Inspector's Report
ABP-318943-24

Development	10 year permission for 12 turbine wind farm, located on a 140-hectare site
Location	located within the townlands of Cappateemore East, Ballycannan West, Ballycannan East, Ballycar South, Ballycar North, and Glennagross Co. Clare
Planning Authority	Clare County Council
Applicant(s)	Ballycar Green Energy Ltd
Type of Application	Permission under 37 E of the Planning and Development Act 2000, as amended- Strategic Infrastructure Development
Prescribed Bodies	Shannon Airport Group Transport Infrastructure Ireland AirNav Ireland Environmental Trust Ireland An Taisce

Observer(s)	See Appendix 2 (section 17)
Date of Oral Hearing	22nd of January 2026
Date of Site Inspection	25th and 26th of March 2025
Inspector	Adrian Ormsby

Contents

1.0 Introduction and Pre-Application Consultation 7

2.0 Site Location and Description 7

3.0 Proposed Development 8

4.0 Planning History 11

4.1. Preplanning Consultations 11

4.2. Current Wind Farm Applications to ABP 11

4.3. Relevant Decided Wind Farm Applications/Appeals 12

4.4. Other relevant proposals 12

5.0 Chief Executives Report – Clare County Council 13

6.0 Prescribed Bodies 21

6.1. Introduction 21

6.2. AirNav Ireland (ANI) 22

6.3. Shannon Airport Authority DAC (SAA) 22

6.4. Transport Infrastructure Ireland 23

6.5. An Taisce 25

7.0 Observations 27

8.0 Applicant's Response 29

8.1. Introduction 29

8.2. Response to Chief Executive Report - Clare County Council 29

8.3. Response to AirNav Ireland Submission 35

8.4. Response to Shannon Airport Authority (SAA/SAG) Submission 36

8.5. Response to Transport Infrastructure Ireland (TII) Submission 37

8.6. Response to An Taisce Submission 37

8.7. Response to Public Observations 40
9.0 Further Information 48
9.1. Introduction 48
9.2. Prescribed Bodies submission on Further Information 49
9.3. Public Submissions and Observations on Further Information (FI) 55
9.4. Applicant's Responses to Further Information Submissions 56
10.0 Policy Context 68
10.1. EU Legislation/Policy 68
10.2. National Policy and Legislation 69
10.3. Regional Spatial Economic Strategy for the Southern Region 2020-32 (RSES) 73
10.4. Ministerial Guidelines and Other Relevant Guidance 76
10.5. Clare County Development Plan 2023-2029 81
10.6. Limerick City and County Development Plan 2022-2028 (LDP) 94
10.7. Tipperary County Development Plan 2022-28 97
10.8. Natural Heritage Designations 97
10.9. EIA 98
11.0 Assessment 99
11.1. Introduction 99
12.0 Planning Assessment 100
12.1. Principle of the Development and Compliance with Policy 100
12.2. Duration of Permission and Period of Operation 104
12.3. Wind Energy Development Guidelines, Guidelines for Planning Authorities (DoEHLG, 2006) (WEDG) 106
12.4. Aviation Concerns 108

12.5. Visual Amenity 210
12.6. Residential Amenity 211
12.7. Traffic and Transport 217
12.8. Biodiversity Enhancement Management Plan (BEMP) 218
12.9. Other Matters 219
13.0 Environmental Impact Assessment 222
13.1. Statutory Provisions 222
13.2. EIA Structure 222
13.3. Issues Raised in Respect of EIA 225
13.4. Compliance with the Requirements of Article 94 and Schedule 6 of the Regulations 2001 226
13.5. Consultations 231
13.6. Compliance 231
13.7. Assessment of Likely Significant Effects 232
13.8. The Interaction between these factors. 407
13.9. Mitigation and Monitoring Measures 408
13.10. Summary of relevant Article 94 Considerations for the Commission 408
13.11. Reasoned Conclusion 410
14.0 Appropriate Assessment 412
14.1. Stage 1 Appropriate Assessment Screening 412
14.2. Stage 2 Appropriate Assessment 413
15.0 Recommendation 414
16.0 Appendix 1- Appropriate Assessment (AA) 416
16.1. Stage 1- Appropriate Assessment Screening 416
16.2. Stage 2- Appropriate Assessment 424

17.0 Appendix 2- Observations 447

17.1. Observers to Original Application 447

17.2. Observers to Further Information 449

18.0 Appendix 3- Sagentia Aviation Report 450

19.0 Appendix 4- Oral Hearing Agenda and Proceedings 452

*All weblinks referenced in this report have been confirmed as active on the 12th of March 2026.

1.0 Introduction and Pre-Application Consultation

1.1. An Bord Pleanála received a written request on the 14th of December 2021 from Malachy Walsh and Partners (MWP) Engineering and Environmental Consultants on behalf of Ballycar Green Energy to enter preapplication consultations under Section 37B of the Planning and Development Act 2000, as amended, in relation to a proposed wind farm development in County Clare. Planning reference number ABP-312193-21 relates.

1.2. Two online pre-app meetings were held between the prospective Applicant and the Board's representatives on the 23rd of February and 1st of September 2022. A formal request to close the pre-application consultation was received by the Board on September 26th, 2022. The details of the meetings are set out in the written records contained on the Board's file.

1.3. At a meeting held on the 28/10/2022 the Board decided that-

> *"having regard to the size, scale and location of the proposed wind farm and related development, and to the policy context, it is considered that the proposed development constitutes development that falls within the definition of energy infrastructure in the Seventh Schedule of the Planning and Development Act 2000, as amended, thereby satisfying the requirements set out in section 37A(1) of the Act. The proposed development is also considered to be of strategic importance by reference to the requirements of sections 37A(2)(a), (b) and (c) of the Planning and Development Act 2000, as amended. An application for permission for the proposed development must therefore be made directly to An Bord Pleanála under section 37E of the Planning and Development Act 2000, as amended."*

1.4. An Bord Pleanála (now An Coimisiún Pleanála) received the subject application on the 26th of January 2024.

2.0 Site Location and Description

2.1. The site is located in an upland area of County Clare c. 5km north of Limerick City and c. 2km to the east of Woodcock Hill. The site is detailed as located within the following townlands Cappateemore East, Ballycannan West, Ballycannan East,

Ballycar South, Ballycar North, and Glennagross. These are located in the south of County Clare with the application site c. 7km east/southeast of Sixmilebridge, c. 10km east/north east of Bunratty, c. 2km west/northwest of Ardnacrusha and c. 1km north of the settlement of Ballycannon North (Meelick).

2.2. As per Map B 'Settlement Hierarchy' of the Clare County Development Plan 2023-29 the Commission will note much of the site appears to be located within the Limerick Shannon Metropolitan Area. Sixmilebridge is a 'Small Town', Ballycannon North (Meelick) is a 'Large Village' and Ardnacrusha is a 'Small Village'.

2.3. The application site is located around the south, west and northwest side of a localised hill with turbines proposed at contour levels ranging from c. 70m to close to c. 250m as per 1:50,000 Discovery Series Mapping available to the Commission. Much of the site is located to the west, south and in close proximity to an existing quarry known as O'Connell's Quarry.

2.4. The site predominantly comprises of a mix of agricultural pasture land and commercial forestry.

2.5. The Turbine Delivery Route (TDR) is from Foynes in the west of County Limerick via the N69 through Limerick City and on to the application site using regional and local roads. In the context of the site description, the Commission should be aware that the intended final leg of the journey is northwards from the junction of the R464 along the L3056. Quinsborough House Protected Structure RPS 093 is located on the east side of the L3056 just north of the junction with the regional road and c.2.7 km south of the application site. Recorded Monument CL053-041 a Ringfort is located on the east side of the L3056 approximately 0.5km south of the application site boundary.

2.6. The application site is located c. 17 km east of Shannon Airport.

2.7. Page 4 of the application form indicates the area of the site to which the application relates is 104.7 ha..

3.0 **Proposed Development**

3.1. The application comprises-

- 12 wind turbines with associated foundations and hardstanding

    - 11 turbines will have a hub height of 90m and blade length of 68m
    - 1 turbine (T10) will have a hub height of 85m and blade length of 68m
    - An overall total tip height of 153m to 158m
- a maximum export capacity of 4.5 MW each[1].
- approximately 141,912 MWh per year of renewable electricity to the national grid[2]
- An electrical substation (110kV), associated ancillary buildings, fencing, on-site visitor cabin and provision of parking-
    - substation buildings 400 sq.m and 192 sq.m.
    - Water facilities provided through rain water harvesting with waste water discharge to holding tanks prior to authorised removal.
- A 90m high meteorological mast between turbines 2 and 4
- 2 site entrances, 1 permanent and 1 temporary for construction traffic, both entrances off the L-7062 local road.
- New and upgraded access tracks
- Underground cabling connecting turbines to substation
- 1 borrow pit to source stone material and 3 deposition areas, all between turbines 5 and 6
- A grid connection including 1.5km underground to the national grid
- Temporary works to public roads to facilitate the turbine delivery route (TDR)
- Approximately 15.97 ha of tree felling under licence and replanting under afforestation licence[3]
- and ancillary works.

[1] EIAR Volume II, Chapter 2, section 2.3.19, page 2-21. This aligns with the total generating capacity of 54MW suggested at pre application consultation ABP-312193-21.
[2] EIAR Volume II, Chapter 14, section 14.4.3.2, page 14-26
[3] The Board should note the location for replanting is not identified in the application. Section 2.3.14 of the EIAR states- *"The Applicant commits to not commencing the project until both felling and afforestation licences are in place and this ensures the afforested lands are identified, assessed and licensed appropriately by the relevant consenting authority"*

3.2. The application seeks a 10 year permission and an operational period of no less than 35 years from the date of commissioning. The application indicates an 18 month construction period[4].

3.3. The TDR will be from the port of Foynes in Limerick with delivery through the Limerick Tunnel and Dock Road as necessary.

3.4. The application also proposes temporary works at the junction of R464 and the L3056 however the area of these works are not included within the red line application site boundary.

3.5. The application is accompanied by typical planning documentation including-

- A Planning Statement prepared by MWP
- an Environmental Impact Assessment Report (EIAR) prepared by MWP
- an Appropriate Assessment Screening Report (AASR)[5] and Natura Impact Statement (NIS) both prepared by MWP
- Biodiversity Enhancement Management Plan (BEMP)[6] providing proposed enhancement measures for Important Ecological Features (IEFs) within the application site boundary as well as some measures outside the red line boundary of the site[7] e.g. net gain of 1.31 ha of Mixed broadleaved woodland, 292m of Treelines, 129m of hedgerows as well as provision of 34 bat boxes and 12 bee boxes.
    - Figure 2 of the BEMP presents an aerial photograph of the site and lands with proposed enhancement measures overlain
    - Table 2 details measures to be implemented with reason/objective and measure of enhancement proposed
    - Tables 4 and 5 detail area size and length of IEF habitats to be removed and gained including net gain, with a rationale for each set out.

[4] Section 2.4.4 of the EIAR
[5] The AASR is provided as Appendix 1 to the NIS.
[6] The BEMP is provided as Appendix 6E to the EIAR.
[7] Section 2 of the BEMP details these pertain to the land holdings (folios) of the landowners involved in the development.

4.0 Planning History

4.1. Preplanning Consultations

- ABP-312193-21- for subject application

4.2. Current Wind Farm Applications to ABP

4.2.1. ABP-320705-24 Strategic Infrastructure Development application-

- lodged on the 30/08/2024 referred to henceforth as ‘Knockshanvo’.
- 9 no. wind turbines with hub height range from 102.5m to 110.5m, a rotor diameter range of 149m to 163m and a blade tip height range of 179.5 metres to 185 metres, 110kV substation and ancillary development.
- located to the north/north west and north east of the subject application site with parts of the site boundary as close as c. 3.5km with the distance between turbines ranging from c. 4km to north and c. 6.5km to north east.

4.2.2. ABP-318782-24 Strategic Infrastructure Development application-

- lodged on the 22/12/2023 referred to henceforth as ‘Oatfield’.
- 11 Turbine Wind farm with an overall ground to blade tip height range of 176.5m to 180m, a rotor diameter range of 133m to 150m and a hub height range of 105m to 110m, ancillary structures including all works associated with the connection of the wind farm to the national electricity grid, via a 110kV underground cable connection (circa. 4.3km cable length), to the existing 110kV overhead line in the townland of Ballycar North, with 2 no. new 16m steel lattice end masts & associated overhead line electrical infrastructure etc.
- located to the north/north east of the subject application site with parts of the site boundary as close as c. 0.7km with the distance between turbines ranging from c. 4km to north and c. 6.5km to north east.

4.3. Relevant Decided Wind Farm Applications/Appeals

- ABP-321285-24- (referred to henceforth as Lackareagh). **Grant** of permission for 7 no. wind turbines, 38kV substation with BESS and ancillary development- Grant date 11/07/2025. The main turbine is located c. 11.5km to the north east of the subject application site.
- ABP-317227-23- (referred to henceforth as 'Fahybeg') **Grant** of permission for 8 turbine wind farm and all associated site development works- Grant date- 6/03/2024. The main turbine area of this permission lies c.8.5km to northeast of subject application.
- ABP-308799-20- (referred to henceforth as 'Carrownagowan') **Grant** of permission for 19 wind turbines and all associated site development works- Grant date- 29/09/2022 The boundary of this permission is c. 12km to the northeast of the boundary of the subject application.

  This decision has been subject to judicial review proceedings which are ongoing.

4.4. Other relevant proposals

- ABP- 318505-23- **Approved-** Proposed construction of a 110kV underground grid connection cable connecting the permitted Carrownagowan windfarm to the existing 110kV substation at Ardnacrusha.
- ABP-316754- ABP- RZLT
- ABP-304690-19- Quarry extension, **Grant** 13/12/2019 located c. 200m to north of part of application site boundary.
- 24/60416- Solar Farm and ancillary works- Notification of decision to grant permission 30/06/2025. Appeal lodged on the 28/07/2025.
- 23/60249- Solar Farm and ancillary works- **Grant** 06/09/2023
- 23/57 and ABP-316237-23 Solar Farm- Application **withdrawn** while on Appeal

5.0 Chief Executives Report – Clare County Council

5.1.1. Introduction

This submission includes-

- Chief Executive Report dated 05th of March 2024
- Copy of Resolution passed at the March 2024 monthly meeting
- A submission on behalf of the Elected Members of the Shannon Municipal District dated 12th of March 2024 and
- Extracts from the minutes of the March monthly meeting

5.1.2. The Chief Executive Report-

- **Planning Policy Context**
    - The submission sets out the policy context from National, Regional to Local. It also refers to refers to Ministerial Guidelines including the Draft Wind Energy Guidelines 2019.
    - The site is predominantly located within an area designated as 'Strategic' for wind energy development which can accommodate a medium to large scale wind farm.
    - The development as proposed would facilitate approx. 54MW of power and potentially a large portion of the targeted (150MW) wind generation of the designated 'strategic' area.
    - The Wind Energy Strategy (WES) was prepared and incorporated into local policy in 2009 and remains in the current 2023-29 County Development Plan (CDP). Although in place 14 years the WES remains the planning policy framework that guides wind development within the county.
    - The site is located in the 'Slieve Bearnagh Uplands' landscape character area (LCA).
    - From a planning policy perspective, the development as proposed would be in compliance with the designations as set out in the current

CDP and associated WES noting also national and regional level policy objectives with respect to renewable energy.

- It should be noted that since the adoption of the WES there has been advancements in turbine technology in terms of their energy output and also in terms of their height and scale, whereby it is noted in this instance the tip height of the turbines is under 160m.
- There is a concern that the existing Section 28 guidelines do not account for such heights and scale of turbines.
- The PA also notes the extent of windfarm applications in the general area that are currently proposed or at the pre-planning stage, whereby potentially 67 no turbines could be constructed in the wider area.
- Of particular concern is the potential ad hoc approach to windfarm developments and the resulting implications for the cumulative assessment of same in terms of visual and residential amenity, landscape impacts, construction/road impacts and impacts on wildlife/biodiversity.
- There is a concern that the cumulative impact of this development with other applications may not have been appropriately assessed in the submitted EIAR e.g. the recently submitted application to the Board in respect of the Oatfield windfarm.
- Objective 11.47 of the CDP seeks to encourage and to favourably consider proposals for renewable energy developments to meet national, regional and county renewable energy targets, and to facilitate a reduction in CO2 emissions and the promotion of a low carbon economy. In this instance however in the absence of updated Section 28 guidance, the cumulative impacts of windfarm developments in the wider area and the potential ad hoc approach to the development of windfarms within this 'Strategic' designation is of concern.

- In terms of **Visual Amenity** the following is noted-
  - Objective CDP 14.2 refers to site selection criteria

- The landscape type is similar to 'Mountain Moorland' or 'Transitional Marginal Landscapes' as per the departmental guidelines of 2006
- The turbines as proposed in this instance are to have a total tip height of up to 158m. Under the landscape character assessment of the WES, the northwest and westerly aspects of Slieve Bernagh are recognised as being robust and can accommodate medium to large windfarms.
- Given the height and overall scale of the development the proposal would significantly alter the overall character and appearance of this landscape.
- The submitted photomontages include localised impacts at Cappateemore (Viewpoints 1-4), long range viewpoints from Knockalisheen Road (5), Limerick City (7 & 25), Parteen (13) and Ardnacrusha (14) whereby the full extent of the development is demonstrated.
- It is noted the photomontages do not show the cumulative impact of the recently lodged Oatfield application and it is considered that this would be useful for demonstrating the impact of the development in particular for long range views from the N18 or Bunratty.
- The proposal would be visible in views from Limerick City and the Board may wish to seek the views of Limerick City & County Council in respect of impacts on designated views or prospects in the Limerick Development Plan.
- the majority of the site is designated as 'Strategic' in the wind energy strategy, and the proposal would appear in principle to comply with the strategy and also to assist in achieving wind energy targets for 'strategic' areas.
- However, it is clear that the proposal would significantly alter the landscape character at this location. Given the height, scale and number of the turbines as proposed the development would have a significant landscape and visual impact, both locally and over greater distances from houses, roads, villages, and amenity locations.

- The wind energy strategy when adopted recognised turbine heights from 75-125m. The Section 28 Guidelines on Wind Energy in 2006 also defined large turbines as over 100m to blade tip whilst recognising that turbine heights will change over time. It is clear that the heights of the turbines as now proposed are not representative of the range of turbines identified in the WES or the 2006 Guidelines.
- In light of the above, the PA wishes to outline its concern in respect of this development from a visual amenity perspective

- In terms of **Residential Amenity** the following is noted-
  - Subject to mitigation measures as set out in the EIAR the proposal may not give rise to negative impacts from shadow flicker on surrounding houses and it is recommended a specific condition be attached if permitted.
  - While the proposal appears to comply with existing departmental guidelines in terms of noise, such guidelines are from 2006. It is requested the Board ensure that noise impacts are addressed and in the absence of new guidelines the noise requirements of the WHO may be more appropriate in light of the number of noise sensitive receptors in the vicinity of the proposal and having regard to changes in turbine technology and design since the 2006 guidelines. Objective CDP 11.47 seeks to strike an appropriate balance between such proposals and protecting residential amenities.

- In terms of **Traffic** the following is noted-
  - The main traffic implications are during the construction period
  - Works are proposed at the junction of the R464 and the L-3056 to allow for wider turbines loads. These works appear to be outside the scope/boundary of the current application and the Applicant should ensure that they have sufficient legal interest to carry out same.
  - The main implications for this development arise along the local roads serving the site in particular the L-3056 and the L-7062 where a number of pinch points are identified in Appendix 2C of the EIAR.

Concern over the implications of any works required along the route on established hedgerows, stone walls and mature trees, whereby the proposal may impact on the character of the rural area are highlighted.

- The use of on-site materials and the adjoining quarry as detailed in the Traffic and Transport Report would assist in the reduction of traffic movements from the wider road network. However should the adjoining quarry not be used there is a concern given the construction time periods that the traffic implications of this development may not be known. There is also a concern in respect of the cumulative impact with other wind and solar farm developments including grid connection works.
- Should the Board decide to grant permission a number of related conditions are recommended

- In terms of **Soils & Hydrology** the following is noted-
  - The site is located in upland setting with a mix of coniferous forestry, transitional woodland, scrub, agricultural land with an area of peat to the northwest of the site.
  - There are concerns in respect of surface waters, contamination of water bodies within the site and downstream
- In terms of **Natural Heritage** the following is noted-
  - There are some concerns in respect of the impacts of the development on bird species by reason of habitat loss and fragmentation, habitat degradation and disturbance, and displacement of the species. There is also the potential for the windfarm to create a barrier effect to dispersal, regular movements or migration, and resulting in displacement, collision with blades and mortality.
  - With regard to invasive species the implementation of mitigation measures outlined in the Invasive Species Management Plan are considered appropriate to avoid the spread of such species.
- In **Conclusion** the proposal is broadly supported by the designation in the WES and CDP. The cumulative impact of a number of windfarm

developments in the area and the orderly development of same is of concern. There are also other concerns as detailed. Concerns regarding height and scale of the development, advances in technology and assessment of same in the absence of updated Section 28 Guidelines is highlighted.

- Should permission be granted appropriate conditions are recommended.

5.1.3. **Elected Members Submission-**

- Project Splitting-
    - The proposal immediately adjoins another 11 turbine SID ABP-318782-24- Oatfield,
    - There are two further applications at Carrownagowan (under judicial review) and Fahy Beg 5km and 8km from the site.
    - A further two are at preplanning stage with the Board adjacent to the site and some 6km distant.
    - The cumulative impact of all these on the area will be enormous.
    - The proposed application and Oatfield intend to share a single line for grid connection.
    - It is appropriate all these be assessed in tandem so the full impact including visual impact over the wider area can be assessed.
- Inadequacy of the current Wind Energy Strategy (WES) of the Council and the present Wind Energy Guidelines produced by the Department.
    - The ministerial guidelines are from 2006. Wind energy technology has developed substantially since 2006 including their height.
    - The draft 2019 Guidelines have not been adopted. The Balz judgement made it clear the Board should give reasons for not adopting updated advice. It is likely the Board will need to have regard to the 2019 draft guidelines and should give reasons for not following them.
    - The 2006 guidelines refer to high turbines being above 100m. The proposal is some 60% higher. It is difficult for the Board to make an assessment having regard to the 2006 guidelines.

- The cumulative impact of the proposed and adjacent windfarm is not adequately considered and it is inconceivable to think the Applicant was not aware of the Oatfield application.
- The Wind Energy Strategy (WES) was produced in 2009 and repeatedly readopted in development plans. Given the general increase in height of turbines since 2009, would the sites strategic categorisation apply now without some criteria for maximum height having regard to the proximity of St Johns Castle, Bunratty Castle and over 220 houses within 1.3km.
- The proposal is not a remote location, is 3km from Limerick City. It is in the centre of a nationally important tourism area.
- The existing WES is not considered appropriate tool to assess the present application. The adequacy of guidance is critical to assess noise and shadow flicker given the sites location effectively in a suburban location.

- Inappropriateness of the site
  - 1200 residents live within 1.3km radius of the proposal with some residences as close as 520m to the closest turbine. The latter is much closer than the minimum separation distance of four times the tip height as per the draft guidelines.
  - The extent of impacts in combination with the very large number of people who will be affected suggest the proposal is not appropriate regardless of the present wind energy strategy designation.
- Specific Site Sensitivities-
  - The site must be regarded as highly sensitive given its proximity to Limerick City and the visibility the proposal will have upon key tourism landmarks within both county Clare and Limerick.
  - The proposal will be highly visible from King Johns Castle in Limerick and Bunratty Folk Park and Castle- premium tourist destinations.

    - The proposal will significantly impact first impressions of tourists visiting the area. It must be considered a significantly negative and detrimental cumulative impact. It will lead to significant visual clutter contrary to paragraph 3.3 of the WES which also seeks to avoid piecemeal development.
    - The estuarial setting with a backdrop of high hills in east Clare is dramatic.
    - The hills rise to 300m but are to be topped to 158m in this application and 180m in the adjacent application.
    - The proposal in-combination with other such proposals will dramatically negatively impact the tourism industry of Clare and Ireland generally.
    - This is an area where substantial investment has taken place in provision of tourism trails and walkways in recent years.
    - The proposal needs to show compliance with the national landscape strategy for Ireland 2015-2025.
- Piecemeal nature of the proposal.
    - The absence of a specific plan such as a Masterplan layout for the entire area makes it difficult to achieve meaningful community involvement. It is impossible to determine the extent of visual clutter.
- Impact on property values including tourism and residential amenity. Substantial development traffic will be brought through very substandard roadways.
- Important Archaeological Area-
    - The area is the burial place of King Crimathann as well as the location of a number of standing stones and barrows. It has great potential as a tourism resource.
- Visual Prominence over a wide area as confirmed in the EIAR.
- Other Environmental Concerns-

- contamination of groundwater given the high water table,
- impacts on the Pine Martin and Red Squirrel as well
- as extensive ornithological and bat resources in the area.

- The proposal should be refused permission.

6.0 Prescribed Bodies

6.1. Introduction

6.1.1. The Commission are advised that Air Nav Ireland (ANI) are not listed as a Prescribed body under Article 213 or elsewhere within the Planning and Development Regulations 2001 as amended. The Irish Aviation Authority (IAA) are identified in Article 213 (1) (k) where the development might endanger or interfere with the safety of, or the safe and efficient navigation of, aircraft.

6.1.2. ANI are a semi state body established as the Irish Air Navigation Service (IANS) under the provisions of the Air Navigation and Transport Act 2022. Section 50 (2) of this act provides that-

> *"References in any enactment or other record or document referred to in subsection (1) to the IAA shall, on and after the vesting day, in so far as the reference relates to a matter to which a function of the IANS relates, be construed as a reference to the IANS".*

6.1.3. Accordingly, I am satisfied the reference to the 'Irish Aviation Authority' in the Planning and Development Regulations should be read as AirNav Ireland in so far as the matter relates to the functions of AirNav Ireland and they are therefore a Prescribed Body. The Commission are also advised that representatives of the IAA contributed to the submissions of ANI at the Oral Hearing heard on this file in January 2026.

6.1.4. Four submissions were received from prescribed bodies which are summarised hereunder-

6.2. AirNav Ireland (ANI)

6.2.1. This submission was received on the 08/03/24 and can be summarised as follows-

- It is considered that the proposed Ballycar Wind Farm development would degrade the performance of the Woodcock Hill Radar.
    - Due to the proximity and scale of the proposed development, there are no credible and implementable mitigations on the Woodcock Hill Radar itself to eliminate the Radar beam deflections, reflections, and shadowing from the proposed turbines.
    - This development would compromise the Woodcock Hill radar's compliance with EU mandated surveillance performance criteria required to support 5 Nautical Mile horizontal separation of aircraft in en-route Irish airspace and 3 Nautical Mile horizontal separation of aircraft in Dublin airspace.
- ANI have engaged in meetings and in a workshop in Dublin on 22 February to explain and illustrate the potential impact of the proposed development on the Woodcock hill radar. The Woodcock Radar region impacted is a sector over 30 degrees wide extending over Ireland and the Irish Sea. Much of En-Route air traffic from Europe and the UK flying to North America, fly through this sector, and much of the Dublin Airport arrivals and departures also fly through this sector. This development would result in a reduction in the level of safety in our Shannon En-Route and Dublin Air Traffic Control centres which depend on Woodcock Hill radar data, as a result of the degraded performance of the Woodcock Hill radar equipment.
- AirNav Ireland cannot accept a reduction in the level of safety in our Shannon En-Route and Dublin Air Traffic Control centres. Therefore, AirNav Ireland objects to this development proceeding.

6.3. Shannon Airport Authority DAC (SAA)[8]

6.3.1. This submission was received on the 03/03/24 and can be summarised as follows-

[8] Now known as the Shannon Airport Group (SAG)

- In general terms, the siting of wind turbines at this location may have implications for the operations of the communication, navigation and surveillance systems used by ANI for the separation and safety of aircraft. The geographical siting of these turbines may also have implications for the flight paths of aircraft.
- The proposed development will have no impact on the aerodrome obstacle limitation surfaces (OLS) i.e. the airspace around the aerodrome.
- There are significant concerns relating to radar systems and notably the Woodcock Hill radar-
    - It was initially thought that with appropriate mitigation measures any impacts to the radar would be negated (see Letter of Support from ANI (dated 20th Dec 2023).
    - This letter of support also indicated that both Instrument Flight Procedures (IFP's) and NAVAID's were unaffected by the proposal.
    - Following recent engagement between the developer, ANI, State aerodromes and IAA Aerodromes division, it became apparent that proposed mitigation measures cannot be deployed to prevent impacts on the Woodcock Hill radar site.
    - The letter of support for the development from ANI has been rescinded as of 27th Feb 2024.
- SAA fully supports the updated ANI's position of not being able to support the development and therefore objects to this development proceeding.
- If permission is granted certain conditions are stated.

6.4. **Transport Infrastructure Ireland**

6.4.1. This submission was received on the 06/03/24 and can be summarised as follows-

- Refers to Section 2.5 of the "*Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012)*" which seeks to avoid the creation of additional access points from new development or the generation of

increased traffic from existing accesses (i.e. non-public road access) to national roads, to which speed limits greater than 50 kph apply.

- There are a number of operational issues that require resolution relating to network maintenance and road safety prior to any decision on this planning application including-
    - Proposed Turbine Haul Route
        - consultation is required with each Council as well as Public Private Partnership Concession Motorway Maintenance and Renewal Contracts (MMaRC).
        - Any proposed works to the national road network to facilitate turbine component delivery to site shall comply with TII Publications and shall be subject to Road Safety Audit as appropriate.
        - prior to any development all necessary licenses, approvals, permits or agreements shall be put in place including specific Deed of Indemnity where required.
        - Mitigation measures identified by the applicant should be included as conditions in any decision to grant permission.
        - Any damage caused to the existing national road due to the development shall be rectified in accordance with TII Standards.
        - Such details shall be agreed prior to commencement of any development on site.
    - Structures on Haul Route
        - The EIAR does not appear to confirm if abnormal 'weight' loads are a feature of turbine or substation component delivery to site.
        - A permit for such movements is required from each Local Authority through whose jurisdiction the vehicle shall travel. All national road structures on the proposed haul route should be checked to confirm their capacity to accommodate abnormal loads proposed.

        - TII considers such an assessment is required and requests referral of all proposals agreed between the road authority and the applicant impacting on national roads.
    - Grid Connection Routing
        - There are no material impacts to the national road network.
    - Greenways
        - Consultation is recommended in relation to any Greenways in the vicinity.

6.5. An Taisce

6.5.1. This submission was received on the 22/03/24 and can be summarised as follows-

- Requirement for Assessment under Water Framework Directive (WFD)
    - the site traverses the Crompaun East stream which is designated as poor water quality status by the Environmental Protection Agency (EPA) under the WFD and is at risk of not achieving good status by 2027.
    - This has downstream hydrological implications given its connectivity with the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.
    - The proposal should be assessed against Article 4 of the WFD to determine whether the project may cause a deterioration of the status of a surface or ground water body or if it may jeopardise the attainment of good surface or ground water status or of good ecological potential and good surface or ground water chemical status.
    - Regard required to the potential for impact during the construction and decommissioning phases of the development, in which contaminants from sediment run-off are likely to water courses.
- Ornithology

- Questions are raised over the conclusion of the Ornithology report as the report acknowledges that significant effects upon bird species will occur due to the loss of critical hunting, breeding and foraging grounds.
- There are seven red-listed species recorded within the subject site, signifying the ecological importance of the habitats contained in the area for the preservation of these species.
- A variety of amber-listed species were also recorded, along with the critically endangered Hen Harrier species.
- The Board are advised to consult the 'Draft Hen Harrier Threat Response Plan' and its recommendation details of which are included in the submission.

- Slope and Soils
  - The combination of this sloping topography and poorly drained soil could indicate landslide susceptibility which the Board should carefully consider as a preliminary matter and verify accordingly with regard to the sufficiency of soil depths for example.
  - The EIAR determines that a Peat Stability Risk Assessment is not required due to development not occurring on the areas of the subject site containing peaty topsoil. This should be assessed as a precautionary measure to confirm that shallow peaty topsoil "was avoided by the proposed infrastructure layout during the site design process".
  - The proposal seeks to construct new slopes throughout the subject site, which warrants careful examination and assessment, with further information requested in the absence of details regarding measures for soil compaction and ensuring stability.
  - The Board are referred to the Scottish Government's guidelines for assessing peat landslide risk.

- Habitats Directive Legal Obligations

- Hydrological connectivity to the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA are detailed.
- Reference is made to relevant case law which interpreted the transposition of the Habitats Directive in the Irish context. Case C-258/11, Sweetman & Others v An Bord Pleanála & Others and Kelly v An Bord Pleanála & Others are cited.

7.0 Observations

7.1. There are 70 public submissions on file which are available to the Commission to view. The names of each observer are listed in Appendix 2 of this report. I have read each observation in full including all attachments and appendices etc. The submissions are in many cases extensive and broad ranging. I have considered the points raised and have endeavoured to summarise what I consider are the substantive planning matters for the purpose of this application as follows-

- 2006 Wind Energy Guidelines outdated and inadequate. Regard required to 2019 draft guidelines. Reference to the Balz 2019 judgement
- County Development Plan WES designation outdated and not fit for purpose given the proposed size of turbines
- Cumulative impacts of the development with other permitted and proposed developments including Oatfield Wind Farm ABP-318782-23, piecemeal development and project splitting. Over-concentration of wind farms.
- Inadequacies and deficiencies in the application including EIAR, AASR and NIS. European sites improperly ruled out.
- Significant visual amenity concerns, impacts upon tourism in area, scenic routes, protected structures national monuments etc.
- Adverse impacts upon existing residential existing amenity including noise, infrasound, shadow flicker, vibrations, overshadowing, loss of light, overbearing, disturbance during construction, proximity of turbines to houses, light pollution, impacts on public health etc.
- Inadequate public consultation

- Concerns over grid connection
- Concerns over Turbine Delivery Route
- Water related concerns including risks of flooding, pollution to watercourses, groundwater and domestic water supplies etc.
- Adverse impact upon biodiversity and wildlife including birds
- Adverse impacts to SAC, SPA's, NHA's and pNHA's.
- Loss of peat and subsequent biodiversity impacts
- Risk of peat slippage and landslides, proximity to fault lines.
- Concerns regarding devaluation of property in the area and difficulties obtaining planning permission for homes in the future.
- Traffic impacts upon local road network including safety
- Built and cultural heritage concerns including impacts to archaeology and protected structures etc.
- Significant Aviation related concerns
- Proximity of proposals to adjoining lands and adverse impacts to same
- Legal obligations on ABP regarding SEA and European Case Law. Numerous references to recent High Court judgment in Wexford[9]
- Community Benefit Fund not as favourable as intended
- Wind Farms are not carbon neutral, impacts to climate change
- Risks of turbine damage, explosion, breakages, ice, lightning strikes, mechanical failure etc
- Telecommunication and electromagnetic interferences etc.
- Procedural concerns, letter of consents etc
- Enforcement of development and mitigation measures

[9] [2024] IEHC136 Webster & Anor -v- Meenacloghspar [Wind] Limited

- Concerns over ‘wind take’ and effective sterilisation of lands, need to facilitate access to adjoining lands.
- Exact turbine design and output not determined.
- Materially contravenes Objectives 59 and 60 of NPF[10] in relation to Biodiversity.

8.0 Applicant’s Response

8.1. Introduction

8.1.1. The Applicant’s response was received on the 30/04/24. I have structured this section in keeping with the order set out in section 5 and 6. It is summarised as follows-

8.2. Response to Chief Executive Report - Clare County Council

8.2.1. Chief Executive Report

- The Councils submission is positive in tone and confirms compliance with the policies and objectives of the CDP and the WES. Refers specifically to sections 5.1 and 6.0 of the submission.
- Cumulative impacts of other permitted and proposed wind farm developments were assessed and no significant adverse effects are envisaged.
- Amenity-
    - the Response details the Council recognises the proposal complies with the WES and will assist in achieving wind energy targets for strategic areas. The site is specifically mentioned in the WES as being suitable. Cumulative impacts were assessed. It acknowledges the Councils view the proposal would significantly alter the landscape character however the proposal complies with the WES- it then quotes from the Council’s submission.

[10] NPO’s 87 & 89 and of NPF First Revision April 2025 most similar

- As noted in Ch 12 of the EIAR the significance of the landscape effect is considered moderate in the immediate vicinity with affects ranging from neutral to adverse. It details although effects are long term they are reversible with decommissioning.

- In relation to Residential Amenity
  - Ch 11 of EIAR confirms no shadow flicker will be experienced at residential receptors.
  - Ch. 10 of the EIAR details the proposal will not exceed the noise limit criteria detailed in the 2006 Guidelines.
  - Cumulative impacts of other permitted and proposed wind farm developments were assessed. No significant adverse cumulative effects are envisaged.
  - As there will be no shadow flicker and noise won't exceed the stated criteria an appropriate balance will be maintained between facilitating the proposal and protecting residential amenity.
  - There is no objection to suitable conditions.
- In relation to Traffic-
  - The Applicant will liaise with Limerick C&CC and Clare CC in relation to turbine delivery
  - Where required legal interest will allow for temporary works
  - Works along the TDR will be minimised to ensure character not affected
  - The Traffic and Transport Report (EIAR Appendix 15C) conservatively assumed that the quarry adjoining the site would not be used as a source of material. The report confirms the proposal will not negatively affect the functionality of the road network.
  - Cumulative impacts with other wind and solar developments were assessed with no significant adverse effects envisaged.
  - There is no objection to a condition with respect to traffic.

- In relation to Soils & Hydrology
    - Refers to Ch 8 and 9 of the EIAR. Section 8.7 concludes that with implementation of proposed mitigation measures the proposal will not have a significant adverse effect on hydrology and hydrogeology of the site and surrounding area. Ch 9 confirms similarly for land, soil, geology for the site or along the grid connection route.
    - The NIS details the proposal will not adversely impact the integrity of the two identified European Sites (SAC and SPA)
- In relation to Natural Heritage-
    - Ch 7 of EIAR Ornithology assesses the potential impacts on ornithology in the area.
    - Compliance with monitoring and mitigation undertakings are likely to ensure there is not likely to be any significant effect on ornithology or in combination with other developments.
    - The proposal will not adversely affect the integrity of the SPA
    - There is no objection to a planning condition being attached.

8.2.2. **Elected Members Submission**

- In relation to “Project Splitting”-
    - Cumulative impacts were assessed. No significant, adverse cumulative effects are envisaged with these projects.
    - The Oatfield windfarm (ref: ABP-318782) was not cumulatively assessed by the applicant, due to the timeline associated with the submission of this development.
    - The proposal and the Oatfield project are two separate developments and are not being developed in tandem. They cannot be deemed as “project splitting”.
    - The submitted EIAR covers the proposed wind farm and the grid connection. Project splitting has not occurred.

- In relation to inadequacy of the current Wind Energy Strategy of Clare County Council and inadequacy of the 2006 Wind Energy Guidelines-
    - The 2006 Guidelines remain the relevant guidelines in place. The Board are only required to have regard to the guidelines and can consider updated best practice standards / requirements / specifications in assessing impacts.
    - The applicant would welcome the opportunity to provide a cumulative assessment of the development with the Oatfield windfarm.
    - The WES referenced is contained within the CDP 23-29. The Planning Authority recognises that the proposal complies with the WES and will assist in achieving wind energy targets for 'strategic' areas.
- In relation to the Appropriateness of the site-
    - the Planning Authority recognises the proposal complies with the WES and assist in achieving wind energy targets.
    - The Proposed Development site (Ballycar) is specifically mentioned in the WES as being suitable for wind energy development.
    - The minimum separation of the turbines from dwellings is in compliance with the 2006 WEDG.
- In relation to 'Specific site sensitivities'-
    - Ch 12 of the EIAR concludes the proposal is unlikely to have a significant adverse effect on existing or future tourism potential
    - There are no tourist attractions pertaining specifically to the site. There are a number of cultural amenities in the wider area including King John's Castle (c. 6km south) and Bunratty Castle (c. 10km southwest). Views from these are included in the LVIA. The resulting significance of effect ranges from imperceptible, neutral (Bunratty) to moderate, neutral (King John's Castle).
    - the proposal complies with the WES and will assist in achieving wind energy targets for 'strategic' areas.
- In relation to 'Piecemeal nature of development'-

- extensive community engagement was undertaken. Details are contained within Appendix 1A Stakeholder Community Report.
- The Clare CDP and WES Strategy outline the wind energy zoning for the area, providing the guiding masterplan for the development of wind energy projects in the area.

- In relation to impacts on 'property values' in the area-
  - No substantive, peer reviewed research is available which demonstrates that wind energy developments impact negatively on property values.
  - Chapter 12 of the EIAR concludes that the proposal is unlikely to have a significant adverse effect on existing or future tourism potential of the area.
  - No significant adverse effect is predicted on transport infrastructure or traffic. The traffic assessment concluded that the construction phase will likely have a slight, short-term, negative effect over the 18 month construction period with isolated, local peaks of brief by moderate effect. The peak development traffic is not anticipated to coincide with the peak traffic hour on the public network. The operational phase would have imperceptible to no significant traffic effects
- In relation to 'Archaeology'-
  - Chapter 13 assesses the effects on archaeology and wider cultural heritage.
  - Thirteen test trenches were excavated under licence within the vicinity of archaeological features within the site, all with negative results and no previously unknown features found.
  - After mitigation, there will be no residual likely significant effects on cultural and archaeological heritage.
- 'Prominence over a wide area'
  - the Planning Authority recognises that the proposal complies with the WES and will also assist in achieving wind energy targets for 'strategic'

areas which are capable of absorbing wind farm developments due to their relatively low scenic value as landscapes.

- The proposed site is specifically mentioned in the WES as being suitable for wind energy development.
- Chapter 12 comprises a complete and robust Landscape and Visual Impact Assessment. The LVIA included an assessment of the likely significant direct effects on the landscape and also the effects on its landscape character.
- The significance of the landscape effect is considered to be moderate in the immediate vicinity of the site. The effects range from neutral to adverse. Although the turbines are considered to result in long term effects, the majority of these effects are reversible, due to the decommissioning of the wind farm. There are no landscape designations or Heritage Landscapes in the vicinity of the site and the area is categorised as 'Strategic' for wind energy.

- Other Environmental Concerns-
  - Chapter 6 Biodiversity, Chapter 7 Ornithology and Chapter 8 Water discuss the various environmental aspects identified in the submission. No significant adverse effects are predicted on biodiversity, ornithology or water.
  - Chapter 6 concludes that with the construction and operation of the proposal in accordance with the design, best practice and mitigation measures proposed, significant residual effects on biodiversity are not likely.
  - Compliance with monitoring and mitigation undertakings are likely to ensure that there is not likely to be any significant effect on ornithology
  - Chapter 8 of the EIAR contains an examination of information on private wells in the vicinity. No groundwater will be abstracted. It is considered that the proposal including control measures and mitigation measures will ensure that there will be no significant effect on surface water quality, surface water flows or groundwater resources.

8.3. **Response to AirNav Ireland Submission**

- Consultation with the (IAA)/ANI commenced in January 2022. The Aviation Technical Assessment (EIAR Volume 3 Appendix 15A- Aviation Report, Appendix C) issued as part of consultation and outlined that the proposal have a potential impact on the monopulse secondary radar at Woodcock Hill. See Section 5.9.4 and 5.9.5 of the Aviation Technical Assessment.
- The IAA's response in November 2022 detailed the IAA would object to the proposal.
- The applicant commissioned a further technical analysis of the radar system. A 'Mitigation Option Study is contained in Appendix 15A, Appendix E of the EIAR. This report was compiled by CYRRUS and was provided to the IAA/AirNav Ireland. The report details engagement with the manufacturer of both radar systems to confirm their capability to operate in the presence of Wind Turbines with minimal intervention. It states the-

  > *"RSM970 MSSR at Woodcock Hill and STAR 2000 PSR with comounted MSSR at Shannon Airport have been developed to allow this capability".*

- The submission from AirNav Ireland does not reference the Mitigations Option Study which was provided to AirNav Ireland directly and also included in the application. Their submission states that there are no credible and implementable mitigations to eliminate radar beam deflection, reflections and shadowing.
- The Applicant contends credible and implementable mitigations to eliminate radar beam deflections, reflections and shadowing are contained within the Mitigations Option Study, where CYRRUS engaged with the manufacturer of the radar system to confirm their capability to operate in the presence of wind turbines with minimal intervention. Further details are provided.
- The submission details further communications between the parties from December 2023 - February 2024 following which ANI rescinded their support for the proposal without a technical aviation reason.

- Over the course of two years consultation with IAA/ANI no concerns were raised in relation to potential impacts to En-Route traffic with concerns only raised following submission of the application. The applicant was not afforded the opportunity to provide evidence that the proposal will not result in a reduction in the level of safety in the Shannon En-Route and Dublin Air Traffic Control centres.
- The Applicant requests an opportunity to provide a technical report outlining that the proposal will not result in a reduction in the level of safety i.e. a Request for Further Information.
- There is no objection in the event of permission being granted a planning condition is attached whereby operation of the proposal cannot commence until all aviation concerns are addressed to the satisfaction of ANI.

8.4. **Response to Shannon Airport Authority (SAA/SAG) Submission**

- The submission confirms that the proposal will not impact on Shannon Airport aerodrome.
- SAA's objection is based on the concerns of ANI.
- There appears to be an inconsistency between the submissions made on behalf of SAA and ANI. SAA states that it was initially thought that with appropriate mitigation measures any impacts from the proposal would potentially be negated. The ANI submission does not make reference to this initial position.
- The SAA submission continues to state that following recent engagement it became apparent that impacts could not currently be mitigated against. The submitted Mitigation Option Study details impacts can be mitigated. No reference is made to this study in the submission.
- There is no objection to standard planning conditions being attached to any grant of planning permission.

8.5. Response to Transport Infrastructure Ireland (TII) Submission

- The applicant will liaise with Limerick City and County Council, Clare County Council, PPP Companies, MMaRC and any other relevant road authorities in relation to the delivery of turbine components or other relevant matter.
- All licenses, approvals, permits or agreements (including abnormal load) as necessary shall be in place prior to any development and that any works to the national road network will comply with TII Publications.
- There is no objection to a planning condition being attached with respect to the mitigation measures identified.
- Any damage to the existing national road shall be rectified in accordance with TII Standards and will be agreed with the authority.
- The applicant commits to contacting TII prior to works taking place.
- In addition, in the event of permission being granted, a financial contribution condition towards the upkeep of roads in the area benefiting the proposed wind farm will be applied as a matter of routine.
- The capacity of the proposed haul route to accommodate abnormal loads will be confirmed and submitted to the road authority.

8.6. Response to An Taisce Submission

- In relation to comments on the Water Framework Development (WFD)
    - EIA chapter 8 section 8.6 outlines compliance with the WFD.
    - It concludes the proposal alone or in combination with other developments is not likely to cause a deterioration in the quality of any body of surface water or groundwater, is not likely to alter the chemical status of any waters, is not likely to have a significant effect on any European site and is not likely to compromise the ability of any waters to meet the objectives of the Water Framework Directive and transposing legislation.
    - The NIS states that based on best scientific knowledge, the proposal will not, either alone or in combination with other plans and projects,

adversely affect (directly or indirectly) the integrity of two the identified European sites, namely the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA, considering the specific conservation objectives of each site.

- In relation to Ornithology-
    - EIA Chapter 7 considers the impacts of the proposal upon ornithology in the area.
    - Field surveys were undertaken from October 2019 to September 2023 inclusive, thereby providing significant data on activity within the survey area.
    - A Collision Risk Modelling Report is included as Appendix 7K of the application. No regular migration routes or local movements of waterbird species or birds of prey were identified through the Proposed Development site.
    - Due to the mix of agricultural land and commercial forestry across the site, the ornithological study concluded that the area is of relatively low importance for birds.
    - Section 7.8 of the EIAR outlines the residual effects of the Proposed Development and concludes implementation of the proposed mitigation measures in full will limit residual effect to low significance, negligible/not significant.
    - The application fully assesses any potential impacts on red and amber listed species including Hen Harrier. Specific hen harrier surveys were carried out across the extensive survey period.
    - Chapter 7 of the EIAR and information received from the NPWS confirms that there are no known traditional hen harrier territories within the Proposed Development, with one confirmed breeding site located within a 0-3km radius in both 2010 and 2015
    - Section 7.3.2.2 of the EIAR details there were four records of hen harrier during the vantage point surveys carried out (totalling 864 hours between October 2019 and September 2023).

- Section 7.3.2.5 outlines that hen harrier activity was recorded approximately 3.8km west of the site in the 2023 breeding hen harrier surveys.
- Section 10 of the NIS states the proposal will not adversely affect (either directly or indirectly) the integrity of the River Shannon and River Fergus SPA which is designated for avifauna.
- Compliance with monitoring and mitigation undertakings are likely to ensure that there is not likely to be any significant effect on ornithology alone or in combination with other developments.
- As no significant effect on ornithology is likely, the applicant does not deem that consideration of an alternative site is required.

- In relation to Slope and Soils-
  - Section 9.8 of the EIAR (Land and Soils) concludes that no significant effects on land, soil and geology will occur as a result of the proposal.
  - No records exist of any landslide events within or in proximity to the site. The closest recorded event is c.16km north of the site.
  - Previous landslides within wind farms have occurred within sites predominantly comprised of peat material. Section 9.3.9 of the EIAR details no peat deposits are mapped within the development site so the risk of any landslip is minimal.
  - A pocket of peaty topsoil was recorded during site visits and was avoided by the proposed infrastructure during the layout design.
  - As no infrastructure is proposed within the area containing limited peat, it was not deemed necessary to carry out a Peat Stability Risk Assessment.
  - Mitigation Measures are outlined in Section 9.5.1.2 of the EIAR and further detailed in the submission.
- In relation to the Habitats Directive-
  - The NIS details with proposed mitigation measures the proposal will not affect the integrity of the identified SAC and SPA.

8.7. Response to Public Observations

8.7.1. The Applicant has responded to the matters raised in the third party submissions. They clearly detail the submissions relate to a range of issues and only the relevant planning issues are responded to. They highlight that non-planning issues or issues that are not of relevance to the current application or are too generalised to address are not included in their response.

8.7.2. The response details that regard should also be had to the other responses to Prescribed Bodies in which many of the issues raised in third party submissions have also been addressed and in order to avoid repetition. The pertinent matters can be summarised as follows-

- Ornithology-
    - refer to Clare County Council (CCC) and An Taisce Response
    - Ch 7 of the EIAR relates. The area is rated as Local Importance (higher value) for birds. Following mitigation, the effect of construction related disturbance to breeding hen harrier, sparrowhawk, buzzard, kestrel, peregrine and woodcock is avoided or reduced to not significant or at most slight.
    - With appropriate mitigation in place to prevent effects from pollutants on the quality of habitats within the River Shannon and River Fergus Estuaries SPA, significant adverse effects on water quality and the Special Conservations Interests of the SPA are not predicted.
- Habitats Directive-
    - Refer to An Taisce Response
    - The NIS determined that with the implementation of mitigation measures it is considered that the proposal, either individually, or in combination with other plans/projects, will not affect the integrity of the Lower River Shannon SAC or River Shannon and River Fergus Estuaries SPA
    - Other European sites excluded from further assessment are outlined in the NIS.

- The NIS contains information which the competent authority may consider in making its own complete, precise and definitive findings and conclusions, and upon which the competent authority is capable of determining that all reasonable scientific doubt has been removed as to the effects of the proposal on the integrity of the relevant European sites.

- Water-
  - Refer to CCC and An Taisce Response
  - Contamination of Private Well. Ch 8 of the EIAR contains an examination of information on private wells in the vicinity and no groundwater will be abstracted as part of the development. It is considered that the Proposed Development including control measures with mitigation measures, will ensure that there will be no significant effect on surface water quality, surface water flows or groundwater resources.
  - Flooding- referring to the submission from Environmental Trust Ireland and matters raised relating to the rail line near Ballycar between Ennis and Limerick the applicant contends the Ballycar townland referenced in the submission is a different Ballycar townland to that included in the proposal. It is approximately 15km from the Proposed Development. There are no instances of historic flooding within the site.
- Devaluation and Sterilisation of Property
  - No substantive, peer reviewed research is available which demonstrates that wind energy developments impact on property values.
  - Future housing development in the area not prevented with multiple examples of dwellings adjacent to wind farms.
  - The use of land as an operational wind farm does not sterilise the land for agricultural uses such as grazing for cattle and sheep or for future quarrying.
- Landslide Risk Assessment

- Refer to An Taisce submission.
- No records exist of any landslide events within or in proximity to the site, with the closest recorded event approximately 16km north of the development. Previous landslides within wind farms have occurred within the peat material. No peat is mapped within the development. As per Ch 9 of the EIAR there is no risk of peat instability, or from felling activities, as the limited area of peat identified on site, is being avoided.

- Landscape and Visual
  - Refers to the Clare County Council response
  - Chapter 12 of the EIAR includes a complete and robust LVIA. The significance of the landscape effect is considered to be moderate in the immediate vicinity of the site. The effects range from neutral to adverse. It is noted that though the turbines are considered to result in long term effects, the majority of these effects are reversible, due to the decommissioning of the wind farm. There are no landscape designations or Heritage Landscapes in the vicinity of the site and the area is categorised as 'Strategic' for wind energy.
- Tourism
  - Ch 12 of The EIAR (Landscape and Visual) concludes that the proposal is unlikely to have a significant adverse effect on existing or future tourism potential of the area. Ch 5 (Population and Human Health) provides an assessment on physical disruption, severance, or exclusion of user's ability to continue existing activities or deterrence of additional further development of amenities and tourism potential. The location of the site away from major tourist attractions and recreational activities will ensure that visitors are not directly impeded. Although the wind farm may be visible from some attractions/amenities this will not impact on those attractions.
- Biodiversity
  - Significant residual effects on biodiversity are not likely on any Important Ecological Features (IEFs) (EIAR Chapter 6).

- No significant disturbance and/or displacement impacts are expected to protected mammals (EIAR - Appendix 6B)
- The Invasive Species Report (EIAR Appendix 6F) noted two invasive species (Japanese knotweed and Himalayan balsam) with implementation of outlined measures avoiding the spread of these species and all infestations eradicated from the development site, including those outside the footprint of construction works.
- No significant, permanent, negative residual effect on bats (EIAR – Appendix 6B)
- Habitats- The proposed area is largely composed of agricultural grassland and commercial conifer tree plantation. Mitigation and monitoring measures have been designed to offset any significant direct or indirect effect which may result in residual significant impacts to IEFs considered. No habitats conforming to EU Annex I habitats are located within the Proposed Development boundary and those of importance, including areas of upland blanket bog and wet heath, have been actively avoided by iterative design.
- No removal of peat required.

- Noise and Vibration
  - The proposal can operate without significant effects on the amenity of any sensitive receptors.
  - Regarding 'Health'-
    - The HSE Public Health Medicine Environment and Health Group drafted a position paper in 2017 titled Position Paper on Wind Turbines and Public Health. It identified that there is no published scientific evidence to support adverse effects of wind turbines on health and concluded that:

      "Published scientific evidence is inconsistent and does not support adverse effects of wind turbines on health. However,

adequate setback distances and meaningful engagement with local communities are recommended in order to address public concern."

- With respect to infrasonic noise levels below the hearing threshold, the World Health Organisation (WHO) document Community Noise (WHO, 1995) has stated that:

  "There is no reliable evidence that infrasounds below the hearing threshold produce physiological or psychological effects."

  The Proposed Development therefore would not be prejudicial to public health.

- Regarding Humidity & Temperature
  - Reference is made in submissions to the relative humidity and temperature used to predict the noise levels and state that the tests are not realistic and are invalidated.
  - The noise assessment submitted has been prepared in accordance with the following guidance documents:
    - ETSU-R-97 – The Assessment and Rating of Wind Farm Noise (1997);
    - A Good Practice Guide (GPG) to the application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (Institute of Acoustics 2013).
  - As per the outlined mitigation in place, there will be no significant adverse residual noise and vibration effects at sensitive receptors.

- Cultural Heritage
  - Ch 13 of the EIAR assesses the effects on archaeology and wider cultural heritage. As part of the assessment test trenches were excavated under licence within the vicinity of archaeological features

within the site, all with negative results and no previously unknown features found.

- Exclusion zones will be physically established by archaeologists before the construction phase and groundworks associated with cuttings through townland/barony boundaries will be kept to a minimum.
- All ground disturbance associated with construction will be monitored by a suitable qualified archaeologist. If during archaeological monitoring and testing, previously unrecorded sites/features are discovered, then preservation 'in situ' or preservation by record will be carried out.
- It is concluded that after mitigation, there will be no residual likely significant effects on cultural heritage.

- Telecoms
  - A telecoms report is included in Appendix 15B of the EIAR.
  - Based on the findings of the consulting process, there were four Telecom Operators with networks in the vicinity of the Proposed Development that required a detailed technical analysis. The provision of alternative relay links will be put in place to prevent telecommunication impacts.
  - As is standard practice, a signed Protocol between the developer and RTE will be in place, in which the developer will be responsible to resolve any issue of interference with television reception as a result of the Proposed Development.
- Community Engagement
  - Extensive community engagement was undertaken over a 24 month period. Details in relation to community engagement are contained within Appendix 1A of the EIAR. Table 1 in the response outlines consultation undertaken.
- Cumulative Impact

- As part of the submitted application, cumulative impacts of other permitted and proposed developments were assessed. No significant, adverse cumulative effects are envisaged with these projects.
- However the Oatfield windfarm (ABP ref: ABP-318782) was not cumulatively assessed due to the timeline associated with the submission of this development. The applicant would welcome the opportunity to provide a cumulative assessment of the development.

- Wind Energy Development Guidelines
  - The 2006 Guidelines remain the relevant guidelines in place. The Board are only required to have regard to the guidelines.
- Shadow Flicker
  - Ch 11 of the EIAR commits that shadow flicker will not be experienced at any receptors. The applicant has no objection to a planning condition being attached.
- Traffic and Transport
  - Referring to a submission regarding the required letters of consent along the turbine delivery route, it details as temporary works are not included in the application boundary, no letters of consent are required to be submitted.
  - The Traffic and Transport Report (Appendix 15C of the EIAR) confirms that the proposal will not negatively affect the functionality of the surrounding road network. The issue has also been addressed in the response to the TII submission.
  - In relation to the suitability of the N69 from Foynes it details this national road has been utilised for the delivery of wind turbine components over a number of years to a significant number of wind farm developments.
- Geology
  - Reference is made within submissions in relation to geological faults in the area. Chapter 9 of the EIAR details geological processes that lead

to the formation of fault lines and earthquakes are less pronounced in Ireland and aren't considered a risk due to a lack of seismic activity. It concludes no significant effects on the land, soil and geology of the site of the Proposed Development will occur.

- Consultation with Limerick City and County Council
    - A full copy of the application was issued to Limerick City and County Council upon submission to the Board.
- Grid Connection
    - The grid connection does not connect to Ardnacrusha substation.
- Aviation
    - Refers to the responses to the prescribed bodies on the issue of aviation - AirNav Ireland and Shannon Airport Authority.
    - The published Aeronautical Information Publication (AIP[11]) for Coonagh Airfield states that all flights in/out should be to the south of the River Shannon, which is in the opposite direction of the proposed development. During the aviation screening process, it was deemed that there would be no impact from the Proposed Development.
- In conclusion, the proposal does not have a negative or adverse impact on the environmental, visual, cultural, ecological or community context within which it is located. The Proposed Development has a positive environmental impact at both macro and micro levels.

[11] I understand Aeronautical Information Publication (AIP) is a publication issued by ANI on behalf of IAA and contains relevant aeronautical information essential to air navigation e.g. regulations, procedures and other information necessary for the safety, regularity and efficiency of international air navigation- https://www.iaa.ie/commercial-aviation/airspace/aeronautical-information-services

https://www.airnav.ie/getattachment/644a6bed-6d13-4876-955f-400785981f0c/EI_AD_2_EICN_EN.pdf?lang=en-IE

9.0 Further Information

9.1. Introduction

9.1.1. On the 26th of July 2024 the Commission requested the following Further Information (FI) from the Applicant

1. *Significant concerns in relation to Aviation Safety have arisen given the proximity and scale of the proposed development to the Woodcock Hill Radar as set out in the observations received by the Board from AirNav Ireland and Shannon Airport Authority DAC. Notwithstanding the Applicant's response to the observations received, the Applicant is requested to review these submissions further and respond accordingly e.g. through the submission of a technical report. The applicant is advised that their response should demonstrate that sufficient consultation with AirNav Ireland and Shannon Airport Authority has been undertaken and all Aviation concerns have been addressed to their satisfaction.*

2. *A planning application for a Strategic Infrastructure Development wind farm case number ABP-318782-24 (Oatfield) was received by the Board on the 22/12/2023 in close proximity to the subject application site. The applicant is requested to submit a revised/updated NIS addressing in-combination considerations that may arise from the proposed development and the Oatfield wind farm proposal.*

9.1.2. A response was received on the 20th of September 2024 and comprises of the following-

1. Aviation Response Statement prepared by AI Bridges including-
    - Appendix 1 Ballycar Wind Farm Aviation Technical Assessment-Cyrrus (already submitted)
    - Appendix 2 IFP Opinion Ballycar Windfarm Cyrrus (already submitted)
    - Appendix 3 Ballycar Windfarm Impact on ILS Inspection Report – FCSL (already submitted)

- Appendix 4 Ballycar Wind Farm Aviation Impact Assessment & Mitigation Report – AI Bridges (already submitted)
- Appendix 5 Mitigation Options Study Ballycar Windfarm - Cyrrus (already submitted)
- Appendix 6 AIRNAV Response Statement Ballycar Windfarm - Cyrrus
- Appendix 7 Aviation Assessment Methodology
- Appendix 8 Thales RSM970 Technical Description[12]
- Appendix 9 Thales Windfarm Mitigation Presentation
- Appendix 10 Thales Structured List of Upgrades
- Appendix 11 EUROCONTROL Mode S Station Functional Specification (EMS 3.11)
- Appendix 12 AIS AIP[13] Newcastle Airport Appendix 13 Project Marshall ATC Radar Upgrade

2. A revised Natura Impact Statement (RNIS) prepared by Malachy Walsh and Partners (MWP) dated September 2024.

9.2. Prescribed Bodies submission on Further Information

9.2.1. Six submissions were received from prescribed bodies which are summarised hereunder-

9.2.2. AirNav Ireland 18/12/24

- Objects in the strongest possible terms to the proposed development
- The Irish Aviation Authority (IAA), who regulate AirNav Ireland, confirmed that AirNav Ireland are the Surveillance/ Communications/NAVAIDs experts in assessing impacts of such developments. References to the UK (CAA) are not relevant in this context and indeed may be a misrepresentation, in relation to the Enroute Surveillance (Radar) network.

[12] The Commission is referred to section 12.4.3.5 of this report where it is noted this document was not submitted with original application. It has now been submitted as part of the FI.
[13] Aeronautical Information Publication

- The greatest cause of concern is the generation of radar beam deflections that would generate false targets at higher altitudes and at distance of up to 250nm[14].
- There is an expected impact for calibration of the ILS[15] system serving Runway 24 at Shannon Airport. Any amendment to the current calibration serials has the potential to affect the safety assurance material of the ILS24 Glide Slope. Should any aspect of the ILS system's safety assurance material be negatively impacted or called into question, the Irish Aviation Authority (IAA) is likely to impose restrictions on the use of this landing facility, directly affecting landing traffic on the main runway at Shannon Airport.
- The RFI documentation as lodged has no standing without a full review by the AirNav Ireland Surveillance and NAVAIDs Teams including a demonstration of how mitigation measures, if available, could be applied.
- References to other "granted" wind farm developments are not accurate as in all but two cases cited, AirNav Ireland has either sought more formal assessments or objected to these developments due to their impact on systems/services.
- Ballycar has the potential for the biggest impacts on AirNav Ireland systems, without measurable, evidence-based, demonstrable mitigations being applied

9.2.3. **Shannon Airport Authority DAC (SAG) – 22/12/24**

- Despite assurances indicated by the developer in the Response to the RFI Shannon Airport Authority retains and shares the serious concerns of Air Nav Ireland most specifically the Woodcock Hill radar surveillance system and how this impacts the approach of aircraft to the 24 end of Runway 06/24 at Shannon Airport.
- Appropriate mitigation measures cannot be deployed to the satisfaction of Air Nav Ireland to prevent impacts on the Woodcock Hill radar site

[14] c. 463km
[15] Instrument Landing System

- Any amendment to the current calibration serials has potential to affect the ILS Glide Slope angle, which could in turn affect the usability of this landing system.
- The Glide Slope angle is essentially the angle of descent an aircraft will use on approach to an aerodrome. It is the angle between the flight path and the ground. The larger the angle, the steeper the descent and the higher rate of descent. The ILS Glide Path for Runway 24 at Shannon operates at an angle of 3 degrees which is the optimal angle recommended and which ensures acceptable speed control for aircraft during landing.
- Any increase on the 3 degree slope would not be recommended from a safety perspective and could prevent certain aircraft types landing at the aerodrome. This has serious commercial implications for business at Shannon Airport.

9.2.4. **Transport Infrastructure Ireland 19/12/24**

- TII has no specific observations to make in relation to this Further Information circulated

9.2.5. **Uisce Éireann (UÉ) – 09/12/24**

- No connection to UÉ water supply or waste water services required.
- Negligible risk to public water from either the construction or operation of the proposed development.
- Negligible risk to UÉ infrastructure. In the event that the access roads construction impacts an UÉ asset, the applicant will be expected to submit a diversions enquiry.
- Typical UÉ requirements are detailed

9.2.6. **Development Applications Unit- Nature Conservation – 23/12/24**

- The Commission's FI request was limited to a revised/updated Natura Impact Statement (NIS) addressing in-combination considerations that may arise from the proposed development and the Oatfield wind farm proposal.

- It is not clear from the RNIS as to whether the assessment of the Knockshanvo Wind Farm included a consideration of cumulative impacts in combination with the proposed development at Ballycar.
- Section 6.7.2 appears to contain the majority of the revisions to the NIS. These revisions highlight the potential in-combination effects that relate to

    a. shared catchment (Blackwater [Clare] River) and

    b. effects of disturbance/displacement of birds using the River Shannon and River Fergus Estuaries SPA.

  However, the description of the cumulative effects appears to lack clear and precise conclusions and relies on surface water mitigation measures about which the Department has already flagged some concerns.
- In the NIS, section 7.2.6, it states-

  > *"The following subsections provide further detail on the various mitigation measures that will be incorporated into the proposed development to avoid or minimise any water quality impacts that could significantly affect the Conservation Objectives of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA".*

  This is followed by-

  > *"A surface water monitoring schedule will be finalised prior to construction and then followed throughout the construction phase of the project - refer to the Surface Water Management Plan in Appendix 2B".*

  In Appendix 2B, it states

  > *"A programme for water monitoring will be prepared in consultation Clare County Council and with Inland Fisheries Ireland prior to the commencement of the construction of the proposed development".*

  The DAU the highlight for the purposes of AA, there can be no doubts or lacunae regarding what is required for mitigation and the assessment must contain complete, precise and definitive findings and conclusions capable of

removing all reasonable scientific doubt as to the effects of the works proposed on the protected sites concerned.

- Regarding section 3.1 of the BEMP it is recommended that areas prone to siltation of nearby rivers/streams and drains be identified as best as possible prior to construction and detailed maps of proposed water quality mitigation measures be provided for clarity.
- They recommend the Board seeks clarification on how the proposed mitigation measures put forward in the original application will be able to address the cumulative impacts on the Blackwater [Clare] River and the European sites downstream.
- The applicant also states in respect to the impact on birds using the River Shannon and Fergus Estuaries SPA and other SPAs nearby:

  > *"Upon considering the possibility of in-combination effects of the proposed development with Oatfield Wind Farm and Knockshanvo Wind Farm, it is noted that the nearest turbines are located approximately 4.2 kilometres and 5.2 kilometres away, respectively, from the proposed development site - see Figure 4-15, above. These significant intervening distances ensure a relatively wide dispersal without clustering of individual wind farms with the proposed development. Consequently, there is no plausible potential pathway for operational in-combination effects to occur between the proposed Ballycar Wind Farm and other wind farms that could result in significant cumulative effects."*

- The DAU questions the Applicant's use of statements "significant intervening distances" and plausible. They question the basis for conclusions and if . likely significant effects have been entirely ruled out using the best scientific knowledge. They seek assurances with specific reference to ornithological data presented in the other wind energy development applications.
- The DAU then remind the Board of its obligations under Article 6 of the Habitats Directive and the planning policy context for the proposed development, including the Clare County Development Plan.

9.2.7. **HSE- National Environmental Health Service (NEHS) – 23/12/24**

- The NEHS did not make observations on the application made on the 26th January 2024 and it is considered appropriate to consider aspects of the original EIAR along with the significant further information in making this submission.
- The NEHS considers likely significant effects within a Population and Human Health context that uses a source - pathway- receptor model, based on emissions through environmental media and population exposure. The exposure of populations, if any, is then considered against recognised health protection criteria. A Population Health approach to the sensitivity of receptors would not consider individual specific sensitivity of a human receptor, but the sensitivity of the established land use or service provision.
- The NEHS is aware of the High Court decision in Webster/Rollo V Meenaclogher (Wind) Limited (2024 IEHC 136) 8th March 2024, and details of the judgement. The judgement that the noise from the wind farm was a Private Nuisance. If Planning Authorities are considering a duty to incorporate the likelihood of a private nuisance into their decision making they should consider this judgment.
- With reference to section 5.4.2.6 and the 2017 HSE position paper on wind farm noise it is important to consider there is no direct evidence that wind farm noise has a specific or unique health effect that is different to potential health effects from noise exposure from any development. There is however a strong research base into the effects of noise on human health and this would include wind farms, if noise exposure from them is at levels that impact on human health.
- The NEHS supports the commitment made in chapter 11 to use the available technology to ensure there is no exposure to shadow flicker at any sensitive receptor.
- In relation to significant effects from noise and vibration the NEHS has considered the background noise monitoring in the context of their site visit and the nature and characteristic of the proposed development area. The

NEHS is satisfied the measurement of the existing noise environment is representative.

- In relation to operational noise the tabulated predicted noise exposure levels in table 10.18 of the EIAR indicate levels significantly below the criteria set in the 2006 Guidelines. Tabulation of predicted change as indicated would be the most informative way of accessing the likely effect of operational noise. The predicted noise exposure levels are of a level that would not require assessment under what the NEHS considers to be the most i.e. the Environmental Noise Guidelines for the European Region, 2018, which is a health protection standard.
- The NEHS considers the most effective mitigation for the protection of Public and Environmental Health from noise during construction is limiting hours of operation for noisy activity such as blasting.
- Regarding protection of drinking water sources there is no hydrological connection to the two identified group water schemes. The NEHS is of the opinion that if the mitigation measures identified are implemented in full there will be adequate protection of surface and ground water during the construction and operation of the proposed development. Proposed monitoring should be implemented to validate effectiveness of mitigation.
- The NEHS is satisfied there will be adequate protection of Public and Environmental Health during the construction phase if all the mitigation measures are implemented in full. A number of recommendations are also set out.
- The NEHS has not identified any additional mitigation measures required to protect Public and Environmental Health during the construction and operational phase of the proposed development.

9.3. Public Submissions and Observations on Further Information (FI)

9.3.1. 21 FI public submissions/observations were received, 19 of which are from observers who made submissions to the original application. The names of each observer are listed in Appendix 2 of this report. I have considered all the points

raised and in my opinion the substantive planning matters for the purpose of this application relate to the issues raised in the FI request regarding Aviation Safety and Cumulative Impacts and the RNIS. Other matters raised e.g. noise are addressed as appropriate in the assessment section.

9.4. Applicant's Responses to Further Information Submissions

9.4.1. The Applicant has submitted their response to the FI submissions on the 13/02/25. The response addresses each of the Prescribed Bodies submissions individually as well as public submissions.

9.4.2. The following summarises the Applicant's response to submissions made by prescribed bodies and the public in relation to the Applicant's FI submission.

9.4.2.1. Response to Uisce Éireann Observation

- The proposal does not require any connection to water or wastewater services.
- The proposal poses a negligible risk to public water abstraction and infrastructure.
- The proposed construction, operation and decommissioning does not require any diversions or building over Uisce Éireann infrastructure.
- The proposal will not impact Uisce Éireann assets.

9.4.2.2. Response to TII Observation

- Confirms their position as per the TII observation submitted to the Board on the 6th of March 2024.
- No specific observations in relation to the further information submitted.

9.4.2.3. Response to HSE National Environmental Health Service (NEHS)

- The NEHS did not make an observation on the original application made on
- They have therefore considered it appropriate to consider aspects of the original EIAR, along with the further information submitted

- the NEHS considers likely significant effects within a population and human health context that uses a source-pathway-receptor model based on missions through environmental media and population exposure.
- The assessment undertaken for the proposal considers likely significant effects on public health as per the EPA Guidelines. Please see Section 5.2.3.2 of Chapter 5 Population and Human Health, which outlines the assessment criteria as per the EPA Guidelines. The source-pathway-receptor is used throughout the EIAR and NIS.
- The 2006 Guidelines apply to new wind farm developments. The proposal has considered the proposed new guidelines where applicable (i.e. 2019 draft).
- A full and comprehensive assessment has been undertaken in relation to noise and vibration (Chapter 10 of EIAR). The proposal will comply with relevant noise and vibration limits and there will be no significant adverse residual noise and vibration effects at sensitive receptors. Mitigation measures will be implemented in the unlikely event of noise disturbance at receptors, including measures which will be applied should complaints of Amplitude Modulation arise during operation.
- In relation to Chapter 5 of EIAR-
    - The NEHS notes the EIAR methodology for assessing likely significant effects is the preferred methodology, and that the assessment carried out has considered the opportunity for health gain.
    - The NEHS considers the protection of water supplies, including private wells has been adequately considered.
    - With reference to the quotation from the 2017 HSE position paper, Chapter 10 Noise provides a full and comprehensive assessment has of noise and vibration. The proposal will comply with relevant noise and vibration limits and there will be no significant adverse residual noise and vibration effects at sensitive receptors.
    - The NEHS supports the measures proposed in Chapter 11 Shadow Flicker.
- In relation to likely Significant Effects from Noise and Vibration

- the NEHS are satisfied that the background noise monitoring is representative of the existing noise environment.
- predicted noise levels are in compliance with, and significantly below the criteria as set out in the relevant Guidelines.
- No significant cumulative effects are predicted with other wind farm developments, quarrying activities and forestry felling operations.
- The NEHS outlines that the predicted noise exposure levels are of a level that does not require assessment against the Environmental Noise Guidelines for the European Region, 2018.
- The NEHS considers the proposed construction hours outlined in the Application adequate to protect public and environmental health from noise.
- Section 10.5.3 of Chapter 10 outlines mitigation measures which will be incorporated into a Blast Management Plan for the Proposed Development, which will be complied with during blasting operations.
- there will be no significant adverse residual noise and vibration effects at sensitive receptors.

- In relation to Protection of Drinking Water Sources-
  - The NEHS confirms that there is no hydrological connection to the two identified group water schemes.
  - The NEHS have outlined that with the implementation of the outlined mitigation measures, there will be adequate protection of surface and ground water during the construction and operation of the Proposed Development. Extensive mitigation measures are outlined in Chapter 8.
  - No additional mitigation measures are required to protect Public and Environmental Health.
- In relation to the Construction and Environmental Management Plan (CEMP)
  - The NEHS has considered the CEMP and the schedule of mitigations provided and are satisfied there will be adequate protection of Public and Environmental Health during the construction phase. All

recommendations of the NEHS are to be complied with as detailed in documentation submitted including CEMP.

9.4.2.4. **Response to Department of Housing, Local Government and Heritage (DAU)**

- The RNIS details that due to the location of Knockshanvo Wind Farm adjacent to Oatfield Wind Farm, both wind farms were considered when assessing the potential for significant in-combination effects with Ballycar Wind Farm i.e. in-combination effects on the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA.
- The DAU's view's in relation to the description of cumulative effects and the optimum standard of water running into adjacent streams from the trackside drainage as detailed in the BEMP are noted.
- An extensive programme of mitigation measures pertaining to protection of water quality during the construction phase is set out in Appendix 2A Construction and Environmental Management Plan (CEMP) and Appendix 2B Surface Water Management Plan (SWMP) as well as shown in a number of the detailed drawings.
- Based on the proposed design, mitigation measures and best practice construction, the proposal will not result in significant adverse water quality impacts to the Kilnacreagh Stream which is a tributary of the Blackwater [Clare] River.
- Sections 6.7.2.1.1 and 6.7.2.2 of the RNIS clearly conclude that there is no potential for synergistic interaction between the Proposed Development and the Oatfield and Knockshanvo wind farm's that could cause in-combination effects on the qualifying features of the Lower River Shannon SAC or River Shannon and River Fergus Estuaries SPA.
- Section 7 of the NIS outlines the detailed, substantive mitigation measures, including mitigation by design, surface water drainage and the treatment system with surface water management and the protection of water quality discussed in detail.

- Regarding the DAU recommendation for ‘clarification’ Section 6.7.2.1.1 of the RNIS discusses the potential cumulative impacts on the Blackwater [Clare] and the European sites downstream. Oatfield and Knockshanvo wind farm development areas are both located predominantly upstream and upgradient of Ballycar and within a different river subbasin, namely Blackwater [Clare], and therefore, there is no direct hydrological link between the application site and the main development areas of Oatfield and Knockshanvo.
- The response does highlight a “highly tenuous” indirect hydrological link between the underground collector cables of both Ballycar and Oatfield via the Kilnacreagh Stream and the Blackwater [Clare] River into which the stream drains.
    - The underground grid connection cable will cross the Kilnacreagh Stream approximately 110 metres from where the cable connects to the overhead lines of the National Grid. A proposed access track over the Kilnacreagh Stream will coincide with the proposed crossing point of the cable. A new bottomless culvert is proposed to carry both the track and cable over the stream, therefore, eliminating any requirement for in-stream works.
    - The underground collector cable for Oatfield will cross the Blackwater [Clare] River along the L-7062 Local Road using horizontal directional drilling approximately 1.7 kilometres downstream of the crossing of the Kilnacreagh Stream for Ballycar.
    - Should concurrent installation of underground collector cables occur, there is very slight potential, that the tenuous hydrological connection forms a pathway through which cumulative water quality impacts on the Blackwater [Clare] could potentially occur with potential to impact the designated aquatic habitats and species of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA located, respectively, approximately 16.7 river kilometres and 25.3 river kilometres downstream from the L-7062 crossing.
    - Considering the lack of any in-stream works, the highly localised nature and limited scope of the works, the tenuity of the hydrological

connection between the two proposed cable crossings, and the intervening distances to the European sites downstream, the potential for significant in-combination water quality impacts affecting the Qualifying Interests (QIs) of the SAC or the SPA is extremely low.

- Based on the proposed design, mitigation measures and best practice construction, there is no potential for adverse water quality impacts to arise due to a synergistic interaction between Ballycar, Oatfield or Knockshanvo that could result in significant cumulative effects that would undermine the Blackwater [Clare] River or the conservation objectives for the qualifying features of the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA.

- Regarding statements in relation to potential in-combination effects on the River Shannon and River Fergus Estuaries SPA-
  - Only black-headed gull and cormorant were recorded at the site. No other birds of SCI were recorded within 2km of the site boundary during all surveys carried out.
  - The River Shannon and River Fergus Estuaries SPA is designated for wintering black-headed gull and the two observations made of the species during VP surveys at the site during 48 months of ornithological surveys occurred during the winter months. However, all observations of black-headed gull recorded during the bird surveys in support of the Oatfield and Knockshanvo developments occurred during the breeding season (summer months) signifying that the black-headed gull using the other two proposed wind farm sites are unlikely to be part of the SPA's designated wintering population of black-headed gull.
  - Considering this information, there is no potential adverse impacts to the wintering population of black-headed gull for which the River Shannon and Fergus Estuaries SPA is designated due to in-combination effects of the operational phase of Ballycar and the proposed Oatfield and/or Knockshanvo developments.

- It is possible that the regularly observed cormorant at the inland lakes located between approximately eight and eleven kilometres north-northwest of Ballycar are part of the SPA's cormorant population.
- Considering the availability of habitat of equal or greater ecological value within the estuarine waters of the River Shannon and River Fergus estuaries and the absence of any significant numbers of cormorant transiting over Ballycar, there is no potential for the SPA's breeding and wintering population of cormorant to be adversely affected as a result of any operational phase in-combination effects with the other two proposed wind farms.

- In relation to the potential for in-combination effects that may increase the risk of either species colliding with wind farm infrastructure or being displaced as a result of it, the sheer paucity of activity of either black-headed gull or cormorant at Ballycar and the Oatfield and/or Knockshanvo sites indicates that any in-combination effects that may occur with regard to collision risk will not be of such significance as to significantly adversely affect the integrity of the River Shannon and River Fergus Estuaries SPA, in light of its conservative objectives for these qualifying interests.

9.4.2.5. **Response to AirNav Ireland (ANI)-**

- The response identifies four key points-
  - Deflections
  - Instrument Landing System (ILS) calibration testing
  - Requirements for full review and demonstration of mitigation measures
  - Other granted wind farms
- Deflections
  - ANI's greatest concern is the generation of radar beam deflections that would generate false targets at higher altitudes and at a distance of up to 250nm. ANI have not provided any in-depth, substantive analysis or evidence to support this concern

- the Applicant has provided significant, in-depth analysis in relation to the potential impact of radar beam deflections with the initial application and in the FI response.
- the Thales RSM970 MSSR installed at Woodcock Hill uses a well-established processing system to remove deflected targets as detailed in Section 3.4.2 of Appendix 1 Aviation Response Statement and associated Appendix 8.

- ARTAS Surveillance Data Processing system
  - The ARTAS system is one of the most advanced and successful surveillance data processing systems in the world. It is used for Air Traffic Management Surveillance in Irish Airspace including surveillance at higher altitudes and out to a distance of up to 250nm
  - Radar sites are strategically placed throughout the Republic of Ireland, with overlapping coverage (see Figure 2 of response). These deliver duplicated coverage of ANI's airspace to the ARTAS systems located in Shannon and Dublin Air Traffic Control centres.
  - In the event of a lack of coverage/deflections/out of serve etc from one radar, ARTAS automatically uses data from another radar providing overlapping coverage ensuring an accurate picture to air traffic controllers.
  - An example is provided in Figure 3 as demonstration.
  - Independent technical expert advice submitted demonstrates that the proposal will not generate radar beam deflections, resulting in false targets at higher altitudes and at a distance of up to 250nm. However if it did, the ARTAS system will discount such deflections, resulting in no impact to the air traffic control system.
  - The Thales RSM970 MSSR installed at Woodcock Hill uses a well-established processing system to remove deflected targets.

This coupled with the ARTAS system will ensure radar beam deflections will not be experienced.

