levels above the limits set in accordance with ETSU-R-97 and mitigation measures can be secured by condition, should complaints arise. There is no policy context or direct evidence to justify refusal of the application on the grounds of concerns regarding infrasound and low frequency noise;
- the information on geology, hydrology and hydrogeology and the source-pathway-receptor approach contained in the PWSRA provide sufficient evidence on likely risk to private water supplies. For those properties where a pathway between source and receptor exists, mitigation measures, to be secured by condition, would avoid significant adverse effects.

- capacity factors, grid constraints and constraint payments are not relevant considerations in the assessment of this application; and
- with embedded mitigation measures proposed as part of the development, and others secured by condition, there would be no significant residual effects in relation to peatland, bats, transport and access, associated infrastructure or any other matters.

9.94 Based on our assessment of matters relevant to this application, we conclude that the proposal would comply overall with the adopted South Ayrshire LDP and its associated supplementary guidance on wind energy, and accord with Scottish Planning Policy.

9.95 In balancing the factors for and against the proposal, we recognise the contribution that the proposal would make towards meeting climate change objectives and emission reduction targets. We conclude that these benefits would outweigh the adverse landscape and visual effects in this instance.

Recommendations

9.96 We recommend that consent should be granted under section 36 of the Electricity Act 1989 and that planning permission should be deemed to be granted under section 57 of the Town and Country Planning (Scotland) Act 1997 (as amended), subject to the conditions listed in Appendix 1.

David Liddell *Alison Kirkwood*

Reporter Reporter

APPENDIX 1: LIST OF RECOMMENDED CONDITIONS

Conditions attached to Section 36 consent

1. Duration of consent

(1) The consent is for a period of 40 years from the date of Final Commissioning. Written confirmation of the date of Final Commissioning shall be provided to the planning authority and Scottish Ministers no later than one calendar month after that date.

(2) Written confirmation of the date of First Commissioning shall be provided to the planning authority and Scottish Ministers no later than one calendar month after that date.

Reason: to define the duration of the consent.

2. Commencement of Development

(1) The Commencement of Development shall be no later than five years from the date of this consent, or in substitution, such other period as the Scottish Ministers may hereafter direct in writing.

(2) Written confirmation of the intended date of Commencement of Development shall be provided to the Scottish Ministers and the planning authority no later than one calendar month before that date.

Reason: to avoid uncertainty and ensure that the consent is implemented within a reasonable period.

3. Non-assignation

(1) This consent may not be assigned without the prior written authorisation of the Scottish Ministers. The Scottish Ministers may authorise the assignation of the consent (with or without conditions) or refuse assignation as they may, in their own discretion, see fit. The consent shall not be capable of being assigned, alienated or transferred otherwise than in accordance with the foregoing procedure.

(2) The applicant shall notify the planning authority in writing of the name of the assignee, principal named contact and contact details within 14 days of written confirmation from the Scottish Ministers of an assignation having been granted.

Reason: to safeguard the obligations of the consent if transferred to another company.

4. Serious incident reporting

In the event of any breach of health and safety or environmental obligations relating to the Development during the period of this consent, the company will provide written notification of the nature and timing of the incident to the Scottish Ministers and the planning authority, including confirmation of remedial measures taken and/or to be taken to rectify the breach, within 24 hours of the incident occurring.

Reason: to keep the Scottish Ministers and the planning authority informed of any such incidents, which may be in the public interest.

5. Aviation lighting

(1) There shall be no Commencement of Development unless and until an Aviation Lighting Landscape and Visual Impact Mitigation Plan (the ALLVI mitigation plan) has been submitted to and approved in writing by the Scottish Ministers, following consultation with the Civil Aviation Authority.

(2) The ALLVI mitigation plan shall provide:

a. for the use of an aircraft detection lighting system or a scheme which demonstrates minimisation of the visual impact of the proposed lighting, including:

i. the extent of reduction of lighting intensity during good meteorological visibility as allowed by Civil Aviation Authority policy and guidelines on wind turbines;
ii. the technical specification of light fittings designed to emit light horizontally in 360 degrees; and
iii. the extent of cardinal or strategic lighting of selected turbines; and

b. the timescale of and parameters for the periodic review of the operation and effectiveness of the ALLVI mitigation plan following its approval over the lifetime of the Development, to allow for adaptation and modification (with the written approval of the Scottish Ministers in consultation with the Civil Aviation Authority) in light of monitoring, reviews and changes in technology and relevant policy.

(3) The approved ALLVI mitigation plan shall be fully implemented throughout the lifetime of the Development, unless otherwise approved in writing by the Scottish Ministers following a periodic review.

Reason: in the interests of aviation safety

Conditions to be attached to the deemed planning permission

6. Design and operation of turbines

(1) There shall be no Commencement of Development unless full details of the proposed wind turbines (including, but not limited to, the power rating and sound power levels, the size, type, external finish and colour, any anemometry masts and all associated apparatus) have been submitted to and approved in writing by the planning authority. The turbines shall be consistent with the candidate turbine or range assessed in the EIA Report, and the blade tip height shall not exceed a height of 200 metres above ground level. The turbines and blades shall be painted in non-reflective pale grey semi-matt paint of a colour and tone approved by the planning authority.

(2) The Development shall be constructed and operated in accordance with the approved details and maintained in the approved colour, free from external rust, staining or discolouration, until such time as the wind farm is decommissioned.

(3) All wind turbine blades shall rotate in the same direction as those of the existing Arecleoch wind farm.

(4) None of the wind turbines shall display any name, logo, sign or other advertisement (other than health and safety signage) unless otherwise approved in advance in writing by the planning authority.

Reason: to ensure that the environmental impacts of the turbines forming part of the Development conform to the impacts of the candidate turbine assessed in the EIA Report and in the interests of the visual amenity of the area.

7. Design of sub-station and ancillary development

(1) There shall be no Commencement of Development unless final details of the external appearance, dimensions, and surface materials of the substation building, battery facility and associated compounds, construction compound boundary fencing, external lighting and parking areas have been submitted to and approved in writing by the planning authority. The substation building, associated compounds, fencing, external lighting and parking areas shall be constructed in accordance with the approved details.

(2) None of the anemometers, power performance masts, switching stations or transformer buildings/enclosures, ancillary buildings or above ground fixed plant shall display any name, logo, sign or other advertisement (other than health and safety signage) unless otherwise approved in advance in writing by the planning authority.

