Mr Guillermo Alonso Castro
Engineering Manager
GPG Australia

By email: galonsoc@globalpower-generation.com

Our ref: 105201-01

Dear Guillermo,

Re: Darlington Wind Farm – Preliminary Aviation Assessment

Please find in this correspondence a summary overview of the aviation impact assessment on possible constraints to the development of the Darlington Wind Farm.

1.1. Project background

Global Power Generation Australia Pty Ltd (GPG) is conducting early phase development of the Darlington Wind Farm in the Western District of Victoria. The proposed wind farm is located between the towns of Darlington and Mortlake, approximately 87 km southwest of Ballarat and 50 km northeast of Warrnambool.

GPG wishes to understand the potential aviation impacts of the proposed development and the suitability of the site for development with respect to any identified or potential aviation constraints relating to the project and / or project site.

The analysis conducted in this preliminary aviation assessment is based on a wind turbine generator (WTG) tip height of 240 m AGL.

1.2. References

References used or consulted in the preparation of this report included:

- Airservices Australia, *Aeronautical Information Package; including AIP Book, Departure and Approach Procedures, Designated Airspace Handbook and EnRoute Supplement Australia,* dated 16 June 2022
- Civil Aviation Safety Authority, *Civil Aviation Safety Regulations 1998* (CASR)
- Civil Aviation Safety Authority, Advisory Circular (AC) 91-10 v1.1: *Operations in the vicinity of non-controlled aerodromes*, dated November 2021
- Civil Aviation Safety Authority, Part 139 (Aerodromes) Manual of Standards 2019, dated 13 August 2020 Version F2020C00797
- Civil Aviation Safety Authority, Advisory Circular (AC) 139.E-05 v1.0 Obstacles (including wind farms) outside the vicinity of a CASA certified aerodrome

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- Department of Infrastructure and Regional Development, Australian Government, National Airport Safeguarding Framework, Guideline D Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms)/ Wind Monitoring Towers, dated July 2012
- EUROCONTROL, European Organisation for the safety of air navigation, *EUROCONTROL Guidelines, How to assess the potential impact of wind turbines surveillance sensors*, edition 1.2, ISBN: 978-2-87497-043-6, Reference number: EUROCONTROL-GUID-130, September 2014
- International Civil Aviation Organization (ICAO), *Doc 8168 Procedures for Air Navigation Services—Aircraft Operations (PANS-OPS)*
- ICAO Standards and Recommended Practices, Annex 14—Aerodromes
- ISO 31000:2018 *Risk management—Guidelines*, Standards Australia
- OzRunways, aeronautical navigation chart extracts, dated 14 June 2022
- Australian Government, Geoscience Australia, NationalMap.

1.3. Client material

GPG provided the following material for the purposes of this analysis:

- EHP Darlington WF spatial Data 13-09-2922
- Wind farm project area, *320-0616-00-P-01-DR10 Context Plan RevBVer2.pdf* emailed 15 June 2022
- *31205200333_General Layout Darlington_V18.pdf*
- *Darlington General Layout_V18.kmz.*

1.4. Wind farm description

The proposed wind farm will consist of up to 61 WTGs with a tip height of 240 m AGL.

The highest ground level in the proposed Project area is approximately 170 m AHD (source, Google Earth).

The overall maximum tip height of the proposed WTGs will be approximately 410 m AHD (1345 ft AMSL).

1.5. Site overview

The Project site is in the Western District of Victoria, between the towns of Darlington and Mortlake, approximately 87 km southwest of Ballarat and 50 km northeast of Warrnambool.

Figure 1 shows an indicative location of the Project.

Figure 1 Project Area overview

1.6. Nearby certified aerodromes

Australia's Civil Aviation Safety Authority (CASA), under CASR Part 139, specifies the conditions that aerodrome operators must adhere to in order to operate an aerodrome that is available for air transport operations and published instrument approach procedures.

Warrnambool aerodrome is the only certified aerodrome within 30 nm (55.56 km) of the boundary of the proposed wind farm. Instrument approach protection surfaces (PANS-OPS) surfaces exist above the wind farm. (See paragraph 1.10)

Peterborough aerodrome (certified) is located 31 nm (46km) from the boundary of the proposed wind farm.