- Performance Based Navigation (PBN)
  - EU Regulation 2018/1048 details airspace usage requirements concerning Performance Based Navigation (PBN) to be implemented in Irish airspace by June 6th, 2030.
  - This requires the use of ground-based radar systems such as the Woodcock Hill MSSR (except for contingency only) to cease and instead transition to exclusive use of satellite navigation systems.
  - These will negate current issues with ground-based radar systems (topography, built environment, etc.).
  - The IAA has developed the PBN Transition plan to ensure a smooth and safe transition to the provision of the Air Traffic Management and Air Navigation services using PBN. ANI has made no reference to this required transition.
- Reference to the UK (CAA – Civil Aviation Authority)
  - The Applicant firmly rejects references to the UK aviation sector as not relevant and may be a misrepresentation in relation to Enroute surveillance for the reasons set out in the response submission.
  - National Air Traffic Services (NATS) on behalf of the CAA are subject matter experts with regards to the development of wind farms and aviation mitigation, having implemented strategies and mitigations that ensure wind farm developments can proceed without impacting on aviation.
- ANI's initial observation to the application-
  - This referenced concerns in relation to radar beam reflections and shadowing that are not repeated in FI submission.

        - It is considered therefore that these concerns have been adequately addressed by the FI response.

- Instrument Landing System (ILS) calibration testing
    - This an entirely new issue which was not raised in their original planning submission. It does not definitively outline concerns or provide substantive analysis to support ANI's objections.
    - ANI's initial letter of support states the proposal has no impacts on Instrument flight Procedures serving Shannon Airport or Navigation Aids at Shannon Airport.
    - The FI submission raised an impact for calibration of the ILS system serving Runway 24 at Shannon Airport.
    - Appendix 15A Aviation Report of the Application contains a report (Appendix D) on the impact of the Proposed Development on ILS flight inspection. Also submitted with FI submission.
    - The report concludes that with minor amendments to the flight inspection procedure, the proposal will not have any adverse effect on Runway 24 ILS flight inspection procedures and flight profiles.
    - Flights checks are carried out by an IAA approved Flight Inspection Service Provider. The provider utilised by the IAA is FCSL, who have undertaken the impact assessment on behalf of the Applicant.
    - They have undertaken 49 flight checks for Shannon Airport from 2022-24. Only 11 flights have been recorded in close vicinity of the proposal. Only 1 of these was recorded under the altitude of 2,400ft. All others were above an altitude of 3,000ft. Flight checks are therefore already being carried out at higher altitudes.
    - The Proposed Development will not impact on flight checks. Should additional costs arise the Applicant commits that they will bear any additional expense associated with flight checks at higher altitudes and has no objection to a planning condition in this regard.
- Requirements for full review and demonstration of mitigation measures

- The applicant considers the FI submission has not been properly reviewed by ANI. They refer to a statement in ANI's observation that the documentation has no standing without a full review.
- Consequently, AirNav Ireland's position of objecting does not appear to have substantive basis.
- The Applicant considers ANI's submission confirms that there is only the potential for impacts on the systems without measurable, evidence-based demonstrable mitigation being applied if it is available.
- Deflections will not be experience. In the event that minor optimisations/mitigations are required these are available, have been proposed, and will be applied (and the associated costs of its provision will not be borne by AirNav Ireland). The mitigation measures proposed are measurable, evidence-based and demonstrable.
- International aviation experts who have provided input, compiled and reviewed these reports have outlined that the proposal will not result in any impacts on aviation systems and safety.

- Other granted wind farms
  - The Applicant asserts elements of ANI's position on other wind farms are incorrect as detailed.

9.4.2.6. **Response to Shannon Airport Authority (SAA)-**

- This submission replicates a number of points from the ANI FI submission.
- The issue of ILS calibration was not raised previously by SAA.
- The observation appears to link the Woodcock Hill radar with ILS for Shannon Airport. The Woodcock Hill radar serves enroute traffic in and out of Irish airspace. The radars at Shannon airport are utilised for airport terminal traffic. The Woodcock Hill radar is not relevant with regard to Shannon Airport ILS.
- The SAA FI submission raises a new issue not previously raised. It states that any increase in the 3˚ slope angle between the flight path and the ground

could prevent certain aircraft types landing at the aerodrome and have serious commercial implications for the business at Shannon Airport.

- The Applicant confirms that no increase to the 3˚ glide slope angle is required to facilitate the Proposed Development. See figure 4 of submission[16] which shows the proposal is not located within the flight path for runway 24. Aircraft will continue to descend at the 3˚ glide slope angle with no residual impact to safety or commercial implications for Shannon Airport.

9.4.2.7. **Response to Public Submissions**

- The Applicant's response considers the points raised in the public submissions to the FI response. The response details these have already been comprehensively addressed as part of the initial application, and the response to the original observations submitted to the Board (section 8.7 of this report).

9.4.2.8. **Other Comments**

- The Applicant's response to FI also addresses "Climate Obligations of Statutory Bodies: Co-Existence of Windfarms".
    - It focuses on the required shift by all state authorities, in the context of delivering climate-conscious decision-making that complies with mandatory International, EU and national law climate obligations.
    - It argues an inconsistent and inadequate approach has been adopted by AirNav Ireland and Shannon Airport, with a non-existent approach adopted by both as to their climate action obligations.
    - It argues in order to comply with Section 15 of the Climate Act, the Board is required to consider whether a decision is "practicably available" to it which would be consistent with the State's climate objectives and policies.
    - It refers to the recent decision of Coolglass Wind Farm Limited v An Bord Pleanála [2025] IEHC1, in which the Court held that *"if there is*

[16] Also Figure 3.5 of FCSL Report

some impracticability in a grant of permission, but it can (or could potentially) be resolved by a procedural decision that is not impractical then the [decision maker] is required to make the procedural decision that is most consistent with climate goals to enable the problem to be fixed."

- The Applicant asserts that it is practicable to grant permission subject to a condition requiring the Applicant to collaborate with the relevant aviation bodies.

- It is then submitted that the Board is entitled to prefer the evidenced-based technical risk assessment and reports that has been provided with the Application over the non-evidence based general statements of objection made by AirNav Ireland and Shannon Airport and provide its reasons for the preference.
- SAA confirmed in its submission of March 3rd, 2024, *that "With specific reference to Ballycar Wind Farm, and arising from our own internal assessment, this development will have no impact on the aerodrome OLS."*
- Options for the Board are then set out which include granting permission based on information submitted, with specific aviation conditions, convene a meeting with the relevant bodies or host a limited agenda oral hearing.

10.0 Policy Context

10.1. EU Legislation/Policy

10.1.1. The revised Renewable Energy Directive (REDIII)

- This lays down a minimum binding target of 42.5% share of renewables by 2030 with an aspiration to reach 45%. It sets the course for a rapid acceleration of renewable energy deployment, while taking into account other policy considerations such as multiple use of land. It requires a massive scale-up of renewables projects, driving demand for inter alia wind energy.
- This was transposed into Irish Legislation by way of SI No. 274 of 2025 dated the 06th August 2025.

10.1.2. European Wind Power Action Plan[17]

- This details-
    - the EU target of at least 42.5% of renewables by 2030 will require the installed capacity to grow from 204 GW in 2022 to more than 500 GW in 2030.
    - Globally, annual wind capacity additions should reach at least 329 GW per year until 2030 to achieve net-zero emissions by 2050, more than quadrupling today's deployment levels (75 GW).
- It identifies six main pillars of concerted action by the European Commission, Member States and the industry:
    i. acceleration of deployment through increased predictability and faster permitting;
    ii. improved auction design;
    iii. access to finance;
    iv. creating a fair and competitive international environment;
    v. skills; and
    vi. industry engagement and Member State commitments.

10.2. National Policy and Legislation

10.2.1. Climate Action and Low Carbon Development Act 2015, as amended 2021

- Section 15 of the 2021 amendment act requires An Coimisiún Pleanála, in so far as practicable, to perform its functions in a manner consistent with-

    "(a) the most recent approved climate action plan,

    (b) the most recent approved national long term climate action strategy,

    (c) the most recent approved national adaptation framework and approved sectoral adaptation plans,

[17] https://energy.ec.europa.eu/publications/european-wind-power-action-plan_en

(d) the furtherance of the national climate objective, and

(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."

10.2.2. **Climate Action Plan 2024 (CAP24) and 2025 (CAP25)**

- CAP24 and CAP 25 are the most recent annual updates to Ireland's Climate Action Plan. The purpose of the CAP's is to lay out a roadmap of actions which will ultimately lead to meeting the country's national climate objective of pursuing and achieving, by no later than the end of the year 2050 (as committed to in the Climate Action and Low Carbon Development (Amendment) Act 2021), the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy. It aligns with the legally binding economy-wide carbon budgets and sectoral emissions ceilings that were agreed by Government in July 2022.
- Central to achieving these goals is the strategic increase in the share of renewable electricity to 80% by 2030. In order to reach 80% of electricity demand from renewable sources by 2030 section 12.4.1.1 of CAP24 details inter alia the following-
    - Accelerate the delivery of utility-scale onshore wind, offshore wind, and solar projects through a competitive framework
    - Target 6 GW of onshore wind by 2025
    - Target 9 GW of onshore wind by 2030
    - Deliver a streamlined electricity generation grid connection policy and process, and remove barriers, where possible, for the installation of renewables and flexible technologies reducing the need to build new grid, including hybrid (wind/solar/ storage) connections

  CAP25 section 11 identifies some of these as Key Targets.
- CAP24 details the significant changes to enhance the electricity grid's capacity and flexibility. This will accommodate the significant upsurge in renewable energy while ensuring the system's reliability and efficiency. Additionally, managing electricity demand through innovative policies and

technologies is crucial for aligning energy consumption with cleaner production.

- Section 11 of CAP25 deals specifically with electricity and identifies a number of relevant actions. It states-

> *"A renewables-led system is at the core of Ireland's plan to radically reduce emissions in the electricity sector, protect our energy security, and ensure our economic competitiveness. This requires the accelerated and increased deployment of new renewable electricity generation capacity and related infrastructure."*

10.2.3. **Project Ireland 2040: National Planning Framework First Revision, April 2025 (NPF) and the National Development Plan (NDP 2018-2027) and NDP review 2025**

- The National Planning Framework First Revision (NPF) identifies the importance of climate change through its National Strategic Outcome (NSO 8), which relates to ensuring a 'Transition to a Low Carbon and Climate Resilient Society'.
- National Policy Objective 70 seeks to-

> *"Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050."*

- The National Development Plan (NDP) 2021-2030 sets out the investment priorities that will underpin the implementation of the NPF, one of which is climate action. Section 3.7 of the plan details-

> *"increasing the share of renewable electricity up to 80% by 2030. This is an unprecedented commitment to the decarbonisation of electricity supplies."*

- Section 3.3 of the NDP 2025 Review deals with Climate where Irelands ambitious national climate goals under the CAP's are detailed. Section 5.8 is titled 'NDP Priority Investment and Sectoral Plans' and states-

> *"The National Development Plan will provide for the provision of up to €3.5 billion in new equity to support investment in electricity grid*

infrastructure over 2026 – 2030. €2 billion will be provided to EirGrid and €1.5 billion to ESB. This equity will enable both companies to significantly increase capital investment to expand electricity transmission and distribution network infrastructure."

Although section 8.4 of the NPF discusses Tourism in the context of 'Co-ordination of Investment with Northern Ireland, it specifically references promoting strategic attractions of scale and signature tourist attractions such as the Wild Atlantic Way. National Policy Objective 63 seeks to-

"Support the coordination and promotion of all-island tourism initiatives through continued co-operation between the relevant tourism agencies and Tourism Ireland….."

10.2.4. The National Biodiversity Action Plan 2023-2030 (NBAP)

- Ireland's 4th NBAP sets the biodiversity agenda for the period 2023 – 2030. The NBAP has a list of Objectives which promotes biodiversity as follows-
    - Objective 1 Adopt a whole of government, whole of society approach to biodiversity;
    - Objective 2 Meet urgent conservation and restoration needs;
    - Objective 3 Secure nature's contribution to people;
    - Objective 4 Enhance the evidence base for action on biodiversity and
    - Objective 5 Strengthen Irelands contribution to international biodiversity initiatives.

10.2.5. National Renewable Energy Action Plan (NREAP)

- Under the first EU Directive 2009/28/EC[18] (RED) in 2009, member countries of the European Union were obliged to draft and submit to the European Commission National Renewable Action Plans (NREAPs) outlining pathway which will allow them to meet their 2020 renewable energy, energy efficiency and GHG cuts targets.

[18] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF

- Ireland 2020 electricity target- 42.5% of electricity demand met by electricity generated from renewable energy sources.

10.2.6. **National Landscape Strategy for Ireland 2015-2025 (NLS)**

- Ireland signed and ratified the Council of Europe's European Landscape Convention (ELC) in 2002 which came into effect on 1 March 2004. It obliges Ireland to implement policy changes and objectives concerning the management, protection and planning of the landscape. The National Landscape Strategy is intended to ensure compliance with the ELC and to establish principles for protecting and enhancing it while positively managing its change. It is a high level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions.
- The objectives of this Strategy are-

  to establish and implement through a series of actions, policies aimed at understanding, protecting, managing and planning our landscape. It sets out specific measures to integrate and embed landscape considerations in all sectors which influence the landscape and improve and enhance the quality of decision-making by those who have an impact on it.

10.3. **Regional Spatial Economic Strategy for the Southern Region 2020-32 (RSES)**

- Chapter 5 of the RSES deals with the Environment including responding to Climate Change. It states-

  "Environmental protection and enhancement is a core component of the RSES. The relevant Regional Strategic Outcome is: Low Carbon, Climate Resilient and Sustainable Society".

  It acknowledges climate change as the most important long term challenge facing Ireland and states-

  "The Regional Assembly is committed to implement regional policy consistent with the Climate Action Plan….."

It goes on to state-

> *"The RSES recognises and supports the many opportunities for wind as a major source of renewable energy. Opportunities for both commercial and community wind energy projects should be harnessed, having regard to the requirements of DoHPLG Guidelines on Wind Energy. Wind Energy technology has an important role in delivering value and clean electricity for Ireland.*

- The RSES sets out a number of Regional Policy Objectives (RPO). The following are considered relevant-
    - RPO 87 Low Carbon Energy Future
        - *The RSES is committed to the implementation of the Government's policy under Ireland's Transition to a Low Carbon Energy Future 2015-30 and Climate Action Plan 2019. It is an objective to promote change across business, public and residential sectors to achieve reduced GHG emissions in accordance with current and future national targets, improve energy efficiency and increase the use of renewable energy sources across the key sectors of electricity supply, heating, transport and agriculture.*
    - RPO 95 Sustainable Renewable Energy Generation:
        - *It is an objective to support implementation of the National Renewable Energy Action Plan (NREAP), and the Offshore Renewable Energy Plan and the implementation of mitigation measures outlined in their respective SEA and AA and leverage the Region as a leader and innovator in sustainable renewable energy generation.*
    - RPO 98 Regional Renewable Energy Strategy:
        - *It is an objective to support the development of a Regional Renewable Energy Strategy with relevant stakeholders.*
    - RPO 99 Renewable Wind Energy:

- *It is an objective to support the sustainable development of renewable wind energy (on shore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines.*

- RPO 219 New Energy Infrastructure:
  - *It is an objective to support the sustainable reinforcement and provision of new energy infrastructure by infrastructure providers (subject to appropriate environmental assessment and the planning process) to ensure the energy needs of future population and economic expansion within designated growth areas and across the Region can be delivered in a sustainable and timely manner and that capacity is available at local and regional scale to meet future needs.*
- RPO 221 Renewable Energy Generation and Transmission Network:
  - *a. Local Authority City and County Development Plans shall support the sustainable development of renewable energy generation and demand centres such as data centres which can be serviced with a renewable energy source (subject to appropriate environmental assessment and the planning process) to spatially suitable locations to ensure efficient use of the existing transmission network;*
  - *b. The RSES supports strengthened and sustainable local/community renewable energy networks, micro renewable generation, climate smart countryside projects and connections from such initiatives to the grid. The potential for sustainable local/community energy projects and micro generation to both mitigate climate change and to reduce fuel poverty is also supported;*
  - *c. The RSES supports the Southern Region as a Carbon Neutral Energy Region.*

10.4. **Ministerial Guidelines and Other Relevant Guidance**

10.4.1. **The Wind Energy Development Guidelines, Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government in June 2006 (WEDG),**

- Chapter 5- Environmental Implications
    - Section 5.6- Noise
    - Section 5.11- Aircraft Safety-

      "The siting of wind turbines may have implications for the operations of the Communications, Navigation and Surveillance systems used for Air Traffic Control for the separation and safety of aircraft. Wind turbine siting may also have implications for the flight paths of aircraft.

      Regard must be had to the Irish Aviation Authority's Obstacles to Aircraft in Flight Order, 2002, (S.I. 14 of 2002), as amended, which specifies the criteria used to determine whether or not any object anywhere in the State is deemed to be an obstacle affecting aircraft operations……

      …… Accordingly, wind energy developers should be advised to contact the Irish Aviation Authority at the pre-planning stage of consultation, with details of locations and proposed heights of turbines, to ensure that the proposed development will not cause difficulties with air navigation safety"

    - Section 5.12- Shadow Flicker
- Chapter 6- Aesthetic Considerations in Siting and Design
    - In relation to 'Height' the following is noted- Footnote 12 states- *"The notion of what constitutes tall, medium and short turbines will change over time with technological advances and thus a shift in turbine height relative to capacity. In 2005, less than 60m to blade tip are considered short, 75-100m medium and over 100m tall."*
        - Section 6.8 deals specifically with 'Height'

- Section 6.9 deals with 'Landscape Character Types as a Basis for Guidelines'- Clare have describe the site as per their Landscape Character Type (LCT) as 'Moorland Mountain' in accordance with the Guidelines.
- Section 6.9.1 deals with '*Mountain Moorland'* and in relation to 'height' (p.50) it states-

  "There would ***generally be no height restrictions on mountain moorlands as the scale of landscape is so great****. However, shorter turbines may be more appropriate where they are located on small peaks and outcrops in order to maintain an appropriate scale. Profile, whether even or uneven, is dependent on topography: the more rugged and undulating (e.g., knolls and crags) the more uneven it will be. The profile of the wind energy development should not necessarily run in parallel to that of the topography"*[19]
- Table 1- Page 78- 'Matrix Summarising Landscape Character Based Recommendations'- *"Any height"*

10.4.2. **The Draft Wind Energy Guidelines published by the Department of Housing Local Government and Heritage in December 2019 (DWEDG). The following sections are of relevance-**

- Section 4.9.5- Aircraft Safety-
  - Generally similar to 2006 guidance
  - The following is noted-

    "If located close to an airport (within 20 km), a wind turbine could interfere with the safe operation of an airport, simply by its presence and height……"
- Section 5.7- Noise
- Section 5.8- Shadow Flicker-

[19] Bold emphasis added.

- *"Modern wind turbines have the facility to measure sunlight levels and to reduce or stop turbine rotation if the conditions that would lead to shadow flicker at any neighbouring property occur. With careful site design and appropriate mitigation, and most critically the use of appropriate equipment and computer software, no existing dwelling or other affected property (e.g. existing work places or schools) should experience shadow flicker."*

- Section 5.8.2 – Shadow Flicker Control
  - *"The planning authority or An Bord Pleanála should impose condition(s) to ensure that no existing dwelling or other affected property will experience shadow flicker as a result of the wind energy development subject of the planning application and the wind energy development shall be installed and operated in accordance with the shadow flicker study submitted to accompany the planning application, including any mitigation measures required."*

10.4.3. **Development Management Guidelines for Planning Authorities, June, 2007**

- Section 5.13- 'Issues relating to title to land'

  "If, however, the terms of the application itself, or a submission made by a third party, or information which may otherwise reach the authority, raise doubts as to the sufficiency of the legal interest, further information may have to be sought under Article 33 of the Regulations. Only where it is clear from the response that the applicant does not have sufficient legal interest should permission be refused on that basis".

- Section 7.3- 'Basic criteria for conditions'- *Necessary, Relevant to planning, Relevant to the development to be permitted, Enforceable, Precise and Reasonable.*

- Section 7.3.2- 'Conditions should be relevant to planning'-

  Section 34(4)(a) of the Planning Act gives power to impose a condition regulating the development or use of adjoining etc. land, but such land

must be under the control of the applicant and the condition must be "expedient for the purposes of or in connection with the development authorised by the permission".

- Section 7.3.3 'Conditions should be enforceable'-

  "Conditions should be capable of being complied with."

- Section 7.3.5 'Conditions should be reasonable'

  "….a useful test of reasonableness may be to consider whether a proposed condition can be complied with by the developer without encroachment on land that he or she does not control, or without otherwise obtaining the consent of some other party whose interests may not coincide with his/hers."

- Section 7.8 'Conditions relating to other codes'

  "There has been a tendency to attach to planning permissions conditions relating to matters that, though of concern in the exercise of development management, are the subject of more specific controls under other legislation or are directly regulated by other statutes or by the common law…..

  It is inappropriate, however, in development management, to deal with matters which are the subject of other controls unless there are particular circumstances e.g. the matters are relevant to proper planning and sustainable development and there is good reason to believe that they cannot be dealt with effectively by other means. The existence of a planning condition, or its omission, will not free a developer from his or her responsibilities under other codes and it is entirely wrong to use the development management process to attempt to force a developer to apply for other some licence, approval, consent, etc. At best, the imposition of conditions in relation to matters that are the subject of other controls is an undesirable duplication."

- Section 7.9 'Conditions requiring matters to be agreed'

"Conditions requiring matters to be the subject of consultation with, or to be agreed with……..another public authority, should not be attached to a permission……

If the matter in question is of genuine planning concern, it should be dealt with in the decision order, or be made the subject of a further permission or an agreement with the planning authority; if the matter is not proper to planning, it should be omitted entirely from the decision."

- Section 7.10 'When are compliance conditions appropriate?'

  "Conversely, there are situations where compliance conditions would not be appropriate, such as:

  Where the details would be required by the planning authority or the Board in order to decide on the overall merits of the planning application, which situation would apply…..

10.4.4. **Other Guidance**

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA 2022).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, Department of Housing, Planning, Community and Local Government (2018)
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report, European Union 2017
- EUROCONTROL Guidelines for Assessing the Potential Impact of Wind Turbines on Surveillance Sensors.
- Spatial Planning and National Roads Guidelines for Planning Authorities' (DoECLG, 2012).
- Guidelines for Landscape and Visual Impact Assessment ((GLVIA 3rd Edition) Landscape Institute and Institute of Environmental Management & Assessment 2013 (IEMA)

- Guidelines for Ecological Impact Assessment 2018 Chartered Institute of Ecology and Environmental Management (CIEEM)
- Guidelines for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009)
- Scottish Natural Heritage (SNH) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation 2019
- BRE: Site layout planning for daylight and sunlight 2022

10.5. Clare County Development Plan 2023-2029

10.5.1. Introduction

- The Clare County Development Plan 2023-2029 (CDP) which was adopted by the Elected Members of Clare County Council on 9th March 2023. The Plan then came into effect 6 weeks from the date of adoption i.e. the 20th April 2023 and is currently the statutory plan for the area.
- According to the Clare County Council website[20] the final adopted CDP 2023-2029 is currently being prepared and graphically designed. Until then an 'Interim Version' (April 2023) of the Clare CDP 2023-2029 has been prepared and is made available. It is this 'Interim Version' that is used as the basis for this Report.

10.5.2. Volume 1-

- Chapter 2 is titled 'Climate Action'- Table 2.2 details 'Renewable Energy Resource Targets for County Clare to 2030' and sets out Onshore Wind targets of 1,590.0 GWh/y and 550.0 MW.
- Section 2.7.6 states the-

> *"Council will support and facilitate renewable energy use and sustainable generation at appropriate locations within both the county*

[20] https://clarecdp2023-2029.clarecoco.ie/stage3-amendments/adoption/

and its offshore waters to meet national objectives towards achieving a low carbon economy by 2050."

- Section 2.9 details the Renewable Energy and Wind Energy Strategies in Volumes 5 and 6-

  "seek to position County Clare as a national leader in renewable energy generation."

- Chapter 6 is titled 'Economic Development'. Section 6.18 deals with 'Energy'.
  - Development Plan Objective CDP6.17 'Energy Supply' states-

    It is an objective of Clare County Council:

    a) To contribute to the economic development and enhanced employment opportunities in the county by:

    i) Enabling the development of a self-sustaining, secure, reliable and efficient renewable energy supply and storage for the County in line with CDP Objective 3.3;

    ii) Facilitating the county to become a leader in the production of sustainable and renewable energy for national and international consumption through research, technology development and innovation; and

    iii) Supporting on-land and off-shore renewable energy production by a range of appropriate technologies in line with CDP Objective 3.3.

- Chapter 8 is titled 'Rural Development and Natural Resources'. Section 8.3.4 deals with 'Renewable Energy'
  - Development Plan Objective CDP8.12 states-

    It is an objective of Clare County Council:

    To support the implementation of the National Renewable Energy Action Plan (NREAP), the Clare Wind Energy Strategy and the Clare Renewable Energy Strategy to facilitate the development of renewable energy developments in rural areas to meet national objectives towards achieving a low carbon economy by 2050……..

- Chapter 11 is titled ‘Physical Infrastructure, Environment and Energy’. Section 11.8.2 deals with ‘Energy Security’ and 11.8.5 deals with Renewable Energy Sources. The following Development Plan Objectives are relevant-
    - CDP 11.44 Energy Security-

      It is an objective of Clare County Council:

      To promote and facilitate the sustainable development, maintenance and upgrading of electricity and gas network grid infrastructure, to integrate renewable energy sources, thereby creating a secure and efficient energy supply and storage system for County Clare which is ready to meet increased demand as the regional economy grows.
    - CDP11.45 Electricity Networks

      It is an objective of Clare County Council:

      a) To facilitate improvements in energy infrastructure and encourage the expansion of the infrastructure within the County;

      b) To facilitate future alternative renewable energy developments and associated utility infrastructure throughout the County;…….
    - CDP11.47 Renewable Energy

      It is an objective of Clare County Council:

      a) To encourage and to favourably consider proposals for renewable energy developments, including community owned developments, and ancillary facilities in order to meet National, Regional and County renewable energy targets, and to facilitate a reduction in CO2 emissions and the promotion of a low carbon economy;

      b) To assess future renewable energy-related development proposals having regard to the Clare Renewable Energy Strategy 2023-2030 in Volume 5 of this plan and associated SEA and AA;

c) To support the sustainable development of renewable wind energy (on-shore and offshore) at appropriate locations and of its related grid infrastructure in County Clare, in accordance with all relevant policies, guidance and guidelines pertaining to the protection of the environment and protected habitats and species, and to assess proposals having regard to the Clare Wind Energy Strategy in Volume 6 of this plan and the associated SEA and AA, or any subsequent updated adopted Strategy and to national Wind Energy Guidelines;

d) To prepare a new and updated Wind Energy Strategy for County Clare during the lifetime of this plan, subject to the publication of the update to the Wind Energy Development Guidelines for Planning Authorities 2006;

e) To strike an appropriate balance between facilitating renewable and wind energy-related development and protecting the residential amenities of neighbouring properties;

f) To support and facilitate the development of new options and technological advances in relation to renewable energy production and storage, that may emerge over the lifetime of this Plan;

g) To support the integration of indigenous renewable energy production and grid injection;

h) To ensure that all proposals for renewable energy developments and ancillary facilities in the County are in full compliance with the requirements of the SEA and Habitats Directives and Objective CDP3.3 of this plan; and

i) To promote and market the County as a leader of renewable energy provision.

- CDP11.48 Renewable Energy Strategy

  It is an objective of Clare County Council:

a) To support implementation of the National Renewable Energy Action Plan (NREAP), and the Offshore Renewable Energy Plan including mitigation measures outlined in their respective SEA and AA and promote County Clare and the Southern Region as a leader and innovator in sustainable renewable energy generation; and

b) To support the implementation of the Clare Renewable Energy Strategy 2023-2030 in Volume 5 of this plan; and

c) To support the development of a Regional Renewable Energy Strategy with relevant stakeholders.

- Appendix 7 details Plans, Policies and Guidelines to which the Development Plan must have regard- Page 523 details regard was had to Wind Energy Development Guidelines (2006 and draft 2019). It also states-

  Chapter 2 Climate Action, Chapter 11 Transport, Service Infrastructure and Energy and Volume 6 Clare Renewable Energy Strategy has been formulated having regard to the Wind Energy Guidelines.

- Chapter 14 is titled 'Landscape'. See Volume 2 Map C- The site is located within a 'Working Landscape' as described in section 14.3.2.2 of Volume 1. The following Development Plan Objective is relevant-
  - CDP14.3- Western Corridor Working Landscape

    "It is an objective of Clare County Council:

    a) To permit development in these areas that will sustain economic activity, and enhance social well-being and quality of life - subject to conformity with all other relevant provisions of the Plan and the availability and protection of resources;

    b) To ensure that selection of appropriate sites in the first instance within this landscape, together with consideration of the details of siting and design, are directed towards minimising visual impact;

c) To ensure that particular regard should be had to avoiding intrusions on scenic routes and on ridges or shorelines. Developments in these areas will be required to demonstrate:

i. That the site has been selected to avoid visual prominence

ii. That site layouts avail of existing topography and vegetation to reduce visibility from scenic routes, walking trails, public amenities and roads

iii. That design of buildings and structures reduces visual impact through careful choice of form, finishes and colours and that any site works seek to reduce the visual impact of the development."

- Section 14.5 deals with 'Views and Prospects'. The following objective is relevant-

  "CDP14.7 Scenic Routes-

  It is an objective of Clare County Council:

  a) To protect sensitive areas from inappropriate development while providing for development and change that will benefit the rural community;

  b) To ensure that proposed developments take into consideration their effects on views from the public road towards scenic features or areas and are designed and located to minimise their impact; and

  c) To ensure that appropriate standards of location, siting, design, finishing and landscaping are achieved."

- The Commission are referred to Map 14A (Page 357 in Volume 1)- Landscape Designations (including scenic routes). Appendix 5 details the Scenic Routes. The following are considered relevant
  - No. 22 From Brickhill Bridge north east to road junction at Reaskcamoge
  - No. 23- Road from Cratloe north east through Gallows Hill to Glennagross
  - No. 26- R466 between Broadford and O'Briensbridge

- No. 27- R463 from O'Briensbridge through Killaloe to outside Ogonnelloe

10.5.3. **Volume 2- Maps**

- Strategic Maps
  - Map B Settlement Hierarchy- Much of the site appears to be within the Limerick Shannon Metropolitan Area.
  - Map C Landscape Designations- The site is located within the 'Working Landscape'
  - Map E Renewable Energy and Associated Infrastructure- the site appears to be located within a green hatched area designated 'Strategic Areas (Wind Energy)'. It is noted this designation appears to be surrounded by a purple hatched designation titled 'Acceptable in Principle (Wind Energy)'.
  - Map F Nature Designations- SAC's, SPA's and NHA's including pNHA's.
  - Maps H8, H11 and H12 are titled 'Areas of Special Control' and show the area closest to the site at a scale of 1:50000. These maps include 'Scenic Routes' identified in broken yellow lines with four 'scenic routes' in close proximity to the application site. See Appendix 5 details above.
  - Maps I8, I11 and I12 are titled 'Infrastructure, Environment and Flood Risk Zones' and show the area closest to the site at a scale of 1:50000. The site is not located within Flood Zones A or B. A designated 'Recreational Route is identified along the local road that generally runs from southeast to northwest close to the western boundaries of the site.

10.5.4. **Volume 3- Municipal District Written Statement and Maps**

- Volume 3(b) – Shannon Municipal District, including the Limerick-Shannon Metropolitan Area, Written Statement and Maps

10.5.5. **Volume 4- Record of Protected Structures**

- See 'Infrastructure, Environment and Flood Risk Zones' Maps I8, I11 and I12.

10.5.6. **Volume 5- Renewable Energy Strategy**

- Chapter 6 is titled 'Onshore Wind'. The vision as set out in Chapter 1 states-

  "A County Clare that is the national leader in renewable energy generation which supports energy efficiency and conservation, and which achieves balanced social and economic development throughout the County and assists in achieving national climate change mitigation targets."

- Page 28 discusses the Wind Energy Development Guidelines (WEDG's) 2006 and draft of 2019. It states-

  "The Government are currently working on a new set of revised guidelines due to be published in 2024. Once finalised, the Revised WEDG's will be issued under the PDA and will apply to planning applications and considerations for future wind energy development proposals."

- The following objectives are considered relevant-

  - RES 3.1 'Meeting the County's energy needs from 100% renewables'

    "It is an objective of Clare County Council:

    To meet the County's energy needs from 100 % indigenous renewable energy sources."

  - RES 4.1 'Meeting the County's energy needs from 100% renewables'

    "It is an objective of Clare County Council:

    To facilitate the achievement of (or to exceed where possible) the renewable energy targets set out in Table 4.3 by 2030, ensuring that County Clare is the national leader in sustainable renewable energy generation, supporting energy efficiency, security and conservation, achieving balanced social, environmental and economic development

throughout the County and assisting in the achievement of Ireland's national climate change mitigation targets."

- Map 4.2 (Page 50)- Location and Permitted Capacity (MW) of Renewable Energy Projects in County Clare
- Chapter 6 'Onshore Wind'. This chapter provides a summary of the key objectives of the Clare County Wind Energy Strategy (WES) which forms Volume 6 of the CDP.
- Figure 6.1 Wind Energy Designations (Page 61)
- Chapter 17 is titled 'Environmental Considerations & Development Management Advice'.
    - Section 17.1.1 discusses 'Key success factors of Renewable Energy projects and states-

      "Successful renewable energy projects are generally characterised by: Compliance with Development Plan policy and strategies"….. and a number of other criteria detailed on page 138.
    - Section 17.2 details 'Environmental Considerations' including Biodiversity, Noise, Landscape and Visual etc.
    - Section 17.3 details 'Development Management for Renewable Energy Developments'

10.5.7. **Volume 6- Clare Wind Energy Strategy**

- The Preface to this document states-

  "In accordance with the requirements of the Department of Environment, Community and Local Government as set out in Circular PL20-13, the previous "Clare Wind Energy Strategy 2017-2023" has not been reviewed as part of the preparation of this draft plan."

  The Preface concludes-

  "The local authority has had regard to all the submissions received during the consultation stages of the Development Plan. However, any

issues raised with regard to wind energy policy were addressed in the context of the requirement to comply with Circular PL20-13."

A copy of Planning Circular Letter, Circular PL 20-13 is included and the Commission will note it is also addressed to An Bord Pleanála.

- Table 1c details the 'Relevant Policy and Legislative Framework'. The Commission will note it refers to the 2006 Wind Energy Guidelines.
- Section 1.4 (page 16) states-

  "For commercial operations, turbine heights of 75m to 125m to blade tip are assumed, as these represent the range of turbines submitted in planning applications in County Clare since 2000. The DoEHLG Wind Energy Development Guidelines, Guidelines for Planning Authorities, 2006 acknowledge that turbine heights will change over time but consider the following definitions:

  • Small – less than 60 m to blade tip

  • Medium -75 to 100m to blade tip

  • Large – over 100 m to blade tip."

- Section 2.3.5 deals with 'Landscape and Visual Impacts'. The following is noted-

  - *It was noted in Section 1 that landscape designations in the previous Clare County Development Plan 2005-2011 and the preparation of the Clare County Development Plan 2011 – 2017 informed this Strategy. These included areas designated as scenic routes and vulnerable landscapes in the previous plan and areas designated as Heritage Landscape and Scenic Routes in the current plan. In addition, the Landscape Character Assessment of County Clare was used as a baseline to assess capacity for areas to accommodate wind farm developments.*

    Neighbouring counties' land use designations such as scenic routes, or areas of primary amenity were also integrated. This data incorporated

the counties of Galway, North Tipperary, County Limerick and County Kerry (up to a 50km buffer from Clare County boundaries).

- Section 2.37 deals with 'Archaeology' and states-
    - *"Whilst not precluding wind farm development, the visual impact of wind farms on such sites and archaeological landscapes should be carefully considered"*
- Section 2.38 deals with "Recreation, Tourism and Amenity" and states-
    - *Consideration was also given to areas within the County that are of significant importance for recreation or tourism.*
- Section 2.39 deals with 'Landslide Susceptibility' and states-
    - …. "*landslide risk assessment is required on a site by site basis and policy should reflect the importance of undertaking adequate modeling, risk assessment, and mitigation at planning application stage"*
- Section 2.6.1 is titled 'Defining Areas for Wind Farm Development' and sets out the Hierarchy of site designation and the criteria used for each 'zoning'.
    - For '*Strategic Sites'* the following criteria is stated-
        - *Viable Wind Speeds*
        - *Proximity to grid*
        - *Slopes less than 15 degrees*
        - *Excludes all cSAC's, SPA's and NHA's*
        - *400 m from properties receiving post (residential and commercial)*
    - For 'Not Normally Permissible' the following criteria is stated
        - *Large number of natural heritage designations or*
        - *Important recreational / tourism area*
        - *Large number of archaeological sites*
        - *HDA and SEA recommended against these areas being included*

- Chapter 3 sets out ‘General’ and ‘Specific Area’ ‘Wind Energy Objectives’ including-
    - WES One: Development of Renewable Energy Generation

      It is the objective of the Council to support, in principle and in appropriate scales and locations, the development of wind energy resources in County Clare. It is an objective of the Council to ensure the security of energy supply by accommodating the development of wind energy resources in appropriate areas and at appropriate scales within the County.
    - *WES Eight: ‘Strategic Areas’ These key areas are considered to be eminently suitable for wind farm development and are of strategic importance because of;*
        - *Good / excellent wind resources*
        - *Access to grid*
        - *Distance from properties and*
        - *Outside any Natura 2000 sites*

      Projects within these areas must:
        - *Demonstrate conformity with existing and approved wind farms to avoid visual clutter.*
        - *Be designed and developed in line with the Wind Energy Development Guidelines, Guidelines for Planning Authorities (DoEHLG, 2006) in terms of siting, layout and environmental studies.*
        - *Provide a Habitats Directive Assessment under Article 6 of the Habitat Regulations if the site is located in close proximity to a Special Area of Conservation or Special Protection Area.*
        - *Be developed in a comprehensive manner avoiding the piecemeal development of the areas designated as ‘strategic’.*

      Target wind energy generation from strategic areas is 400 MW”

- Chapter 4 is titled “Advice on Landscape Capacity for wind energy developments based on Landscape Character Areas (LCA’s)”. The site appears to be located within LCA 8- ‘Slieve Bernagh Uplands’ as per Figure E on page 34.
- Table 4a (Page 36) sets out ‘Strategic Guidance on Landscape Capacity for Wind Energy Developments’ This details-
    - Overall sensitivity to wind farms as Medium to Low
    - Appropriate size of wind farms Large
    - Capacity- ….*“In the Broadford Hills areas, the areas around Woodcock Hill, Ballycar, Corlea and Knockaunnamoughily are identified as Strategic Areas. Potential Renewable Energy Generation for this area is 150 MW (LCEA).”*
    - Corresponding Landscape Character Type (LCT) in 2006 Planning Guidelines as ‘Moorland Mountain’
    - Cumulative advice from 2006 Guidelines- “*Acceptable, depending on topography as well as siting and design of wind energy developments involved.”*

10.5.8. **Volume 10a- Appropriate Assessment Natura Impact Report**

- Section 10 assesses the Clare County Wind Energy Strategy (WES) and details it was adopted as part of the 2011-2017 CDP. A Natura Impact Report was prepared and an Appropriate Assessment was undertaken on the strategy at the time of adoption. Having regard to Circular PL 20-13 it states no changes have occurred to the WES and the succeeding CDP 2017-2023 or the current CDP 2023-2029. It acknowledges that since the adaptation of the WES the boundaries of SACs and SPAs may have changed and that there may now be a gap in the assessments carried out on the Strategy. It contends internal procedures at the development management level provide for an added level of protection where the WES may be lacking, and areas identified as ‘acceptable in principle’ undergo a thorough and detailed assessment process. It refers to other provisions to address potential indirect

and/or off-site impacts including objectives CDP 8.38, CDP 3.2, CDP15.3 to CDP15.9.

10.6. **Limerick City and County Development Plan 2022-2028 (LDP)**

- The Commission are reminded that section 2.3.5 Clare's WES (Volume 6) details methodologies and considerations relating to 'Landscape and Visual Impacts'. In this regard it details 'neighbouring counties' land use designations such as scenic routes, or areas of primary amenity were also integrated. Given that the previous "Clare Wind Energy Strategy 2017-2023" was not reviewed as part of the current development plan process (as per Circular PL20-13) it is appropriate to give consideration the contents of the current LDP especially having regard to the proximity of the site to Limerick City.
- Volume 1 Section 6.4.2 discusses 'Views and Prospects' and states-

  "Limerick contains many sites and vantage points from which scenic views over areas of great natural beauty, local landmarks, historic landscapes, Shannon Estuary and adjoining Counties, may be obtained. Due to the topography of Limerick City, its quality townscapes, riverscapes and landscapes, as well as its visual landmarks, there are many views of significance within the City. The City has a number of linear views consisting of landmark buildings, such as King John's castle, the City walls and City skyline. River prospects are also important and usually, though not exclusively, experienced while crossing a bridge. River prospects in this instance refer to the ability to see landmark building(s) from bridges."

- The following LDP Objective is relevant-

  Objective EH O31 Views and Prospects

  It is an objective of the Council to:

  a) Preserve, protect and encourage the enjoyment of views and prospects of special amenity value or special interests and to prevent development, which would block or otherwise interfere with views and/or prospects.

b) In areas where scenic views and prospects are listed in the Plan, there will be a presumption against development, except that required to facilitate farming and appropriate tourism and related activities. The development must be appropriately designed so that it can be integrated into the landscape.

- The 'Views and prospects' within Limerick are shown on Map 6.2 (page 192).
- Objective EHO35
    - Special Control Areas Mungret

      It is an objective of the Council to protect and maintain the integrity of the Special Control Areas at Mungret Monastic Complex, incorporating all national monuments and protected views including:

      1) View from Mungret College northeast to the Monastic Complex and;

      2) Views northwest across the Monastic Complex.

      Development within this area will be prohibited with the exception of leisure facilities and moderate extensions to existing dwellings, which will not adversely impact on the character or setting of the complex. The Council will facilitate the provision of interpretative panels and directional signage for Mungret Monastic Complex and park, will be considered in consultation with local community groups.

    - See also CDP Volume 2a Map 3: Limerick City and Suburbs (in Limerick), including Mungret and Annacotty - Zoning Map
- Details on Limerick City views and prospects are set out in the Building Height Strategy in Volume 6. 'Significant Views and Landmarks. are set out in Chapter 3 (pages 48-51).
    - Map 3.4 'Key Vantage Points into Limerick City'
    - Map 3.5 Key Views & Landmarks
        - The pertinent *'Key View'* would appear to be 'D' looking north along the River Shannon towards the application site and encompasses 'St Johns Castle' *'Local Landmark'* No.33. The

Commission will note a photograph on page 53 appears to reflect this 'Key View' but states 'Image looking North West Along the River Shannon'.

- A *'Linear View'* in both directions is identified as '*10 Nicolas Street'*. The northwest direction is towards the site.
- A *'Waterfront Panorama away from the City'* is identified at St Arthurs Quay that would appear to include views in the direction of the site along the River Shannon.

- Section 6 is titled Building Height- Policies and Guidance. It details that policies are formulated in the context of providing support for the delivery of increased building height in Limerick City. Relevant Policies include-
  - Policy BH4: *To protect and enhance significant views and vistas and the visual presence of key landmark buildings within the City.*
  - Policy TB7: Assessment Criteria for Tall Building

    Limerick City and County Council will take account of the following in assessing applications for tall buildings:

    The site context - Including inter alia topography, natural environment, landscape, height, built form, urban grain, scale, streetscape and impact on the skyline;

    Impact on significant buildings, views, landmarks and landscapes - Tall building proposals should address the potential effect on the setting of, and views to and from the following over a wide area:

    **Protected Structures*

    **Architectural Conservation Areas*

    **Sites on the Record of Monuments and Places*

    **Public Parks and Open Spaces*

    **The River Shannon and other water bodies*

    ** Significant views and prospects, specifically those identified on Map 6.10 of this Building Height Strategy for Limerick City;*

- Tall Building Assessment – Significant Views P.210
    - "High Level Principles" P. 211- *"In maintaining significant views and river prospects it is important to avoid obtrusive tall structures that detract from them. New development should not obstruct views of landmarks such as prominent buildings of historical significance."*
    - Map 6.10- Tall Buildings - Potential Significant Views

10.7. **Tipperary County Development Plan 2022-28**

- Volume 1 Chapter 11- Environment and Natural Assets, Section 11.7.2 Scenic Routes and Views Figure 11.1
- Section 11.9 sets out Planning Policy- Policy 11 – 16 states-

    "Facilitate new development which integrates and respects the character, sensitivity and value of the landscape in accordance with the designations of the Landscape Character Assessment, and the schedule of Views and Scenic Routes (or any review thereof). Developments which would have a significant adverse material impact on visual amenities will not be supported."

- See also Volume 3 Appendix 2 Figure 1 and Table A- Schedule of Scenic Routes and Views. The following are considered most relevant-
    - V57 View west on the Cork Road approach to Newport
    - V59 Views of surrounding landscape from M7 including Annaholty and Rossfinch
- See also Photographs of such views provided after Table A in Volume 3 Appendix 2 pages- 28 and 29

10.8. **Natural Heritage Designations**

10.8.1. Special Area of Conservation (SAC)

- The Lower River Shannon SAC (002165) is located as close as c. 1.1km south of the site

- The Glenomra Wood SAC (001013) is located c. 5.6km north east of the site.

10.8.2. Special Protection Areas (SPA)

- The River Shannon and River Fergus Estuaries SPA (004077) is located as close as c. 4.5km south west of the site.
- The Lough Derg (Shannon) SPA (004058) is located c. 18km to the north east of the site.
- The Slievefelim to Silvermines Mountains SPA (004165) is located c. 17.5km east of the site.

10.8.3. Natural Heritage Areas-

- Woodcock Hill Bog NHA (002402) is located c. 1km west of the site
- Gortacullin Bog NHA (002401) is located c. 5km north of the site

10.8.4. Proposed Natural Heritage Areas-

- Knockalisheen Marsh (002001) is located c. 1km south of the site.
- Garrannon Wood (001012) is located c. 5.5km south west of the site.

10.9. **EIA**

10.9.1. Schedule 5 of the Planning and Development Regulations, 2001 (as amended) transposes Annex I and II of the EIA Directive and sets out prescribed classes of development, for which Environmental Impact Assessment is required. The following classes are noted:

- Part 2 (3) Energy Industry (i)-

  Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts.

10.9.2. The Application is accompanied by an Environmental Impact Assessment Report (EIAR) which is examined and assessed in section 13 below.

11.0 **Assessment**

11.1. **Introduction**

11.1.1. I have examined the application details and all other documentation on file, including the observations from prescribed bodies and the public, the Applicant's response to the observations and their submitted Further Information as well as submissions and responses to the Further Information. I have inspected the site and viewed it from surrounding public roads and the general wider area including designated scenic routes/views. I have had regard to relevant local/regional/national policies and ministerial and other appropriate guidance were considered relevant.

11.1.2. I am satisfied the substantive issues for assessment relate to typical Planning Assessment considerations, Environmental Impact Assessment considerations and Appropriate Assessment considerations and other related matters for each arising from the submissions received.

11.1.3. I shall address these matters as follows-

- Section 12- Planning Assessment
    - Principle of the Development and Compliance with Policy
    - Duration of Permission and Period of Operation
    - Wind Energy Development Guidelines, Guidelines for Planning Authorities (DoEHLG, 2006) (WEDG)
    - Aviation Concerns
    - Visual Amenity
    - Residential Amenity
    - Traffic and Transport
    - Biodiversity Enhancement Management Plan (BEMP)
    - Other Matters
- Section 13- Environmental Impact Assessment
- Section 14- Appropriate Assessment

12.0 Planning Assessment

12.1. Principle of the Development and Compliance with Policy

12.1.1. The Commission is referred to section 10 of this report for a comprehensive review and summary of what I consider are the most relevant policy provisions in respect of the subject application.

12.1.2. The Climate Action Plan 2024 and 2025 (CAP 24 & 25) lays out a roadmap of actions which are intended to deliver upon Irelands national climate objective of pursuing and achieving, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy by no later than the end of the year 2050.

12.1.3. Central to this is the targeted aim to strategically increase the country's share of renewable electricity to 80% by 2030 through measures including the delivery of 6 GW of onshore wind by 2025 and 9 GW of onshore wind by 2030. The proposed 12 turbine wind farm will have a maximum export capacity of 4.5 MW each[21] and will accordingly provide an important contribution role in delivering upon Ireland's CAP 24 & 25 obligations. The proposal is therefore considered consistent with the CAP 24 & 25.

12.1.4. The National Planning Framework First Revision (NPF) is the Government's high-level strategic national plan for shaping the future growth and development of Ireland out to the year 2040. National Policy Objective 70 (NPO70) of the NPF seeks to-

> *"Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050."*

It is clear national planning policy that 'appropriate locations' should be promoted for renewable energy use such as that proposed.

12.1.5. At a regional level chapter 5 of the RSES for the Southern Region 2020-32 acknowledges climate change as the most important long term challenge facing Ireland and states-

[21] EIAR Volume II, Chapter 2, section 2.3.19 page 2-21

"The Regional Assembly is committed to implement regional policy consistent with the Climate Action Plan….."

It goes on to state-

"The RSES recognises and supports the many opportunities for wind as a major source of renewable energy."

Regional Policy Objectives 99 (RPO99) seeks-

"to support the sustainable development of renewable wind energy (on shore and offshore) at appropriate locations and related grid infrastructure in the Region in compliance with national Wind Energy Guidelines."

12.1.6. At the local level it is important to highlight that Section 10 of the PDA sets out legal provisions for the contents of a Development Plan. Section 10 (2) requires the plan to includes objectives. Section 10 (2) (e) requires an objective for-

"the preservation of the character of the landscape where, and to the extent that, in the opinion of the planning authority, the proper planning and sustainable development of the area requires it, including the preservation of views and prospects and the amenities of places and features of natural beauty or interest"

12.1.7. The current Clare CDP came into effect on the 20th April 2023 and is the primary statutory plan for the consideration of all planning application types including wind farms within the county's functional area. In this regard, I understand the CDP and its associated Wind Energy Strategy (Volume 6) was prepared with due regard to national and regional planning policy. It was also subject to evaluation by the Office of the Planning Regulator (OPR) for compliance with same policies.

12.1.8. Chapter 2 is titled 'Climate Action'- Table 2.2 details 'Renewable Energy Resource Targets for County Clare to 2030' and sets out Onshore Wind targets of 1,590.0 GWh/y and 550.0 MW. Section 2.7.6 states the-

"Council will support and facilitate renewable energy use and sustainable generation at appropriate locations within both the county and its offshore waters to meet national objectives towards achieving a low carbon economy by 2050."

Section 2.9 details the Renewable Energy and Wind Energy Strategies in Volumes 5 and 6-

> *"seek to position County Clare as a national leader in renewable energy generation."*

Development Plan Objective CDP 6.17 'Energy Supply' seeks to (inter alia) enable the development of a self-sustaining, secure, reliable and efficient renewable energy supply and storage for the County. Development Plan Objective CDP8.12 seeks to (inter alia) support the implementation of the Clare Wind Energy Strategy and the Clare Renewable Energy Strategy to facilitate the development of renewable energy developments in rural areas to meet national objectives towards achieving a low carbon economy by 2050. This is further supported through the provisions of objective CDP11.47 'Renewable Energy' which seeks to (inter alia) encourage and to favourably consider proposals for renewable energy developments in order to meet National, Regional and County renewable energy targets, and to facilitate a reduction in CO2 emissions and the promotion of a low carbon economy. This objective also seeks to support the sustainable development of renewable wind energy (on-shore and offshore) at 'appropriate locations' having regard to the Clare Wind Energy Strategy.

12.1.9. Clare's Wind Energy Strategy is set out in Volume 6 of the CDP. The preface to this volume details the previous Wind Energy Strategy for 2017-2023 was not reviewed as part of the preparation of the preparations for the current plan and refers to the Council's requirement to comply with the Government's Circular PL20-13. This circular dated 20th of December 2013 and titled 'Review of Wind Energy and Renewable Energy Policies in Development Plans' essentially mandates local authorities to defer amending their existing Development Plan policies as part of either the cyclical review or variation processes and should instead operate existing Development Plan policies and objectives until advised otherwise by this Department.

12.1.10. The Commission will note many of the objections and frustrations detailed in submissions/observations to the proposed development relate to the adequacy of Clare's Wind Energy Strategy (WES) as part of the current county development plan (CDP) in the context of the time that has passed since its original formation,

including regard to what are considered outdated Wind Energy Design Guidelines from 2006.

12.1.11. I understand and appreciate these concerns, particularly with regard to the provisions of Circular PL20-13 that still has effect a number of years later. However, the Commission have no role or function in policy formulation and must consider proposals in a manner consistent with the Climate Action and Low Carbon Development Act 2015, as amended in 2021 and the current policy objectives at national, regional and local levels which support renewable energy.

12.1.12. At a local level, Clare's Wind Energy Strategy remains the statutory planning framework for such developments as per its provision within the current CDP. Section 2.6.1 is titled 'Defining Areas for Wind Farm Development with four hierarchy areas identified. This section states *"particular attention was paid to identifying strategic areas of regional and national importance*". Figure D identifies 'Strategic Windfarm Development Areas' with section 3.3 detailing specific area objectives including WES Eight: 'Strategic Areas'. This states-

> *"These key areas are considered to be eminently suitable for wind farm development and are of strategic importance because of;*
>
> - *Good / excellent wind resources*
> - *Access to grid*
> - *Distance from properties and*
> - *Outside any Natura 2000 sites*
>
> *Projects within these areas must:*
>
> - *Demonstrate conformity with existing and approved wind farms to avoid visual clutter.*
> - *Be designed and developed in line with the Wind Energy Development Guidelines, Guidelines for Planning Authorities (DoEHLG, 2006) in terms of siting, layout and environmental studies.*
> - *Provide a Habitats Directive Assessment under Article 6 of the Habitat Regulations if the site is located in close proximity to a Special Area of Conservation or Special Protection Area.*

- *Be developed in a comprehensive manner avoiding the piecemeal development of the areas designated as 'strategic'.*

Target wind energy generation from strategic areas is 400 MW

12.1.13. The Local Authority submission to the application (see section 5 of this report and Figure 2 of their submission) details the site is predominantly located within an area designated as 'Strategic' for wind energy development which can accommodate a medium to large scale wind farm and would potentially contribute a large portion of the targeted (150MW) wind generation of the designated 'strategic area'[22]. Figure 2 of the submission shows the 12 turbines located within the 'Strategic Area' with the substation compound and grid connection located within the 'Wind Energy Acceptable in Principle Area' to which Specific Area Objectives WES Nine applies.

12.1.14. Notwithstanding the criteria for wind farms as set out in WES Eight: 'Strategic Areas' and the similar provisions of WES Nine, I am satisfied the site is an 'appropriate location' for the proposed development by virtue of its designation at the local policy making level as a key area considered to be eminently suitable for wind farm development and is of strategic importance as clearly detailed in the WES and current CDP.

12.1.15. Therefore the proposed site is considered an 'appropriate location' as per National Policy Objective 70 (NPO70) of the NPF and Regional Policy Objective 99 (RPO99) of the RSES for the Southern Region 2020-32. Accordingly the proposal in principle is consistent with the Climate Action Plan 2024 & 2025. National, Regional and Local policy and will provide an important contribution role in delivering upon Ireland's CAP 24 & 25 obligations.

12.2. Duration of Permission and Period of Operation

12.2.1. As detailed in the public notices and more particularly in section 2.2.1.1 of the EIAR the Applicant seeks a 10 year planning permission lifespan and an operational period of no less than 35 years from the date of commissioning of the wind farm.

[22] See WES Page 36- Table 4a: Strategic Guidance on Landscape Capacity for Wind Energy Developments

12.2.2. Section 2.2.1.1 of the EIAR details permission is sought in perpetuity for the substation which will form part of the national electricity network. This is not specifically stated in the public notices.

12.2.3. Section 2.2.1.1 of the EIAR also details the requirement for a 10 year planning permission is considered appropriate for a development of this size to ensure all consents required are secured to enable the construction and operation of the development.

12.2.4. Section 2.4.4 of the EIA discusses 'Duration and Timing'. It details that it is envisaged construction may start in 2026 with an 18 month construction period[23]. A typical programme of works and phasing is then set out in Table 2-5 with some phases running concurrently. This is further detailed in the CEMP[24].

12.2.5. The Commission will note section 7.20 of the WEDG 2006 details permission may be granted for a duration longer than 5 years if it is considered appropriate, for example, to ensure that the permission does not expire before a grid connection is granted but it is the reasonability of the applicant to request same in the first instance.

12.2.6. The proposed development includes for connection to the national grid from the proposed onsite substation to connect to an existing 110kV overhead line within the application site boundary.

12.2.7. Having considered the above, most notably the expected 18 month construction period and inclusion for grid connection within the application site, it is difficult to see how all typical consents required cannot be secured within the standard five year planning permission period. I do not consider the requirement for a 10 year permission to have been adequately justified. Should the Commission decide to grant permission a standard 5 year permission is therefore recommended.

12.2.8. Section 2.7.1 of the EIAR discusses decommissioning. It details at the end of the estimated 35 year lifespan a decision will be made whether to repower or decommission the turbines with further development subject to a new planning permission application at that time. Section 2.7.2 details the grid connection and substation will likely remain a permanent part of the national grid.

[23] Also repeated in section 10.6.7 of the EIAR in relation to Noise and Vibrations
[24] EIAR Appendix 2A

12.2.9. I have not been able to identify any clear justification for an operational period of no less than 35 years. However it is clear the Applicant has not sought a permanent permission and in this context should the Commission grant permission for the proposal a temporary permission as sought is considered appropriate.

12.2.10. Should the Commission decide to grant permission, a 35 year operational life is considered acceptable.

12.3. Wind Energy Development Guidelines, Guidelines for Planning Authorities (DoEHLG, 2006) (WEDG)

12.3.1. The Commission will note significant concerns are raised in the submissions received including from local elected members and public submissions on the suitability of the WEDG 2006 which are considered outdated and not fit for purpose given the nature, location and scale of the proposed development. Some observers argue that the Commission should have regard to provisions of the Draft Revised Wind Energy Development Guidelines December 2019) (DWEDG 2019).

12.3.2. Section 28 (2) of the Planning and Development Act requires the Commission to have 'regard' to guidelines issued under section 28 (1) and the 2006 Guidelines remain in force.

12.3.3. The Commission should consider having regard to the Draft 2019 Guidelines where appropriate, in the context of the judgement of the Supreme Court in Balz v ABP [2019] IESC 90, particularly in areas where technical knowledge has advanced considerably e.g. noise and shadow flicker since the 2006 guidelines and how such can mitigate against adverse impacts. In this context and having considered matters raised in submissions e.g. concerns regarding shadow flicker and noise, such regard is considered appropriate. The information provided in such submissions particularly regarding noise, separation distances and shadow flicker do not in my view, adequately or convincingly justify a departure from the provisions of the 2006 guidelines or the guidance regarding shadow flicker and noise levels as set out in the 2019 DWEDG. In this context, I also refer to the submission of the HSE's National Environmental Health Service (NEHS) who do not raise significant public health concerns arising from the proposed development including noise and shadow flicker etc.

12.3.4. Notwithstanding the above, it is stated on page 8 of the WES i.e. the current CDP, that one of the objectives of the strategy is to "develop a Wind Energy Strategy having regard to the Wind Energy Development Guidelines, 2006 (WEDG 2006). This is further emphasised in Table 1C on page 13 which states-

"This strategy has been developed in line with these guidelines"

12.3.5. Specific Area Objective WES Eight: 'Strategic Areas' as set out in the WES of the CDP details wind energy projects must be designed and developed in line with the WEDG 2006 in terms of siting, layout and environmental studies.

12.3.6. Chapter 4 of the WES of the CDP is titled '*Advice on Landscape Capacity for wind energy developments based on Landscape Character Areas (LCA's)'*. The Wind Energy Designations Map on page 33 of the WES shows the site generally within a 'Strategic Area'. Figure E on page 34 displays the CDP designated Landscape Character Areas (LCA) with the site located within LCA 8- Slieve Bernagh Uplands as confirmed in section 3.6 of the Local Authority's submission on the application.

12.3.7. Table 4a on page 36 of the WES provides *'Strategic Guidance on Landscape Capacity for Wind Energy Developments'*. This describes the subject area with a sensitivity to wind farm developments of 'medium to low' and suitable for a 'Large' wind farm size (turbine numbers) with the Ballycar area specifically identified as a 'Strategic Area'.

12.3.8. Section 4.1 of the WES details 'Landscape Character Types' (LCT) are used in the WEDG 2006 as a means of identifying the most appropriate scale and layout of wind energy developments in these areas. Table 4a also confirms the designated CDP's Landscape Character Area (LCA) corresponds with the WEDG LCT- 'Moorland Mountains'.

12.3.9. The WEDG 2006 provides six 'Landscape Character Types' the first of which is 'Mountain moorland'. This is further described in section 6.9.1 of the WEDG 2006 with siting and design guidance set out including location, spatial extent, spacing, layout, height and cumulative effect.

12.3.10. I am satisfied the CDP WES designation 'Moorland Mountain' is reference to the WEDG 2006 LCT 'Mountain Moorland' and there is no discernible difference intended other than the ordering of words.

12.3.11. Referring back to the criteria for wind energy developments set out Objective WES Eight, the majority of the development is sited with a 'strategic area' considered to be eminently suitable for wind farm development with all layout options usually acceptable as per the 2006 WEDG siting and design guidance for mountain moorland. In this context the proposed turbine layout is generally considered random in appearance around the Ballycar area with the layout designed based on site specific factors such as policy designation and local conditions as discussed in Chapter 9 of the EIAR- Land and Soil. I see no reason to raise issue with the proposed layout given that each turbine is located within the 'Strategic Area'

12.4. Aviation Concerns

12.4.1. Introduction

12.4.1.1. At the outset the Commission are advised, given the technical complexities of this topic, I have sought input from an external independent Aviation Consultant- Sagentia Aviation (SA). SA have been provided with copies of all materials relevant to Aviation as submitted with the application and at Further Information stage. They have also been supplied with copies of submissions received from AirNav Ireland (ANI) and the Shannon Airport Authority (SAA).

12.4.1.2. SA have produced their report which includes a review of the information provided and an overall synopsis with a final summary. A copy of this report is attached to this Inspectors Report as Appendix 3. I will provide a summary of same in section 12.4.8 below and discuss the overall findings from same in my assessment section set out below in section 12.4.9.

12.4.1.3. The Commission are also advised that under the provisions of Section 135(2AB) of the Planning and Development Act 2000, as amended, the Commission conducted an Oral Hearing to allow points or arguments in relation to specified matters only i.e. the Aviation related issues relevant to Shannon Airport and the Woodcock Hill radar. This Oral Hearing will hereafter be referred to as a 'Limited Agenda Oral Hearing' (LAOH). The LAOH took place on January 22nd 2026 and is discussed in further detail in section 12.4.26 – 12.4.35 below.

12.4.1.4. For the Commission's convenience the following are a list of Acronyms and Aviation related phrases which are referred to throughout this section-

- AI Bridges- The Applicant's lead Aviation Consultant. These are described in section 15.1.1 of the EIAR as *"a company with extensive experience in aviation and telecommunications\electromagnetic interference impact assessment studies for EIA's"*
- AIAMR- Aviation Impact Assessment & Mitigation Report (submitted with original application, includes 5 appendices)
- AMSL- Above Mean Sea Level
- ANI- AirNav Ireland
- ANSP- Air Navigation Service Provider
- ARS- Aviation Response Statement (submitted in response to FI request- includes 12 appendices 5 of which were submitted with original application).
- ARTAS- This system provides overlapping coverage of all nine radar sites across Ireland. It deliver full duplicated coverage of AirNav Ireland's airspace to the ARTAS Surveillance Data Processing systems located in Shannon and Dublin Air Traffic Control centres
- ATC- Air Traffic Control
- ATSEP- Air Traffic Safety Electronics Personnel- Under ANNEX I of (EU) 2017/373 Air Traffic safety electronics personnel (ATSEP) means any authorised personnel who are competent to operate, maintain, release from, and return into operations equipment of the functional system[25].
- CAA- The UK's Civil Aviation Authority
- CNS- Communication Navigation Surveillance
- Cyrrus- An IAA approved procedure designer[26] and authors of Appendix 5 submitted by Applicant with the AIAMR and ARS

[25] As explained at the Oral Hearing by representative of ANI.
[26] The Commission are advised that during the Oral Hearing it was clarified that Cyrrus are not an IAA approved procedure designer.

- Eurocontrol- pan European, civil -military organisation dedicated to supporting European aviation
- FCSL- Flight Inspection Service Provider used by the IAA and authors of Appendix 3 submitted by Applicant with the AIAMR and ARS.
- IAA- Irish Aviation Authority
- IFP- Instrument Flight Procedures
- ICAO- International Civil Aviation Organisation
- ILS- Instrument Landing System- A navigational aid. I understand these can enable pilots to land on the runway in poor visibility conditions including when they cannot see the runway due to conditions.
- LAOH- Limited Agenda Oral Hearing i.e. the Oral Hearing conducted by ACP to allow points or arguments in relation to specified matters only i.e. a limited agenda oral hearing. The specified matter for the LAOH was- 'the Aviation related issues relevant to Shannon Airport and the Woodcock Hill radar'.
- MOS- Mitigation Options Study
- MRT- Multi radar tracking (see also ARTAS)
- MSSR- Monopulse Secondary Surveillance Radar
- NATS- The CAA's National Air Traffic Services
- NAVAID's- Navigational Aids- I understand these can be both onboard and/or on the ground e.g. Instrument Landing System (ILS).
- OLS- Obstacle Limitation Surfaces
- PBN IR Performance Based Navigation- EU Regulation 2018/1048 requires Irish airspace to employ satellite based navigation systems by June 6th, 2030 i.e. satellite systems replacing existing ground systems
- PERSEUS- model used in TNO Report
- PSR- Primary Surveillance Radar (PSR)
- SA- Sagentia Aviation- external Aviation consultant engaged by An Coimisiún Pleanála

- SAA/SAG- Shannon Airport Authority / Shannon Airport Group
- SDP- Surveillance Data Processor
- Thales- the actual manufacturer of the radar systems at Shannon Airport and on Woodcock Hill and provider of proposed mitigation to PSR and MSSR radars at Shannon and Woodcock Hill. See also Appendix 8, 9 and 10 of the ARS submitted by Applicant at FI stage.
- Tooman- This is a new radar installation built and operable since the submission of the planning application. It is my understanding (from the Oral Hearing) this is a co-mounted PSR and MSSR located near the Naul, Dublin and is operational since 2025[27].
- TNO- The 'Technical Brief of Evidence' submission presented at the Oral hearing by Cyrrus on behalf of the Applicant included a TNO Report. Paragraph 98 of the technical brief describes TNO as *"a not-for-profit organisation established by law in the Netherlands. They have more than 30 years' experience in modelling the effects of wind turbines on Defence radars and they have developed assessment methods since 1995. TNO has been sponsored by the Netherlands Ministry of Defence and Ministry of Economics to develop a modelling tool, PERSEUS, specifically TNO have developed the PERSEUS tool capabilities for primary and secondary radar simulations. The TNO team comprises 80 people working across all service divisions."*[28]

12.4.1.5. The application site is located c. 17 km east of Shannon Airport and its associated radars. Another radar is located on Woodcock Hill c. 15km from the airport and c. 2km to the west of the application site. The Commission should note-

- The radar on Woodcock Hill is a Monopulse Secondary Surveillance Radar (MSSR) and

[27] See also the Applicant's LAOH 'Technical Brief of Evidence' prepared by Cyruss and submitted at the LAOH, paragraph 69.
[28] See also Paragraph 100 and 101 of the 'Technical Brief of Evidence'

- The radar at Shannon Airport is a Primary Surveillance Radar (PSR) with co-mounted MSSR[29].

12.4.1.6. The Commission will note the Applicant has submitted a letter with the original application in Appendix 1B of the EIAR dated 20/12/2023 from AirNav Ireland[30] (ANI) which states-

"There are three areas of concern for the ANSP[31] regarding this proposal:

1. *"Instrument Flight Procedures serving Shannon Airport: I can confirm that there is no impact on these procedures in relation to the proposed development.*
2. *Navigation Aids at Shannon Airport, managed by AirNav Ireland: I can confirm that there is no impact on these procedures in relation to the proposed development.*
3. *Surveillance (Radar) Systems managed by AirNav Ireland: This is our main area of concern as the proposed development, being at the same elevation as our Woodcock Hill Surveillance Radar, at c.2nm from the most westerly turbine proposed in this development, will have an impact on this radar service."*

The letter goes on to detail there is adequate time to consider how to mitigate issues related to the Woodcock Hill Radar site and at that time they do not present a reason to object to the proposed development. The letter then clearly supports the application in principle subject to ongoing development of appropriate mitigations for the potential surveillance impacts.

12.4.1.7. Notwithstanding this letter, significant Aviation concerns are subsequently raised through the planning application process by ANI, Shannon Airport Authority (SAA) and throughout public submissions regarding impacts to existing aviation structures

[29] See EIAR Appendix 15A- Appendix C of Ballycar Wind Farm Aviation Technical Assessment complied by Cyrrus Section 5.3 and Figure 9 within.
[30] AirNav Ireland has one primary function which is to provide air traffic management and related services within Irish airspace- https://www.airnav.ie/what-we-do/air-traffic-management/airnav-overview#:~:text=AirNav%20Ireland%20has%20one%20primary,radio%20officers%20in%20Ballygirreen%2C%20Co.
[31] Air Navigation Service Provider

i.e. radars at Shannon Airport and Woodcock Hill. Public submissions also raise other aviation concerns including impacts to Coonagh Airfield c. 5.3 km south west of the site.

12.4.1.8. The Commission should also note that the 2006 WEDG and the 2019 Draft WEDG provide guidance relating to 'Aircraft Safety'. Both details that the siting of wind turbines may have implications for the operations of the communications, navigation and surveillance systems used for Air Traffic Control (ATC) for the separation and safety of aircraft and that wind turbine siting may also have implications for the flight paths of aircraft. The 2019 draft guidance details a wind turbine could interfere with the safe operation of an airport, simply by its presence and height if located close to an airport (within 20 km). The proposed development is located c. 17km from Shannon Airport and c. 2km from the radar on Woodcock Hill and surveillance and implications for flight paths are raised as concerns by the ANI and SAA through their initial application and FI submissions.

12.4.1.9. Both wind energy guidance documents also detail that regard 'must' be had to the Irish Aviation Authority's 'Obstacles to Aircraft in Flight Order, 2002', (S.I. 14 of 2002)[32] with the later draft guidance referring to an amendment in 2005, (S.I. 215 of 2005)[33]. I have reviewed both of these and have considered the information within including definitions and obligations which in some cases are detailed as separate from permission required to be obtained under the Planning and Development Acts as amended. Other relevant matters include those that can generally be addressed through suitable planning conditions should the Commission decide to grant permission e.g. such as lighting to obstacles, location of turbine coordinates etc.

12.4.2. **The Original Application**

12.4.2.1. The Applicant addresses Aviation as part of Material Assets in the EIAR i.e. Chapter 15 and associated Appendix 15A. They identify that the proposed development could

[32] https://www.irishstatutebook.ie/eli/2002/si/14/made/en/print#:~:text=This%20Order%20defines%20obstacles%20to%20aircraft%20in%20flight,specifies%20reporting%20and%20information%20requirements%20with%20respect%20thereto.

[33] SI Obstacles to Aircraft in Flight Order. 2005. No. 215.doc

interact with aviation operations. They detail that in the absence of proposed mitigation measures, the effects to aviation from the proposed development would likely be negative, moderate to significant and long term for the duration of the operational phase.

12.4.2.2. The proposed mitigation measures are then set out in Appendix 15A in the form of a report from AI Bridges titled "Aviation Impact Assessment & Mitigation Report" (AIAMR) and five associated appendices including reports from Cyrrus[34] and Thales[35]. Appendix 5 prepared by Cyrrus is titled 'Mitigation Options Study' (MOS).

12.4.2.3. The Executive Summary of the MOS states-

> *"Cyrrus have engaged with the manufacturer of both radar systems to confirm their capability to operate in the presence of Wind Turbines with minimal intervention. The RSM970 MSSR at Woodcock Hill and STAR 2000 PSR with co-mounted MSSR at Shannon Airport have been developed to allow this capability. The STAR 2000 PSR was designed to work in areas with wind turbines, a continual development cycle has been carried out by Thales to ensure the systems performance is not impacted by Wind Turbines. If required upgrades and enhancements for the STAR 2000 are available. Thales have provided evidence that they are confident that with minor optimisation the proposed wind turbines at Ballycar should have minimal effect on the coverage provided by the radars. This evidence is provided as commercial in confidence. Cyrrus have permission from Thales to reference relevant parts but not provide the Thales documents in full."*

12.4.2.4. Section 1.3 of the MOS deals with the Woodcock Hill Radar. It refers to the 'Thales Datasheet' which details systems technical characteristics and ability to meet required specifications and standards. It states these have been included for reference. It also says evidence is provided to constructively address IAA's concerns regarding reflections, deflections, and shadowing.

[34] Cyrrus are detailed as an 'IAA approved procedure designer'. (Based on submissions from parties (including the Applicant) to the LAOH this is not correct).
[35] Thales are the actual manufacturer of the radar systems at Shannon Airport and on Woodcock Hill.

12.4.2.5. These concerns are addressed as follows-

- Regarding reflections it is stated a full explanation of how this is addressed is provided in Thales RSM970 technical description referring to foot/end note 3 in the MOS.
- Regarding deflections (false returns) it is stated the Woodcock Hill MSSR will remove false targets using an inbuilt De-FRUITER. It is stated a detailed explanation of how this is done is provided in reference again referring to foot/end note 3 in the MOS.
- Regarding shadowing it is stated Cyrrus and Thales are confident that any effect would be minimal and have no impact on aeronautical operations.

The Commission should note that page 6 of the MOS list references and identifies the "Thales RSM970 Technical Description" as number 3. This would appear to be foot/end note 3 referred to in the MOS. However, I have not been able to identify this within the documentation submitted with the original application[36]. It would appear the omission of this document is for commercial sensitivity reasons as per the extract cited in paragraph 12.4.2.3 above.

12.4.2.6. Section 1.4 of the MOS deals with the Shannon Airport Star Radar (PSR with co mounted MSSR). It details rotating wind turbine blades will be processed as moving targets by the PSR and will be displayed as clutter. It then details that modern SDP[37] systems can use advanced techniques to prevent this clutter from the wind turbines from being displayed. It contends the Shannon Radar (Star 2000 PSR)) was designed to operate in areas with wind turbines with reference made to similar radars at Schiphol Airport in the Netherlands and Newcastle in the UK which operate successfully with multiple wind farms in close proximity. Further reference is then made to a UK Ministry of Defence Project (Marshall) in which similar Thales radar systems have been inbuilt with capability to operate alongside windfarms.

12.4.2.7. The Commission are referred back to section 1.3.1 of the AIAMR in which exerts from the Thales i.e. 'radar manufacturers documentation' are provided as follows-

[36] See also section 12.4.5.2 below and footnote 39
[37] Surveillance Data Processor

- Figure 1- “Evidence of the Mitigation Measure Solution for Radar Beam Deflections”
- Figure 2- “Evidence of the Mitigation Measure Solution for Radar beam deflections”
- Figure 3- “Evidence of the Mitigation Measure Solution for reflections”
- Figure 4- “Evidence showing Shadowing is operationally tolerable” i.e. *“The maximum heights of shadow regions from the turbines will be below the published ATC surveillance minimum altitudes and should therefore be tolerable.”*
- Figure 5- provides *“technical calculations of the shadow regions based on the EUROCONTROL Guidelines”* i.e. turbine 1 will have a maximum height of 352m or 1,152 feet AMSL and is located in identified sector where the minimum altitude is 2,300 AMSL. Turbines 11 and 12 are in sector 2 where the minimum altitude is 3,000AMSL. This essentially means any aircraft flying in these sectors will not be flying low enough to be impacted by the shadow regions of the turbines.

12.4.2.8. The MOS concludes with recommendations detailing the information provided by Thales, the manufacturer of both radar systems at Shannon Airport and Woodcock Hill provides assurance that mitigation for the Ballycar Windfarm is possible. It then further recommends-

- an onsite condition survey is carried out by Thales of both radar systems to confirm their current operational state and ascertain whether updates or upgrades would be required
- a limited operational flight trial may also be prudent to provide a baseline of the current systems coverage over the area of the proposed Windfarm.
- once the windfarm is built, the systems may require minor optimisation by Thales and oncle completed
- a further Flight Check to confirm the systems performance was acceptable over the Windfarm area.

12.4.2.9. Section 2 of the AIAMR presents Table 1 which identifies each concern derived from consultations with the Irish Aviation Authority (IAA). The table also seeks to address each concern with a mitigation solution where appropriate and details there will be no residual impacts. Section 3 then sets out a number of recommendations to remediate concerns to the radar equipment at Shannon Airport and Woodcock Hill- these are summarised as-

- the technical documentation provided by the manufacturer (Thales) of the two radar systems provides assurance that mitigation for the Ballycar Windfarm is possible.
- an onsite condition survey should be carried out by Thales on both the systems to confirm their current operational state and ascertain whether updates or upgrades would be required.
- a limited operational flight trial may be prudent to provide a baseline of the current systems coverage over the area of the proposed Windfarm.
- once the windfarm is built, the systems may require minor optimisation by Thales with a further Flight Check recommended to confirm the systems performance would be acceptable over the Windfarm area

These recommendations are also generally the conclusion and recommendations set out in section 2.2 of the MOS.

12.4.3. **Submissions of ANI and SAA**

12.4.3.1. The submission to the original application from ANI argues that the proposed wind farm would degrade the performance of the Woodcock Hill Radar. It details that due to the proximity and scale of the proposal, there are no credible and implementable mitigations on the Woodcock Hill Radar itself to eliminate the Radar beam deflections, reflections and shadowing from the proposed turbines. The proposal would therefore compromise the radars compliance with EU mandated performance criteria. They argue the proposal would result in a reduction in the level of safety on the Shannon En Route and Dublin Air Traffic Control centres.

12.4.3.2. The ANI submission does not raise concerns regarding the PSR radar at Shannon Airport.

12.4.3.3. The submission to the original application from SAA details that the proposal will have no impact on the Shannon Aerodrome Obstacle Limitation Surfaces (OLS)[38]. SAA however, notes and shares the concerns of ANI relating to the Woodcock Hill radar. The submission details it was originally thought that impacts to Woodcock Hill radar could potentially be negated but following further engagement these impacts cannot currently be mitigated against. SAA cannot therefore support the development on the basis that appropriate mitigation measures cannot be deployed to prevent impacts on Woodcock Hill radar.

12.4.3.4. The SAA submission does not raise concerns regarding the PSR radar at Shannon Airport.

12.4.4. **Applicant's Response**

12.4.4.1. The Applicant's response to the ANI submission briefly discusses the history of consultations with the IAA prior to submission of the application. The response then suggests ANI has not considered the submitted "Mitigations Option Study" (MOS) in which they argue credible and implementable mitigations to eliminate radar beam deflections, reflections, and shadowing are contained. These measures are a result of consultation with Thales the actual radar manufacturer. It is stated-

"In relation to reflections, deflections and shadowing, the study confirms:

- *Thales RSM970 MSSR has inbuilt two stage reflection processing to eliminate reflections;*
- *Thales RSM970 MSSR has inbuilt DE-FRUITER to eliminate deflected targets; and*

[38] I understand 'obstacle limitation surfaces' refers to defined areas around an airport/aerodrome that are to be maintained free from obstacles.

- *Shadowing from Ballycar Windfarm will be below the published ATC surveillance minimum altitudes and should therefore be operationally tolerable.*

12.4.4.2. The Response submission then details a radar workshop was held with representatives of the IAA, ANI and SAA in February 2024, following the submission of the planning application to facilitate discussion between radar manufacturers and the representatives of those bodies.

12.4.4.3. This workshop did not specifically relate to the proposed development however it is detailed that the topic did come up. Following the workshop ANI issued a letter to the Applicant rescinding their letter of support for the proposal with no technical aviation reason supplied.

12.4.4.4. The Applicant's Response details that ANI's concern regarding the potential for a reduction in the level of safety in the Shannon En-Route and Dublin Air Traffic Control centres arising from the proposed development were not raised in approximately two years of consultations but have now been raised once the application is made. The Applicant details they would welcome the opportunity to address this concern.

12.4.4.5. The Applicant's response to the SAA submission similarly suggests that the submitted MOS was not considered by the SAA.

12.4.5. **Further Information**

12.4.5.1. Following a review of the original application documentation and all submissions received it was recommended that Further Information be sought to address Aviation related and other concerns. Specifically the Applicant was requested to review the Aviation related submissions further and respond accordingly e.g. through the submission of a technical report. The applicant was advised to demonstrate in their response that sufficient consultation with ANI and SAA has been undertaken and all Aviation concerns have been addressed to their satisfaction.

12.4.5.2. The Applicant has responded to the FI request. Substantial documentation has been submitted in support of the Applicant's position. This includes-

1. A cover letter Response from the Applicant
2. an Aviation Response Statement (ARS) prepared by AI Bridges including-
    - Appendix 1 Ballycar Wind Farm Aviation Technical Assessment- Cyrrus (already submitted)
    - Appendix 2 IFP Opinion Ballycar Windfarm Cyrrus (already submitted)
    - Appendix 3 Ballycar Windfarm Impact on ILS Inspection Report – FCSL (already submitted)
    - Appendix 4 Ballycar Wind Farm Aviation Impact Assessment & Mitigation Report – AI Bridges (already submitted)
    - Appendix 5 Mitigation Options Study Ballycar Windfarm - Cyrrus (already submitted)
    - Appendix 6 AIRNAV Response Statement Ballycar Windfarm - Cyrrus
    - Appendix 7 Aviation Assessment Methodology
    - Appendix 8 Thales RSM970 Technical Description[39]
    - Appendix 9 Thales Windfarm Mitigation Presentation
    - Appendix 10 Thales Structured List of Upgrades
    - Appendix 11 EUROCONTROL Mode S Station Functional Specification (EMS 3.11)
    - Appendix 12 AIS AIP[40] Newcastle Airport Appendix 13 Project Marshall ATC Radar Upgrade

12.4.5.3. In section 2.2 of their cover letter the Applicant clearly details ANI's concerns relate only to the operation of the Woodcock Hill radar station. They assert they have submitted independent expert technical assessments compiled by Cyrrus- an Irish

[39] The Board are referred to section 12.4.2.5 and footnote 36 of this report. This document has now been submitted.
[40] Aeronautical Information Publication

Aviation Authority (IAA) approved procedure designer[41] and that the technical assessments were undertaken in accordance with EUROCONTROL Guidelines. They contend it is the opinion of these independent experts that-

- the performance of the radar equipment at Woodcock Hill will not be impacted by the proposal or
- as indicated by the manufacturer, modest upgrading of the equipment can be undertaken to fully mitigate any impact.