Reason: to ensure that the environmental impacts of the sub-station and ancillary development forming part of the Development conform to the impacts assessed in the EIA Report and in the interests of the visual amenity of the area.

8. Micro-siting

(1) All wind turbines, buildings, masts, areas of hardstanding and tracks shall be constructed in the locations shown on Figure 3.1: Proposed Site Layout, dated 24 April 2019 (EIA Report volume 3a) and in Table 3.3 (EIA Report volume 2). Wind turbines, buildings, masts, areas of hardstanding and tracks may be adjusted by micro-siting within the site. However, unless otherwise approved in advance in writing by the planning authority (in consultation with SEPA and NatureScot), any micro-siting adjustment is subject to the following restrictions:
a. No wind turbine or infrastructure shall be moved more than 50 metres from the position shown on Figure 3.1 Proposed Site Layout and in any event Turbine 4 shall not be moved any nearer to the properties at Glenour, Wheeb Farm and Kilrenzie Farm;
b. No infrastructure other than as required for a water course crossing will be micro-sited to within 50 metres of a water course as shown on OS data 1:50,000 digital data set;

(2) All micro-siting permissible under this condition must be approved in advance in writing by the Environmental Clerk of Works (ECoW).

(3) No later than one month after the date of First Commissioning, an updated site plan to a scale of 1:30,000 must be submitted to the planning authority showing the final position of all wind turbines, masts, areas of hardstanding, tracks and associated infrastructure forming part of the Development. The plan should also specify areas where micro siting has taken place and, for each instance, be accompanied by copies of the ECoW or planning authority's approval, as applicable.

Reason: to control environmental impacts while taking account of local ground conditions

9. Borrow Pits – Scheme of Works

There shall be no Commencement of Development unless a site specific scheme for the working and restoration of each borrow pit forming part of the Development has been submitted to and approved in writing by the planning authority in consultation with SEPA. The scheme shall include:

a. a detailed working method statement based on site survey information and ground investigations;
b. details of the handling of any overburden (including peat, soil and rock);
c. drainage, including measures to prevent surrounding areas of peatland, water dependent sensitive habitats and Ground Water Dependent Terrestrial Ecosystems from drying out;
d. a programme of implementation of the works described in the scheme; and
e. full details of the reinstatement, restoration and aftercare of the borrow pit(s) at the end of the construction period, to include topographic surveys of pre-construction profiles, and details of topographical surveys to be undertaken of the restored borrow pit profiles.

The approved restoration scheme shall thereafter be implemented in full.

Reason: to ensure that excavation of materials from the borrow pit(s) is carried out in a manner that minimises the impact on road safety, amenity and the environment, and that the mitigation measures contained in the EIA Report accompanying the application, or as otherwise agreed, are fully implemented. To secure the restoration of borrow pit(s) at the end of the construction period.

10. Borrow Pits – Blasting

(1) There shall be no Commencement of Development until a monitoring scheme for borrow pit blasting has been submitted to and agreed with the planning authority.

(2) Blasting shall only take place on the site between the hours of 10.00 to 16.00 on Monday to Friday inclusive and 10.00 to 12.00 on Saturdays, with no blasting taking place on a Sunday or on a Bank Holiday or Public Holiday (unless otherwise approved in advance in writing by the planning authority).

(3) Ground vibration from blasting shall not exceed a peak particle velocity of 6mm/ second at agreed blasting monitoring locations. The measurement shall be the maximum of three mutually perpendicular directions taken at the ground surface.

Reason: to ensure that blasting activity is carried out within defined timescales and vibration limits to control impact on amenity.

11. Ecological Clerk of Works

(1) There shall be no Commencement of Development unless the planning authority has approved in writing the terms of appointment by the Company of an independent Ecological Clerk of Works (ECoW) in consultation with NatureScot and SEPA. The terms of appointment shall:

a. impose a duty to monitor compliance with the ecological and hydrological commitments provided in the EIA Report and other information lodged in support of the application, the approved CEMP, the approved habitat management plan, and other plans approved in terms of conditions 19 - 23 ("the ECoW works");
b. require the ECoW to report to the Company's nominated construction Project Manager any incidences of non-compliance with the ECoW works at the earliest practical opportunity;
c. require the ECoW to submit a monthly report to the planning authority summarising works undertaken on site; and
d. require the ECoW to report to the planning authority any incidences of non-compliance with the ECoW works at the earliest practical opportunity.

(2) The ECoW shall be appointed on the approved terms throughout the period from Commencement of Development, throughout any period of construction activity and during any period of post construction restoration works approved in terms of conditions 13 and 18 - 23 and at the expense of the Company.

(3) No later than 18 months prior to any decommissioning of the Development or the expiration of this consent (whichever is the earlier), the Company shall submit details of the terms of appointment by the Company of an independent ECoW throughout the decommissioning, restoration and aftercare phases of the Development to the planning authority for approval in consultation with NatureScot and SEPA. The ECoW shall be appointed on the approved terms throughout the decommissioning, restoration and aftercare phases of the Development.

Reason: to secure effective monitoring of and compliance with the environmental mitigation and management measures associated with the Development.

12. Planning Monitoring Officer (PMO)

There shall be no Commencement of Development unless the planning authority has approved in writing the terms of appointment by the company of an independent and suitably qualified environmental consultant (the "PMO") to assist the planning authority in monitoring compliance with the terms of the planning permission and conditions attached to this consent. The terms of appointment shall:

a. impose a duty to monitor compliance with the terms of the planning permission and conditions attached to this consent;
b. require the PMO to submit monthly reports to the planning authority summarising works undertaken on site; and
c. require the PMO to report to the planning authority any incidences of non-compliance with the terms of the planning permission and conditions attached to this consent at the earliest practical opportunity.

The PMO shall be appointed on the approved terms throughout the period from Commencement of Development to completion of construction.

Reason: to enable the development to be suitably monitored to ensure compliance with the consent issued.

13. Construction and Environmental Management Plan

(1) There shall be no Commencement of Development unless a Construction and Environment Management Plan (CEMP) outlining site specific details of all on-site construction works, post-construction reinstatement, drainage and mitigation, together with details of their timetabling, has been submitted to and approved in writing by the planning authority in consultation with NatureScot and SEPA.