12.4.5.4. The Applicant then submits their position is confirmed by a technical report (Appendix 1 of FI submission), with further illustration and detail provided to validate the position. They then draw further comparative consideration to international sites (previously identified in original application information) where aviation safety has been fully maintained in conjunction with the operation of wind farm installations e.g. Newcastle International Airport and UK Department of Defence radar installations.

12.4.5.5. The Aviation Response Statement (ARS) contained in Appendix 1 is compiled by AI Bridges. In its overview (section 2), it details significant consultations with the IAA/ANI have occurred, commencing in January 2022[42] and that the proposal will not result in an impact on aviation. The full detailed technical assessments conducted since 2021 to 2024 are then detailed as included as appendices to the ARS.

12.4.5.6. The ARS re-confirms the findings of the AIAMR and the MOS already submitted regarding deflections, reflections and shadowing. It also confirms the proposed wind farm will not result in any impacts to en-route aircraft and will not impact Woodcock Hill Radar compliance with EU mandated surveillance performance criteria regarding

[41] It was confirmed at the LAOH that this is no longer correct.

[42] Section 2.3.5 details additional consultation with ANI took place in February 2024 following submission of the application at a Radar Workshop. The workshop did not specifically relate to the proposed development but the topic of the Proposed Development and potential impacts on the Woodcock Hill radar were discussed. Following the workshop it is stated the Applicant received a further letter from ANI rescinding the letter of support in principle supplied with no technical aviation reason included.
Section 2.38 refers to further meetings in May 2024 in which the Applicant suggested a planning condition whereby the wind farm could not commence until all aviation concerns were fully addressed to the satisfaction of ANI.
Section 2.39 details email correspondence between the applicant and ANI in which a reply to the recommended condition is outstanding from senior management and the legal team of ANI.

separation of aircraft in En-Route Irish airspace and separation of aircraft in Dublin airspace.

12.4.5.7. Section 2.1 of the ARS provides a Statement of Authority regarding the aviation related consultants AI Bridges and Cyrrus engaged in the application and FI response.

12.4.5.8. The ARS then details that EU Regulation 2018/1048 has been brought into force and lays down airspace usage requirements concerning Performance Based Navigation (PBN IR). This dictates that air navigation services will transition from ground-based radar systems such as the Woodcock Hill MSSR to satellite navigation systems. The movement to satellite based navigation systems in Irish airspace is due to take place by June 6th, 2030. Satellite based aircraft navigation systems will therefore negate any potential impacts associated with wind farms on aircraft navigation.

12.4.5.9. Section 3 of the ARS deals with the Technical Reports. Section 3.3 is titled IAA Radar Surveillance and discusses the presence of radar sites strategically placed throughout the country as shown in Figure 2. Figure 3 labels the radars at Shannon and Woodcock Hill and presents overlapping radar coverage between the radar sites across the country. These radars deliver duplicated coverage of ANI's airspace to the ARTAS systems located in Shannon and Dublin Air Traffic Control centres. The system merges the radar data and distributes the appropriate air situation picture to the air traffic controllers. In the event of a lack of coverage from one radar, the system automatically uses data from another radar providing overlapping coverage, thereby ensuring an accurate picture to controllers. The ARTAS system allows for the maintenance of 5 NM and 3 NM separation detailed as necessary in the ANI submission.

12.4.5.10. Section 3.4.1-3.4.3 then deals specifically with the issues of reflections, deflections and shadowing at the Woodcock Hill MSSR. The information builds on the previously submitted information and concludes similarly.

12.4.5.11. Section 3.4.4 deals specifically with ANI's concern over "En-route Radar Facilities" i.e. the impact of degraded performance of the Woodcock Hill radar equipment to en-

route traffic within Irish airspace. As the radar will not experience reflections (with minor optimisation) or deflections due to the wind farm the performance of the radar equipment will not be degraded and there will be no impact to en-route air traffic. The ARS then details as the minimum flying height for en-route traffic through controlled Irish airspace is 7,500 feet there is no possibility for any shadowing impacts. This is presented in Figure 9- "Altitude of Shadow Region and Minimum Flying Altitudes."

12.4.5.12. The Applicant then presents Figure 11 which is titled "Arbitrary shadowing zone presented by IAA". This purports to show a conceptual sketch of the IAA claimed zone of shadowing resulting from the most northerly and southerly proposed turbine to the Irish Sea. The ARS dismisses this claim and argues no consideration is given for the Slieve Bloom mountain range in the midlands. They refer to the maximum calculated shadow region due to the presence of the proposed wind farm as 3.6km and argue that the resulting shadow region will not extend as presented in Figure 11 and will therefore not impact on Dublin airspace.

12.4.5.13. The submission then details that additional analysis from Cyrrus in relation to shadow regions identifies that while there may be some limited shadowing behind the proposed wind farm, there will be no shadowing impact to Woodcock Hill Radar Surveillance of En-route aircraft at heights of 7,500 to 35,000ft. A comparative of this is presented in Figures 12 and 13 of the ARS.

12.4.5.14. The ARS then refers to references taken from field trials in the UK to address the minimal shadow region impacts on En-route Radar facilities. This is supported by reference to the UK Civil Aviation Authority (CAA) Safety Policy which is detailed as shown in Appendix 6. Appendix 6 is titled 'Response AIRNAV Ireland Ballycar Wind Farm AI Bridges' and appears to be prepared by Cyrrus[43]. It is dated '25 April 24'.

12.4.5.15. The Commission should note I have not identified the 'UK Civil Aviation Authority (CAA) Safety Policy' in Appendix 6. I do however note two exerts are cited and appear to be titled-

- 'Shadowing behind the Turbines caused by Physical Obstruction'

[43] The title page refers to AI Bridges, but the authors appear to be from Cyrrus.

- ‘Low Level Coverage’

These two exerts are also those provided within the ARS and are supportive of the Applicant’s position that such shadow regions would only cover a small area and would only affect low flying aircraft. Figure 2 of Appendix 6 then presents *“an indication of the area around the proposed Ballycar windfarm which may be affected”.* It argues as En-route traffic is generally expected to be between FL100 and FL400[44], as only the low-level coverage is likely to be affected there will be no degradation in the radar performance for enroute traffic.

12.4.5.16. Appendix 6 then presents Figure 3 which shows Dublin Terminal Area 3NM Coverage. This presents overlapping radar coverage from at least 3 radar systems closer to Dublin Airport than Woodcock Hill. It provides a quote from the ANI website which states-

> *“The ARTAS systems merge the radar data and distribute the appropriate air situation picture to our controllers in Shannon, Dublin and Cork.”*

This quote is not sourced, however I have identified it on the ANI website[45]. The Applicant then conclude it is unlikely that the Woodcock Hill radar which is > 90NM from the Dublin Airport would be used for maintaining the 3NM Separation when a minimum of four other systems provide closer cover in this area.

12.4.5.17. The ARS then refers to Appendix 9 “Thales Windfarm Mitigation Presentation” where dedicated flight trials have been conducted of their Wind Farm Filter in difficult terrain circumstances such as Low Radar Cross Section targets, ground targets and low altitudes. I have reviewed Appendix 9 and note on the third page it details wind farm mitigation and provides a weblink to the Thales website. The Commission is advised this weblink was not active on the 05th of March 2026. I did review the link prior to that date and noted that the Thales Wind Farm Filter was described as field proven with several dedicated flight trials performed in difficult circumstances. In relation to civil air surveillance the Windfarm Filter was described as a dedicated algorithm that uses a specific adaptive Constant False Alarm Rate (CFAR) mechanism designed to

[44] I understand this refers to Flight Levels with 100 referring to 10,000 ft and 400 referring to 40,000 ft
[45] https://www.airnav.ie/air-traffic-management/atm-systems-technology/surveillance-radar

minimise track loss and reduce false alarms above and around windfarms and can also be activated into other Thales ATC radars already in service as software.

12.4.5.18. Importantly, I noted that the website did make the point that what works for one radar, operating around one windfarm, characterised by a certain type of wind turbines, may not work for another radar in a different context. This strongly suggested that 'radar specific mitigation' is required for each individual wind farm development.

12.4.5.19. The Commission is advised that the information I viewed was consistent with the contents of the 'exchange of correspondence'[46] between Thales and ANI first submitted at the LAOH by ANI. The Thales letter (dated December 18th, 2025) states-

> *"….Thales wants to make clear that even so radars are equipped with anti-reflection & clutter suppression algorithms or specific Wind Farm mitigation solutions, there is no generic answer to Wind Turbine impact on radar performance, it is a case-by-case basis that needs each time dedicates study based on site location & specificities, radar environment, position & dimensions of each Wind Turbines, wind activity in the region, operational constraints on the area of coverage."*

12.4.5.20. The ARS goes on to discuss "the cone of silence of the radar". This is described as an area above ground based radar system that does not track En-route traffic and this is also the case for the Woodcock Hill MSSR. This is graphically demonstrated in Figure 14. The Applicant contends that all radars in the state have these "non-coverage" areas and therefore overlapping radar coverage from multiple radar systems is required to ensure surveillance and tracking of aircraft through such cones of silence zones. The Applicant then presents the overlapping coverage map of 9 ground based radars throughout the state to demonstrate there is multi radar tracking capability of the aircraft in Irish airspace- i.e. the ARTAS system including through the shadow area caused by the proposed development.

[46] See also sections 12.4.35 and 12.4.36.14 of this report

12.4.5.21. The ARS then discusses the impact of the earths curvature and the Slieve Bloom Mountain range terrain which blocks the radar signal path from Woodcock Hill to Dublin Airport. This is presented in Figure 16. Allowing for a loss of 1,000ft of cover for every 10nm it is estimated that aircraft below 9000ft would not be detected or controlled in Dublin using the Woodcock Hill Radars based on its distance of >90 nm.

12.4.5.22. Section 4 of the ARS is titled "Mitigation Measures" and details that the only potential mitigation required to address any concerns in relation to radar facilities relates to the Woodcock Hill Radar. These are-

- some minor optimisations of the existing radar system may be required to prevent possible reflection issues. Should this be required-
    - it would be completed one channel at a time and allow the system to remain operational throughout.
    - transitional arrangements can be managed to ensure minimal operational disruption occurs.
    - overlapping radar coverage exists in the event that the radar system was offline for a short period

This would appear to be contrary to the recommendations set out in section 3 of the AIAMR and section 2.2 of the MOS where on site condition surveys to both Shannon PSR and Woodcock Hill MSSR are recommended.

12.4.5.23. Section 4.1 of the ARS deals with International and National Precedence. It refers back to the MOS prepared by Cyrrus and submitted with the original application. This provided a EUROCONTROL Assessment which was also used for radars at Newcastle Airport[47] that operate with several windfarms within the radars 'operating volume'. The Commission are referred to Appendix 12 in which an ATC Minimum Altitude Chart is provided.

[47] It is also stated in section 4.2 of the ARS that the Newcastle Airport secondary radar is the same model as is used at Woodcock Hill, Thales RSM970.

12.4.5.24. The ARS refers to ‘Project Marshall’ which is detailed as an upgrade program by the UK Military of Defence that incorporated Windfarm Mitigation Filters to their existing radars some of which were the same model and age of the Woodcock Hill Radar. These are presented in Appendix 13.

12.4.5.25. The ARS refers to ‘Dutch Government Radar Modelling’ which involved use of a computer program which alleviated the difficult task of designing and evaluating surface based radar systems. It details this was used in relation to the wind farm south of Manchester Airport were able to demonstrate that the shadowing impacts of the wind farm where blocked/screened by the mountain range further south of the wind farm i.e. all shadowing impacts were blocked. This information is not supported in the Appendices.

12.4.5.26. Section 4.2 explains how Newcastle Airport previously objected to Wind Farm developments in its area that may have impacted upon its operations. It details following detailed engagement process with all stakeholders Newcastle Airport were satisfied a technological solution was found in the form of radar optimisation, which involved updating the airport’s radar software system. The software upgrade to the Radar mitigated the potential impacts. The Thales Wind Farm Filter incorporates this feature. The Commission are reminded of the comment from the Thales website regarding the Filter set out in section 12.4.5.17 which suggests

> *“What works for one radar, operating around one windfarm characterised by a certain type of wind turbines, may not work for another radar in a different context.”*

12.4.5.27. Section 5 of the ARS discusses other wind farm developments in the east Clare/Limerick area and are presented in Figure 18. Both Carrownagowan (ABP-308799-20) and Fahybeg (ABP-317227-23) have been permitted and are located within 16km of the Woodcock Hill radar. No adverse impacts to En-route Secondary Surveillance Radar facilities were noted by the IAA/ANI for either the Carrownagowan or Fahybeg wind farms even though both were inside the 16km exclusion zone. A similar situation arises with Lackareagh windfarm which at the time was still in the planning system (ABP-321285-24 granted on the 11/08/25). The Applicant does refer to concerns raised by IAA/ANI regarding Oatfield and

Knockshanvo wind farms which are currently before the Commission. However they argue both developers will have commissioned specialist detailed Technical Aviation Assessments that show that there will be no impacts to the Woodcock Hill Radar.

12.4.5.28. Section 6 of the ARS details there will be no residual impacts following mitigation measures for reflections and deflections. Regarding shadowing there will be minimal but operationally tolerable impacts i.e. a shadow region (3.6km as per section 7) but its height will be well below minimal flying altitude. Regarding enroute traffic there will be no residual impacts and no impact to Woodcock Hills compliance with EU mandated surveillance performance criteria required to support 5 Nautical Mile horizontal separation of aircraft in En-Route Irish airspace and 3 Nautical Mile horizontal separation of aircraft in Dublin airspace.

12.4.5.29. The ARS concludes in section 7 with statements on all issues raised by IAA/ANI throughout the consultation stages and those regarding Woodcock Hill Radar. It then again references the ARTAS system and its capabilities for multi radar tracking in order to duplicate coverage to air traffic controllers across the country. They repeat further consultations have taken place with ANI since the application was submitted in which a condition was proposed by the Applicant to which they await ANI's response. The Applicant then indicate to the Commission, that they are amenable to such a condition, if the Commission decide to grant permission or if the Commission decided to convene a Limited Agenda Oral Hearing.

12.4.6. **Submissions of ANI and SAA to the FI**

12.4.6.1. The submission to the FI response from ANI clearly sets out that they maintain their position of objection "*in the strongest possible terms*". They qualify their position by detailing-

1. The content of the supplied ARS has not adequately addressed the concerns of ANI. In relation to the Enroute Surveillance (Radar) network, references to the UK (CAA) are not relevant in this context and may be a misrepresentation. The greatest cause of concern is the generation of radar beam deflections that would generate false targets at higher altitudes and at distance of up to 250nm

2. Referring to ANI NAVAID's[48] facilities and the original documentation from the developer, there is an expected impact for calibration of the ILS[49] system serving Runway 24 at Shannon Airport which may lead to the imposition of restrictions on the use of this landing facility, directly affecting landing traffic on the main runway at Shannon Airport.
3. The FI response documentation has no standing without a full review by the AirNav Ireland Surveillance and NAVAIDs Teams including a demonstration of how mitigation measures, if available, could be applied.
4. References to other wind farm developments are not accurate as in all but two cases cited, ANI has either sought more formal assessments or objected to these developments due to their impact. Of all the wind farms and based on the location and elevation above Mean Sea Level, the proposal has the potential for the biggest impacts on ANI systems, without measurable, evidence-based, demonstrable mitigations being applied.

12.4.6.2. SAA/SAG's FI submission continues to support the position of ANI. It also details an expected impact for calibration of the ILS system serving Runway 24 based on the information received from ANI. The impact has the potential to affect the Glide Slope angle which in turn could affect the usability of this landing system. The submission then details the Glide Slope angle at the airport is 3° which is the optimal angle recommended ensuring acceptable speed control for landing aircraft.

12.4.6.3. The Commission should note the concerns raised by both ANI and SAA/SAG regarding impacts to NAVAIDs i.e. calibration of the ILS system serving Runway 24 were not raised in the original submission. The letter of support in principle[50] that accompanied the application did suggest no impact to NAVAID procedures.

12.4.7. **Applicant Response to ANI and SAA/SAG FI submissions.**

ANI FI Submission

[48] Navigational Aids
[49] Instrument Landing System
[50] See section 12.4.1.6

12.4.7.1. The Applicant identifies four main points in ANI's FI submission.

Point 1

12.4.7.2. The first of these is ANI's greatest concerns being the generation of radar beam deflections that would generate false targets at higher altitudes and at distance of up to 250nm. The Applicant argues ANI have not provided any in-depth, substantive analysis or evidence. They refer to the information already submitted and the fact that the radar at Woodcock Hill uses a well-established processing system to remove deflected targets. They remain adamant the proposal will not cause deflections to the Woodcock Hill radar and even if it did they again point to presence of a backup in the existing overlapping radar systems available i.e. the ARTAS system.

12.4.7.3. The Applicant provides an example for demonstration purposes in Figure 3 showing an enroute flight over Ireland travelling from Paris to Washington on February 06th, 2025 at an altitude of 34,000ft. Based on the location of the aircraft and overlapping radar coverage as per Figure 2, the aircraft is being tracked by potentially eight of the nine radars – Shannon x2, Woodcock Hill, Cork, Mt Gabriel, Dooncarton, Dublin x2 with this information merged by ARTAS.

12.4.7.4. The Applicant then refers to further changes in such radar surveillance and the advance of Performance Based Navigation (PBN) through EU Regulation 2018/1048 i.e. satellite systems replacing ground systems in 2030.

12.4.7.5. The Applicant then firmly rejects the ANI submission that references to the UK aviation sector are not relevant and may be a misrepresentation in relation to Enroute surveillance for the reasons set out below. They refer to the CAA's National Air Traffic Service (NATS) as subject matter experts with regards to the development of wind farms and aviation mitigation having implemented such strategies and accordingly such references are significantly relevant and are not a misrepresentation.

12.4.7.6. The Applicant highlights no reference is made in the ANI FI submission to radar beam reflections and shadowing and therefore considers this an implicit recognition that such concerns have been fully addressed by the applicant FI response.

Point 2

12.4.7.7. The second point relates to ANI's 'new issue' regarding ILS calibration testing which does not include substantive analysis to support their objection and instead uses uncertain language i.e. 'potential' and 'likely'.

12.4.7.8. The Applicant considers this issue was comprehensively addressed in the original application through the submission of a report compiled by FCSL (EIAR, Appendix 15A Appendix D- 'Ballycar Windfarm Impact on ILS Inspection Report'. This is also submitted as Appendix 3 to the ARS submitted at FI stage. FCSL are an IAA approved, international flight inspection and procedure validation specialist.

12.4.7.9. The Applicant details flight checks are conducted annually to ensure that flight procedures and associated navigational aids are safe and accurate. These flight checks are carried out by an IAA approved Flight Inspection Service Provider and are used for calibration of instrument landing systems. The Flight Inspection Service Provider utilised by the IAA is FCSL, who have undertaken the impact assessment on behalf of the Applicant i.e. Appendix D of original application and Appendix 3 of ARS.

12.4.7.10. The Commission should also note that section 4 of the FCSL report states-

> *"International Standards and Recommended Practices (SARPS) for ILS are published by the International Civil Aviation Organization (ICAO)".*

12.4.7.11. Section 3.1 of the FCSL report discusses Shannon Airport Runway 24. It details the ILS provides radio navigation information to aircraft in the initial and final approach phases of flight towards Runway 24 within 25NM of Shannon Airport. In discussing the ILS equipment reference is made to Glide Path equipment (providing vertical guidance to a 3.0° glide path). They then refer to Figure 3.1 which shows an extract from AIP Ireland confirming the coordinates of such ILS installations dated 24/02/22.

12.4.7.12. Section 3.2 of the FCSL report deals with ILS Coverage Information in which standards and recommended practises are published by the International Civil Aviation Organisation (ICAO) and describes required extent of coverage. Figure 3.3 is detailed as showing the Runway 24 ILS Localiser lateral coverage sector in relation to the proposed development. Regarding 'Glide Path Coverage' section 3.2.2 details ICAO requirements as shown in Figure 3.4 with Figure 3.5 showing Glide Path lateral Coverage at Runway 24 in relation to the proposed Wind Farm. In this regard the proposed wind farm would appear to be located well outside the required Glide Path.

12.4.7.13. Section 5 of the FCSL report details that the ILS at Runway 24 is flight checked in accordance with FCSL Flight Inspection Procedure (FIP) FIP 23 (ILS Flight Inspections GPS Southern Ireland. Flight profiles are then flown in accordance with same and such profiles are presented in Figures 5.1-5.7.

12.4.7.14. Section 6 of the FCSL report deals with Impact Assessment for each profile. These are presented in Figures 6.1-6.8. Section 7 concludes that-

> *"a flight inspection aircraft flying centreline, part orbit and bottom edge flight profiles associated with the Shannon Airport Runway 24 ILS will remain sufficiently clear of the proposed Ballycar Wind Farm site".*

However for-

> *"the slice and left slice 8° profiles, the proposed wind farm will require that these profiles are flown at higher altitudes to provide sufficient clearance above the proposed wind turbines."*

The Commission are referred to Figures 6.4, 6.5 and 6.6 of the FCSL report. These glide paths will have to be raised to 2400ft to provide the flight inspection aircraft adequate coverage over the proposed wind turbines. With this change the report states the proposed wind farm will not have any adverse effect on Runway 24 ILS flight inspection procedures and flight profiles.

12.4.7.15. The Applicant's Response to the ANI submission, highlights how ANI did not raise this issue in their original submission. They refer to the FCSL report and detail only minor amendments to the flight inspection procedure are required and there will be

no adverse effects to Runway 24's ILS. However they do highlight there may be an increased cost of flying, as delays in schedules may be experienced due to increased cloud cover at the higher altitude. The report details test flights carried out at increased altitudes (2,600ft) verify that adequate signals are achieved, and sufficient fly-up guidance is also achieved. As a result, there will not be any adverse effect on Runway 24 ILS flight inspection procedures and flight profiles.

12.4.7.16. The report then discusses FCSL experiences over 2022-24 and recordings of 49 flight checks for Shannon Airport in which only 11 flights were recorded in close proximity to the proposed development site. Of these only one was recorded below an altitude of 2,400 ft with all others above 3,000 ft. This indicates flights checks are already being carried out at higher altitudes.

Point 3

12.4.7.17. The Applicant refers to ANI's position that the submitted documentation has no standing without a full review by the AirNav Ireland Surveillance and NAVAIDs Teams including a demonstration of how mitigation measures, if available, could be applied.

12.4.7.18. The Applicant suggests this would appear to indicate ANI have not properly reviewed the information submitted including that from international aviation experts. The Applicant considers in the event that minor optimisations/mitigations are required these are available, have been proposed, and will be applied (and the associated costs of its provision will not be borne by ANI). Therefore the mitigation measures proposed are measurable, evidence-based and demonstrable.

12.4.7.19. Finally, the Applicant asserts ANI have not provided any in-depth analysis of the information provided outlining what elements of the submitted reports have not addressed their concerns.

Point 4

12.4.7.20. The Applicant refers to 'factually incorrect' ANI commentary on other wind farms granted and details-

- the planning file for ABP-308799-20 Carrownagowan contains a letter outlining no objection dated 19th May 2021 from the IAA
- ABP-317227-23 Fahy Beg has received a grant of permission and
- Information regarding Lackareagh, Oatfield and Knockshanvo wind farms was based on a review of publicly available files.

SAA/SAG FI Submission

12.4.7.21. Regarding SAA/SAG FI submission, the Applicant details these are replications from ANI's submission. They highlight that SAA/SAG also did not raise the issue with ILS in their original submission or in other consultations.

12.4.7.22. The Applicant highlights how the SAA/SAG submission appears to link the Woodcock Hill radar to the ILS for Shannon Airport. The Woodcock Hill radar serves enroute traffic in and out of Irish airspace and therefore is not relevant to ILS at Shannon Airport.

12.4.7.23. The Applicant's response addresses the issue regarding the 3° glide slope angle raised by SAA/SAG. They highlight how SAA/SAG did not previously indicate the proposed development would require such an increase. The Applicant contends no such increase is required as the proposed wind farm is not located within the flight path for Runway 24 as shown in Figure 4[51].

12.4.7.24. The Applicant concludes that SAA/SAG and ANI have not provided an evidence-based assessment to substantiate their objection to the Proposed Development.

ANI and SAA/SAG Climate Obligations

[51]Also Figure 3.5 of FCSL Report

12.4.7.25. The Applicant's response takes the opportunity to question ANI and SAA/SAG Climate Obligations in the context of International, EU and national law. They consider ANI and SAA/SAG have adopted an inconsistent and inadequate approach with particular reference to Section 15 of the Climate Action and Low Carbon Development Act 2015 (as amended).

12.4.7.26. In this context, the Applicant suggests the Commission is obliged to exercise its discretionary and evaluative powers in a manner consistent with the relevant plans and objectives, insofar as practicable. They argue the evidence-based assessment by IAA approved international aviation experts as submitted demonstrates that coexistence of wind farms with existing aviation infrastructure is fully achievable i.e. through mitigation proposed.

12.4.7.27. The Applicant refers to the then recent High Court judgment Coolglass Wind Farm Limited v An Bord Pleanála [2025] IEHC1 citing paragraph 131 (iii) (d) and put forward the argument that the Commission is entitled to prefer the evidenced-based technical risk assessment and reports that has been provided with the Application over the nonevidence based general statements of objection made by ANI and SAA/SAG and provide its reasons for this preference.

12.4.7.28. In conclusion. the Applicant suggests four options are available to the Commission which in summary are-

1. grant permission based on the totality of aviation related information submitted,
2. grant permission with suitable specific aviation conditions
3. convene a meeting with the relevant bodies or
4. host a limited agenda oral hearing on the aviation issue

These options will be considered in the Assessment section below.

12.4.8. **External Consultant Report**

12.4.8.1. Sagentia Aviation (SA) have prepared their report on aviation related matters arising from the proposed development. The report is titled 'Independent Aviation Review',

dated 29th of August 2025 and is set out as Appendix 3 to this Inspectors Report. SA have considered the aviation evidence presented to An Coimisiún Pleanála by the Applicant and the relevant prescribed bodies (i.e. ANI and SAA/SAG). It includes an overall synopsis and a final summary.

12.4.8.2. Section 4.2 of the SA report details the concerns raised by both ANI and SAA/SAG throughout the process can be categorised as-

- Instrument Flight Procedures (IFP),
- Instrument Landing Systems (ILS), and
- Surveillance Systems i.e. the radars at Shannon Airport (PSR) and Woodcock Hill)

SA detail that the Applicant has commissioned and provided a number of assessments with the intention of providing a level of confidence that mitigations are available to address the concerns detailed above. SA state *"the assessments were conducted by reputable independent aviation consultants and specialists."*

12.4.8.3. However SA have clearly stated-

> *"…..in the context of increasing confidence sufficiently that the Airport and AirNav may remove objections to the development, very little quantitative evidence has been provided. The Developers reasoning in the main have been supported by claims, arguments and conceptual certainty rather than claims, arguments and evidence based on the actual systems in question and against the development being considered."*

12.4.8.4. In relation to IFP and ILS concerns, SA generally find the information submitted (i.e. Appendix B (Cyrrus) and Appendix D (FCSL) of the Aviation Report submitted as Appendix 15A of the EIAR) both reasonably address the relevant concerns raised. Regarding the concerns raised after submission of FI in relation to potential impacts for calibration of the ILS system and safety assurance material, SA find that the FCSL Report contains sufficient evidence to assure the airport that "*flight calibration activities can still be conducted satisfactorily to validate current performance requirements of the Glidepath",* and that safety assurance material will require a

minor update to reflect the change in serials but based on the FCSL submission *"the overall risk to the quality of safety assurance material is very low".*

12.4.8.5. The SA report then discusses concerns relevant to Surveillance Systems i.e. the radars at Shannon Airport (PSR) and Woodcock Hill (MSSR). It states the Applicant has-

> *"presented 'credible' mitigation solutions based on technical reports provided by reputable aviation consultants, however the level of evidence detail required to assure the Airport and AirNav of a solutions likelihood of success, and the impacts and costs associated with each undertaking are not present."*

12.4.8.6. It highlights the proposal provides 'recommendations' for the Shannon Airport PSR and the Woodcock Hill MSSR including to have condition surveys undertaken and provision of upgrade options. However SA find the proposal does not include the detail required to achieve each option i.e.-

> *"timescales, costs, risks, integration, implementation and downtime, validation testing, commissioning and transition, safety programme planning, management and production/ updates of safety assurance artefacts and regulatory assurance compliance."*

12.4.8.7. The SA report details that it is not unusual for this level of detail to be available at the planning stage but it is usual that a form of 'Aviation Mitigation Scheme' would be agreed and then suitable conditions can be attached to a grant of planning permission. However, it is evident from the submissions of ANI and SAA that Aviation impacts are not yet mitigated or agreed to the satisfaction of these prescribed bodies.

12.4.8.8. The Applicant details a number of recommendations to mitigate Aviation Concerns in the 'Mitigation Options Study' (MOS) (see also section 12.4.2.8) including-

- An onsite condition survey of both radar systems
- limited operational flight trial
- once the windfarm is operational, optimisation may be required and

- a further Flight Check to confirm the radar systems performance

12.4.8.9. In the context of the above, SA agree with the Applicant that mitigation is possible but it is clear such mitigation is required to radars systems that are controlled by ANI and SAA and that the extent of such mitigation is not as simple as 'optimisation' but could instead range from "*relatively low risk optimisation*" to what is more likely a *"costly (circa £3M to £4M) upgrade from a STAR 2000 PSR to a STAR NG variant"* for the Shannon Airport PSR.

12.4.8.10. SA state that both ANI and SAA will therefore require *"further assurance and understanding of the full impact to their operations before removing objections*". The extent of optimisations/upgrades would then determine if limited operational flight trials or full commissioning flight trials would be required which provide significant costs and implications. Minor optimisations and the extent of flight checks are considered understatements as the possibility of an upgrade to the PSR will involve-

> *"a complex and costly programme of work including system integration, implementation and downtime, validation testing, commissioning and transition, safety programme planning, management and production/ updates of safety assurance artefacts and regulatory assurance compliance is required."*

12.4.8.11. In their 'Final Summary' SA commend the Applicant for their engagement with ANI and SAA to identify and address Aviation related impacts arising from the proposed development, including preparation of appropriate assessments and studies to address said impacts by reputable and credible aviation consultancy firms. However, SA states the 'Mitigations Options Study' (MOS) *"provides claims and arguments, but not tangible outcomes in the form of 'measurable evidence'".* Although SA consider this appropriate at this point in planning process, the mitigation proposals in the MOS are considered an *"indication of high-level potential capability only"* and *"that the references to Newcastle Airport and Project Marshall are flawed and could be misconstrued".* SA contend-

"that whilst the report did present credible claims and arguments for the point in time, the results and conclusions, could be misinterpreted as 'solutions', and this appears to be what has happened in follow on engagements to date"

12.4.8.12. Referring then to the Ballycar Wind Farm Aviation Impact Assessment & Mitigation Report (AIAMR) (including the MOS is Appendix 5) SA state the AIAMR-

"….contained viable mitigation options but still without detail of actually how they would be applied, how long will it take, what is the cost, how they will be assured and how they would impact the provision of a safe Air Traffic Service."

12.4.8.13. In terms of the Further Information Response, SA considers the Applicant's submission simply presents the findings of the previously commissioned technical assessments i.e. Appendixes 1 to 5 and additional material (Appendixes 6 to 13) which SA describe as generally reference artifacts. SA again highlight how the Applicant has reasonably argued that credible mitigations are available for the issues raised by AirNav and Shannon Airport regarding the MSSR at Woodcock Hill.

12.4.8.14. The SA report then considers the matter of a 'Planning Condition' as suggested by the Applicant in their FI response i.e. the proposal could not commence operations until all aviation concerns were fully addressed to the satisfaction of ANI. SA consider this to be a *"totally appropriate approach"* and that *"the Developer is willing to accept a significant planning condition that places the financial and operational (renewable revenue) risk upon themselves".*

12.4.8.15. The concluding comments of the SA report state-

"…the aviation concerns have not been addressed to the satisfaction of AirNav and the Airport.

…credible surveillance mitigation options do exist, but further collaborative engagement is required to establish how a state of 'conceptual certainty' could be improved to a state of measurable evidence being provided by the Developer at a level that would satisfy the Airports and AirNavs concerns to allow the project to move forward.

This could be through the development of an Aviation Mitigation Scheme, which provides enough detail, commercial certainty and stipulates residual obligations sufficiently enough for the objections to be replaced with planning conditions."

12.4.8.16. Having considered the above, I am satisfied that the Sagentia Aviation (SA) report provides an independent, thorough and robust consideration of the aviation related matters relevant to consideration of the subject planning application.

12.4.9. **Assessment- Pre Limited Agenda Oral Hearing (LAOH)**

12.4.9.1. Having considered all of the information on file, including the issues raised by the prescribed bodies, public submissions, and the content of the Expert External Consultant Report as commissioned by ACP, I am satisfied the substantive matters to address in this assessment are-

1. The requirement for mitigation measures to address aviation impacts from the proposed wind farm including the existing radar surveillance systems at Shannon Airport (PSR) and Woodcock Hill (MSSR) and impacts to Instrument Landing Systems (ILS) and Instrument Flight Procedures (IFP).
2. The actual recommendations and Mitigation Measures proposed including ARTAS and performance based Navigation or satellite systems for surveillance in 2030..
3. The ability (consent) to implement proposed recommendations and mitigation measures including those to Shannon PSR and Woodcock Hill radars
4. Other Aviation related Impacts including those to Coonagh Airfield

Point 1 and 2- requirement for mitigation and the measures proposed including recommendations

12.4.9.2. The Applicant has submitted detailed technical information with the original application, the Further Information response and further responses to issues raised by prescribed bodies and public submissions. They have clearly detailed significant

consultations with the IAA and ANI have taken place throughout the preparation of the application as well as after its submission to An Coimisiún Pleanála.

12.4.9.3. At the Further Information (FI) stage, the Applicant was requested to demonstrate that sufficient consultation with ANI and SAA had been undertaken and that all aviation concerns had been addressed to their satisfaction. Unfortunately, it is evident that consultations were not conducted to a level that adequately addressed the FI request.

12.4.9.4. In section 15.4.2.4 of the submitted EIAR (and as discussed in section 13.7.8.3 below)[52] the Applicant identify the potential for surveillance radar impacts on the Woodcock Hill (MSSR) and the Shannon Airport (PSR) from turbines at the proposed development and that in the absence of mitigation the proposal would likely be negative, moderate to significant and long term for the duration of the operational phase.

12.4.9.5. Therefore, it is clear the proposed development will have impacts on aviation safety and in the context of the prescribed bodies submissions, I consider these to be at least significant, negative and adverse in the absence of mitigation.

12.4.9.6. The information provided in the EIAR and in particular Appendix 15A includes an Aviation Impact Assessment & Mitigation Report" (AIAMR) and five associated appendices including reports from Cyrrus[53] and Thales[54]. Appendix 5 prepared by Cyrrus is titled 'Mitigation Options Study' (MOS). Impacts regarding radar beam deflections, reflections and shadowing are identified and proposed mitigation measures and recommendations are put forward. This information is supplemented by the Aviation Response Statement (ARS) with 13 Appendices submitted at FI stage.

[52] EIA Assessment- Material Assets- Aviation

[53] Cyrrus are detailed as an IAA approved procedure designer (Based on the Oral Hearing it appears Cyrrus are no longer approved by the IAA but are procedure designers in other jurisdictions).

[54] Thales are detailed as the actual manufacturer of the radar systems at Shannon Airport and on Woodcock Hill.

12.4.9.7. The Applicant's Response to ANI's FI submission specifically addresses ANI's greatest cause of concern-

> *"generation of radar beam deflections that would generate false targets at higher altitudes and at distance of up to 250nm"*

and repeats that the existing Woodcock Hill MSSR radar can use its own in built techniques to remove false targets and therefore the proposal will not cause deflections.

12.4.9.8. However, it is clear from the content of section 4.5 of the Independent Expert Consultant Report prepared by Sagentia Aviation (SA), that the recommendations proposed by the Applicant in the Mitigations Options Study (MOS) (see also section 12.4.2.8) in relation to surveillance radar impacts at the Airport PSR and Woodcock Hill MSSR are insufficient at the time of their submission- i.e. it is not clear if low risk optimisations are required or instead, what is considered more likely for the Shannon PSR, a costly upgrade (circa £3M to £4M) will instead be required to the radar. This likely upgrade will then impact upon the extent of flight trials required that go beyond the scope of what the Applicant has recommended as a "*limited operational flight trial*", with the costs and implications detailed as *"not insignificant".* SA considers the recommended minor optimisations to both radars and the extent of flight checks to be 'understatements' as the possibility of an upgrade to the PSR will involve-

> *"a complex and costly programme of work including system integration, implementation and downtime, validation testing, commissioning and transition, safety programme planning, management and production/ updates of safety assurance artefacts and regulatory assurance compliance is required."*

12.4.9.9. I acknowledge that neither ANI or SAA/SAG highlight any specific concern regarding the PSR at Shannon Airport, it is important to highlight the recommendations of the MOS clearly state that a condition survey is required to both the PSR at Shannon and the MSSR at Woodcock Hill to confirm both operational status and ascertain whether updates or upgrades would be required.

12.4.9.10. Noting the concerns raised by SA regarding the likely requirement for the existing Shannon PSR needing to be upgraded to the latest variant being offered by Thales, which is a STAR NG PSR and at significant expense, it would seem prudent that such condition surveys are carried out to both radars in advance of the application in order to inform the full extent of actual mitigation measures proposed. This also seems necessary having considered the statement on Thales website (as discussed in section 12.4.5.1.17 above) that-

> *"What works for one radar, operating around one windfarm characterised by a certain type of wind turbines, may not work for another radar in a different context. Evaluating the impact of each windfarm on potential radars is therefore crucial to de-risking investments."*

12.4.9.11. The matter of the proposed development's impact upon calibration of the ILS system serving Runway 24 at Shannon Airport is a new issue raised by ANI and SAA in response to the FI submission. It is not entirely clear the basis upon which this concern has subsequently arisen, given that the letter of support from ANI submitted with the application details no impacts to navigation aids at Shannon Airport.

12.4.9.12. The Applicant contends this issue was addressed in the report submitted with Appendix 15A to the EIAR- Appendix D by FCSL- 'Ballycar Wind Farm Impact on ILS Inspection Report' and also submitted with the FI documentation Aviation Response Statement (ARS) Appendix 3. The Applicant details that the author of the report FCSL are an IAA approved 'Flight Inspection Service Provider' and are used for calibration of ILS. The flight assessment shows that aircraft flying centreline, part orbit and bottom edge associated with runway 24 will remain clear of the proposed wind farm. However for slice and left slice 8° flight profiles, aircraft will be required to fly at higher altitudes (2,400ft) to provide sufficient clearance of the turbines. The impact of this appears to be potential for increased cost of flying as delays in schedule may occur due to increased cloud cover. However FCSL confirm that inspection flight procedures will not be impacted. Test flights at 2,600ft verify adequate signals are achieved and therefore no impact to the ILS flight procedures. The Applicant indicate they will bear cost of additional expense of flight checks.

12.4.9.13. SAA/SAG have shared ANI's concern regarding the ILS system serving Runway 24 and in particular potential for increasing the 3° glide slope angle. The Applicant categorically states the proposed development will not result in an increase to the 3° glide slope angle at Runway 24. They refer to figure 4 of the FCSL report which clearly shows the proposed development is not located within the flight path for Runway 24.

12.4.9.14. The SA independent External Report section 4.4 states-

> *"there is sufficient evidence presented in the FCSL Report to assure the Airport that flight calibration activities can still be conducted satisfactorily to validate current performance requirements of the Glidepath. Several flying serials may need to be increased in height, but FCSL have confirmed that the Glide Path RF signal levels exceed minimum levels and sufficient fly-up guidance is achieved below the Glide Path sector.*
>
> *Sagentia Aviation notes AirNav concerns that any amendment to current calibration serials has the potential to affect the safety assurance material. The safety assurance material will require a minor update to reflect the change in serials, but as FCSL have already confirmed that this change will not impact calibration activities and that the there is sufficient fly-up guidance, then the overall risk to the quality of safety assurance material is very low."*

12.4.9.15. Having considered the above, impacts to ILS have been identified and measures have been put forward by the Applicant to address same. The Commission's appointed External Consultant- SA describes the Applicant's consultants Cyrrus and FCSL as *"reputable and competent organisations capable of undertaking the respective assessments*" and that the information submitted in the FCSL Report is sufficient to assure the Airport that flight calibration activities can still be conducted satisfactorily to validate current performance requirements of the Glidepath. SA also consider that safety assurance material will require a minor update to reflect the change in serials. They contend that as FCSL have already confirmed that this change will not impact calibration activities and that there is sufficient fly-up guidance, then the overall risk to the quality of safety assurance material is very low.

12.4.9.16. Regarding Instrument Flight Procedures (IFP), SA notes no concerns were raised by ANI or SAA/SAG during the planning application stages. Initial concerns were raised in advance of the application being lodged and these are addressed through the report commissioned and undertaken by FCSL who SA describe as a Civil Aviation Authority (CAA) and IAA Approved Procedure Design Organisation. Section 4.3 of the SA report states-

> *"The approach, outcomes and conclusions of the IFP Opinion Report are reasonable in the context applied, they have been accepted by the AirNav…."*

12.4.9.17. Notwithstanding the overall mitigation measures and recommendations proposed by the Applicant, they also point to the capabilities of ANI's existing ARTAS system which uses coverage from nine overlapping radars nationwide, which includes for surveillance at higher altitudes and out to a distance of 250nm. In the event of a lack of coverage or deflections from one radar ARTAS automatically uses data from other radars ensuring an accurate picture for air traffic controllers. I acknowledge the functionality of the ARTAS system as explained by the Applicant, which is also set out on the ANI website[55]. It is clear that ARTAS is a combination of ANI radar assets providing combined coverage of ANI's airspace. However and notwithstanding same, it is clear that ARTAS should not be considered a credible mitigation measure to safeguard against degradation of the performance of either the Shannon Airport PSR or the Woodcock Hill Radar. It could also be argued degradation to existing radars resulting from the proposed development could also run a risk of degradation to ARTAS full capabilities. ANI's primary function is to provide air traffic management and related services within Irish airspace and based on the totality of the information submitted, I am not in a position to accept the existing ARTAS system as viable mitigation to address the aviation related concerns from the proposed development as raised by the prescribed bodies.

12.4.9.18. The Applicant then points to the EU regulatory advancement of performance based Navigation or satellite systems for surveillance in 2030 to replace ground based radars surveillance such as at Woodcock Hill. While I acknowledge the intention of

[55] https://www.airnav.ie/air-traffic-management/atm-systems-technology/surveillance-radar

this point and the likely benefit of same in the future, I do not consider it to have significant weighting at this time on the subject application, nor can it be relied upon to address impacts and degradation of the performance of existing Surveillance Radars arising from the proposed development.

12.4.9.19. The Applicant challenges and rejects ANI's consideration that references to the UK (CAA) are not relevant in this context and indeed may be a misrepresentation, in relation to the Enroute Surveillance (Radar) network. The Applicant points to the CAA's National Air Traffic Services (NATS) who manage airspace across the UK where enroute traffic is trafficked and managed. They argue NATS have implemented mitigation strategies that ensures wind farms can proceed without impacting aviation and therefore such references are not a misrepresentation.

12.4.9.20. The Commission are referred sections 3.6.2 and 4.6 of the SA External Report. The report considers the mitigation options presented by the Applicant in this context are-

> *"an indication of high level potential capability only, the references to Newcastle Airport and Project Marshall are flawed and could be misconstrued*."

Conclusion Points 1 and 2- requirement for mitigation and the measures proposed including recommendations

12.4.9.21. Having considered all of the above, I am satisfied the proposed development will have at least significant impacts in relation to aviation safety and that mitigation measures are required, in particular to the two existing radars at Shannon Airport and at Woodcock Hill.

12.4.9.22. The Applicant has identified and acknowledged there will be impacts and put forward mitigation measures and recommendations to address these. Despite originally offering conditional support for the application both ANI and SAA do not accept the mitigation measures and recommendations as proposed and accordingly object to the proposed development.

12.4.9.23. Sagentia Aviation commissioned by ACP to advise on aviation related matters have stated-

> *"….that credible surveillance mitigation options do exist, but further collaborative engagement is required to establish how a state of 'conceptual certainty' could be improved to a state of measurable evidence being provided by the Developer at a level that would satisfy the Airports and AirNavs concerns to allow the project to move forward."*

12.4.9.24. Therefore, it is clear to me that based on the information on file, at least significant aviation impacts which are described by the Applicant as negative are likely to arise from the proposed development unless adequate mitigation measures are proposed and implemented. The Applicant is adamant the mitigation measures and recommendations proposed adequately address the identified aviation impacts including to existing radars. However ANI and SAA/SAG do not accept that the measures proposed address their concerns in particular to existing radars. The external consultant commissioned by ACP- Sagentia Aviation (SA) contends that mitigation measures exist to address aviation concerns including to existing radar installations, but the information submitted by the Applicant does not provide a state of measurable evidence to remove the concerns of ANI and SAA/SAG. They do however contend an Aviation Mitigation Scheme could be developed allowing for objections to be removed and replaced with planning conditions.

Point 3- The ability (consent) to implement proposed mitigation measures to Shannon PSR and Woodcock Hill Radars

12.4.9.25. The Commission will note the Applicant has detailed in their FI response (see section 12.4.5) and their further response to ANI and SAA submissions (see section 12.4.7) that the Commission should consider granting permission with a condition requiring aviation related mitigation measures to be agreed prior to commencement of development. The SA External Report considers this a *"totally appropriate approach"* and they suggest-

"the development of an Aviation Mitigation Scheme, which provides enough detail, commercial certainty and stipulates residual obligations sufficiently enough for the objections to be replaced with planning conditions."

12.4.9.26. The application of such a 'Planning Condition' requiring aviation related mitigation measures to be agreed with ANI and SAA/SAG prior to commencement of development, may seem like an appropriate solution to the matter. However, it is important to note that the Applicant has acknowledged there will be impacts to the Shannon PSR and Woodcock Hill radars and mitigation measures will be required e.g. in the form of proposed optimisations.

12.4.9.27. Regardless of what the mitigation is, importantly no party disputes that mitigation is required. However, the crux of the matter is, that the mitigation is required to radar installations and aviation operational procedures and neither the installations or the procedures are under the control of the Applicant. Furthermore ANI or Shannon Airport have not given their consent for any such mitigation to be implemented. It is also noted that neither radar installation is within the red line planning application boundary nor are they within the blue line boundary representing the Applicant's landholding and lands within their control.

12.4.9.28. The Commission are referred to requirements of the Planning Acts in this regard, which I lay out as follows for convenience-

Section 37 (G)(3)

The Board may, in respect of an application under section 37E for permission—

(a) decide—

(i) to grant the permission, or

(ii) to make such modifications to the proposed development as it specifies in its decision and grant permission in respect of the proposed development as so modified, or

(iii) to grant permission in respect of part of the proposed development(with or without specified modifications of it of the foregoing kind), or

(b) decide to refuse to grant the permission,

and a decision to grant permission under paragraph (a)(i), (ii) or (iii) may be subject to or without conditions[56].

Section 37(G)(7)

Without prejudice to the generality of the Board's powers to attach conditions under subsection (3) the Board may attach to a permission for development under this section—

(a) a condition with regard to any of the matters specified in section 34(4)…..

Section 34 (4) (a)

Conditions under subsection (1) may, without prejudice to the generality of that subsection, include all or any of the following—

(a) conditions for regulating the development or use of any land which adjoins, abuts or is adjacent to the land to be developed and which is under the control of the applicant if the imposition of such conditions appears to the planning authority—

(i) to be expedient for the purposes of or in connection with the development authorised by the permission, or

12.4.9.29. The location of the Shannon Airport including the Shannon PSR radar and the location of the Woodcock Hill MSSR radar do not adjoin, abut and are not adjacent to the lands to be developed. Nor are they under the control of the Applicant and therefore imposition of such a condition does not seem legally possible. Furthermore, and in the context of the submissions received from ANI and SAA/SAG who control both radars, manage Irish air space and manage airport operations and

[56] Underlined emphasis added

in a scenario where both clearly object to the proposed development, it is not possible to say how such a condition could be expedient for the purposes of or in connection with the development, if authorised by the permission.

12.4.9.30. The Board are also referred to extract '4-235' taken from Westlaw- Browne, Simons on Planning Law, 3rd edn, 2021 which states-

> *"In the case of adjacent land not under the control of the applicant and thus outside s.34(4)(a), it may be possible to impose a negative condition specifying that no development shall be carried out until certain matters are attended to on other land (in relation to, for example, access). Conditions of this type should, however, be used sparingly and only in circumstances where there is a reasonable prospect of the condition being fulfilled. If there is no such reasonable prospect, then it would seem fairer to refuse planning permission, rather than to prejudice any entitlement to compensation which might otherwise arise, by granting a conditional planning permission…..*

The Commission are also referred to extract '4-243' from the same publication which states-

> *"Where a condition is deemed to be unlawful, then the question arises as to whether it is severable. If so, the condition(s) must be struck out and the permission will then continue to be effective. However, if the unlawful condition is not severable then the permission itself must have been invalid ab initio."*

12.4.9.31. The Commission are also referred to the Development Management Guidelines 2007[57] and in particular section 7.3 which sets out basic criteria for conditions which includes '*reasonable'*. A usual test for determining 'reasonable' is set out section 7.3.5 and questions if-

> *"…a condition can be complied with by the developer without encroachment on land that he or she does not control, or without otherwise obtaining the consent of some other party whose interests may not coincide with his/hers."*

[57] See also section 10.4.3 of this report

In this instance, where it is clear that the developer cannot obtain consent of ANI or SAA/SAG it would not appear 'reasonable' to apply a condition as suggested by the Applicant.

12.4.9.32. Section 7.8 deals with 'Conditions relating to other codes' which states-

> *"It is inappropriate, however, in development management, to deal with matters which are the subject of other controls unless there are particular circumstances e.g. the matters are relevant to proper planning and sustainable development and there is good reason to believe that they cannot be dealt with effectively by other means. The existence of a planning condition, or its omission, will not free a developer from his or her responsibilities under other codes and it is entirely wrong to use the development management process to attempt to force a developer to apply for other some licence, approval, consent, etc.*

I acknowledge this section of the guidelines is not necessarily transferable to the subject matter, I am satisfied however, that the main premise of this part of the Guidelines relates to the application of a condition as suggested by the Applicant. In this situation ANI and the IAA are the regulatory bodies regarding aviation safety and without at the very least agreement to such a condition from those bodies it would in my opinion be inappropriate to apply such a condition.

12.4.9.33. Section 7.9 of the guidelines deals with 'Conditions requiring matters to be agreed'. This section clearly states conditions requiring matters to be the subject of consultation with, or to be agreed with another public authority, should not be attached to a permission. In this context I am satisfied that ANI and SAG as well as IAA are public authority's and it would therefore be inappropriate to apply such a condition as the applicant suggests.

12.4.9.34. Based on the contents of planning legislation, the two legal extracts and the section 28 Ministerial Guidelines as detailed above, it is my view that, it would not be appropriate to apply such a condition and such a condition would not, in any event, be severable from any final decision, nor would such a condition be reasonable, as mitigation measures are clearly required to avoid at least significant and negative

aviation related impacts, that would otherwise mean the proposed development should be refused.

Conclusion on Point 3- ability (consent) to implement proposed mitigation measures to Shannon PSR and Woodcock Hill Radars

12.4.9.35. Having considered the above, it is clear that if permission is granted, mitigation measures will be required to airport operations and existing radar surveillance infrastructure that is not within the red line planning application site or the blue line landholding of the Applicant. The Applicant does not have control of the said operational space, radar lands or the necessary consents to implement the necessary mitigation measures to adequately mitigate aviation related impacts arising from the proposed development. In this context, where both ANI and SAA/SAG object to the proposed development and do not at least offer their consent to implement the mitigation measures, as proposed by the Applicant, I consider it inappropriate to grant permission with a condition, where it seems there is no reasonable prospect the condition can be fulfilled based on the information on file.

Point 4- Coonagh Airport

12.4.9.36. Public submissions have raised concerns regarding the impact of the proposed development on Coonagh Airfield which is located c. 5.3 km south west of the application site.

12.4.9.37. The Applicant in their response to such submissions have indicated the published aeronautical information for Coonagh Airfield states that all flights in/out should be to the south of the River Shannon which is the opposite direction of the proposed wind farm and therefore there would be no impact from the proposed wind farm. I have also reviewed this aeronautical information (dated 30/10/2025) on ANI's website[58] where it is stated that-

[58] https://www.airnav.ie/air-traffic-management/aeronautical-information-management/aip-package https://www.airnav.ie/getattachment/644a6bed-6d13-4876-955f-400785981f0c/EI_AD_2_EICN_EN.pdf?lang=en-IE

"All circuits should be flown to the south of the Shannon River at 800Ft avoiding built up areas. Pilots are reminded of the proximity of the P9 and the Shannon Control Zone"

12.4.9.38. The Commission are reminded that ANI's primary function is to provide air traffic management and related services within Irish airspace. ANI have made two submissions to this application and have not raised any concerns regarding the impact of the proposal on Coonagh Airfield. Nor has a submission been received from Coonagh Airfield.

12.4.10. **Initial Conclusion- Pre Limited Agenda Oral Hearing**

12.4.11. I have considered all of the information on file regarding Aviation. In particular, I remind the Commission the matters discussed in section 12.1 of this report i.e. the principle of the development and the fact the site is predominantly located within an area designated as a 'Strategic Area' for wind energy development which can accommodate a medium to large scale wind farm and is eminently suitable for such development.

12.4.12. It is clear the Applicant has engaged in significant consultations with the IAA/ANI throughout the planning application preparation stage as detailed in Appendix 15A- AIAMR- Appendix 1 and elsewhere in the file. However, I note further consultations appear not to have been conducted as requested by the Commission at the Further Information stage.

12.4.13. The Applicant has engaged subject matter experts in the form of Cyrrus and FCSL. Cyrrus are detailed as an IAA Approved Procedure Designer[59] who have reported on all possible Mitigation Measure options to remediate the impacts of the proposal on surveillance radar systems. FCSL Ltd. are detailed as a certified flight inspection company retained by the IAA for bi-annual flight inspection services, and they have prepared a study to assess the impacts of the proposal on ILS Inspection flights. The Applicant has also detailed engagement with and submitted technical documentation from Thales the manufacturer of the PSR and MSSR Radars at Shannon Airport and Woodcock Hill respectively.

[59] It was established at the LAOH that Cyrrus are no longer IAA approved.

12.4.14. Sagentia Aviation (SA) have been appointed by ABP/ACP to advise on Aviation matters and they have commended the Applicant for their engagement with the appropriate bodies at an early stage of the process as well as supporting the abilities and competence of the companies engaged by the Applicant to address Aviation matters. Some concerns have been highlighted in public submissions in this regard and based on the contents of the SA report, I am satisfied such concerns have not been substantiated.

12.4.15. The Applicant contends that identified impacts from the proposed development i.e. deflections, reflections and shadowing can either be mitigated by optimisations of the Woodcock Hill radar using inbuilt processes and/or are otherwise operationally tolerable given the small extent and height of likely shadowing from the turbines. The Applicant contends the flight path into Runway 24 at Shannon Airport is not impacted by the location of proposed turbines with no change required for the glide path angle from that existing i.e. 3°.

12.4.16. I acknowledge that ANI are the Surveillance/ Communications/NAVAIDs experts in assessing aviation related impacts of development such as that proposed for the benefit of public and aviation safety in Ireland. I also acknowledge SAA/SAG requirements to protect their aerodrome, OLS and flight paths for obvious public safety and their own commercial reasons.

12.4.17. Based on the content of independent external consultant's report by SA and the information on file including submissions from the prescribed bodies, it is clear to me that aviation related mitigation measures are required, including to, both the Shannon Airport PSR and the Woodcock Hill MSSR. The measures required include the recommendations put forward by the Applicant in the Mitigation Options Study e.g. possible optimisations, establishing if upgrades are required and need for flight trials. Importantly SA advise that such recommendations are understatements with a 'likely' and costly upgrade from a STAR 2000 PSR to a STAR NG variant (radar types) resulting in

> *"a complex and costly programme of work including system integration, implementation and downtime, validation testing, commissioning and transition, safety programme planning, management and production/ updates*

of safety assurance artefacts and regulatory assurance compliance is required."

12.4.18. Regardless of the mitigation required or what they may be, it is abundantly clear that mitigation would be required if the proposal is to be permitted, as suggested by all parties and this will involve implementation to radar systems that are not under the control of the Applicant.

12.4.19. ANI's primary function is to provide air traffic management and related services within Irish airspace. They have objected to the proposed development and are supported by the SAA/SAG. On the basis of the information submitted with the application and in the context of their concerns, it is difficult to see how permission can be granted when mitigation is required to airport operations and both existing radar systems that are not controlled by the Applicant and where consent has not been provided by ANI or SAA/SAG to implement any such mitigation / recommendation e.g. a condition survey.

12.4.20. The Applicant disputes the concerns raised arguing that they have been addressed with the information provided, but they have acknowledged that concerns remain. The Applicant suggests the concerns can be overcome through four options available to the Commission which I summarise as follows-

1. grant permission based on the totality of aviation related information submitted,
2. grant permission with suitable specific aviation conditions
3. convene a meeting with the relevant bodies or
4. host a limited agenda oral hearing on the aviation issue

12.4.21. As set out throughout this section, it is clear that mitigation measures are required to address at least significant and negative aviation impacts arising from the proposed development. Based on the contents of the SA report and the information provided by the Applicant, mitigation measures would certainly appear possible to mitigate aviation concerns. However the information on file is not sufficient to-

"establish how a state of 'conceptual certainty' could be improved to a state of measurable evidence being provided by the Developer at a level that would

satisfy the Airports and AirNavs concerns to allow the project to move forward." (SA report section 4.6).

12.4.22. In my view, it is not possible to grant permission based on the totality of aviation related information submitted. As explained in section 12.4.9.35 it is not appropriate to impose specific aviation conditions to lands that are not within the applicant's control. In my opinion to do so would also be contrary to the 2007 Section 28 Ministerial Guidelines as discussed in sections 12.4.9.31- 33.

12.4.23. However, the Applicant has also put forward a strong argument regarding climate obligations of Statutory Bodies and co-existence with wind farms in their response to FI observations received on the 12/02/25. They consider ANI and SAA/SAG's position to be inconsistent with Section 15 of the Climate Act. The Applicant then refers to An Coimisiún Pleanála's similar obligations with reference to the High Court judgment of Coolglass Wind Farm Limited vs An Bord Pleanála. They cited paragraph 131 (iii) (d) of the judgment-

"if there is some impracticability in a grant of permission, but it can (or could potentially) be resolved by a procedural decision that is not impracticable, then the board is required to make the procedural decision that is most consistent with climate goals to enable the problem to be fixed….."

12.4.24. Paragraph 131 (i) and (ii) of the judgment also states-

(i) "The board must ask itself what substantive disposition of the matter that is practicably available would contribute to achieving the s. 15 goals. In the case of renewable energy projects, the answer to that will almost always be a grant of permission….

(ii) "The board should then ask whether the substantive disposition of the matter in a way that furthers climate goals is precluded by a mandatory and non-fixable legal requirement that confers no discretion or evaluative judgement on the decisionmaker. If so, the project has to be refused no matter how climate-friendly it is."

12.4.25. Having considered the matters as set out above in the context of the Commission's obligations under Section 15 of the Climate Act[60] and in advance of a formal decision on this file, I recommended[61] that the Commission under the provisions of Section 135(2AB) of the Planning and Development Act 2000, as amended, should conduct an Oral Hearing to allow points or arguments in relation to specified matters only (limited agenda oral hearing LAOH) i.e. *"the Aviation related issues relevant to Shannon Airport and the Woodcock Hill radar".* This recommendation was accepted by the Commission on the 09th of October 2025.

12.4.26. **Oral Hearing- Introduction**

12.4.26.1. A Limited Agenda Oral Hearing (LAOH) was originally arranged to be held at Treacy's Oakwood Hotel, Shannon in County Clare on the 20th November 2025. On the 18th of November 2025 and at the request of the Applicant and supported by ANI, An Coimisiún Pleanála decided to adjourn the hearing to facilitate further engagement between the parties. Despite the late notice of this decision, it was considered to be in keeping with ACP's obligations under section 15 of the Climate Action and Low Carbon Development Act 2015, as amended 2021 i.e. in order to further climate goals.

12.4.26.2. The LAOH was rearranged and held in the Clayton Hotel, Limerick on the 22nd of January 2026. Representatives of the Applicant, AirNav Ireland (ANI and including IAA), Shannon Airport Group (SAG) five participants from the public and other observers attended the Hearing. The LAOH agenda and proceedings of the Hearing are provided in Appendix 4 of this report and referenced where relevant in the assessment section below (Section 12.4.36). The proceedings were also recorded and are available to the Commission on an audio file.

[60] 'While the portions cited by the Applicant have subsequently been set aside by the Supreme Court, they were the applicable precedent as of the time I recommended an oral hearing be held and when the oral hearing was held.

[61] See Memo on file dated 08th of October 2025.

12.4.27. **Applicant's Submission to the LAOH**

12.4.27.1. At the Hearing the Applicant presented their case, which generally included oral submissions accompanied by written submissions as follows-

- Legal Submission led by Esmonde Keane SC
- Technical Brief of Evidence from Cyrrus (Technical Representative) including submission of TNO[62] Report
- Planning Brief of Evidence, Gavin Lawlor
- A submission from Wind Energy Ireland

Accompanying written submissions are on the file for the Commission's consideration.

12.4.27.2. From the outset the Applicant put forward their position which initially focused on the legislative status of ANI in the context of the Climate Action and Low Carbon Development Act 2015, as amended 2021 i.e. that ANI are a 'relevant body' to which the provision of the Act applies and in this regard, as is the case with ACP, ANI should perform its functions in a manner consistent with-

"(a) the most recent approved climate action plan,

(b) the most recent approved national long term climate action strategy,

(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,

(d) the furtherance of the national climate objective, and

(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State."

12.4.27.3. The submission then refers to the Coolglass High Court judgement and suggested that a suitable specific aviation condition as put forward by the Applicant[63], imposes no greater obligation upon ANI than they are already subject to under section 15 of the Climate Act, as amended. The Applicant suggests that ANI do not seem to

[62] See list of Acronyms and Aviation related phrases in section 12.4.1.3 above
[63] See section 12.4.7.28 of this report

consider themselves a body to which the Act applies and this may inform ANI's lack of significant engagement or positive contribution in relation to the mitigation measures and the possible imposition of the condition as suggested by the Applicant.

12.4.27.4. Following this, the Applicant put forward their oral and written submission titled 'Technical Brief of Evidence' prepared and presented by Cyrrus. The document and audio file are on file for the Commission to consider.

12.4.27.5. Paragraph 26 identifies three issue areas to address which they detail as called out by Sagentia Aviation (SA) and confirmed by ANI in a meeting between the Applicant and ANI on 16th December 2025. The three areas are-

- Instrument Flight Procedures (IFP)
- Instrument Landing Systems (ILS), and associated routine flight checking
- Surveillance systems at each of Shannon PSR, Woodcock Hill MSSR

12.4.27.6. In relation to the first two of these, paragraphs 27 and 34 of the Technical Submission from Cyrrus appear to suggest these matters are resolved. Notwithstanding this, further recommendations are detailed in paragraph 45 regarding ILS and impacts from the cranes used to install the proposed turbines-

> *"It is recommended that further computer simulations are carried out to assess the effects of the cranes to be used to erect the turbine structures on the ILS Localiser and Glide Parth guidance signals and that a full ILS flight inspection is performed after construction of the wind farm is completed to assess the actual levels of interference caused by the wind turbine structures. At the meeting with AirNav dated 16th December, the developer confirmed that they are happy to support the assessment of construction cranes with further simulations and agreed to work with AirNav on this issue and to provide the relevant information to AirNav. This engagement and a commitment to a post construction full ILS flight inspection can be addressed through an appropriate planning condition. With these mitigations, this issue is resolved."*

12.4.27.7. The Applicant's position that IFP and ILS related matters are resolved is contrary to the position set out by ANI and SAG at the LAOH and as set out in sections 12.4.28.9, 12.4.28.29 - 12.4.28.34 and 12.4.29.5 – 12.4.29.7 below, where aviation and airport operational impacts, including prolonged service outages during constriction stage and a risk of losing of CAT II runway status are highlighted.

12.4.27.8. In relation to Surveillance systems, paragraph 47 of the submission details there are a cascade of mitigation options for both Shannon PSR and Woodcock Hill MSSR that are proven, credible technical mitigation options. Paragraph 48 details the Applicant has not received a comprehensive description of ANI's Operational Requirements but from their expert opinion there are technical solutions that will address the issues arising from the construction of the proposed development. It is stated that-

> *"The outcome will be a Functional System that is as safe as, or safer than the one currently in existence."*

12.4.27.9. The Commission are referred to Appendix 1 of the 'Technical Brief of Evidence' submission which shows a series of mitigation options which are detailed as including matters required in the SA report i.e. timescales, costs, risks, integration, implementation and downtime, validation testing, commissioning and transition, safety programme planning, management and production, updates of safety assurance artefacts, and regulatory assurance compliance.

12.4.27.10. Appendix 1 sets out Options A-E for the Shannon PSR and A-C for Woodcock Hill MSSR. These are-

Shannon PSR-

- Option A: Thales software upgrade - applied to existing Thales STAR 2000
- Option B: Thales hardware and software upgrade (applied to existing Thales STAR 2000)
- Option C1: Infill Radar: Add a Terma Scanter 4002 X-Band radar as a second PSR sensor to complement the existing Thales STAR 2000 by providing 'infill' solution

- Option C2: Replace existing STAR 2000 with Terma Scanter 4002 X-Band radar and change Operational Range requirement to 40Nm
- Option D: Upgrade Shannon PSR to the latest Thales variant, STAR NG.
- Option E: Tender for new radar with windfarm mitigation capability (2d+ or 3D)

Woodcock Hill MSSR-

- Option A: Maintenance and upgrades of the Thales RSM970 Mode S MSSR
- Option B: Supplement Secondary Surveillance with Wide Area Multilateration (WAM) and ADS-B
- Option C Install a second MSSR to the east of the proposed windfarm and use data within the MRT[64]

12.4.27.11. The Applicant contends each mitigation option is proven to resolve the impacts on windfarms for other airports and radar systems in the UK, mainland Europe and elsewhere and would be appropriate for the proposed development and satisfactorily resolve the issues raised by AirNav.

12.4.27.12. Option A is indicated as the Applicant's preferred solution for both radars. In relation to the Shannon PSR it is indicated that ANI have already chosen to implement option D by 2029 i.e. Upgrade Shannon PSR to the latest Thales variant, STAR NG[65]. The Commission should note that ANI confirmed during the questioning stage of the Hearing that they have a plan underway over the next five years to replace all the radars including Shannon, which would appear to be Option D proposed by the Applicant. During the questioning stage of the LAOH ANI confirmed the radars are being replaced as they are getting older and due to obsolescence. They are not being replaced for the purpose of wind farm development[66].

[64] The Applicant's technical expert made the point at the Hearing that Tooman radar operable since 2025 near the Naul Dublin essentially acts as option C.
[65] See paragraph 78 of the submission.
[66] The Commission is referred to the IAA publication titled 'Final Decision on RP4 draft Performance Plan for Air Navigation Services Charging and Performance 1 October 2024' exerts of which were presented to the hearing by the applicant during the questioning stage in which paragraphs 15.8 and 15.11 identify upgrades to the Shannon and Woodcock Hill radars amongst others.

12.4.27.13. In relation to the MSSR it is indicated that Option A and C are essentially "*there effectively*" i.e. existing maintenance programme accommodating reasonable mid-life upgrades if recommended by Thales and the operable Tooman radar in Co. Dublin.

12.4.27.14. Appendix 2 of the Applicant's submission is a report prepared by TNO[67] titled *"Detailed Engineering Assessment due to Wind Turbines at Ballycar"* dated 19th of January 2026 and hereafter referred to as the TNO report. Paragraph 97 of the technical submission states a Detailed Engineering Assessment (DEA) is called for in the Eurocontrol Guidelines to assess the potential impact of wind turbines on SSR when the wind turbines are located closer than 16km and with the closest proposed turbine at 2.4 km the study is appropriate.

12.4.27.15. The TNO report uses a modelling tool called PERSEUS to predict performance of radar with obstacles within a 2km distance and refer to an example of an Air Traffic Control (ATC) tower located 1.9km from an MSSR at Brussels Radar

> *"which evidences the accuracy of the model by showing the correlation between the simulated track and the actual position".*

12.4.27.16. The DEA is set out in section 4 of the TNO report and highlights mitigation by other MSSRs i.e. Tooman radar. Section 5 sets out conclusions including-

> *… it can be observed that both situations, with and without the newly planned wind turbines at Ballycar, there could be an effect on the MSSR performance due to the newly planned wind turbines when the target is at a certain area….*
>
> *"It has been shown that after the newly planned wind turbines are built, the change in the expected cross-range error due to these wind turbines is negligible small."…*
>
> *"that another existing MSSR (i.e., MSSR Tooman) could provide overlapping coverage in the sectors affected by the consented and newly planned wind*

[67] See list of acronyms in section 12.4.1.3 above

turbines, ensuring redundancy and maintaining surveillance performance where the Woodcock Hill MSSR shows reduced performance."

12.4.27.17. The next part of the Applicant's submission was made by Mr Gavin Lawlor, Planning Consultant. The purpose of this submission is stated as

"to outline a sample planning condition that the Commission could include on any grant of planning permission, were it so minded, to formalise the proposed mitigation measures that have been outlined in relation to the concerns raised by AirNav and Shannon Airport."

12.4.27.18. The submission notes ANI's proposal to upgrade their current Thales STAR 2000 Radar to a Thales STAR NG Radar by 2029 and highlight that this is well within the 10 year duration the applicant seeks for the overall proposed development.

12.4.27.19. The submission refers to the letter from Thales to ANI dated the 18th of December 2025 that details the Thales STAR NG has the benefit of a Wind Farm Filter that can mitigate the impact on radar performance. However the submission also details that Thales identify that there is-

"no generic answer to Wind Turbine impact on radar performance, it is a case-by-case basis that needs each time a dedicated study that considers the site location specifics".

The submission then makes the point that all the tools are available to substantiate and model the Wind Farm Filters ability to mitigate impact on primary radar performance and thus maintain the safety standards.

12.4.27.20. In relation to the Woodcock Hill MSSR, the submission refers to the TNO Report and states the *"proposed development will have no material effect on this facility".*

12.4.27.21. The submission then suggests the proposed planning condition-

"Prior to the commencement of development, the applicant shall submit for the written agreement of AirNav in consultation with the IAA an Aviation

Mitigation Scheme which shall provide for a comprehensive mitigation strategy for potential impacts on aviation surveillance during construction, operation and decommissioning of the proposed development. A copy of this agreement shall be submitted to the planning authority.

The development shall be carried out in accordance with the mitigation measures and the timescale for their implementation contained in the agreed Aviation Mitigation Scheme. The cost of all mitigation measures, including the direct costs of AirNav, shall be paid by the developer unless otherwise agreed as part of the Aviation Mitigation Scheme.

In default of agreement, the matter may be referred to the Commission for determination and the development shall be carried out and completed in accordance with that determination.

***Reason**: In the interest of protecting air navigation and safety"*

12.4.27.22. Following this part of the submission the Applicant referred to "Extracts from Eurocontrol Guidelines" which were submitted in written format and are on file. In particular the Applicant highlights how the extract provides a chart that-

"demonstrates the intention that ANSPs engage with wind farm developers in relation to safety impact assessments".

12.4.27.23. The next part of the Applicant's submission was made by Ms Yvonne O'Brien of Wind Energy Ireland (WEI) which amongst other things highlights how the proposed development if consented, would be part of Ireland's response to the climate emergency. The submission refers to ACP's obligations under the 2015 Climate Act as amended and the High Court's Coolglass judgement. It refers to the IAA's 'National Safeguarding Framework Consultation Document'[68] of September 2025 which specifically called for co-operation between the wind energy and aviation industries-

[68] The Commission should note it was highlighted at the Hearing by SAG during their submission that this consultation document remained in the consultation stage with the process not yet finalised at the time of the Hearing.

……"As such, the aviation community must engage positively in the process of developing solutions and ensuring productive cooperation between wind energy and aviation operations."…..

12.4.27.24. In concluding comments WEI-

"considers that ACP is required by law to take any additional steps it can to ensure it carries out its functions in a manner consistent with the Climate Action Plan. This includes directing AirNav Ireland to provide further information/submissions to ACP and/or imposing a condition to the consent which facilitates further engagement and agreement to be reached between the parties"

12.4.28. **ANI's Submission to the LAOH**

12.4.28.1. ANI then presented their position which also included oral submissions accompanied by written submissions as following-

- Legal Submission led by Suzanne Murray SC
- Precis of Evidence by-
    - Peter Kavanagh- General Manager for Shannon Enroute Air Traffic Control (ATC) and Aeronautical Information Services (AIS) at ANI
    - Charlie O'Loughlin- Domain Manager of Surveillance, Mechanical and Electrical Systems for ANI
    - Fergal Doyle- Navigational Aid Air Traffic Management Specialist ANI
    - Paul Kennedy- Head of Aviation Infrastructure, IAA

Accompanying written submissions are on the file for the Commission's consideration.

12.4.28.2. ANI's legal representative Suzanne Murray SC started the submission by highlighting that the IAA are a prescribed body within the Planning and Development Regulations 2001 as amended and that ANI as Air Navigation Service Provider have engaged with the Applicant since January 2022 and made two submissions on the application objecting to the proposed development. ANI retain their objection. The

submission refers to the 4th schedule of the Planning and Development Act 2000 as amended and in particular Paragraph 10 (e) which details ACP can refuse permission if a structure would endanger or interfere with the safety of aircraft or the safe and efficient navigation thereof.

12.4.28.3. ANI do not accept the issues can be addressed by a condition as proposed by the applicant. They also state-

> *"A condition requiring a third party external to the process to agree something and then if that is not agreed for it to be determined by An Coimisiún Pleanála is not a valid condition. AirNav is the Air Navigation Service Provider - not the Commission."*

12.4.28.4. Mr. Peter Kavangh then set out his contribution to the submission which includes details of his experience and competence. He considers that development, such as the proposed Ballycar Wind Farm development of 12 wind turbines of over 150m in height must be assessed to ensure that it does not compromise the safety and integrity of Air Traffic Services.

12.4.28.5. Section 4.5 of the written submission details '*competency to assess impacts and determine mitigations'* under EU Law- Regulation (EU) 2017/373. The submission goes on to state that-

> *"AirNav Ireland have had to develop and maintain a regulatory approved process to ensure that all our staff are trained and competent to perform their tasks"*

12.4.28.6. Section 4.6 discusses '*Implications for Wind Farm Impact Assessment*' and specifically states-

> *"Only personnel employed by AirNav Ireland, as the ANSP, are in a position to ensure that these competency requirements under EU law are met;*
>
> *These personnel (constituting Managers, ATM Safety experts, ATSEPs and SMEs) are the only individuals qualified to oversee and assess and sign off on the impact of changes to the ATM/ANS functional system and to determine whether proposed mitigations are effective and compliant;*

External parties, including windfarm developers and their associated consultants, do not have the regulatory authority or operational experience in the AirNav Ireland Operational environment which is required to validate safety arguments, or to put forward and assess mitigations. Pursuant to Regulation this authority and experience can only arise from personnel within AirNav Ireland's operational environment and Functional System."

12.4.28.7. Section 4.7 then discusses the 'Shannon Enroute Functional System' and key areas impacted by the proposed development including Instrument Flight Procedures (IFPs) the Shannon Airport Runway 24 Instrument Landing System (ILS) and associated flight inspection procedures, and AirNav Ireland's surveillance systems.

12.4.28.8. It was indicated that Cyrrus have not assessed IFP's since 2021 and that ANI have currently engaged-

"the Airnav Ireland IFP procedure designer to update the Shannon airport instrument flight procedures for the regulatory requirements of the latest magnetic variation, IAA regulatory expectations regarding Continuous Climb Operations and Continuous Descent Operations which are essential components of modern procedure design, as well as updates to IFPs for Performance Based Navigation (PBN) requirements

AirNav Ireland also intended to contract its procedure designers to review the Shannon Airport ATC Surveillance Minimum Altitude Chart,

In parallel with this work, AirNav Ireland will request the procedure designer to conduct an assessment of the proposed development on the current and planned IFPs."

ANI do not have the results of this analysis and updates will require approval from IAA.[69]

12.4.28.9. In relation to ILS systems it is detailed there are concerns that impacts include prolonged outages of the Runway 24 ILS at Shannon Airport during the construction phase of the turbines. Shannon Airport is regularly used as a diversion airport for

[69] Under questioning at the Hearing ANI advised that a copy of this report when complete will be made available to the Applicant.

critically ill passengers needing urgent medical attention, or if an aircraft is having technical issues. In 2024 and 2025 there were 78 diversions.

12.4.28.10. Mr Kavanagh details he is responsible from an operational perspective for safety within a 451,000km^2 airspace and that in the eyes of EU aviation regulations the consultants who have provided their views do not have the competency to even propose mitigations let alone insist they are suitable and can supersede qualified and competent views of ANI's experts.

12.4.28.11. Mr Kavanagh concludes by stating-

"the evidence demonstrates that placing a wind farm at this site would introduce risks that modern safety practice exists precisely to prevent. It is clear to me that the Proposed Development would endanger or interfere with the safety of aircraft or the safe and efficient navigation thereof."

12.4.28.12. The Commission should note Appendix A of the written submission includes an exchange of correspondence between ANI and Thales dated 05th of December 2025 and 18th of December 2025 (part of the letter) and this is discussed in section 12.4.35 below.

12.4.28.13. The third presenter to the Hearing on behalf of ANI was Mr Charlie O'Loughlin. He details his current role with ANI involves managing the specification, procurement, testing, integration, validation and operation of ten Secondary radars and four Primary radars supporting AirNav Irelands Air Traffic service in Dublin and Shannon Enroute Air Traffic Control centres as well as, Cork ATC Tower and Shannon ATC Tower. Mr O'Loughlin indicates he responsible for ensuring that all engineers working on the radars in Ireland are trained and competent to the ATSEP level B standard in the Radar subject area. He details he wrote the ATSEP level B Radar training requirements and competency standards that are used to certify AirNav Radar engineers as ATSEP Level B.

12.4.28.14. Section 3 of his submission details his familiarity with the application and outlines the rationale behind ANI's position on the application including the methodologies recommended to assess impact as set out in the 'EUROCONTROL

Guidelines for Assessing the Potential Impact of Wind Turbines on Surveillance Sensors'.[70]

12.4.28.15. Section 3.2 specially details the following possible impacts- reflections, deflections and shadowing which can potentially degrade the performance of a radar at a distance of 16km. Mr O'Loughlin considers these impacts are likely from the proposed wind farm with a clear line of sight at a distance of 2.4km from the Woodcock Hill radar. The specific radar performance aspects impacted by wind turbines are detailed as coverage, availability, accuracy and probability of detection.

12.4.28.16. Eleven of the proposed 12 turbines are detailed as in direct line of sight of the Shannon PSR. Mr O'Loughlin considers there is a high probability the Shannon PSR will detect the 11 turbines leading to induced clutter and false targets thereby also degrading the performance of the Shannon radar.

12.4.28.17. In section 3.3 Mr. O'Loughlin fundamentally disagrees with the analysis provided by the Applicant. He considers it technically incorrect, irrelevant, and not applicable. He states-

> *"is not permissible in our safety critical environment to implement mitigation measures while maintaining the operational service of Woodcock Hill radar."*

Mr O'Loughlin then refers to the 'exchange of correspondence'[71] between ANI and Thales citing an extract which includes the following-

> *"The effect of this reduced radar performance on the operations and the safety can only be validated by the Civil Aviation Authority in charge of the Air Traffic in this airspace. "*

[70] The Commission are advised that during the questioning stage of the Hearing the Applicant's legal team challenged the submission of Mr. O'Loughlin's regarding his understanding of requirements within safeguarding zones. Mr. O'Loughlin disagreed with the Applicant's interpretation. He reiterated that across Europe 16km is the safeguarding zone all ANSP's apply as a minimum with 28km in the UK. Under further questioning on the matter Mr. O'Loughlin explained circumstances where other wind farm developments may be located within safeguarding zones where terrain, line of sight, size and scale of development are necessary considerations e.g. if proposals are shielded by hills, below the radar beams and not in the line of sight from radars.

[71] Section 12.4.35 below

12.4.28.18. Section 3.4 sets out ANI's '*expert position on proposed mitigation measures*' and states Thales radar reflection processing algorithm is not applied for aircraft emergency codes (examples detailed) and therefore reflections from the proposed turbines will result in multiple false emergencies being presented to Air Traffic Control.

12.4.28.19. The submission then details radars must be switched off to introduce change including for measures to address 'reflection tuning'. This cannot be done as each turbine is constructed and the radar can only then be restored if ANI has evidence from testing that reflection tuning has worked. It is indicated that validation could take four weeks with regulatory approval a minimum of two weeks. He indicates 96 weeks in total may be required to introduce reflection mitigations for 12 turbines but this will not eliminate reflections of aircraft in emergencies.

12.4.28.20. In relation to 'Deflections' Mr O'Loughlin details the proposed mitigation is technically incorrect as detailed leading to potential for 'duplicate tracks' which can set off safety-net alerts such as 'Short Term Conflicts Alerts' i.e. 90 second warning of two or more aircraft in conflict that require the Air Traffic Controller to take immediate avoiding action. It is stated this is required regardless of one or more of the conflict targets being incorrectly generated because of deflections.

12.4.28.21. In relation to 'Shadowing' Mr O'Loughlin considers the proposed mitigation strategy i.e. '*below the published ATC surveillance minimum altitudes and should therefore be operationally tolerable'* is a total misrepresentation of the purpose of Surveillance Minimum Altitudes chart. He indicates these charts are not related to radar systems. The submission states-

> *"The Proposed Development will cause shadowing, and this will reduce the probability of detection of Woodcock Hill radar and a reduction in radar coverage in the 33-degree sector from 73 degrees from North to 106 degrees from North. It is not possible, on the Woodcock Hill radar, to mitigate for this reduction in radar coverage.*

The 12 turbines are physical obstacles all impacting the radar beam. To maintain the current level of coverage you cannot put obstacles in front of the radar"

12.4.28.22. In relation to the Shannon Primary Radar clutter Mr O'Loughlin details the radar will detect eleven of the twelve turbines leading to turbine-induced clutter and false Aircraft targets. This clutter impact is certain to degrade the performance of the Shannon PSR and will also introduce false aircraft targets on every ATC's radar screen.

12.4.28.23. In relation to the Sagentia Report Mr O'Loughlin highlights that SA have acknowledged they have not assessed the exact methodologies applied and results obtained of technical assessments completed by the Applicant.

12.4.28.24. In conclusion Mr O'Loughlin states-

"…it is my expert view that due to the size and number of the turbines in the proposed development, and its proximity to Woodcock Hill radar, there are no implementable mitigations on the AirNav Ireland Woodcock Hill Secondary Radar and the Shannon Primary radar that will eliminate all radar impacts, arising from the Proposed Development. To be clear, the AirNav concern is that impacts of the proposed infrastructure on the radar at Woodcock Hill cannot be mitigated for, and not that the impacts "are not being adequately addressed or mitigated" as stated in the Independent Aviation review. If the Proposed Development was implemented, the impacts arising would certainly degrade the measured surveillance performance of the Woodcock Hill radar, thereby unacceptably reducing the level of safety of AirNav Ireland's surveillance infrastructure".[72]

12.4.28.25. Appendix 1 of this submission includes a weblink to the EUROCONTROL Guidelines for Assessing the Potential Impact of Wind Turbines on Surveillance Sensors.

[72] Underlined emphasis retained from written submission.

12.4.28.26. The fourth presenter from ANI was Mr Fergal Doyle who detailed he is a Navaids ATM Specialist with a number of his competencies detailed including those relevant to ILS.

12.4.28.27. Section 3 of his submission discusses the Shannon Airport Runway 24 ILS. This runway is detailed as *"a Category II precision approach system, essential for safe landings in low visibility conditions down to 100ft decision height i.e. at 100 feet, the pilot must be able to see the runway lights to continue the landing safely*.'

12.4.28.28. The submission details wind turbines and construction cranes can distort ILS signals through reflection and multipath, creating the risk of misleading guidance to aircraft and that ANI must be certain that each turbine and crane does not affect the ILS signals. The submission details ILS modelling have limitations and experience shows simulations can be inaccurate. ANI cannot rely on simulations for safety critical decisions.

12.4.28.29. The submission details that at a meeting between ANI and the Applicant on December 16th 2025, it was agreed that the ILS[73] must be taken out of service whenever turbines or cranes are erected and only restored after a flight check confirms compliance with International Civil Aviation Organization (ICAO) tolerances. This is likely to result in repeated and prolonged unavailability of ILS 24 during the construction stage.

12.4.28.30. Section 3.1.1 and 3.2.2 of the submission discusses the proposed mitigation including those as discussed at the above meeting. The submission detailed that ANI have conducted a safety risk assessment on the effects of the construction phase of the proposed Ballycar windfarm. This assessment concluded that while the likelihood of interference is remote, the potential severity is high. In accordance with regulatory requirements the submission states it is mandatory that the ILS be withdrawn from service whenever a turbine or crane that could affect the ILS signal is erected, and that a flight check is completed before the ILS is restored. In practical terms, AirNav Ireland must be certain that each individual turbine and crane does not adversely

[73] The Applicant has proposed mitigation regarding cranes and ILS impacts in paragraph 45 of their technical submission. See also paragraphs 12.4.27.6 & 7 above.

affect the ILS signals before the system can safely return to service. It is stated that for twelve wind turbines-

> *"the result would be repeated or prolonged ILS outages lasting many months. This would cause unacceptable operational disruption to Shannon Airport, AirNav Ireland, airlines, and transatlantic traffic that rely on Shannon as a diversion airport for technical or medical emergencies."*

It was indicated that the proposed mitigation measures do not address the core issue that construction would lead to repeated or prolonged unavailability of ILS 24 which would impact the safe and efficient navigation of aircraft.

12.4.28.31. Section 4 discusses runway 24 ILS flight inspection procedures, flight check profiles and Impacts from the proposed development and details the ILS must be flight checked every 180 days to confirm full coverage and as detailed. Flight checks are carried out by FCSL under IAA-approved procedures. The submission states-

> *"If the Ballycar Wind Farm is built, turbine heights would breach the requirement of remaining at least 1,000 feet above the highest obstacle within 5 NM either side of their track when flying. As a result, several ILS flight-check profiles could no longer be flown at ICAO-recommended altitudes. Because these profiles are defined in ICAO guidance and the approved inspection procedure, any change to the flight-check profiles would require new IAA approval.*
>
> *If amendments were not approved, or if mitigation requires increasing the glide path angle to 3.5', the Runway 24 ILS could not retain Category II approval. No aircraft could land at Shannon airport in low visibility."*

12.4.28.32. Section 4.1.2 of the submission indicates ANI reviewed the 2022 FCSL report and requested clarification. An updated report dated 12th of November 2025[74] confirms that the majority of the standard profiles completed during an annual flight inspection would be affected by the windfarm. The submission states-

> *"These profiles form part of the FCSL IAA regulatory approved procedures, so any change requires new regulatory approval. If these changes are not*

[74] A copy of this report was not submitted to the LAOH.

approved, or if mitigation requires increasing the glide path to 3.5', the ILS 24 will lose its Cat II approval."

12.4.28.33. ANI then detail that FCSL have no experience of adjusting their flight-inspection procedures due to wind-farm construction, for a Cat II ILS.

12.4.28.34. The submission concludes stating that the proposed development would-

"significantly disrupt ICAO-compliant flight inspections, result in numerous and prolonged withdrawal of ILS24, create major regulatory un certainty and place the Runway2 4 Cat II ILS at risk. Loss of Cat II operations at Shannon Airport would cause unacceptable disruption to the safe and efficient navigation of aircraft to Shannon Airport, impacting AirNav Ireland as the navigation service provider, airlines, and transatlantic traffic relying on Shannon as a diversion airport.

12.4.28.35. ANI's fifth submission was made by Mr. Paul Kennedy, Head of Aviation Infrastructure with the Irish Aviation Authority (IAA). Section 3 details ANI's competency to assess impacts and determine mitigations. It details ANI are certified by IAA pursuant to EU regulations 2017/373 to provide ATM/ANS surveillance and communication services. The submission states that only

"organisations certified pursuant to this regulation, or operating in accordance with the contracted activities provision in the Regulation, hold the competency to conduct and submit safety assessments to the IAA."

12.4.29. **SAA/SAG's Submission to the LAOH**

12.4.29.1. Mr. Paul Hennesey of Shannon Airport Group (SAG) then presented his submission with a written copy also provided and on file for the Commission's consideration. Mr Hennesey set out his 'Qualifications and Experiences' before providing some information in relation to the Shannon Airport Group and its role as an economic driver. Importantly he highlights the role of Shannon Airport as diversionary airport for transatlantic flights heading west from Europe and east from the USA with 98 such diversions recorded in 2025 including weather, medical and aircraft emergencies.

12.4.29.2. The submission then details the Statutory framework applicable to Shannon Airport's safeguarding operations including ICAO, EU regulations and IAA legislation. It states that-

> *"The objective of aerodrome safeguarding is to assess the implications of any development being proposed at, and within the vicinity of an aerodrome to ensue, as far as practicable, that the aerodrome and its surrounding airspace is not adversely impacted by a development thus ensuring the continued safety of aircraft while taking off, landing or flying in the vicinity of an aerodrome."*

12.4.29.3. The submission fully supports ANI's position in respect of the protection of the Communications, Navigation and Surveillance systems (CNS) associated with Shannon Airport. Interferences to these systems would impact the safe and efficient operation of Shannon Airport.

12.4.29.4. SAA/SAG concurs with the position adopted by ANI in respect of IFP's.

12.4.29.5. In relation to Instrument Landing System (ILS), Shannon Airport Runway 24 is CAT II enabled while Runway 06 is CAT I enabled. Cat II allows for precision landings in lower visibility than standard CAT I. Its purpose is to allow landings in conditions where CAT I approaches would be impossible, thereby enhancing airport capacity and safety during low visibility events. Temporary release of the ILS as suggested by the Applicant during construction of 12 turbines would not be acceptable to Shannon Airport or its airline customers. It details that a significant number of movements in 2025 occurred during CAT II conditions i.e. 332 movements over 25 days. Not having this available would lead to significant economic impacts for Shannon Airport. Based on 2017-2025 data Shannon Airport operates under Instrument Meteorological Conditions (IMC) about 65% of the time versus Visual Meteorological Conditions (VMC). This highlights the critical nature of having available a CAT II landing system on Runway 24 and that any unavailability could not be entertained by SAG.

12.4.29.6. The submission then discussed 'Runway 24 ILS flight inspection procedures and flight profiles'. ANI information details there will be an expected impact for calibration

of the ILS system serving Runway 24 at Shannon Airport from the proposed development i.e. *"Any amendment to the current calibration serials has potential to affect the ILS Glide Slope angle, which could in turn affect the usability of this landing system."* The ILS Glide Path for Runway 24 at Shannon operates at an angle of 3 degree which is the optimal angle recommended and which ensures acceptable speed control for aircraft during landing. Any increase in the angle has serious commercial implications for business at Shannon Airport e.g. diversions by aircraft to other aerodromes, cost, inconvenience, schedule disruption and environmental impact (e.g. noise/additional fuel consumption) etc.

12.4.29.7. The submission then details a similar situation at Kerry Airport where the glide path angle was changed from 3 degrees to 3.5 degrees because of a nearby wind farm eliminating the possibility of Kerry Airport ever achieving CAT II capability.

12.4.29.8. In relation to Surveillance radars SAA/SAG concurs with the position of ANI.

12.4.29.9. The submission concludes by stating-

> *"The proliferation of proposed wind farm developments in East Clare which are located on the flight/approach paths to Runway 24 at Shannon are problematic on many levels for both the airport and Air Nav Ireland, the airspace managers. The Ballycar project due to its geographical proximity to both the Woodcock Hill radar station and impacts on the Runway 24 ILS presents significant challenges to both Air Nav Ireland's and Shannon Airport's operations and on that basis, we cannot support this development"*

12.4.30. **Public Participants**

12.4.30.1. Participant's from the public were as follows-

- Deputy Cathal Crowe
- Mr Gerry Ryan
- Mr James (Jim) Fitzgerald
- Ms. Liane Cronin and

- Mr. Timothey Myers

Some written submissions were received from these Participants and are on the file for the Commission's consideration. As directed by the Commission the specified matter for the purpose of the hearing was-

> *'the Aviation related issues relevant to Shannon Airport and the Woodcock Hill radar'*

The Commission are advised that a number of points were made at the hearing which I did not consider related to the specified matter. In this regard I summarise generally what I consider relate to the specified matter by each speaker as set out below. The Commission is reminded the full audio file recording is available to them to listen to each participant in full.

12.4.30.2. Deputy Cathal Crowe-

- Deputy Crowe as elected TD has a mandate to represent his constituency, the application site is within the constituency and he is the Fianna Fáil spokesman for Aviation and Logistics.
- It is assumed ACP has no in-house expertise in radar operations and Aviation.
- How has the expert opinion of the IAA has not been accepted on a verbatim basis by ACP?
- The cumulative effect of 32 turbines within c. 5-6 km of the Woodcock Hill radar does not appear to have been considered and should be questioned.
- Woodcock Hill Radar ('the Golf Ball') is responsible for the air safety of approx. 78 million transatlantic passengers flying through Irish air space each year.
- The area around Woodcock Hill radar is not cluttered and works perfectly. The proposal will surely distort radar signals and responses compromising safety.
- Woodcock Hill should not become a test lab for air safety when experts say it is not safe.

- Ireland needs primary, secondary and military radar that are unimpeded every day of the year.
- Woodcock Hill is of national, international and strategic importance.
- Climate change and biodiversity concerns etc. cannot be used to side step air safety considerations.
- Shutting down Woodcock Hill radar for any period of time to allow for testing, calibration, commissioning etc. would do significant damage to Ireland Inc. and Irish aviation.

12.4.30.3. Mr. Gerry Ryan-

- Mr Ryan is a general aviation pilot holding a current and valid PPL (private pilot's licence) undertaking flights within the Shannon Control Zone using the Shannon PSR and the MSSR at Woodcock Hill.
- Coonagh Airport sits within the Shannon Control Zone and he is a member of Limerick Flying Club.
- The 'as is' aviation situation is being ignored. It is as safe as it can be now and demonstrably so. There is no wind farm currently impacting the area, no deflections and clutter etc.
- Transatlantic flights and c. 100m passengers p.a. rely on continuous safe operation of one MSSR and that is at Woodcock Hill.
- The Applicant acknowledges the proposed development will cause impacts. The proposal will reduce the level of safety to a level below the 'as is' situation. There is no evidence the mitigation measures will 100% work and that systems will be as safe or safer than they are today. The Applicant's documents are vague and ambiguous as detailed.
- Referring to potential for a 30 degree blind spot in airspace, ACP must accept ANI's position as they are the only proper and qualified technical experts.
- IAA and ANI are the statutory and definitive authority on aviation safety in Ireland. Such advice must be taken and accepted.

- Coonagh aerodrome sits c. 5km from the site but its air space is 2km from the site. The air space is one of two routes available to flights arriving or departing Coonagh and it is these that can only be used.
- The Applicant ignores the Aviation community and shows a lack of understanding of AIP requirements regarding the meaning of 'flights' and 'circuits'. The proposal has the potential to severely impact safe 'flight' operations from Coonagh Airdrome. The two routes into and out of Coonagh and related aviation restrictions mean the flights cannot climb above or avoid likely turbulence from wind turbines. Impacts relate to extent of available air space to fly. Concentration of traffic in a smaller volume of air space increases in the designated corridors resulting in higher collision risks. All flights will be restricted to use one of the two air corridors available thereby increasing risk.

12.4.30.4. Mr. James (Jim) Fitzgerald-

- Climate change legitimacy is not outweighed by the proposed developments safety impact on aviation and safety critical nationally strategic infrastructure such as the Woodcock Hill and Shannon radars.
- Impacts include radar reflections, radar deflections, inaccurate position data of aircraft presented to air traffic controllers, inability to meet EU mandated radar requirements and the currently used standard 3nm and 5nm separation distances used.
- Additional aviation safety risk cannot be justified unless the risk is mitigated to zero.
- Unresolved impact issues remain in relation to the ILS at Shannon and the ability to successfully calibrate and flight test it, as required by regulation.
- Cyrrus claims in their statement of Authority, that they are an IAA approved APDO or IFP designer. It is now confirmed in an email dated 17th of December 2025[75] by the IAA that Cyrrus are not an IAA approved APDO or IFP designer.

[75] A written copy of this email was submitted by Mr. Ryan to the Hearing and is on file. I queried this matter at the hearing and the representative of Cyrrus detailed that Cyrrus were an approved organisation at the time

- The claim GPS satellites can negate the impact of wind turbines on ground based radar systems such as Woodcock Hill are incorrect and misleading.
- Referring to Ballycar, Oatfield and Knockshanvo wind farm applications there has been little to no aviation cumulative assessment.

A written copy of Mr Fitzgerald's submission is on file.

12.4.30.5. Ms. Lianne Cronin-

- The Commission are advised that parts of this submission do not appear to be recorded in full as per the audio file. Having conducted the Hearing, I am satisfied the relevant concerns are generally raised in previous submissions and include those below. The Commission should also note written submissions received from Ms Cronin to the application, FI, as well as the submission received on the TNO report (See section 12.4.34 below)
    - Anything impacting the operational efficiency of critical radar infrastructure directly impacts Aviation related safety. If the systems fail the consequences are catastrophic. There is no room for uncertainty in relation to mitigation.
    - Proposed mitigations are misleading in many respects as detailed.
    - Can the proposed development be modified to address aviation concerns, reduce height, number of turbines, layout, appropriateness of the site etc.
    - Creation of 30 degree blind spots and radar blanking will be increased by cumulative impact of other wind farms.

12.4.30.6. Mr. Timothy Myers-

the report (submitted with application) was prepared with the rules changing around that time affecting their certification.
This was further questioned at the Hearing by Deputy Crowe who highlighted the certification ending around 2020 with the planning application lodged in 2024. Cyrrus advised the general point is regardless of where approval is the baseline criteria that is mandated to use is the PANS-OPS criteria. Therefore if ANI repeat what is done Cyrrus is confident they will come back with the same result.

- Renewable energy is important but when a proposal places essential radars at risk it is necessary to raise concerns.
- These radars provide a critical safety function every day. They depend on freedom from interference.
- The windfarm would interfere with the radar and that interference would be detrimental.
- As experts such as ANI/SAG have warned this proposal would fundamentally reduce the level of safety in Irish controlled air space.

12.4.31. **Questioning**

12.4.31.1. Each Participant to the Hearing was afforded an opportunity to ask questions at the Hearing. The majority of Participants took this opportunity. The entirety of the questions and answers are available to the Commission to hear on the audio file. I have highlighted and summarised some of the questions and answers that I considered particularly relevant to the specified matter generally in footnotes throughout this report.

12.4.31.2. The final question of the day was from the legal representative of ANI to the Applicant's technical representative from Cyrrus and asked if it was accepted that ANI are the only body who is qualified in Ireland to assess and determine the suitability of mitigation measures? The representative from Cyrrus confirmed he does accept this and under the regulatory framework, ultimately it is the Air Navigation Service Provider that has to sign off. He then detailed it was Cyrrus role to contribute and get ANI to a position of comfort to sign off on such measures.

12.4.31.3. In relation to my own questioning on the Applicant's confidence in the TNO report and the possibility of circulation, the legal representative of the Applicant advised that Ballycar is 100% committed to safety and positive engagement including the exchange of information such as operational requirement and the IFP report referred to by ANI.

12.4.32. **Closing Statements**

12.4.32.1. ANI-

- Having engaged with the Applicant before and during the planning process (detailed in Appendix 15A of the application), ANI is entitled to take a view after having engaged with the developer on the matters within its competence as ANSP that it is still not satisfied as to the appropriateness of the development.
- Impacts on the radar at Woodcock Hill cannot be mitigated. It is not at all clear what the result of further engagement would be in light of that position.
- The concerns cannot be addressed by way of an invalid planning condition that would be 'Ultra Vires' to impose for the following reasons
    - ANI are a third party and conditions should not require agreements between the applicant and a third party.
    - The detail to be agreed must not be a fundamental and determining issue for the case. An Aviation Mitigation Scheme is fundamental and it is not appropriate to be left over to condition.
    - If the matter can't be agreed between the ANI/IAA and the Applicant the matter may be referred to the Commission. That would be a matter outside the competency of the Commission.
- ACP have to give significant weight to the position of ANI in their role as the ANSP.
- Referring to section 15 of the Climate Act, the wording within 'insofar as practicable' and references from the Coolglass High Court judgement, ANI position is that refusing on the basis of the air safety is not in conflict with section 15 of the Act.

12.4.32.2. SAG-

- No closing statement made

12.4.32.3. Applicant-

- The Applicant has carefully considered and addressed the matters and has provided, insofar as it can, with measurable certainty and demonstrated there

are mitigation measures available that can address the legitimate concerns of ANI, IAA and the public.

- The suggestion that the proposed planning condition is invalid, is incorrect. The condition serves a proper planning purpose, fairly and reasonably relates to the development, is not unreasonable and is enforceable. It does not require a party 'to agree'.
- It is a matter for the Commission to adopt or vary the suggested wording.
- A similar pre-commencement agreement condition was applied to a wind farm development permitted by ACP (ACP-320354-24) with matters to be agreed with the IAA[76] and submitted to the Planning Authority for written agreement.
- The condition does not dictate to ANI the result of collaborative cooperation, negotiation or investigation between the parties.
- It is recognised that ANI undoubtedly has its statutory functions. However ANI are a relevant body under the Climate Act and as a result are under obligation to engage to meet Ireland's climate targets while also to consider at all times air safety obligations.
- The Applicant is utterly committed to engage with ANI on the matters of concern. The proposal is of significant importance to meeting Ireland climate targets.

12.4.33. **Submissions Circulated**

12.4.33.1. During the course of their submission the Applicant referred to and submitted a report titled *"Detailed Engineering Assessment due to Wind Turbines at Ballycar"* prepared by TNO[77] and dated 19/01/2026. Representatives of ANI raised concerns the submission was 'significant additional information' and would need further consideration and a written response. Having considered the matter over the course

[76] I have reviewed the IAA submission dated 13th of June 2024 to this planning application and the associated condition applied by ACP requiring agreement with the IAA and then the Planning Authority. The IAA submission does not actively object to the proposed development and instead invites engagement from the Applicant with the ANI. I do not consider this a comparable scenario to the subject application where ANI have clearly objected.

[77] See section 12.4.1.3 above

of the Hearing and while I was not convinced the contents of the TNO Report are necessarily ‘significant additional information’ as they did relate to the specified matter and in particular the radar at Woodcock Hill, I did agree to allow the report to be circulated to Participants for written submission within a two week period following the hearing. All Participants were advised any submission they wished to make should relate to the content of the TNO report only.

12.4.33.2. Following the Hearing, I reviewed and noted concerns raised by the legal representative of the Applicant regarding the ‘exchange of correspondence’ between ANI and Thales dated 05th of December 2025 and 18th of December 2025 (part of the letter), referred to by ANI in their oral and written submissions. I also reviewed and further considered the content of the correspondence. Given the content of this exchange it was considered appropriate to invite the Applicant only, to make a further written submission on this exchange and they too were afforded a two week period to respond.

12.4.34. **Submissions on TNO Report**

12.4.34.1. Thirteen submissions were received from the following Participants-

1) AirNav
2) Shannon Airport Group
3) HSE- National Environmental Health Service (NEHS)
4) TII
5) Deputy Cathal Crowe
6) Gerry Ryan
7) James (Jim) Fitzgerald
8) Lianne Cronin & Michael Jame Reale
9) Timothey Myers
10) Bernadette and Tony Kiely
11) Konrad Rumberger

12)Mary Cronin

13)Mike and Patricia Reale

The Commission are advised that much of the content of some of these submissions appear to address matters that I do not consider relate to the content of the TNO report only. Accordingly, I do not intend to repeat those details here, but the Commission can review the whole contents of the submissions that are on file. The submissions insofar as they relate to the TNO Report only are summarised as follows-

12.4.34.2. -1. AirNav-

- The submission includes an Executive Summary-
    - The TNO Report does not alter ANI's view regarding the threat posed to ANI's radar at Woodcock Hill the proposed development.
    - The report reinforces the conclusion presented by ANI at the Hearing that the proposed development if implemented would have impacts that would certainly degrade the measured surveillance performance of the Woodcock Hill radar, thereby unacceptably reducing the level of safety of ANI's surveillance infrastructure.
    - The submission quotes three statements from page 5, 6 and 34 the TNO report that reinforce ANI concerns.
    - The report does not address the issue of the proposed development causing reflections to the radar at Woodcock Hill.
    - The TNO Report is limited in its scope (i.e. less than 100km).
    - It does not provide assurance that the proposal will not degrade the performance of the Woodcock Hill radar, and it highlights that there is no mitigation to reduce or eliminate increased bearing errors that would result from the wind farm development.
    - The report acknowledges that reflection and shadowing issues will arise from the wind turbines but fails to address how the Woodcock Hill radar performance will be protected.

- The TNO wind turbine assessment modelling is not validated on wind turbines but instead a stationary 65m high airport control tower. This illustrates that there are no precedents of large wind turbines at comparable distances i.e. 2.4km from a radar. It is not a relevant comparison and does not inform or educate the technical data relating to the proposed windfarm development in proximity to the Woodcock Hill radar.
- Paragraph 4.5 of the TNO Report (Mitigation by other MSSR) reinforces that the surveillance performance of Woodcock Hill radar is impacted and suggests that the coverage of another radar in Dublin is a sufficient mitigation. This is an incorrect assumption. Any degradation of any element of AirNav Ireland's surveillance infrastructure must be avoided. The safety of the overall system depends on the performance of every component to facilitate safe ongoing operations during periods of radar failures, maintenance or upgrades.
- ANI's core concerns in relation to the Woodcock Hill radar performance are not addressed by the TNO Report.

- The submission then sets out a Technical Expert's Assessment of the TNO Report. ANI consider the TNO report-
  - details performance of radar systems can be negatively influenced by wind turbines in their vicinity and this aligns with ANI's concerns
  - has not addressed the most important issue that can arise when a wind farm is near a secondary radar system i.e. bearing errors. Bearing errors are the consequence of radar beam deflections by wind turbines
  - conducts its own validation of the modelling used involving the MSSR being partly obstructed by and the Brussels ATC tower at 65m high and at a range of approximately 2km[78]. This is not equivalent to twelve 158m high wind turbines. There was no precedent of existing wind

[78] The Commission should note the choice and height of the Brussels ATC Tower was questioned by the legal representative of ANI at the Hearing. Cyrrus explained wind turbines are modelled treated as complete cylinders and to infinite height i.e. the worst-case scenario, with the theory of radar beams being slightly bent when they approach an obstacle with that bending an issue at long distance. He considered the validation appropriate.

turbines close enough to a radar to be used to validate the model and ANI is not aware of any relevant comparator.

- Deflection Errors outlined in the TNO Report at Figure 2.4, are comparable in scale to the 2km grid used in the simulated graph.
- Is limited to 100km range raising the question as to why 256NM or 474km, the range covered by the Woodcock Hill radar was not used. It can therefore be inferred that the obstruction of targets above 12390 ft will occur beyond 100km.
- Figure 4.16 confirms that Woodcock Hill radar coverage of the Irish sea, above Flight Level 245 required for En Route control in Ballycasey Shannon, is impacted.
- Figure 4.14 confirms that Woodcock Hill radar coverage of the Dublin Terminal Manoeuvring Area (TMA) at Flight level 100 required for Dublin 3NM control in Dublin Air Traffic Control Centre is impacted.
- Table 4.2 at paragraph 4.4.3 confirms the OBE[79] errors will be greater after the proposal is constructed. Table 4.3 gives examples of the associated cross-range error which increases with range. This information confirms the proposal will introduce bearing errors and does not provide assurance the proposal will not degrade the performance of the Woodcock Hill radar in relation to bearing errors.
- The modelling also highlights that there is no mitigation at Woodcock Hill radar that will reduce or eliminate these increased bearing errors.
- In relation to section 4.4.5 there is still a visible bearing error and this error is in the range 1000m to 2000m, in the example presented.
- Section 4.5 reinforces that the surveillance performance of Woodcock Hill radar is impacted and suggests that the coverage of another radar in Dublin is a sufficient mitigation. This is an incorrect assumption. Any degradation of any element of AirNav Ireland's surveillance infrastructure must be avoided. The safety of the overall system depends on the performance of every component to facilitate safe

[79] Off-boresight error

ongoing operations during periods of radar failures, maintenance or upgrades.

- The Commission Implementing Regulation (EU) 2017/373, specifically Annex IV, ATS.OR.210 ("the Regulations") places the legal responsibility on AirNav Ireland to ensure that the system will be as safe as it was before the change which according to our trained and competent engineers cannot be achieved with respect to Woodcock Hill radar.
- the TNO Report fails to address reflection and shadowing issues. AirNav Ireland therefore maintains that other MSSRs will not mitigate for the new reflection and shadowing hazards that Ballycar will introduce.
- The only mitigation proposed in the TNO Report is mitigation by the MSSR Tooman. No other mitigation measures are proposed. The MSSR Tooman is not a mitigation measure for reflections. The TNO Report substantiates AirNav Ireland's concern that impacts of the proposed infrastructure on the radar at Woodcock Hill cannot be mitigated for.

- In conclusion ANI state-

  "AirNav Ireland maintains that if the proposed development was granted planning permission, the impacts arising would certainly degrade the measured surveillance performance of the Woodcock Hill radar. The TNO Report supports this assertion. The proposed windfarm development introduces an unacceptable level of air navigation safety risk by reducing the radar performance and level of AirNav Ireland's surveillance infrastructure. The TNO Report reinforces this view."

12.4.34.3. -2. Shannon Airport Group (SAG)-

- The conclusions of the TNO report indicate the proposed and already consented wind farms will add to performance loss of the Woodcock Hill radar.

- ANI have concluded that cross range errors are the opposite of negligible
- ANI's position is that any degradation of ANI infrastructure cannot be countenanced.
- SAG continue to support ANI and their concerns regarding aviation safety.

12.4.34.4. -3. HSE- (NEHS)

- No observations are made in relation to the TNO report.

12.4.34.5. -4. TII-

- No specific observations

12.4.34.6. -5. Deputy Cathal Crowe-

- The TNO report cannot be given any greater weight than ANI's stated position of objection. This position of objection is corroborated by both the IAA and SAG.
- The impacts and risks associated with the proposed Ballycar Windfarm cannot be mitigated against in any credible manner according to IAA, ANI and SAG. The TNO report in no way changes this dynamic.
- Climate goals, which are worthy, do not allow the imposition of greatly increased safety risks and impacts to the millions of air passengers that travel through Irish airspace that is controlled using the Woodcock Hill radar.

12.4.34.7. -6. Gerry Ryan-

- It is detailed in the email accompanying this submission that it is a *"response to the new RFI on Aviation Safety relating to the proposed wind farm development".* The submission also includes letters from Limerick Flying Club who are not a participant of this planning application. The Commission are advised I have only considered comments related to the TNO report including-
    - The TNO report makes no reference to "reflections", "deflections" or shadowing". It does not mention ATC screen clutter, nor is there any mention of General Aviation safety.

- The question must be asked as to why this information is being added almost 4 years after the applicant began its application process and why it was not distributed in advance of the Hearing.
- TNO must be assumed to be an employee of the applicant.
- Section 4.5 Page 35 states, *"The DEA of the MSSR shows that wind turbines within the surveillance area introduce some degradation".*
- If this application is approved there will be 12 turbines in Line-of-Sight at Ballycar alone with other proposed wind farms in the area also be in Line-of-Sight as confirmed by the applicant.
- Vague wording in the TNO report is used to describe impacts. Wording such as- "the radar is not completely blind", "might be obscured" and "potentially interferes"
- The submission then quotes a number of sections from the TNO report.
- The TNO report confirms
    - that the proposed wind farm will cause issues with the MSSR at Woodcock Hill.
    - The radar (Woodcock Hill MSSR) has Line-of-Sight towards the wind farm.
    - Major impacts to the Woodcock Hill radar.
- There has been no cumulative assessment of the proposed immediately adjacent Oatfield and Knockshanvo windfarms. It cannot be given any credence over ANI's objections.

12.4.34.8. -7.James (Jim) Fitzgerald-

- The TNO report clearly states that the proposed Ballycar wind farm will cause an impact to the Woodcock Hill MSSR- radar shadowing and loss of radar precision at the Woodcock Hill radar at various altitudes- see section 4.5. The radar shadowing that would be caused by the proposal is confirmed to be to a much greater height, distance and extent than what Ai Bridges/Cyrrus claimed it would be.

- The TNO report and the previously submitted documentation from Ai Bridges and Cyrrus on behalf of the developer, are fundamentally different, do not support the application in any way and indeed appear to contradict each other
- The previous submissions from the applicant can be summarised as stating there will be no impacts on the radar from the proposed wind farm or any impacts that do arise can be easily mitigated against using existing capabilities of the radar system. These contentions are not referenced in the TNO report and therefore are not supported by it.
- The TNO report makes no reference to any of Ai Bridges/Cyrrus' previous claims or assertions in its report.
- The TNO report supplies no statement of authority or background information relating to having the appropriate and required qualifications to author such a report with knowledge or authority.
- The report does not provide any analysis of the cumulative effect of the proposed Ballycar wind farm along with the immediately adjacent Oatfield and Knockshanvo wind farms. It only considers the other currently permitted wind farms in the East Clare area- Carrownagowan, Fahybeg and Lackareagh which are also substantially further away from the Woodcock Hill radar. If ANI and SAG have deemed each individual proposed wind farm to be unacceptable in terms of impacts and with no credible or implementable mitigations available for each proposed wind farm, logic would dictate that the cumulative impacts would be even more serious and consequential.
- TNO states that their analysis is based on their own theoretical model. There is no evidence to show that this model is accepted by any ATC entity or regulatory authority, or ATC engineering entity with the equivalent authority or standing as ANI and/or the IAA.
- TNO further states that this theoretical model uses real MSSR data, however there is no clarification if this MSSR data is from the same manufacturer or model as the Woodcock Hill radar or if it is in any way equivalent or comparable.

- TNO further states their model is based on an ATC tower being the obstruction/ impact causing structure rather than wind turbines. It would appear a solid non-moving singular stationary object such as an ATC control tower is in no way comparable to 12 wind turbines (or 32 turbines if the adjacent proposed windfarms were cumulatively considered) that have large spinning blades and are spread out over a considerable side profile distance to the radar.
- TNO contends that the primary method of mitigation is the overlapping coverage of another MSSR-Tooman. This is a purely theoretical contention by TNO and does not consider when MSSR Tooman has to be taken out of service for repair and or service.

12.4.34.9. -8. Lianne Cronin & Michael Jame Reale

- This submission is extensive coming in at c. 91 pages. Many of the matters raised, which include copies of previous submissions are not considered to relate to the content of the TNO report only and therefore are not considered further. The relevant matters are summarised as follows:
    - Notwithstanding all the reports on file the proposed development, without mitigation, will impact the operation of the radar towers at Shannon airport and Woodcock Hill.
    - The TNO appears to contradict other reports submitted. It agrees there will be an impact to the Woodcock Hill radar tower but that it is negligible and does not discuss or consider mitigation in any form.
    - Impacts are highlighted from the conclusion of the TNO report.
    - The submission disagrees with the categorisation of expected cross range error as negligible small.
    - The cavalier use of the word negligible in the TNO report echoes back to non-commercial language and untruths used in the assessments made by other report authors on behalf of Ballycar.
    - The TNO Report states “All already consented wind turbines near the newly planned wind turbines are also taken into account” however this

only includes Carrownagowan, Fahybeg and Lackareagh. There is no consideration given by the TNO report to Knockshanvo or Oatfield.

- The TNO report discusses the minimum flying altitudes in respect of commercial aircraft however the privately operated light crafts flown from Coonagh would be under these heights and therefore be more likely to result in errors for the radar tower.
- The TNO Report does not add value to the discussion as it proposes no alternative solutions, suggests impacts are negligible which is proven false and confirms the already understood premise that the Ballycar wind farm will degrade the operation of the Woodcock Hill radar tower.

12.4.34.10. -9. Timothey Myers-

- The TNO report makes no reference to “shadowing” “reflections” or ”deflections”. Nor does it mention ATC Screen Clutter or General Aviation Safety.
- the report fails to resolve the fundamental safety risks identified by the statutory bodies.
- The submission refers to the applicant’s proposed mitigation measures and comments of representatives from ANI. These appear to be comments from the Oral Hearing.
- The TNO report fails to account for the operational impact on the Category II Runway, essential for low-visibility and emergency landings. The submission appears to refer to comments made at the hearing.
- The report offers theoretical mitigations that the national safety experts have deemed unworkable.

12.4.34.11. -10. Bernadette and Tony Kiely-

- This submission appears to address a number of matters that I do consider relevant to the TNO report and accordingly I do not consider further. The following points are considered relevant-

- The Applicant has still not found a report that might convince ACP and the general public that there are no aviation safety risks in building a windfarm so close to the radar station at Woodcock Hill
- The motives behind the late submission of the TNO report are questioned.

12.4.34.12. -11. Konrad Rumberger-

- A number of points in this submission do not relate to the TNO report and are therefore not considered. The following points are considered relevant to the TNO report-
  - Reading, understanding and submitting meaningful observations on the TNO report is challenging, especially in the given timeframe.
  - TNO is a Dutch organization governed by public law, a not-for-profit organization providing information to governments. Since the Netherlands are known for their pro Wind Energy politics there is the danger that a report from practically a Government organization might be a little biased towards Wind Energy, regardless of the topic at hand.
  - The report concludes the turbines will have an effect on air traffic safety.
  - The potential for bias is brought to ACP's attention.
  - Referring to a picture from the TNO report the submissions highlights the potential cumulative impact of wind turbines.

12.4.34.13. -12. Mary Cronin

- This submission is extensive coming in at c. 52 pages. It is noted much of this submission is similar to that of the submission from Lianne Cronin & Michael Jame Reale above, includes previous submissions and accordingly it is not considered necessary to repeat same further. I am satisfied the concerns relevant to the TNO report are generally the same.

12.4.34.14. -13. Mike & Patricia Reale

- This submission is extensive coming in at c. 89 pages. It is noted much of this submission is similar to that of the submission from Lianne Cronin & Michael Jame Reale and Mary Cronin above, includes previous submissions and accordingly it is not considered necessary to repeat same further. I am satisfied the concerns relevant to the TNO report are generally the same.

12.4.35. **Submission from Applicant- 'Exchange of Correspondence' between ANI and Thales**

12.4.35.1. The Applicant was invited to comment on an 'exchange of correspondence' between ANI and Thales dated 05th of December 2025 and 18th of December 2025 (part of the letter). This matter was discussed and submitted at the LAOH as part of Mr Kavanagh's precis of evidence for ANI.

12.4.35.2. The Applicant's submission appears to address matters that I do not consider relevant to the 'exchange of correspondence' i.e. the matter which a submission was invited. The Applicant however states-

> *"it was necessary to present the Applicant's commentary within the context of the wider communications and meetings, that occurred subsequent to the call by the Commission for a limited agenda oral hearing and the publication of the Sagentia report.*

It is a matter for the Commission if they wish to consider the full content of the submission which is available on file.

12.4.35.3. In my opinion the following matters to the 'exchange of correspondence' are relevant from the Applicant's submission-

- The executive summary details-
  - In their letter to Thales, ANI direct Thales not to engage with the Applicant or in fact, any wind farm developer in Ireland, which is an unprecedented action by an Irish semi-state company, who have a responsibility to in so far as is practicable, perform its functions in a manner that is consistent with Government climate policy, including achievement of renewable energy targets.

- This gives further insight regarding ANI's wholly unsatisfactory approach to this planning application and its avoidance of evidence-based examination of the grounds for its objections, and the potential to address these objections through constructive engagement and agreement of mitigations.
- Thales confirm that there is no generic answer to potential wind turbine impacts on radar performance and that for each individual case, a site-specific study is required. They also state that with the appropriate information, Thales may help in assessing the impact from wind turbines and even provide mitigation solutions.
- A range of mitigation solutions are available and therefore a planning condition will provide an appropriate mechanism for all parties to engage meaningfully and work together to identify the optimum solution.

- Section 2.0 of the submission deals with to the 'exchange of correspondence'. Section 2.1 deals specifically in relation to ANI's letter to Thales. The following is noted-
  - The applicant is concerned and perturbed by the contents, tone and language used within. They believe it gives further insight to the Commission regarding ANI's wholly unsatisfactory approach to this planning application and its avoidance of evidence-based examination of the grounds for its objections and the potential to address these objections through constructive engagement and agreement of mitigations.
  - ANI seem concerned only to ensure that they retain a monopoly on the information necessary to create the solutions which will mitigate any potential interaction between the wind farm and aviation safety
  - Following on from a meeting between the Applicant and ANI on the 16th of December 2025, ANI were to arrange a meeting with Thales and the Applicant to further explore existing operational requirements and the potential mitigation solutions. This arrangement was not subsequently made by ANI. Unknown to the Applicant at the time of the

meeting, ANI had already directed Thales not to engage with the Applicant. At the meeting, ANI did not inform the Applicant that they had directed Thales not to engage with the Applicant.

- ANI are directing one of the largest suppliers of radar equipment not just to Ireland but in the EU, not to engage with the Applicant or any other wind farm developers.
- The submission refers to ANI's obligations "in so far as is practicable perform its functions in a manner that is consistent" with Government climate policy, including achievement of renewable energy targets. The direction to Thales is deeply frustrating for wind energy developers to support the Government in meeting its climate targets.
- The direction of ANI to Thales is directly obstructive to the planning process for the proposed development.
- It is important to note that at no point during the process of compiling the various technical aviation assessments has the Applicant engaged directly with Thales. All engagement has been through Cyrrus, who contrary to the dismissive tone adopted by ANI at the Oral Hearing are an internationally recognised and vastly experienced aviation consultant. Cyrrus have a long-term relationship with Thales having first worked with Thales on a full radar installation in Norwich in 2014. Subsequently, but in particular over the past 7 years, Cyrrus has developed a close professional working relationship with Thales, as their radar wind farm mitigation capability has become more important for a variety of Cyrrus clients. *"Cyrrus have never come across a position like this, where a semi-State body would seek to abuse its position as the dominant player in the aviation navigation market to restrict access to Thales by the Applicant'*.
- The Applicant, at no point over the extensive engagement process with ANI has ever dismissed or attempted to minimise the concerns of ANI. It was only after receiving a letter from ANI which stated "I support this application in principle, on behalf of AirNav Ireland" that the Applicant

proceeded in good faith and submitted the planning application to the Commission.

- At all times in the process, the Applicant has endeavoured to address the concerns of ANI and to engage proactively in relation to mitigation solutions. The Applicant however is of the opinion that this openness to engage proactively has not been reciprocated by ANI, and the letter to Thales further reinforces this belief.
- ANI state that Thales is well aware that there is no 'one-size-fits-all' solution relating to potential impacts of wind farm developments in proximity to radars. This suggests that ANI are aware that potential options do exist in relation to mitigating the potential impacts of wind farm developments on aviation surveillance systems. Constructive engagement from ANI is necessary to identify the optimum solutions relative to operational requirements. This aligns with Sagentia's view that *"credible surveillance mitigation options do exist"*.
- The Applicant firmly and genuinely believes that systems and solutions exist which if implemented could result in an increase in the level of system operability, redundancy and safety. It is supported in that belief by reputable industry experts and site-specific modelling.
- The Applicant believes that the letter dated the 05th of December 2025 from ANI to Thales is a direct attempt to impair the ability of the Applicant in the planning process, and to prevent the Proposed Development from potentially proceeding, when in fact the Applicant has put forward solutions based upon independent technical expertise and wishes only to deliver these solutions in conjunction with ANI as part of a planning condition.

- Section 2.2 of the submission deals with Thales letter to ANI dated 18th of December 2025. The following is noted-
  - The Applicant appears to have submitted the full contents of the letter in Appendix 2 of the submission[80].

[80] The Commission are advised only two pages of the letter were submitted to the hearing.

- Thales confirm to ANI that-

  > *"there is no generic answer to Wind Turbine impact on radar performance, it is a caseby-case basis that needs each time dedicates study based on site location & specificities radar environment, position & dimensions of each Wind Turbines, wind activity in the region, operational constraints on the area of coverage."*

- ANI have taken a generic approach to the proposal whereby they have not provided the Applicant or the Commission with a dedicated study on the site specifics of the development. They have not provided a detailed analysis, demonstrating impacts on the Woodcock Hill MSSR and Shannon PSR/MSSR, they have taken a generic approach of objecting without substantiation. This is contrary to Thales' recommendation in the letter, whereby they state that a dedicated study is required on a case-by-case basis, taking account of the variables.
- The applicant has undertaken a dedicated study and has provided a cascade of mitigation measures, noting that there is no generic answer to wind turbine impact on radar performance. The Applicant did seek additional operating date from ANI at the meeting of December 16th but this was not provided.
- The TNO report which was presented by the Applicant at the limited agenda oral hearing provides the dedicated study commissioned by the Applicant, which has taken account of site specific variables. The TNO report concludes that-

  > *"after the newly planned wind turbines are built, the change in the expected cross-range error due to these wind turbines is negligible small."*
  >
  > and
  >
  > *"it has been shown that another existing MSSR (i.e., MSSR Tooman) could provide overlapping coverage in the sectors*

affected by the consented and newly planned wind turbines, ensuring redundancy and maintaining surveillance performance where the Woodcock Hill MSSR shows reduced performance."

- Notwithstanding the TNO report the Applicant agrees there is no generic answer. Thales state that with appropriate information, they may help in assessing the impact from wind turbines and even provide mitigation solutions to reduce this impact. This could form part of a condition survey.
- However Thales have been directed by ANI not to engage with the Applicant. Therefore, although Thales outline that they can help in assessment and mitigations, they are being directed by ANI not to engage.
- Thales state that the impact on radar performance has to be seen by the totality of wind turbines in the radar coverage area and not individually per wind turbine or per wind farm. The TNO report has taken this into account and has modelled impacts from consented wind farms in the vicinity of the Proposed Development including the Carrownagowan, Fahy Beg and Lackareagh wind farms. The report outlines that these developments will have an impact on the MSSR, in the absence of the Proposed Development.
- In relation to Thales documents made available on public websites, the Applicant confirms that the Thales material was not included in any attempt to undermine ANI and that approval was in place from Thales to reference the documents.
- In relation to the MSSR at Woodcock Hill, the Thales letter outlines potential impacts on the MSSR in isolation. It does not take into account the complete air traffic control system, including overlapping radar coverage. ANI have multiple radar sites across Ireland, which deliver full duplicated coverage of ANI's airspace to their advanced ARTAS surveillance data processing systems, which merges the radar data and distributes the appropriate air situation picture to the ANI

controllers. The air traffic control system has multiple inbuild layers of defence to protect against reflections as detailed.

- These are system capabilities and therefore the system as a whole needs to be assessed and not just potential impacts on one individual radar. ANI have not provided system operational requirements despite numerous requests.
- In relation to the PSR at Shannon, Thales state they are able to evaluate the impact of wind turbines on the STAR 2000 PSR[81] before the turbines are installed and can provide solutions to mitigate their impact. This evaluation takes into account site specificities.
- Thales confirm that they have experience undertaking wind farm impact studies on the STAR NG at distances of 10km from wind turbines. As the Proposed Development is approximately 18km from the PSR, Thales have sufficient capability to undertake an assessment.
- The Applicant firmly agrees that Thales should be engaged to undertake an assessment on the potential impact of the Proposed Development on the Shannon PSR however ANI have directed Thales not to engage with the Applicant.
- It does not appear ANI have requested Thales to undertake an assessment, and therefore ANI do not have any evidence to demonstrate that the Proposed Development would impact the Shannon PSR.
- ANI have confirmed to the Applicant that they are in the process of upgrading the Shannon PSR to the latest Thales variant offer, the STAR NG, with this upgrading to be carried out by 2029.

[81] The Commission should note this is indicated on page 3 of the letter from Thales to ANI. This page does not appear to have been submitted by ANI at the Hearing. It has been presented by the Applicant in their response.
Importantly the letter does conclude with *"It is under responsibility each Civil Aviation Authority to assess whether or not the equipment is acceptable for their operations and the safety of the Air Traffic within their managed airspace. This is of course valid for AirNav Ireland and potential impact from wind farms."* This is consistent with commentary on the first page of the letter that was submitted by ANI and states- *"The effect of this reduced radar performance on the operations and the safety can only be validated by the Civil Aviation Authority in charge of the Air Traffic in this airspace*."

- Thales has the capabilities to model the potential impact of the Proposed Development on the Shannon PSR and ANI should engage Thales to undertake such an assessment. The installation of the Thales STAR NG at Shannon will provide a proven technical option to mitigate the impact of the Proposed Development on the radar's performance.
- In their conclusion
    - It is the Applicant's belief that key State aviation bodies neither understand Government policy nor their legal obligation to, in so far as is practicable, perform their functions in a manner consistent with those policies.
    - Thales have indicated they may help in assessing the impact from wind turbines and even provide mitigation solutions.
    - ANI have confirmed that they plan on upgrading the Shannon PSR to the latest Thales variant, the STAR NG, which Thales confirm has wind farm filtering capabilities, thereby providing a proven technical option to mitigate the impact of wind turbines on the radar's performance.
    - In relation to the Woodcock Hill MSSR, the TNO report confirms that the Proposed Development will have zero impact on radar performance to the west (over the Atlantic), north, or south of Woodcock Hill.
    - The impact identified east of the Woodcock Hill MSSR is negligibly small and that this will be mitigated by the overlapping coverage provided by other MSSRs including a new radar at Tooman. The overlapping radar coverage in the sectors affected by the Proposed Development ensures redundancy and maintains surveillance performance where the Woodcock Hill MSSR shows reduced performance.
    - It is clear that there are a range of mitigation solutions available and therefore, a planning condition will provide an appropriate

mechanism for all parties to engage meaningfully and work together to identify the optimum solution.

12.4.36. **Assessment- Post Limited Agenda Oral Hearing (LAOH)**

12.4.36.1. The Commission are referred to section 12.4.9 (Assessment Pre-Limited Agenda Oral Hearing Assessment) and 12.4.10 (Initial Conclusion) of my report. They are reminded of-

- the argument set out in section 12.4.23 regarding climate obligations of Statutory Bodies and co-existence with wind farms put forward by the Applicant,
- the then implications of the High Court Coolglass judgement and the asserted obligations for relevant bodies under Section 15 of the Climate Act[82].

In advance of a formal recommendation/decision on this file, I made a recommendation to the Commission under the provisions of Section 135(2AB) of the Planning and Development Act 2000, as amended, for an Oral Hearing to be conducted to allow points or arguments in relation to specified matters only (i.e. Limited Agenda Oral Hearing- LAOH) i.e. *"the Aviation related issues relevant to Shannon Airport and the Woodcock Hill radar".* This recommendation was accepted by the Commission on the 09th of October 2025.

12.4.36.2. The LAOH was held on January 22nd 2026 and a general summary of the proceedings are set out in sections 12.4.26 – 12.4.35 above. Notwithstanding all of the information that was submitted both orally and in writing at the Hearing, the main purpose of the Hearing was to determine if the matter of proposed mitigation measures could be agreed between the Applicant, ANI and the SAG, to such an extent, that should the Commission decide to grant permission, they could choose do so with a planning condition requiring an Aviation Mitigation Scheme to be agreed subsequent to the decision, as proposed by the Applicant and recommended by ACP's external consultant SA.

[82] In accordance with the Coolglass High Court judgement at that time.

12.4.36.3. The Commission will be aware, the Coolglass High Court judgement was appealed and the Supreme Court of Ireland delivered its judgment in Coolglass Wind Farm Limited v An Coimisiún Pleanála [2026] IESC 5 on the 4th of February 2026. The Supreme Court rejected the interpretation of section 15 posited by the High Court and provided its own interpretation.

12.4.36.4. A large part of the Applicant's submission to the LAOH centred around the obligations imposed upon ANI under section 15 of the Climate Action and Low Carbon Development Act 2015, as amended 2021, with particular emphasis on the Coolglass HC judgement. While I appreciate and have considered the basis of the Applicant's submission in this regard, I have now considered the superseding Supreme Court Coolglass judgement. I am satisfied, it is not a matter for the Commission to determine ANI's or any other relevant bodies obligations under the Climate Act. The Commission is obliged to perform its own existing and statutory functions in a manner consistent with section 15 of the Climate Act as amended and in doing so An Coimisiún Pleanála is confined to the limits of its own functions, not those functions of other relevant bodies, be they prescribed bodies, public bodies or even third parties[83].

12.4.36.5. In section 12.4.9.1 of this report, I identified the following substantive matters to be addressed-

1. The requirement for mitigation measures to address aviation impacts from the proposed wind farm including the existing radar surveillance systems at Shannon Airport (PSR) and Woodcock Hill (MSSR) and impacts to Instrument Landing Systems (ILS) and Instrument Flight Procedures (IFP).
2. The actual recommendations and Mitigation Measures proposed including ARTAS and performance based Navigation or satellite systems for surveillance in 2030, as well as the cascade of measures proposed at the LAOH.

[83] During the LAOH, ANI described the IAA as a Prescribed Body (see section 12.4.28) and ANI as a third party (see section 12.4.32.1)

3. The ability (consent) to implement proposed recommendations and mitigation measures including those to Shannon PSR and Woodcock Hill radars
4. Other Aviation related Impacts including those to Coonagh Airfield

12.4.36.6. Regarding point 1, no party disputes that mitigation measures are required.

12.4.36.7. Regarding point 2, The Applicant's LAOH submission regarding IFP and ILS appears to take the view that determination of required mitigation measures are resolved[84] based on the contents of the SA report. Regarding IFP and ILS the SA report states-

> *"The approach, outcomes and conclusions of the IFP Opinion Report are reasonable in the context applied, they have been accepted by the AirNav"* (section 4.3)
>
> And
>
> *Sagentia Aviation believes that there is sufficient evidence presented in the FCSL Report to assure the Airport that flight calibration activities can still be conducted satisfactorily to validate current performance requirements of the Glidepath."*
>
> (section 4.4)

12.4.36.8. It is clear from the submissions of ANI and SAG that the mitigations proposed are not acceptable with the operational impacts during constructing in particular cited. This was set out at the LAOH and as summarised in sections 12.4.28.9, 12.4.28.29 - 12.4.28.34 and 12.4.29.5 – 12.4.29.7 above, where aviation and airport operational impacts including prolonged service outages during constriction stage and a risk of losing of CAT II runway status are highlighted.

12.4.36.9. Regarding point 2 and surveillance mitigation measures I refer the Commission to sections 12.4.9.17 and 12.4.9.18 regarding ARTAS and Performance Based Navigation or satellite systems for surveillance in 2030. I do not consider these as

[84] See paragraphs 27, 34 and 45 (further mitigation proposed to resolve the matter) of the Technical Submission from Cyrrus to the LAOH

acceptable mitigation for the proposed wind farm and note that ANI have not supported this basis either.

12.4.36.10. Notwithstanding this, the Applicant does propose a cascade of surveillance mitigation options for both Shannon PSR (Options A-E) and Woodcock Hill MSSR (Options A-C). These are set out in Appendix 1 of the Cyrrus' technical submission to the LAOH and it is detailed that each option include the details called for in the Sagentia report (i.e. timescales, costs, risks, integration, implementation and downtime, validation testing, commissioning and transition, safety programme planning, management and production, updates of safety assurance artefacts, and regulatory assurance compliance). It is contended in paragraph 48 of their submission that the technical solutions will address the issues arising from the construction of the proposed wind farm and the applicant can develop a solution that will meet the ANI's operational and safety requirements compliant with IAA Regulations. It is detailed the outcome will be a Functional System that is as safe as, or safer than the one currently in existence.

12.4.36.11. The Applicant also highlights that for the Shannon PSR, ANI have already decided to implement Option D i.e. Upgrade the Shannon PSR to the latest Thales variant, STAR NG[85]. This was confirmed during the questioning stage of the LAOH by ANI but importantly, it was stated that this was not being done for the purpose of Wind Farm development.

12.4.36.12. Regarding the Woodcock Hill MSSR the Applicant indicates Option A- 'maintenance and upgrades' and Option C 'installing a second MSSR to the east' are already in effect i.e. the Tooman Radar in north County Dublin, operational since 2025. It is noted the presence and utilisation of the Tooman radar is indicated as mitigation in the TNO report. However ANI advise that the Tooman radar is not mitigation for reflections and that the TNO Report substantiates ANI's concern that impacts of the proposed infrastructure on the radar at Woodcock Hill cannot be mitigated for (see section 12.4.34.2.1).

[85] The SA report considered this a 'likely' upgrade rather than optimisation of the existing radar.

12.4.36.13. In order to implement proposed mitigation measures ANI and SAG also highlight the limitations of some measures and the extent of aviation operational impacts they will occur during construction to the radars and Shannon Airport. They highlight how-

- Thales radar reflection processing algorithm is not applied for aircraft emergency codes and how reflections from the proposed turbines will result in multiple false emergencies being presented to Air Traffic Control.
- Radars must be switched off to introduce 'reflection tuning' and that this cannot be done as each of the twelve turbines is constructed. Radars can only then be restored if ANI has evidence from testing that reflection tuning has worked. Validation could take four weeks with regulatory approval a minimum of two weeks suggesting a period of 96 weeks may be required in total to introduce reflection mitigations but this will not eliminate reflections of aircraft in emergencies.
- The proposed wind farm would impact standard flight profiles completed during an annual flight inspection. These profiles form part of the FCSL IAA regulatory approved procedures, so any change requires new regulatory approval. If these changes are not approved, or if mitigation requires increasing the glide path to 3.5', the ILS 24 will lose its Cat II approval. Cat II approval. Cat II allows for precision landings in lower visibility than standard CAT I- In 2025 there were 332 movements over 25 days.[86]

12.4.36.14. The Commission's attention is further drawn to the 'exchange of correspondence'[87] between ANI and Thales submitted to the LAOH by ANI and in particular the reply letter from Thales dated December 18th, 2025 in which it is stated on page 1-

> *"Thales wants to make clear that even so radars are equipped with anti-reflection & clutter suppression algorithms or specific Wind Farm mitigation solutions, there is no generic answer to Wind Turbine impact on radar performance, it is a case-by-case basis that needs each time dedicates study*

[86] see section 12.4.29.5 above.
[87] See also sections 12.4.5.18 and 12.4.35

based on site location & specificities, radar environment, position & dimensions of each Wind Turbines, wind activity in the region, operational constraints on the area of coverage.

With appropriate information Thales may help assessing impact from Wind Turbines, even provide mitigation solution to reduce this impact, but there will always be an impact on radar performance. The effect of this reduced radar performance on the operations and the safety can only be validated by the Civil Aviation Authority in charge of the Air Traffic in this airspace."

The letter concludes on page 3[88] (submitted by the Applicant) by stating-

"Thales is only able to assess the impact of Wind Turbines on the radar performance, and not the impact on the operational safety of the CNS[89] infrastructure. It is under responsibility each Civil Aviation Authority to assess whether or not the equipment is acceptable for their operations and the safety of the Air Traffic within their managed airspace. This is of course valid for AirNav Ireland and potential impact from wind farms."

It seems evident, that should the development be permitted, it will lead to impacts on radar performance or degradation of existing radars as advised by ANI, regardless of the mitigation measures proposed. The extent of these impacts or degradation that may then be permissible (via mitigation measures) is a matter for ANI to adjudicate upon in Ireland. Based on ANI's submissions to the application and at the LAOH it is undoubtedly the case that the proposed mitigation measures are not acceptable to ANI.

12.4.36.15. Regarding point 3- i.e. the ability (consent) to implement proposed recommendations and mitigation measures for example through a planning condition as suggested by the Applicant- it is abundantly clear that ANI and SAG remain opposed to the proposed development and object to the imposition of a planning condition such as that proposed by the Applicant.

[88] Page 3 was submitted by the Applicant and not ANI- see section 12.4.35 and footnotes 80 and 81.
[89] Communication Navigation Surveillance

12.4.36.16. As discussed in section 12.4.9.35 above, it is my opinion, that imposing a condition for all aviation related mitigation measures to be agreed with the relevant Prescribed Bodies, where the implementation of such measures is required to lands outside the control of the Applicant, where at least the consent of the relevant prescribed bodies for such measures to be implemented, has not been demonstrated (notwithstanding their active objections to the proposed development) would not be appropriate having regard to section 34 (4) (a) of the Planning and Development Acts 2000, as amended and therefore in the context of section 15 of the Climate Action and Low Carbon Development Act 2015, as amended 2021 and the Supreme Court Coolglass judgement, a decision to grant permission with such a condition would be 'impracticable'.

12.4.36.17. It is notable in the questioning stage of the LAOH representatives for the Applicant accepted under the regulatory framework that ultimately is the Air Navigation Service Provider, it is ANI that has to sign off in relation to assessment and determination of the suitability of mitigation measures. In the context of the EIA Directive 2011/92/EU as amended by 2014/52/EU, the requirements of planning legislation and the provisions of the Development Management Guidelines 2007 including Section 7.8 'Conditions relating to other codes', I would be significantly concerned about the Commission's role in this regard. Notwithstanding the provisions available to the Commission under section 172 of the Planning Act, where the Commission shall ensure it has access as necessary to, sufficient expertise, which the Commission has done by appointing Sagentia Aviation (SA), I note the position of ANI given their statutory functions, responsibilities, experience and competence in relation to Air Navigation.

12.4.36.18. It is a matter for the Commission if they wish to seek further expertise from Sagentia Aviation on the submissions received orally and in writing at the LAOH. However for the reasons set out above I do not consider it necessary.

12.4.36.19. Regarding Point 4 i.e. 'other Aviation related impacts including those to Coonagh Airfield', I have considered the matters raised in submissions and at the LAOH. In summary it would appear the proposed development has the potential to impact on the available air space for 'general aviation' users of the Coonagh airfield

who are already limited by IAA imposed restrictions, such as flying heights for private aircraft, the Shannon Airport Control Zone and restricted air space over Limerick city including the prison. This would seem to suggest an already limited space from the airfield towards the application site. The air space that is available will then be susceptible to turbulence arising from the turbines. With one of the only two routes into and out of Coonagh airfield from the east in the general direction of the proposed application site it is likely the proposed development will then lead to congestion of the other airfield route from the south of the River Shannon and west of the Airfield.

12.4.36.20. While I accept the veracity of this concern, the use of air space is a matter for the IAA and ANI. I note ANI have not raised any concerns and Coonagh Airfield have not made any submissions to this application at any stage[90]. It may well be a case that further details would be required in relation to determining existing and predicted private aircraft movements with resulting impacts from the proposed wind farm development identified and assessed. However, I am not aware of any formal 'planning' guidance in this regard and would be reluctant to form a recommendation on this basis. Notwithstanding this and having regard to other aviation considerations set out in this report and conclusion, the matter raised here is likely a moot point.

12.4.37. **Conclusion Post Limited Agenda Oral Hearing**

12.4.37.1. Having considered all of the information above and in particular relating to points 2 and 3, I recommend that the Commission refuse permission.

12.5. **Visual Amenity**

12.5.1. A large number of submissions raise concerns regarding the size and scale of the proposed turbines and their proximity to visually sensitive locations such as residential property.

12.5.2. In order to avoid unnecessary repetition I do not intend to address this matter in great detail at this point. Landscape and Visual impacts are addressed in Chapter 12

[90] A submission received as part of a submission to the TNO report cannot be considered at that point.

of the EIAR and these are given full consideration in the Landscape section of this report- see section 13.7.21 below.

12.5.3. The proposal is likely to have a significant/very significant/profound and adverse visual amenity and landscape impacts over the 'Site and Immediate vicinity' as well as the 'Wider Landscape' as defined within the EIAR, especially as shown in the submitted Zone of Theoretical Visibility ZTV mapping[91]. The extent of such impacts cannot in my opinion be avoided, managed and/or mitigated by the measures proposed within the EIAR or through suitable conditions.

12.5.4. In my opinion, the only real mitigation employable for wind farms of the size and scale such as that proposed, is their siting at 'appropriate locations' identified in statutory Development Plans.

12.5.5. The majority of the subject application site including the location of proposed turbines, is located within an area designated a 'Strategic Area' that is considered eminently suitable for wind farm development as clearly detailed in the current Clare CDP and its WES i.e. an 'appropriate location'. This is consistent with National Policy Objective 70 of the National Planning Framework which seeks to promote renewable energy use and generation at 'appropriate locations'.

12.5.6. Therefore, while the extent of impacts upon visual amenity are acknowledged, it is considered the development as proposed is sited in an 'appropriate location' as per the provisions of the Clare County Development Plan 2023-2029.

12.6. **Residential Amenity**

12.6.1. A large number of observations have been received raising concerns relevant to residential amenity. These include noise, shadow flicker, health effects, impacts to property values and visual amenity etc. These are all addressed in detail in their relevant sections of the EIAR assessment and for the purpose of this section are considered as follows.

12.6.2. **Noise**

[91] Section 12.1.1 of the EIAR identifies the study area with a Zone of Theoretical Visibility (ZTV) extending to a radius of 20 kilometres in accordance with the WEDG 2006- see Figure 12-1 and Appendix 12A of the EIAR.

12.6.2.1. The Commission are referred to Section 13.7.10 of this report and Chapter 10 of the EIAR which addresses Noise and Vibration in more detail. Significant noise related concerns are raised in public submissions including methodology and modelling employed, Tonal noise, Infrasound (low frequency Noise) and Amplitude Modulation.

12.6.2.2. The Commission are also referred to the Further Information observation of the HSE-National Environmental Health Service (NEHS) (section 9.2.7 above) which comments on the background noise monitoring in the context of their site visit and the nature and characteristic of the proposed development area and in which they find the measurement of the existing noise environment as representative.

12.6.2.3. The Commission are reminded that section 5 of the WEDG 2006 states-

> *"In general, noise is unlikely to be a significant problem where the distance from the nearest turbine to any noise sensitive property is more than 500 metres."*

Figure 10-2 of the EIAR shows there are no such receptors are within 500m of the proposed turbines. See also section 5.3.2 and Figure 5-5 of the EIAR. It is noted that the DWEDG 2019 details-

> ***"****Separation distance alone cannot be relied upon as a mechanism to accurately control noise levels"*

12.6.2.4. In section 10.2.7 of the EIAR the applicant details that the assessment presented in the EIAR is based on the guidance outlined in the WEDG 2006. The results of the EIAR modelling detail the proposed development will not exceed the noise limit criteria as set out in the WEDG 2006 and therefore specific operational mitigation measures are not proposed.

12.6.2.5. Notwithstanding this, the EIAR does provide a number of other mitigation measures to address noise related concerns including addressing complaints of amplitude modulation and infrasound (low frequency noise). A warranty from Turbine manufacturers is to be sought guaranteeing no tonal noise.

12.6.2.6. Having considered all of the information on file including the submissions received and as detailed in section 13.7.10 below, should the Commission decide to grant permission it is recommended a suitable planning condition be imposed regarding noise levels at noise sensitive locations and the submission of a 'Noise Compliance Monitoring Programme' (NCMP) for agreement in advance of works commencing on site.

12.6.2.7. Overall, I am satisfied that impacts predicted to arise regarding noise and residential amenity can generally be avoided, managed and mitigated by the measures which form part of the proposed development, proposed mitigation measures, and through suitable planning conditions as recommended.

12.6.3. **Shadow Flicker**

12.6.3.1. A number of parties have raised concerns regarding shadow flicker. Specific concerns relate to the proximity of the wind farm to homes, the impact of same and the efficacy of the shadow flicker study submitted with the application.

12.6.3.2. The Commission are referred to Section 13.7.9 of this report and Chapter 11 of the EIAR which address Shadow Flicker. The EIAR details a defined 10 rotor diameter study area was modelled with theoretical worst-case and more realistic scenario presented and discussed in section 11.4.2. The criteria and thresholds utilised are detailed as those set out in the 2006 Wind Energy Development Guidelines (WEDGs).

12.6.3.3. The EIAR details theoretical worst case scenario assumptions, including-

- the sun is always shining with cloudless,
- the wind is continuously blowing with turbine always turning,
- wind direction is always aligned with rotor blades perpendicular to receptor
- No screening
- windows of the rooms at receptor directly face the development, the rooms are occupied and curtains or blinds if present are open.

It then sets out more realistic assumptions such as the sun will not always shine nor will the wind always blow etc.

12.6.3.4. Section 11.2.5 explains that the 'Realistic Scenario' utilised for modelling allows for a 29% 'sunniness' factor as recommended by the 'Best Practice Guidelines for the Irish Wind Energy Industry, Irish Wind Energy Association, 2012'. The modelling results presented in the EIAR include worst case scenario and the Realistic Scenario modified to reflect cloud cover i.e. (sunniness factor- 29%) and it is argued the realistic estimate is still expected to overestimate the real case due to the other assumptions detailed.

12.6.3.5. The EIAR notes that the WEDG 2006 state that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30-hours/year or 30-minutes/day. The EIAR does not refer to the DWEDG 2019 which I notes sets out a zero-shadow flicker requirement, through the use of technology.

12.6.3.6. Figure 11-2 of the EIAR identifies dwellings within 10 rotor diameter of proposed turbines. Table 11-2 details c. 114 homes within this range and results in the worst case and more realistic scenarios. It is detailed that 79 receptors may experience or exceed the maximum minutes in the worst case scenario reduced to 12 receptors in the more realistic scenario.

12.6.3.7. The EIAR considers potential cumulative impacts in section 11.4.4 and concludes that due to the considerable intervening distance between the proposed development and those identified cumulative shadow flicker effects are possible. This is considered reasonable.

12.6.3.8. In order to mitigate the potential shadow flicker impact, it is detailed in section 11.5.1.2 of the EIAR that turbines will be programmed to shut down during periods when shadow flicker is predicted to occur, and where conditions are present for it to occur. This strategy has been successfully employed at other wind farms. I note the proposed Shadow Flicker Control Measures is explained in section 11.1.1.1 of the EIAR.

12.6.3.9. The use of such control mechanisms to address potential shadow flicker is a relatively standard feature in modern wind turbines and, given that shadow flicker effects, by their nature, lend themselves to accurate prediction, there is no reason to believe that the shut-down protocols would be ineffective in mitigating the potential impacts in the limited cases where they arise. I further note that turning off particular turbines at certain times is provided for in the WEDG 2006 with the DWEDG 2019 detailing that with the use of appropriate equipment and computer software, no existing dwelling or other affected property should experience shadow flicker.

12.6.3.10. Subject to implementation of this mitigation measures, I do not consider that the proposed development would result in significant shadow flicker impacts at residential receptors within a distance of 10 rotor diameters of the proposed wind turbines.

12.6.3.11. It is noted that section 11.7 'Conclusion' of the EIAR states *"shadow flicker control modules will be installed on relevant turbines"*. In this regard it is considered appropriate should the Commission be minded to grant permission, a condition should be included requiring shadow flicker control modules to be installed on <u>all</u> turbines to safeguard and protect in the unlikely event of any unidentified receptor.

12.6.4. **Health effects**

12.6.4.1. A number of observations raise issues in relation to health effects arising from the proposed development including those related to residential amenity such as noise and shadow flicker and concerns of risks of pollution to water supplies.

12.6.4.2. I am satisfied that noise and shadow flicker concerns can be adequately mitigated against by the measures proposed in the EIAR. The Applicant has identified the potential for adverse impacts to watercourses and groundwaters and proposed series of mitigation measures to protect against such risks. Many of these are considered standard construction practices for a proposal of this nature. A comprehensive Construction Environmental Management Plan (CEMP) accompanies the application and should be supplemented by a suitable planning condition if the Commission decide to grant permission. The application also

provides for a programme of water quality monitoring during pre-construction, the construction phase and operational phase which will be agreed and amended as required with Clare County Council and Inland Fisheries Ireland as detailed in section 8.1.1.36 of the EIAR.

12.6.4.3. On balance, based on the information submitted with the application, as detailed in the submissions received, the reasons outlined above which are considered in greater detail in the relevant sections of the EIAR and my assessment below, I do not consider that the proposal will have significant adverse health effects.

12.6.5. **Impacts to property values**

12.6.5.1. The Commission are referred to section 13.7.5 of the EIAR below which addresses Population and Human Health where this matter is further discussed.

12.6.5.2. I acknowledge concerns raised in relation to impacts on residential property values that may result from the proposed development. I accept that some people may not want to purchase a property within certain distances of turbines such as that proposed. However, this is a subjective consideration and there are many other reasons why a person may or may not want to buy property in this area.

12.6.5.3. There is no substantive evidence presented that would conclusively indicate a depreciation in property values directly attributable to the wind farm's presence at this particular location. Furthermore, I note the EIAR does not identify any habitable dwellings within the 500m separation distance recommended in the Wind Energy Guidelines of 2006. Accordingly, I cannot conclude that the proposed development is likely to result in a significant impact on property values in the area.

12.6.6. **Other**

12.6.6.1. Other residential amenity related concerns raised in submissions include matters such as overbearing, overshadowing and loss of light and disturbance during construction. I have considered overbearing concerns in relation to visual amenity and landscape in section 13.7.21 of the EIAR Assessment below. I do not consider

the proposal will have a significant impact from overshadowing or loss of light in the context of Residential Amenity having considered guidance such as BRE: Site layout planning for daylight and sunlight 2022.

12.7. Traffic and Transport

12.7.1. The main issues pertaining to traffic and transport are addressed in section 13.7.8 below and generally involve construction-related and turbine delivery route related impacts such as increased HGV movements along the public road network.

12.7.2. A number of submissions have been received raising such concerns with particular regard to the proximity of the application site and temporary construction site entrance along the L-3056 local road to the existing O'Connell quarry located c. 1km north of the application site including noise and vibration.

12.7.3. At the time of my site inspection it was evident the road already caters for significant HGV movement from and to the quarry and in this context it should be noted construction related impacts will be temporary with limited operational traffic movements to and from the site. Furthermore noting the proximity of a number of houses along this road in close proximity to the application site it is considered appropriate should the Commission decide to grant permission a condition should be applied specifying working hours at the site for the proposed development to include for deliveries thereby reducing the impact of noise and vibrations at unsociable hours. A derogation should also be provided within the condition given the nature of deliveries associated with farms that are evidently infrequent e.g. turbine deliveries etc.

12.7.4. The Traffic and Transport matters including adverse impacts are specifically addressed in Chapter 15 of the submitted EIAR mitigation measures proposed. The Commission are also referred to Appendix 2C- Turbine Delivery Route Assessment and Appendix 15C- Traffic & Transport Report. A Construction Traffic Management Plan is also provided in Appendix 2D and should the Commission grant permission it is recommended this plan be finalised and agreed with the Local Authority and TII in advance of any works via condition.

12.7.5. Overall, I am satisfied that traffic and transport related issues have been reasonable identified and addressed in the information submitted and on file. Subject to the

implementation of such measures and planning conditions as recommended I am satisfied traffic and transport related concerns have been addressed.

12.8. Biodiversity Enhancement Management Plan (BEMP)

12.8.1. The Commission will note a large number of biodiversity related submissions have been received including with the original application and in response to the Further Information submission. The concerns highlighted in the submissions are considered in greater detail in section 13.7.6 of the EIAR assessment relating to Biodiversity and section 14 relating to Appropriate Assessment of the report below.

12.8.2. Biodiversity is considered in Chapter 6 of the EIAR. Section 6.7 proposes the implementation of a BEMP aimed at achieving biodiversity net gain within the proposed development site will be implemented on-site under the guidance of the Project Ecologist/ECoW. A BEMP is included as Appendix 6e of the EIAR.

12.8.3. Enhancement measures to be implemented are set out Table 2 details measures to be implemented with reason/objective and measure of enhancement proposed. These include 2.7ha of wet grassland, 2.2ha of Wet Heath/Upland Blanket Bog, 35 ponds, 34 bat boxes and 12 bee boxes throughout the site.

12.8.4. Table 4 details the quantities of habitats proposed to be removed and gained by the development, as well as the resulting net gain such as 3.8 ha of wet grassland, 2.16ha of upland blanket bog, 507 ha of drainage ditches (ponds) and bat and bee boxes detailed above. Table 5 details the length of Important Ecological Features (IEF) habitats to be removed and gained including net gain of 129m of hedgerow, 292m of Treelines and protection of 682m of watercourse habitat previously open to damage from cattle etc.

12.8.5. The Commission are referred to Figure 2 of the BEMP which shows an aerial photograph of the site and lands with proposed enhancement measures overlain. It is noted many of these measures are located outside of the red line application site boundary. Section 2 of the BEMP states-

> *"A range of habitat enhancement measures are deemed feasible at the proposed development site, which pertains to the land holdings (folios) of the landowners involved in the development."*

Such land appear to be identified within the blue line boundary as shown on the 'Planning Application and Landholding Boundary' Drawing Number 22156 MWP 00 00 DR C 5002 and submitted with the application. Accordingly should the Commission decide to approve the proposed development it is recommended a condition be attached to provide for implementation of the BEMP to include for the entry into section 47 agreement to include through the lifetime of the operation of the development..

12.8.6. Notwithstanding the mitigation measures set out in the EIAR and NIS relevant to BEMP and having considered all of the information on file including the totality of submissions received, I am satisfied the proposed BEMP subject to implementation in accordance with suitable planning conditions, will provide a mechanism of Biodiversity Enhancement that can contribute to an overall net biodiversity and planning gain.

12.9. **Other Matters**

12.9.1. **The Commission's legal obligations- Belgian case**

12.9.1.1. I note a number of third party submissions raise concerns related to non-compliance with the requirements of Directive 2001/42/EC (the Strategic Environmental Assessment (SEA) Directive) and cite a decision of the Court of Justice of the European Union (CJEU) under 24/19 in Belgium as relevant to the jurisdiction to permit the subject development. In summary this judgement appears to have annulled a development consent on the basis that the decision was pursuant to a 2006 Belgian Circular that had not been subject to SEA and accordingly Directive 2001/42/EC.

12.9.1.2. More specifically and in the context of the subject application, the observers argue the Irish Policy Framework for wind farms based on the 2010 National Renewable Energy Action Plan (N-Reap) and subsequently the National Energy and Climate Plan 2021-2030 (NECP) as well as the 2006 Ministerial Guidelines on Wind Energy Development, all constitute plans or programmes within the meaning of Directive 2001/42/EC and have been adopted without carrying out a Strategic Environmental

Assessment (SEA). Consequently the proposed application should fall similar to CJEU 24/19.

12.9.1.3. I am satisfied that An Coimisiún Pleanála do have the appropriate jurisdiction to decide on this planning application. In conclusion, I recommend the Commission dismiss the concerns raised by Observers in this regard and decide upon the application accordingly.

12.9.2. **Burden on land registry**

12.9.2.1. I note concerns raised by a third party in relation to burdens on land within the application boundary and landholding. I am satisfied that such matters are civil ones and not something for the Commission to be concerned with.

12.9.3. **Inadequate Public Consultations**

12.9.3.1. I acknowledge concerns raised in submissions in this regard. I have reviewed the applicant's public notices and public website in which all documentation associated with the proposed development is available. I also note other consultations carried out including preapplication consultations with ABP, the Local Authority and those with various Stakeholders and the Community as detailed in Volume III Chapter 1 of the EIAR. I have considered the contents of the Further Information Submission. Having regard to the totality of all documentation submitted and the advertisements provided, I am satisfied that the applicant has adequately complied with statutory consultation requirements.

12.9.4. **Windtake**

12.9.4.1. I note some concerns have been raised in public submissions regarding the impacts on property rights of landowners where lands may have been considered optimal. Having considered section 5.13 of the WEDG 2006 regarding windtake, I do not consider such concern well founded or a matter for the Commission to consider further.

12.9.5. **Tremors**

12.9.5.1. I note some concerns have been raised in public submissions regarding potential for impacts relating to geological faults and/or tremors at or near the proposed site and the potential for these and the proposed development to contribute to risks of landslides. I also similar note concerns due to proximity of the quarry.

12.9.5.2. Chapter 9 of the EIAR deals with Land and Soil and likely significant effects are considered in section 16.7 of this assessment. Section 9.3.5 of the EIAR identifies evidence of faulting in the area but details that geological processes that lead to the formation of fault lines and earthquakes are less pronounced in Ireland and are not considered a risk due to lack of seismic activity.

12.9.5.3. Based on the information before me I do not consider the concerns in public submissions sufficiently made and therefore I do not share these concerns.

12.9.6. **Adequacy of drawings**

12.9.6.1. Some concerns have been raised in submissions regarding the adequacy of drawings including the accuracy of the information provided within.

12.9.6.2. Given the extent of the application site and scale of the development, I am satisfied the drawings and associated information within the documentation, submitted with the application as a whole, including at further information stage, provides a more than reasonable basis for consideration of the application as a whole.

12.9.7. **Enforcement**

12.9.7.1. Concerns have been raised in public submissions regarding enforcement of the proposed development and potential difficulties arising with same e.g. noise. While I appreciate the veracity of these concerns the matter of planning enforcement falls under the jurisdiction of the local authority.

12.9.8. **Forestry**

12.9.8.1. Some concerns have been raised in submissions regarding the proposed loss of existing forestry and potential impacts upon biodiversity.

12.9.8.2. The application proposes the loss of c. 15.97 ha of existing commercial forestry in order to facilitate the proposed development. This is discussed in section 2.3.13 and 2.3.14 of the EIAR. Figure 2-14 of the EIAR presents the general area of loss near proposed turbines T5 and T6.

12.9.8.3. The Applicant commits in section 2.3.14 of the EIAR to not commence the project until both felling and afforestation licences are in place and this ensures the afforested lands are identified, assessed and licensed appropriately by the relevant consenting authority. This commitment is repeated in Chapter 15 of the EIAR under Material Assets section 15.4.1.2 and proposed as mitigation in section 15.5.1.2

12.9.8.4. Having considered all of the above and noting the terms of felling and afforestation licences are matters for separate legal codes, I am satisfied that the proposed loss of c. 15.97ha will not have significant impacts.

13.0 Environmental Impact Assessment

13.1. Statutory Provisions

13.1.1. The proposed development is of a type and scale that requires Environmental Impact Assessment (EIA) under the Planning and Development Act 2000, as amended, with the development comprising one which falls within Schedule 5, Part 2, (3) (i) of the Regulations i.e. *"Installations for the harnessing of wind power for energy production (wind farms) with more than 5 turbines or having a total output greater than 5 megawatts."*

13.2. EIA Structure

13.2.1. This section of this report comprises the EIA of the proposed development in accordance with Planning and Development Act 2000 (as amended) and the associated Regulations, which incorporate the European directives on EIA (Directive 2011/92/EU as amended by 2014/52/EU).

13.2.2. Section 171A of the Planning and Development Act, 2000 (as amended) provides an interpretation of EIA as:

"a process-

(a) consisting of-

(i) the preparation of an environmental impact assessment report by the applicant in accordance with this Act and regulations made thereunder,

(ii) the carrying out of consultations in accordance with this Act and regulations made thereunder,

(iii) the examination by the planning authority or the Board, as the case may be, of-

(I) the information contained in the environmental impact assessment report,

(II) any supplementary information provided, where necessary, by the applicant in accordance with section 172(1D) and (1E), and

(III) (III) any relevant information received through the consultations carried out pursuant to subparagraph (ii),

(iv) the reasoned conclusion by the planning authority or the Board, as the case may be, on the significant effects on the environment of the proposed development, taking into account the results of the examination carried out pursuant to subparagraph (iii) and, where appropriate, its own supplementary examination, and

(v) the integration of the reasoned conclusion of the planning authority or the Board, as the case may be, into the decision on the proposed development, and

(b) which includes-

(i) an examination, analysis and evaluation, carried out by the planning authority or the Board, as the case may be, in accordance with this

Part and regulations made thereunder, that identifies, describes and assesses, in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of the proposed development on the following:

(I) population and human health;

(II) biodiversity, with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;

(III) land, soil, water, air and climate;

(IV) material assets, cultural heritage and the landscape;

(V) the interaction between the factors mentioned in clauses (I) to (IV), and

(ii) as regards the factors mentioned in subparagraph (i)(I) to (V), such examination, analysis and evaluation of the expected direct and indirect significant effects on the environment derived from the vulnerability of the proposed development to risks of major accidents or disasters, or both major accidents and disasters, that are relevant to that development."

13.2.3. Article 94 of the Planning and Development Regulations, 2001 and associated Schedule 6 set out requirements on the contents of an EIAR.

13.2.4. This EIA section of this report is therefore divided into two sections. The first section assesses compliance with the requirements of Article 94 and Schedule 6 of the Regulations. The second section provides an examination, analysis and evaluation of the development and an assessment of the likely direct and indirect significant effects of it on the following defined environmental parameters. It also provides a reasoned conclusion and allows for integration of the reasoned conclusions into the Commission's decision, should the Commission agree with the recommendation made.