(2) The CEMP shall include (but shall not be limited to):

a. a site waste management plan (dealing with all aspects of waste produced during the construction period other than peat), including details of contingency planning in the event of accidental release of materials which could cause harm to the environment;
b. details of the formation of the construction compound, welfare facilities, areas of hardstanding, turning areas, internal access tracks, car parking, material stockpiles, oil storage, lighting columns, and construction compound boundary fencing;
c. a dust management plan;
d. site specific details for management and operation of any concrete batching plant (including disposal of pH-rich waste water and substances);
e. details of measures to be taken to prevent loose or deleterious material being deposited on the local road network including wheel cleaning and lorry sheeting facilities, and measures to clean the site entrances and the adjacent local road network;
f. a pollution prevention plan, including arrangements for the storage and management of oil and fuel on the site;
g. soil storage and management;
h. a peat management plan, to include details of vegetated turf stripping and storage, peat excavation (including volumes), handling, storage and re-use;
i. a water management plan covering water control and the means of drainage from all hard surfaces (including internal access tracks, construction and lay-down areas, turbine pads and crane pads) and structures within the site;
j. site illumination;
k. the construction of the access into the site and the creation and maintenance of associated visibility splays;
l. a construction method statement for the following:

- crane pads;
- turbine foundations;
- working cable trenches;
- erection of the wind turbines and meteorological masts; and
- watercourse crossings.

m. post-construction restoration/reinstatement of the working areas not required during the operation of the Development, including construction access tracks, borrow pits, construction compound, storage areas, laydown areas, access tracks, passing places and other construction areas, within six months of the end of construction and commissioning. Wherever possible, reinstatement is to be achieved by the careful use of turfs removed prior to construction works. Details should include all seed mixes to be used for the reinstatement of vegetation;

(3) The Development shall be implemented thereafter in accordance with the approved CEMP unless otherwise approved in advance in writing by the planning authority in consultation with NatureScot and SEPA.

Reason: to ensure that all construction operations are carried out in a manner that minimises their impact on road safety, amenity and the environment, and that the mitigation measures contained in the EIA Report accompanying the application, or as otherwise agreed, are fully implemented.

14. Construction Hours

(1) Construction work which is audible from any noise-sensitive receptor shall only take place on the site between the hours of 07.00 to 19.00 on Monday to Friday inclusive and 07.00 to 13.00 on Saturdays, with no construction work taking place on a Sunday or on a Bank Holiday or Public Holiday. Outwith these specified hours, construction work on the site shall be limited to turbine erection, maintenance, emergency works, dust suppression, and the testing of plant and equipment, unless otherwise approved in advance in writing by the planning authority.

(2) HGV access into and out of the site during the construction of the wind farm shall be limited to 07.00 to 19.00 Monday to Friday, and 07.00 to 16.00 on Saturdays, with no HGV access into or out of the site taking place on a Sunday or on a Bank Holiday or Public Holiday.

Reason: in the interests of local amenity.

15. Traffic Management Plan

There shall be no Commencement of Development unless a Traffic Management Plan has been submitted to and approved in writing by the planning authority, in consultation with Dumfries and Galloway Council, Transport Scotland and Police Scotland. The traffic management plan shall include:

a. a detailed construction programme;
b. details of deliveries related to the construction programme;
c. a road condition survey (before and after) for key access routes to site;
d. the routing of all traffic associated with the Development on the local road network;
e. measures to ensure that the specified routes are adhered to, including monitoring procedures;
f. details of all signage and lining arrangements to be put in place;
g. details of all off-site highway alterations required to accommodate deliveries;
h. provisions for emergency vehicle access;
i. identification of a nominated person to whom any road safety issues can be referred; and
j. a plan for access by vehicles carrying abnormal loads, including the number and timing of deliveries, the length, width and axle configuration of all extraordinary traffic accessing the site

The approved traffic management plan shall thereafter be implemented in full, unless otherwise agreed in advance in writing with the planning authority.

Reason: in the interests of road safety and to ensure that abnormal loads access the site in a safe manner.

16. Abnormal Loads

Prior to commencement of deliveries to the site, the proposed route for any abnormal loads on the trunk road network, along with accommodation measures required including the removal of street furniture, junction widening and traffic management must be approved, in writing, by the planning authority, in consultation with Dumfries and Galloway Council, Transport Scotland and Police Scotland where necessary. The approved scheme shall be implemented in full.

Reason: in the interests of road safety.

17. Trunk road signage and temporary traffic control measures

Prior to the commencement of deliveries to the site, any additional signage or temporary traffic control measures deemed necessary due to the size or length of any loads being delivered or removed must be approved, in writing, by the planning authority, in consultation with Dumfries and Galloway Council and Transport Scotland where necessary. The approved scheme shall be implemented in full.

Reason: in the interests of road safety.

18. Habitat Management Plan

(1) There shall be no Commencement of Development unless a Habitat Management Plan has been submitted to and approved in writing by the planning authority in consultation with NatureScot and SEPA.

(2) The Habitat Management Plan shall set out proposed habitat management of the wind farm site during the period of construction, operation, decommissioning, restoration and aftercare of peatland within the site. The Habitat Management Plan shall also include proposals to monitor the impact of deer grazing/trampling on peatland habitats.

(3) The Habitat Management Plan shall include provision for regular monitoring and review to be undertaken to consider whether amendments are needed to better meet the habitat plan objectives and to ensure there are no negative impacts on peatland.

(4) Unless otherwise agreed in advance in writing with the planning authority, the approved Habitat Management Plan shall be implemented in full.

Reason: in the interests of good land management and the protection of habitats.

19. Species Protection Plan

(1) There shall be no Commencement of Development until such times as protected species surveys have been carried out by a suitably qualified person. The surveys shall inform the mitigation measures required for the protection of such species which shall be incorporated into a Species Protection Plan.

(2) The Species Protection Plan shall be submitted to and approved in writing by the planning authority in consultation with NatureScot prior to the Commencement of Development. The approved Species Protection Plan shall be implemented in full.

Reason: in the interests of nature conservation.

20. Bird Protection Plan

(1) There shall be no Commencement of Development unless a Bird Protection Plan has been submitted to and approved in writing by the planning authority in consultation with NatureScot. The Bird Protection Plan shall set out measures to protect Goshawk, including post construction ornithology surveys.

(2) The approved Bird Protection Plan shall be implemented in full.

Reason: in the interests of protecting Goshawk through the life time of the wind farm.

21. Water Quality Monitoring Plan

There shall be no Commencement of Development unless a Water Quality Monitoring Plan has been submitted to and approved in writing by the planning authority. The Water Quality Monitoring Plan shall identify the location, duration and frequency of monitoring to be undertaken within the watercourse catchment areas identified as being at risk of potential construction effects in the EIA Report. The approved Water Quality Monitoring Plan shall be implemented in full.

Reason: in the interests of protecting water quality

22. Fish Monitoring Plan

(1) There shall be no Commencement of Development until such times as fisheries surveys have been carried out by a suitably qualified person.

(2) The surveys shall inform the mitigation measures required for the protection and monitoring of fisheries which shall be incorporated into a Fisheries Monitoring Plan.
The Fisheries Monitoring Plan shall be submitted to and approved in writing by the planning authority prior to the Commencement of Development. The approved Fisheries Monitoring Plan shall be implemented in full.

Reason: in the interests of protecting fisheries

23. Bat Mitigation and Monitoring Plan

There shall be no Commencement of Development until such times as a Bat Mitigation and Monitoring Plan has been submitted to and approved in writing by the planning authority in consultation with NatureScot. The approved Bat Mitigation and Monitoring Plan shall be implemented in full.

Reason: in the interests of nature conservation.

24. Programme of Archaeological Works

There shall be no Commencement of Development unless the planning authority has approved the terms of a programme of archaeological works to be observed during

construction of the Development, to include measures to be taken to protect and preserve any features of archaeological interest in situ and the recording and recovery of archaeological features which cannot be so preserved. The approved scheme of archaeological works shall thereafter be implemented in full.

Reason: to ensure the protection or recording of archaeological features on the site.

25. Replanting of Forestry

(1) There shall be no Commencement of Development unless a woodland planting scheme to compensate for the removal of 60.1 hectares of existing woodland ("the Replanting Scheme") has been submitted for the written approval of the planning authority in consultation with Scottish Forestry.

(2) The Replanting Scheme must comply with the requirements set out in the UK Forestry Standard (2017) (Ref: ISBN 978-0-85538-999-4) and the guidelines to which it refers, or such replacement standard as may be in place at the time of submission of the Replanting Scheme for approval. The Replanting Scheme must include:

a. details of the location of the area to be planted;
b. the nature, design and specification of the proposed woodland to be planted;
c. the phasing and associated timescales for implementing the Replanting Scheme;
d. proposals for reporting to the planning authority on compliance with timescales for obtaining the necessary consents and thereafter implementation of the Replanting Scheme.

(3) The approved Replanting Scheme (or, as the case may be, an approved amended Replanting Scheme) shall be implemented in full, unless otherwise agreed in writing by the planning authority in consultation with Scottish Forestry.

Reason: to secure replanting to mitigate against effects of deforestation arising from the Development.

26. Wind Farm Forestry Felling Plan

There shall be no commencement of development until a Wind Farm Forestry Felling Plan has been submitted to and approved in writing by the planning authority, in consultation with Scottish Forestry. The Wind Farm Forestry Felling Plan shall cover the application site and provide details of phase 1 felling, restocking proposals and forestry management practices. The approved Plan shall be implemented in full, unless otherwise agreed in writing by the planning authority, in consultation with Scottish Forestry.

Reason: to minimise and manage the effects of the forestry felling required to accommodate the Development.

27. Construction Noise

(1) Construction works require to be carried out in accordance with the approved Code of Practice BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014 Noise and Vibration Control on Construction and Open Sites or any subsequent code amending consolidating or replacing it as approved by the Secretary of State pursuant to Sections 71(2) and 104 of the Control of Pollution Act 1974.

(2) As the Development is in an area of existing low ambient noise levels and the construction activities continue for more than one month, the following minimum criteria are applicable:

Assessment category and threshold value period (LAeq) threshold value in decibels (dB), Category A (5228-1 Annex E.)

Night time (23.00-07.00)	45
Evenings and Weekends*	55
Daytime (07.00-19.00) and Saturdays (07.00-13.00)	65

*19.00-2300 weekdays, 1300-23.00 Saturdays and 07.00-23.00 Sundays.

Reason: to minimise disturbance to residents from noise and vibration.

28. Operational Noise

The rating level of noise immissions from the combined effects of the wind turbines forming part of the Development and the turbines of the Arecleoch Wind Farm (including the application of any tonal penalty) shall not exceed the values for the relevant integer wind speed set out in, or derived from, the tables attached to this condition at any dwelling which is lawfully existing or has planning permission at the date of this consent. The turbines shall be designed to permit individually controlled operation or shut down at specified wind speeds and directions in order to facilitate compliance with noise criteria and:

a) The Company shall continuously log power production, wind speed and wind direction. These data shall be retained for a period of not less than 24 months. The Company shall provide this information to the planning authority within 14 days of receipt in writing of a request to do so.

b) There shall be no First Commissioning of the Development until the Company has received written approval from the planning authority of a list of proposed independent consultants who may undertake compliance measurements in accordance with this condition. Amendments to the list of approved consultants shall be made only with the prior written approval of the planning authority.

c) Within 21 days from receipt of a written request from the planning authority following a complaint to it from an occupant of a dwelling alleging noise disturbance at that dwelling, the Company shall, at its expense, employ a consultant approved by the planning authority to assess the level of noise immissions from the wind farm at the complainant's property. The written request from the planning authority shall set out at least the date, time and location to which the complaint relates and any identified atmospheric conditions, including wind direction, and include a statement as to whether, in the opinion of the planning authority, the noise giving rise to the complaint contains or is likely to contain a tonal component.

d) The assessment of the rating level of noise immissions shall be undertaken in accordance with an assessment protocol that shall previously have been submitted to and

approved in writing by the planning authority. The protocol shall include the proposed measurement location(s) where measurements for compliance checking purposes shall be undertaken, whether noise giving rise to the complaint contains or is likely to contain a tonal component, and also the range of meteorological and operational conditions (which shall include the range of wind speeds, wind directions, power generation and times of day) to determine the assessment of rating level of noise immissions. The proposed range of conditions shall be those which prevailed during times when the complainant alleges there was disturbance due to noise, having regard to the written request of the planning authority under paragraph c, and such others as the independent consultant considers likely to result in a breach of the noise limits.