13.3. Issues Raised in Respect of EIA

13.3.1. A number of EIAR related issues have been raised in submissions to the Commission on this application. These will be considered where substantive and as required in the sections that follow.

13.3.2. Other broader EIAR related issues include matters raised by the Elected Members and the public such as 'Project Splitting' and 'Cumulative Impact' concerns given the proximity of the application site to a number of other wind energy developments as detailed in section 4 of this report and in particular applications for-

- an 11 turbine wind farm known as Oatfield currently before the Commission under reference number ABP-318782-24 and .
- a 9 turbine wind farm known as Knockshanvo currently before the Commission under reference number ABP-320705-24

13.3.3. The submissions consider that the fragmented approach to wind energy development in this area of County Clare is 'Project Splitting'. The Applicant in their submission response argue strongly to the contrary.

13.3.4. Having considered the submissions and other information on file, I am satisfied the proposed development is entirely independent of other wind energy developments in the area including Oatfield and Knockshanvo. I note all applications decided upon and also those currently before the Commission have been or will be subject to the EIA Directive (in terms of consideration at preliminary examination, for EIA screening and/ or subsequent EIAR) and therefore I am satisfied no project splitting for the purposes of avoiding the rigours of EIA has arisen in this context.

13.3.5. I acknowledge and appreciate the concerns raised in relation to consideration of cumulative impacts of the proposed developments with other such proposals in the general area. In particular, I note the proximity of the site to the Oatfield and Knockshanvo wind farms. These applications have not yet been determined by the Commission. The Applicant in their original submissions response clearly contend that cumulative impacts with other wind farm developments were assessed with no significant, adverse cumulative effects envisaged. They have acknowledged that the Oatfield and Knockshanvo windfarm was not originally cumulatively assessed due to the timeline associated with the submission of the subject application but these have

now been considered within the context of their Further Information submission and potential impacts to designated European Sites.

13.3.6. The European directives on EIA (Directive 2011/92/EU as amended by 2014/52/EU) sets out the criteria for consideration if EIA. It clearly details the characteristics of projects and the likely significant effects that must be considered, with particular regard to cumulation of impacts with other '*existing and/or approved projects*'. In this context, and in my opinion, it would be unreasonable to insist the Applicant includes for a cumulative assessment of proposed developments that are not yet decided and may not be permitted for the purposes of the EIA Directives. However, the Commission are advised that consideration of cumulative considerations with the Oatfield and Knockshanvo windfarms should be considered if consent is given to either or both in advance of a decision on this application.

13.4. Compliance with the Requirements of Article 94 and Schedule 6 of the Regulations 2001

13.4.1. I assess below compliance with the requirements of Article 94 and Schedule 6 of the Regulations.

Article 94 (a) Information to be contained in an EIAR (Schedule 6, paragraph 1)
A description of the proposed development comprising information on the site, design, size and other relevant features of the proposed development (including the additional information referred to under section 94(b).
A description of the proposed development is contained in Chapter 2 of the EIAR including details on the location, site, design and size of the development, arrangements for access and construction methodology, spoil and waste to be generated. In each technical chapter the EIAR details are provided on use of natural resources and the production of emissions and/or waste (where relevant).
A description of the likely significant effects on the environment of the proposed development (including the additional information referred to under section 94(b).
An assessment of the likely significant effects of the development is generally carried out for each of the technical chapters of the EIAR. I am satisfied that the assessment of significant effects is comprehensive and sufficiently robust to enable decision making.
A description of the features, if any, of the proposed development and the measures, if any, envisaged to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment of the development (including the additional information referred to under section 94(b)).

The EIAR includes mitigation measures to address potential adverse effects and are identified in each technical chapter of the EIAR. A schedule of Mitigation Measures is set out in section 17 of the EIAR which details pre-commencement, construction stage, operational stage and decommissioning stage measures to address identified impacts. These measures include such matters as finalising the CEMP and the Biodiversity Enhancement Management Plan (BEMP). Mitigation measures generally comprise standard good practices and site-specific measures and are generally considered capable of offsetting significant adverse effects identified in the EIAR.

The Commission's attention is drawn to proposed mitigation measures and concerns over same regarding Material Assets i.e. Aviation as set out in section 12.4 of this report and below.

A description of the reasonable alternatives studied by the person or persons who prepared the EIAR, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment (including the additional information referred to under section 94(b).

In consideration of this requirement I have had particular regard to section 1.5 of the European Union's 2017 publication *'Preparation of guidance documents for the implementation of EIA Directive'* as well as the guidance set out in the EPA's *'Guidelines on the Information to be contained in EIAR'* (2022).

A description of the alternatives considered is contained in Chapter 4 of the EIAR. The Applicant has also detailed regard to the EU 2017 guidance in section 4.1 of the EIAR.

Chapter 4 of the EIAR sets out a rationale for site selection. The alternatives considered include-

- Alternative Wind Farm Layout and Turbine Scale (see table 4-4)
- Alternative Grid Connection Methodologies;
- Alternative Construction Methodologies and
- A do-nothing scenario

The main reason for opting for the current proposal as set out in sections 4.3 & 4.6 of the EIAR appears to be- *"to minimise potential environmental effects and to maximise wind potential on site."*

However section 4.3.3 'Preliminary planning stage design' details the *"technical design criterion for the layout was to maximise the annual energy yield, while maintaining the required separation distances between turbines".*

This suggests less of a focus on minimising potential environmental effects e.g. impacts on landscape and visual amenities but instead more of an emphasis on maximising yield.

Table 4-4 sets out the process of design evolution and iterations in which 7 layout iterations were considered. The initial iteration (figure 4-7) describes 15 turbines up to 150 metres tip height, with

iteration 1 and 2 describing 9 turbines of 175m (Figure 4-8) and 12 turbines with tip heights of 158m (Figure 4-9). Iteration 6 then reduced turbine 10 to 150m to avoid a local watercourse (Figure 4-13).

A rationale seeking *"to minimise potential environmental effects and to maximise wind potential on site"* is entirely understandable. However it clearly conflicts with minimising environmental impact such as landscape and visual impacts.

The Commission will note the Local Authority have raised concerns in relation to height of the proposed development and state-

"the proposal would significantly alter the landscape character at this location. Given the height, scale and number of the turbines as proposed the development would have a significant landscape and visual impact, both locally and over greater distances from houses, roads, villages, and amenity locations".

Furthermore they consider the height of the proposed turbines (11*158m and 1*150m) is not representative of the range of turbines identified in the WES or the 2006 Guidelines. Section 1.4 of the WES clearly indicates "turbine heights of 75m to 125m to blade tip are assumed." Section 1.5.2 of the EU 2017 Guidelines states-

"The identification of Alternatives can be facilitated on the basis of information available at the planning level or the information received through the public consultation".

EIAR Volume 3 Appendix 1A Stakeholder Community Report page 15- 'Queries & Mitigations' identifies 'Visual' and states-

"Throughout the consultation process queries were received from the local community regarding potential visual impact. The project team confirmed that these concerns would be taken into consideration during the design phase and the placement of turbines would aim to reduce visual impact as much as possible, particularly on residents in close proximity to the development……"

EIAR Volume 3 Appendix 1B Stakeholder engagement includes correspondence from the Local Authority in which the Senior Executive Planner (SEP) indicates the provisions of the Clare CDP 2017-2023 and associated WES should be considered. Reference is also made to the then draft CDP process.

It is clear from the above engagements with the community and local authority that the height of turbines, visual impact and compliance with the WES would be significant considerations in advance of the application.

Considering these further and noting the extent of concerns raised by the local authority and other submissions to this application, it is my opinion that consideration of turbine heights within the 100-125m assumptions as clearly set out in the WES could fall within what should be

considered a 'reasonable alternative' as this would appear to be the underlying policy and reasoned basis for identification of this area as a 'Strategic Area Development Area' Figure D and objective WES Eight of the WES.

Having considered all of the above it can therefore be argued that the EIAR as submitted has not adequately considered 'reasonable alternatives'.

In particular and as highlighted in the 2017 EU guidance environmental assessment of Alternatives should be targeted and focused on the comparison of impacts between several options and presented as such in the EIA Report.

It is clear to me there is no consideration of the landscape and visual impact of turbines within the 100-125m range as assumed in the WES within the EIAR.

Notwithstanding this I note section 1.4 of the WES of the CDP does also state-

"there no prescription in relation to turbine heights"

Accordingly it is not unexpected that the Applicant seeks- *"to minimise potential environmental effects and to maximise wind potential on site"* with turbines exceeding the 100-125m range.

Having considered all of the above, with specific regard to the Policy Context set out in section 10 of this report i.e. requirements of REDIII setting a minimum binding target of 42.5% share of renewables by 2030 with an aspiration to reach 45% and the states obligations under the Climate Action Plan 2024 and 2025, and the NPF First Revision etc. I am satisfied consideration of the landscape and visual impact of turbines within the 100-125m range could be considered contrary to maximising Ireland's renewable energy commitments and can be considered as not a 'reasonable alternative' in this context.

The Commission may wish to consider this matter further.

Article 94(b) Additional information, relevant to the specific characteristics of the development and to the environmental features likely to be affected (Schedule 6, Paragraph 2).

A description of the baseline environment and likely evolution in the absence of the development.

In each technical chapter of the EIAR details are provided on the existing baseline conditions and likely impacts in a do-nothing scenario.

A description of the forecasting methods or evidence used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information, and the main uncertainties involved

The methodology employed in carrying out the EIA, including the forecasting methods are set out, in each of the individual chapters assessing the environmental effects.

The Applicant has indicated in section 1.8 of the EIAR that there were no difficulties encountered in the preparation of the EIAR and best available predicative modelling techniques where used were relevant to inform the assessment. The Commission should note a letter of support for the proposed development from Air Nav Ireland was submitted with the application subject to agreement of mitigation measures. This letter of support has been rescinded through ANI subsequent observations.
A description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it.
This issue is specifically dealt with in section 2.13 as well as 2.14, 8.3.5, 9.6, 14.6 and other sections of the EIAR. Specific risks have been identified through out. The risk of disasters (typically considered to be natural catastrophes e.g. very severe weather event) or accidents (e.g. fuel spill, traffic accident, land-slide) are considered low. There is no historical record of flooding within the planning boundary and the site is not within an identified flood zone. In the case of the occurrence of a severe weather event such as flooding during construction, construction work will cease. During operation stage turbines will shut down during high wind speed events. These risks are reasonable given the nature of the proposal. The Commission should note specific risks regarding operational impacts to Aviation have not been adequately addressed. The Applicant has described the extent of impact without mitigation measures as negative, moderate to significant and long term for the duration of the operational phase. **The Commission may wish to consider this matter further in the context of submissions from AirNav Ireland, Shannon Airport Group and as discussed in section 12.4 of this report.**
Article 94 (c) A summary of the information in non-technical language.
This information has been submitted as a separate standalone document (Volume 1). I have read this document, and I am satisfied that it is reasonably concise, comprehensive and is written in a language that is reasonably easily understood by a lay member of the public given the nature of the proposal.
Article 94 (d) Sources used for the description and the assessments used in the report
The sources used to inform the description, and the assessment of the potential environmental impact are set out in each chapter. I consider the resources relied upon are generally appropriate and sufficient.
Article 94 (e) A list of the experts who contributed to the preparation of the report
The EIAR Project Team is set out in section 1.7 of the EIAR. Tables 1.3 and 1.4 details the Engineering Design Team and the EIAR Authors and Specialist Contributors with qualifications set out in Table 1-5.

13.5. Consultations

13.5.1. I note a number of submissions on the file raise concerns in relation to inadequate public consultations.

13.5.2. The application has been submitted in accordance with the requirements of the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended) in respect of public notices. In addition, the applicant has carried out public consultation including preapplication consultations with the Commission (ABP-312193-21), have developed a dedicated project website[92] and have carried out community engagement as detailed in section 1.4.2.4 of the EIAR. Observations have been received from statutory bodies and members of the public. These are considered in this report where appropriate, in advance of decision making.

13.5.3. Following a request for Further Information (FI) the Applicant submitted their response. This was readvertised with revised public notices submitted and are on file. Further observations have been received on the (FI) from statutory bodies and members of the public. These are also considered in this report where appropriate, in advance of decision making.

13.5.4. I am satisfied, therefore, that appropriate consultations have been carried out as required, with prescribed bodies and the public all having opportunities to comment on the proposed development and on the submitted further information in advance of decision making.

13.6. Compliance

13.6.1. Having regard to the foregoing, I am satisfied that the information contained in the EIAR, and supplementary information provided by the developer is sufficient to comply with article 94 of the Planning and Development Regulations, 2001 as amended. Certain concerns such as those relating to Aviation and other matters of detail are considered in my assessment of likely significant effects and as set out below.

[92] https://ballycargreenenergyplanning.ie/

13.7. Assessment of Likely Significant Effects

13.7.1. This section of the report sets out an assessment of the likely environmental effects of the proposed development under the following headings, as set out Section 171A of the Planning and Development Act 2000, as amended:

- Population and Human Health.
- Biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directives (Directive 92/43/EEC and Directive 2009/147/EC respectively).
- Land, Soil, Water, Air and Climate.
- Material Assets, Cultural Heritage and the Landscape.
- The Interaction between these Factors.

13.7.2. Given the nature of the proposed development the EIAR has considered the following environmental impacts separately-

- Noise and Vibration (chapter 10)
- Shadow Flicker (chapter 11)
- Landscape and Visual (chapter 12)
- Cultural Heritage (chapter 13)

13.7.3. In accordance with section 171A of the Act, this assessment includes an examination, analysis and evaluation of the application documents, including the EIAR and submissions received and identifies, describes and assesses the likely direct and indirect significant effects (including cumulative effects) of the development on these environmental parameters and the interaction of these. My assessment generally follows the approach of Section 171A of the Act while also providing for the individual sections as set out in the EIAR. Each topic section is therefore structured around the following topics:

- Issues raised in the application and submissions
- Examination, analysis and evaluation of the EIAR
- Assessment and Conclusion

13.7.4. The Commission should note a comprehensive ‘Schedule of Mitigation Measures’ is presented in section 17 of the EIAR which sets out mitigation measures

recommended in the EIAR. This details the timeframe, the measure, the person responsible and the relevant EIAR chapter etc.

13.7.5. **Population and Human Health**

a) Issues raised in submissions to this application are generally in respect of matters impacting population and public health including residential amenities such as visual impact, noise, shadow flicker, traffic hazard, devaluation of properties, impacts on telecommunication services and the general proximity of turbines to large areas of population and the possibility of negative impacts from same include sterilisation of lands and depopulation of the area.

b) Chapter 5 of the EIAR deals with Population and Human Health. Section 5.2 sets out the Methodology used, including the identification of the Study Area which comprises Electoral Divisions (ED's) and Small Area Population Statistics (SAPS) as shown in Figures 5-1 and 5-2. Assessment criteria is set out in Table 5-5 and is based on the terminology set out in EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (2022).

c) Section 5.3 of the EIAR describes the existing baseline environment in which the development is situated in terms of settlement patterns, population density, population trends, public health, economic activity, land use and tourism & amenities. Limerick City and its suburbs are identified approximately 3km southeast of the site with smaller localised populations in the general locality of Ardnacrusha, Meelick, Parteen, Cratloe, Bunratty and Sixmilebridge as shown in Figure 5-4. The EIAR describes the area of the site as rural but moderately populated area with settlement patterns typically comprised of a mixture of one-off housing and ribbon style development distributed along the local and regional road networks. Having visited the site and inspected the general area, including my own desktop assessment, I agree with this description. Figure 5-5 of the EIAR shows residential properties within buffer zones of less than 1km, less than 2km and more than 2km of each of the proposed turbines. The EIAR details 303 dwellings within 2km of the nearest turbine.

d) Figure 10-2 (Chapter 10 of the EIAR in relation to Noise and Vibration) indicates the closest dwellings to turbines are-

- 511m east of turbine 7 (Noise Sensitive Location (NSL) 86- see also figure 10.6 of EIAR)
- 520m north west of turbine 2 (NSL 8- see also figure 10.3 of EIAR)
- 547m east of turbine 10 (NSL 89- see also figure 10.6 of EIAR)
- 569m north east of turbine 1 (NSL 73- see also figure 10.3 of EIAR)

Having considered chapter 10 of the EIAR, I am satisfied there are no habitable dwellings located within 500m of any of the proposed turbines.[93].

e) Section 5.3.5 of the EIAR discusses public health in the context of the 2022 census. Table 5-8 sets out the local population generally has good or very good health with only between 1 - 5% of the study areas population reporting 'bad' or 'very bad' health. Sections 5.3.6- 5.3.8 goes on to discuss Economic Activity, Land Uses and Tourism & Amenities.

f) Section 5.4 of the EIAR is titled Assessment of Effects. It considered effects at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table P&HH below-

TABLE P&HH

Project Phase	**Potential Effects**
Do Nothing	• See section 5.4.4 • Leave site as is- existing agriculture and forestry will continue • No increase in local employment • No economic benefit • Community benefit fund will not be realised • No construction stage emissions • No noise, shadow flicker or visual effects • Local reginal and national benefits of replacing fossil fuels will be lost • Ireland fails to meet carbon emissions associated with Climate Action Plan

[93] The Board should note a derelict cottage is identified in section 6.3.5 of the EIAR to the northeast of the study area near Turbine 7 (Plate 6-2 and Figure 6.9). While I could not locate this derelict cottage during my inspection, I am satisfied this property as presented in the EIAR is not habitable for the purpose of required separation distances from proposed turbines.

Construction	• Existing agriculture and forestry (save felling) will cease • Disturbance to local communities • Traffic, Peak daily HGV movements estimated at 252, 21 deliveries per hour. Peak time turbine base pours- i.e. 12 occasions, grid connection off public road, crossing to public road- brief. • Noise- will not exceed limits of BS5228. • vibrations, • dust especially near entrances and public road • Restricted access to local roads as required, TDR impacts • Security fencing of site • No significant impact on population numbers, no loss of dwellings, no displacement, no mass immigration • Creation of 60 jobs- primarily local • Local economic benefits- aggregates and concrete supply. Knock on impacts to local economy • No benefits from development during construction to Tourism, not tourist area, • Construction related risks to human health and safety. Legislation in place. • Risks of major accident or natural disaster, environmental pollution • Most likely risks flooding and fire • Proposal not regulated under Seveso.
Operation	• See section 5.4.2 • Conventional agriculture and forestry can continue independent of the proposal, only c. 15.97 ha of forestry lost at footprint of wind farm infrastructure • All existing land use practises can co-exist • Benefit to local communities through community benefit fund • Full time employment for small number of persons but may not be locally based • Visible impact upon tourism and recreation sites • Landscape and visual impacts • Potential risk from electricity generation, not significant. Substation secured • Risk of blades falling from severe weather damage, lightning strikes, inadequate maintenance etc. • No significant traffic • Turbine noise can be a source of annoyance to some people, possible Amplitude Modulation can arise, low frequency noise could arise • Shadow flicker- 12 properties identified at risk of exceeding 30 hours per year, theoretically possible to 79 properties. • Positive contribution to air quality- displaced GHG emissions

	• Positive impact on climate change • Visual impact unavoidable but extent will vary.
Decommissioning	• See section 5.4.3 • Everything removed bar access tracks, hardstanding's remediated to match landscape, • Recycling where possible • Substation will remain as part of electrical infrastructure • Works similar to construction stage- no significant ground works.
Cumulative	• See section 5.4.5 • Small scale construction traffic impacts may coincide with Fahybeg windfarm on the L7062 should works overlap. Impact low • No cumulative noise anticipated • Visual impacts considered distant and distinct with cumulative visibility variable. Impact slight to moderate.

Mitigation Measures

g) A number of such measures are set out in section 5.5 and are detailed as-

- those that generally arise due to impacts during the construction stage from traffic, noise, and dust effects and during the operational stage from noise and shadow flicker. Specific mitigations are then set out in Chapters 10, 11, 12 14 and 15
- CEMP, Traffic Management Plan etc
- A Community Benefit Fund governed by SEAI estimated at €3.75 million over the first 15 years of operation or c. €250,000 per annum
- All afforestation guidelines and Health and Safety legislation will be adhered to.
- Fail safe mechanisms during high wind speeds, separation distances to private homes and public roads etc.
- Amplitude Modulation and low frequency noise measures proposed if complaints arise (page 5-26)
- Shadow flicker module to prevent shadows at critical times (page 5-26)
- Blasting (Site specific blasting plan if required page 5-22).

Residual Effects

h) With mitigation measures in place, no significant negative residual effects on population and human health will occur in relation to dust, noise and shadow flicker. Overall there will be no significant residual; effects on population and human health.

13.7.5.1. Assessment and Conclusion

a) I have considered Chapter 5 of the EIAR and all relevant documentation on file. I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant is reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on population and human health.

b) Construction of the proposed wind farm development would undoubtedly result in substantial investment in the area with employment opportunities for construction workers and ancillary spin off benefits for the local economy.

c) Given the relative short-term nature of the construction phase, I do not consider that there would be significant negative impacts on the population or economy during the construction phase that cannot be reasonably mitigated by the measures proposed.

d) In the operational phase, significant adverse employment or population impacts are unlikely. Furthermore the Community Benefit Fund would result in a significant positive socio-economic impact as would the payment of rates and development contributions to the local authority.

e) I acknowledge concerns raised in relation to impacts on residential property values that may result from the proposed development. I accept that some people may not want to purchase a property within certain distances of turbines such as that proposed. However, this is a subjective consideration and there are many other reasons why a person may or may not want to buy property in this area. There is no substantive evidence presented that would conclusively indicate a depreciation in property values directly attributable to the wind farm's presence at this particular location. Furthermore, I note the EIAR does not identify any habitable dwellings within the 500m separation

distance recommended in the Wind Energy Guidelines of 2006. Accordingly, I cannot conclude that the proposed development is likely to result in a significant impact on property values in the area.

f) In terms of sterilisation of lands from future residential developments, I see no planning reason why applications for housing in close proximity to the proposed development could not be made and permitted where appropriate. Such applications would be subject to normal planning considerations for such housing.

g) I acknowledge that some people may not want to live near wind farms. However this area is generally rural in nature yet is close to larger more urban population areas. I do not consider the proposed development would be a significant driver of depopulation in the area.

h) With regard to human health, issues related to noise, air, dust, water pollution, shadow flicker etc. are considered elsewhere in this report. Given the nature of the proposed development there is potential for significant health and safety impacts during the construction and decommissioning phases. I am satisfied that the proposed mitigation measures, including a condition requiring the Construction and Environmental Management Plan (CEMP) (Appendix 2A of the EIAR) to be finalised and agreed with the Planning Authority prior to commencement of development and implementation of general best practice construction methods including health and safety obligations, would be capable of mitigating these potential impacts to an acceptable residual level.

i) Cumulative individual environmental factors can interact with population and human health such as air quality, noise, vibration and traffic during construction and operation. The cumulative impact of these and other permissions and development have been considered, and no significant adverse impacts are identified that cannot be managed through mitigation measures such as those set out in the CEMP.

j) Overall, I consider that the proposed development will have some positive impacts on the local socio-economic environment including via the community benefit fund as well as a wider scale through positive climate action. I am also

satisfied that the potential for significant adverse impacts on population and human health can generally be avoided, managed and mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on population or human health.

13.7.6. **Biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directives (Directive 92/43/EEC and Directive 2009/147/EC respectively).**

a) A large number of submissions to this application raise significant concerns regarding biodiversity and wildlife in the area including those protected habitats and species and threatened species either under national or European legislation or both.

b) Similar concerns are also raised more specifically relating to bird species. In this regard and notwithstanding those species raised in the submissions, I understand all species of wild bird that occur naturally in Ireland are fully protected at all times by the Wildlife Act and relevant amending legislation, notwithstanding the provisions of the EU Birds Directive.

c) Biodiversity is addressed in Chapter 6 of the EIAR with Ornithology examined in Chapter 7. The site is not located within any designated nature conservation area. Woodcock Hill Bog NHA (002402) is located c. 1km west of the site.

d) An Appropriate Assessment Screening Report and Natura Impact Statement have also been submitted with the application and revised as part of the Further Information stage . I address the issue of Appropriate Assessment separately in Section 14 and Appendix 1 of this report.

e) The EIAR considers Biodiversity and Ornithology separately. For ease of reference I shall apply a similar consideration in my assessment as set out below.

13.7.6.1. **EIAR Chapter 6- Biodiversity**

a) The methodology employed for this section of the EIAR is set out in section 6.2 and includes-

- A Desktop Study including data sourced from the following-
  - NPWS mapping
  - NBDC
  - EPA
  - GSI and
  - A number of others
- Data requests from NPWS and Bat Conservation Ireland
- Consultations with IFI, NPWS, Clare Co Co and DoAFM
- Field Surveys including-
  - Habitats in accordance with Fossitt 2000 and Best Practise Guidance 2011,
  - Flora- botanical surveys with emphasis on plant species listed in Annex II of Habitats Directive, Floral Protection Order species (2022) and flora species listed in The Irish Red Data Book (2016)
  - Invasive Species (Appendix 6f)
  - Non-Volant Mammals- including Badger, Otter and Pine Marten (appendix 6b)
  - Bats- Passive Automated Surveys, Active Transects Surveys and Potential Roost Assessments- (Appendix 6a)
  - Freshwater Aquatic Surveys (Appendix 6c)
  - Marsh Fritillary (Appendix 6d)
- A Biodiversity Enhancement Management Plan

b) Section 6.3 of the EIAR provides a thorough description of the 'baseline environment', including existing habitats at the wind farm site and grid

connection route. This description is consistent with my observations during my own site inspection. This section also details consideration of designated sites in the wider area but within 15km of the site i.e. SAC, SPA, NHA, pNHA and Ramsar Sites of which none are designated. Consideration is also given to Important Bird and Biodiversity Areas (IBAs) and Salmonoid Rivers.

c) Section 6.3.5.2 sets out the habitats encountered in accordance with Fossitt 2000 with associated mapping provided in Figures 6.9 and 6.10 and photographs provided throughout.

d) Invasive Species are discussed in section 6.3.6 with Japanese Knotweed, Himalayan balsam and Cherry Laurel identified on site during field surveys.

e) No rare or protected flora species were identified during surveys however suitable habitats for some species were encountered

f) Section 6.3.8 discusses Non-Volant Mammals with field surveys identifying badger and pine martin activity within the site, visual sightings of Irish hare and a trail camera sighting of Irish stoat. No other protected species were recorded however records of such species retrieved from the NDBC database for this area are detailed in Table 6-7 including fallow deer, pygmy shrew and red squirrel. Other species recorded included fox, rabbit, Sika deer and American mink.

g) Section 6.3.9 considers Bat species and details results of bat surveys. Figure 6-12 displays known bat roost locations identified from desktop information provided by Bat Conservation Ireland. Nine or ten bat species were recorded by the Passive Survey as detailed in section 6.3.9.2 including Annex II listed Lesser Horseshoe. The EIAR details works along the TDR as it approaches the site boundary were also considered.

h) An analysis of Freshwater Aquatic Surveys is set out in section 6.3.10, and Reptiles and Amphibians in section 6.3.11. Appendix 6C provides the Aquatic Survey Report.

i) Terrestrial Macro-Invertebrates such as bees and butterflies are discussed in section 6.3.12 with level of protection detailed in Table 6-13. A Marsh Fritillary survey was carried out (Appendix 6D). No protected or threatened species

were recorded during surveys. But other terrestrial invertebrate species were observed during surveys, none of which are threatened or afforded legal protection in Ireland.

j) Section 6.3.13 of the EIAR identifies what are considered Important Ecological Features (IEF) for the purpose of the EIAR based on-

- It first considers designated sites in which based on the contents of the NIS European Sites or sites of International Importance are not considered further. The section then looks at sites of National Importance such as NHA's and pNHA's which may be within the zone of influence (ZOI) of the application site. The only pNHA considered within the ZOI i.e. ecologically connected is Clonlara House NHA c. 5km from the site with possible impacts to bat populations i.e. Leisler's Bat i.e. within foraging range. This is then brought forward as an IEF.
- The EIAR then focuses on key habitats (as per Fossitt 2000) with Table 6-14 identifying a number of such IEF's
- Key Fauna and Flora are then identified in Table 6-15 with a number of Flora, Mammals, aquatic Species, and the Common Frog put forward as IEF's.

A clear rationale for each IEF is set out in this section based on protection status and results of surveys etc.

k) Section 6.3.14 considers a Do-Nothing Scenario in which current land use practises will likely continue with potential further land for agriculture uses.

l) Section 6.4 of the EIAR is titled *'Assessment of Impacts and Effects'*. It considered effects at Construction, Operation, Decommissioning stages, and Cumulative effects with particular focus on the identified IEF's. These are summarised in Table BIO below-

TABLE BIO

Project Phase	**Potential Effects**
Do Nothing	• See section 6.3.14 • current land-use practices will continue

Construction	• See section 6.4.1 • Habitat loss and alteration effects associated with forestry felling, vegetation clearance, site access tracks and excavations for turbine foundations and deposition areas, site substation, as well as the temporary construction compound within the site boundary of the proposed project • Temporary habitat loss, barriers to animal movements and disturbance as a result of side-casting, and/or stockpiling of material; • Temporary disturbance and/or displacement of species, potential for injury/mortality as a result of increased activity and physical presence; • Potential pollution of drains and streams draining the site and of downstream watercourses lower in the catchment, impacts to water quality (also see section 6.4.18 increased sediment loading), impacts of poor site management to contain same. • Potential spread of invasive species • Impacts to Leisler's include loss of potential foraging/commuting habitat to Cloonlara House pNHA, • Habitats loss detailed in Table 6-16 and 6.17 • Impacts to IEF Habitats and Species set out in Table 6.18 and 6.19. • Pollution to local watercourses, groundwater and subsequent impacts • Spread of Invasive species • Increased daytime activity disturbance to non-volant mammals (IEFs detailed) • Impacts to bats set out in Table 6-20 and Appendix 6a- including impacts to foraging and commuting habitat, lighting from construction etc. • Impacts to Marsh Fritillary and other macro-invertebrates discussed in Table 6.21 • Impacts to Freshwater Aquatic Species including works of 158m of culverting are set out in Table 6.22 including pollution risk to watercourse and subsequent implications downstream e.g. to the SAC • Impacts to Reptiles and Amphibians detailed in Table 6.23 generally relate to Common Frog and disturbance.
Operation	• See section 6.4.2 • Surface water run off • Impacts to Cloonlara House pNHA set out in Table 6-24, injury to bats from collision/barotrauma from blades, disturbance/displacement • Impacts to habitats and Flora- significant effects not anticipated • No significant impacts expected to protected mammals (IEFs), impacts from human disturbance including maintenance during operation not significant • Impacts to Bats- collision and barotrauma, set out in Table 6-27 • Impacts to Terrestrial Macroinvertebrates- displacement from habitat disturbance set out in Table 6-28 • Impacts to Freshwater Aquatic Species- disturbance set out in Table 6.29

	• Impacts to Reptiles and Amphibians- disturbance set out in Table 6.30 • Impacts to Water Quality- no significant effect from surface or waste drainage
Decommissioning	• See section 6.4.3 • Generally similar to construction involving works required to remove infrastructure
Cumulative	• See section 6.4.4 which considers such impacts from other minor developments including the County Development Plan, climate change, forestry, agriculture, peat extraction, quarrying, other wind developments in the area. • Wider study area already degraded i.e. water quality, forestry, drainage to peat areas etc no significant effects likely • In terms of Climate change the wind farm will contribute to a reduction in carbon emissions and a positive impact. • Impact from noise with existing quarrying- blasting on site etc- local disturbance to species • Distance to other existing and permitted windfarms- no impacts

Mitigation Measures

m) A number of such construction mitigation measures are set out in section 6.5 and are detailed as including-

- Mitigation by design- see section 6.5.1- minimising the footprint of the proposal on ecologically sensitive habitats, area of peat completely avoided
- Mitigation by Management- section 6.5.2,
    - A suitable qualified and experienced Project Ecologist/ECoW will be employed during the construction phase of the project with level of authority to stop construction activity as required etc.
    - A Construction and Environmental Management Plan (CEMP) including monitoring and supervision
    - Site Environmental Manager with daily inspections
    - General protection of habitats including designated exclusion zones
    - Removal of vegetation in accordance with the Wildlife Acts
    - Forestry felling under licence

    - Hedgerow and treeline reinstatement with native hedgerow and tree species
    - Woodland/Scrub Habitat Reinstatement
- Implementation of Biodiversity Enhancement Management Plan (Appendix 6E)- see also sections 3.5 and 12.8 above.
- Protection of Fauna including
    - Pre-construction surveys no more than 10-12 months in advance of construction with additional surveying immediately prior to site works commencing
    - Surveys and implementation of best-practice guidelines for badger and otter will be overseen by the Project Ecologist/EcoW, mitigation carried out in full accordance with NRA/TII Guidelines.
- Felling of forestry will be limited to appropriate periods, avoidance of removal of vegetation during the bird-nesting period, where any breeding sites will be disturbed, mitigation will be carried out under approval from NPWS as necessary and in full accordance with NRA/TII Guidelines.
- Inspection of clearance areas in advance by suitably qualified ecologist
- Preconstruction surveys for bats in advance of works to determine if roosting occurs or is likely to occur and if baseline remains same. Removal of trees and impacts to bats will be subject to provisions of derogation licence in advance of works. Ecologist will carry out pre-clearance inspections immediately in advance of tree-felling and vegetation removal. This will ensure that any changes in site context in relation to suitability for bats will be highlighted and that any additional mitigation measures which are then required are applied. Establishment of buffer zones around turbines. All Tree felling sensitive to bats and in accordance with felling licence, design and installation of bat boxes overseen by a bat specialist and/or the Project Ecologist/ECoW. Lighting to minimise impacts on local bat populations and in accordance with detailed guidance
- Amphibian surveys will be carried out by an ecologist in advance of construction works, appropriate actions will be followed by the project

ecologist to ensure their preservation including seeking derogation licence where frogs will require translocations in order to proceed with proposed works

- Areas of suitable marsh fritillary habitat identified will be marked and fenced off prior to the commencement of works. Pre-construction larval web surveys for marsh fritillary will be undertaken by a suitably qualified ecologist prior to construction works commencing, to identify any additional areas for Marsh Fritillary, pre-construction surveys prior to the commencement of works. If encountered in proximity to infrastructure side casting of material will be to the opposite side of the proposed infrastructure to where the suitable habitat occurs.
- General Protection of fauna measures set out
- Implementation of Invasive Species Management Plan (ISMP) (Appendix 6F) incorporated into CEMP, preconstruction survey of site and grid connection areas, ISMP to be updated as required, post-construction stage monitoring and treatment. Implementation of detailed Biosecurity measures- including all plant, equipment and PPE to be clean and free of soil/mud/debris or any attached plant or animal material prior to entering the site. Invasive Species spread measures including delivery to site.
- Water quality- A site-specific Surface Water Management Plan has been designed to avoid/minimise impacts to water quality within and downstream of the site. Implementation of CEMP, programme for water monitoring will be prepared in consultation with Inland Fisheries Ireland prior to the commencement of development, Further baseline water quality monitoring of all streams near the development site will be undertaken prior to construction to confirm existing conditions at the time of construction, water quality in the streams and outflow from the drainage and attenuation system will be monitored, field-tested and laboratory tested on a regular basis during different weather conditions, Additional infrastructure and measures used to control water quality set out, All design and works in proximity to watercourses will follow the best practice guidance, A site-specific Water Quality Management System has been

designed, dewatering measures detailed, typica concrete storage and bunding measures, A tree felling harvesting plan and associated mapping will be prepared to avoid pollution such as eutrophication, fuel management plan, construction wheel wash to settlement pond as per CEMP and a number of detailed standard best practise measures.

n) Operational mitigation measures are set out in section 6.5.2.2 and include-

- In relation to water quality- regular inspections will ensure culverts are free from blockages and there is no damage or erosion of the stream crossing wing walls, particularly after storm events. Silt ponds will also be inspected and maintained before the drains and verges have vegetated, biological water quality monitoring will be undertaken to monitor surface water quality, Macroinvertebrates will be sampled annually on the first, second and third years at aquatic sites listed in the aquatic report, and in future years if there is instability in the macroinvertebrate communities.
- In relation to Bats- Post-construction monitoring aims to assess changes in bat activity patterns, Post-construction fatality monitoring and activity surveys will be undertaken in years 1, 2, 3, 5, 10 and 15 post construction. Results will be analysed and presented in report format to the planning authority and to NPWS annually. Consultation with NPWS re full scope and timing of these post construction surveys prior to the completion of the construction phase, Curtailment measures will be considered further if monitoring identifies significant activity and / or bat fatalities, control of regrowth of trees/encroachment of scrub will be monitored and physically controlled within buffer areas to maintain vegetation at low-height, and to retain 50m clearance setback around relevant turbines, Bat boxes installed will be inspected within one year of erection, seasonal inspections undertaken by a licensed bat-handler
- In relation to habitats and flora- An operational phase monitoring programme for habitat reinstatement areas will be developed by the Project Ecologist/ECoW and incorporated into the Biodiversity

Enhancement Management Plan, monitoring implemented post construction to evaluate success of habitat reinstatement areas, Any additional measures deemed necessary to further facilitate reinstatement of habitats will be incorporated into the monitoring program, the plan will be agreed in advance with NPWS and updated in light of the operational conditions and any statutory requirements, Vegetation structure and suitability for marsh fritillary will be monitored.

- In relation to Invasive species- continued monitoring and where required, managed in accordance with the ISMP[94]

o) Decommissioning Mitigation Measures are set out in section 6.5.2.3 and include-

- a comprehensive reinstatement proposal, including the implementation of a program that details any removal of structures and landscaping, will be submitted to Clare County Council and the NPWS for approval prior to the decommissioning work. The same mitigation for the construction phase of the wind farm will apply to the decommissioning phase. Any mitigation measures will be carried out using appropriate best practice at the time.

Residual Effects

p) Residual Effects are set out in section 6.6. See also Table 6-32. With the full implementation of the mitigation measures detailed it is not likely that significant adverse effects, to the identified IEF habitats and species will arise. It is considered that the receiving environment has the capacity to accommodate the proposal without significant effects on habitats and flora and faunal features.

The watercourses downstream are considered to have assimilation capacity adequate to absorb water quality effects to a level that would not have significant effects on aquatic biota or water quality status.

13.7.6.2. **Assessment and Conclusion**

[94] Invasive Species Management Plan

a) I have considered Chapter 6 of the EIAR and all relevant documentation on file. I have also considered all of the written submissions made in relation to biodiversity and the relevant contents of the file including the EIAR.

b) I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant is reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on Biodiversity with European Sites. European Sites are also further considered in section 14 and Appendix 1 of this report.

c) Overall, I consider that the proposed development will have impacts as detailed in the EIAR on Biodiversity of the subject and surrounding areas. I am satisfied that the potential for significant adverse impacts on biodiversity can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures (which in many cases are considered best practise measures for development of this type), implementation of the Biodiversity Enhancement Management Plan (BEMP) and through suitable planning conditions. In the absence of any robust information to the contrary, I am satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on biodiversity and would also be consistent with chapter 17 of Volume 5 (Wind Energy Strategy) of the Clare County Development Plan 2023-2029. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on Biodiversity in this context.

13.7.6.3. **EIAR Chapter 7 Ornithology**

a) The methodology employed for this section of the EIAR is set out in section 7.2 and includes-

- A Desktop Study as detailed

- Consultations with NPWS (see Appendix 1B in Volume III) and attempted[95] consultations with both Birdwatch Ireland and An Taisce.
- Field Surveys including-
    - Vantage Point Surveys- see table 7.2 and Figure 7.1
    - Distribution and Abundance Surveys- 8 of these are detailed (section 7.2.3.2)

Section 7.2.3.3 details that no significant survey limitations were encountered.

b) Section 7.2.4 details the assessment approach is based on "Guidelines on the information to be contained in Environmental Impact Assessment Reports" (EPA, 2022) and "Guidelines for Ecological Impact Assessment in the UK and Ireland" (CIEEM, 2018).

c) Section 7.3 details a through considerations of the Baseline conditions of the site and surrounding area. It identifies the proximity of the site to the River Shannon and River Fergus Estuary SPA, Irish Wetland Bird Survey sites within 10km (Table 7-4) and reference to Birdwatch Irelands Sensitivity Tool for wind energy developments (Figure 7-5) in which the site is identified as within a zone of low bird sensitivity to wind energy development[96]. The EIAR also considers the NPWS Rare and Protected Species Database with only the Hen Harrier identified for the study area with historical information on sightings and breeding sites detailed in Table 7.5.

d) The EIAR then sets out to identify 'Target Species' for the study area which are set out in Table 7.6 next to their Conservation Status.

e) Section 7.3.2 presents the results of the Field Surveys undertaken with full survey details and flight paths provided in Appendices 7C to 7J in Volume III.

- Section 7.3.2.2- Flight Activity Surveys presents a summary of birds recorded including four detailed sightings of hen harriers as well as recordings of Sparrowhawk, Buzzard, Peregrine, Kestrel, Cormorant,

[95] The EIAR details no response was received.

[96] This is hosted by the National Biodiversity Data Centre mapping tool https://maps.biodiversityireland.ie/Map The Board should note Figure 7-5 appears to identify the site incorrectly to the south of the application site, however I am satisfied this likely just an editing error with the EIAR correctly detailing the site is within a zone of low bird sensitivity (score 19 for the Hen Harrier only).

Little Egret, Grey Heron, Mallard, Snipe, Woodcock, Whimbrel, Black-headed Gull, Herring Gull and Lesser Black-backed Gull.

- Section 7.3.2.3 sets out a summary of Transect Surveys undertaken identifying breeding and wintering bird species associated with the identified habitats around the transect routes.
- Section 7.3.2.4 summarises results of Winter waterbird surveys for 2019-2020 and 2022-2023. It identifies the regular population of whooper swan to the south of the river Shannon c. 6.5km south of the site. Table 7.7 summarises species recorded and details none of these were recorded within the study area on a regular basis or in significant numbers.
- Section 7.3.2.5 summarises the findings of the Breeding Hen Harrier Survey with no sightings detailed between April and August 2022. Three periods of activity were recorded in 2023 as detailed but concludes that the absence of any sightings on a later date suggests breeding attempts were unsuccessful.
- Other surveys are summarised in sections 7.2.3.6 to 7.3.2.11 include Winter Hen Harrier Roost, Woodcock and Nightjar breeding, Wader Breeding, Peregrine Breeding, Raptor and Hinterland.

f) Table 7.8 sets out the Conservation Status of ornithological receptors identified in the Study Area with three Annex I species identified (Hen Harrier, Peregrine and Little Egret[97]), 7 Red listed and various amber and green listed. A commentary is then detailed for each species in order of conservation status detailed.

g) Section 7.3.4 sets out an overall summary of the Conservation Value of the site for Birds. It considers the study area to be of relatively low importance for birds. It does however identify-

- the northern sector of the site provides suitable foraging habitat and within breeding range territory for hen harrier, however the majority of

[97] The Board will note none of these are of special conservation interest (SCI's) for the River Shannon and River Fergus Estuaries SPA.

the foraging habitat is outside of the application boundary with minimal habitat to be removed/ altered to facilitate the proposed development.

- the proximity of the site to the nearby quarry and its recorded successful nesting pair of peregrine.
- The study area is within breeding territories of kestrel (Red list), buzzard and probably sparrowhawk with all three hunting regularly within the study area.
- The study area supports breeding meadow pipit and (probably) grey wagtail, wintering snipe, woodcock and redwing (all Red-listed species) with woodcock recorded breeding to the northwest of the study area.
- A range of Amber-listed species were identified within the study area on a regular basis including goldcrest, swallow, willow warbler, starling, house sparrow and linnet.
- It details the study area and the off-site area along the TDR does not provide ex-situ habitat for the Special Conservation Interests of the River Shannon and River Fergus Estuaries SPA- A Black-headed gull, (a Qualifying Interest A179), was recorded flying within, or close to, the study area on three occasions but not actually foraging within the study area.
- On the basis of providing breeding and foraging habitat for several bird species of conservation importance, the study area is rated as of Local Importance (higher value) for birds.

h) Section 7.4 of the EIAR is titled *'Assessment of Potential Effects'*. It considered effects in a Do Nothing scenario, at Construction and Operation stages under a number of headings (see section 7.4.2), Decommissioning stages, and Cumulative impacts. These are summarised in Table ORN below-

TABLE ORN

Project Phase	**Potential Effects**
Do Nothing	• See section 7.4.1 • current land use practices including agriculture and forestry expected to continue

	• with harvesting and replanting of forestry a higher diversity of passerine species would be expected within young canopy forests which may attract foraging hen harriers on a more regular basis
Construction	• Phase expected to last 18 months • Loss of habitats- see section 7.4.2.1- Permanent loss of 32.65 ha, 849m of hedgerow, 15m of treeline and 158m of stream and drainage ditches. Commercial conifer (15.97ha loss)- impact rated 'Not Significant', Improved grassland loss of 7.27ha- 'Not Significant', Other grasslands useful for ground nesting species and foraging impact rated 'Adverse effect of Slight Significance', loss of woodland habitat- 'Adverse effect of Slight Significance' • Potential disturbance to birds- see section 7.4.2.2- Hen harrier, Sparrowhawk, Buzzard, Peregrine, Kestrel and Woodcock identified as potentially sensitive with breeding populations identified within study area. Impacts are generally rated 'Adverse Significant Effect of Short Duration'. • Nest damage or destruction during construction including TDR- see section 7.4.2.3. Impact rated 'Adverse Significant Effect of Short Duration'. • Effects on Special Protection Areas. As the site drains to the River Shannon (and SPA), there is potential for adverse effects on the habitats and food supplies of waterbird species should contaminants enter the system as a result of the construction phases of the wind farm proposed development e.g. release of suspended solids/nutrients, cementitious materials and hydrocarbons into the drainage network arising from all construction related site works including the site access track network, turbine foundations and associated turbine hardstands, electrical sub-station building, met mast, and works associated with the grid connection. Risk of nutrient release and drainage to SPA as a result of the clear-fell of conifers.
Operation	• Potential displacement of birds during operation- section 7.4.2.4 Hen Harrier- could show some signs of displacement around the turbines at the proposed development site. It is likely that any displacement effect would be highest in the early period of operation, with some degree of habituation occurring over time. Significance of potential effect is rated as Slight and of short- to medium-term duration. Sparrowhawk- it is expected that the species will not be displaced from suitable habitat in the vicinity of turbines at the proposed development site - significance of potential effect rated as Not significant. Buzzard- the species could show some signs of displacement around the turbines at the proposed development site. It is likely that any displacement effect would be highest in the early period of operation, with some degree of habituation occurring over time. Significance of potential effect is rated as Slight and of short- to medium-term duration. Peregrine- It is expected that the species will not be displaced from suitable habitat in the vicinity of turbines at the proposed development site - significance of potential effect rated as Not significant. Kestrel- it is expected that the species could show some signs of displacement around the turbines at the proposed development site. It

	is likely that any displacement effect would be highest in the early period of operation, with some degree of habituation occurring over time. Significance of potential effect is rated as Slight and of short- to medium-term duration. • Potential effects from noise during operation - section 7.4.2.5 effects of noise from wind turbines may adversely affect behaviour of bird species, especially passerines, and ultimately breeding success, in a similar way as the effects of background noise from traffic, industry, urban areas etc. At the proposed development site, there is already a background level of noise, including traffic, farming activities and quarrying. While the behaviour of passerine species using habitats in proximity to turbines may be affected by noise from turbines, which could result in declines in the densities of species, the significance of this effect is likely to be, at most, Slight. • Potential barrier effect by presence of turbines - section 7.4.2.6 The proposed development area has not been identified through the baseline surveys and desk review as being along a migration route for birds, such as wetland species (swans, geese etc.) or birds of prey, either on a seasonal basis (spring / autumn) or a daily basis (such as routes between feeding and roost sites). Furthermore, the proposed development is not in proximity to any other group of turbines (operational or permitted) so there cannot be a barrier effect in combination with other wind farm developments. (The Commission are referred to **section 15.3 of this report** and reminded that I have formed the opinion it would be unreasonable to insist the Applicant include for a cumulative assessment of proposed developments that is not yet decided and may not be permitted.) • Predicted collision risk to birds- - section 7.4.2.7 Collision Risk Modelling using vantage point data collected over the period 2019-2023 (four breeding seasons and four winter seasons) used. See Appendix 7K. Five species identified as requiring detailed collision risk modelling- Hen Harrier, Sparrowhawk, Buzzard, Kestrel and Peregrine. Three species buzzard, kestrel and peregrine have a collision risk of more than one bird over the entire lifetime of the proposed development. Buzzard predicted rate of 14.958 collisions over the lifetime of the development or 0.427 casualties per year. Impact rated as a Long-term Slight Adverse effect. Kestrel predicted rate of 10.935 collisions over the lifetime of the Development or 0.312 casualties per year. Impact rated as Long-term Slight Adverse effect. Peregrine- rate of 1.702 collisions over the lifetime of the Development or 0.049 casualties per year. Impact rated as a Long-term Moderate Adverse effect • Potential effects on birds in hinterland section 7.4.2.8 The proposed development is not expected to have any effects on bird species. • Potential Effects on waterbirds associated with the Shannon - section 7.4.2.9 Surveys confirmed the presence of various bird species of conservation importance, and especially whooper swan, within the study area (section 7.3.6.2.5) the site for the proposed development

	does not have suitable habitats to support on a regular basis any of the bird species associated with the Shannon system and areas identified for works along the TDR. It is concluded that the operation of the proposed development does not pose a significant risk of displacement or collision to any waterbird species associated with the Shannon system. As the site drains to the River Shannon, there is potential for adverse effects on the habitats and food supplies of the waterbird species should contaminants enter the system as a result of the construction, operation and/or decommissioning phases of the proposed development. In the absence of mitigation, this is potentially a Significant Adverse Effect of Short-term Duration. • Potential effects on Special Conservation Interests of SPAs - section 7.4.2.10 Potential for effects also considered in NIS. Potential for adverse effects on the habitats and food supplies of waterbird species should contaminants enter the system as a result of the operation of the wind farm proposed development, without appropriate mitigation measures being in place. Release of suspended solids/nutrients etc during operation e.g. site maintenance etc.
Decommissioning	• See section 7.4.3 • Generally similar to construction stage involving works required to remove infrastructure • disturbance to breeding birds which may be on site at the time; • potential pollution of local waterways and ultimately associated SPA.
Cumulative	• See section 7.4.4 which considers such cumulative impacts at the time of making the application- • Permitted wind farms- Castlewaller in Tipperary- (EIAR states- 304496[98] and not constructed) approx. 20km east Carrownagowan (308799) approx. 13km to northeast Fahy Beg (317227) (grant 06/03/2024) approx. 8.5km to northeast • Existing Wind farms two turbines approx. 3.2km south east one turbine 8.2km south east • With proximity and size of existing wind farms and no others within 10km radius there are no plausible potential for significant cumulative effects on ornithological interests as a result of wind energy proposed developments. • The Commission should note the proximity of the now permitted Fahy Beg wind farm. I have reviewed the online documentation for this

[98] This is a reference number for a section 5 declaration request summarised as- if changes to permitted 16 turbines and relocation of 11 is or is not development or is or is not exempted development. Parent permission- 11/51/0251, Extension of Duration 16/600472 (grant on 05/07/16)

	development[99] and noted the turbine design and layout. I have considered the ornithological (avifauna) impacts as set out in its EIAR Volume 2 Chapter 8 in the context of the subject application. I have not identified any likely significant cumulative ornithological impacts. Whilst it is open to the Commission to seek Further Information on the matter, given the separation distances involved between the developments, I am of the opinion significant adverse cumulative impacts are unlikely and such input is not necessary. • Cumulative effects with Solar Farms are considered in other chapters of the EIAR. • Commercial forestry Already likely to have had adverse impacts on hen harrier, merlin, red grouse, curlew and snipe. Can contribute to water pollution- suspended solids and nutrients to Shannon system the proposal will not contribute to cumulative adverse effects with forestry on site and in surrounding areas • Agriculture Assumed farming practises are on-site and in the local area are carried out according to best practice advice from the Department of Agriculture, Food and the Marine. The proposed development will not contribute to a cumulative adverse effect when considered with the agricultural activities on site and in surrounding areas • Quarrying- O'Connell's quarry to immediate NE Blasting may be required during construction stage, with quarry activities may cause local disturbance to bird species. Strict conditions for blasting. Cumulative noise effects with neighbouring quarry considered slight and brief in duration.

Mitigation Measures Section 7.5

i) Construction measures are detailed in section 7.5.1 and include-

- Habitats-
    - loss of semi-natural grassland and woodland/hedgerows habitats offset through a Biodiversity Enhancement Management Plan (BEMP) see Appendix 6E. The plan will benefit bird species through the supply of breeding and foraging habitats during the lifetime of the proposed development.

[99] https://www.pleanala.ie/en-ie/case/317227

- The success of the BEMP enhancement measures will be evaluated through a monitoring programme.

- Disturbance to breeding species-
  - Pre-construction breeding surveys to identify/confirm distribution within the study area at the time of construction.
  - Should any of listed species be recorded breeding within the given distances of the works area through confirmatory surveys before and/or during construction (see Section 7.6), a buffer zone (using stated distances) will be established around the expected location of the nest (location identified as far as is possible without causing disturbance to the bird) and all works will be restricted within the zone until it can be demonstrated by the project ornithologist that the species has completed the breeding cycle in the identified area. Any restricted area that is required to be set up will be marked clearly using hazard tape fencing (or equivalent) and all site staff will be alerted through toolbox talks. The project ornithologist will monitor the area to ensure that the restriction is being adhered to. Applied from March to August.
- Destruction of bird nests-
  - compliance with Section 22 of the Wildlife Acts 1976 to 2021 as amended,
  - all vegetation required to be cleared, including tree felling, to facilitate the works will be done outside of the restricted period from 1st March to 30th August.
  - Should it be necessary to remove vegetation during the breeding season, for instance where bramble and ephemeral plant species have become established on ground cleared earlier, this will be surveyed by an ornithologist up to 10 days before any clearance.
  - Should an active nest be located, the area will be restricted from works by a distance where it is considered that the works would not cause disturbance or abandonment of the nest. Such distances, which will vary according to species and local topography, will be determined by

the project ornithologist. The restriction will be maintained until it is established that any young birds present have fledged.

j) Operational measures are detailed in section 7.5.2 and section 7.7 (Post Construction Monitoring) and include-

- Collision risk mitigation
    - For buzzard and kestrel- discouragement of hunting birds from the area around the turbines achieved by the clearance of vegetation which attracts small mammals, birds and large insects (all prey items).
    - the area which will be cleared of vegetation to discourage bat activity around the turbines will suffice for birds as well. This will be
    - A radius up to 95 m around each turbine will be cleared of vegetation and kept as a short sward through regular mowing and trimming from March through to October. Scrub or rank grass will not be allowed to become established within any of these buffer zones. (See also biodiversity section 6.5.21 of EIAR)
    - For peregrine, the risk of collision is more likely associated with birds flying through the site when leaving or arriving at the breeding location rather than birds hunting around the turbines with the risk likely to be highest when inexperienced young birds are initially fledged and engaging in flight practice. Real time monitoring of the breeding location through the breeding season or for as long as the breeding attempt is in progress. It is noted that in some years the breeding site may not be occupied or breeding may be abandoned at any stage for various reasons, which is often inclement weather. In the early stage of the breeding cycle, focus will be on determining the routes taken by the adults when leaving the site (or arriving back at same). It is considered that there is at least a 4-week period when the young birds are at the highest risk of collision with the turbines. In this period, it may be preferable to curtail during daylight hours the turbine or turbines which are perceived (based on earlier observations) to pose the highest risk to fledgling collision.

Alternatively, the approach might be to turn off the turbines immediately when the young birds are becoming active in the morning (which will vary between days based on weather) and leave them off until they settle down later (which could be for several hours). For this to work, the relevant turbines would need to be turned off (on instruction from the observer) within a very short space of time, i.e. less than 60-90 seconds, and would require a direct line of contact between the observer and the turbine control room.

- Post Construction Bird Monitoring (operational)
    - Post-construction bird monitoring will take place to establish whether the construction and operation of the proposed development has had effects on the bird species associated with the site prior to construction (as shown by the baseline surveys in the 2019-2023 period). It will comprise-
        - Flight activity surveys
        - Transect survey within Site
        - Collision searches-
            - carried out in the first three years of operation (post-construction surveys) and subsequently in years 5, 10, 15, 20, 25 and 30 in the spring to autumn periods,
            - both bats and birds will be monitored in one programme.
            - Consultations will remain ongoing with the NPWS and Clare County Council throughout the operational phase of the project via submission of annual reports for the first three years and subsequently every 5, 10, 15, 20, 25 and 30 years in line with bird monitoring programme.

k. Decommissioning measures include-

- the mitigation that will be undertaken for minimising disturbance to nesting birds during construction will also be applied during the decommissioning phase

l. Mitigation for waterbirds associated with River Shannon and SPA

- Mitigation measures proposed to maintain water quality in the drainage channels and watercourses which drain the site are detailed in Chapter 8 Water and referred to in the NIS
- Implementation of mitigation through avoidance principles, pollution control measures, surface water drainage measures and other preventative measures have been incorporated into the proposed development design in order to minimise potential significant adverse effects on water quality at the site.
- A 50 m stream buffer zone has been implemented to EPA mapped watercourses at the proposed development site (apart from watercourse crossings and minor works) which will largely result in the avoidance of sensitive hydrological features.
- Direct discharges to surface waters of de-watered loads will not be permitted under any circumstances. This in turn will avoid or reduce the potential for adverse effects on downstream estuarine habitats.
- All of the mitigation measures described in Chapter 8 Water are contained in the Construction and Environmental Management Plan (CEMP) (appended to the EIAR in Appendix 2A).
- The CEMP provides a contractual commitment to mitigation and monitoring and reduces the risk of pollution whilst improving the sustainable management of resources.
- The environmental commitments of the proposed development will be managed through the CEMP and will be secured in contract documentation and arrangements for construction and later phases, such that there will be a robust mechanism in place for their implementation.

- The CEMP addresses the construction phase, and will be observed through to the commissioning, operation and final decommissioning phases.
- An ECoW with experience in overseeing wind farm construction proposed developments will be appointed by the Contractor for the duration of the construction phase to ensure that the CEMP is effectively implemented and that all planning conditions relating to ecology are complied with.
- An Environmental Manager will be appointed by the Developer to oversee the environmental management of the proposed development, advise on the environmental issues and ensure compliance by the Contractor.

Residual Effects

m. Residual Effects are set out in section 7.8 and includes-

- The BEMP will result in a net gain for biodiversity within the site
- With mitigation for disturbance during the breeding season it is likely that there will be no significant residual effects on sensitive breeding species, including peregrine
- The presence of the turbines is unlikely to cause a significant displacement effect for most bird species. While habituation to the presence of the turbines is likely with time, the residual effect is rated as a Slight Significant short- to medium-term effect.
- A collision risk with turbines has been identified for buzzard, kestrel and peregrine based on Collision Risk Modelling taking into account the respective conservation status of each species. For kestrel and buzzard, the avoidance of the immediate areas around turbines by vegetation management will be actively encouraged so as to minimise risk of collision. For peregrine, the risk will be reduced through mitigation involving curtailment of turbines posing highest risk during the period around fledging time this programme will be supported by real-time monitoring post-construction surveys. With mitigation implemented, the residual risk of collision is considered likely to be reduced to the non-significant level.

- The strict mitigation measures to maintain water quality in local drains and watercourses during the construction, operational and decommissioning stages will ensure that there will be no significant residual effects (rated as Imperceptible) on local water quality or on QI of the SPA.
- Application of the proposed mitigation measures in full will limit residual effects to low significance, negligible/not significant

13.7.6.4. **Assessment and Conclusion**

a) I have considered Chapter 7 of the EIAR and all relevant documentation on file including the relevant bird surveys etc. set out in the Appendices. I have considered all of the written submissions made related to ornithology and the contents of same. I have also considered the other relevant contents of the file including the EIAR and NIS.

b) I am satisfied that the structure and content of this chapter of the EIAR, as well as the overall methodologies used, the quality of data put forward, judgements and conclusions presented by the applicant are reasonable, and along with the other submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on Bird species with European Sites also considered throughout and in section 14 and Appendix 1 of this report.

c) Overall, I consider that the proposed development will have impacts as generally detailed in the EIAR, on birds frequenting the subject site, study area and surrounding areas including European sites. I am satisfied that the potential for significant adverse impacts on bird species can be avoided, managed and/or mitigated by measures that form part of the proposed scheme, the proposed mitigation measures (which in many cases are considered best practise measures for development of this type), implementation of the Biodiversity Enhancement Management Plan (BEMP) and through suitable planning conditions including in particular a condition relating to peregrine and collision risk.

d) In the absence of any robust information to the contrary, I am satisfied that the proposed development would not have any unacceptable direct, indirect or

cumulative impacts on bird species and would also be consistent with chapter 17 of Volume 5 (Wind Energy Strategy) of the Clare County Development Plan 2023-2029. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on bird species in this context.

13.7.6.5. **Overall Conclusion (on EIAR Chapters 6 and 7)- Biodiversity, with particular attention to the species and habitats protected under the Habitats and Birds Directives (Directive 92/43/EEC and Directive 2009/147/EC respectively).**

a) As the Applicant has addressed this EIA factor in two separate EIAR chapters, I have considered, assessed and concluded on Biodiversity and Ornithology separately as set out above. I now concluding on both together.

b) Having considered all of the contents as set out in section 13.7.6, section 14 and Appendix 1 of this report, I am satisfied that the potential for significant adverse impacts on Biodiversity can generally be avoided, managed and mitigated by measures that form part of the proposed scheme including the implementation of the BEMP, the proposed mitigation measures and through suitable planning conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on Biodiversity, (with particular attention to the species and habitats protected under the Habitats and Birds Directives)

13.7.7. **Land, soil, water, air and climate.**

13.7.7.1. **Land and Soil**

a) Issues raised in submissions to this application relating to land and soil are generally in respect of matters including impacts from same including-

- Proximity to Peat bog, absence of Peat Stability Risk Assessment and possible instability leading to landslides etc.
- Proximity to quarrying lands
- Collapse to adjoining lands
- sterilisation of lands

b) Chapter 9 of the EIAR deals with Land and Soil. Section 9.2 sets out the Methodology used, including a desk-based study, site walkover, field surveys and a qualitative assessment of the potential effects. Reference is made to a number of reports which guidance was taken. Section 9.2.3 details the study area. No limitations or difficulties were detailed as encountered.

c) Section 9.3 of the EIAR describes the existing baseline environment in which the development is situated in terms of topography which is described as hilly ranging from 60-260m AOD gently sloping southeast towards Ardnacrusha. It describes the study area summarily as primarily in agricultural use, with areas of conifer forests and transitional woodland scrub throughout with a more detailed description of existing uses set out in section 9.3.2 with reference to CORINE land cover mapping 2018 displayed in Figure 9-2. I note concerns raised in public submissions which identify peat bog in this mapping. I have reviewed same and replicated the data presented in this figure using EPA mapping[100] overlaid with An Coimisiún Pleanála's own mapping system. I am satisfied peat bog is not recorded within the application site boundary with the closest area c. 1km south west of proposed turbine 2 (i.e. Woodcock Hill Bog NHA), a significant distance in the context of the proposed development. Section 9.3 goes on to detail regional and local geology, soils and subsoil, geological heritage and economic heritage (and proximity of quarries etc).

d) Section 9.3.9 discusses existing slope stability and details there are no records of any landslide events recorded within or in proximity to the development site. With closest events recorded c. 16km from the site. Reference is made to recorded previous land slide events within wind farms which were recorded within peat material. Figure 9-7 (GSI) details no peat is mapped within the site however the EIAR reports a localised finding of peaty topsoil was recorded during site visits in the north west corner of the site between Turbine 1 and 2. This was mapped and probed finding an average 1m depth, but not within the site boundary. Peaty top soil was recorded throughout the site but not considered to constitute peat deposits but instead a highly organic topsoil with peaty appearance. The EIAR clearly states all

[100] https://gis.epa.ie/EPAMaps/

such areas of peat were avoided in terms of the site boundary with no proposed infrastructure located within the peaty topsoil. Therefore it was not deemed necessary to carry out a Peat Stability Risk Assessment. Noting concerns raised in the submissions and having considered section 9.3 as presented by the applicant, I am satisfied a Peat Stability Risk Assessment is not necessary in this context.

e) Section 5.3.5 of the EIAR discusses public health in the context of the 2022 census. Table 5-8 sets out the local population generally has good or very good health with only between 1 - 5% of the study areas population reporting 'bad' or 'very bad' health. Sections 5.3.6- 5.3.8 goes on to discuss Economic Activity, Land Uses and Tourism & Amenities.

f) Section 9.4 of the EIAR is titled Assessment of Effects. It considered effects at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table L&S1 below-

TABLE L&S

Project Phase	**Potential Effects**
Do Nothing	• See section 9.4.4 of EIAR • Leave site as is land and soil unchanged with the exception of future agricultural/forestry change
Construction	• See section 9.4.1 • total volume of excavated material for the proposed development is approximately 418,300m3. • Extraction of onsite aggregates (rock, stone, gravel, sand) for use on site from the proposed on-site borrow pit. • Concrete and additional aggregate materials will be sourced from local authorised facilities • Potential for waste soil • Potential for materials containing invasive species Effects on Soil and Geology- Soil erosion, Soil Compaction, Slope Stability impacts all rated 'negative moderate short-term effects' Effects on the underlying bedrock geology arising from the construction phase are considered to be a negative, not-significant, short-term effect. • Effects from Accidental Spills & Contamination/Pollution can lead to the degradation and the physio-chemical alteration of the land and soils environment as well as cause indirect effects to the biodiversity, human health and material asset environments. Effects from e.g.

	Fuels, oils, hydrocarbons etc, cement, concrete, wastewater, contaminated runoff, sedimentation Contamination from accidental spills of hydrocarbons, cement or contaminated waters etc. is rated as a negative, significant, short-term, 'Worst-case' effect on the land and soils environment, and a negative, significant, short-term, indirect, cumulative effect to the geological and hydrogeological environment. • Effects from Rock Blasting (discussed further in Chapters 6 Biodiversity and Chapter 10 Noise and Vibration in the EIAR) May be required at borrow pit, turbine foundations and access track cuttings. Effects include- ground vibration and air overpressure, could result in soil liquefaction in the vicinity of the blast hole and could contribute to slope instability potential for excessive dust within the vicinity of the turbine bases or borrow pit which may affect the soils or nearby aquatic environment Other potential human and structural effects from noise and vibration is dealt with in Chapter 5- Population and Human Health, Chapter 10 Noise and Chapter 14- Air and Climate of the EIAR. Effects rated 'negative, significant, short-term, direct effect' on the land and soils environment • Effects from Tree Felling- Permanent felling of approx. 15.97ha is required for the construction turbines, as well as the hardstands, crane pads, access tracks, borrow pit, deposition areas and substation/grid connection. The main effects arising from tree felling involve effects to soil. Landscaping, soil excavation, and root and stump harvesting can cause extensive soil disturbance and expose underlying overburden which may influence soil stability and contribute to soil sedimentation, soil erosion and surface water runoff. A large volume of soil can remain attached to roots when stumps are extracted from the ground. The use of heavy machinery can induce soil loading and compression of soft deposits which may influence surface water runoff and soil erosion rates. Tree felling has the potential to have an effect which can cause noticeable changes in the character of the land and soils environment, affecting its sensitivities. Effects rated 'negative, slight, short-term, direct effect'. • Grid Connection Route and Substation Effects- Excavation of soils, subsoils and bedrock will be required along the grid route and for the substation. These works will result in temporary and transient disturbance of access tracks, a public road surface, subsoil, and bedrock. The majority of subsoil excavated along the grid cable connection will be reinstated following these works. All excavations along the grid connection route will be reinstated to existing ground/road level. There will be a requirement to excavate some existing ground around the substation, particularly along the access track to the substation. There will also be a requirement to construct new slopes along the

	raised substation platform due to the topography of the proposed substation location. Effects rated 'negative, slight, short-term', effect for public road users and local landowners in the vicinity of the route.
Operation	• See section 9.4.2 of the EIAR • Effects on Landuse- No additional effects to land and land use will occur during the operational phase. Existing agricultural activities will recommence following construction Conventional felling and forestry activities will resume and continue to take place at the site independent of the wind farm development. Insignificant loss of 15.97ha of commercial forestry. Land use change will have an effect on the land and soils environment which causes noticeable changes in the character of the environment but without significant consequences. The transition to the production of renewable energy represents a 'positive, not significant, long-term direct effect'. • Effects on Soil and Geology Majority of excavations will have been reinstated. Some erosion of soil will continue early into the operation phase, however as vegetation becomes established and equilibrium is achieved, erosion rates will reduce to pre-construction levels. Landscaping and revegetation of excavated areas, the deposition areas, and areas over the hardstand footprint represents a 'positive, slight, long-term direct effect' to the land and soils environment, when compared to existing baseline conditions Effect on hydrogeology will remain, although to a far lesser extent, due to the risks associated with sedimentation and contamination of the aquifers as a result of erosion and runoff (see Chapter 8 Water), as areas are reinstated and revegetated and construction traffic is stopped, these effects will also be reduced to minimal levels. All vehicular movement during operation and maintenance will be restricted to the areas of hardstanding and existing/newly constructed access tracks. Effects on soil and geology will causes noticeable changes in the character of the land and soils environment without affecting its sensitivities. Rated 'negative, slight, long-term direct effect'. • Effects from Accidental Spills and Contamination/Pollution from plant and machinery during operations e.g. minor accidental leaks or spills of fuel/oil, leaks and spills from transformers in substation and turbines resulting in contamination of soils and groundwater Rated 'negative, moderate, direct, unlikely, long-term effect'. • Effects from Grid Connection Route and Substation- Minor excavations of replaced soils, subsoils, trench backfill material could be required along the grid connection route and substation areas if a fault occurred during the operational phase- unlikely. All felled trees will be replanted on suitable sites and therefore change in land use associated with the substation will not be considered significant.

	Effects will cause noticeable changes in the character of the environment but without significant consequences. Rated 'negative, not-significant, temporary, direct effect'.
Decommissioning	• See section 9.4.3 • potential effects will be similar to those associated with construction, however significantly reduced in magnitude. Turbine components will be removed at the decommissioning stage, access tracks should remain in place. Hardstanding and foundation areas will be reinstated to match the surrounding landscape. Will require minimal earthworks. Turbine bases will be rehabilitated by covering with local topsoil in order to regenerate vegetation which will reduce runoff and sedimentation effects. It is likely that turbine components where possible will be reused as they have a life well in excess of the wind farm proposal i.e., greater than 35 years. The current view is that the disturbance associated with the removal and disposal of the elements (hard core and sediment) would be more deleterious than leaving them in place. Underground cables will likely be cut back and left underground as removal may do more harm than leaving them in situ. A return to the original land use practices will recommence. Effects on land and soils would cause noticeable changes in the character of the environment without affecting its sensitivities. This represents a 'positive, slight, long-term effect'.
Cumulative	• See section 9.4.5 • Consideration of wind turbines existing and permitted within 25km of the site and permitted solar farms in the general area up to 4km set out. • Due to the localised nature of the proposed construction works, there is no potential for significant cumulative effects in-combination with any other local developments on the land, soils and geology environment • Erosion, sedimentation and contamination of the soils at the site have the potential to enter local watercourses and aquifers within the site with potential for cumulative effects through hydrological pathway assessed in Chapter 8 Water of the EIAR. • Works to the quarry to NE of site could expand southwards but shall not expand into the proposed development area. Quarrying activities confined to quarry boundary. Potential for cumulative blasting- noise and vibration. • Potential for cumulative effects on the land and soils environment arising from the proposed development and developments on adjacent sites is rated 'negative, not-significant, long-term effect'.

Mitigation Measures

g) A number of such measures are set out in section 9.5 and are detailed as including-

- Construction
    - Mitigation Measures for Land Use
        - Site layout and design- overall footprint of the proposed development is approximately 30% of the planning application boundary.
        - footprint of the works has been minimised to avoid unnecessary soil sealing, disruption etc
        - Material extraction and importation will be minimised as much as possible
        - Turbine locations, the alignment and rotation of the hardstands, and the routes of proposed new access tracks were designed to optimise the balance between access criteria and the required volumes of excavated and imported materials.
        - turbine foundations will be backfilled with a cohesive material, where possible using the material arising during the excavation, and landscaped using the vegetated soil set aside during the excavation.
        - land associated with the footprint of the development will be reinstated at the end of the operational life of the wind farm such that it can be used again for agricultural/pastural and/or forestry purposes
        - Existing access tracks have been utilised in the design as much as possible such that the existing land use does not change in these areas of the site during the operational life of the wind farm.
        - These measures are designed to reduce the effect of land use change by sequestering carbon, reducing waste (soil, subsoil, and rock materials), target limitations and controls on soil sealing, and not changing the use of the original lands where practicable.

- The proposed grid connection route was designed to minimise the length of cabling to connect the wind farm to the grid, with the majority of the route within existing tracks, thereby not significantly impacting on current land use.

- Mitigation Measures for Soil and Geology-
  - Soil Erosion-
    - Managed and controlled in accordance with Construction and Environmental Management Plan- see Appendix 2A of EIAR.
    - it is intended that the proposed crane hardstands will be constructed using excavation methods over the footprint of the hardstand area / turbine base.
    - Excavations for turbine foundations will be completed to an approved temporary works design and carried out such that they are stable or adequately supported.
    - installation of sediment control measures within the drainage system as per Chapter 3 of EIAR and CEMP
    - A combination of new and upgraded drainage networks will be installed within the site. The existing drainage network will be upgraded, where necessary, and settlement ponds and sediment traps installed at key locations.
    - Drainage will be constructed in parallel with access track construction and turbine excavation, including drains and stilling ponds, etc.
    - The drainage network has a twin system of water management separating out clean water from dirty water.
    - This network and design approach is outlined in Chapter 3 Civil Engineering of the EIAR.

- Temporary works will be such that they do not adversely interfere with existing drainage channels/regimes.
- Temporary stockpiles of excavated spoil, stored in the footprint of the excavation areas, will be directed for use in backfilling and restoration or placed in the deposition areas on site.
- Reusable excavated sub-soils and aggregate will be stored in temporary stockpiles at suitably sheltered areas to prevent erosion or weathering and shall be shaped to ensure rainfall does not degrade the stored material.
- Stockpiles will be stored away from any open surface water drains, managing height and slope of all stockpiles and minimising soil movement.
- Excavated material from the grid connection route will be used to reinstate the area around the cable trench following backfilling of the trench with approved materials. Any excess material from the grid connection route will be removed and disposed of to the onsite deposition areas or to an appropriate facility licensed to accept such waste.
- The implementation of erosion and sediment controls will be made prior to the commencement of site clearance works.
- Silt traps, such as geotextile membrane, will be placed in the existing drainage network prior to construction work. These will be inspected weekly by the Environmental Manager and cleaned regularly as required as directed by the Environmental Manager.

▪ Soil Compaction

- The CEMP includes minimum site management controls

- A Traffic Management Plan (TMP) (Appendix 2D of EIAR) has been developed to manage and control vehicular movement onsite- scheduling of HGVs during the construction phase to reduce the number of vehicle movements in, through and off site.
- Unscheduled vehicles will not have access to the site.
- Machinery will not operate directly on excavated/stockpiled soils.
- Heavy vehicles will only follow designated and newly constructed access tracks and avoid loading areas which are not contained within the footprint of the main works.
- The compound, vehicles, stockpiled materials and heavy machinery will be in place for the duration of the construction phase and will be removed once commissioning is complete.
- Within and around excavations, pore water pressure will be kept low by avoiding loading the soil/subsoil and giving careful attention to the existing drainage, to avoid altering the surface drainage regime.

▪ Slope Stability

- All temporary cuts/excavations will be carried out such that they are stable or adequately supported.
- Temporary works will be such that they do not adversely interfere with existing drainage channels/regimes.
- All site excavations and construction will be supervised by a suitably competent and experienced engineer.
- The Contractor's method statements for each element of work will be reviewed and approved by the engineer prior to site operations.

- Prior to excavation, drains will be established to effectively intercept overland flow prior to earthworks.
- The existing network of drainage within the site will be utilised whenever possible.
- An emergency response system to prepare for weather events like heavy rainfall/storms etc. will be developed for the construction phase of the project, particularly during the early excavation phase. Responses to include cessation of construction until the storm event including storm runoff has passed over.
- A competent project geotechnical engineer or engineering geologist will be employed during the construction phase of the works.
- As part of the detailed design and assessment, identification of potential planes of weakness will be made in the overburden such as discrepancies in the material type and foliation direction in the bedrock.
- Earthworks will be constructed to safe stable angles in accordance with the detailed design and best practice.
- Plant and materials will be stored in approved locations only (such as the proposed temporary site compound) and will not be positioned or trafficked in a manner that would surcharge existing or newly-formed slopes.

o Mitigation Measures for Accidental Spills and Contamination/Pollution

  - Implementation of the CEMP (Appendix 2A) includes site management controls to mitigate for contamination/pollution including e.g. a drainage network to be in place and wheel wash facilities onsite for the duration of the construction phase.
  - A bunded containment area will be provided within the compound for the storage of fuels, lubricants, oils etc.

- Good site practice will be applied to ensure no fuels, oils or any other substance are stored in a manner on site in which they may spill and enter the ground.
- Dedicated, bunded storage areas will be used for all fuels or hazardous substances. Spill kits will be maintained on site.
- Refuelling construction machinery and vehicles in designated refuelling areas using a prescribed re-fuelling procedure. A fuel management plan will be implemented.
- The drainage and treatment system will be managed and monitored and particularly after extreme rainfall events during the construction phase.
- Controls will be regularly inspected and maintained.
- A programme of inspection and maintenance will be designed and dedicated construction personnel assigned to manage this programme.
- A checklist of the inspection and maintenance control measures will be developed and records kept of inspections and maintenance works.
- The purpose of this management control is to ensure that the measures in place are operating effectively, prevent accidental leakages and identify potential breaches in the protective retention and attenuation network during earthworks operations.
- Stockpiles of stripped topsoil will be in locations with minimum trafficking to prevent damage and dusting.
- The access track surface can become contaminated with clay or other silty material during construction. Access track cleaning will, therefore, be undertaken regularly during wet weather to reduce the volume of sediment runoff to the treatment system.

o Mitigation Measures for Rock Blasting

- Layout design- the borrow pit and the most northerly proposed turbine foundations have been located in areas away from steep slopes, a large change in the topography, and of thin soil cover.
- Blasting will not occur after periods of heavy rainfall. In particular, no blasting will take place for at least 24 hours following a period of rainfall which exceeds 25mm within the previous 24 hours.
- Rock blasting will only take place within the borrow pit if extraction using rippers or hydraulic breakers is deemed impractical.
- If rock blasting proves to be necessary, a detailed blasting design will be undertaken by a suitably qualified and experienced specialist for each location to ensure that a peak particle velocity (PPV) of 10 mm/s is not exceeded at a distance of greater than 20m from the blast holes as per BS 7385 Part 2: 1993.
- If this cannot be achieved, blasting will not be permitted at this location.
- Blasting for the access track cuttings and hardstands will be subject to the same rigorous controls as that proposed at borrow pit and turbine foundation locations.
- To avoid excessive dust within the vicinity of the borrow pit, the blast areas will be lightly sprayed with water prior to blasting.
- A Blast Management Plan will ensure compliance with the Explosive Act 2006 (amended by Part 6 of the Criminal Justice Act 2006) and related legislation, and BS 7385 in relation to blasting.
- Clare County Council, An Garda Síochána, and adjoining landowners will be notified in advance of any blasting activities on the site.

- The Blast Management Plan will be prepared by the appointed contractor prior to the construction phase and in consultation with Clare County Council, An Garda Síochána and adjoining landowners.
- Blasting will not occur at the same time as blasting at the adjoining quarry.
- The NPWS and any other required consultees will be consulted as part of the general consultation and blasting permitting process.

- Mitigation Measures for Tree Felling
  - Topsoil removed from felled areas for the construction of the proposed development will be used in landscaping works or placed in the deposition areas.
  - Where possible, the vegetative layer will be stored with the vegetation and soil facing the right way up to encourage regrowth.
  - The felling areas will then be monitored and maintained.
  - Any runoff from the clear felled areas will be treated using the same design philosophy as that for the access tracks and hardstands. This includes the separation of clean and dirty water by the installation of berms, channelling dirty water to silt traps and settlement ponds and ensuring that the discharge rate of the drainage system is no higher than the existing condition by using engineered settlement ponds.
  - Where practicable, brash mats will be used to support vehicles on soft ground, reducing soil erosion and avoiding the formation of rutted areas, in which surface water ponding can occur.
  - Brash mat renewal will take place when they become heavily used and worn. Provision will be made for brash mats along off-track routes where practicable, to protect the soil from compaction and rutting.

        - All works will be completed to standard forestry guidelines (Department of Agriculture, Food and the Marine [Teagasc], 2019, Standards for Felling and Reforestation), and in accordance with licence conditions issued by the Forest Service.
        - At the end of the forestry lifetime in the felling areas, the felling will be subject to the requirements of a felling licence and adherence to the environmental mitigation measures associated with the licence.
    - Mitigation Measures for the Grid Connection Route and Substation
        - Measures for the grid connection route and substation will be the same as those at the wind farm site.
        - Measures for soils and geology, drainage, siltation control, hydrocarbon release and general site management will be fully in line with requirements identified in the Environmental Management Plans found in the CEMP (Appendix 2A).
- Operational
    - Mitigation Measures for Land Use
        - No additional mitigation measures are required in relation to land use for the soil and geological environment during the operation of the proposed development.
        - All vehicular movement during operation and maintenance will be restricted to the areas of hardstanding and existing/newly constructed access tracks.
        - Refer to chapter 8 of EIAR mitigation measures for other water related measures.
    - Mitigation Measures for Accidental Spills and Contamination/Pollution
        - the same as the construction phase, however will be significantly reduced during the operation stage as maintenance of the turbines, substation and maintenance vehicles is all that is required.

        - Turbine transformers will be located within the turbines, so any leak of oil would be contained within or adjacent to the turbine.
        - Minimal refuelling or maintenance of operational vehicles or plant will take place on site.
        - Off- site refuelling will occur at a controlled fuelling station.
        - Any on site re-fuelling will be undertaken using a double skinned bowser with spill kits at the ready for accidental leakages or spillages.
        - A minimal amount of fuels will be stored on site. Storage areas where required will be bunded appropriately for the fuel storage volume during the operational phase and will be fitted with a storm drainage system and an appropriate oil interceptor. The plant used will be regularly inspected for leaks and fitness for purpose.
        - An emergency plan for the operational phase to deal with accidental spillages will be prepared and will be communicated to plant operatives.
        - Spill kits will be available to deal with any accidental spillage in and outside the re-fuelling area.
        - The substation transformer oil storage tanks will be in a concrete bund capable of holding 110% of the oil in the transformer and storage tanks.
    - Mitigation Measures for the Grid Connection and Substation
        - None required, unless repair works are undertaken- will include-
            - Use of temporary excavations over the shortest distances possible
            - All excavated material will be stored and reused during reinstatement.
- Cumulative Effects

- No specific measures to mitigate against cumulative effects considered necessary.