e) Where the property to which a complaint is related is not listed in the tables attached to this condition, the Company shall submit to the planning authority for written approval proposed noise limits selected from those listed in the tables to be adopted at the complainant's property for compliance checking purposes. The proposed noise limits are to be those limits selected from the tables specified for a listed location which the independent consultant considers as being likely to experience the most similar background noise environment to that experienced at the complainant's property. The rating level of noise immissions resulting from the combined effects of the wind turbines shall not exceed the noise limits approved in writing by the planning authority for the complainant's property.

f) The Company shall provide to the planning authority and the complainant (if requested), the independent consultant's assessment of the rating level of noise immissions within two months of the date of the written request of the planning authority for compliance measurements to be made under paragraph c), unless the time limit is extended in writing by the planning authority. Certificates of calibration of the instrumentation used to undertake the measurements shall be submitted to the planning authority with the independent consultant's assessment of the rating level of noise immissions.

g) Where a further assessment of the rating level of noise immissions from the wind farm is required, the Company shall submit a copy of the further assessment within 21 days of submission of the independent consultant's assessment pursuant to paragraph f) above unless the time limit has been extended in writing by the planning authority.

Table 1 – Between 07:00 and 23:00 – Noise limits expressed in dB LA90,10 minute as a function of the standardised wind speed (m/s) at 10 metre height as determined within the site averaged over 10 minute periods.

Location	Standardised wind speed at 10 metre height (m/s) within the site averaged over 10-minute periods											
	1	2	3	4	5	6	7	8	9	10	11	12
Balkissock	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
Bellimore-on-Tig	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9	39.9
Brooklyn	38.7	38.7	38.7	38.7	38.7	38.7	38.7	38.7	39.6	41.4	43.1	44.6
Chirmorrie*	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2	37.2
Dochroyle Cottage	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5

Dochroyle Farm	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6
East Altercannoch	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	39.5	42.0	44.2	46.2
Farden	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3
Glenour	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8
Gowlands Terrace	39.2	39.2	39.2	39.3	39.7	40.4	41.3	42.4	43.8	45.2	46.8	48.4
Kilrenzie	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8
Laggish	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	36.5	38.3	40.5	42.3
Queensland Caravan Park	39.3	39.3	39.3	39.3	39.7	40.4	41.2	42.2	43.3	44.6	46.1	47.8
Ward of Cairnlea	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.4
West Altercannoch	38.5	38.5	38.5	38.5	38.5	38.5	38.5	38.5	39.7	42.2	44.5	46.4
Wheeb	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8	39.8
White Cairn	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	37.9	39.9

Table 2 – Between 23:00 and 07:00 – Noise limits expressed in dB LA90,10-minute as a function of the standardised wind speed (m/s) at 10 metre height as determined within the site averaged over 10 minute periods.

Location	Standardised wind speed at 10 metre height (m/s) within the site averaged over 10-minute periods											
	1	2	3	4	5	6	7	8	9	10	11	12
Balkissock	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9
Bellimore-on-Tig	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9
Brooklyn	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7	42.7	44.4
Chirmorrie*	40.2	40.2	40.2	40.2	40.2	40.2	40.2	40.2	40.2	40.2	40.2	40.2
Dochroyle Cottage	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5
Dochroyle Farm	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6	40.6
East Altercannoch	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	43.3	45.3
Farden	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
Glenour	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Gowlands Terrace	42.1	42.1	42.1	42.1	42.1	42.1	42.1	42.3	43.1	44.2	45.4	46.9
Kilrenzie	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
Laggish	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	40.6
Queensland Caravan Park	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	43.3	44.8	46.4
Ward of Cairnlea	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3

West Altercannoch	41.5	41.5	41.5	41.5	41.5	41.5	41.5	41.5	41.5	41.5	43.5	45.6
Wheeb	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8	42.8
White Cairn	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9	40.9

Note: If the Chirmorie windfarm is constructed, the Chirmorrie(*) property would become unoccupied and a noise limit would not apply to that property. Otherwise, the limits specified in Tables 1 and 2 apply at this property only over wind directions in the range of 235 to 45 degrees from North.

Table 3 – Indicative locations (easting/northing of the properties of Tables 1 and 2)

Property	Easting	Northing
Balkissock	214111	582010
Bellimore-on-Tig	214900	582900
Brooklyn	223714	581742
Chirmorrie*	220829	576943
Dochroyle Cottage	223088	579112
Dochroyle Farm	223105	579237
East Altercannoch	223729	580939
Farden	219373	583713
Glenour	217250	583100
Gowlands Terrace	223203	582210
Kilrenzie	217794	583411
Laggish	223141	578208
Queensland Caravan Park	221680	583374
Ward of Cairnlea	222696	581542
West Altercannoch	223450	581200
Wheeb	217206	583624
White Cairn	222238	582574

29. Shadow Flicker

There shall be no Commencement of Development until a scheme for the avoidance or mitigation of any shadow flicker experienced by residential and commercial properties situated within 10 rotor diameters of any turbine forming part of the Development and which lawfully exists or for which planning permission has been granted at the date of this consent has been submitted to and approved in writing by the planning authority. The approved mitigation scheme shall thereafter be implemented in full.

Reason: to offset impacts of shadow flicker on the amenity of residential and commercial property.

30 Television Reception

(1) There shall be no Commencement of Development unless a Television Reception Mitigation Plan has been submitted to, and approved in writing by, the planning authority. The Television Reception Mitigation Plan shall provide for a baseline television reception survey to be carried out prior to the installation of any turbine forming part of the Development, the results of which shall be submitted to the planning authority.

(2) The approved Television Reception Mitigation Plan shall thereafter be implemented in full.

(3) Any claim by any individual person regarding television picture loss or interference at their house, business premises or other building, made during the period from installation of any turbine forming part of the Development to the date falling twelve months after the date of Final Commissioning, shall be investigated by a qualified engineer appointed by the Company and the results shall be submitted to the planning authority and the complainant (if requested). Should any impairment to the television signal be attributable to the Development, the Company shall remedy such impairment so that the standard of reception at the affected property is equivalent to the baseline television reception.

Reason: to ensure local television services are sustained during the construction and operation of this Development.

31 Private Water Supplies

(1) There shall be no Commencement of Development unless a method statement has been submitted to and approved in writing by the planning authority, detailing all mitigation measures to be delivered to secure the quality, quantity and continuity of water supplies to properties which are served by private water supplies at the date of this consent and which may be affected by the Development.

(2) The method statement shall include water quality sampling methods and shall specify abstraction points. It shall incorporate the suggested mitigation measures in Section 3 of Technical Appendix TA10.3 – Private Water Supply Risk Assessment of the EIA Report, including traffic management and drainage infrastructure checks along the stretches of access track relevant to private water supplies PWS2, PWS4 and PWS10.

(3) The method statement shall also incorporate an Emergency Action Plan which states clearly who would be responsible, when they would be required to take action, where and how preventative measures would be implemented and what action and mitigation will be implemented, should any emergencies arise. The Emergency Action Plan shall detail the emergency contacts, with contact telephone numbers and email addresses to be provided to South Ayrshire Council's Planning and Environmental Health Departments and the occupiers of all properties which are served by private water supplies at the date of this consent and which may be affected by the Development.

(4) The approved method statement shall thereafter be implemented in full.

Reason: to maintain a secure and adequate quality water supply to all properties with private water supplies which may be affected by the development.

32. Redundant Turbines

If a turbine fails to generate electricity for a continuous period of twelve months, then unless otherwise agreed in writing by the planning authority, the Company shall;
i) within three months, submit a scheme to the planning authority setting out how the relevant turbine(s) and associated infrastructure will be removed from the site and the ground restored; and

ii) implement the approved scheme within six months of the date of its approval, all to the satisfaction of the planning authority.

Reason: to ensure that any redundant wind turbine is removed from the site, in the interests of safety, amenity and environmental protection.

33. Aviation Safety

There shall be no Commencement of Development until the Company has provided the planning authority, Ministry of Defence, Defence Geographic Centre and NATS with the following information, and has provided evidence to the planning authority of having done so:

a. the date of the expected commencement of each stage of construction;
b. the height above ground level of the tallest structure forming part of the Development; and
c. the position of the turbines and masts in latitude and longitude.

Reason: in the interests of aviation safety.

34. Site Decommissioning, Restoration and Aftercare

(1) The Development will be decommissioned and will cease to generate electricity by no later than the date falling forty years from the date of Final Commissioning. The total period for restoration of the Site in accordance with this condition shall not exceed three years from the date of Final Decommissioning without prior written approval of the planning authority.

(2) There shall be no Commencement of Development unless a decommissioning, restoration and aftercare strategy has been submitted to and approved in writing by the planning authority in consultation with NatureScot and SEPA. The strategy shall outline measures for the decommissioning of the Development, restoration and aftercare of the site and will include, without limitation, proposals for the removal of the Development, the treatment of ground surfaces, the management and timing of the works, and environmental management provisions.

(3) No later than 3 years prior to decommissioning of the Development or the expiration of this consent (whichever is the earlier) a detailed decommissioning, restoration and aftercare plan, based upon the principles of the approved decommissioning, restoration and aftercare strategy, shall be submitted to the planning authority for written approval in consultation with NatureScot and SEPA. The detailed decommissioning, restoration and aftercare plan will provide updated and detailed proposals for the removal of the Development, the treatment of ground surfaces, the management and timing of the works and environment management provisions which shall include:

a. a site waste management plan (dealing with all aspects of waste produced during the decommissioning, restoration and aftercare phases);
b. details of the formation of the construction compound, welfare facilities, any areas of hardstanding, turning areas, internal access tracks, car parking, material stockpiles, oil storage, lighting columns, and any construction compound boundary fencing;
c. a dust management plan;

d. details of measures to be taken to prevent loose or deleterious material being deposited on the local road network including wheel cleaning and lorry sheeting facilities, and measures to clean the site entrances and the adjacent local road network;
e. a pollution prevention and control method statement, including arrangements for the storage and management of oil and fuel on the site;
f. soil storage and management;
g. a surface water and groundwater management and treatment plan, including details of the separation of clean and dirty water drains, and location of settlement lagoons for silt laden water;
h. sewage disposal and treatment;
i. temporary site illumination;
j. the construction of any temporary access into the site and the creation and maintenance of associated visibility splays; and
k. details of watercourse crossings.

(4) The Development shall be decommissioned, site restored, and aftercare thereafter undertaken in accordance with the approved plan, unless otherwise agreed in writing in advance with the planning authority in consultation with NatureScot and SEPA.

Reason: to ensure the decommissioning and removal of the Development in an appropriate and environmentally acceptable manner and the restoration and aftercare of the site, in the interests of safety, amenity and environmental protection.

35. Financial Guarantee

(1) No less than one month before the Commencement of Development, the Company shall deliver a bond or other form of financial guarantee in terms acceptable to the planning authority which secures the cost of performance of all decommissioning, restoration and aftercare obligations contained in condition 34 to the planning authority.

(2) The value of the financial guarantee shall be determined by a suitably qualified independent professional as being sufficient to meet the costs of all decommissioning, restoration and aftercare obligations contained in condition 34. The value of the financial guarantee shall be reviewed by a suitably qualified independent professional no less than every five years and increased or decreased to take account of any variation in costs of compliance with restoration and aftercare obligations and best practice prevailing at the time of each review.

Reason: to ensure that there are sufficient funds to secure performance of the decommissioning, restoration and aftercare conditions attached to this deemed planning permission in the event of default by the Company

Guidance Notes for Operational Noise Condition

These notes are to be read with and form part of the operational noise condition. They further explain the condition and specify the methods to be employed in the assessment of complaints about noise immissions from the wind farm. The rating level at each integer wind speed is the arithmetic sum of the wind farm noise level as determined from the best-fit curve described in Guidance Note 2 of these Guidance Notes and any tonal penalty applied in accordance with Guidance Note 3. Reference to ETSU-R-97 refers to the publication

entitled “The Assessment and Rating of Noise from Wind Farms” (1997) published by the Energy Technology Support Unit (ETSU) for the Department of Trade and Industry (DTI).