- Decommissioning Phase
  - comparable to those used during construction.
  - By keeping some development components in place, when necessary, some of the effects will be avoided.
  - In order to recover vegetation and lessen the effects of runoff and sedimentation, the turbine bases will be rehabilitated by being covered with local topsoil.
  - Access tracks that are not needed for farming or forestry will also be allowed to naturally revert to vegetation.
  - The wind farm's materials and equipment will all be removed from the site and disposed of or repurposed in a way that is environmentally responsible[101].
  - Measures to be put in place to prevent potential pollution from fuel leaks and soil compaction caused by nearby plants.

Residual Effects

h) See section 9.7 and Table 9-4. No significant residual effects on land and soils are considered likely.

13.7.7.2. **Assessment and Conclusion**

a) I have considered Chapter 9 of the EIAR and all relevant documentation on file. I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant is reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on Land and Soil.

[101] Some submissions raise concerns turbine materials such as blades and towers will not be removed from the site. I am satisfied this is addressed here and in any event a planning condition should require the final decommissioning plan to be agreed with the local authority.

b) Construction of the proposed wind farm development would undoubtedly result in impacts as described by the Applicant upon the environment. Given the relative short-term nature of the construction phase i.e. c. 18 months, I do not consider that there would be significant negative impacts on the Land and Soil that cannot be reasonably mitigated by the measures proposed.

c) In the operational phase, significant adverse impacts on land and soil are unlikely.

d) I acknowledge concerns raised in submissions in relation to risks of landslides and proximity of peat to the site. However based on the contents of the Applicant's documents including site surveys and desktop research which I have compared with resources available to ABP, I am satisfied that no site works will take place in areas of peat and I agree with the Applicant's assertion that a Peat Stability Risk Assessment is not necessary. I acknowledge the proximity of the site to existing quarrying operations. I see no reason why the proposed development would compromise or cause collapse to lands under the control of the quarry. In any event such matters are generally considered civil matters. I do not consider the proposed development would sterilise adjoining lands.

e) I am satisfied that the proposed mitigation measures, including a condition requiring the Construction and Environmental Management Plan (CEMP) (Appendix 2A of the EIAR) to be finalised and agreed with the Planning Authority prior to commencement of development and implementation of general best practice construction methods including obligations regarding decommissioning, would be capable of mitigating potential impacts on land and soil to an acceptable residual level.

f) I acknowledge cumulative environmental factors can interact with land and Soil such as air quality, noise, vibration and traffic during construction and operation. The cumulative impact of these and other permissions and development have been considered, and no significant adverse impacts are identified that cannot be managed through mitigation measures such as those set out in the CEMP.

g) Overall, I am satisfied that the potential for significant adverse impacts on Land and Soil can generally be avoided, managed and mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on Land and Soil.

13.7.7.3. **Water**

a) Substantive issues raised in submissions to this application relating to 'Water' are generally in respect of matters including-

- Requirements for assessment under the Water Framework Directive (WFD)- i.e. the Crompaun East stream which is designated as poor water quality status under the WFD and is at risk of not achieving good status by 2027.
- Pollutions to watercourses, groundwaters, domestic and other well sources
- Impacts to flow regimes in the area
- Flooding
- Hydrological connectivity to protected sites- e.g. SAC's and SPA's and potential for negative impacts
- Impacts to peat
- Increased runoff from works including tree felling
- Water testing methodologies questioned

b) Chapter 8 of the EIAR deals with Water. Section 8.1.3 sets out the Methodology used, including a desk-based study and Field work. The detailed field work includes site walkover surveys in 2021, 22 and 23, surveys at proposed water crossings in June 21 and 23 in conjunction with hydrochemistry surveys, collection of water samples and laboratory analysis and consultations with Inland Fisheries Ireland (IFI) and Geological Survey Ireland (GSI) amongst others.

c) Section 8.1.1.5 and 8.1.1.6 considers relevant legislation including the Water Framework Directive and relevant Guidance as detailed.

d) Section 8.1.5 details no difficulties were encountered in the preparation of the assessment.

e) Section 8.2 of the EIAR describes the 'Existing Receiving Environment'. Surface Hydrology is discussed in section 8.2.2.

- The proposed development site and internal grid route are detailed as located within the Shannon International River Basin District Surface water features are shown in Figure 8-4. A number of streams are identified as tributaries to the Crompaun East stream which flows along the western perimeter of the site. The West and East Ballycannon streams flow into the North Ballycannon stream, which flows through the eastern section of the site. The identified watercourses and their network of tributaries extend from the northern extremities of the site and drain to the River Shannon approximately 3km south of the site. The South Ballycar stream and its tributaries flow south immediately east of the site boundary and also drain into the Shannon. The walkover surveys identified an unmapped watercourse which flows from north to south between Turbine 2 and 3 and drains westwards ultimately to the Shannon via network discussed above.
- The proposed grid connection route and substation location to the north of the proposed wind farm site occur within the Blackwater (Clare) River catchment. Identified watercourse drain to the Blackwater River (also known as the Trough River) as shown on Figure 8-4, which I understand flows into the Shannon east of Limerick.

f) Section 8.1.1.13 discusses 'Drainage' and evolution of the site layout regarding Turbine 1. This section details there are no existing drainage system onsite except for small-scale historic agricultural land drains.

g) Section 8.1.1.14 discusses Biological Water Quality and identifies EPA monitoring stations. Six within close proximity of the site are detailed in Table 8-6 with recorded water quality data for each set out. Aquatic Surveys were carried out at a number of locations as identified in Figure 8.6 and discussed

in the Aquatic Ecology Report, See Volume III Appendix 6C[102] (section 2.3.3). Table 8.7 presents Biological Water Quality recorded.

h) Physico-Chemical Water Quality surveys are discussed in section 8.1.1.15 with on-site results presented in Table 8-8 and laboratory analysis presented in Tables 8-9 and 8-10. The EIAR details further baseline water quality monitoring to be undertaken prior to commencement of the development.

i) Flood Risk is discussed in section 8.1.1.17 with OPW flood information indicating no instances of historic flooding.

j) Groundwater and Aquifer classifications are discussed in section 8.1.1.78 and 8.1.1.19. The site is located within two groundwater bodies (GWB)- the Tulla-Newmarket on Fergus GWB and the Lough Graney GWB both of which have a poorly productive bedrock flow regime. The majority of the site is situated within an aquifer described as a Locally Important Aquifer, which is Moderately Productive only in Local Zones (Category LI)- see Figure 8-8.

k) Abstraction is discussed in section 8.1.1.20 and details six boreholes and two dug wells to the south east of the site and are set out in Table 8-11 and shown in Figure 8-9 with other wells. The 8 identified appear to be identified based on their down gradient status. These and others in the wider area can be viewed on the GSI website [103]. Two group water schemes are discussed approx. 20 km to the north of the site but are detailed as not hydrologically to the site. I note a public submission argues some local group water schemes are not considered but within 5km of the site. However the EIAR does detail that it is assumed that all residential properties down gradient of the site have private drinking water abstraction.

l) The EIAR clearly states that no groundwater is to be abstracted as part of the proposal. However if any is encountered during construction and in need of removal the amount would not be of such a quantity as to exceed the recharge capacity of the groundwater body.

[102] Likely typing error in EIAR- appendix 6A
[103] https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx

m) Section 8.1.1.21 discusses Groundwater Sensitivity with large areas of the site having vulnerability of extreme as shown in figure 8-10.

n) Section 8.3 of the EIAR is titled 'Likely Significant Effects'. It considers effects at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table W below-

TABLE W

Project Phase	**Potential Effects**
Do Nothing	• See section 8.3.1 • landuse will remain unchanged • Agricultural practices will remain the same • tree felling of the commercial conifer plantation will occur • There will be no alteration of the existing hydrological or hydrogeological regime.
Construction	• See section 8.3.2 • will require excavation/filling and has the potential to lead to effects on hydrology, hydrogeology and water quality • construction of new access tracks will require some additional drains and the removal of soil, diverting near surface groundwater flow into the drains and channels • risk to water quality results from the potential for ingress of sediment or accidental fuel or oil spillages discharging to any of the streams which flow through the development site. • Any pollutants entering these watercourses could then be transferred to downstream fresh and estuarine waters with potential impacts on the relevant Natura 2000 sites • It is not anticipated that large volumes of groundwater will be encountered within the borrow pit or other excavations. • Groundwater inflows will be influenced by recent rainfall and limited groundwater storage. • The borrow pit location at the top of a ridge and in the vicinity of a watershed divide also ensures groundwater inflow will be restricted to recent recharge. • The existing quarry is likely to have already depressed the ground water table in the area to a level less than the proposed borrow pit base level. • Moderate to high risk of groundwater contamination. • Risk of Increase in Surface Runoff Temporary works during storm rainfall could increase hydraulic loading to watercourses resulting in erosion of watercourses and impact on aquatic ecosystems, or increase the flood risk downgradient. Impact rated Slight, Negative, Indirect, Permanent, Likely • Increase in Suspended Solids

	increase in the suspended sediment load, resulting in increased turbidity which in turn could affect the water quality and fish stocks of downstream water bodies. Impact rated Significant, Negative, Indirect, Short Term, Likely • Potential Release of Hydrocarbons- spillage of fuel, oils, lubricants, or other hydrocarbons to surface waters and groundwater, with potentially adverse effects on local groundwater quality and surface water quality in downstream areas. Hydrocarbon has a high toxicity to humans, and all flora and fauna, including fish, and is persistent in the environment. It is also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in death of aquatic organisms. Impact rated Significant, Negative, Indirect, Short Term, Unlikely. • Release of Cement Based Products Concrete and other cement-based products are highly alkaline and corrosive and can have significant negative effects on water quality. alkaline silt physically damaging to fish risk to the aquatic environment. Impact rated Moderate, Negative, Indirect, Temporary, Likely. • Morphological Changes to Surface Water Courses & Drainage Patterns Diversion, culverting and bridge crossing of surface watercourses can result in morphological changes to drainage patterns and alteration of aquatic habitats. Impacts rated Negative, Direct, Slight, Long Term, Unlikely. • Groundwater and Surface Water Contamination from Wastewater Disposal- leaking sanitary waste could lead to contamination of receiving waters. Impact rated Negative, Indirect, Significant, Temporary, Unlikely • Potential Effects on Groundwater Levels and Local Well Supplies During Excavation Works & from Proposed Borrow Pit- Groundwater levels may be lowered as a result of dewatering due to excavation works and dewatering of the proposed borrow pit. This has the potential to effect local well supplies in close proximity of the site. Impacts rated Negative, Indirect, Slight, Short Term, Unlikely. • Conifer Tree Felling Possibly lead to exposure of soils and subsoils, suspended sediment in watercourses, release of sediment attached to timber in stacking areas, and nutrient release etc. Impact rated Negative, Indirect, Moderate, Short Term, Likely.
Operation	• See section 8.3.3 • slight increase in run-off from a storm event to the streams within the site due to a minor decrease in ground permeability at the turbine hardstands, grid connection and substation. The duration for concentration of surface water flows will decrease as a result of the additional hard-surfaced areas, resulting in additional flows being discharged to the drains adjacent to access tracks during rainfall events. However, the potential increase in runoff rate is likely to be negligible. Impact rated Slight, Negative, Direct, Reversible, Likely • oil will be used in cooling transformers. Potential for oil spills at the substation e.g. maintenance. Impact rated Not Significant, Negative, Indirect, Short Term, Unlikely.

Decommissioning	• See section 8.3.4 • similar to those associated with construction, however of a reduced magnitude, due to the reduced scale of the proposed decommissioning works in comparison to construction phase works. • substation will likely remain in place as part of the permanent electrical infrastructure. • turbines, transformers, and meteorological mast will be dismantled and removed from the site • hardstand areas will be remediated to match the surrounding landcover at the time • In event grid connection decommissioned it will involve removing the cable from the ducting but leaving the ducting and associated supporting structure in place. The ducting will not be removed if the environmental assessment of the decommissioning operation demonstrates that this would likely do more harm than leaving them in situ. • No significant effects on the hydrological and hydrogeological environment are expected to occur during the decommissioning stage of the proposed development.
Cumulative	• See section 8.3.6 • Consideration of other projects include- Quarry expansion 18/818- Expansion of 10 hectares. Due to the proposed implementation of good construction practice and mitigation measures for the quarry expansion no significant cumulative hydrological or hydrogeological effects are anticipated as a result of the proposed quarry expansion. Commercial Forestry- all on-site forestry activities will cease for the duration of the wind farm construction and commissioning phase. Forestry operations, outside of the proposed development site, will resume again post commissioning of the wind farm. No cumulative effects with forestry operations at the site. Other wind and solar farms including Fahy Beg Wind Farm Development (planning reference 317227 permitted)- Given the significant separation distances of the proposed development to other farms and geographical positioning there will be no cumulative water effects, therefore there will be no significant effect. In terms of cumulative hydrological effects arising from elements of the proposed development, the potential for cumulative effects on water quality or flood flows is low as they are all contained within the proposed development site. Other projects including those detailed have or will be put through a rigorous design process for obtaining planning permission including EIA with Construction Environmental Management Plans and Appropriate Assessments to ensure that there will be no adverse effects on hydrology or hydrogeology.

Mitigation Measures

o) A number of such measures are set out in section 8.4 and are detailed as including-

- Construction
    - A Construction Environmental Management Plan (CEMP) Appendix 2A. This CEMP will be updated by the appointed contractor to incorporate any planning conditions, monitoring and follow-up management of impacts. The CEMP commits to implement mitigation measures and follow-up monitoring, thereby reducing the risk of pollution, and improving the sustainable management of resources.
    - A site-specific Surface Water Management Plan (SWMP) (Appendix 2B) has also been prepared. See also Planning Drawing 22156- MWP-00-00-DR-C-5006 and associated drawing sheets.
    - Environmental protection measures including-
        - Diversion of short sections of drains
        - Siltation and erosion control
        - Management of excavated soils and excavated materials
        - Fuel/hydrocarbon management and
        - Invasive species management.
    - Best practice approaches will be deployed with regard to all activities including the following-
        - Drainage (see Section 8.4.1)
        - Spoil management
        - Dewatering
        - Cement Bound Granular Mixtures (CBGM)
        - Accidental spillages
        - Vehicle Washing.
    - The development will be constructed with cognisance of the guidelines listed in Section 8.1.3.3

- The design of the drainage for the proposed development aims to maintain a continuity of existing flows and to manage the discharges at source where possible.
- A 50m buffer was applied to EPA mapped watercourses shown on the 1:50,000 scale OSI maps at the design phase, and used as a constraint for turbine placement.
- Protection of surface waters in the affected catchments will also help protect groundwater bodies in the study area.
- Drainage Management (See also EIAR Chapter 3 Engineering)
    - A site drainage system will be constructed on the proposed development site so as to attenuate run-off, guard against soil erosion and safeguard downstream water quality.
    - The drainage system will be excavated, constructed and implemented along all internal access tracks, to separate and collect 'dirty water' run-off from the tracks and to intercept clean over land surface water flows from crossing internal tracks
    - To achieve separation, clean water drains will be positioned on the upslope and dirty water drains positioned on the downslope of track sides, with track surfaces sloped towards dirty drains;
    - Clean water will be piped under both the access tracks and downslope collection drains to avoid contamination. This allows the clean water to follow the course it would have taken before construction, and not altering the natural/existing hydrological regime.
    - Measures addressed in the drainage design include:
        - Check dams will be placed at regular intervals, based on slope gradient, along all drains to slow down runoff and to encourage settlement and to reduce scour and ditch erosion

- Check dams will be constructed in accordance with best practice utilising clean stone at points along the drainage channel during the construction phase to further mitigate against any sediment escaping to nearby watercourses; and
- Low gradient drains will be provided. These reduce the velocity of flow in the drains, thus reducing soil and subsoil erosion and reducing hydraulic loading to watercourses.
- Where possible existing drains will remain untouched.
- There will be a short section of an existing drain diverted in the vicinity of T4 to eliminate the risk of sediment release during construction.
- Regular buffered outfalls will be utilised that consist of numerous small drains off the main drain which end by fanning out into the surrounding vegetation by tapering drains. The drain will contain hard-core material to entrap suspended sediment.
- Drains carrying construction site runoff will be diverted into settlement ponds, which will promote sediment deposition and reduce hydraulic loading by slowing flow velocities allowing sediment to settle.
- Settlement ponds have been designed in the form of a three stage tiered pond system. See Planning Drawings for design.
- Such features will be maintained by contractor to satisfaction of engineer and IFI for entire construction period.
- Flow from the settlement ponds will enter the sediment traps where runoff will be cleaned further by a series of graded gravel filters.

- Silt traps will require regular inspection and cleaning, and material removed will be disposed at an appropriate location such as an on-site borrow pit/deposition areas.
- Drainage ditch outfalls from silt traps will discharge at regular intervals to mimic the natural hydrology by encouraging percolation and by decreasing individual hydraulic loadings from discharge points.
- The drainage ditches will flow onto the existing ground by fanning out onto the surrounding vegetation via tapering drains
- The access tracks will be graded so that all runoff is directed to the dirty water drains. A low mound will be constructed between the track and the clean water drain to ensure that runoff from the track cannot flow into the clean water system
- No disturbance will be permitted to the natural vegetative buffer. They will be fenced where necessary
- Best practice and practical experience on other similar projects suggest that in addition to the above outlined drainage plans, there are additional site based decisions and plans that can only be made in the field through interaction between the Site Construction Manager, the Project Hydrologist and the Project Geotechnical Engineers. In relation to decisions that are made on site, it is important to stress that these will be implemented in line with the associated drainage controls and mitigation measures outlined above and to ensure protection of all watercourses as per CEMP and SWMP for the project (See Chapter 3 Civil Engineering and Appendix 2A and 2B).

- Site Clearance-

- measures will be implemented in accordance with the Forestry and Water Quality Guidelines (DMNR, 2000) and Coillte (2009): Forest Operations & Water Protection Guidelines.

- River Crossings-
  - No work will take place within 50m buffer zones of EPA mapped watercourses except for construction works identified in Planning Drawing No. 22156-MWP-DR-C-5006 at the following locations:
    - Temporary Construction Site Entrance;
    - Grid Connection to OHL;
    - Met Mast works.
  - Any works taking place in the vicinity of unmapped watercourses or land drains will be undertaken in accordance with the mitigation measures and in the CEMP and SWMP.
  - Working near watercourses during or after intense or prolonged rainfall events will be avoided and work will cease entirely near watercourses when it is evident that there is a risk that pollution could occur.
  - All construction method statements will be developed in consultation with Inland Fisheries Ireland and in accordance with the details in the CEMP accompanying this application.
  - The selection criteria and other details of the proposed crossings can be found in Chapter 3. These crossings will be subject to a Section 50 application to ensure flood risk upstream and downstream of the crossing is not increased.

- Drains
  - A robust drainage system will be put in place including maintenance and enhancement of existing drainage, as well as new systems, to minimise sediment release during construction.

- The existing drainage system will be retained and improved where required.
- Along new access tracks, interceptor drains and silt traps will be put in place simultaneously with the construction of site access tracks and turbine base construction, such that excavation works and any constructed hard surface or mineral soils storage areas will have a functioning drainage system in place in advance of the main construction activity.
- Drains adjacent to access tracks and cable trenches, will be excavated as outlined in the Forest Road Manual.
- The increase in the rate of run-off along the route of the site access tracks and hard-standing areas will be mitigated by the proposed drainage system which includes the provision of settlement ponds to reduce the concentration of suspended solids in the run-off from these areas, and the addition of silt fencing, where deemed necessary.
- Disturbance to the soil layer adjacent to these tracks will be minimised and there will be a low potential for an increase in suspended solids in the surface water run-off. Silt traps will be provided at regular intervals in the existing drains along the tracks to mitigate any increase in suspended solids in the surface water run-off due to trafficking these access tracks from the construction areas.
- Where the tracks have a gradient greater than 2%, check dams will be installed in the drains. The check dams will be constructed with stone of minimum size 37.5mm and will be laid at a spacing of between 9m and 30m dependent on the site slope. The bottom of the upper check dam will be at same height as the top of lower check dam.

o Settlement Ponds including-

- Dedicated settlement ponds will be provided in accordance with CIRIA B14 Design of Flood Storage Reservoirs for the efficient removal of suspended solids.
- Settlement ponds will be put in place prior to excavation for turbines or construction of site access tracks.
- In the event of an emergency, the settlement ponds will provide a temporary holding area for any accidental spills on site as it will be possible to block off the outflow for a limited period. The settlement ponds will be fenced off for safety.

o Concrete Control

- effective containment measures will be implemented to avoid spilling concrete outside construction areas and to prevent concrete entering any part of the drainage system.
- To reduce the potential for cementitious material entering watercourses, concrete pours will be supervised by the construction manager, who will ensure the area of the pour is completely drained of water before a pour commences.
- Pours will not take place during heavy rainfall.
- dedicated concrete chute washout area on site.
- Concrete trucks will be washed out off site at the source quarry.
- If wet concrete operations are required at sensitive locations, a suitable risk assessment will be completed prior to works being carried out.
- For the cable trench construction, temporary storage of cement bound granular mixtures will be in areas where there is no direct drainage to surface waters and where the area has been appropriately isolated with bunds.

o Borrow Pit

- Prior to felling of trees over the area of the proposed borrow pit; an interceptor drain will first be excavated upslope to intercept

existing overland flows and divert them around the borrow pit prior to discharge via a buffer zone on the downslope side.

- Runoff or pumped water from the borrow pit will be isolated from the clean catchment runoff by means of a series of open drains that will be constructed within the area. These drains will contain check dams that will attenuate the flow and provide storage for the increased runoff from exceptional rainfall events.

- Storage Areas and Material Deposition Areas-
  - Cement products will always be stored in a Control of Substances Hazardous to Health (COSHH) store or similar (such as a shipping container), and only be in the open when in use.
  - If temporarily located in the open, then they will be located within an impermeable bunded area and covered to prevent contact with rainwater.
  - Bunding will be in the form of sandbags or silt fencing.
  - Spoil will also be stored around the turbines to a maximum height of 1m.
  - The felled areas around the turbines have been identified as a potential additional area that will be used to store material; however, priority will be given to restoration of the borrow pit and the dedicated material deposition areas.
  - No permanent stockpiles will be left on site after the completion of the construction phase works.
  - After completion of the turbine base reinstatement, works will commence and all remaining stockpiles will be removed for permanent disposal at the proposed deposition areas within the site.
  - Excavated soil will be removed to the designated material storage areas.

- Temporary stockpiles of spoil will not be permitted within 50m of any watercourse.
- The drainage of the material storage areas will include the provision of settlement ponds to reduce the concentration of suspended solids in the run-off from these areas, and the addition of silt fencing where deemed necessary. Overland flows will be diverted around these areas. Material storage areas will be monitored to manage any potential loss of suspended solids to surface waters.
- Any diesel or fuel oils stored on site will be protected by a bund with 110 % of the capacity of the storage tank.

- Access Track and Temporary Road Widening Construction
  - Access track and temporary road widening construction material will consist of crushed aggregate with low fines content. The use of quarry dust will not be permitted.
  - Silt fencing will be erected around the perimeter of the temporary road widening area to minimise siltation.
- Plant and Refuelling
  - Only qualified persons shall operate machinery or equipment.
  - Machinery and equipment shall be checked on a regular basis to ensure they are working properly (no oil/fuel leaks etc.).
  - No refuelling shall take place within 50m of any watercourse.
  - Fuel will be stored in doubly-bunded bowsers or in bunded areas at the site compound.
  - Plant nappies and spill kits will be readily available on plant equipment or when working with fuel operated heavy tools.
  - Refuelling of plant and vehicles will only take place within designated areas of the site compound or in other areas specifically designated for this purpose.

- Only emergency breakdown maintenance will be carried out on site.
- Appropriate containment facilities will be provided to ensure that any spills from breakdown maintenance vehicles are contained and removed off site.
- There will be no discharge of any priority or hazardous substances to groundwater and surface waters.
- A suitable permanent fuel and oil interceptor will be installed to deal with all substation surface water drainage.
- Temporary petrol and oil interceptors will be installed at the site compound for plant repairs/storage of fuel/temporary generator installation.

o Waste

- A dedicated storage area will be provided at the site compound for building materials etc.
- A Waste Management Plan in accordance with DoEHLG guidance will be prepared by the Appointed Project Contractor for the construction phase.
- Any material deemed unsuitable for re-use in the works will be transported off site in trucks and disposed of under license from Clare County Council.
- All personnel working on site will be trained in pollution incident control response, and an emergency response plan will be prepared as part of the CEMP.
- Mitigation measures associated with the NIS will be implemented as part of this EIAR and the CEMP during the construction and operational phases to ensure that there will be no significant adverse effects on the hydrological or hydrogeological regime pertaining to the development site.

o Monitoring-

        - The Surface Water Management Plan sets out the proposed surface water quality monitoring programme during pre-construction, the construction phase and operational phase which will be agreed and amended as required with Clare County Council and IFI. A summary of the proposed monitoring is set out in section 8.1.1.36.
    - Environmental Manager-
        - An Environmental Manager with appropriate experience and expertise will be employed by the appointed Principal Contractor for the duration of the construction phase to ensure that all the environmental design, control and mitigation measures outlined in the EIAR and supporting planning documentation in relation to the water environment are implemented.
        - The Environmental Manager together with an environmental team will deal with drainage maintenance, mitigation measures and monitoring.
        - The Environmental Manager will have the authority to stop construction activity if there is potential for adverse environmental effects to occur.
- Operation-
    - The surface water runoff control measures for the proposed development have been designed in the context of storm events of varying duration and intensity.
    - The settlement ponds have been designed to cater for a maximum continuous flow rate associated with a medium intensity rainfall event. Higher intensity runoff will be attenuated by the open drain collection system which provides temporary storage and limits the rate at which it enters the settlement ponds. Further details of the measures proposed can be found in the Surface Water Management Plan (See Appendix 2B).

- Potential effects on water quality due to the operation and maintenance of the wind farm is principally related to the minor risk of oil spillages. This will have been mitigated by design through the provision of adequate bunding and implemented in the construction stage.
- All vehicular movement during operation and maintenance will be restricted to the internal access tracks and hardstands.

- Decommissioning-
  - potential effects on the water environment during the decommissioning stage will be similar to those during the construction phase. The proposed measures for the Decommissioning Phase are similar to the construction stage.
  - it is likely that a revised/updated environmental assessment will be required at the time of decommissioning to account for any changes in baseline conditions at the proposed development site, and potential changes is assessment guidelines and legislation.
  - A comprehensive reinstatement proposal, including the implementation of a program that details the removal of all structures, will be submitted to the relevant planning authority for approval prior to the decommissioning work.
  - Turbine components will be removed, however it is envisaged that access tracks and associated drainage will remain in place.
  - An environmental assessment will be undertaken at that time to ascertain whether or not it would be more or less environmentally impactful to remove or keep in place the underground cables and access tracks. If the access tracks are removed, the associated artificial drains will be infilled.
  - All elements of the decommissioning works will be agreed with the planning authority and there will be a consent requirement for the timing of decommissioning works.
  - The substation will likely remain in place as part of the permanent electrical infrastructure.

- The turbines, transformers, and met mast will be dismantled and removed from the site following a method statement agreed with planning authority.
- All associated hardstand areas will be remediated to match the surrounding land-cover at the time.
- All materials removed from the site will be treated in accordance with best practice waste and circular economy management procedures.
- The grid connection cable will likely remain a permanent part of the national grid and therefore, decommissioning is not foreseen.
- In the event of decommissioning, it will involve removing the cable from the ducting but leaving the ducting and associated supporting structure in place. The ducting will not be removed if the environmental assessment of the decommissioning operation demonstrates that this would do more harm than leaving them in situ. The assessment will be carried out closer to the time to take into account environmental changes over the project life.
- There is the potential for surface water run-off from exposed soil surfaces, such as those that will initially cover over the decommissioned turbine foundations, to result in slight negative effects on water quality in local surface waters. However, in the case of the proposed development, the site drainage and sediment control measures will still be in place which will prevent any silt-laden run-off due to temporary disturbance and movement of soil from entering the local surface water network. Therefore, no negative effect on surface water or ground water quality is envisaged during decommissioning.

Residual Effects

p) See section 8.5 and Table 8.12. By implementing the proposed mitigation measures, the significance of the residual effects on the water is assessed as being imperceptible to not significant. With the mitigation measures implemented, the applicant assures a high degree of confidence that any negative effects on the receiving environment will be imperceptible/not

significant. In particular, the development as proposed, is not expected to have a significant negative effect on the groundwater regime and hydrological or hydrogeological conditions would not be altered to a degree that would affect the local or wider area.

q) Additionally, the Applicant refers to the Natura Impact Statement (NIS) (which also includes mitigation measures) and has determined that there will be no adverse effects on any qualifying interests of protected Natura 2000 sites hydrologically linked and downstream of the proposed site. Therefore, there will be no significant adverse effects on the hydrological or hydrogeological regime pertaining to the development site.

13.7.7.4. **Assessment and Conclusion**

a) Water related concerns raised in public and other submissions through the course of this application include the WFD, risks to groundwater, surface waters, domestic and other wells, hydrological and other connectivity to European Sites. I have considered these throughout this part of the assessment process.

b) In my view, the greatest potential and most likely significant adverse impact to 'Water' arises from the potential for pollution to local water courses, drain, groundwater and locally sourced water supplies including from suspended solids, oils, cement, chemicals etc. that could be released into waters during the construction phase. In the operational phase, significant adverse impacts on land and soil are considered unlikely.

c) I have reviewed and analysed Chapter 8 of the EIAR and all relevant documentation on file. I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant are reasonable, and along with the submissions on file and my inspection of the site, allows for a thorough assessment and consideration of the likely significant effects of the proposed development on 'Water'. I see no reason to question the methodologies used in terms of water testing as raised in a submission.

d) The EIAR sets out a range of mitigation measures including specific pollution prevention measures to be employed through the construction stage to address risks including those to all water supplies. These measures are generally typical for such proposals and include many of the requirements that would be expected in any detailed Construction and Environmental Management Plan (CEMP) including appointment of Environmental Manager. Specific site design measures are incorporated into the proposal such as a 50m buffer applied to EPA mapped watercourses[104]. These buffers are used as a constraint for turbine placement, stock pile placement and refuelling etc. Best practise construction measures will be employed to minimise sediment laden run off and pollutants etc. with release of cement to water courses including groundwater prohibited as required.

e) In terms of Flooding, I do not share concerns raised in submissions. The site is not identified in a flood risk zone (as per the CDP), the risk of flooding at the site is negligible and would be isolated to local pooling that can be managed through the drainage mitigation measures detailed. Subject to the mitigation measures as proposed, impacts arising from the development downstream are unlikely and in my view are not significant.

f) Regarding the WFD, section 8.6 of the EIAR deals with compliance with the WFD. It concludes the proposal alone or in combination with other developments is not likely to cause a deterioration in the quality of any body of surface water or groundwater, is not likely to alter the chemical status of any waters, is not likely to have a significant effect on any European site and is not likely to compromise the ability of any waters to meet the objectives of the Water Framework Directive and transposing legislation.

g) I have considered the objectives as set out in Article 4 of the Water Framework Directive which seek to protect and, where necessary, restore surface & ground waterbodies in order to reach good status (meaning both good chemical and good ecological), and to prevent deterioration. Having considered the nature, scale and location of the project, and with particular regard to the mitigation measures proposed within the EIAR and detailed in

[104] except for construction works identified in Planning Drawing No. 22156-MWP-DR-C-5006

the (revised NIS), I am satisfied there is no conceivable risk to any surface and/or ground waterbodies to sustain the objections in submissions/observations received and that the development would not prevent the achievement of the future status objectives of any water body including the Crompaun East stream during construction, operation and decommissioning stages.

h) Therefore I can conclude that on the basis of objective information, that the proposed development subject to the mitigation proposed will not result in a risk of deterioration on any water body (rivers, lakes, groundwaters, transitional and coastal) either on a temporary or permanent basis or otherwise jeopardise any water body in reaching its WFD objectives and consequently can be excluded from further WFD assessment.

i) I acknowledge cumulative environmental factors can interact with water such as air quality, noise, vibration and traffic etc. during construction and operation. The cumulative impact of these and other permissions and development have been considered, and no significant adverse impacts are identified that cannot be managed through mitigation measures such as those set out in the CEMP and SWMP.

j) Overall the applicant has proposed an appropriately comprehensive range of mitigation measures to address adverse impacts including decrease in water quality, potential for increased run off and flooding during both construction and to a lesser extent operations. Subject to the implementation of these measures and appropriate planning conditions including for the CEMP and SWMP to be agreed with the Planning Authority in advance of works, the potential impacts of the proposed development on water can be adequately mitigated and that the proposed development will not have a significant residual impact in this regard. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on Water.

13.7.7.5. **Air and Climate**

a) Issues raised in submissions to this application regarding Air and Climate generally relate to impacts upon air quality such as dust from construction and subsequent impacts upon health e.g. Particulate Matter (PM_{10}). Some concerns refer vaguely to impacts on humid airstreams pulsating airwaves and weather locally. A submission argues decarbonisation is not a justification for negative impacts while another argues that wind farms contribute to and cause local climate change. The validity/integrity of the carbon calculator is also questioned.

b) Chapter 14 of the EIAR deals with Air and Climate. Legislative and guidance provisions are detailed in section 14.1.2.1 for Air quality and 14.1.2.2 for Climate. Local Policy is discussed in section 14.1.2.3.

c) The methodology employed is set out in section 14.2. The existing air quality was characterised at a local level to establish a baseline. The nature, scale and duration of the construction works was examined and its potential to significantly affect local air quality assessed. Air Quality is assessed regarding dust and traffic. In order to demonstrate impacts on Climate the EIAR submits a 'carbon calculator' (based on a Scottish Governments tool considered best practise in Ireland[105]) to show how the development will significantly out-weigh any potential carbon losses. The EIAR repeats "there is no peat within the development footprint and therefore, no peat will be removed or disturbed as part of the development" and therefore only elements relating to manufacture of the turbines and felling of forestry have been used to estimate the carbon savings.

d) Section 14.2.3 of the EIAR acknowledges that it is not possible to quantify exactly what effect the proposed development will have on Climate Change and Air Quality beyond the site boundary. However, it contends that it has been possible to determine the potential significance of the effects. It highlights as universally accepted that replacing fossil fuel generated electricity with wind generation and other forms of renewable electricity has a

[105] the Scottish Government excel worksheet titled 'Calculating carbon savings from wind farms on Scottish peatlands'

positive rather than adverse effect nationally and globally on air quality and climate.

e) Section 14.3 of the EIAR describes the existing environment as essentially a rural area in the south of County Clare. The proximity of the site to surrounding urban areas is detailed including the largest Limerick c. 3km south of the site and a number of smaller towns and villages in the area. These urban centres are considered the largest nearby potential sources of pollution as well as agricultural practises and forestry practises.

f) The EIAR draws reference to the Environmental Protection Agency's (EPA) Air Quality Index for Health (AQIH) in which the air quality for the region is ranked at '1 – good'. Other information to air quality in Limerick City is then set out with Table 14-1 presenting EPA Annual Monitoring Data for O3, NO2, SO2, PM2.5 and PM 10 recorded for the rural area of the site from 2017-2022. In summary it is stated that existing baselines are well below ambient air quality limit values in the vicinity of the proposed development.

g) Section 14.3.2 discusses 'Dust Sensitivity of the Receiving Environment'. Sensitive receptors to construction work including the turbines, access tracks etc i.e. houses are identified in Figure 14.3 with the worst-case sensitivity of the area to dust soiling considered to be low as per Table 14-2. The worst case sensitivity of the area to human health impacts e.g. PM_{10} is considered to be low as per Table 14-3. Consideration is then had the sensitivity of the area to ecological impacts from dust e.g. SAC, SPA and pNHA etc. with the site considered not located in the immediate vicinity of any such designated site and due to intervening separation distances. The sensitivity of the area to ecological impacts is considered low as per Table 14-4.

h) Section 14.3.3 focuses on 'Global Climate' and repeats a number of key messages from the World Meteorological Organisation's 2023 Report on the State of the Global Climate. It discusses the IPPC: AR6 Synthesis Report – Climate Change 2023, the US National Oceanic and Atmospheric Assoc. (NOAA) Monthly Report November 2023, United in Science Report 2023 before concentrating on the Local Climate. Using Met Eireann data from a recording station at Shannon Airport, the average monthly precipitation,

rainfall, and wind speeds for the 30-year period between 1991 and 2020 are summarised in Table 14-5

i) Section 14.4 of the EIAR is titled 'Likely Significant Effects of the Proposed Development'. It considers effects at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table A&C below-

TABLE A&C

Project Phase	**Potential Effects**
Do Nothing	• See section 14.4.1 of EIAR • an opportunity to offset Greenhouse Gas Emissions (GHG) from fossil fuel based energy sources would be lost. • The potential for Ireland to reach its renewable energy targets set out in the National Climate Action Plan 2023 and to contribute to climate change mitigation would be reduced. • Emissions of CO2, NOx and SO2 from coal, oil and gas fired power plants will continue, resulting in a continued deterioration in air quality. • In a Do Nothing scenario, there would be an adverse, moderate, long term effect should the proposed development not proceed. • See Table 14-6
Construction	• See section 14.4.2 • emissions from vehicle exhausts generating exhaust fumes containing predominantly carbon dioxide (CO2), sulphur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), and particulate matter (PM10). • There will be dust generated from moving and transporting soil and materials in and around the construction site and on public roads. • Potential for fugitive dust emissions- The key works likely to be associated with dust emissions include earthworks and excavation activities, construction of hardstanding areas and movement of vehicles on and off site. Effects rated 'negative, slight, short-term', effect for public road users and local landowners in the vicinity of the route. Earthworks- will primarily involve excavation, haulage, tipping, landscaping and stockpiling etc. Rated- Low risk of temporary dust soiling impacts, Low risk of ecological effects and Low risk of temporary human health effects is reached. See Table 14-7. Construction- Dust emissions Low risk of temporary dust soiling impacts, Low risk of ecological effects and Low risk of temporary human health effects. See Table 14-8. Trackout- the movement of dust and dirt from a construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. Materials with the highest potential for dust emissions will be concrete and aggregates for the construction of hardstanding areas and access tracks. 126 max amount of outward HGV movements daily. Low risk of temporary dust

	soiling impacts, Low risk of ecological effects and Low risk of temporary human health effects. See Table 14-9. See Dust Summary Table 14-11. Overall considered low risk across all construction activities with adverse, not significant, temporary effect on dust sensitive receptors. • Vehicle Emissions- see section 14.4.2.2- Exhaust emissions from construction and delivery vehicles during the construction period of 18 months therefore are unlikely to have an adverse effect on local air quality and will not have a significant effect on local, regional or national Air Quality Standards given the scale of the high levels of dispersion, and the limited duration of works.
Operation	• See section 14.4.3 of the EIAR • Alignment with Climate Policy Targets etc • The project will lead to a reduction in greenhouse gas emissions by using a least cost technology recognised in the CAP. • The development will provide approximately 141,912 MWh per year of renewable electricity to the national grid. • the electricity generated by the wind farm will displace electricity that would otherwise have been produced by burning fossil fuels and will displace the associated greenhouse gas emissions. • There will be some carbon losses due to the manufacturing process of the wind turbines- carbon losses and potential payback calculated as follows- Clear felling of forestry is required to facilitate a number of turbine access tracks, substation and grid connection. The carbon losses over the lifetime of the development are calculated from the area to be felled and the average carbon that would have been sequestered annually. The theoretical worst case carbon losses due to the proposed development are presented in Table 14-12 i.e. 52,223 tonnes of CO_2 equivalent over 35 year life span. A grid mix emission factor of 0.375 t CO2 MWh-1 sourced from the SEAI document 'Energy Related CO2 emissions in Ireland 2005 to 2018' was used as the counterfactual emission factor. This results in a payback time of 1 year (Refer to Volume III, Appendix 14B). Therefore, for the remaining 34 years of operation, the proposed development will be directly responsible for significant carbon savings. Once operational, there will be no direct emissions to the atmosphere from the development. The electricity generated will assist to displace electricity otherwise generated from coal, oil and gas fired power plants, thus reducing emissions from these power plants. A long-term, significant, positive effect see Table 14.3 Occasional operational and maintenance vehicles exhausts etc

Decommissioning	• See section 14.4.4 • involve the dismantling and removal of the wind farm infrastructure off-site and the dust generating activities will be greatly reduced when compared to the construction phase. • Emissions from plant and machinery exhausts will be lower than anticipated for the construction phase. • foundation removal is the least preferred option in terms of effects to the environment. The turbine foundations will therefore be backfilled and covered with soil material. As there is no usable soil or overburden material on the site after construction, this material will be sourced locally and imported to site on heavy good vehicles. The imported soil will be spread and graded over the foundation using a tracked excavator and revegetation enhanced by spreading of an appropriate seed mix to assist in revegetation. Low risk of temporary dust soiling impacts, Low risk of ecological effects and Low risk of temporary human health effects. See Table 14-10. • Dust emissions during the demolition phase will be lower than the construction phase given that there is no requirement for excavations.
Cumulative	• See section 14.4.5 • Consideration of wind turbines existing and permitted within 25km of the site and permitted solar farms in the general area up to 4km set out. • Proximity to quarry and its permission detailed (18/818. The EIAR mitigation measures and conditions imposed by the Council include those managing dust and vehicle wheel washing etc. are detailed. No significant cumulative effect on either air quality or climate once those mitigation measures are implemented. • Occasional operational and maintenance vehicles exhaust emissions. Effect will be imperceptible. No measurable significant adverse cumulative effect with other developments. • Should this wind farm and other renewable electricity generation projects become operational, the combined beneficial cumulative effects will be greater than those described. The tonnes of CO2 emissions avoided and the improvement to air quality, especially in towns and cities, will be greatly enhanced. • The potential cumulative effect with other renewable energy projects will be long term, significant and positive on air quality and climate as there is no emission to the atmosphere from the proposed development during the operational phase, • There will be no cumulative effect on air quality with ongoing forestry operations

Mitigation Measures

j) A number of such measures are set out in section 14.5 and are detailed as including-

- General-
    - Mitigation measures as outlined in the various other chapters of this EIAR and specifically the procedures contained within the CEMP (Volume III, Appendix 2A) will minimise any potential effects, ensuring there is no significant adverse effect.
- Construction-
    - Dust Generation (section 14.5.1.1)
        - Construction phase generated dust will be minimised by a number of detailed best practise measures which are also incorporated into the CEMP
    - Construction Traffic Emissions (section 14.5.1.2)
        - including implantation of Traffic Management Plan (Volume III, Appendix 2D)
- Operation-
    - Potential effects of climate change on the operational development may involve curtailment where the turbines will be restricted from operation due to severe winds
    - No other significant adverse effects during the operational phase, therefore no mitigation measures are required.
- Decommissioning-
    - similar in nature, however smaller in scale in comparison to the construction phase. Similar mitigation measures such as those related to dust and construction vehicles.

Residual Effects

k) See section 14.7 and Table 14.14. The operation of the proposed development will displace air pollutants that would otherwise have been produced by fossil fuel generated electricity. Overall, the operational phase of the development will have a positive, moderate and long-term effect on air quality and climate.

13.7.7.6. **Assessment and Conclusion**

a) I have considered Chapter 14 of the EIAR and all relevant documentation on file. I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant is reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on Air and Climate.

b) I acknowledge the submissions received and concerns raised in this regard. Generally I am satisfied that the mitigation measures proposed adequately deal with concerns over air emissions including dust and impacts to health etc. Concerns expressed regarding humid airstreams, pulsating airwaves and the impact on weather locally are referenced but are not substantiated. I accept that decarbonisation arising from wind energy developments is not a justification for other negative environment impacts. That is why the proposal requires mandatory EIAR and each of the impacts can be considered with mitigation measures proposed where required. In terms of the carbon calculator I acknowledge the concerns raised in relation to the validly/integrity of same. I have not identified errors as suggested. However, I tend to share the view of the developer that the carbon benefits of the proposal during operation significantly outweigh the carbon emissions arising from manufacturing and construction. In this regard the Applicant contends carbon emissions will be offset after one year with the remaining 34 years of intended operation being directly responsible for significant carbon savings.

c) The construction of the proposed development would result in impacts such as those described by the Applicant. Given the relative short-term nature of the construction phase i.e. c. 18 months, and the general set back from sensitive receptors such as domestic dwellings, I do not consider that there would be significant negative impacts on Air and Climate that cannot be reasonably mitigated by the measures proposed as well as the overall development.

d) In the operational phase, significant adverse impacts on Air and Climate are unlikely with only positive impacts envisaged.

e) I am satisfied that the proposed mitigation measures, including a condition requiring the Construction and Environmental Management Plan (CEMP) (Appendix 2A of the EIAR) to be finalised and agreed with the Planning Authority prior to commencement of development and implementation of general best practice construction methods including obligations regarding decommissioning, would be capable of mitigating potential impacts on Air and Climate to an acceptable residual level.

f) I also acknowledge cumulative environmental factors can interact with Air and Climate such as air quality especially during construction. The cumulative impact of these and other permissions and development have been considered, and no significant adverse impacts are identified that cannot be managed through mitigation measures such as those set out in the CEMP.

g) Overall, I am satisfied that the potential for significant adverse impacts on Air and Climate can generally be avoided, managed and mitigated by measures that form part of the proposed scheme, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts.

13.7.8. **Material Assets**

a) Material Assets are considered in section 15 of the EIAR.

b) The EIAR considers ‘Material Assets’ under the following headings-

- Traffic and Transport
- Aviation
- Forest Resources
- Television and Telecommunications
- Water and Wastewater Infrastructure
- Gas
- Waste Infrastructure

I will consider Traffic and Transport and Aviation separately with the remaining five considered together.

13.7.8.1. **Traffic and Transport**

a) Although not specifically listed in Article 3 of the EIA Directive 2014/52/EU, matters covered in this heading are considered pertinent under many of the environmental factors listed in Article 3 and discussed throughout this assessment. Traffic and Transport matters are specifically addressed in Chapter 15 of the EIAR, See also Appendix 2C- Turbine Delivery Route Assessment and Appendix 15C- Traffic & Transport Report.

b) The Commission will note concerns raised by the Council and TII in relation to Traffic and Transport. The Commission should also note the Applicant's response to these matters in their 'Response to Observations' (see sections 6.2 and 6.5 of this report).

c) A large number of public submissions to this application also raise concerns related to Traffic and Transport. These range from impacts associated with increased traffic on local roads to the inadequacies of the roads to cater for the type of vehicles needed to complete the development and road safety concerns. Concerns include matters associated with the Turbine Delivery Route proposed from Foynes in County Limerick to the site and disruption to local road usage.

d) Section 15.3.1 describes the baseline environment for Transport Infrastructure. The application site will benefit from two proposed access points. Both of these are located on the L7062 as shown in Figure 15.2. Both are intended for use during the construction stage with Point A used to accommodate construction traffic bringing in materials from the nearby quarry and Point B used for turbine deliveries, materials sourced from alternative quarries as well as operations and maintenance vehicles. Once the construction phase concludes, Entrance Point A will be reinstated to its original condition. Entrance Point B is intended to be used as the permanent site entrance upon completion of works. This will be scaled back, landscaped, and will see the installation of fencing and gating as the wind farm transitions

into operational status. Figure 15-1 also shows the intended Turbine Delivery Route from Foynes in County Limerick to the application site.

e) The EIAR details traffic generated by the new development will access the site from the R464 to the south of the site, then via the L3056 which leads north approximately 2.5km to the local access road L7062. The junction selected for the traffic assessment is the one between the L3056 and the R464. It is assumed that all development traffic will use the assessed junction, as the road to the north beyond the existing quarry narrows to a single lane local access road which is deemed unsuitable for HGV traffic- See Figure 15-3.

f) Results of the Traffic Counts are presented in Table 15-2 and annual average daily traffic forecasts for 2026 (project construction commencement) set out in Table 15-3.

g) Section 15-4 of the EIAR is titled Assessment of Impacts and Effects. It considers effects at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table T&T1 below-

TABLE T&T1

Project Phase	**Potential Effects**
Do Nothing	• See section 15.4.4 of EIAR • In the 'Do-Nothing' scenario, the proposed development will not be constructed and there will be no alteration to existing land-uses, no generation of waste, traffic generation and there will be no additional effects on the public road network or on existing access arrangements.
Construction	• See section 15.4.1 • Traffic The traffic generated by the new development will access the site from the R464 via the L3056 which leads north approximately 2.5km to the local access road L7062. It is assumed that all development traffic will use the assessed junction, as the road to the north beyond the existing quarry narrows to a single lane local access road which is deemed unsuitable for HGV traffic. It is also assumed that all staff vehicles will approach the site from the south i.e. using the assessed junction.

	It is envisaged that the majority of materials delivered to site will be sourced from the local quarry O'Connell Quarries, situated northeast of the proposed development. However, for the purposes of a robust assessment, traffic volumes associated with the delivery of materials from this quarry have been included as travelling through the assessed junction, which in reality will not be the case. • Turbine Delivery Route Assessment The route from Foynes Port to the N18 has already been tested and proven successful by the successful delivery of Vestas turbines to Cloncreen Wind Farm in County Offaly The bottom tower sections and the nacelles may be too high to go through the Limerick Tunnel and would require delivery via the Shannon Bridge in Limerick City. This route has also been assessed and found to be feasible The junction of the L-3056 / R464 at Parteen requires temporary road widening through third party land to the southeast of the junction. No temporary road widenings along the local road from the R464 will be required along the local road to facilitate delivery of turbine towers or blades, as a blade lifter trailer will be utilised. • Hours and Staff- Construction activities for the proposed development are scheduled to take place during the following hours: 7:00 a.m. to 7:00 p.m. from Monday to Friday, and 8:00 a.m. to 2:00 p.m.. on Saturdays. These working hours are subject to confirmation at the beginning of the project, and any potential changes to the hours will be discussed and agreed with Clare County Council. Works along public roads will be from 9:00 a.m. to 5:00 p.m. Monday to Friday and 9:00 a.m. to 2:00 p.m. on Saturdays. A permit for moving abnormal loads will be sought from An Garda Síochána for the delivery of oversized wind turbine components. Site personnel will arrive at the site prior to 7:00 am and depart after 7:00 pm on weekdays, avoiding peak traffic hours. Assuming an average occupancy rate of 1.00 personnel per vehicle (representing a conservative scenario), the estimated peak staff of 60 will generate 60 no. car and van trips to and from the site each working day. • Delivery Vehicle Volumes 18-month construction phase will require the importation of up to 14,010 loads of construction materials using standard heavy vehicle delivery trucks with capacities of 10m3 and 20 tonnes. 120 loads required for the wind turbine components possibly resulting in temporary delays for other traffic during off peak delivery periods. It is conservatively assumed that staff will arrive and depart at a rate of 1 vehicle per person, will all travel through the junction onto the R464 from the site. 120 no. HGV deliveries will be associated with the delivery of the turbines, nacelles and blades. These will be spread across 3 months i.e. 60 working days and will be isolated from other daily traffic movements. 4 no. HGV movements per day are therefore associated with the delivery of turbines, nacelles and blades. These movements

	will all access the site from the south-west direction off the R464 and exit the junction towards the south-west direction upon return. Approximately 252 (two way) no. HGV movements per day are associated with the delivery of other construction materials during the peak construction period. This level of traffic is expected only for a period of approximately 2 weeks during the construction stage associated with concrete pours for the turbine foundations. These movements are not expected to impact the local road network due to the proximity of the source quarry to the development site, however it is conservatively assumed that these movements will pass through the assessed junction to account for the delivery of the representative quantity of materials from an alternative quarry. The peak hourly traffic will be 18 no. HGV deliveries to and from the site. The estimated rural road link AADT volume/capacity ratio for the R464 is provided in Table 15-8. The R464 is expected to continue to operate within its estimated rural road link AADT capacity, for the predicted 2026 AADT volumes. It is assumed that all development traffic will use the assessed junction, as the road to the north beyond the existing quarry narrows to a single lane local access road which is deemed unsuitable for HGV traffic. the traffic levels expected from the proposed development and their impact on the junction is shown in Table 15-9. Based on the 2022 traffic data and the trip data associated with the site during the peak construction phase, the proposed development will affect the functionality of the junction. However this is considered highly precautionary and based on 100% of the traffic (including materials delivery) using the assessed junction. It is envisaged that materials will be sourced from the local quarry and therefore the associated traffic movements with these will not use the assessed junction, as they will enter the site from the north. This road currently experiences no congestion, the increase in traffic will exceed the TII threshold of 10% where congestion does not exist. Capacity Analysis of T-junction at R464 and the L3056 based on three scenarios. Modelling (PICADY) results concludes the junction will operate satisfactorily and within capacity in the long term for the years modelled. Concludes the development traffic will have minimal impact on the surrounding road network • Road Pavements Heavy vehicle traffic volumes generated by the proposed development construction could result in damage to existing and proposed road pavements on public roads, including at vehicle turning, accelerating and decelerating locations. • Overall Impact Summary likely have a slight, short-term, negative effect, over the 18-month construction period with isolated, localised peaks of brief but moderate effect. will not significantly impact the future operational capacity of the assessed junction. The peak development traffic is not anticipated to coincide with the peak traffic hour on the public network.
Operation	• See section 15.4.2 of the EIAR

	• periodic maintenance on site, relatively low volume of vehicles, including occasional heavy vehicles. The proposed development would not significantly impact the future operational capacity of the assessed junction • Impact rated imperceptible to not significant negative traffic effects.
Decommissioning	• See section 15.4.3 The removal of the wind turbines similar to the delivery of the wind turbines for the construction phase, with similar LGV traffic volumes and impacts. The total volume of HGV traffic will be significantly reduced compared to the construction period. It is likely the substation will remain in place. The turbine will most likely be removed from site using the same transport methodology adopted for delivery to site initially. On decommissioning about 85% of turbine components, including steel, copper wire, electronics and gearing, can be recycled or reused. The fibreglass blades however are difficult to recycle and currently are generally disposed of by landfill. For the Ballycar wind farm this would equate to approximately 840 tonnes of materials requiring disposal. This would be a moderate, negative effect of the development and likely to require provision of new treatment technologies and/or facilities. Site access tracks will be left in-situ, as appropriate. If it were to be confirmed that the tracks were not required in the future for any other useful purpose, they could be removed where required. Underground cables will be removed, and the ducting left in place. Overall, the effect of the decommissioning phase is assessed to be likely slight and negative, and of short-term duration.
Cumulative	• See section 15.4.5 (I note this refers to cumulative impacts on population and human health, which is considered a likely typing error) • Consideration of wind turbines existing and permitted within 25km of the site and permitted solar farms in the general area up to 4km set out. • During the construction phase of the proposed development, there is a brief stretch along the local road L7062 where construction traffic from the proposed Fahy Beg development (permitted under ABP-317227-23) might coincide. There will be no significant cumulative impact as this local road typically experiences very light traffic and has the capacity to accommodate a temporary increase if necessary

Mitigation Measures

h) A number of such measures are set out in section 15.5.1 and are detailed as including-

- Construction

- Pre-construction and post-construction surveys will be carried out to ensure the structural integrity of the proposed haulage route road network.
- Repairs will be carried out on the public roads, as necessary, to ensure that the condition does not deteriorate below a standard that could affect the use of the roads
- The appointed contractor will liaise with An Garda Síochána and Clare County Council during the construction phase.
- The appointed contractor will recognise that other external factors such as severe weather events can affect traffic flow close to the project and will endeavour to minimise the effect of the works on traffic in the planning of and programming of the works at construction stage.
- Road pavements will be regularly monitored and reinstated in accordance with the requirements of Clare County Council.
- A strict protocol will be ensured for HGV drivers to follow the designated haulage route and timing restrictions, as detailed;
- Advance warning will be given to the local residents and other users (i.e. cyclists) for specific times when large volumes of HGV traffic may occur
- All signage relating to the proposed construction traffic routes for construction traffic will be agreed with Clare County Council;
- A well planned and executed delivery programme avoiding peak traffic on typical days will be ensured (i.e. local school start and finish times);
- Adequate parking will be provided on site for both employees and visitors to ensure parking will not occur on the public road;
- A road sweeping vehicle will be provided as required to remove any mud that is deposited on the local road in the vicinity of the site access; and
- Wind turbine loads will be delivered in consultation with Clare County Council and An Garda Síochána, during off-peak traffic periods.

- Operation-
    - Traffic associated with the operation and maintenance of the wind farm will be minimal and is not anticipated to have any impact on the surrounding traffic in the long term. No additional mitigation measures required.
- Decommissioning
    - None specifically provided but generally considered similar to those as set out at construction stage and as per section 15.4.3.

Residual Effects

i) See section 15.6 and Table 15-12. No significant residual effects on expected.

13.7.8.2. **Assessment and Conclusion**

a) I have reviewed and considered the Traffic and Transport sections as set out in Chapter 15 of the EIAR and all relevant documentation on file including associated appendices. I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements, modelling and conclusions presented by the applicant are reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on Traffic and Transport.

b) I acknowledge the concerns received in the submissions received including those of the Council's Chief Executive and TII. I am satisfied that these have been adequately addressed in the information submitted and in Applicant's response to the submissions.

c) I have visited the site and travelled the public roads in the general area. In particular, I have observed the significant amount of HGV traffic already travelling to and from O'Connell's quarry generally travelling past the application site boundary and noted the potential impacts these may have on existing properties in the vicinity of the public road e.g. noise and vibration.

d) I also note the Council's Chief Executive Report's concerns in relation to works at the junction of the R464 and the L-3056 to allow for wider turbines

loads which are considered outside the scope of this application. The Applicant has detailed in Appendix 2C- Turbine Delivery Route Assessment section 4.1 that third party land is temporarily required within the field to the south east of the junction to facilitate tower and other oversize component deliveries. The access road widening and swept path analysis is shown in Figure 52 (Page 41) of the assessment. However the extent of these works are not shown within the red line application boundary (Drawings 22156-MWP-00-00-DR-C-5002 and 5003). The extent of works could however be considered to generally appear within the publicly advertised development description i.e. *'temporary works on sections of the public road network…."*

e) I have examined the landowners consent letters submitted with the application. I have not identified a letter of consent for the lands at the junction of the R464 and the L-3056 i.e. folio numbers CE23456 and CE4631F.

f) In the Applicant's response to the Council's Chief Executive Report, they have detailed-

> *"The applicant confirms that where required, legal interest will allow for temporary work".*

I acknowledge separate licensing and permitting arrangements exist outside of the planning consent process that deal with the above concerns regarding public property.

g) Notwithstanding the above, the Commission will be aware section 37(H) of the Act details that a person shall not be entitled solely by reason of a permission under section 37(G) to carry out any development. Should the Commission decide to grant permission for the proposed development, the developer will still have to be certain they have all the other necessary legal entitlements including licences, permits to public lands and/or relevant consents etc. relative to private lands, in order to execute any grant of permission for the subject development.

h) A number of other concerns are also raised through the public submissions. These relate to traffic congestion, noise, vibration, road safety and condition of local roads. Having considered the expected construction period of c. 18 months, I am satisfied these concerns can be addressed through the

mitigation measures proposed and suitable conditions e.g. traffic management plan (Appendix 2D) operating hours, licences, permits and consent arrangements, financial bonds etc. I have also considered the condition of local roads in the area and see no reason why these cannot facilitate the development subject to the mitigation measures proposed including agreement with to Council and TII as necessary.

i) I note the proximity of Quinnsborough House (Protected Structure RPS 093 See Map I12 CDP Volume 2) and its curtilage including gates, walls and piers etc. to the proposed Turbine Delivery Route (a currently utilised public road) and the junction of the R464 and L3056. I also note Map I12 also shows Trees for Preservation in proximity to this junction. The application does not propose any works to the curtilage of the Protected Structure including trees. The Applicant has indicated legal interest in terms of the works required to the junction which are to the south side away from the protected structure, its curtilage and the trees. Notwithstanding the extent of temporary works in private lands adjoining an existing public road with footpath and the necessary consents required, I do not consider this to be a significant issue for the development as proposed. Works affecting the character of the Protected Structure and its curtilage would require a grant of permission or in the absence of same would be unauthorised. I am not convinced these concerns come within the scope of this application.

j) Overall, it is clear that the greatest potential for negative impacts on traffic and transport arises during the construction phase, since there will be minimal traffic generated during the operational phase. Similar impacts could be likely if the development is decommissioned and large elements removed from the site. These impacts have generally been identified in the EIAR.

k) I am satisfied the impacts are generally construction management related issues that can be effectively mitigated through the Construction Traffic Management Plan (Appendix 2D), suitable planning conditions and the mitigation measure as proposed in the EIAR e.g.-

- A finalised Construction Traffic Management Plan shall be submitted for the agreement of the planning authority prior to commencement of development in any event.
- The final route for all HGV and oversized load traffic associated with the proposed development including any necessary road warning signage and/or road opening/closing licences shall be agreed with the Planning Authority and TII.
- The final location and extent of temporary works (including consents where necessary) shall be identified to the satisfaction of the planning authority.
- Protocols and monitoring measures shall be put in place to ensure that HGV and over size load traffic travelling to and from the site is suitably controlled so as to minimise the likelihood of HGVs meeting head-on on public roads or conflict with other vehicles on the final turbine delivery route.
- A pre-construction and post-construction survey of the public roads utilised during the construction phase shall be undertaken. The extent, specification and timing of the survey shall be agreed with the planning authority. Any damage to the road, drainage, boundaries or associated features of the public road shall be rectified at the developer's expense to the satisfaction of the planning authority.
- Communications and complaints protocols to ensure that local residents are aware of the construction programme, haul routes, traffic control measures and to provide a dedicated liaison person and contact details for complaints or queries.
- Appointment of a dedicated Traffic Management Co-ordinator whose role shall include implementation and monitoring of the Traffic Management Plan, acting as a point of contact for the planning authority, other relevant bodies and members of the public in relation to traffic and transportation matters.

- Provision of a wheel wash facility within the site and measures to prevent soiling of public roads, including the covering of loads and the use of road sweepers, as required.
- A condition specifying development operating hours with appropriate derogation for large component deliveries to the site to be agreed with the Planning Authority.
- A condition requiring the payment of a bond to ensure the satisfactory reinstatement of public roads following completion of the construction phase to be agreed with the Planning Authority.
- A decommissioning plan to be agreed with the planning authority which may include for turbine foundations to remain in situ.

l) I do not consider there to be significant operational impacts.

m) The potential for significant adverse impacts on traffic and transport can be avoided, managed and/or mitigated by measures that form part of the proposed development, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on traffic and transportation.

13.7.8.3. **Aviation**

a) The Commission is referred to section 12.4 of this report, where Aviation matters are examined and assessed in detail. I also refer the Commission to the External Consultant report received from Sagentia Aviation (SA). For completeness Aviation is considered within this EIA section but is primarily dealt with in section 12.4.

b) The Applicant has considered Aviation in Chapter 15- Material Assets of the EIAR. Section 15.3.4 and figure 15-5 identifies a number of aerodromes and airfields in the surrounding region including Coonagh Airfield. The Commission are also referred to the contents of Appendix 15A of the EIAR and the submitted Aviation Impact Assessment & Mitigation Report (AIAMR)

prepared by AI Bridges with a number of technical reports attached as appendices within.

c) Section 15.4 considers Assessment of Impacts and Effects during Construction and Operation stages of the proposal. Specific Impacts are discussed in section 15.4.1.4

d) The Commission will note significant concerns raised by Air Nav Ireland (ANI) and Shannon Airport Authority (SAA/SAG) in relation to Aviation regarding the original application submission as well as the Further information submission. These concerns are shared by a number of public submissions with some concerns raised regarding impacts to Coonagh Airport.

e) The Commission should also note the Applicant's response to these matters in their 'Response to Observations' and 'Response to Further Information Observations' (see sections 8.0 and 9.4 of this report).

f) Section 15.3.4 and figure 15-5 of the EIAR identifies a number of aerodromes and airfields in the surrounding region. The application site is located c. 17 km east of Shannon Airport with the Woodcock Hill radar located c. 15km from the airport and c. 2 km west of the site. Coonagh Airfield is c. 5.3 km south west of the site.

g) Section 15.4 of the EIAR is titled Assessment of Impacts and Effects. Section 15.4.1.4 deals with Aviation. The EIAR considers effects at construction and operation stages. It does not specifically consider effects at, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects.

h) I have endeavoured to summarise the detailed effects in Table AV1 below-

TABLE AV1

Project Phase	**Potential Effects**
Do Nothing	• See section 15.4.4 of EIAR • In the 'Do-Nothing' scenario, the proposed development will not be constructed and there will be no alteration to existing land-uses • In the absence of mitigation, the construction phase of the proposed development is detailed to possibly have a negative, moderate to significant and short-term effect on aviation.

Construction	• The EIAR details the only potential effect on aviation during the construction stage is the erection of wind turbines on site. Due to subsurface nature of works to the grid connection there will be no effects on Aviation. • subsurface nature of works to the grid connection there will be no effects
Operation	• See section 15.4.2.4 of the EIAR • potential for surveillance radar impacts on the Woodcock Hill Monopulse Secondary Surveillance Radar (MSSR) and the Shannon Airport (Primary Surveillance Radar) PSR from turbines at the proposed development • in the absence of mitigation the proposal would likely be negative, moderate to significant and long term for the duration of the operational phase
Decommissioning	• See section 15.4.3 The removal of the wind turbines similar to the delivery of the wind turbines for the construction phase, with similar LGV traffic volumes and impacts. Overall, the effect of the decommissioning phase is assessed to be likely slight and negative, and of short-term duration.
Cumulative	• See section 15.4.5 (I note this refers to cumulative impacts on population and human health, which is considered a likely typing error) • Consideration of wind turbines existing and permitted within 25km of the site and permitted solar farms in the general area up to 4km set out. • Due to the absence of other tall structures in the wider vicinity of the proposed development and given that the nearest permitted but not yet constructed wind farm of scale is approximately 12km from the subject site, it is assessed that there is no likelihood for the proposed development to have any significant effects on aviation, in combination with other existing, permitted or proposed developments.

Mitigation Measures

i) Mitigation measures are set out in section 15.5 and are detailed as including-

- Construction
    - The Applicant will agree an acceptable aviation obstacle warning lighting scheme with the Department of Defence and IAA/AirNav Ireland ahead of turbine construction and will supply the coordinates and elevations for built turbines, as is standard for wind farm developments..
- Operation (see section 15.5.2)-

- To prevent any interference to surveillance radar to Woodcock Hill MSSR and the Shannon Airport PSR mitigation measures outlined in the Aviation Impact Assessment & Mitigation report will be applied, refer to Appendix 15A.
- Correspondence from AirNav Ireland (Appendix 1B) outlines their support in principle in relation to the proposed development.[106]

- Decommissioning
  - None specifically provided but generally considered similar to include that as set out at construction stage.

Residual Effects

j) See section 15.6 and Table 15-12. No significant residual effects are expected post mitigation.

13.7.8.4. **Assessment and Conclusion**

a) I have reviewed and considered the relevant Aviation sections as set out in Chapter 15 of the EIAR and all relevant documentation on file including associated Appendix 15A and the appendices within. I have also considered the detailed information supplied by the Applicant at Further Information stage and in response to FI submissions as well as that submitted at the Limited Agenda Oral Hearing (LAOH).

b) I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant are reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on Aviation related issues.

c) Regarding public submissions raising concerns over impacts to Coonagh Airfield the Applicant has indicated the published aeronautical information for Coonagh Airfield states that all flights in/out should be to the south of the River Shannon which is the opposite direction of the proposed wind farm and

[106] The Board should note this correspondence is no longer supported as per the subsequent submissions of ANI and SAA.

therefore there would be no impact from the proposal. I have reviewed this on AirNav Irelands website[107] dated 22/02/2024 where it is stated-

> *"All circuits should be flown to the south of the Shannon River at 800Ft avoiding built up areas. Pilots are reminded of the proximity of the P9 and the Shannon Control Zone"*

At this point the Commission are reminded that ANI's primary function which is to provide air traffic management and related services within Irish airspace. ANI have made two submissions to this application and have not raised any concerns regarding the impact of the proposal on Coonagh Airfield.

d) Construction impacts can be addressed through the mitigation measures proposed and suitable planning conditions.

e) However, based on the submissions to the LAOH, it is clear the most significant impacts relate to Aviation operational matters and existing radar infrastructure. I have considered the contents of information on file and submitted at FI, submissions from ANI and SAA/SAG as well as the independent External Report received from Sagentia Aviation. The Commission are referred to section 12.4 of this Inspectors Report where this matter is examined in further detail, where I carry out a more comprehensive assessment and make a subsequent recommendation.

13.7.8.5. **Forest Resources, Television and Telecommunications, Water and Wastewater Infrastructure, Gas, Waste Infrastructure**

a) The Applicant has considered the above as 'Material Assets' for the purpose of the EIAR and assessed these specifically in Chapter 15 of the EIAR.

b) Some related concerns have been raised generally in the submissions received regarding risks of fire near forested areas from lightning strikes, loss

[107] https://www.airnav.ie/air-traffic-management/aeronautical-information-management/aip-package https://www.airnav.ie/getattachment/644a6bed-6d13-4876-955f-400785981f0c/EI_AD_2_EICN_EN.pdf?lang=en-IE

of forestry, rights of way to forestry, electromagnetic interference e.g. to phones, tv, internet etc, impacts on existing utility operations etc.

c) Section 15.3 details the baseline environment-

- In terms of Forest Resources section 15.3.2 of the EIAR details existing land cover at the site as a mixture of pastures and coniferous forests. The majority of the site consists of pastures while the more elevated areas of the site are composed of coniferous forest, which is owned and managed commercially. The surrounding land includes some pastures and lands principally occupied by agriculture. It also details there are no defined recreational or tourism amenities within or associated with the proposed development site.
- In terms of Grid Capacity and Electrical Infrastructure section 15.3.3 details Ardnacrusha 110kV Substation is situated within the property of Ardnacrusha Power Station located at Parteen close to the Limerick-Clare border. The 110kV substation has recently been upgraded to a new 110kV GIS busbar.
- Television and Telecommunications are discussed in section 15.3.5. A Telecommunications Impact Study is provided in Appendix 15B, which also identified key television and telecommunications infrastructure in the vicinity of the proposed development.

  Four Telecom Operators with networks (Enet, Eir, Three and Virgin Media) in the vicinity of the proposed development were identified and shown in Figure 15-6 relative to the proposed turbines. The extent of these are further demonstrated in figures 15-7, 15-8, 15-9 and 15-10.

  The EIAR details Eir Fibre Broadband is available within the wider as shown in Figure 15-11.

  In terms of Television the EIAR details TV reception in the area is principally received from the following transmitters-

  - to the northwest via the transmitter at Maghera, County Clare,
  - from the south via the 2RN Transmitter at Mullaghanish, County Cork.

- from the southeast via the transmitter at Woodcock Hill, County Clare or the transmitter at Mullaghanish, County Cork
- from the east via the transmitter at Ballina, County Clare.

See Figure 15-12

- In terms of Gas the EIAR details there are no gas transmission lines within the wind farm, substation or grid connection route (GCR). See Figure 15-13.
- The EIAR details there are no existing watermains or wastewater infrastructure within the footprint of the proposed wind farm or any known within the public road that the grid connection crosses.
- There is currently no waste or construction phase waste infrastructure within the EIAR study area. There is an approved facility located in Tuamgraney c. 18km north east of the site.

d) Section 15.4 is titled Assessment of Impacts and Effects. It considered effects at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table MA below-

TABLE MA

Project Phase	**Potential Effects**
Do Nothing	• See section 15.4.4 • there will be no alteration to existing land-uses, no generation of waste, traffic generation and there will be no additional effects on the public road network or on existing access arrangements. • Conventional tree felling will continue to take place at the site independent of the wind farm proposal.
Construction	• Forestry- See section 15.4.1.2 felling of appropriately 15.97 ha of forest will be required. The amount of forest that will be lost as a result of the development is minimal and will be insignificant relative to the size of the forest resource nationally, regionally and locally. Replanting activities will be undertaken Forestry Impacts rated neutral, imperceptible and long term effect on forest resources. • Grid Capacity and Electrical Infrastructure see section 15.4.1.3 During the process of connecting the proposed development to the national grid, some minor, brief disruption to electrical supply, at a local level, may occur.

	Impact rated negative, not significant and brief effect on the grid capacity and electrical infrastructure. • Television and Telecommunications section 15.4.1.5 potential for electromagnetic interference occurs only during the operational phase of the development There are no telecom ducts within the proposed wind farm. Impacts rated negative, not significant and short-term effect. • Gas section 15.4.1.6- There will be no effects on gas infrastructure during construction. • Water and Wastewater Infrastructure See section 15.4.1.7- No public water or wastewater utility infrastructure is required Water needs limited to truck washing, wheel wash, dust suppression and sanitary facilities and sourced from on-site rainwater collection systems and settlement ponds. It is estimated that up to approximately 3,000 litres per day of potable water will be required during peak construction for construction employees. It is proposed that this water requirement will be imported in bulk water tanks. During the construction time period, sanitary wastewater, estimated to be 3,000 litres per day, will be collected in portable toilets. Disposal of sanitary wastes will be managed through a contract with a licenced waste contractor. Imp[acts rated neutral, imperceptible effect on existing water/wastewater infrastructure. • Waste Management- Excavated spoil will be resourced efficiently on site and will be reused for the backfilling, landscaping, and restoration around wind farm infrastructure such as turbines and hardstands. Dedicated spoil storage areas and a borrow pit are proposed within the site. These will be used for generating material for the construction of access tracks and hardstands and for spoil storage. In the event that removal of minimal soil quantities are required, these will be treated as Article 27 by-product (a non-waste) or treated to comply with Article 28 if practicable and recycled if possible. Spoil will also be stored around the turbines to a maximum height of one metre (1m). The felled areas around the turbines have been identified as a potential additional area that will be used to store material; however, priority will be given to restoration of the borrow pit and the dedicated spoil storage areas. Berms will be formed along sections of access tracks and hardstands that will act as a physical edge protection measure to prevent vehicles falling off where a drop off greater than 1m exists from the track / hardstand edge. Spoil generated onsite will be used to create these berms. Approximately 165,000m3 of stone won from the borrow pit will be reused on site. Construction phase waste will be stored in the construction compound and collected at the end of the construction phase and taken off site to

	be reused, recycled and disposed of in accordance with best practice procedures at an approved facility. Plastic waste will be taken for recycling by an approved contractor and disposed or recycled at an approved facility. Hazardous materials, such as fuels and lubricant oils, used during construction that require disposal will be disposed of in accordance with all applicable laws and regulations. Domestic type waste generated by contractors will be collected on site, stored in an enclosed skip at the construction compound and disposed of at a licensed landfill facility. Any litter issues on site could potentially lead to the presence of vermin on site or at adjacent sites which would likely cause a negative, short-term, slight effect on the local environment.
Operation	• See section 15.4.2 • Forest Resources 15.4.2.2- The proposal will not impede or deter either existing or future use of the local forest resources for recreational activities. Improvements to on-site forest tracks would provide opportunities for further development and use of some of the forest areas for recreation. No significant negative effects on the local forest resources for any future recreational use. Any felling to facilitate the wind farm during the operational phase will continue to operate within the safeguards set out in the relevant guidelines. • Grid Capacity and Electrical Infrastructure 15.4.2.3 Complement the national grid development strategy and help in contributing to the regions expected overall wind generation. assist in meeting increases in electricity demand nationally by exporting electricity into the electricity market contribute to ensuring that adequate electricity supplies are available in a manner fully compatible with Government energy and environmental policies. The wind farm proposal does not pose a risk to the local electricity infrastructure. The proposed development will likely have a positive, slight and long term effect on the existing grid capacity and electrical infrastructure. • Television and Telecommunications 15.4.2.5 A signed Protocol between the developer and RTE will be in place, in which the developer will be responsible to resolve any issue of interference with television reception as a result of the proposed development. Only three of the Telecom Operator Networks could be impacted by the proposed wind farm development the proposed development could potentially have a negative, slight and long term effect on telecommunications in the local area • Gas- 15.4.2.6 no effects to existing gas infrastructure • Water and Waste Infrastructure 15.4.2.7

	Approx 60 litres of potable water likely required per day. This water will be supplied as bottled water. The volumes of water required are minimal and would have a negligible impact on the water supply utilities. Wastewater from welfare facilities on site, estimated to be approximately 60 litres per day, will drain to integrated wastewater holding tanks associated with the toilet units. The stored effluent will then be collected on a regular basis from site by a permitted waste contractor and removed to a licenced waste facility for treatment and disposal. The volumes of wastewater requiring disposal are minimal and would have an imperceptible effect on the capacities of external treatment facilities. The operational phase of the proposed development will likely have a neutral, imperceptible and long-term effect on the existing water and waste infrastructure. • Waste Management 15.4.2.8 minimal amounts of solid waste will be generated, which will be collected onsite and transported to a licensed disposal or recycling facility by a waste hauling contractor. Hazardous materials, such as gear and hydraulic oils used in the operation of the wind turbines and mineral oils used in transformers, will be disposed of in accordance with all applicable laws and regulations. The types of wastes to be generated would be similar to established construction waste streams and would not require unusual or new treatment options. Waste volumes are not likely to be significant as to require new permitted treatment, storage and disposal facilities. If waste material is not stored correctly and managed, this could lead to litter issues on site. Any litter issues on site during the operational phase could potentially lead to the presence of vermin on site or at adjacent sites which would likely cause a negative, long-term, slight effect on the local environment.
Decommissioning	• See section 15.4.3 • Generally similar to construction • Waste Management- If decommission the wind turbines will be disassembled in reverse order to how they were erected. about 85% of turbine components, including steel, copper wire, electronics and gearing, can be recycled or reused. The fibreglass blades however are difficult to recycle and currently are generally disposed of by landfill, this would equate to approximately 840 tonnes of materials requiring disposal. This would be a moderate, negative effect of the development and likely to require provision of new treatment technologies and/or facilities. Underground cables will be removed, ducting remains Leaving the turbine foundations in-situ is considered a more environmentally prudent option, as to remove that volume of reinforced concrete from the ground would result in waste. • Grid Capacity and Electrical Infrastructure

	It is likely the substation will remain in place and will be taken in charge by the system operator, after the wind farm is connected to the national electricity grid. • Forest Resources Site access tracks will be left in-situ, as appropriate. If it were to be confirmed that the tracks were not required in the future for any other useful purpose, they could be removed where required. Overall, the effect of the decommissioning phase is assessed to be likely slight and negative, and of short-term duration.
Cumulative	• See section 15.4.5 (I note this refers to cumulative impacts on population and human health, which is considered a likely typing error) • Consideration of wind turbines existing and permitted within 25km of the site and permitted solar farms in the general area up to 4km set out. • It is proposed forestry operations within the planning boundary will resume post commissioning of the wind farm. • The total amount of felling proposed for the project is 15.97 hectares. The Applicant commits to not commencing the project until both felling and afforestation licences are in place and this ensures the afforested lands are identified, assessed and licensed appropriately by the relevant consenting authority. • The proposed development is not likely to result in any cumulative effects on resources or utility infrastructure, either individually or in combination with other existing permitted or proposed developments. • The proposal would positively cumulate with other wind farm developments in the region (existing and permitted) to advance in delivering local, regional, and national Green Energy targets.

Mitigation Measures

e) A number of such measures are set out in section 15.5.1 and are detailed as including-

- Construction
    - Forest Resources-
        - the potential effect of forestry felling on the environment will be controlled as it currently is, by strict environmental controls, practices and guidelines as described by the relevant Forest Service Guidelines.
        - Tree felling required will be kept to a minimum and under the terms of felling licences.

        - Obligations to replant clear-fell areas will be fulfilled (see also section 2.3.14 of EIAR)
        - The proposed project will not result in any significant adverse effects on forest resources requiring additional mitigation.
    - Grid Capacity and Electrical Infrastructure
        - All works in the vicinity of ESB Networks infrastructure will be carried out in ongoing consultation with ESB networks and will be in compliance with any requirements or guidelines they may have including procedures to ensure safe working practices are implemented when working near live overhead/underground electrical lines.
    - Television and Telecommunications
        - In the event of interference to television and telecommunication services the Applicant is committed to work with telecommunication providers to remedy any issues of interference to affected communication links.
        - Contractors will be obliged to adhere to good practice measures outlined in the CEMP to prevent any impacts to television and telecommunication services.
    - Gas
        - No mitigation measures required.
    - Water and Wastewater
        - All wastewaters will be taken off-site by an authorised waste contractor and brought to an authorised waste facility.
    - Waste Management
        - Resource efficiency will be the responsibility of the contractor and will form part of the construction resource efficiency methods outlined in Section 15.4.1.8
        - In the event that there is a requirement for soil to be exported from site, this will be treated as an Article 27 by-product (a

non-waste) where practicable or treated to comply with Article 28, and recycled if possible.

- A Resource Waste Management Plan (RWMP) will be implemented by the appointed contractor.
- Where waste is created, it will be managed in accordance with the waste hierarchy in Council Directive 2008/98/EC on waste and section 21A of the Waste Management Act 1996,
- All waste for offsite treatment/disposal will be stored temporarily in appropriate dedicated storage areas.
- The areas in which wastes are stored on site will be segregated to prevent material and contaminated surface water runoff entering local surface water drains.
- All chemical, hydrocarbon or other controlled wastes will be stored in designated areas in appropriate approved containers within bunds or on spill pallets, as required.
- All waste to be removed from site will be undertaken by authorised waste contractors and transported to an authorised facility in accordance with best practice and the site waste management plan as per the CEMP.

- Operation
  - Forest Resources-
    - Tree felling kept to a minimum and under the terms of felling licences
    - will not impede existing or deter existing or future use of the local forest resources, therefore no additional mitigation measures are required
  - Television and Telecommunications-
    - Alternative relay links will be put in place to prevent telecommunication impacts from the wind farm see Table 15-11.

        - A signed Protocol between the developer and RTE will be put in place, in which the developer will be responsible to resolve any issue of interference with television reception as a result of the proposed development.
    - Gas-
        - No mitigation measures required.
    - Water and Wastewater
        - All wastewater during the operational phase will be taken off-site by an authorised waste contractor and brought to an authorised waste facility.
    - Waste Management-
        - will produce minimal volumes of waste and much less than the construction phase however, where relevant, mitigation measures outlined in Section 15.5.1.8 and the CEMP for the construction phase will also be applied during the operational phase to prevent any adverse impacts from improper waste management.

Residual Impacts

f) See section 15.6 and Table 15-12. No significant residual effects on expected.