Guidance Note 1

(a) Values of the LA90,10 minute noise statistic should be measured at the complainant’s property, using a sound level meter of EN 60651/BS EN 60804 Type 1, or BS EN 61672 Class 1 quality (or the equivalent UK adopted standard in force at the time of the measurements) set to measure using the fast time weighted response as specified in BS EN 60651/BS EN 60804 or BS EN 61672-1 (or the equivalent UK adopted standard in force at the time of the measurements). This should be calibrated in accordance with the procedure specified in BS 4142: 1997 (or the equivalent UK adopted standard in force at the time of the measurements). Measurements shall be undertaken in such a manner to enable a tonal penalty to be applied in accordance with Guidance Note 3.

(b) The microphone should be mounted at 1.2 – 1.5 metres above ground level, fitted with a two-layer windshield or suitable equivalent approved in writing by the planning authority, and placed outside the complainant’s dwelling. Measurements should be made in “free field” conditions. To achieve this, the microphone should be placed at least 3.5 metres away from the building facade or any reflecting surface except the ground at the approved measurement location. In the event that the consent of the complainant for access to his or her dwelling to undertake compliance measurements is withheld, the wind farm operator shall submit for the written approval of the planning authority details of the proposed alternative representative measurement location prior to the commencement of measurements and the measurements shall be undertaken at the approved alternative representative measurement location.

(c) The LA90,10 minute measurements should be synchronised with measurements of the 10-minute arithmetic mean wind and operational data logged in accordance with Guidance Note 1(d), including the power generation data from the turbine control systems of the wind farm.

(d) To enable compliance with the condition to be evaluated, the wind farm operator shall continuously log arithmetic mean wind speed in metres per second and wind direction in degrees from north at hub height for each turbine, and at any on site meteorological mast(s), if available, together with the arithmetic mean power generated by each turbine, all in successive 10-minute periods. All 10 minute arithmetic average mean wind speed data measured at hub height shall be ‘standardised’ to a reference height of 10 metres as described in ETSU-R-97 at page 120 using a reference roughness length of 0.05 metres. It is this standardised 10 metre height wind speed data, as determined from whichever source is agreed in writing with the planning authority as being most appropriate to the noise compliance measurements being undertaken, which is correlated with the noise measurements determined as valid in accordance with Guidance Note 2, such correlation to be undertaken in the manner described in Guidance Note 2. All 10-minute periods shall commence on the hour and in 10- minute increments thereafter.

(e) Data provided to the planning authority in accordance with the noise condition shall be provided in comma separated values in electronic format.

(f) A data logging rain gauge shall be installed in the course of the assessment of the levels of noise immissions. The gauge shall record over successive 10-minute periods synchronised with the periods of data recorded in accordance with Note 1(d).

Guidance Note 2

(a) The noise measurements shall be made so as to provide not less than 20 valid data points as defined in Guidance Note 2 (b)

(b) Valid data points are those measured in the conditions specified in the agreed written protocol under paragraph (d) of the noise condition but excluding any periods of rainfall measured in the vicinity of the sound level meter. Rainfall shall be assessed by use of a rain gauge that shall log the occurrence of rainfall in each 10 minute period concurrent with the measurement periods set out in Guidance Note 1.

(c) For those data points considered valid in accordance with Guidance Note 2(b), values of the LA90,10 minute noise measurements and corresponding values of the 10-minute standardised ten metre height wind speed, as derived from the site measured wind speed source(s) agreed in writing with the planning authority in accordance with Guidance Note 1(d), shall be plotted on an XY chart with noise level on the Y-axis and the standardised mean wind speed on the X-axis. A least squares, "best fit" curve of an order deemed appropriate by the independent consultant (but which may not be higher than a fourth order) should be fitted to the data points and define the wind farm noise level at each integer speed. Alternatively, an average value in each wind speed 1 m/s bin centred on each integer wind speed may be used if the independent consultant considers this is more representative of the data.

Guidance Note 3

(a) Where, in accordance with the approved assessment protocol under paragraph (d) of the noise condition, noise immissions at the location or locations where compliance measurements are being undertaken contain or are likely to contain a tonal component, a tonal penalty is to be calculated and applied using the following rating procedure.

(b) For each 10 minute interval for which LA90,10 minute data have been determined as valid in accordance with Guidance Note 2 a tonal assessment shall be performed on noise immissions during 2 minutes of each 10 minute period. The 2 minute periods should be spaced at 10 minute intervals provided that uninterrupted uncorrupted data are available ("the standard procedure"). Where uncorrupted data are not available, the first available uninterrupted clean 2 minute period out of the affected overall 10 minute period shall be selected. Any such deviations from the standard procedure, as described in Section 2.1 on pages 104-109 of ETSU-R-97, shall be reported.

(c) For each of the 2 minute samples the tone level above or below audibility shall be calculated by comparison with the audibility criterion given in Section 2.1 on pages 104109 of ETSU-R-97.

(d) The average tone level above audibility shall be calculated for each wind speed bin, each bin being 1 metre per second wide and centred on integer wind speeds. Samples for which the tones were below the audibility criterion or no tone was identified, a value of zero audibility shall be substituted.

(e) The tonal penalty is derived from the margin above audibility of the tone according to Fig 17 on page 104 of ETSU-R-97.

Guidance Note 4

(a) If a tonal penalty is to be applied in accordance with Guidance Note 3, the rating level of the turbine noise at each wind speed is the arithmetic sum of the measured noise level as determined from the best fit curve described in Guidance Note 2 and the penalty for tonal noise as derived in accordance with Guidance Note 3 at each integer wind speed within the range specified by the planning authority in its written protocol under paragraph (d) of the noise condition.

(b) If no tonal penalty is to be applied, then the rating level of the turbine noise at each wind speed is equal to the measured noise level as determined from the best fit curve described in Guidance Note 2.

(c) In the event that the rating level is above the limit(s) set out in the Tables attached to the noise conditions or the noise limits for a complainant's dwelling approved in accordance with paragraph (e) of the noise condition, the independent consultant shall undertake a further assessment of the rating level to correct for background noise so that the rating level relates to wind turbine noise immission only.

(d) The wind farm operator shall ensure that all necessary wind turbines in the Development are turned off for such period as the independent consultant requires to undertake any further noise measurements required under Guidance Note 4(c). If the number of turbines to be turned off are less than the total number of turbines on the site then this shall be agreed in advance with the planning authority.

(e) To this end, the steps in Guidance Note 2 shall be repeated with the required number of turbines shut-down in accordance with Guidance Note 4(d) in order to determine the background noise (L3) at each integer wind speed within the range requested by the planning authority in its written request under paragraph (c) and the approved protocol under paragraph (d) of the noise condition.

(f) The wind farm noise (L1) at this speed shall then be calculated as follows where L2 is the measured level with turbines running but without the addition of any tonal penalty (as specified in ETSU-R-97 page 88):

$$L_1 = 10\log\left[10^{L_2/10} - 10^{L_3/10}\right]$$

(g) The rating level shall be re-calculated by adding arithmetically the tonal penalty (if any is applied in accordance with Note 3) to the derived wind farm noise L1 at that integer wind speed.

(h) If the rating level after adjustment for background noise contribution and adjustment for tonal penalty (if required in accordance with Guidance Note 3 above) at any integer wind speed lies at or below the values set out in the Tables attached to the conditions or at or below the noise limits approved by the planning authority for a complainant's dwelling in accordance with paragraph (e) of the noise condition then no further action is necessary. If

the rating level at any integer wind speed exceeds the values set out in the Tables attached to the conditions or the noise limits approved by the planning authority for a complainant's dwelling in accordance with paragraph (e) of the operational noise condition then the Development fails to comply with the conditions.

Annex 1

Description of the Development: Section 36 Consent

The Development comprises a wind powered electricity generating station known as Arecleoch Windfarm Extension with a generating capacity exceeding 50MW located on land within the Arecleoch Forest to the south of Barrhill in the planning jurisdictions of South Ayrshire Council and Dumfries and Galloway Council. The site location is shown on Figure 1.1 of the Environmental Impact Assessment Report dated June 2019 and the site boundary is shown on Figure 1.2 of that Report

Description of the Development – Deemed Planning Permission

The erection and operation of a windfarm, and associated infrastructure on land within the Arecleoch Forest, south of Barrhill, South Ayrshire. The Development will comprise:
- Up to 13 wind turbines (including external transformers) and associated infrastructure including substation compounds;
- A battery storage facility;
- Forestry felling and compensatory planting

Definitions and Abbreviations

Commencement of Development	means the implementation of the consent and deemed planning permission by the carrying out of a material operation within the meaning of section 27 of the Town and Country Planning (Scotland) Act 1997.
Date of First Commissioning	means the date on which electricity is first exported to the grid network on a commercial basis from any of the wind turbines forming part of the Development.
Date of Final Commissioning	means the earlier of (i) the date on which electricity is exported to the grid on a commercial basis from the last of the wind turbines forming part of the Development erected in accordance with this consent; or (ii) the date falling eighteen months from the date of First Commissioning.
Development	means the Arecleoch Windfarm Extension authorised by this consent and deemed planning permission.
EIA Report	means the Environmental Impact Assessment Report, comprising volumes 1 – 4, dated June 2019.
The Company	means Scottish Power Renewables (UK) Limited (Company No. NI028425) a company incorporated under

	the Companies Acts and having its registered office at The Soloist, 1 Lanyon Place, Belfast, Northern Ireland, BT1 3LP.
planning authority	means South Ayrshire Council
Bank Holiday	means New Year's Day, if it is not a Sunday or, if it is a Sunday, 3rd January. 2nd January, if it is not a Sunday or, if it is a Sunday, 3rd January. Good Friday. The first Monday in May. The first Monday in August. 30th November, if it is not a Saturday or Sunday or, if it is a Saturday or Sunday, the first Monday following that day. Christmas Day, if it is not a Sunday or, if it is a Sunday, 27th December. Boxing Day, if it is not a Sunday or, if it is a Sunday, 27th December.
Public Holiday	means Good Friday, Easter Monday, the first Monday in May and the third Monday in September.

APPENDIX 2: CORE DOCUMENTS

A core document list was compiled by the applicant, in consultation with other parties. It is divided into sections by topic and participant, with each document given a unique reference number. These are the documents that parties referred to during proceedings.

The applicant also set up a documents hub which inquiry participants were given access to and provided a full set of documents on a memory stick to all parties for use during the oral sessions. The core documents are publically available on the DPEA website.

APPENDIX 3: APPEARANCES

The following parties were involved in the inquiry and hearing sessions

Oral Session (and links to webcast)	Topics	Participants
Hearing 12 January 2021	Planning and energy policy, need and carbon benefits Socio-economics including tourism	The Applicant Colin Innes Alison Sidgwick South Ayrshire Council John Campbell QC Alistair McGibbon New Luce Community Council Alistair Buckoke Bardrochart and Knockdolian Estates Ian Kelly Others Helen McDade (on behalf of Susan Crosthwaite) Christopher Andrews
Inquiry 13 January 2021 14 January 2021 15 January 2021	Hydrology, including private water supplies	The Applicant Euan Macleod Gordon Robb South Ayrshire Council John Campbell QC Connie Lobban Dr Rachel Connor (on behalf of Susan Crosthwaite)
Inquiry 1 February 2021 2 February 2021 3 February 2021	Landscape and visual impact	The Applicant Malcolm Thomson QC James Welch South Ayrshire Council John Campbell QC Carol Anderson New Luce Community Council Alistair Buckoke Bardrochart and Knockdolian Estates Ian Kelly

		Others Harriet Ellis Pat Spence Christopher Andrews
Hearing 4 February 2021 (morning)	Ecology Access, traffic and transport Peatland	The Applicant Malcolm Thomson QC David MacArthur (ecology) Joanna Read (transport) Tony Gannon (transport) Colin Duncan (peatland) Struan Stevenson
Hearing 4 February 2021 (afternoon)	Overview of effects and infrastructure implications	The Applicant Malcom Thomson QC Alison Sidgwick Tony Gannon Christopher Andrews Pat Spence
Hearing 5 February 2021	Conditions	The Applicant Colin Innes Alison Sidgwick South Ayrshire Council John Campbell QC Alistair McGibbon Connie Lobban Others Susan Crosthwaite Dr Rachel Connor Pat Spence
Inquiry 9 February 2021 10 February 2021	Noise	The Applicant Malcolm Thomson QC Dr Matthew Cand Susan Crosthwaite Melvin Grosvenor Dr John Yelland Professor Mariana Alves-Pereira Pat Spence Dr Angela Armstrong