13.7.8.6. **Assessment and Conclusion**

a) I have reviewed and considered the relevant sections as set out in Chapter 15 of the EIAR and all relevant documentation on file including associated appendices. I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant are reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on the Material Assets identified.

b) I am satisfied the impacts are generally construction management related issues that can be effectively mitigated through the Construction Traffic

Management Plan (Appendix 2D), suitable planning conditions and the mitigation measure as proposed in the EIAR.

c) I do not consider there to be significant operational impacts.

d) The potential for significant adverse impacts on identified Material Assets can be avoided, managed and/or mitigated by measures that form part of the proposed development, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on these assets.

13.7.9. **Shadow Flicker**

a) A large number of submissions to this application raise residential amenity concerns including shadow flicker. The Applicant has presented a dedicated chapter to 'Shadow Flicker' in the EIAR i.e. Chapter 11.

b) Shadow Flicker from wind farms is a significant issue that can have significant and adverse impacts upon population and human health during the operation stage of a wind farm. The EIAR describes Shadow flicker as the alternating light intensity produced by a wind turbine as the rotating blade casts shadows on the ground and stationary objects, such as the window of a residence. It also contends Shadow flicker can only occur if there is an unobstructed direct line of sight from within a dwelling to a turbine and that no flicker will occur when the turbines are stationary or when the sun is obscured by clouds or fog, or if blinds or curtains are drawn at the receptor location.

c) Section 11.2 of the EIAR discusses the Study Area and Methodology including identification of houses within the defined study area. Section 11.2.4 details that modelling was based on a worst case scenario assumption when reporting shadow flicker results for the existing environment. Other assumptions include the sun will always shine, the wind will continuously be blowing thereby moving turbines, there will be no existing screening such as trees etc, windows will face the turbines and curtain or blinds are open.

d) Section 11.2.6 refers to the WEDG 2006 recommendations that shadow flicker at offices and dwellings within 500m of a turbine should not exceed 30

hours per year or 30 minutes per day, and at distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low. It then details the Clare WES requires developments to have regard to the thresholds and limits contained within the 2006 Guidelines in terms of shadow flicker.

e) Figures 11-2 to 11-7 identifies all houses within 10 rotor diameter of the turbines.

g) Section 11.4 is titled Assessment of Impacts and Effects. It considers effects at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table SF below-

TABLE SF

Project Phase	**Potential Effects**
Do Nothing	• See section 11.4.3- should the development not proceed shadow flicker will not occur
Construction	• None
Operation	• See section 11.4.2 • Results of the shadow flicker model (Worst Case Scenario and Realistic Scenario) for all houses within 1.36 km (10 rotor diameters) are presented in Table 11-2. • Dwellings within the study area where shadow flicker will not occur are excluded from the table. • Current shadow flicker thresholds may potentially be exceeded at some locations. The maximum minutes per day may be reached or exceeded at 79 locations. • When sunshine hours are accounted for shadow flicker reduces to well below the 30 hours per year threshold value at most locations except for H8, H85, H86, H87, H89, H91, H94, H95, H96,H97,H98 and H99. • The EIAR considers the effect of shadow flicker without mitigation would have a long-term significant effect for these locations.
Decommissioning	• Not considered in EIAR but no impacts
Cumulative	• See section 11.4.4 • Considers a number of existing and permitted wind farms related developments. Due to considerable intervening distance no cumulative shadow flicker effects considered possible.

Mitigation Measures

h) Such measures are detailed in section 11.1.1.1 and further set out in section 11.5-

- Implementation of Shadow Flicker Control Measures (SFCM) on relevant turbines i.e. the identified dates and times of day of potential flicker occurrence at dwellings within the shadow flicker study area to be inserted into the SFCM computer program. This software considers factors such as weather conditions, which will then automatically stop each wind turbine at times when shadow flicker would otherwise occur within any of the dwellings. Once the conditions for shadow flicker to occur no longer apply (e.g. when the sun has passed the relevant position in the sky or it has been clouded over), the wind turbine is automatically restarted.
- The model has identified that there is the potential for shadow flicker to occur and has identified the times when this could happen. Turbines will be programmed to shut down during periods when shadow flicker is predicted to, and where conditions are present for it to occur.
- The developer commits to installing mitigation measures that will eliminate shadow flicker at a receptor and the operation and performance of the shadow flicker control measures will be monitored on an ongoing basis by the operator

Residual Impacts

a) See section 11.6 and Table 11-3. After mitigation there will be no residual likely significant effects.

13.7.9.1. **Assessment and Conclusion**

a) I have reviewed and considered the relevant sections as set out in Chapter 11 of the EIAR and all relevant documentation on file including submissions received. I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant are reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects

arising from shadow flicker from the proposed development most notably on Population and Human Health.

b) I am satisfied the impacts are wholly operation related issues that can be effectively mitigated through the Shadow Flicker Control Measures detailed in section 11.1.1.1 of the EIAR, suitable planning conditions and the mitigation measure as proposed in the EIAR.

c) The proposal is consistent with the WEDG 2006 recommendations[108] regarding Shadow Flicker and I note the guidelines state-

> *"At distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low. Where shadow flicker could be a problem, developers should provide calculations to quantify the effect and where appropriate take measures to prevent or ameliorate the potential effect, such as by turning off a particular turbine at certain times."*

d) It is also important to highlight the 2019 Draft Guidelines states-

> *"Modern wind turbines have the facility to measure sunlight levels and to reduce or stop turbine rotation if the conditions that would lead to shadow flicker at any neighbouring property occur. With careful site design and appropriate mitigation, and most critically the use of appropriate equipment and computer software, no existing dwelling or other affected property (e.g. existing work places or schools) should experience shadow flicker"*

e) It is noted that section 11.7 'Conclusion' of the EIAR states *"shadow flicker control modules will be installed on relevant turbines".* In this regard it is considered appropriate should permission be granted to include a condition requiring shadow flicker control modules to be installed on all turbines to safeguard and protect in the unlikely event of any unidentified receptor.

f) I am satisfied the potential for significant adverse impacts on identified receptors can therefore be avoided, managed and/or mitigated by measures that form part of the proposed development, the proposed mitigation

[108] Section 5.12 of the guidelines

measures and through suitable conditions. I am therefore satisfied that the proposed development would not result in unacceptable direct, indirect or cumulative shadow flicker impacts. I have also considered these in the context of population and human health.

13.7.10. **Noise and Vibration**

a) A large number of public submissions to this application raise noise and related concerns. Reference and comparison are made to the High Court civil judgment in Wexford regarding noise and related nuisance from an existing wind farm[109]. Criticisms are made of the noise modelling techniques and methodologies employed by the Applicant.

b) Noise from wind farms is a common source of objection including significant and adverse impacts upon population and human health during the operation stage of a wind farm.

c) The EIAR details Noise and Vibration assessments were undertaken for the construction, operational and decommissioning phases of the proposed development and the grid connection route. Construction and decommissioning stage impacts are considered generally similar given the nature of both.

d) Although phased and temporary the main sources of noise and vibration during the construction stage are identified as-

- excavation and earth moving,
- laying of access tracks and hard standings,
- transportation of materials and erection of the wind turbines.
- Blasting, instead of rock breaking may be required.

e) The main sources of noise and vibration from a wind turbine during operation stages are identified as

- aerodynamic noise (rotating blades in the air) and

[109] [2024] IEHC136 Webster & Anor -v- Meenacloghspar [Wind] Limited

- mechanical noise (gearbox (if not a direct drive system) and generator)
- no significant vibrations from the proposed development

f) Section 10.1.1.1 details that the submitted noise assessment is based on guidance in relation to acceptable levels of noise from wind farms as contained in the document “Wind Energy Development Guidelines” published by the Department of the Environment, Heritage and Local Government in 2006 i.e. WEDG 2006. Section 10.2 sets out the Methodology employed by the Applicant and includes typical guidance such as-

- EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports, 2022
- ETSU-R-97 – The Assessment and Rating of Wind Farm Noise (1997)
- A Good Practice Guide (GPG) to the application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (Institute of Acoustics 2013) (IOA GPG).

Section 10.2.5 details the following were considered for vibration-

- NRA 2014 Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes

g) Section 10.3 discusses the ‘Existing Environment’ including existing noise sources at noise monitoring locations and the prevailing background noise levels. It references the sites location in a “Strategic Area” for wind farm development as per the CDP. The main noise sources in the area are traffic on the local and regional road network, and machinery involved in working agricultural land and forestry. Natural noise sources include wind borne noise in vegetation and water in streams and rivers.

h) Section 10.3.1 deals with Noise Sensitive Locations with five noise monitoring locations (NML) selected to characterise the existing noise environment and derive the noise limit criteria for potentially effected locations. These are identified in Table 10-2 and include rural locations and rural houses. Figure 10-2 presents the NML’s, a number of Noise Sensitive Receptors (NSR) including a number of houses and identifies the proximity of proposed turbines to NSL’s and NSR’s. These are further presented in Figures 10-3 – 10.7 with

each dwelling numbered (c. 270) and a 10 RD (rotor diameter) buffer identified.

i) Section 10.3.1 states *"Noise monitoring was carried out between the 21st October 2021 and 21st November 2021."* Sections 10.3.3 discusses the noise monitoring equipment used with section 10.3.3 details the equipment used meets the requirements of the IOA GPG. The sound level meter used is detailed as Bruel & Kjaer with copies of the calibration certificates with serial numbers for the sound level meters and sound level calibrator are included in Appendix 10A. Provisions for meteorological data i.e. wind speed, periods of rainfall and wind shear are detailed in sections 10.3.4 and 10.3.5.

j) Section 10.3.2 details it is not practical, feasible or recommended by the guidelines to measure background noise at every single location within the study area. Rather, representative locations are selected to characterise the existing noise environment of the wider area. A study area of 1.36 km or 10 times the rotor diameter (RD) was adopted.

k) Prevailing background noise levels results for amenity and nights hours are presented in Tables 10-3 and 10-4 for each NSL.

i) Section 10.4 is titled Likely Significant Effects. It considers effects of Noise and Vibration during Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table N&V below-

TABLE N&V

Project Phase	**Potential Effects**
Do Nothing	• See section 10.3.7.2- it is likely that noise and vibration levels will remain unchanged
Construction	• See section 10.4.1 • Entails the building of the wind farm infrastructure including access tracks, hard standings, turbine bases, drainage system, substation, control buildings, and borrow pit, and also the grid connection route works areas • construction of the wind farm access tracks will include the noisiest plant and machinery • The most intense areas of activity will be during the excavation and construction of the turbine bases and hardstands. This will require a

	concentration of stationary equipment. A piled foundation may be required. • Typical plant and machinery outlined in Table 10-5 • Borrow Pit- Rock from the borrow pit may be broken out using a rock breaker or blasting. • For breaking nearest NSL identified as houses H74, H8, H28 and H83 with predicted noise levels of 33 - 38dB(A). Impact detailed as likely adverse moderate localised temporary direct effect • For blasting- once off event approx. once or twice a month, not possible to calculate emissions and will be coordinated with the neighbouring quarry to ensure that blasts do not coincide. Impact detailed as likely adverse moderate localised temporary direct effect • Substation Construction- Typical Plant detailed in Table 10-7, located approx. 418m from nearest NSR. Impact likely adverse moderate localised temporary direct effect • Grid Connection Cable Trenching and Jointing Bays. Very short time frame, temporary and minor nature of the works and machinery, in combination with the low number of NSR impacted at any one time, the potential effect of noise is not significant. Significant vibrations not expected, impact likely adverse moderate localised temporary direct effect • Forestry Felling- removing trees to allow construction of elements of the proposed development required for T5, T6 and the location of the substation and grid route. Some distance from NSR no significant effects. Nearest NSL c. 300m. No significant vibrations. Impacts likely adverse not significant localised temporary direct effect • Construction Traffic- most intense period during the pouring of the concrete for the turbine bases. See section 13.7.8.1 of this assessment regarding Transport. Impacts likely adverse not significant localised temporary direct effect. • Vibrations- Wind Farm Works nearest NSL 512m- likely adverse imperceptible localised temporary direct effect,, substation- nearest NSL 418m likely adverse imperceptible localised temporary direct effect, Borrow Pit potential during rock breaking and blasting, closest property 721m- impact likely be an adverse not significant localised temporary direct effect
Operation	• See section 10.4.3 of EIAR • Wind Turbines- section 10.4.3.2 sets out noise assessment results with Table 10-14 displaying results and that the proposed development will not exceed the noise limit criteria as set out in the 2006 WEDG. • The predicted noise emissions from the wind farm development at all receptors within the study area of 1.36km is presented in contour format in Figure 10-18. • Section 10.4.3.3 deals with Special Audible Characteristics including Tonal Noise, Amplitude Modulation (AM) and Low Frequency Noise (Infrasound). No impacts from Tonal Noise are expected with warranty from manufacturer required. AM cannot be predicted but if it arises it will be investigated with required mitigation if appropriate. Low frequency Noise such as Infrasound noise is discussed with reference to EPA guidance and draft 2019 WEDG (not in practise). A Modern

	active yaw turbine is proposed, impacts such as complaints will be investigated with corrective action taken if justified. • Substation- 418m from nearest NSR. Noise level will typically be 93dB9A)Lw. Noise level at NSR predicted to be 28 dB(A)- no significant effect • Vibration- see section 10.4.3.6- no significant sources of vibration from the wind farm development or the substation.
Decommissioning	• See section 10.1.1 and 10.2.2 The decommissioning phase works will be similar in magnitude to the construction phase with comparable plant and machinery involved. The assessment criteria will be the same and both will be temporary effects of short duration
Cumulative	• See section 10.4.3.7 • Other wind farms- There are no other operational, permitted, or proposed wind farm developments which may impact cumulatively with the proposed development with nearest c. 4km and c. 8.5km away. Permitted Carrownagowan is 12km, Fahybeg, 8.5km. The assessment shows no significant noise or vibration effects to NSRs closest to the proposed wind farm. Given the separation distances of the proposal to other farms and geographical positioning, there will be no cumulative noise or vibration effects, therefore there will be no significant effect • O'Connell's Quarry Cumulative Noise Emission Calculations set out in Table 10-17 with cumulative effects not considered significant. Section 10.4.1.4 details blasting will be coordinated with the quarry to ensure that blasts do not coincide. The cumulative effect is not considered a significant effect. • Forestry Felling. The noise emissions are low and will not be significant when in combination with the operational wind farm. Effect not significant.

Mitigation Measures

l) Mitigation measures for the impacts are detailed in section 10.5 and can generally be summarised as-

- Construction
    - the Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures when deemed necessary to comply with recommendations of BS 5228- 1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites- Noise. A series of typical measures are then listed including operation hours from restricted to between 7:00hrs and 19:00hrs weekdays and between 7:00hrs and 14:00hrs on Saturdays with the requirement to seek derogation from the Council to-

        - ensure that optimal use is made of good weather period or at critical periods within the programme (i.e. concrete pours)
        - accommodate delivery of large turbine component along public routes it could be necessary on occasion to work outside of these hours.
    - Measures detailed for rock breaking
    - Blast Management measures are set out in section 10.5.3 including liaison with O'Connell's Quarry
    - Vibration levels (section 10.5.2) will not exceed those described in BS5228 –1&2:2009 + A1 2014, Code of Practice for the Control of Noise and Vibration on Construction and Open Sites and limited to the values set out in Section 10.2.5
- Operational (See section 10.5.4)
    - As the proposed turbines are predicted not to exceed DoEHLG noise limit criteria in standard operating mode, mitigation measures are not required.
    - Should a complaint of Amplitude Modulation arise during the operation of the wind farm, an investigation into the phenomenon will be carried out in accordance with best practice, specifically the Institute of Acoustics' (IoA) Noise working Group (Wind Turbine Noise) Amplitude Modulation Working Group (AMWG), Method for Rating Amplitude Modulation in Wind Turbine Noise (August 2016). If required, mitigation measures will be implemented.
    - Regarding Infrasound and Low Frequency Noise section 10.4.3.3 details complaints will be investigated in accordance with the most appropriate guidance at the time and corrective action will be taken if the complaint is found to be justified.
    - No mitigation measures required during operational stage.
- Decommissioning

- The noise mitigation measures that will be considered in relation to any decommissioning of the site are the same as those proposed for the construction phase of the development
- Vibration levels will not exceed those described in BS5228 –1&2:2009 + A1 2014, Code of Practice for the Control of Noise and Vibration on Construction and Open Sites and the EIAR chapter.

Residual Effects

13.7.11. Section 10.6 of the EIAR details residual impacts are expected. For Construction and Decommissioning stages see Tables 10-18 (Noise) and 10-19 (Vibrations). Operational residual effects are discussed in section 10.6.8 and set out in Tables 10-20 and 10.21 for the turbines and the substation. The extent of effects are described as most noticeable to those closest to the site but for the majority of receptors the effect will be slight.

13.7.11.1. **Assessment and Conclusion**

13.7.12. Having regard to the foregoing and noting the distance of the nearest noise sensitive locations and receptors form the site, I tend to agree with the view set out in the EIAR that the proposal will not give rise to noise and vibration during construction and/or operation which will impact significantly upon sensitive receptors including residential amenity.

13.7.13. Overall, I find the methodology used throughout chapter 10 of the EIAR to be robust, comprehensive and a reasonable consideration of the matters pertinent to noise and vibration impacts in the context of the EIA Directive.

13.7.14. In terms of construction noise I am satisfied impacts can be addressed through mitigation measures proposed, best practise measures generally provided for in chapter as well as the CEMP and through appropriate planning conditions.

13.7.15. In terms of potential operational phase noise such impacts are primarily associated with the operation of the wind turbines themselves. The EIAR details that predicted noise levels will not exceed DoEHLG noise limit criteria (WEDG 2006) in

standard operating mode and therefore mitigation measures are not required[110]. However the EIAR does provide measures including investigation of Amplitude Modulation and Infrasound related complaints and application of measures to address such complaints where appropriate .

13.7.16. The Commission are reminded section 5 of the WEDG 2006 states-

"In general, noise is unlikely to be a significant problem where the distance from the nearest turbine to any noise sensitive property is more than 500 metres."

Figure 10-2 of the EIAR shows there are no such receptors are within 500m of the proposed turbines. See also section 5.3.2 and Figure 5-5 of the EIAR. In this context I favour the position put forward by the Applicant regarding the extent of impacts. However should the Commission decide to grant permission it is recommended a suitable planning condition be imposed regarding noise levels at noise sensitive locations and submission of a Noise Compliance Monitoring Programme (NCMP) for agreement in advance of works commencing on site.

13.7.17. I acknowledge the valid concerns of the public in this regard, with concerns of noise related impacts from wind farms well known. However, I do not share the criticisms of noise assessment methodology including equipment used. The submitted assessment makes use of noise modelling to predict noise impacts. I understand that all such models are by their very nature predictive and all have their own limitations. However the information presented is detailed as in accordance with typical best practise as set out in section 10.4.3.1 of the EIAR.

13.7.18. Furthermore I note the content of the Further Information observation of the HSE- National Environmental Health Service (NEHS) which comments on the background noise monitoring in the context of their site visit and the nature and characteristic of the proposed development area and in which they find the measurement of the existing noise environment as representative.

13.7.19. I also accept the public submissions and concerns in the context of the High Court decision in Webster vs Meenaclogher (Wind) Limited (2024 IEHC 136). This is a civil action regarding noise nuisance and is outside of the planning code. I again

[110] Section 10.4.3.5 'Significance of Effect' Page 10-34

note there are no noise sensitive receptors such as habitable houses located within 500m of the proposed turbines.

13.7.20. Overall, I am satisfied that impacts predicted to arise regarding noise and vibration can be avoided, managed and mitigated by the measures which form part of the proposed development, proposed mitigation measures, and through suitable planning conditions. I am, therefore, satisfied that the proposed development would not have any unacceptable direct, indirect, or cumulative impacts in terms of noise and vibration and have also considered these in the context of population and human health.

13.7.21. **Landscape**

a) A number of Landscape related concerns have been set out in the submissions received. Generally these relate to the height and number of turbines proposed and the visual impact of same from people's homes and across the wider landscape. In particular, the Commission should note the Planning Authority, in their submission to the application have considered that the proposal would significantly alter the landscape character at this location.

b) The majority of the site is located within the 'Slieve Bearnagh Uplands' Landscape Character Area (LCA 8) with a small portion including one turbine within 'River Shannon Farmlands' (LCA 9).

c) Landscape and Visual impacts are addressed in Chapter 12 of the EIAR. Section 12.1.1 identifies the study area with a Zone of Theoretical Visibility (ZTV) extending to a radius of 20 kilometres in accordance with the WEDG 2006- see Figure 12-1 and Appendix 12A. The EIAR details the characteristics of the study area are described as follows-

- The 'Site and Immediate vicinity' approx. 3 kilometres radius around it
- the 'Wider landscape' referring to the areas beyond 3 kilometres, but within 20km i.e. ZTV.

The EIAR also includes photomontages as detailed in Section 12.6.2 and a Photomontage Booklet contained in Volume IV to the EIAR.

d) Section 12.2 details the Methodology used including guidance documents and policy context. Section 12.2.5 discusses the distinction between landscape effects and the visual effects of a proposed development in accordance with the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA) as recommended in the EPA's 2022 Guidelines on the Information to be contained in Environmental Impact Assessment Reports.

e) As per the GLVIA and in accordance with Table 3.4 of the EPA Guidelines 2022, landscape and visual considerations are employed in the EIA including detailed ratings. These are set out as follows-

- Categories of Landscape Sensitivity are detailed as ranging from Low to Very High as outlined in Table 12-1
- Magnitude of Landscape Change categorised in Table 12-2 from Negligible to Very High
- Categories of Visual Receptors Sensitivity as detailed in Table 12-3 ranging from Negligible to Very High
- Magnitude of Visual Change set out in Table 12-4 ranging from Negligible to Very High
- Significance of Effect assessment criteria as shown in a Significance Matrix[111] labelled Table 12-5 with 'magnitude for change' rated against 'sensitivity of the receptor'. The EPA guidance provides seven classifications of significance, namely:
    - Imperceptible (defined as an effect capable of measurement but without significant),
    - not significant,
    - slight,
    - moderate,
    - significant,

[111] Taken directly from the EPA 2022 guidance- Figure 3.4 Chart Showing Typical Classifications of the Significance of Effects

- very significant and
- profound (defined as an effect which obliterates sensitive characteristics)

- Duration of effect outlined in Table 12-7 from Temporary to Permanent.

Table 12.7 also identifies long term effects as ranging from 15 to 60 years. The EIAR considers the proposal as reversible with a life span of approx. 35 years i.e. the removal of turbines after 35 years will reverse the main landscape and visual effects.

f) The EIAR then discusses Landscape Policy Context in section 12.3.2 with specific reference to the Clare CDP designations including 'Living Landscapes' as illustrated in Map 14A- Landscape Designations' of the CDP. These are shown in Figure 12-2 of the EIAR. The site is identified within the 'Working Landscape' to which Development Plan Objective CDP 14.3 applies.

g) Other landscape designations and 'Scenic Routes' from the CDP are presented in Figure 12-3[112] with a number of 'Heritage Landscape' designations located outside of the 'Site and Immediate vicinity' study areas but within the 'Wider landscape' study area. Figure 12.3 also includes scenic routes in County Limerick and Tipperary.

h) Scenic Routes are discussed in section 12.3.2.2 of the EIAR. It refers to Section 14.5, Appendix 5 (list of designated routes) and Objective CDP 14-7 of the Clare CDP. Table 12.8 of the EIAR lists all designated scenic routes within 20 kilometres of the site with six identified and their distance and potential theoretical visibility detailed.

i) Section 12.3.2.3 of the EIAR discusses the Landscape Character Assessment (LCA) of County Clare which is set out in section 14.2.1 of the CDP. The site is located primarily within LCA 8 in the Slieve Bernagh hills with one proposed turbine detailed as within LCA 9 Shannon Estuary Farmland. These designations are described as rolling upland hills with core areas above 200 metres, rising to 526 metres at the highest point, with occasional small lakes

[112] Appendix 12B, Volume III of EIAR

and small streams draining these slopes. The LCA's are presented in Figure 12-4[113] of the EIAR. The relevant CDP objective is detailed as CDP 14.1.

j) Section 12.3.2.4 discusses the Wind Energy Strategy (WES) i.e. Volume 6 of the CDP. The Commission will note, I have considered policy related matters in section 12.1 of this report and for the purpose of the landscape section of this EIA assessment, I remind the Commission that the site is located within an area designated as a 'Strategic Area' eminently suitable for wind energy development and to which CDP objective WES Eight: 'Strategic Areas' applies.

k) The EIAR considers the Limerick Development Plan 2022-28 (LDP) in section 12.3.3. Figure 12-6[114] identifies Limerick's designated Landscape Character Areas and their proximity to the site. Section 12.3.3.2 discusses designated 'Views and Prospects' in Limerick which are presented in Figure 12-7. Table 12-9 identifies four 'Views and Prospects' outside Limerick City's boundary and within the county area. It refers to Objective EH O30[115] Views and Prospects.

l) The EIAR then focuses on 'Other Views in Limerick City and environs' with reference to Volume 6 of the CDP- 'Building Height Strategy for Limerick City'. It details these are clearly important but they are not protected views. The views discussed are presented in Figure 12-8 of the EIAR. Map 3.4 from Volume 6 of the CDP is replicated in the EIAR as Figure 12-10 and displays 'Key Vantage Points into Limerick City' with view 2 from Woodcock Hill Bog west of the site and into the city. The EIAR details these are not protected views.

m) Section 12.3.4 of the EIAR focuses on the Tipperary Development Plan 2022-2028 (TDP) with a small proportion of the county falling within the 20 km study area of the proposed development. Volume 3 of the TDP designates scenic views, scenic routes and two types of designated landscapes. Landscape designations and scenic routes are presented in Figure 12-3 of the EIAR[116].

[113] Appendix 12C in Volume III of EIAR
[114] Appendix 12D, Volume III
[115] Likely typing error- should be Objective EH O31 Views and Prospects
[116] Also Appendix 12B, Volume III.

Tipperary scenic views are listed in Table 12-10 of the EIAR with their distance from turbines and potential theoretical Visibility set out. Section 12.3.4.2 of the EIAR discusses the TDP Landscape Character Assessment with four areas identified partly within the study area ranging from c. 11.9km to c.18.5 km from the nearest turbine.

n) The majority of LCA 12 'Arra Mountains and Lower Lough Derg' lies within the 'wider landscape' study area and is c. 11.9km from the nearest turbine. Scenic Route V55 is also located within this LCA.

o) Section 12.3.5 of the EIAR then discusses national policy guidelines i.e. the Wind Energy Design Guidelines (WEDG 2006) and the Draft Wind Energy Development Guidelines of 2019. The CDP's WES identifies the site within the Slieve Bernagh Uplands Strategic Area, in which the LCA is best characterised as Mountain Moorland as per the WEDG.

p) Section 12.4 of the EIAR is titled 'Receiving Environment - Landscape Character of Site and Surrounds'. It provides a robust consideration of the site and its surrounds including many of the topics considered elsewhere in the EIAR.

q) Section 12.4.9 discusses 'Potential Visual Receptors and Theoretical Visibility' and identifies these '*by combining viewers of high susceptibility to the proposed change in views, with highly valued viewpoints'*. It refers to the two ZTV Maps as shown in Figures 12-12 (Hub height) and 12-13 (Tip Height)of the EIAR[117]. It is clear from both of these ZTV maps that the majority of the turbines i.e. 10-12 (as shown in blue on the maps) will be theoretically visible from the majority of places to the north east, east, south east, south and south west of the site, with a lower number of turbines visible from certain locations to the west, north west and north of the site.

r) Potentially Sensitive Receptors are detailed to include-

- residences in close proximity
- recreational trails/amenity areas

[117] See also Appendix 12F and 12G in Volume III

- Cratloe Woods- dense canopy will prevent outwards views
- Riverside Walk in Limerick between Shannon and Thomand Bridge likely to have views of turbines
- The Lough Derg Way

- scenic routes and protected views-
  - in Clare-
    - part of scenic route 23 to the west of site with screening from dense forestry likely
    - short sections of scenic routes 26 and 27 which are at a distance
  - in County Limerick
    - Tory Hill- views to hill itself and not proposed development
    - near Murroe

    both areas on the boundary of the study area.
  - in Limerick City-
    - include viewers from the Riverside walk to the north, and views from The Shannon and Thomond bridges which are noted in the Development Plan.
    - Mungret College where a protected view is mapped to the north west.
  - in Tipperary
    - M7 Motorway
    - Two other routes are more distant, the majority of scenic views are not towards the proposed development

- Designated Landscapes-
  - Several areas of 'Heritage Landscapes' within the study area as well as more distant in Co Clare

    - Two very small sections of Primary and Secondary Scenic Amenity are within the study area in Tipperary but at distance of over 17km

- Cultural Heritage
    - Recorded monuments on the site which are not publicly accessible
    - Limerick City (St John's Castle, King's Island and riverfront area)
    - Views will be largely screened from the historic town of Bunratty, however some potential for visibility remains from the castle itself (a National Monument).
    - Similarly, intermittent theoretical visibility is shown on the ZTV in the vicinity of Cragaunnowen Castle, but the Crannogs and lakes are outside the theoretically visible area and visibility is likely to be further reduced by trees.
    - Power station at Ardnacrusha is an element of cultural heritage however it is also a working power station. Views will be restricted to workers there apart from occasional open days where visitors are permitted, but its industrial heritage character in a landscape heavily modified by man would render viewers less sensitive than at other cultural heritage sites.
- Less sensitive receptors are detailed including national roads and motorways etc.

s) Section 12.6.2.2 of the EIAR is titled 'Viewpoint Description'. 26 individual viewpoints are identified in Table 12-11 and form the basis of the submitted proposed photomontages. A commentary is then provided on each viewpoint including the existing view, visual receptor sensitivity, proposed photomontage and magnitude of change, significance of effect, and Cumulative Visibility.

t) Section 12.4.10, 12.5 and 12.6 deal with 'Effects from the Development. These are considered as effects at Construction, Operation,

Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects and are summarised in Table LAN1 below-

TABLE LAN1

Project Phase	**Potential Effects**
Do Nothing	• See section 12.4.10 • it is assumed that the lands would continue to be used for agriculture and forestry purposes and the site would remain a working landscape. • Other activities identified in Chapter 6 of EIAR- Biodiversity include potentially further land reclamation for agriculture.
Construction	• See section 12.5 • Landscape Effects Landscape Sensitivity of the site and immediate surroundings (the area approximately 3 kilometres around the site) is considered Low-Medium. The construction of the 12 no. turbines and associated elements, including the substation, cabling, meteorological mast, and access tracks is expected to take 18 months. Activities taking place at the construction phase include vegetation clearance, where necessary, followed by widening of an existing entrance to create a permanent site entrance to the north-east of the site. There is also a proposed temporary access to be used during the construction phase only which is located at an existing entrance. This entrance will be reinstated to its original condition once the construction phase is completed. The permanent entrance will necessitate vegetation removal. This will be scaled back, landscaped, fenced and gated. A total of 10.65 km of new internal tracks are proposed, with 1.8km of existing internal access tracks being upgraded and widened. 0.56km of this is for temporary access tracks. These access tracks will have a standard running width of circa 5m with surface water collection drains on either side. Construction of the turbine hardstands, turbines, substation and met mast involves vegetation removal and earthworks (existing hedgerows will need to be removed The opening of a proposed on-site borrow pit location which has been identified to provide the majority of the required fill material for internal tracks, passing bays, hardstands, foundations and the temporary compound will also be undertaken during construction. This phase will involve machinery entering and exiting the site and working on the site for the duration of the construction phase, resulting in a change from an area with occasional machinery to an area with a temporary increase in noise, dust and construction works. This will result in a temporary change to the character of the landscape of the site and immediate surrounds. The magnitude of change associated with the on-site elements including the turbines and associated

	buildings (permanent and temporary) is considered to be varied. The more pronounced visual effects are considered to be Medium to High. The proposed works will affect both the landscape fabric of the site and its character. The proposed 110kV grid route is approximately 1.5km in length. A 110kV substation is proposed in forested lands north of T1, to the northwest of the site. From the proposed 110kV substation, an underground cable is routed in a north west direction where it connects to the existing 110 kV overhead line.1.0km of the 110kV grid route is proposed within existing forestry tracks which will have minimal landscape effects, with the remaining 0.5km routed through conifer forestry. It also crosses a 3m wide local public road. A new unbound stone access track will be constructed over the 110kV grid route (within the existing forestry) to allow access for future maintenance. The proposed grid connection is considered of Low magnitude of change. The project also includes additional components outside the boundaries of the Development Application Area, including temporary works along the turbine delivery route. There will be a requirement for tree felling and consequently replacement forestry land. However, these will be at a significant remove from the development site, therefore there will be no cumulative impact in conjunction on the proposed development. Impacts of the grid connection are rated Not Significant The construction phase of the on-site elements (turbines, hardstands and tracks, met mast, temporary compound and substation) will result in a Moderate and adverse landscape effect which is temporary in nature. • Visual Effects see section 12.5.2 A number of viewpoints are selected and described in section 12.6.2 with reference to each selected viewpoint and likely visual effects during construction. Viewers at viewpoints 2,3,4 and 9 (see Figure 12-14) are likely to experience visual effects during the construction stage due to their proximity to the site, as well as other viewers in close proximity to the site. These viewers are considered to be of Medium-High sensitivity. These visual effects are likely to be confined to the immediate vicinity of the site where works such as vegetation clearance, widening of site entrances, and earthworks as well as the construction of the structures are likely to be more evident, from the local roads close to the site. Site and immediate vicinity Construction Phase visual effects are likely to be localised and affect only the site and immediate vicinity, with some views from public roads and nearby residences given the sloping nature of the site topography. The construction phase will result in changes at a local level and will involve site works including vegetation removal on the site and at the entrances, with hedgerow removal necessary to construct the

	permanent site entrance, and to construct some of the internal access tracks. Other activities carried out at this stage which may be visible will be tree felling in the vicinity of two turbine bases, as well as the vicinity of proposed tracks, substation and borrow pit. One temporary construction compound will be constructed to the west of the permanent site entrance in a field south of the access track and this may be visible from the surrounding roads, in particular the road east of the site at Ballycannon. The borrow pit and deposition area are located within forestry and therefore should be largely screened. Some tree felling will occur to facilitate the substation construction but there are few visual receptors in this remote part of the study area. The tree felling and substation construction is likely to be visible from elevated views to the west such as Viewpoint 9 Woodcock Hill. It is noted that as part of the site is under commercial forestry, tree felling, and re-planting is an existing activity. Machinery will be entering and exiting the site as well as working on site, and the associated movements will be evident in the vicinity of the site especially along the Local Road L-7062 where both entrances are located. The magnitude of change is considered as localised, Medium magnitude in the immediate vicinity of the site. The grid connection is relatively short, at 1.5km beginning at the windfarm substation which is in the north of the site. Receptors are considered as subject to a Medium to High magnitude of change in the immediate vicinity of the site. The visual effects are considered Moderate, adverse in the immediate vicinity of the site and site entrances, as well as the elevated lands to the west near Woodcock Hill, however these are temporary in nature during construction. The Wider Landscape will experience a Negligible to Low magnitude of change during the construction phase. Effects rated not Significant, adverse and temporary.
Operation	• See section 12.6 • Landscape Effects 12.6.1 Is the same for both the construction and operational phases (see section 12.5.1.1 of EIAR) The site is site is considered ‘Strategic’ for wind energy in the current Clare WES. Changes to the fabric of the site are limited to the immediate site area, consisting of changes to accommodate the footprint of the turbines and associated elements such as earthworks, access tracks and positioning of elements including the substation and cabling. Changes as a result of non-turbine elements to the landscape fabric and character, will be largely evident at the local level, and not the wider landscape. The majority of the proposed turbines are sited on improved grassland and conifer plantation, with some on other grassland types.

	Two turbines are located in forestry, along with the proposed substation. Tree felling will take place, the majority of which is coniferous forestry (approx. 15.97ha) and re-planted elsewhere and not within 10km of the site, to eliminate any potential for cumulative effects. Approximately 849 metres of hedgerow and 15 metres of treeline will be removed to facilitate the proposed development. The works will not directly affect the archaeological monuments at Glennagross. There will be no structures, works, bunding or stockpiling of materials near these features, and though turbines are in close proximity to these structures, it is considered that works will not affect the fabric of the structures. There will be changes to their setting which is discussed further in Chapter 13 of the EIAR (see also section 13.7.21 and 13.7.22 of this assessment). Other elements visible from some areas in the wider landscape include the proposed substation, while the turbines themselves will impart a larger degree of change to the local landscape. Visibility of the turbines from the immediate surrounds will be pronounced, as there are some open and expansive views. The presence of 12 turbines of large scale will impart a Medium-High magnitude of change to the landscape character of the locality. Considered to result in a Medium-High magnitude of change to the landscape character of the locality. Significance of the landscape effect is considered to be Moderate in the immediate vicinity of the site with effects ranging from Neutral to Adverse. The majority of these effects are reversible, due to the decommissioning of the wind farm. Landscape effects on the site and immediate vicinity include both effects on the physical landscape and the visual presence of the turbines in the landscape. The more obvious changes to the landscape character include the turbines and the proposed substation. The landscape is a rural, working agricultural landscape with farms and a quarry visible from views to the north of the site. The proposed cable route will not result in any visual effects at the operational stage as it is below ground Landscape Character and Viewpoints See Table 12-11 summarised as- Viewpoints 2,9,10,11,12,16 and 19 represent LCA 8 Slieve Bernagh, where the majority of the proposed development is situated. The visual effect ranges from Slight to Significant, with one view with no effect. Viewpoints 1,3,4,8,13,14 are taken from LCA 9 River Shannon Farmland, which includes the southern portion of the site. These LCAs contain the viewpoints with the most pronounced visual effects, however considerable variation occurs in the vicinity of the site, compared with the western and north-eastern extremities of this LCA.

	Viewpoints 20 and 24 are taken from Shannon Coastal Zone LCA in Co. Limerick, with Viewpoints 17 and 22 on the boundary between these two LCAs on the Clare/Limerick border. Viewpoints 15 and 20 are taken from LCA 10 Sixmilebridge Farmland, with the visual effect of both considered Imperceptible. Viewpoint 23 represents the Agricultural Lowlands LCA in Co Limerick, while Viewpoint 18 represents the boundary of this LCA with LCA Slieve Feilim Uplands. Limerick City and surrounding LCAs (Southern Environs) are represented by Viewpoints 5,6,7,25,26 which again show varying visual effects as they range from urban to peri-urban contexts. Effects on the Slieve Bernagh LCA vary. Viewpoints 2,9,10,11,12,16,19 range from more pronounced visual effects from closer viewpoints such as 2 and 9, to less pronounced visual effects at viewpoints 11 and 12, and 19. Viewpoint 16 shows no visibility. Effects on Landscape Character will be Moderate in the vicinity of the site. Effects range from Slight in the centre of the LCA, to no effect in the northern part of the LCA which includes the northern and eastern slopes of the Slieve Bernagh hills. There will be no effect to the shores of Lough Derg within this LCA and the adjacent Arra Mountains and the Lower Lough Derg LCA in Co. Tipperary. LCA 9 River Shannon Farmland extending from Bunratty to the west, to Lough Derg in the north-east. The southernmost turbine of the proposed development is situated in this LCA. Due to the expansive nature of the LCA, the effects on the landscape character will vary. The proposed development will be clearly visible from this part of the LCA near the site, with more pronounced visual effects in Viewpoints 1,3 and 4 The visual presence of the proposed development will be significantly less in parts of the LCA to the west, at Bunratty and in the vicinity of Cratloe and also to the north-east at Killaloe. In these areas there will be places where viewers will have glimpses, or no views of the proposed development. • Visual Effects- 12.6.2 The nature of the elevated/sloping site results in some of the hardstands and tracks being prominent. It is proposed to install lighting on the turbines in a pattern that is acceptable to the Irish Aviation Authority/AirNav Ireland for aviation visibility purposes. Tree felling will take place, the majority of which is coniferous forestry (approx. 15.97ha). See section 12.6.2.2 for Viewpoint Description and Table 12-11. A summary of visual effects is set out in section 12.6.2.3. and Table 12-12. This indicates visual receptor sensitivity, magnitude of change and the significance of effect of the 26 viewpoint locations. The visual effects are summarised as follows; Two views (2,4) were judged to be Significant and adverse;

	Three views (1,3,9) were considered Moderate-Significant. Two of these (1,9) were considered neutral and one adverse (3) in quality; Visual effects at six views (5,7,10,13,14,25) are categorised as Moderate and neutral; Three views (8,11,19) are categorised as Slight-Moderate and neutral; Visual effects at six views were considered Slight (Viewpoints 12,18,21,23,24,26) and neutral; Four viewpoints showed no visibility- 6,16,17 and 22. The more pronounced visual effects (Significant and adverse) are illustrated in viewpoints 2 and 4 which are viewpoints in close proximity (less than 1 kilometre) east and west, of the nearest turbines. These are slightly lower in elevation. Viewpoints 1 and 3 show slightly less pronounced visual effects as the turbines are partly screened by intervening vegetation and are slightly further away (more than 1 kilometre) from the turbines. Similar visual effects to Viewpoints 1-4 are likely to be experienced in other locations at similar distances in the immediate vicinity to the south, east and west of the turbines, where open views occur, such as at the Ballycannon graveyard. Viewpoints 10 and 11 represent the more sparsely settled area to the north, with more undulating topography and dense conifer plantations. The topography greatly reduces the number of turbines visible. The visual effects from the viewpoints in this area are Slight-Moderate, Moderate and neutral. The other close view is that from Woodcock Hill, a local landmark, which lies west of the proposed turbines. This is just off a scenic route and would have a similar but more open view than the scenic route. It is a location for recreation as well as the location of a mast and radar dome. This viewpoint is considered Moderate-Significant, however neutral in quality. Scenic Routes Viewpoint 9 represents the closest stretch of Scenic Route to the site. It is a location where views would be more open and slightly more elevated than the scenic route and would therefore represent this location. Other scenic routes/views or otherwise designated views are represented by viewpoints 18 (Scenic Route at Ashroe, Co. Limerick) and 26, the view from Mungret College to the Monastic Complex. These views are considered to be Slight and neutral in terms of visual effect. River views in Limerick City are not Designated scenic views and are represented by Viewpoints 6 and 7. Settlements- Several viewpoints represent settlements in Co. Clare (within approximately 10km) to the site, which include Sixmilebridge (Viewpoint 15), Parteen (Viewpoint 13), O' Briensbridge (17), the outskirts of Clonlara (Viewpoint 8) and Castleconnell in Co. Limerick (Viewpoint 22).

	Visual effects in these locations are not pronounced, with Imperceptible visual effect from Sixmilebridge and no visual effect from the viewpoints at O' Briensbridge and Castleconnell. These are included to reflect the actual visibility from these settlements. More pronounced visual effects include the view from Parteen, which is expected as it is much closer to the site, and at Clonlara. These however are considered Slight-Moderate, Moderate and neutral in quality. The settlement of Limerick City and certain views are represented in Viewpoints 5,6,7, and 25. Viewpoints 6 and 7 are taken from the riverfront representing 'Waterfront Panoramas' in the Development Plan, though no views will be available from View 6. View 7 from Thomond Bridge will have open views (visual effect here is judged as Moderate and neutral) though it is noted the view in the Development Plan is to the south in the opposite direction to the proposed development. A similar view to Viewpoint 7 is View 25 from the parapet on King John's Castle, where there are open views to the site and a 360 degree panorama of the city. These views from the city centre however will be experienced by viewers who are in the centre of an urban area, and though the turbines will be visible from these areas, the viewers are in a somewhat busy urban context with many different views in various directions. Therefore, the focus of the view towards the turbines may be less than a different setting. It is also noted that glimpses of the proposed development are likely to be available from the river walk from the city centre to the University of Limerick, where gaps in vegetation allow views. Cultural Heritage Viewpoints 20,25,26 represent National Monuments at Bunratty, King John's Castle and the view to Mungret Monastic complex. The visual effects are most pronounced in the view from King John's castle which is expected as it is the closest (approximately 5km) from the site and provides expansive and elevated views towards the proposed development. Views are considered Moderate and neutral in quality, being set well into the landscape in a tight cluster and a feature of the landscape that does not interfere with the panoramic views from the castle. The castle parapet and access walkway is the only location in the castle where such views exist. Other views from the courtyard are restricted by the walls. The turbines are largely screened from ground level in the vicinity of Bunratty castle. Viewpoint 26, a protected view towards the Mungret churches, shows that the proposed Ballycar turbines are visible in a different direction, off to the left, and their presence does not interfere with the protected view. Views 6 and 8 represent views along riverside walkway begins in Limerick City known as Lough Derg Way. glimpses of the turbines are likely however more open views such as Viewpoint 6 illustrate that the

	turbines will appear as a feature of the surrounding landscape and will not change the overall character of the view from the trail. Landscape Character Areas (LCAs) detailed as- Viewpoints 2,9,10,11,12,16 and 19 represent LCA 8 Slieve Bernagh where the majority of the proposed development is situated. The visual effects range from Slight to Significant, with one view with no effect. Viewpoints 1,3,4,8,13,14 are taken from LCA 9 River Shannon Farmland, which includes the southern portion of the site. These LCAs contain the viewpoints with the most pronounced visual effects, however considerable variation occurs in the vicinity of the site, compared with the western and north-eastern extremities of this LCA. Viewpoints 20 and 24 are taken from Shannon Coastal Zone LCA in Co. Limerick, with Viewpoints 17 and 22 on the boundary between these two LCAs on the Clare/Limerick border. Viewpoints 15 and 20 are taken from LCA 10 Sixmilebridge Farmland, which are both Imperceptible. This reflects an overall pattern of little visibility from this LCA to the west. Viewpoint 23 represents the Agricultural Lowlands LCA in Co Limerick, (but is also on the southern coast of the River Shannon Seascape Area 11), while Viewpoint 18 represents the boundary of this LCA with LCA Slieve Feilim Uplands. Limerick City and surrounding LCAs (Southern Environs) are represented by Viewpoints 5,6,7,25,26 which again show varying visual effects as they range from urban to peri-urban contexts.
Decommissioning	• See section 12.8 If planning permission is not sought after the end of life of the turbines, the site will be decommissioned and reinstated with all 12 No. wind turbines and towers removed. Impacts of decommissioning similar to construction impacts and will comprise temporary visual disturbance such as cranes and on-site machinery. Once decommissioned, however, the visual effects of the turbines will be reversed, and while viewers at close proximity may still see the access tracks, the hardstands will gradually re-vegetate.
Cumulative	• See section 12.6.3 The EIAR considers the majority of the site as well as the landscape type of the other permitted wind farms (Carrownagowan and Fahy Beg) as Slieve Bernagh LCA, which is characterised as Mountain Moorland as per the WEDG. It refers to the WEG 2006 which details …*"open expanse of such landscapes can absorb a number of wind energy developments, depending on their proximity……"* On review of the submitted montages, it is evident that where other wind energy developments are visible in the photomontage, they do appear as discrete elements which are at some distance from each other. • Cumulative Landscape Effects Other wind farms considered in Figure 12-15 Cumulative ZTV[118]

[118] See also Appendix 12G

	Wind turbines are not currently recognisable elements of the present landscape character. The Cumulative ZTV shows the pattern of visibility of the proposed Ballycar turbines with the Fahybeg and Carrownagowan turbines. These wind farms, if built, would increase the visibility and presence of wind turbines in the study area. The magnitude of change varies throughout the study area, with no cumulative visibility to the north of the study area. The effect on the landscape character of the Slieve Bernagh LCA would vary, as the visibility will vary throughout the LCA. The magnitude of change in the southern part of the Slieve Bernagh LCA is considered Medium where cumulative visibility will occur, in the areas which are shaded green around the site. However, parts of this LCA to the north which are shaded pink on the ZTV will have no cumulative visibility with the proposed development and therefore there is no change. Some sequential visibility in the parts of the LCA which lie between the proposed development and the Fahy Beg wind farm is likely to impart a Medium-High magnitude of change. The magnitude of change in the LCA to the south-east, Shannon Estuary Farmland, varies also but is considered to range from Low to Medium. A Slight to Moderate cumulative effect on certain parts of the landscape character of the Slieve Bernagh LCA and parts of the Shannon Estuary Farmland is considered. • Cumulative Visual Effects Combined Cumulative visual effects of listed viewpoints are discussed in Table 12-13 based on Visual Receptor Sensitivity, Magnitude of change and Significance of effect. Viewpoints 6,9,24,25,26, the Fahy Beg turbines tend to be more visible as they are closer and also less screened by topography, on the southern flanks of Lackareagh mountain. The Carrownagowan turbines are in general more distant, fewer are visible and are largely screened by the Slieve Bernagh hills to the south of the permitted turbines. The views where the cumulative turbines are most evident in combination with the proposed turbines are Viewpoint 9 and Viewpoints 4,25,26,27 and 28[119], where the proposed and existing turbines are visible in the same view (in-combination). In these views, the proposed turbines are generally more prominent and, in all cases, there is a considerable separation distance between the proposed Ballycar turbines and the other turbine clusters. Each appear as a distinct cluster, consistent with the DoEHLG guidance. The cumulative effect varies depending on the viewpoint from No effect to Moderate. In general the presence of Cumulative turbines in the wider views makes little change, with the other turbines tending to be only visible to a small extent (see Viewpoints 5,8,9).

[119] This is considered a likely typing error. There are no VP's 27 and 28.

	More pronounced cumulative effects are likely to be sequential views at locations which are between the proposed Ballycar turbines and the two permitted/proposed wind farms to the north-east, as one looks in different directions, as shown in Viewpoint 19. Viewpoint 7 will show visibility of the Fahy Beg turbines however, the proposed Ballycar turbines are not visible. View 18 O'Brien's bridge will have a view looking south-west to Ballycar and form a different part of the settlement, a view towards Fahy Beg in the opposite direction. These are experienced from different locations in the same settlement. In the majority of the views where other turbines are/will be visible these appear as distant and distinct wind farms, and do not result in a proliferation of turbines in any one view, or any cases where one wind farm is seen behind the other and in close proximity. Cumulative visibility is considered to vary throughout the study area, ranging from Slight to Moderate. One of the more obvious views where this is likely to occur is at the location of Viewpoint 19 where there are panoramic views, with existing distant turbines visible to the east. There will also be views towards permitted turbines where there are open views and visibility is indicated on the ZTV. An additional Baseline view (Baseline A) was produced for Viewpoint 19, and illustrates though the Carrownagowan turbines would be visible, they are seen as a distinct and distant cluster, from the same viewpoint but in a different direction. There is considerable separation between these and the Ballycar turbines. The areas of additional cumulative theoretical visibility as a result of the proposed Ballycar turbines are relatively limited areas (areas shaded blue in Figure 12-15. The areas shaded green represent areas with theoretical visibility of both Ballycar and the other turbines, while pink shaded areas represent areas where Ballycar turbines are not visible. On review of the topography and of the montages, the proposed Ballycar turbines are likely to be less visible to the north of the study area, and this is confirmed by the ZTV. However, receptors to the north-east of Ballycar and the south-west of Fahy Beg would possibly experience views of both wind farms but in different directions, or views at different locations for example along a journey when the road changes direction. • Other non-wind projects- see section 12.6.3.4 Other projects considered- Solar farms at Drummin and Ballygalss approximately 2km and 4.3km east of the site. Review of these applications indicates that the closest solar array at Drummin will be largely screened from the local road to the west of the solar array, and visibility is therefore unlikely from locations further west on a similar level. However, a viewpoint taken from the local road at Ballycannon indicates some visibility of the proposed panels and it is possible that sequential visibility will arise, and one may see the wind farm to the

	west and turning to the south-east may see glimpses of both solar farms. The nature of the solar farms is that they are more likely to be visible at close range unless open views from elevated locations are available such as those near Ballycannon. Cumulative visual effects are considered to be Not Significant to Slight in some localised areas. An existing quarry lies to the north-east of the site and is visible, along with the turbines in Viewpoints 11 and 12. A proposed extension of 10 hectares has been granted. The proposed extension is located to the west and south of the existing quarry. The visual effect of the quarry extension along with the proposed turbines are likely to be Not Significant to Slight and adverse, with the closer view being Viewpoint 10. The felling of the conifer plantation, as part of the forestry life cycle, is likely to be visible as this is seen against the skyline, and thus slightly more of the turbine towers may be revealed particularly in Viewpoint 10. Where the existing rockface is visible, the extension of the quarry will result in this remaining visible.

Mitigation Measures

u) A number of such measures are set out in section 12.7 of the EIAR and are detailed as including-

- Construction
    - Landscape Mitigation Measures-
        - including tree protection and fencing will be carried out where necessary during the construction phase, in the vicinity of the substation and where other areas of trees/woodland are in close proximity to construction.
        - Re-instatement of the areas following the construction phase, including replanting of the hedgerow with native species similar to what is to be removed at the temporary entrance. The borrow pit and deposition areas will be allowed to re-vegetate.
        - Areas of cut and fill will be minimised, and any bare areas will be left to naturally re-vegetate (or as otherwise advised by ecologist).

        - There will be no bunding or stockpiling of materials near the archaeological features in the north-west of the site.

- Operation
    - Avoidance, Mitigation and Enhancement
        - Mitigation by design is carried out, include a choice of appropriate grey or off white turbine colour,
        - sensitive siting and design of the turbines and associated elements,
        - minimising vegetation removal such as hedgerows and trees, and
        - avoiding sensitive elements on the site such as the archaeological monuments to the north-west of the site
        - Enhancement measures are set out in the BEMP (see Appendix 6E) and referred to in Chapter 6 Biodiversity. Those aiding in landscape and visual effects include-
            - Existing internal treelines and hedgerows will be enhanced within the site, where possible. This includes planting up any large gaps with appropriate native shrubs and trees.
            - Approximately 967 metres of native hedgerow planting is proposed.
            - Linear sections adjacent to the proposed internal access tracks, and reinstated areas around turbines will be allowed to be colonised with local plants through natural dispersion and germination.
- Decommissioning-
    - Once decommissioned, the visual effects of the turbines will be reversed

- comprehensive reinstatement proposal, including the implementation of a programme that details the removal of structures and landscaping, will be submitted to the Planning Authority

Residual Effects

v) Residual Effects are those as also identified in Section 12.5 and 12.6 of the EIAR.

13.7.21.1. **Assessment**

13.7.21.2. *Introduction*

a) I have reviewed and considered the relevant sections as set out in Chapter 12- Landscape and Visual of the EIAR, its associated Landscape and Visual Impact Assessment (LVIA) Photomontage Booklet (Volume IV) and all relevant documentation on file including public submissions. I am satisfied that the structure and content of the chapter, as well as the overall quality of information used, judgements reached and conclusions presented by the applicant are reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development upon the 'Landscape'.

b) Chapter 12 of the EIAR and the LVIA, including the methodologies employed are a well-considered and robust analysis of the typical issues relevant to this section of the EIAR. Given the extent of the study area and the challenges for assessment purposes imposed by same, I am satisfied the identified 20km Zone of Theoretical Visibility, identification of LCA's, scenic routes with the location and number of Viewpoints selected represents a comprehensive and reasoned consideration of both the landscape and visual impact matters including cumulative impacts as explained in the EIAR. The application in this regard allows for adequate consideration of the landscape and visual impacts arising from the proposed development.

c) I have considered all of the 'Potentially Sensitive Receptors' identified in section 12.4.9 the EIAR. I have visited the site and viewed it from-

- identified viewpoints as detailed in *TABLE LAN4*[120] below.
- the following Scenic Routes and/or designated Views & Prospects-
    - Clare-
        - No. 22 From Brickhill Bridge north east to road junction at Reaskcamoge
        - No. 23- Road from Cratloe north east through Gallows Hill to Glennagross
        - No. 26- R466 between Broadford and O'Briensbridge
        - No. 27- R463 from O'Briensbridge through Killaloe to outside Ogonnelloe
    - Limerick County
        - The two scenic routes identified within the designated Study Area on Map 6.2 (page 192) and Appendix 12H of the EIAR i.e. Tory Hill and Slieve Felim way route close to Murroe (near and including VP18).
        - Mungret College (VP26)
        - Mungret Monastic Settlement
    - Tipperary
        - Parts of V57- View west on the Cork Road approach to Newport
        - Parts of V59- Views of surrounding landscape from M7 including Annaholty and Rossfinch
- and much of the wider road network identified within the study area including from Clare County, Limerick City, Limerick County and County Tipperary.

d) I have considered EIAR Appendix 12G (ZTV map), the designated 20km radius study area and the separation distances from the proposed

[120] Section 13.7.21.6

development. I am satisfied no other scenic route or designated views & prospects in Clare, Limerick or Tipperary would be significantly impacted and therefore should not reasonably come under consideration.

e) I have also considered the landscape and visual effects from areas not specifically identified in the Applicant's study area i.e. from much of the road network around the study area in which a large number of other sensitive receptors such as houses, churches and other occupied buildings exist. In this regard the Commission are also referred to the following in Chapter 5 of the EIAR-

- Figure 5-4: Principal Towns/villages in the Area and
- Figure 5-5: Residential Dwellings within 1-2km of the wind turbines (as well as a large number identifiable outside 2km)

13.7.21.3. *Consideration of Submissions*

a) I note, in the Planning Authority's submission to the application, they consider the proposal to be in compliance with the designations as set out in their current CDP and associated WES as well as national and regional level policy objectives with respect to renewable energy. However, they also consider the proposal would significantly alter the landscape character at this location having particular regard to the height and number of turbines. They argue the heights proposed are not representative of the range of turbines identified in the WES or the 2006 Guidelines.

b) A very large number of public submissions raise concerns regarding the landscape and visual impacts. These concerns also refer to cumulative impact with other similar wind farm developments in the wider area. I acknowledge and appreciate cumulative impact concerns of not yet permitted wind farms which are not considered in the EIAR. I refer the Commission to section 13.3 of this report where this matter is addressed.

c) A large number of these submissions also raise related concerns regarding the height and number of turbines proposed and the visual effect of same upon the landscape and from sensitive receptors such as homes.

13.7.21.4. *Summary of the Applicant's Position*

a) The Applicant's overall position is as follows-

- Landscape effects during the construction stage are considered to be Medium to High with the significance ranging from Not Significant to Moderate
- Visual effects during construction will have a medium magnitude in the 'Site and Immediate vicinity' with the magnitude of effects considered Moderate and Adverse but localised and temporary
- Visual effects during construction over the 'Wider Landscape' will have a Negligible to Low magnitude of change during the construction phase and affects considered as Not Significant, adverse and temporary.
- Operational landscape effects will impart a Medium-High magnitude of change to the landscape character of the locality with significance detailed as Moderate in the Site and 'Immediate vicinity' with effects ranging from Neutral to Adverse.
- In terms of Slieve Bernagh Uplands LCA 8, operational effects are considered Moderate in the vicinity, Slight in the centre of the LCA, to no effect in the northern part.
- In terms of River Shannon Farmland LCA 9 where one turbine is proposed there will be pronounced operational effects near the site, but less visual presence to the west, at Bunratty and in the vicinity of Cratloe and also to the north-east at Killaloe
- Operational Visual effects considered Significant and adverse from two viewpoints- 2 and 4, with three ranging from Moderate-Significant i.e. 1, 3 & 9- (see table 12-12).
- Operational visual effects from local Viewpoints close to Scenic Routes and Views (Viewpoint 9 Woodcock Hill near Scenic Route 23)- Moderate to Significant.

- Other views and prospect in Limerick i.e. viewpoint 18 and 28[121]- Slight to neutral with Limerick City Views not protected- VP 6 and 7.
- Operational visual effects from settlements generally not pronounced and imperceptible for a number of places detailed.
- More pronounced operational effects from Parteen and Clonlara considered Slight-Moderate, Moderate and neutral in quality. Effects from Limerick City e.g. Thomond Bridge judged as Moderate and Neutral
- In terms of Cultural Heritage operational visual effects are
    - more pronounced to St. Johns Castle with expansive and elevated views towards the proposed development. Views are considered Moderate and Neutral.
    - Turbines are largely screened from ground level in the vicinity of Bunratty Castle.
    - The proposed turbines do not interfere with the protected view at Mungret.
- Cumulative Landscape Effects are illustrated in the Cumulative ZTV Map Hub Height (see Figure 12-15). Effect on the landscape character of the Slieve Bernagh LCA would vary throughout the LCA. The southern part of the Slieve Bernagh LCA is considered Medium. Some sequential visibility in the parts of the LCA which lie between the proposed development and the Fahy Beg wind farm are likely to impart a Medium-High magnitude of change. The change to the south-east, Shannon Estuary Farmland is considered to range from Low to Medium. Significance of effect described as Slight to Moderate on certain parts of the landscape character of the Slieve Bernagh LCA and parts of the Shannon Estuary Farmland LCA.
- Cumulative Visual Effects- Cumulative visibility is considered to vary throughout the study area, ranging from Slight to Moderate.

[121] Likely typing error and should be VP26.

- Cumulative Other- Cumulative visual effects with solar farms are considered to be Not Significant to Slight in some localised areas. Effect with permitted quarry extension considered Not Significant to Slight and adverse.

13.7.21.5. *Assessment/Evaluation*

a) I base much of the following assessment/evaluation on the methodology employed by the Applicant and in particular the criteria detailed in Table 3.4 of the EPA 2022 Guidelines which I set out in the following tables for ease of reference-

TABLE LAN2

EPA Significance of Effects Category	**Corresponding EPA definition**
Profound	An effect which obliterates sensitive characteristics
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences

Imperceptible	An effect capable of measurement but without significant consequences

TABLE LAN3

Quality of Effects	**Corresponding EPA definition**
Negative/Adverse	Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.
Neutral	Scheme complements (or does not detract from) the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality
Positive	Improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

b) I will consider effects against the following identified 'Potentially Sensitive Receptors' generally in accordance with section 13.7.21.2 paragraph 'c' above i.e.-

- Viewpoints
- Scenic Routes and Views and Prospects
- Landscape Character Areas (LCA's)
- Others- Much of the wider road network identified within the study area including from Co. Clare, Limerick City, Co. Limerick County and Co. Tipperary including settlements, housing and other properties etc.

I acknowledge that both the GLVIA 3rd Edition Guidelines (section 2.23) and the EPA 2022 guidelines (section 3.7.2) identify judgment as an important element to determine significance of an effect. Therefore, I endeavour to

substantiate my considerations where they differ from those set out in the EIAR.

13.7.21.6. *Viewpoints*

a) In terms of the 26 Viewpoints, I set out the following table which summarises the Applicant's findings followed by my own consideration-

TABLE LAN4

VP No.	Location	Distance[122] from nearest proposed turbine (km)	No.[123] of Turbine nacelles visible	Sensitivity	Magnitude	Significance of Effect	Quality of Effect
1	View from Knocknalisheen, south of Cappateemore Bridge Two Photomontages	1	11	Medium High	1a- High 1b- Medium-High	Moderate-Significant	Adverse
My consideration- I disagree with the EIAR findings. Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, High, *Very Significant/Profound* and Adverse. The turbines would be visually domineering to residential properties.							
2	View from local road at Cappateemore West	0.73	9	Medium High	2a- High 2b- High 2c- High	Significant	Adverse

[122] As detailed in EIAR Volume IV: Photomontages
[123] As detailed in EIAR Volume IV: Photomontages

	Three Photomontages provided 2a, 2b and 2c						
My consideration- I disagree with the EIAR findings. Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, High, *Very Significant/Profound* and Adverse. The turbines would be visually domineering to residential properties.							
3	View from local road and houses at Killavoher, Meelick	1.26	12	Medium High	Medium - High	Moderate - Significant	Neutral
My consideration- I disagree with the EIAR findings. Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, High, Very Significant/Profound and Adverse. The turbines would be visually domineering to residential properties.							
4	View from local road at Ballyfinneen	0.74	9	Medium	High	Significant	Adverse
My consideration- I disagree with the EIAR findings. Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, High, *Very Significant/Profound* and Adverse. The turbines would be visually domineering to residential properties.							

5	View from Knockalisheen Road at Moyross, Co. Limerick	3.41	12	Medium-High[124]	Medium	Moderate	Neutral
My consideration- I disagree with the EIAR findings. Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, High, *Very Significant/Profound* and Adverse. The turbines would degrade the quality of the rural landscape and its views from this general (urban) area while presenting as domineering features.							
6	View from Shannon Bridge plaza, Limerick City	5.74	0	Medium - High	None	None	None
My consideration- Based on the information submitted the development is not visible from this view. Having visited the VP, noting the urban context and having examined the documentation submitted, I do not expect the turbines to be visible from this general area and therefore effects are likely Not Significant/ Imperceptible.							
7	View from Thomond Bridge, Limerick City	4.97	12	High	Medium	Moderate	Neutral
My consideration- I disagree with the EIAR findings. Given the number, distance, height and scale of turbines visible including the prominence of the view from an important site in Limerick City, I find the Sensitivity, Magnitude, Significance and Quality to be High, (much closer to) High (than							

[124] As per page 12-72 of EIAR which differs to Table 12-12 on page 12-88 of EIAR

medium), *Significant/Very Significant* and Adverse. I acknowledge this view is not protected however the number, height and scale of the turbines would degrade the quality of the scenic landscape as viewed from this area.							
8	View from Lough Derg Way at Clonlara Bridge	6.5	11	Medium - High	Low- Medium	Slight - Moderate	Neutral
My consideration- I disagree with the EIAR findings. Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be between Medium and High, *Significant/Very Significant* and Adverse. The turbines would degrade the quality of landscape and its views from this scenic area (albeit not protected).							
9	View from Woodcock Hill	2.4	9	High	Medium	Moderate - Significant	Neutral
My consideration- This VP adjoins Scenic Route 23. I tend to agree with the findings of the EIAR in relation to this VP. It is worth noting that I consider views from Scenic Route 23 to be in the opposite direction of the proposed development and from the public road rather than from this VP. It is also considered the Aviation related structures in the location of this VP and views to the Shannon are more likely to be features of interest rather than the area behind the structures where the VP towards proposed turbines appears to be taken from.							
10	View from local road at Derrynaveagh	1.63	4	Medium	Medium	Moderate	Neutral

My consideration- Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, High, *Very Significant-Profound* and Adverse. It should also be noted the turbines would likely be visually domineering to a number of residential properties located north of this VP towards VP 11 and further south of this VP along and off the local road.							
11	View from Oatfield Cross (R471)	3.09	5	Medium	Low - Medium	Slight - Moderate	Neutral
My consideration- Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, Medium-High, *Significant/Very Significant/Profound* and Adverse. I do not consider the VP presented in the EIAR to be reflective of general views from Oatfield Cross and the R471 or the local roads just off. There are a number of residential properties and St Vincent De Paul's Church in close proximity of the VP from which their sensitivity is not reflected in the Photomontage. I note the presence of the church is referred to on page 12-77 of the EIAR but I disagree with the sensitivity presented. The turbines would likely be visually domineering to a number of residential properties located near this VP.							
12	View from R471 west of Trough Cross	3.82	3	Low - Medium	Low	Slight	Neutral
My consideration- Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be Medium, Medium, Moderate and Neutral. However it should be noted there are a large number of residential properties east, west and south but in close proximity of this VP and from those properties the sensitivity and magnitude is likely to range higher with significance of							

Significant/Very Significant likely. The quality of such effect would be adverse with the visible turbines likely presenting as domineering.							
13	View from road at Ballykeenaun, Parteen	2.97	12	Medium – High	Medium	Moderate	Neutral
My consideration- Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be Medium, High, *Significant/Very Significant* and Adverse. There are a large number of residential properties around this VP with views towards the site considered of scenic quality (although not protected). The turbines would degrade the quality of landscape and its views from this general area while presenting as domineering features.							
14	View from Blackwater Bridge at Rosmadda West (Ardnacrusha)	3.45	12	Medium	Medium	Moderate	Neutral
My consideration- Given the number, proximity, height and scale of turbines visible, I find the Sensitivity, Magnitude, Significance and Quality to be High, Medium, *Significant/Very Significant* and Adverse. I acknowledge the Applicant's contention as detailed in the EIAR regarding Ardnacrusha power station and headrace canal are characteristics of a heavily modified landscape relating to electricity generation, with steel pylons and electricity poles visible on the far bank of the canal.							

However, I do not consider the landscape and visual effect of the proposed development to be comparable in this context as views towards the upland Ballycar area remain scenic and evidently rural rather than modified. The turbines would degrade the quality of this landscape and its views from this general area while presenting as domineering features.							
15	View from R470 at Sixmilebridge near school	7.47	0	Low	Negligible	Imperceptible	Neutral
My consideration- Based on the information submitted the development is not visible from this view. Having visited the VP, noting the urban context and having examined the documentation submitted, I do not expect the turbines to be visible from this general area and therefore effects are likely Not Significant/ Imperceptible.							
16[125]	View from Mid Clare Way and local rd. (east of Seefin) at Kyle	6.61	0	Medium - High	None - Negligible	None – not significant	None
My consideration- This VP is from the junction of a local road and the Mid Clare Way walking trail where views towards the site are screened by a forested area. Having inspected this VP it is likely the effects are as suggested in the EIAR. However, it should be noted that views just south on the local road beyond the forested area or further west along the walking trail again beyond the forested area and noting the separation distance of c. 6km would likely range from Medium – High, Medium – High, *Moderate - Significant* and Adverse.							
17	View from old bridge at O' Briensbridge	10.94	0	Medium - High	None	None	None

[125] Page 12-80 considers ratings if visibility becomes availability in Winter months. The ratings presented differ from Table 12-12 of EIAR.

My consideration- Based on the information submitted the development is not visible from this view. Having visited the VP and having examined the documentation submitted, I would consider the sensitivity to be High, but do not expect the turbines to be visible from this general area. Therefore landscape and visual effects are likely Not Significant/ Imperceptible.							
18	View from Local road at Ashroe (north of Glenstal Abbey), Co. Limerick	17.47	12	High	Low	Slight[126]	Neutral
My consideration- This view is taken along a designated Scenic Route[127]. As detailed on page 12-81 an existing turbine is visible from places but this is generally intermittent along the scenic route. Noting the distance to the proposed development, the nature of the local road and the scale of the proposal, I tend to disagree with the magnitude presented in the EIAR and suggest a rating of Medium is more likely. The significance of this effect would be closer to Moderate than Slight given the scenic route designation. Noting the separation distance I do not consider the quality of the effect Adverse.							
19	View from Knockanuartha summit (12 o' clock hills walking route) Two Photomontages	5.73	8	High	Low-Medium	Slight - Moderate	Neutral

[126] The magnitude and sensitivity results in Slight-Moderate but EIAR applies professional judgment to result in Slight only.
[127] See Limerick CDP Map 6.2 (page 192).

My consideration- While I did not inspect this VP in person, I note it is taken from near the peak of Knockanuarha Hill (12 O'clock Hills) with a peak indicated at 309m on OS Discovery Series Mapping c. 5.5km north of Turbines 1 and 3 at contours of c. 230m and 240m. I tend to disagree with the EIAR findings and suggest the Sensitivity, Magnitude, Significance and Quality is more likely to be High, Medium High, *Significant/Very Significant* and Adverse with the turbines degrading the quality of landscape and views from this general upland area.							
20	View from local road at Bunratty	9.94	0	High	Negligible	Imperceptible	Neutral
My consideration- Based on the information submitted the development unlikely to be very visible from this view. Having visited the VP and having examined the documentation submitted, I tend to share the position as presented in the EIAR. This position extends to the road network around the general area of the castle as well as including from the ground level of Bunratty Folk Park. However it should be acknowledged that views from the upper levels of Bunratty Castle including its turret are likely to present a greater Magnitude, Significance and Quality of effect which would degrade the landscape and would be adverse. Such views are however not protected and would be at a considerable distance of close to 10km.							
21	View from Ringmoylan/Ballymacdonnell Pier, Co. Limerick	15.21	9	High	Low	Slight	Neutral

My consideration- Having inspected this VP and considered the information on file, I tend to share the position presented in the EIAR. The proposed development would be at a considerable distance and while they would degrade the natural landscape, I would not consider the quality of the effect to be adverse.							
22	View from the Ferry Playground, Castleconnell	9.8	0	High	Negligible[128]	None	None
My consideration- Based on the information submitted the development will not be visible from this view. Having visited the VP, noting the urban context and having examined the documentation submitted, I do not expect the turbines to be visible from this general area and therefore effects are likely not Significant/ Imperceptible.							
23	View from R521 south of Caherconlish	17.43	12	Medium	Low	Slight	Neutral
My consideration- Having inspected this VP and considered the information on file, I tend to share the position presented in the EIAR. I also noted the presence of the existing turbine visible from this VP. The proposed development although greater in number, larger in scale and located at higher ground than the existing turbine would be located at a considerable distance from the VP. Their presence would degrade the natural landscape but it is not significant, nor would I consider the quality of the effect to be adverse.							
24	View from R526 at Cloughkeating, Co. Limerick	10.89	12	Medium	Low - Medium	Slight	Neutral

[128] As per Table 12-12

My consideration- Having inspected this VP and considered the information on file and noting the height and scale of the proposal, I tend to share the position presented in the EIAR.							
25	View from King John's Castle, Co. Limerick	5	12	High	Medium	Moderate	Neutral
My consideration- The existing and proposed photomontages are presented at a height from St Johns Castle. This is detailed in the EIAR as from the viewing parapet to the western side of the Castle close to the River Shannon. This VP is not reflective of views from the public realm. Having visited the general area of the VP (from the public realm at ground level) and having examined the documentation submitted, I disagree with the position as presented in the EIAR. I find the quality of effect likely to be Adverse. However from the public realm to the front of the castle towards the site, it is more likely the proposed development will not be visible with no significant or adverse effect. In this context the Commission should consider this VP in conjunction with VP 7 (Thomand Bridge) where I find the Sensitivity, Magnitude, Significance and Quality to be High, (much closer to) High (than medium), *Significant/Very Significant* and Adverse. I acknowledge views from St. Johns Castle at the public realm or at a height as presented in the EIAR are not protected. However as per VP7 the number, height and scale of the turbines would degrade the quality of landscape as viewed from the general area of the Castle and Thomond Bridge and present an overall adverse quality of effect, notwithstanding the fact these views are not protected.							
26	View from Mungret College	9.1	8	High	Low	Slight	Neutral

My consideration- This VP includes a protected 'View and Prospect' as per the Limerick CDP. The protected view is towards the Mungret Monastic Complex as detailed in Objective EHO35. A photomontage with the proposed development is not provided and I note it is detailed 8 nacelles are visible.

Having inspected this VP, considered the information on file and noting the orientation of the monastic settlement and distance to the proposed development, it is likely the position presented in the EIAR is reasonable.

13.7.21.7. *'Scenic Routes' and 'Views and Prospects'*

a) I have inspected the site from the following scenic routes (SR) in Clare- No. 23, 26 and 27 (see Table 12.8 of the EIAR). I have also inspected the site from Scenic Route 22[129].

- SR 22 & 23- I note the proximity of scenic routes 22 and 23 (see also VP9 above) to the application site. I have visited these routes and travelled their lengths. I am not convinced views from these routes towards the application site (which would generally be intermittent in any event) are necessarily protected by this designation and in this regard I am satisfied the proposal will not have a significantly adverse impact on these scenic routes.
- SR 26- I travelled the length of this scenic route from the junction with the R463 to south of Broadford. Views towards the site are restricted by existing topography for the most part and mature roadside boundaries. The extent of protection of this route is considered likely to be to the east and north side of the regional road towards Lackareagh and Slieve Bearnagh where worthy views of these upland areas are evident. I am satisfied the proposal will not have a significantly adverse impact on this scenic route.
- SR 27- This route is located along much of the R463 which is a heavily trafficked regional road with poor horizontal alignment. I travelled along this route from Killaloe towards the site. Views of scenic worthiness are considered to be towards the River Shannon a south-westerly direction. Views towards the application site are generally intermittent with existing mature roadside boundaries limiting views. Therefore views towards the site are not considered the reason likely for this designation. I am satisfied the proposal will not have a significantly adverse impact on this scenic route.

[129] From Brickhill Bridge north east to road junction at Reaskcamoge c. 1.3 km to 6.5km east and south east of the proposed site.

The proposal would not be contrary to the Clare CDP Objective CDP14.7 regarding Scenic Routes. Furthermore the proposal would also not be contrary to CDP14.3 *'Western Corridor Working Landscape'* [130] as the proposal is not on the scenic routes within this designation and I do not consider it will intrude significantly on such designations.

b) I have inspected the site from the following 'Scenic Routes and Views' (SRV) in Tipperary-

- SRV- The V57 View west on the Cork Road approach to Newport is located in excess of 12km south east of the application site. It is located along the R503 to the west side of Newport. Views towards the application site are considered at a distance and intermittent. I note the Applicant's contention in Table 12-10 of the EIAR that most scenic views are eastwards towards the Slieve Feilim Hills. I am satisfied the proposal will not have a significantly adverse impact on this scenic route.
- SRV- The V59 Views of surrounding landscape from M7 including Annaholty and Rossfinch is located in excess of 12 km east of the application site. Such views are from the M7 motorway. For safety reasons I have inspected and considered views from the Birdhill junction M7 flyover. Noting the distance to the application site and the function of the motorway, I am satisfied the proposal will not have a significantly adverse impact on this scenic route.

The proposal is sufficiently distant from other SRV's identified in Table 12-10 of the EIAR and Appendix 3 of the Tipperary Development Plan. The proposal would not be contrary to the Planning Policy 11-16 regarding 'Views and Scenic Routes'.

c) I have inspected the site from the following 'Views and Prospects' (V&P) in County Limerick as identified in Map 6.2 of the Development Plan and Table 12-9 of the EIAR-

[130] All lands within 10km on either side of the N18/M18 – except as excluded by Heritage Landscapes

- V&P from Mungret College northeast to the Monastic Complex. The Commission is also referred to VP 26 above. The proposed development will be c. 9km north to north east from this V&P. It is clear the protection afforded by this status is towards the Monastic Complex c. 400m north east and not the wider back drop to the application site (see Map 6.2 of LDP). While the proposed development will likely be visible from this V&P as detailed in VP26[131] I am satisfied the proposal will not have a significantly adverse impact on this V&P.
- V&P northwest across the Monastic Complex. The protection afforded to this V&P is detailed as *"Views northwest across the Monastic Complex" in Objective EHO35"* (see also Map 6.2 of LDP which also suggests north and north east). Northwest would be away from the proposed application site. Views north would not be towards the site and north east would require views over the main Limerick City urban area. Given the distances involved I am satisfied the proposal will not have a significantly adverse impact on this V&P.
- V&P from local roads in vicinity of Tory Hill. This V&P is at a considerable distance from the application site at c. 18km. Views towards the site from Tory Hill would likely be uninterrupted but distant. Views from local roads around V&P would be intermittent. I am satisfied the proposal will not have a significantly adverse impact on this V&P.
- V&P from Local roads west of Murroe. This view is at a considerable distance from the application site at c. 17km with views towards the site intermittent from many places. Section 6.4.2 of the LDP suggests this V&P *"makes an attractive walking route to complement the attractions of the Clare Glens"*[132] I consider the proposal will not have a significantly adverse impact on this V&P.

Having considered all of the above the proposal would not be contrary to Objective EH O31- Views and Prospects and Objective EHO35- Special

[131] Photomontage not submitted but 8 nacelles detailed as visible.
[132] Recreational and amenity facility in County Limerick- see sections 5.8.17 and 10.10 of LDP.

Control Areas Mungret as set out in the Limerick City and County Development Plan 2022-2028.

d) I have also inspected the site from a number of locations along the River Shannon within Limerick City including-

- from near Shannon Bridge (See VP 6 above). The proposal is not likely to be visible from here.
- Thomond Bridge (VP 7). The proposal will present a Significant/Very Significant and Adverse impact by virtue of the number, height and scale of the turbines visible which would degrade the quality of the scenic landscape as viewed from this area.
- The general area of St. John's Castle (VP25). The proposal is unlikely to be visible from the public realm around Dublin Castle but will present significantly as identified in VP25 from a height. As discussed in the Viewpoint section above this should be considered with VP 7 given the prominence and proximity of these viewpoints.

Notwithstanding the above, the Commission will note that there are no protected views and prospects or scenic routes in the main urban area of Limerick City. Notwithstanding the significant/very significant and adverse impact upon the Landscape, likely from Thomond Bridge and the upper parts of St. Johns Castle the proposed development is not considered to be contrary to any specific policy or objective as set out in the Limerick City and County Development Plan 2022-2028 including within Volume 6- Building Height Strategy.

13.7.21.8. *Landscape Character Areas and other designations*

a) Chapter 14 of the Clare CDP details with 'Landscape'. Section 14.2.1.3 identifies a number Landscape Character Areas (see Map 14.2). The majority of the site is located within the 'Slieve Bernagh Uplands' (LCA 8) with a small portion and one turbine located in the Shannon Estuary Farmland (LCA 9).

b) The Commission will note the site is also located within the 'Western Corridor Working Landscape' (see Map 14A) which the Clare CDP defines as all lands

within 10km on either side of the N18/M18 – except as excluded by Heritage Landscapes and to which CDP Objective 14.3 applies. This requires "*selection of appropriate sites" in the first instance within the landscape*". The Commission are referred to section 12.1 of this report in which it is clear the majority of the development is sited within a 'Strategic Area' considered to be eminently suitable for wind farm development with all layout options usually acceptable as per the WEDG 2006 siting and design guidance for 'mountain moorland'.

c) The Landscape and Visual effects of the development as proposed at this location and within the LCA's and 'working landscape' are quite evident from many of the viewpoints presented in the EIAR and as shown in the LVIA photomontages.

d) I share the Applicant's finding that the site and the immediate vicinity within 3km of the site is where the visual effects will be most pronounced (EIAR section 12.4.9). However, I disagree with their following contentions in relation to 'immediate vicinity of the site'-

    - Landscape Sensitivity- Low-Medium (Section 12.5.1.1 and 12.6.1.1)
    - Magnitude of Change- Medium-High change to the landscape character of the locality
    - Significance- Moderate
    - Quality- Neutral to Adverse

    In my opinion the Sensitivity, Magnitude, Significance and Quality is more likely to be High, High, Significant/Very Significant and Adverse with the proposed turbines where visible likely to degrade the quality of landscape within the 'immediate vicinity of the site'.

e) In relation to LCA 8 the Commission are referred to section 12.6.1.3 of the EIAR[133] and my findings above on VP's 2,10,11,12,16 and 19 as well as my commentary in relation to areas around VP 12 and 16.

[133] Page 12-65 Landscape Character and Viewpoints

f) In relation to LCA 9 the Commission are referred to the same section of the EIAR and my findings on VP 1, 3, 4, 8, 13 and 14, where I consider the Applicant's findings understated with significance of impacts likely to be Significant/Very Significant and Adverse and thereby degrading of the landscape.

g) In relation to other LCA's in Clare as well as County Limerick and Tipperary, I tend to agree with the findings put forward by the Applicant in section 12.6.1.3 of the EIAR[134] in relation to landscape with no significant or adverse effects identified.

h) Overall, it is my view the proposed development will have significant/very significant/profound visual and landscape impacts which are likely to be Adverse upon many parts of LCA 8 and 9 within County Clare especially within the immediate vicinity of the site. However, it is acknowledged that the significance and quality of such impacts is likely to vary with regard to vantage point and distance with impacts from the 'wider landscape' less significant in the context of the 'Western Corridor Working Landscape' designation and the sites location within a 'strategic area' considered to be eminently suitable for wind farm development .

13.7.21.9. *Others*

a) I have viewed the site from much of the road network identified within both areas of the study area including from Clare County, Limerick City, Limerick County and County Tipperary. I have viewed from many areas and sites not specifically identified as 'Potentially Sensitive Receptors'.

b) In particular, I refer the Commission to-

- Figure 5-4 (Chapter 5 Population and Human Health) which identifies the proximity of the site to principal towns and villages in the area including Limerick City.

[134] This section of the EIAR states "Viewpoints 20 and 24 are taken from Shannon Coastal Zone LCA in Co. Limerick" This would appear to be in error with VP20 from Bunratty in Clare.

- Figure 5-5 which identifies Residential Dwellings within 1-2km of the proposed turbines
- Figure 10-2 (Chapter 10 of the EIAR in relation to Noise and Vibration) which indicates the closest dwellings to the proposed turbines The EIAR details 303 dwellings within 2km of the nearest turbine.
- Figure 12-12: Hub Height ZTV
- Figure 12-13: Tip Height ZTV and
- Figure 12-15: Cumulative ZTV (Hub Height)

c) It is not reasonable for an EIAR to identify and consider every 'Potentially Sensitive Receptors' within its study area. I acknowledge the Applicant has provided a comprehensive and robust consideration of such receptors in their EIAR. However it is my opinion the proposed development when operational is likely to have effects that should be categorised as *Significant/Very Significant/Profound* with *Adverse impacts* upon many other 'Potentially Sensitive Receptors' that have not been specifically identified within the EIAR including for examples areas near to identified viewpoints e.g. near VPs 10, 11, 13, 14 and 16 as well as the settlements of Meelick (Ballycannon) and even the suburbs of Limerick City.

13.7.21.10. *Conclusion*

a) I appreciate and fully accept concerns raised in relation to the height and number of turbines at this location and the adverse visual and landscape impacts likely from same. I find the height, scale and number of turbines proposed are likely to have significant/profound and adverse impacts upon a number of sensitive landscape and visual receptors in the study area most notably in the 'Site and Immediate vicinity' but also in the closer areas of the 'Wider Landscape'. I also have serious reservations about the likely impacts of the turbines on views from Limerick City especially the area of Thomond Bridge and upper heights at St. John's Castle. However this concerns must be balanced with the fact that views from the Bridge and Castle towards the application site are not protected views and are at a distance of c. 5km.

b) It is pertinent to consider the specific matter of turbine height. 11 turbines are detailed as having hub heights of 90m and blade lengths of 68m with 1 turbine (T10) having a hub height of 85m and a blade length of 68m. The existing ground level of each turbine is set out in drawing titled 'Site Layout – Master Sheet'- (Number 22156-MWP-00-00-DR-C-5005) and in this context and given the site location in a relatively localised upland area I consider the proposal is likely to have a significant/very significant/profound and adverse visual and landscape impact over the 'Site and Immediate vicinity' as well as the 'Wider Landscape' especially as shown in the submitted ZTV mapping.

c) Chapter 6 of the WEDG 2006 discusses 'Aesthetic Considerations in Siting and Design'. In terms of turbine heights it details-

> *"The notion of what constitutes tall, medium and short turbines will change over time with technological advances and thus a shift in turbine height relative to capacity. In 2005, less than 60m to blade tip are considered short, 75-100m medium and over 100m tall".*

In this context the proposed turbines are substantially higher than those discussed in the WEDG but do fall within the meaning of 'over 100m tall'. Section 6.9.1 of the guidelines details *'siting and design guidance for mountain moorland'* and in terms of height states-

> *"There would generally be no height restrictions on mountain moorlands as the scale of landscape is so great. However, shorter turbines may be more appropriate where they are located on small peaks and outcrops in order to maintain an appropriate scale."*

Therefore the WEDG clearly do not restrict consideration of turbines such as those proposed.

d) Section 1.4 of Clare's WES is titled 'Terms and Definition'. In this section it clearly states-

> *"For commercial operations, turbine heights of 75m to 125m to blade tip are assumed, as these represent the range of turbines submitted in planning applications in County Clare since 2000."*

e) The Local Authority's Chief Executive submission[135] to this application states-

> *It is clear that the height of the turbines as now proposed are not representative of the range of turbines identified in the WES or the 2006 Guidelines.*

f) While I accept and acknowledge the views of the Chief Executive in this regard, I highlight for the Commission, the same section of the WES goes on to state-

> *"…….turbine heights are increasing and* ***there is no prescription in relation to turbine heights[136]****. Each application will be assessed on its own merits against planning policy, objectives and legislation".*

This must then be considered against the fact the majority of the site is located within an area designated as a 'Strategic Area' eminently suitable for wind energy development and to which CDP objective WES Eight: 'Strategic Areas' applies. Therefore the site is an 'appropriate location' for such proposals where there is no clearly stated preclusion on heights such as those proposed.

g) Having visited the site and its surrounding area and having considered the height, scale and number of turbines proposed, I conclude the EIAR understates the susceptibility of identified receptors and the magnitude of impacts with particular regard to a number of the selected viewpoints[137] and summarised in *TABLE LAN4* above, as well as impacts to local roads, settlements, other residences within 3km and from Limerick City etc. and the wider study area especially to the south of the site.

h) I have considered the mitigation and avoidance measures put forward in Section 12.7 of the EIAR. Notwithstanding same and once constructed, the potential for significant, very significant and/or profound landscape and visual effects from the proposed development of this size and scale, especially upon the 'Site and Immediate vicinity'[138] of the identified study area, including within

[135] See Section 5.1.2 of this report
[136] Emphasis added.
[137] Summarised in Table 12-12 of EIAR
[138] c. 3km radius of the proposed development

the ‘wider landscape’, cannot in my opinion be avoided, managed and/or mitigated by the measures proposed or through suitable conditions.

i) The only real landscape mitigation employable for wind farms of the size and scale such as that proposed, is their siting at ‘appropriate locations’ identified in statutory Development Plans. The majority of the subject application site including the location of proposed turbines, is located within an area designated a ‘Strategic Area’ that is considered eminently suitable for wind farm development as clearly detailed in the current Clare CDP and its WES i.e. an appropriate location. This is consistent with National Policy Objective 70 of the National Planning Framework which seeks to promote renewable energy use and generation at ‘appropriate locations’. The Commission are also reminded that all layout options are usually acceptable as per the WEDG 2006 siting and design guidance for areas considered ‘mountain moorland’.

j) It is clear from a large number of the submissions received that there is robust opposition to the proposal from a landscape and visual impact perspective. In this regard, the local policy context and wind energy designations as formulated in the operative County Development Plan (CDP) is paramount.

k) The CDP, its WES and the WEDG 2006 do not preclude heights such as those proposed and it can be argued that they do in fact make provision for turbines of the heights proposed. There is no clear policy, objective or even standard set out in the CDP or the Ministerial Guidelines by which the proposed development could be considered contrary to regarding proposed heights. The site is located in a ‘Strategic Area’ eminently suitable for wind energy development and therefore the proposed site is an ‘appropriate location’ for wind farm developments such as that proposed consistent with NPO70 of the NPF, despite the evidently adverse Landscape and Visual impacts that will result from the proposed development over the identified ‘Site and Immediate vicinity’ and parts of the ‘Wider Landscape’. I consider these impacts to be significant/very significant/profound and adverse in many cases.

l) It should also be noted that the application is for a 35 year life span. In this context the development if permitted would not be on a permanent basis. Therefore the Landscape and Visual impacts could be considered mitigated

over a longer term through condition whereby a decommissioning plan will see to the removal of the turbines and the associated adverse impacts.

m) In the context of the EIAR Directive, the potential for significant adverse impacts on Landscape cannot be avoided over the lifespan of the project if permitted. However, they can be considered mitigated/managed by the siting of the proposed development in a 'strategic area' considered eminently suitable for wind farm development and permitting the development on a non-permanent basis as detailed in section 12.2 of this report.

13.7.22. **Cultural Heritage**

a) A number of Cultural Heritage related concerns have been set out in the submissions received including impacts on-

- the wider archaeological heritage significance of the area,
- archaeological sites of importance and their setting such as King Crimhthann- High King burial site
- omission of Sarsfield Ride from report,
- gates, wall and piers etc to protected structure Quinnsborough House (Reg No. 093) from construction traffic-
- recorded monument near Turbine 2 and its visibility in the landscape
- views from King Johns Castle in Limerick a National Monument underassessed
- from Bunratty Castle, Dromoland Castle,
- Mungret College protected view

b) One submission also includes a Cultural Heritage Assessment by Aisling Mulcahy an Archaeologist. This highlights what are considered deficiencies in the Applicant's Heritage Assessment in the EIAR. Concerns are raised in relation to a number of matters including-

- Lack of reference to legislation not yet in force and importance of consideration of setting for monuments.

- two assets on the TDR Quinnsborough House and Ringfort CL053-041,
- impacts to Intangible Cultural heritage including Placenames, Folklore, Sarsfield Ride and the Bard of Thomond.
- Prehistoric Ritual Complex altered completely by encirclement of T1, T2 and T3, loss of visual amenity and impacts of profound significance.
- Non-compliance with NPO23, NPO55 and NPO60 of the NPF, a number of detailed provisions of the Clare CDP and Limerick CDP and the WEDG of 2006.

c) Cultural Heritage is addressed in Chapter 13 of the EIAR. Section 13.2 of the EIAR details the Methodology employed which included a desk top assessment, site inspections and licensed testing (near turbine 2 and aits access track, 13 trenches, all negative results- see Appendix 13A).

d) Section 13.2.2 and Table 13-1 sets out the assessment criteria in accordance with EPA Guidelines on the Information to be contained in environmental impact assessment reports (2022). Section 13.2.3 details no significant limitations were encountered during field work but does explain how two turbine locations T5 and 6 were only partly inspected due to forestry. An Unmanned Aerial Vehicle Survey was utilised and returned negative result.

e) Section 13.3 discusses the 'Existing Receiving Environment of Proposed Development'. In terms of Archaeology National Monuments within 10km of the site are identified in Table 13-2 including Bunratty Castle, Mungret Churches and King Johns Castle amongst others- See Figure 13-1.

f) Recorded Monuments (RM) within 5km of the site are discussed in section 13.3.1.2. 177 RM were identified as per Figure 13-2 and set out in Appendix 13B. Four are located in proximity of the development and one within the planning application site boundary. These are discussed in further detail in section 13.3.1.3 and detailed to establish potential physical effect and visual effects on the setting of the closest located monuments See Figure 13-3 for locations in context of proposal.

- Aerial photography of 3 monuments (Cairn, Standing Stone and Barrow) described as conforming as a 'prehistoric ritual complex' is provided in Plate 13-1. These monuments range from 90m to 430m from proposed turbines 1, 2 and 3. The standing stone is photographed and shown in Plate 13-2 with the barrow shown in Plate 13-2. The EIAR details licensed trenching was undertaken in proximity to these monuments with negative results and no features discovered.
- An 'enclosure' is located c.300m to the north east of proposed Turbine 7 (see Plate 13-4). This is detailed to have panoramic views of surrounding areas.
- An 'earthwork' is situated c.240m to the south of turbine 7, outside of the planning site boundary. The location of the monument was highly overgrown however the drone survey revealed possible changes in the surface that may reflect its footprint (Plate 13-5).

g) Section 13.3.4 is titled National Inventory of Architectural Heritage (NIAH) and details no structures recorded within the NIAH or protected within the application boundary. However 83 protected structures are detailed within 5km of the site and detailed in Table 13.5. Quinnsborough House is identified as RPS No. 093 and NIAH No 20406302 as a 18th -19th century house located in Parteen townland, Clare.

h) Section 13.3.6 discusses 'Cultural Heritage Sites' describing these as incorporating both archaeological and built heritage remains which are not subject to statutory protection, or which have not been previously recorded as heritage assets in any known datasets. Examination of the pre-famine 1st Edition OS 6" map of 1840-42 (Figure 13-4) revealed a number of structures within the proposed planning boundary (Table 13-6). A c.100m corridor encompassing the proposed access tracks/internal grid connection between the turbines was assessed from which four pre-famine structures or settlements were noted. The 1893 OS mapping Figure 13-5 revealed that three of the four structures had survived by that time (Table 13-6).

i) Section 13.3.8 discusses the site location and description with initial inspections in May 2021. The information in this section discusses findings of

the site, all 12 turbine locations, the proposed Borrow Pit and deposition areas, substation areas and internal access tracks and grid connection. A number of photographs are included.

j) Section 13.4 is titled 'Existing Receiving Environment of the Proposed Grid Cable Connection'. A 150m corridor encompassing the proposed grid connection was assessed and no Recorded Monuments were identified. One monument was identified c. 120m from the connection to the overhead line see figure 13-8. No Protected Structures or structures recorded in the NIAH are identified within the proposed grid connection route

k) Section 13.4.9 details the baseline information gathered and researched is sufficient to allow a determination of the significance of effect of the proposed development on the existing archaeological environment.

a) Section 13.5 is titled 'Likely Significant Effects'. I shall consider these effects as follows- at Construction, Operation, Decommissioning stages, in a Do-Nothing Scenario and Cumulative effects. These are summarised in Table CH below-

TABLE CH

Project Phase	**Potential Effects**
Do Nothing	• See section 13.5.7 • No potential for effects on archaeological and cultural heritage assets.
Construction	• Proposed Turbines- potential to encounter unknown archaeological features or monuments based on existing recorded monuments (RM) in vicinity (especially turbine 2) and large number of RMs within 5km study area. Rated moderate. • National Monuments indirect visual effect to the National Monuments in state care within the 10 km radius from the limits of the site has the potential to occur (Figure 13-10). However, based on site visits to these National Monuments, there will be a 'not-significant' to 'slight' visual effect during the operation stage of the proposed development. Bunratty- visual effect to the monument will be 'not significant', as turbines will be not visible from the Castle location. Mungret Churches- Topographic analysis indicates that the proposed turbines will be visible from the location of these monuments. However, given the distance, and the fact that the location of the site is partially

	blocked by vegetation, the visual effect on the two churches is classified as 'slight.' St. Munchin Church- The topographic analysis and field inspection showed that the proposed turbines will theoretically be visible from the location of the monument. However, given the location of the church within a modern housing estate and other surrounding buildings, the visual effect is classified as 'not significant'. King John's Castle- Examination of topography and desk-based research indicates that the proposed turbines will be visible from the monument especially from the upper levels, ramparts etc. many of which are locations for tourist viewpoints (Plate 13-19). The visual effect to the monument may be classified as '*slight'.* A viewpoint from King Johns Castle has been included in the Landscape and Visual Impact Assessment (Chapter 12 Landscape and Visual of the EIAR) and Volume IV photomontages. Refer to this chapter for a detailed discussion on this viewpoint. Fanning's Castle- Topographical analysis of the monument location revealed theoretical visual effect to the castle. However, given the location of the tower house in the centre of Limerick City, where the monument is well captured by other buildings and no viewing platform is provided from the upper levels of the Castle, the visual effect may be classified as 'not significant', as the proposed wind turbines will not be visible. • Recorded Monuments- Recorded monuments located within 5km are situated outside of the proposed development footprint and consequently there will be no direct effect to any of them during the construction of the turbines. Site inspection and drone survey revealed that the proposed wind turbines may be visible from the monuments to differing degrees. Visible effects are based on the distances to the monuments from the proposed development. See Figure 13-11. The visual effect on all recorded monuments situated between 3km to 5km from the proposed turbines was classified as '*not significant'* even in the case that turbines may be visible from their location. This is based on the fact that there are no upstanding monuments of high importance within this zone. Monuments within a 3km zone were classified from *'not significant' to 'slight'*. In this case, class and type of the monument was analysed (as for example: castle, church or ringfort may be more visually impacted than a more low-profile monument with little above ground remains) See Table 13-9. Monuments within the boundary and immediate vicinity of the proposed development- Visual effect to the monuments in proximity to the proposed development is classified from '*slight*' (earthwork CL053-049) and '*moderate'* (enclosure CL053-040) to '*significant'* (ring-barrow CL052-064003, standing stone CL052-064002, cairn CL052-064001). These three are the prehistoric complex and will be visually and possibly auditory impacted on by T2 and, to a lesser diminishing extent, by T1, T3 and T4. However, the prehistoric complex is not open to the public as is located on private land. Consequently, unauthorised access to the site is prohibited. • Protected Structures and/or NIAH-

	No recorded protected structures or NIAH structures within the boundary of proposed development and consequently there will be no physical effect to any. There will be a 'not-significant' cultural visual effect to the protected structures or structures listed in the NIAH. The EIAR details closest located structures are Catholic Church of Saint John the Baptist Reg. No: 20406208 (c.2.3km to the SW) and Ardnacrusha Power Station Reg. No: 20405308 (c.2.7km to the SE). The other protected structures are located more than 3km from the proposed development, with the vast majority within the northern limits of Limerick City and significantly screened beyond other buildings (Table 13-2). I note Quinnsborough House is a PS and is on the NIAH. It is located c.2.7 km south of the site. While there may be a visual impact from the site and its curtilage from turbines I do not consider these significant given the distance and orientation. • Proposed Substation, Compound, Deposition Areas, Borrow Pit 13.5.2 Potential unknown archaeological subsurface features may be impacted during the construction phase. The effects rated 'Slight'. There will be physical effect to the Ballycannan West and Ballycannan East townland boundary during the construction of the borrow pit/deposition area. Physical effect at this location is classified as 'moderate'. Archaeological monitoring will be carried out during the construction stage. • Internal Grid Connection/Access Route 13.5.3 The proposed internal access track/grid connection route within the boundary of the proposed development will traverse a number of fields that may effect previously unknown archaeological features. Impact classified as 'moderate'. Cultural Heritage Sites- The track/grid connection route will cross barony / parish and townland boundaries several times. Therefore, these historic boundaries will be physically impacted during the construction phase and will require archaeological record and monitoring. Physical effect to the boundaries during the construction phase is classified as 'moderate' (Figure 13-12). The field inspection revealed no trace of the pre-famine settlements depicted on 1st Ed. OS maps, however, there may be impact to the sub-surface remains of these buildings. Four locations were found on the 1st Ed. OSI map- See Figure: 13-12) Impact is classified as '*slight*' due to the lack of any visible remains of any of these structures on the surface. • Proposed Grid Cable Connection c.1.5km in length mainly situated within existing forestry tracks and through conifer forestry. The effect to previously unrecorded features during the construction phase is classified as 'slight'. There will be a physical impact to the Parish boundary of St Munchins and Kilfinaghta at the most north-western end of proposed grid connection. Remains of the original boundary may still survive. This effect is classified as 'slight'.

Operation	• See section 13.5.6 • Visual effect of the proposed turbines on all recorded monuments situated between 3km to 5km from proposed turbines is classified from 'not significant' to 'slight effect'. • The proposed turbines may not be visible from all monuments due to surrounding vegetation/buildings; • As for the recorded monuments located within the proposed development site and it's vicinity, the effect is classified from 'slight' to 'significant': 'slight' (earthwork CL053-049), 'moderate' (enclosure CL053-040), 'significant' (ring-barrow CL052-064003, standing stone CL052-064002, cairn CL052-064001) • Lower visibility infrastructure such as access tracks, grid connection, sub-station etc not included in the visual impact analysis. • No direct effects will occur during the operational phase of the proposed development.
Decommissioning	• See section 13.5.7 No archaeological effects anticipated in the course of the de-commissioning of the proposed turbines. Potential subsurface archaeological issues will have been adequately resolved by the mitigation measures in advance of the construction phase of the project, i.e. pre-development testing and archaeological monitoring of ground works associated with the construction phase of the wind farm development. The decommissioning process will utilise all existing internal site tracks and public roads and will not involve any further ground disturbance. The removal of turbines will erase visual effect on recorded monuments. All townland / parish / barony boundaries impacted by the construction of proposed development will be revert to pre-construction phase.
Cumulative	• See section 15.4.9 • Considering the small number of existing, proposed or permitted turbines within the 25km radius zone, cumulative effects on the wider setting of cultural heritage assets is deemed to be '*not significant'*. See figure 13-13.

Mitigation Measures

I) A number of such measures are set out in section 13.6 of the EIAR and are detailed as including-

- Construction (section 13.6.1)
    - Pre-construction targeted archaeological testing under license from the NMS (22E0744) was proposed and undertaken in October 2022 on the footprint of the proposed groundworks in proximity to the prehistoric complex comprising of the three

recorded monuments (Figure 13-14). Nothing of archaeological interest was recorded during the testing and consequently, the possibility of discovering previously unrecorded features on the footprints of T2 is decreased.

- Exclusion zones (reflecting RMP's zones) will be physically established on the ground by archaeologists before the construction phase, around all five monuments: CL052-064001, CL052-064002, CL052-064003, CL053-040, CL053-049.
- No ground disturbance will be undertaken within the zones. The ground works in the vicinity of all monuments will be archaeologically monitored during construction;
- Groundworks associated with cuttings through townland / barony/ county boundaries will be kept to a minimum. Cutting locations will be archaeologically recorded and all boundary cuttings will be monitored with photographs and written descriptions.
- All ground disturbance associated with the construction of the proposed development will be monitored by a suitably qualified archaeologist working under licence issued by the Minister under Section 26 of the National Monuments Act (Amended) 1930 to 2014.
- Should archaeological material be found during the course of monitoring, the archaeologist may have work on site stopped, pending a decision as to how best to deal with the find (e.g. preservation in situ or excavation). Advice will also be sought from the National Monument Service (NMS). Having completed the work, the archaeologist will submit the report to the NMS.
- If during archaeological monitoring and testing, previously unrecorded sites/features are discovered, then preservation 'in situ' or preservation by record will be carried out.

- When preservation ‘in situ’ is not an option, then preservation by archaeological excavation and record will reduce the effect on unrecorded sites to ‘slight’.
- Proposed archaeological monitoring and the full recording of potential remains of vernacular structures, will reduce the effect to ‘not significant’.

- Operational
  - None proposed
- Decommissioning Phase (section 13.6.3)
  - None proposed
  - The decommissioning process will utilise all existing internal access tracks and public roads and will not involve any further ground disturbance.
  - The turbines removal will erase visual effect on recorded monuments. All townland / parish / barony boundaries impacted by the construction of proposed development will revert to the pre-construction phase status as part of decommissioning.
  - Indirect effect during the operation phase which may cause change to the surroundings of the archaeological or architectural heritage resource will be reversed following the decommissioning phase.
- Cumulative
  - None proposed

Residual Impacts

k) See section 13.7. No significant residual effects here will be no residual likely significant effect on cultural heritage.

13.7.22.1. **Assessment and Conclusion**

a) I have reviewed and considered the relevant sections as set out in Chapter 13 of the EIAR and all relevant documentation on file including public

submissions. Notwithstanding the contentions of some of the submissions received, I am satisfied that the structure and content of the chapter, as well as the overall quality of data used, judgements and conclusions presented by the applicant are reasonable, and along with the submissions on file and my inspection of the site, allows for an assessment of the likely significant effects of the proposed development on Cultural Heritage.

b) I am satisfied the impacts are generally construction management related issues that can be effectively mitigated through the measures proposed including archaeological monitoring of all ground works, exclusion zones etc and suitable planning conditions where appropriate.

c) I acknowledge the visual impact the proposal will have on the setting of the five identified recorded monuments (CL052-064001, CL052-064002, CL052-064003, CL053-040, CL053-049) especially the Prehistoric Ritual Complex near turbines 1, 2 and 3. The application proposes a 35 year life span. I do not consider the impact upon the setting of these monuments to be so significant to warrant refusal of the proposed development. Nor do I consider the impact on the wider archaeological importance of the area to be significant.

d) I acknowledge impacts of the proposed development on views from National Monuments as shown in Figure 13.1 and protected structures detailed in Table 13.5. I share the Applicant's contention that the distance of the site from these structures are such that significantly adverse cultural heritage impacts are avoided. I also note the extent of such impacts is not necessarily permanent with the Applicant seeking an operational life span of thirty five years. I have considered policies and objectives regarding protected views in the operative county development plans as follows-

- Clare CDP-
    - Section 14.5 'Views and Prospects' and objective CDP14.7 Scenic Routes and Map 14A (Page 357 in Volume 1)- Landscape Designations (including scenic routes).
- the Limerick CDP

- Limerick County- Objective EH O31 Views and Prospects, Views and Prospects' on Map 6.2 (page 192)
- Limerick City views and prospects as set out in the Building Height Strategy in Volume 6. 'Significant Views and Landmarks. are set out in Chapter 3 (pages 48-51)-
  - Map 3.4 'Key Vantage Points into Limerick City'
  - Map 3.5 Key Views & Landmarks

and the

- Tipperary CDP
  - Volume 1, Section 11.7.2, Scenic Routes and Views, Figure 11.1 (Page 171) and
  - Volume 3, Landscape Character Assessment & Schedule of Views and Routes, Appendix 2 Scenic Routes and Views Table A

I acknowledge concerns raised from such scenic routes and views, especially in the context of tourism from Bunratty Castle, Dromoland Castle and St John's Castle in Limerick etc. However, I do not consider the proposed development to be contrary to any of these objectives. Accordingly I do not consider the proposed developments to have a significant impact on Cultural Heritage in this regard.

e) A submission to the file identifies recorded monument CL053-041- Ringfort, as a National Monument as it has been subject to a Preservation Order (2/1973)[139]. This would appear to be an omission from the EIAR. However, I do not consider its omission significant in the context of the application and this assessment.

f) I also do not consider the absence of a baseline assessment of the Turbine Delivery route on cultural heritage to be a significant matter in the context of this application and assessment. Given the extent of such routes it is not

[139] https://www.archaeology.ie/app/uploads/2025/03/Preservation-Order-listing_March-2025-FINAL.pdf

considered necessary or practical. The use of the L3056 public road as part of the Turbine Delivery Route will not have any significant impacts on Quinnsborough House or recorded monument (National Monument) Ringfort CL053-041. If any works were required to boundaries of these properties that are not necessarily shown in this application such as boundary setback or tree/hedgerow cutting such measures would require necessary consents in any event. The Commission will be aware section 37H(6) of the Act details that a person shall not be entitled solely by reason of a permission to carry out any development.

g) I note concerns raised regarding the absence of consideration of Intangible Cultural Heritage in the EIAR. While I accept the point that these matters could have been included in the EIAR, I don't consider their omission warrants refusing the application nor do I consider the proposal to have a significant impact upon same.

h) I do not consider there to be significant operational impacts.

i) I am satisfied the potential for significant adverse impacts on Cultural Heritage can be avoided, managed and/or mitigated by measures that form part of the proposed development, the proposed mitigation measures and through suitable conditions. I am therefore satisfied that the proposed development would not have any unacceptable direct, indirect or cumulative impacts on traffic and transportation.

13.8. **The Interaction between these factors.**

13.8.1. The interaction of the foregoing environmental considerations and the significance of their effects where relevant are detailed in Chapter 16 of the EIAR.

13.8.2. Table 16-1 sets out a Matrix of Interaction identifies where interaction occurs and labels these if evident as during construction, operation and/or decommissioning stages of the development. The key interactions are detailed in section 16.2.

13.8.3. Having regard to the nature of the proposed development, the receiving environment and the foregoing chapters of the EIAR, I am satisfied that the summary of the potential for interactions between environmental factors is reasonable for this section

of the EIAR notwithstanding the findings relating to aviation impacts as set out in sections 12.4 and 13.7.8.3.

13.9. Mitigation and Monitoring Measures

13.9.1. The proposed mitigation and monitoring measures for each environmental factor at construction and operational stages etc. are outlined individually in each Chapter of the EIAR and generally summarised in each section of this assessment.

13.9.2. Chapter 17 of the EIAR provides a full schedule of Mitigation Measures for the proposed development.

13.10. Summary of relevant Article 94 Considerations for the Commission

13.10.1. The primary objective of any EIAR is to identify the baseline environmental context of the proposed project, to identify the effects if any, which the proposed project, if carried out, would have on the environment and to propose alternative options, where feasible. Appropriate mitigation measures, where necessary should also be proposed.

13.10.2. Overall, I am satisfied the submitted EIAR and associated Appendices including the information provided as Further Information represents a thorough, comprehensive and detailed consideration of the matters pertinent to Environmental Impact Assessment.

13.10.3. However, I have some reservations which the Commission may wish to give further consideration to regarding overall compliance with requirements in Article 94 of the Planning and Development Regulations 2001 as amended, including-

- Consideration of 'reasonable alternatives' i.e. the absence of consideration of turbines in the 100m to 125m range as per the County Development Plan provisions (See section 13.4.1) and
- Consideration of *"a description of the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters which are relevant to it" (*See also section 13.4.1 (and 12.4)).

13.10.4. Having given consideration to the Applicant's position regarding '*reasonable alternatives*' and the clearly stated intention '*to minimise potential environmental effects and to maximise wind potential on site'* in the context of European and National Policy, I have formed a view a proposal for turbines of 100-125m in height could be considered contrary to the state's renewable energy obligations as detailed in section 10 of this report. Therefore such consideration may not be considered reasonable in the context of the subject EIA.

13.10.5. Regarding *"the expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters"*, the Commission will note the strongly raised concerns of AirNav Ireland (ANI) and Shannon Airport Authority (SAA/SAG) in relation to existing aviation related operations and radar surveillance. Both bodies do not accept the mitigation measures proposed and object to the proposed development. Section 15.4.1.4 of the EIAR identifies the potential for surveillance radar impacts on the Woodcock Hill Monopulse Secondary Surveillance Radar (MSSR) and the Shannon Airport (Primary Surveillance Radar) PSR from turbines at the proposed development and mitigation measures and recommendations are proposed as set out in Appendix 15A. In the absence of mitigation the extent of effects to aviation are described as likely to be negative, moderate to significant and long term for the duration of the operational phase. The submissions of ANI are suggestive of risk in the form of degradation to existing radars and prolonged operational outages. The submissions of SAA/SAG share these concerns and further detail impacts to aircraft landing at the airport from a safety and commercial perspective.

13.10.6. Therefore, the Commission should note the "*expected significant adverse effects on the environment of the proposed development deriving from its vulnerability to risks of major accidents and/or disasters"* arising from operational impacts to Aviation have not been adequately described in the context of Article 94. The Applicant has detailed the extent of impact without mitigation measures as negative, moderate to significant and long term for the duration of the operational phase. However given the ongoing objections from ANI and SAA/SAG the impacts (see sections 12.4 and 13.7.8.4) are considered at least significant, adverse and negative. There is no description of the effects on the environment from the proposal arising from for example the degradation of existing radars e.g. environmental, public

safety, airport operations or financial risks etc or the loss of CAT II status to runway 24 at Shannon Airport.

13.10.7. In my opinion, in the absence of agreed mitigation measures and without agreement/consent for implementation of measures/recommendations to existing surveillance infrastructure, which are outside the Applicant's control, it is not possible to say with certainty that the proposed development would not lead a significant risk of major accidents and/or disasters.

13.11. Reasoned Conclusion

13.11.1. Having regard to the examination of environmental information provided in respect of the proposed development, in particular the EIAR and the supplementary information provided by the Applicant, including Further Information, the submissions from the local authority, prescribed bodies and observations received over the course of the application and at the Limited Agenda Oral Hearing, it is considered that the main significant, direct, indirect and cumulative effects on the environment, with the implementation of proposed mitigation measures are as follows-

- **Population and Human Health**: Negative impacts on human health and population arising from construction and operation including noise, traffic and dust disturbances to sensitive receptors in the area. Such impacts can be adequately mitigated through the implementation of the Construction Environmental Management Plan, best practice construction methods, installation of shadow flicker systems on the turbines and noise levels within level recommend in the national wind energy guidelines as well as suitable planning conditions. Furthermore, there will be a long term significant positive effect on population and human health due to the displacement of CO^2 from the atmosphere arising from fossil fuel energy production and from the implementation of the Community Benefit Fund.

  See also Material Assets- Significant risk to Population and Human Health i.e. major disaster arising from possible degradation of existing surveillance radar and other Aviation related operational impacts. The mitigation measures and recommendations proposed do not adequately address the extent of potential impact.

- **Biodiversity**: Impacts to existing habitats and birds (including identified collision risks) can be mitigated through the delivery of mitigation measures including those set out in the RNIS, the EIAR and implementation of the Biodiversity Enhancement Management Plan, final details of which can be agreed with the Planning Authority by condition. The impact on habitats and species will not have any significant effect on the nature or range of any habitats or the conservation objectives of any European Sites. Negative impacts on species within the site, which are likely to arise in the construction and operational phase can be mitigated through the measures proposed and are not considered to be significant. Subject to the mitigation proposed works in or close to watercourses including crossings will not adversely impact on hydrological connectivity or movement of fish or result in the loss of instream habitat. Negative effects on aquatic species and habitat which are likely to arise from potential release of sediments and other pollutants into watercourses can be adequately mitigated by the measures outlined in the application including monitoring.
- **Land, Soils, Water, Air and Climate**: Negative effects on surface water and ground water as a result of accidental spillage of hydrocarbons, increased sedimentation etc. and any other contaminants entering the drainage system can be adequately mitigated by measures outlined in the application. The proposed development will not impede the ability of surface waters to achieve good or high status and the Water Framework Directive and no further assessment is required.
- **Landscape and Visual and Cultural Heritage**: Significant negative Landscape and Visual and Cultural Heritage impacts arise during the operational phase of the development given the placement of significant structures within the local landscape thereby changing the existing visual context significantly and cannot be avoided by new mitigation measures. The impact is therefore considered mitigated by the sites location within an area designated as a 'Strategic Areas' and considered to be "*eminently suitable for wind farm development*" in the Clare County Development Plan 2023-2029 and its Wind Energy Strategy. No significantly adverse impacts to cultural

heritage interest and or scenic views are expected given separation distances between same and intermittency of such views.

- **Material Assets**: At least Significant operational impacts potentially arise regarding Aviation concerns as raised by AirNav Ireland (ANI) and Shannon Airport Authority (SAA/SAG) regarding degradation of existing radar surveillance. The Applicant considers the extent of such impacts to be negative, moderate to significant and long term for the duration of the operational phase. ANI contend the proposed development will have adverse impacts on existing radar surveillance systems, without measurable, evidence-based, demonstrable mitigations being applied. Based on the information on file and the content of the External Aviation Report, it is not considered possible to mitigate against the potential for at least significant aviation related impacts, including through the imposition of a planning condition for such matters to be agreed at a later date.

  Other aviation related operational impacts including prolonged operational outages and loss of CAT II designations to runway 24 at Shannon Airport are also highlighted.

  Negative traffic impacts also arise during the construction phase of the proposed development. Impacts arising from traffic can be appropriately mitigated. Potential negative effects on other material assets, telecommunication links etc during operation can be adequately mitigated through the measures proposed.

14.0 Appropriate Assessment

14.1. Stage 1 Appropriate Assessment Screening

14.1.1. In accordance with Section 177U of the Planning and Development Act 2000 (as amended) and on the basis of the information provided by the Applicant, I conclude that the proposed development could result in significant effects on the

- Lower River Shannon SAC (002165) and the
- River Shannon and River Fergus Estuaries SPA (004077)

in view of the conservation objectives of a number of 'qualifying interests' and 'Special Conservation Interest' features of those sites. It is therefore determined that Appropriate Assessment (stage 2) of the proposed development is required. The Applicant has submitted a NIS with the application and a Revised NIS in response to a request for Further Information (FI).

See Appendix 1 Section 16.1 for AA Screening

14.2. Stage 2 Appropriate Assessment

14.2.1. In screening the need for Appropriate Assessment, it was determined that the proposed development could result in significant effects on the Lower River Shannon SAC (002165) and the River Shannon and River Fergus SPA (004077) in view of the conservation objectives of those sites and that Appropriate Assessment under the provisions of S177V was required.

14.2.2. Following an examination, analysis and evaluation of the NIS and the Revised NIS, all associated material submitted, the further information, responses and subsequent submissions received and taking into account the observations of the Department of Housing, Local Government and Heritage, I consider that adverse effects on the site integrity of the Lower River Shannon SAC (002165) and the River Shannon and River Fergus SPA (004077) can be excluded in view of the conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.

14.2.3. My conclusion is based on the following:

- Detailed assessment of construction and operational impacts.
- Consideration of in-combination effects with other plans or projects
- the proposed development will not affect the attainment of conservation objectives for Qualifying Interest or Special Conservation Interests of the identified European Sites or prevent or delay the restoration of favourable conservation condition for such Qualifying Interest or Special Conservation Interests
- the effectiveness of mitigation measures proposed including adoption and implementation of a CEMP, the Surface Water Management Plan and Invasive Species Management Plan and

- Application of appropriate planning conditions regarding stated mitigation measures

See Appendix 1 Section 16.2 for Stage 2 Appropriate Assessment.

15.0 Recommendation

15.1. It is recommended that the Commission refuse the proposed development for the reason as set out below-

Reasons and Considerations

1. The Commission is not satisfied, on the basis of the information lodged with the application, at Further Information stage, in response to the submissions and observations received and following the 'Specified Matter only' Oral Hearing under section 135 (2AB) of the Planning and Development Act 2000 as amended, including submissions to same, that measurable, evidence based, demonstratable and credible mitigation measures have been submitted by the Applicant, that can remove all level of aviation related risk, likely to arise as a result of the proposed development or that such measures can then be agreed and implemented to the satisfaction of AirNav Ireland, the Shannon Airport Group and the Irish Aviation Authority.

   Furthermore, as aviation related mitigation measures are required, the Commission is not satisfied, that the Applicant has sufficient legal interest, or can acquire such interest to implement such mitigation measures on lands that have not been identified within the application site boundary, the Applicant's landholding or within the Applicant's control i.e. through a letter of consent from the appropriate landowner where necessary mitigation measures are required.

   The Commission has performed its functions in relation to the making of its decision, in a manner consistent with Section 15(1) of the Climate Action and Low Carbon Act 2015, as amended by Section 17 of the Climate Action and

Low Carbon Development (Amendment) Act 2021, (consistent with Climate Action Plan 2024 and Climate Action Plan 2025 and the national long term climate action strategy, national adaptation framework and approved sectoral adaptation plans set out in those Plans and in furtherance of the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State). In this context, it is not practicable, for the Commission to approve the development in a manner consistent with the Climate Act by imposing a condition requiring such matters to be agreed between parties where the necessary consents have not been demonstrated as achievable or the necessary mitigation measures required as credible and implementable.

Accordingly, the Commission is not satisfied that the proposed development would not endanger or would not interfere with the safety of aircraft or the safe and efficient navigation thereof. The proposed development would therefore be contrary to the proper planning and sustainable development of the area.

I confirm that this report represents my professional planning assessment, judgement and opinion on the matter assigned to me and that no person has influenced or sought to influence, directly or indirectly, the exercise of my professional judgement in an improper or inappropriate way.

Adrian Ormsby
Senior Planning Inspector

12th of March 2026

16.0 Appendix 1- Appropriate Assessment (AA)

16.1. Stage 1- Appropriate Assessment Screening

Screening for Appropriate Assessment Test for likely significant effects	
Step 1: Description of the project and local site characteristics	
Brief description of project	12 turbine wind farm with tip height ranging from 153m to 158m, electrical substation, meteorological mast, entrances, access tracks, underground cabling, borrow pit etc. See also section 3 of the main report.
Brief description of development site characteristics and potential impact mechanisms	The site is located in an upland area of County Clare c. 5km north of Limerick City and c. 2km to the east of Woodcock Hill. The site comprises predominantly of a mix of agricultural pasture land and commercial forestry. The Turbine Delivery Route (TDR) is from Foynes in the west of County Limerick via the N69 through Limerick City and on to the application site using regional and local roads. See also section 2 of the main report. The site is located c. 1.1km north of the Lower River Shannon SAC (002165) and c. 4.5km north east of the River Shannon and River Fergus Estuaries SPA (004077). See also section 10.8 of the main report.
Screening report	Yes- • Located in Appendix 1 to Original NIS dated January 2024 • Located in Appendix 1 to Revised NIS* dated September 2024
Natura Impact Statement	Yes- • Original NIS dated January 2024 • Revised NIS* dated September 2024
Relevant submissions	• DAU submission to Further Information Submission- see section 9.2.6 of the main report • Numerous public observations and submissions see sections 7 and 9.3 of the main report.

	• See also Applicant's response to submissions and observations- sections 8 and 9.4.

*The Applicant was requested to submit Further Information addressing in-combination considerations that may arise from the proposed development and an application for another wind farm located in close proximity to the application site. This is known as Oatfield Windfarm (ABP-318782-24).
In their response to the Further Information request the Applicant has submitted a Revised NIS (RNIS) that seeks to address in-combination considerations with Oatfield as well as an application for a second wind farm in close proximity to the application site known as Knockshanvo Windfarm (ABP-320705-24) subsequent to the FI request.

Step 2. Identification of relevant European sites using the Source-pathway-receptor model

European Site (code)	Qualifying interests[1] Link to conservation objectives (NPWS, date)	Distance from proposed development (km)	Ecological connections[2]	Consider further in screening[3] Y/N
Lower River Shannon SAC 002165	https://www.npws.ie/protected-sites/sac/002165	c. 1.1km	Indirect via surface waters	Yes
River Shannon and River Fergus Estuaries SPA 004077	https://www.npws.ie/protected-sites/spa/004077	c. 4.5km	Indirect via air and surface waters	Yes
Glenomra Wood SAC (001013)	https://www.npws.ie/protected-sites/sac/001013	c. 5.6km	No	No
Danes Hole, Poulnalecka SAC (000030)	https://www.npws.ie/protected-sites/sac/000030	c. 6km	No	No
Ratty River Cave SAC (002316)	https://www.npws.ie/protected-sites/sac/002316	c. 6.5km	No	No
Kilkishen House SAC (002319)	https://www.npws.ie/protected-sites/sac/002319	c. 8.5km	No	No
Slieve Bernagh Bog SAC (002312)	https://www.npws.ie/protected-sites/sac/002312	c. 10.5km	No	No
Lough Gash Turlough SAC (000051)	https://www.npws.ie/protected-sites/sac/000051	c. 14.5km	No	No
The Lough Derg	https://www.npws.ie/protected-sites/spa/004058	c. 18km	No	No

(Shannon) SPA (004058)				
Slievefelim to Silvermines Mountains SPA (004165)	https://www.npws.ie/protected-sites/spa/004165	17.5km	No	No

[1] Summary description / **cross reference to NPWS website** is acceptable at this stage in the report
[2] Based on source-pathway-receptor: Direct/ indirect/ tentative/ none, via surface water/ ground water/ air/ use of habitats by mobile species
[3]if no connections: No

Step 3. Describe the likely effects of the project (if any, alone or in combination) on European Sites

AA Screening matrix

Site name Qualifying interests	**Possibility of significant effects (alone) in view of the conservation objectives of the site***	
	Impacts	**Effects**
Site 1: Lower River Shannon SAC 002165 QI list- Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220]	**Indirect:** **Construction Stage-** • Vegetation clearance • Surface water/water quality runoff from soil excavation, landscaping (including borrow pit etc.) • Groundwater • Blasting • Dust, noise, vibration etc. • Lighting disturbance • Storage of excavated/construction materials • Access to site • Invasive species • Habitat Loss and Alteration- • Disturbance and/or Displacement of Species	Reduction or fragmentation of habitat area. Disturbance to QI species Habitat or species fragmentation Reduction or fragmentation in species density Changes in key indicators of conservation status value (water quality etc.) Changes to areas of sensitivity or threats to QI Interference with the key relationships that define the structure or ecological function of the site Climate change

Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099]	**Operational Stage** • Direct emission to air and water • Surface water runoff containing contaminant or sediment • Lighting disturbance • Noise/vibration • Changes to water/groundwater due to drainage or abstraction • Presence of people, vehicles and activities • Physical presence of structures (e.g. collision risks) • Potential for accidents or incidents	Potential for pollutants (e.g. earthworks, concrete pours, fuels spills etc) Potential for nutrient release, eutrophication from contaminated run off etc. Development site works Water Quality and downstream habitats, Noise, lighting and human activity etc. Potential for spread of invasive species and associated impacts at the site and along the TDR.

Salmo salar (Salmon) [1106] Tursiops truncatus (Common Bottlenose Dolphin) [1349] Lutra lutra (Otter) [1355]		
	Likelihood of significant effects from proposed development (alone): Yes	
	Impacts	**Effects**
Site 2: River Shannon and River Fergus Estuaries SPA 004077 SCI list- Cormorant (Phalacrocorax carbo) [A017] Whooper Swan (Cygnus cygnus) [A038] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Scaup (Aythya marila) [A062] Ringed Plover (Charadrius hiaticula) [A137]	Indirect: Water Quality- overland flow, run off, groundwater etc. Habitat Loss and Alteration- Disturbance and/or Displacement of Species	Potential for pollutants (e.g. earthworks, concrete pours, fuels spills etc) Potential for nutrient release, eutrophication from contaminated run off etc. Development site works and Hydrological Connectivity to SPA Wetland areas Water Quality and downstream habitats i.e. wetlands Noise, lighting and human activity etc. Collision, barrier effect Habitat or Species Fragmentation Potential for spread of invasive species and associated impacts at the site and along the TDR.

Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Greenshank (Tringa nebularia) [A164] Black-headed Gull (Chroicocephalus ridibundus) [A179] Wigeon (Mareca penelope) [A855] Shoveler (Spatula clypeata) [A857] Wetland and Waterbirds [A999]		
	Likelihood of significant effects from proposed development (alone): Yes	
Step 4 Conclude if the proposed development could result in likely significant effects on a European site		

It is not possible to exclude the possibility that proposed development alone would result in significant effects on the following designated European Sites-

- Lower River Shannon SAC (002165) and
- River Shannon and River Fergus Estuaries SPA (004077)

from effects associated with

- Potential for pollutants (e.g. earthworks, concrete pours, fuels spills etc)
- Potential for nutrient release, eutrophication from contaminated run off etc.
- Development site works
- Water Quality and downstream habitats,
- Noise, lighting and human activity etc.
- Habitat or Species Fragmentation
- Potential for spread of invasive species and associated impacts at the site and along the TDR.

An Appropriate Assessment is required on the basis of the possible effects of the project 'alone'.

Further assessment of in-combination effects with other plans and projects is not required at screening stage.

Screening Determination

Significant effects cannot be excluded

In accordance with Section 177U of the Planning and Development Act 2000 (as amended) and on the basis of the information provided by the Applicant, I conclude that the proposed development could result in significant effects on the

- Lower River Shannon SAC (002165) and the
- River Shannon and River Fergus Estuaries SPA (004077)

in view of the conservation objectives of a number of 'qualifying interests' and 'Special Conservation Interest' features of those sites. It is therefore determined that Appropriate

Assessment (stage 2) of the proposed development is required. The Applicant has submitted a NIS with the application and a Revised NIS in response to a request for Further Information (FI).

16.2. **Stage 2- Appropriate Assessment**

Appropriate Assessment
The requirements of Article 6(3) as related to appropriate assessment of a project under part XAB, sections 177V of the Planning and Development Act 2000 (as amended) are considered fully in this section.
Taking account of the preceding screening determination, the following is an appropriate assessment of the implications of the proposed development of 12 turbine wind farm with tip height ranging from 153m to 158m, electrical substation, meteorological mast, entrances, access tracks, underground cabling, borrow pit etc. in view of the relevant conservation objectives of the Lower River Shannon SAC (002165) and the River Shannon and River Fergus Estuaries SPA (004077) based on scientific information provided by the Applicant. The information relied upon includes the following: • Original Natura Impact Statement (NIS) prepared by prepared by Malachy Walsh and Partners (MWP) and dated January 2024. • The Revised Natura Impact Statement (RNIS) prepared by prepared by Malachy Walsh and Partners (MWP) and dated September 2024. • Chapters 6 Biodiversity and 7 Ornithology of the EIAR and associated appendices I have reviewed the NIS and the RNIS, associated appendices and all related documentation on file. I am satisfied they provide robust, and comprehensive information in respect of the baseline conditions at the main windfarm site and the overall proposal,

including the turbine delivery and grid connection routes. I am satisfied that all aspects of the project which could result in significant effects are considered and assessed in the RNIS and mitigation measures designed to avoid or reduce any adverse effects on site integrity are included and assessed for their effectiveness.

Submissions/Observations

The Department of Housing, Heritage and Local Government- Development Application Unit (DAU) submitted an observation dated 23/12/24 on the Further Information received i.e. the RNIS. The main issues raised are summarised as-

- Revisions set out in section 6.7.2 of the NIS highlight the potential in-combination effects that relate to shared catchment (Blackwater [Clare] River) and effects of disturbance/displacement of birds using the River Shannon and River Fergus Estuaries SPA.
- The description of the cumulative effects appears to lack clear and precise conclusions and relies on surface water mitigation measures
- Section 7.26 and Appendix 2B refer to a proposed surface water monitoring schedule as mitigation. For the purpose of AA mitigation must include complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected sites concerned.
- Seeking clarification on how the proposed mitigation measures will be able to address the cumulative impacts on the Blackwater [Clare] River and the European sites downstream is suggested.
- In respect of the impact on birds using the River Shannon and Fergus Estuaries SPA and other SPA's additional information to support the statement that there are "significant intervening distances" has not been submitted. The use of the term "plausible" does not suggest that likely significant effects have been entirely ruled out using the best scientific knowledge available. It is suggested this be clarified with reference to ornithological data presented in the other wind energy development applications.

- Competent national authorities are to authorise activity only if they have made certain that it will not adversely affect the integrity of a European site and, consequently, not likely to give rise to deterioration or significant disturbances within the meaning of Article 6(2).

The Applicant has submitted a response to the DAU submission. The DAU submission and response to same have been fully considered.

NAME OF SAC/ SPA (SITE CODE): Lower River Shannon SAC (002165)

'Identification of Potentially Significant Impacts to Qualifying Features' of the SAC is set out in Section 6.2.2 and Table 31 of the RNIS. These are the Qualifying Interest's (QI's) for the SAC. I have reviewed the table against the Conservation Objectives for each site and their associated mapping and agree with the findings of same. The RNIS considers the proposed development has the potential to result in significant effects to the conservation objectives of the following Qualifying Interests (QIs) of the Lower River Shannon SAC-

- Estuaries [1130];
- Mudflats and sandflats not covered by seawater at low tide [1140];
- Reefs [1170];
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion
- vegetation [3260];
- River Lamprey (Lampetra fluviatilis) [1099];
- Sea Lamprey (Petromyzon marinus) [1095];

- Brook Lamprey (Lampetra planeri) [1096];
- Atlantic Salmon (Salmo salar) [1106]; and
- Otter (Lutra lutra) [1355].

All these QI's have a Conservation Objective to maintain favourable conservation condition with the exception of Sea Lamprey, Salmon, and Otter who have Conservation Objectives to restore favourable conservation condition.

Key issues that could give rise to adverse effects:

1. Having considered all of the above and noting the contents of the RNIS in particular section 6.4 and 6.5, the other information on file, the DAU's FI submission and section 16.1 of this report, I am satisfied the main aspects of the proposed development that could have the potential to adversely affect the conservation objectives of this SAC would occur during the construction stage. These include-

    a) Water Quality (see also section 6.4.1 of RNIS)-

    - Potential impacts to- Estuaries, Mudflats and Sandflats, Reefs, Water courses of plain to montane levels –
        - Sediment-laden run-off may arise from exposed areas during groundworks or from construction vehicles/plant. These are potential sources of nutrients which could discharge into watercourses.
        - Accidental fuel/oil spills or uncontrolled emissions of cementitious material/wastewater or other harmful substances also pose a risk to water quality, conservation of communities and habitat distribution

- Nutrient enrichment- Excess algal growth can lead to oxygen depletion in aquatic environments

- Potential impacts to River, Sea and Brook Lamprey, Salmon and Otter-
  - Potential adverse water quality effects which may arise because of the proposed development could impact on
    - the species
    - the population structure of juveniles within the SAC.
    - on spawning habitat
    - habitat condition and availability in watercourses downstream
    - the fish biomass available to otter

b) Habit Loss/Alteration (see also section 6.4.2. of RNIS)-

- Potential impacts to- Estuaries, Mudflats and Sandflats, Reefs, Water courses of plain to montane levels-
  - Generally as per point a) above and water quality
- Potential impacts to River, Sea and Brook Lamprey, Salmon and Otter-
  - Generally as per 1 above and water quality

c) Disturbance/Displacement (See also section 6.4.3 of RNIS)-

- potential for indirect disturbance or displacement of salmon and lamprey arising from potential pollutants and eutrophication

- Potential for disturbance or displacement because of noise and/or human activity to Otter
- Potential to indirectly displace/disturb sources of food for otter

d) Habitat or Species Fragmentation (See also section 6.4.4 of RNIS)-

- Notwithstanding impacts above none envisaged

e) Non-native Invasive Species[140]- (See also section 4.4.5 of RNIS)-

- Potential for spread and associated impacts including travelling downstream negatively impact hydrological regimes and connectivity e.g. drainage ditches near works

See also section 6.4 and 6.5 of the RNIS, the DAU submission and the Applicant's response.

The above is based on the documentation and information provided on the file and from the NPWS website. I am satisfied that the submitted RNIS has identified the relevant attributes and targets of the Qualifying Interests.

NAME OF SAC/ SPA (SITE CODE): River Shannon and River Fergus Estuaries SPA (004077)

'Identification of Potentially Significant Impacts to Qualifying Features of the SPA is set out in Section 6.3.2 and Table 32 of the RNIS. These are the Special Conservation Interest's (SCI's) for the SPA. I have reviewed the table against the Conservation Objectives for each bird species, the wetland (A999) and the associated mapping and tend to agree with the findings of same. The RNIS considers

[140] Japanese Knotweed, Himalayan Balsam and Cherry Laurel encountered within the site and along the haulage route- see Appendix 6F of the EIAR

the proposed development has the potential to result in significant effects to the conservation objectives of the following SCI species and habitat of the River Shannon and River Fergus Estuaries SPA-

- Cormorant (Phalacrocorax carbo) [A017] Breeding & wintering
- Whooper Swan (Cygnus cygnus) [A038] Wintering
- Shelduck (Tadorna tadorna) [A048] Wintering
- Wigeon (Anas penelope) [A050] Wintering
- Teal (Anas crecca) [A052] Wintering
- Pintail (Anas acuta) [A054] Wintering
- Shoveler (Anas clypeata) [A056] Wintering
- Golden Plover (Pluvialis apricaria) [A140] Wintering
- Grey Plover (Pluvialis squatarola) [A141] Wintering
- Lapwing (Vanellus vanellus) [A142] Wintering
- Dunlin (Calidris alpina) [A149] Wintering
- Curlew (Numenius arquata) [A160] Wintering
- Redshank (Tringa totanus) [A162] Wintering
- Greenshank (Tringa nebularia) [A164] Wintering

- Black-headed Gull (Chroicocephalus ridibundus) [A179] Wintering
- Wetlands [A999]

All these SCI's have a Conservation Objective to maintain favourable conservation condition.

Summary of Key issues that could give rise to adverse effects (from screening stage):

1. Having considered all of the above and noting the contents of the RNIS in particular section 6.4 and 6.6, the other information on file, the DAU's FI submission and section 16.1 of this report, I am satisfied the main aspects of the proposed development that could adversely affect the conservation objectives of this SPA would mainly occur during the construction and operational stage. These include-

    a) Water Quality (see also section 6.4.1 of RNIS)-

        - Potential impacts via a reduction in water quality to the 'Wetlands [A999]' habitat i.e. a critical resource for SCI migratory waterbirds that use it- see Table 32 of RNIS.

    b) Habitat Loss/Alteration (see also section 6.4.2.2 of RNIS)-

        - Generally as per point a) above and water quality

    c) Disturbance and/or Displacement of Species

        - Noise emissions during construction

- Adverse water quality effects (as previously discussed)
- Collision Risk (see section 6.4.3.2.3 of RNIS) i.e. wind turbine structures and the rotating blades
- Barrier effects (see section 6.4.3.2.4 of RNIS) including increasing a bird's energy expenditure should they be required to fly further distances

d) Habitat or Species Fragmentation

- significant habitat or species fragmentation not envisaged

2. The Commission are also referred to section 6.6 of the RNIS which considers likely effects against the Conservation Objectives of the SPA. In particular it assesses potentially significant effects to each SCI bird of the SPA.

See section 6.4 and 6.6 of RNIS, the DAU submission and the Applicant's response.

The above is based on the documentation and information provided on the file and from the NPWS website. I am satisfied that the submitted RNIS has identified the relevant attributes and targets of the Special Conservation Interests.

Mitigation Measures for both SAC and SPA

a) Section 7.1 of the RNIS discusses how mitigation was incorporated into the overall design of the proposal with hydrology detailed as an important constraint. The existing drainage network surrounding the site creates the potential for a tangible impact pathway between proposal site and the two identified European sites.

b) Construction mitigation measures are generally detailed throughout section 7.1 and 7.2 including-

- A site-specific Surface Water Management Plan as provided in Appendix 2B of the EIAR (see also section 7.1.2 and 7.2.6 of RNIS) to avoid and minimise impacts to water quality within the site including-
    - A surface water run-off drainage system will be constructed to ensure that clean water flowing in the upstream catchment, including overland flow and flow in existing drains, is allowed to bypass the works areas without being contaminated by silt generated during on-site works such as excavations for the turbine infrastructure or from movement of delivery vehicles and on-site traffic
    - Drains carrying construction site runoff (dirty water) will be directed to settlement ponds that reduce flow velocities, allow for silt settlement and removal of sediment before eventual discharge of treated water via overland dispersal across a wide area of vegetation at a location down-gradient of the proposed construction site.
    - The entire drainage system will be managed and monitored at all times during the construction phase, particularly after heavy rainfall events. A programme of regular inspections and maintenance will be designed and carried out by dedicated construction personnel to ensure any failures are quickly identified and repaired to prevent water pollution. A checklist of the inspection and maintenance control measures will be developed,

and records kept of inspections carried out. These drainage controls will be kept in place during the operational phase of the wind farm until vegetation is re-established.

- A number of additional water quality control infrastructure and measures are detailed including inspections and monitoring.

- Section 7.2 stets out a series of Mitigation by Management Measures including-
  - A suitably qualified and experienced project ecologist/Ecological Clerk of Works (ECoW) will be employed during the construction phase of the project to ensure all environmental impact prevention controls relevant to construction activities occurring at the time are in place. The ECoW will be awarded a level of authority to control works.
  - Implementation of Invasive Alien Plant Species (IAPS) Management as incorporated into the CEMP.
  - Protection of Birds- including felling of approximately 15.97 hectares of forestry. Felling will be undertaken in accordance with a tree felling licence, etc. Where possible, forestry felling and vegetation clearance will only take place before or after the bird breeding season (1st April to August 31st, inclusive). Construction work will commence before the breeding season begins (1st April) to ensure that incubating birds or birds with young are not displaced by the disturbance work commencing during the breeding season.
  - Should it be necessary to remove vegetation during the breeding season, this will be surveyed by an ornithologist up to ten days before any clearance. Should an active nest be located, the area will be restricted from works by a distance where it is considered that the works would not cause disturbance or abandonment of the nest. Such distances, which will vary according to species and local topography, will be determined by

the ornithologist. The restriction will be maintained until it is established that any young birds present have fledged.

- Otters- Pre-construction surveys and should a holt be identified, additional surveys/enabling works will only be undertaken under the appropriate NPWS licence.

- Implementation of Construction Environmental Management Plan (CEMP) as provided in Appendix 2A of the EIAR. This will be updated as required throughout the project. Detailed measures provided in section 7.2.5 of RNIS.
- Management of Concrete as per CEMP, Construction Wheel wash, Management of Fuel/Oil, Refuelling on site measures, storage of materials, containers, stockpiles and waste will follow best practice at all times and be stored at designated areas.
- Excavations- excavated materials and soil management- Such works supervised by a suitably qualified and experienced engineer. The Contractor's method statements for each element of work will be reviewed and approved by the engineer prior to site operations. Specific method statements will be developed for each turbine and hardstanding location within the site. Other measures detailed. All soil to be retained and reused on site. During grid connection works silt retaining measures employed etc.
- Dewatering measures detailed for ground or surface water that may enter turbine foundations or cable trenches/joint bays etc.
- Borrow pit- measures detailed including provision of interceptor drain, inspections by a geotechnical engineer through regular monitoring of the opening works with backfilling measures under the same conditions.

- Grid Connection Cable Works Watercourse Crossings and Land Drainage Ditches (see 7.2.6.11) (refer also to concerns raised in the DAU FI submission regarding potential for in-combination impacts)- grid connection crossing the Kilnacreagh Stream includes provision of a new bottomless culvert to carry both an access track and the cable over the crossing with no instream works required. Other measures detailed.
- Temporary Local Road Widening Works- necessary to undertake some temporary road widening works along the local road network at the junction of the R464 and L3056 to facilitate delivery of turbine components to the proposed development site. Measures are detailed having regard to proximity of these development works to the identified SAC.

c) Operational Mitigation measures are detailed in section 7.3 including-

- Water quality measures noting increased areas of hard surfacing including retention of drainage infrastructure to ensure that run-off continues to be attenuated and dispersed across existing vegetation before reaching downstream receiving waters. Run-off control measures designed in the context of storm events of varying duration and intensity. The settlement ponds have been designed to cater for a maximum continuous flow rate associated with a medium intensity rainfall event. Higher intensity run-off will be attenuated by the open drain collection system which provides temporary storage and limits the rate at which the run-off enters the settlement ponds.
- Water monitoring will continue during years 1 and 2 of the operational phase to include Biological water quality and Macroinvertebrates. These will be sampled annually for the first three years at the aquatic survey sites as detailed in Appendix 6C of the EIAR.
- Lighting to turbines to reduce collision risk to birds. Lighting to be agreed with IAA and ANI.

d) Decommissioning Mitigation measures will be like those at construction stage but at a significantly lesser scale with no requirement for large excavations.

e) Section 8 of the RNIS discusses Monitoring for Avian Fauna, which for the purpose of this assessment are also considered appropriate/necessary mitigation measures. It includes a programme of post-construction bird monitoring to establish whether the construction and operation of the proposed development has had effects on the bird species associated with the site prior to construction as detailed in in Chapter 7- Ornithology of the EIAR. Monitoring will include Flight Activity, Transect and Collision searches.

f) I consider that the proposed mitigation measures outlined in the RNIS generally comprise relatively standard best practice measures for such wind farm development project types and for construction works in the vicinity of watercourses. I consider that the proposed measures, as well as the detailed construction methodology and further management plans contained within the CEMP and throughout the EIS are suitably detailed to remove any lack of clarity regarding potential adverse effects and that they are capable of being successfully implemented. I note that it is also proposed to appoint both an Ecological Clerk of Works and other qualified professions to ensure that the mitigation measures and best practice measures are fully implemented.

In-combination effects

a) Section 6.7 of the RNIS is titled 'Assessment of Potentially Significant Cumulative Effects'. This considers-

- Ongoing Activities i.e. Agriculture, Hydromorphology and Drainage, Forestry, Domestic Wastewater and Diffuse Urban Runoff, Wastewater treatment and Industry Mines and Quarries

- Climate Change
- Other Wind Energy Developments[141]

b) I have considered the first two of these in the context of the information set out in section 6.7 of the RNIS as well as the conservation objectives of the European Sites. I note the potential in-combination impacts (e.g. water quality and drainage-surface water, local water courses, wastewater etc) as identified including the benefits of the proposal regarding climate change. I am satisfied any such adverse impacts can be addressed by way of the mitigation measures proposed.

c) I note concerns raised in public FI submissions regarding other developments not included in the RNIS e.g. a solar farm at Castlebank, Ardnacrusha c. 2 km from the proposed site lodged on the 31/08/24. I have reviewed Clare County Council's website and note planning application 24/60416 for a solar farm was submitted on the 30/08/2024. This application was decided upon on the 30/06/2025 and appealed on the 28/07/2025. A final decision has not been made at the time of writing. The public submissions do not reasonably identify any particular linkage or any specific adverse effects between such developments. I do not consider the concerns raised are reasonable given the absence of specific reference to effects. I have reviewed the proposal and in the absence of connectivity, I do not consider there is potential for in-combination effects.

d) I have considered the proposed development with other planning applications in the area, including those identified in section 4 of this Inspectors Report, in public submissions and from a desktop review of planning applications on Clare County Council's website and An Coimisiún Pleanála's internal system. I do not consider the possible in-combination effects likely to be significant given the nature of the proposed development, the mitigation measures proposed the separation distances between same and the type and extent of connectivity including absence of connectivity where relevant.

[141] The Board will note this section of the RNIS is submitted in response to the FI request.

e) I have also considered the provisions of the Clare County Development Plan 2023-29 (CDP) including its Wind Energy Strategy (WES), Natura Impact Assessment Report (NIR)- (Volume 10a) and Strategic Environmental Assessment (SEA)- (Volume 10b). I note the NIR and SEA both detail the WES within the current CDP was adopted following SEA and AA. These then further detail the site is located within an area designated "Strategic Areas" in the WES and CDP which is considered to be eminently suitable for wind farm development. It is stated such 'Strategic Areas' do not include designated European Sites within their areas. The NIR acknowledges that impacts of wind energy developments may be indirect and/or off-site but other provisions apply including requirement for AA of the development itself.

f) Having considered the above I am satisfied the most likely significant in-combinations impacts are potentially those resulting from other 'Wind Energy Developments'. At the time of requesting Further Information only Oatfield ABP-318782-24 was currently in the planning system. Knockshanvo ABP-320705-24 was submitted following the FI request and accordingly both of these have now been considered by the Applicant in the RNIS.

g) The Commission will note the concerns raised by the DAU regarding in-combination effects including-

- if the RNIS considers in-combination effects with the Knockshanvo Wind Farm
- the description of cumulative effects in section 6.7.2 of RNIS regarding-
    - the shared catchment with the Blackwater [Clare] River and
    - effects of disturbance/displacement of birds using the River Shannon and River Fergus SPA
- if therefore the submission lacks clear and precise conclusions and relies of surface water mitigation measures

- it refers specifically to Section 7.2.6 of the RNIS, the purposes of AA in which there can be no doubts or lacunae regarding mitigation and the need for complete precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works to protected sites
- It refers to section 3.1 'Watercourses' of the submitted BEMP[142] and recommends such areas are identified prior to construction with maps of proposed mitigation provided for clarity
- Suggests clarification required showing how proposed mitigation will address cumulative impacts on the Blackwater [Clare] River and European sites downstream.
- a paragraph is cited from section 6.7.2.2 of the RNIS and highlights the absence of information to support the statement there are *"significant intervening distances*" and the basis of the conclusion as well as the use of the term '*plausible'* does not suggest likely significant effects have been entirely ruled out using best scientific knowledge. Clarity is suggested with reference to ornithological data presented in the other wind farm developments nearby.

h) Although not specifically requested at FI stage, I am satisfied in-combination effects with the Knockshanvo Wind Farm are considered as clearly indicated in sections 2.2.1 and 6.7.2 of the RNIS.

i) The DAU's commentary regarding the description of effects appearing to lack clear and precise conclusions relying on surface water mitigation measures states that this is something-

"…..the Department has already flagged some concerns"

[142] EIAR Appendix 6E

The Commission are advised that no other concerns have been received from the DAU for this application and in this context it is not expressly apparent what the DAU report is referring to.

j) In the Applicant's response to the DAU's FI submission, they refer to a number of site specific detailed drainage drawings[143] submitted with the application, a number of proposed mitigation measures such as no work occurring within 50m of EPA mapped watercourses except for some crossings etc. and highlight an extract in Figure 1 of the submission specifically referring to the drainage system layout crossing at Kilnacreagh Stream. While noting the content of these, the Commission are referred specifically to planning drawing 22156 MWP 11 00 DR C 5006 titled Drainage Layout - Sheet 11 where detailed mitigation measures are shown more clearly and precisely regarding Kilnacreagh Stream as well as the mitigation stated in section 7.2.6.11 of the RNIS.

k) The Applicant's submission contends the measures detailed are further supported by engineering measures in Chapter 3 of the EIAR as well as an extensive programme of the measures set out in the CEMP and Surface Water Management Plan. The response then details surface water baseline information has been sourced from surveys in 2021 and 2023 with a monitoring programme thereafter proposed. While I note the DAU's comments regarding monitoring, I would contend that monitoring is best practise, is an essential part of water quality mitigation, will ensure such measures are managed and therefore will be effective.

l) The Applicant contends all these measures will ensure the proposal will not have a significant adverse water quality impact including upon the Kilnacreagh Stream i.e. a tributary of the Blackwater [Clare] River and therefore downstream to European Sites.

[143] 22156-MWP-00-00DR-C-5006 to 22156-MWP-11-00DR-C-5006 (12 drawings inclusive)

m) Regarding cumulative impact to the Blackwater [Clare] River and European Sites downstream the Applicant refers to section 6.7.2.1.1 of the RNIS and notes both Oatfield and Knockshanvo are both located predominantly upstream and upgradient of the proposed site and within a different river subbasin, namely Blackwater [Clare], and therefore, there is no direct hydrological link between the site and the main development areas of Oatfield or Knockshanvo developments.

n) The Applicant does, however, identify what they describe as a tenuous indirect hydrological link between the underground collector cables of both the proposed and the Oatfield developments. This link is via the Kilnacreagh Stream which drains into the Blackwater [Clare] River. The application proposes developing a crossing of the Kilnacreagh Stream to facilitate the underground grid connection close to the point of the national grid. Similar crossings works are required for the Oatfield grid connection c. 1.7km downstream. Should these works coincide there is a very slight chance a hydrological pathway may be formed through which in-combination water quality impacts on the Blackwater [Clare] could occur.

o) The Applicant considers-

- the European sites are approximately 16.7 river kilometres and 25.3 river kilometres downstream from the L-7062 crossing,
- there will be no instream works,
- the works are limited and
- the hydrological connection is tenuous.

They contend that the design of the proposal, the mitigation measures proposed (see section 7.5.6.11) and implementation of best practice construction will ensure the proposed development will not result in significant adverse water quality impacts to the Kilnacreagh Stream which is a tributary of the Blackwater [Clare] River. Therefore there is no potential for adverse water

quality impacts from in-combination development. Having considered this I am satisfied the Applicant has adequately addressed the DAU concern in this regard.

p) The DAU's concerns regarding impacts on birds using the River Shannon and Fergus SPA and other SPA's include seeking clarity regarding the extent of 'significant intervening distances' and use of the term 'plausible'. The DAU seek assurances with reference to ornithological data presented in other wind energy applications.

q) The Applicant details that only two SCI's species were observed at the proposed site during ornithological surveys i.e. the black-headed gull and the cormorant. The Applicant details that during the ornithology surveys for the Oatfield development eight SCI species were identified, while four SCI species were identified as part of the surveys for the Knockshanvo development. Black-headed gull and cormorant were recorded at both but not within either of the two site boundaries. The two bird species recorded at the application site occurred during the winter months while all observations of black-headed gull recorded during the bird surveys for the Oatfield and Knockshanvo occurred during the summer breeding months suggestive that the black-headed gulls observed in the other wind farm studies are unlikely to be to be part of the SPA's designated wintering population of black-headed gull.

r) Regarding the Cormorant, the Applicant detail sightings were recorded for the other wind farm developments at a group of small lakes approximately 8 kilometres to the north and northwest of the proposed development site. The Applicant asserts it is possible these are part of the River Shannon and Fergus SPA cormorant population, however considering the availability of habitat of equal or greater ecological value within the estuarine waters of the River Shannon and River Fergus estuaries and the absence of any significant numbers of cormorant recorded at the proposed site, there is no potential for the SPA's breeding and wintering population of cormorant to be adversely effected as a result of any operational phase in-combination effects of the proposed development with either of the other two proposed wind farms.

s) I have reviewed and considered all this information in the context of the DAU submission and have noted the contents of section 9 and 10 of the RNIS where the Applicant contends following an examination, analysis and evaluation of the relevant information and best scientific knowledge the proposed development will not adversely affect the integrity of the identified European Sites. While consideration of in-combination effects is entirely appropriate, there remains a need for reasonable and pragmatic consideration regarding the fact the other developments within the planning system that are not yet determined, may not in any event successfully obtain approval. In this context, I am satisfied the concerns of the DAU while reasonable are not sufficiently specific but have been adequately addressed by the Applicant with regard to available ornithological data including data from other wind energy applications as detailed.

t) Having considered all the information above and noting the RNIS detailed need for mitigation measures, I am satisfied that in-combination effects have been assessed adequately in the RNIS and that no significant adverse effects from the proposed development in-combination with other plans or projects will arise to the detriment of the identified European Sites or other European Sites.

Findings and Conclusions

The applicant determined that following the implementation of mitigation measures the construction and operation of the proposed development alone, or in combination with other plans and projects, will not adversely affect the integrity of these European sites.

Based on the information provided, I am satisfied that adverse effects arising from aspects of the proposed development can be excluded for the European sites considered in the Appropriate Assessment. No direct impacts are predicted. Indirect impacts would generally be temporary in nature during construction and mitigation measures are described to prevent adverse effects. Monitoring measures are also proposed to ensure compliance and effective management of measures including at operational stage. Overall,

and based on the information submitted, I am satisfied that the mitigation measures proposed to prevent adverse effects have been assessed as effective and can be implemented. I am satisfied that in-combination effects have been assessed adequately in the RNIS and that no significant adverse in-combination effects from other plans or projects will arise to the detriment of the identified European Sites or other European Sites

Therefore it has been ascertained that the proposed development, individually or in combination with other plans or projects would not adversely affect the integrity of European sites No. 002165 and 004077, or any other European site, in view of those site's Conservation Objectives.

Reasonable scientific doubt

Based on the information submitted, I am satisfied that no reasonable scientific doubt remains as to the absence of adverse effects.

Site Integrity

The proposed development will not affect the attainment of the Conservation Objectives of the Lower River Shannon SAC (002165) or the River Shannon and River Fergus SPA (004077). Adverse effects on site integrity can be excluded and no reasonable scientific doubt remains as to the absence of such effects.

Appropriate Assessment Conclusion: Integrity Test

In screening the need for Appropriate Assessment, it was determined that the proposed development could result in significant effects on the Lower River Shannon SAC (002165) and the River Shannon and River Fergus SPA (004077) in view of the conservation objectives of those sites and that Appropriate Assessment under the provisions of S177V was required.

Following an examination, analysis and evaluation of the NIS and the Revised NIS, all associated material submitted, the further information, responses and subsequent submissions received and taking into account the observations of the Department of Housing, Local Government and Heritage, I consider that adverse effects on the site integrity of the Lower River Shannon SAC (002165) and the River Shannon and River Fergus SPA (004077) can be excluded in view of the conservation objectives of these sites and that no reasonable scientific doubt remains as to the absence of such effects.

My conclusion is based on the following:

- Detailed assessment of construction and operational impacts.
- Consideration of in-combination effects with other plans or projects
- the proposed development will not affect the attainment of conservation objectives for Qualifying Interest or Special Conservation Interests of the identified European Sites or prevent or delay the restoration of favourable conservation condition for such Qualifying Interest or Special Conservation Interests
- the effectiveness of mitigation measures proposed including adoption and implementation of a CEMP, the Surface Water Management Plan and Invasive Species Management Plan and
- Application of appropriate planning conditions regarding stated mitigation measures

17.0 **Appendix 2- Observations**

17.1. **Observers to Original Application**

1. Bobby O'Connell and Sons Ltd
2. Jason and Claire Boyce
3. Ann Campbell
4. Con and Bernie O' Grady
5. Ute and Konrad Rumberger
6. Irene Crowe
7. John and Sinead White
8. William and Jacqueline Shannon
9. Matina Symeonidi and Stephen Devaney
10. Tracy Price
11. Richard and Dympna Gillman
12. Mike Prior
13. Dr. Brian G Fitzgerald
14. Senator Timmy Dooley
15. Richard and Anna Ringrose
16. Terence and Marian Reeves
17. Brendan and Valerie O'Brien
18. Eoin Ringrose
19. Breda and Martin Manning
20. Niall and Elaine Crowe
21. Cathal Crowe TD
22. Anthony and Bernadette Kiely
23. Gerry Ryan and Family
24. Mary, James and Noel Fitzgerald
25. Mary Clifford
26. Jane Benson
27. Timothy Myers
28. Carmel and Tony Finucane
29. Eugene O'Brien
30. Paul and Joanne Finucane
31. Patrick Hartigan
32. Mark Manning
33. Neil Browne
34. Michael and Anita Kelly
35. Susan Madigan
36. Mary Cronin
37. Martina Warde
38. Seamus Gammell and Others
39. Liam Shanahan
40. Lianne Cronin and Michael James Reale
41. Niall Ward
42. Aoife Wogan

43. Laura Ward
44. Mike and Patricia Reale
45. John Kennedy
46. Peter McCarthy
47. Michael and Maura O'Brien
48. Micheál Mac Gearailt
49. Linda and Gerard Quinn
50. Natasha, Thomas, Evan, Kara and Allie Foley
51. Lisa and Damien Geoghegan
52. Carol McNulty
53. Aiden McNulty
54. Fiona Hartigan
55. Colin Peirce
56. Ryan/ Walters family
57. Bernadette Kiely
58. Peter Madden
59. Andy Rainsford
60. Niamh Coady Rainsford
61. Teresa Crawford
62. Mary Harris
63. Brenda and Anthony O'Hare
64. Paul O'Riordan
65. Robert O'Grady
66. Pat and Claire Brennan
67. Simone, Andrew and Sophie Halliday
68. John and Eleanor McNamara
69. Environmental Trust Ireland
70. Brian Ward

17.2. **Observers to Further Information**

1. Patrick Hartigan
2. Gerry Ryan & Others
3. Bernadette and Tony Kiely 22/12/24
4. Bernadette Kiely- c/o Leahy Planning Ltd, on behalf of Meelick Wind Farm Action Group
5. Linda & Gerard Quinn
6. Carol McNulty
7. Aiden McNulty
8. Nora Krajla
9. Daniel Sipos
10. Mary Harris
11. Jane Benson
12. Breda and Martin Manning
13. Richard and Dympna Gillman
14. Brenda and Anthony O'Hare
15. Pat and Claire Brennan
16. Ute and Konrad Rumberger
17. Timothy Myers
18. Mary Cronin
19. Lianne Cronin and Michael James Reale
20. Mike and Patricia Reale
21. Mark Manning

18.0 **Appendix 3- Sagentia Aviation Report**

Independent Aviation Review Ballycar Windfarm Development 29th of August 2025

19.0 **Appendix 4- Oral Hearing Agenda and Proceedings**

An Coimisiún Pleanála

Oral Hearing Agenda
ABP-318943-24

Case	Strategic Infrastructure Development application- Proposed 12 turbine windfarm, located on a 140-hectare site located within the townlands of Cappateemore East, Ballycannan West, Ballycannan East, Ballycar South, Ballycar North, and Glennagross in County Clare
Date	Thursday 22nd of January 2026
Start Time	10.00 am
Location	Clayton Hotel, Steamboat Quay, Limerick City.

Under the provisions of section 135 (2AB) of the Planning and Development Act 2000 as amended, this is a 'Specified Matter only' Oral Hearing i.e. a Limited Agenda Oral Hearing.

This legislative provision provides for the Commission to direct that the Reporting Inspector conducts an Oral Hearing and that he or she shall allow points or arguments in relation to the specified matters only during the hearing.

The specified matter for the purpose of this hearing is-

- the Aviation related issues relevant to Shannon Airport and the Woodcock Hill radar

The purpose of the oral hearing is to allow necessary elaboration, discussion and examination of the specified matter only.

This Hearing will allow participants, who wish to do so, to make further submissions on the specified matter only and to allow the Inspector to seek clarification on any relevant issues arising if required.

Participants will have the opportunity to ask questions or to seek clarification on submissions made at the hearing i.e. those specified matters only. There is no obligation on any participant to make a submission to the hearing or to speak for the full time allocated.

On completion of the Hearing, the Inspector will prepare a report and recommendation on the case for the Commission. The decision on this Strategic Infrastructure Development application will be made by the Commission.

If you intend to provide a written copy of any **new submission** or visual aids when speaking (presentations, maps, photos, etc.), these should be submitted if possible in a digital format to the Commission **in advance of the Hearing and by 5.30pm on Monday 19th of January** (Such submissions will be retained on the case file after the hearing).

Submissions presented to this hearing will be recorded by a service provider organised by An Coimisiún Pleanála. You are not permitted to record the proceedings of the oral hearing.

The agenda and order of appearance for the Limited Agenda Oral Hearing is set out below, along with allocated times. Participants should note that this schedule is indicative only and may vary during the course of the hearing. Section 135 (2) of the Planning Act 2000, as amended, requires the Inspector *"to conduct the hearing expeditiously and without undue formality".* For this reason participants are requested to attend the whole hearing as they may be called to participate at other times and in different order to those set out in the agenda.

Agenda

Time (indicative)	Topic
10:00	Inspector's Opening Statement-
10:15 – 11.30	Ballycar Green Energy Ltd (Applicant)- session 1. • The Applicant is requested to address the Aviation related issues relevant to Shannon Airport and the Woodcock Hill radar. (75 minute maximum for session 1)
11.30 - 11.45	Break (15 minutes)
11.45 - 13.00	Ballycar Green Energy Ltd (Applicant)- Session 2 (75 minute maximum for session 2, 2 hours 30 mins in total for Applicant)
13:00 - 14:00	One hour for Lunch
14:00 – 15.00	Air Nav Ireland (ANI) are invited to- • elaborate on their concerns as raised in their submissions of 08/03/24 and 18/12/24 • address any matter raised in the Applicant's submission to the hearing if relevant (1 hour)
15:00-15.15	Shannon Airport Group (SAG) are invited to- • elaborate on their concerns as raised in their submissions of 03/03/24 and 22/12/24

Time (indicative)	Topic
	• address any matter raised in the Applicant and ANI's submissions to the hearing if relevant (15 minutes)
15:15-15:25	Break- 10 minutes
15:25-17:15	Public Participants Submissions • Cathal Crowe TD- 30 minutes • Gerry Ryan- 30 minutes • James Fitzgerald- 30 minutes • Lianne Cronin- 10 minutes • Timothey Myers- 10 minutes
17:15-17:45	Questions through the Inspector (if required)- • Applicant to ANI and SAG • ANI to Applicant • SAG to Applicant • Public Participants questions to Applicant, ANI and/or SAG (in order of submissions set out above) • Inspectors questions to participants
17:45-18:00	Closing statements (if required): (i) ANI (ii) SAG (iii) Ballycar Green Energy Ltd. (5 minutes maximum each. New issues should not be introduced)
18.00	Closing of Oral Hearing by Inspector.

Notes:

- A copy of the rules for participation in the oral hearing are available on our website at www.pleanala.ie