Figure 2 shows the location of the Project area relative to the closest certified aerodromes:

- Warrnambool Aerodrome – 47 km (25 nm) southwest of the proposed wind farm boundary
- Peterborough Aerodrome – 46 km (31 nm) south of the proposed wind farm boundary.

There will be no impact to terminal instrument flight procedures of any certified aerodrome caused by the Project, at the time of this preliminary assessment.

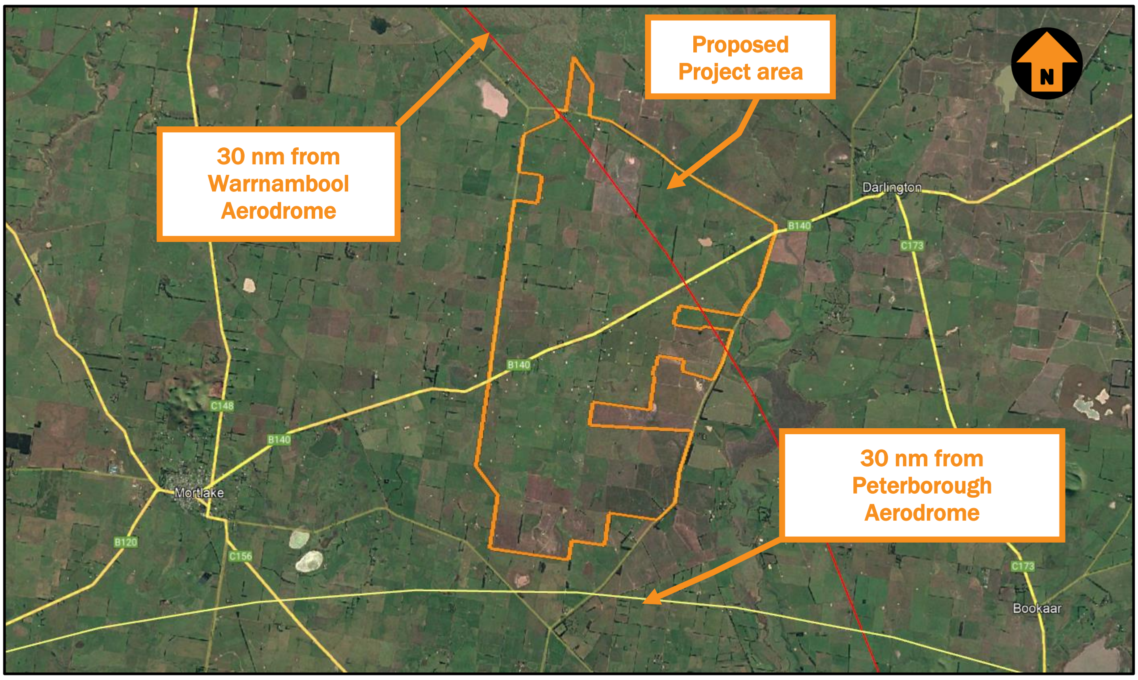

Figure 2 Project Area in relation to nearby Certified Aerodromes

1.7. Nearby aeroplane landing areas

As a guide, an area of interest within a 3 nm radius of an aeroplane landing area (ALA) is considered to be the area that aircraft generally operate within when taking off or landing at ALAs.

The area of interest is used to assess potential impacts of proposed developments on aircraft operations at or within the vicinity of the ALA.

A search on OzRunways, which sources its data from Airservices Australia (AIP), identified 3 ALAs within 3 nm (5.5 km) of the Project area:

- Darlington 1 (Stony Point 1) located approximately 1.8 km east of the proposed wind farm boundary and 1 nm south of Darlington
- Darlington 2 (Stony Point 2) located immediately east of the Darlington -Terang Road, approximately 5.5 km southwest of Darlington. A gully runs across this runway and the high-tension power line approx. 300 m north of the runway end. This ALA is unlikely to be used.

Figure 3 shows these runways in relation to the proposed wind farm boundary and the nearby WTGs.

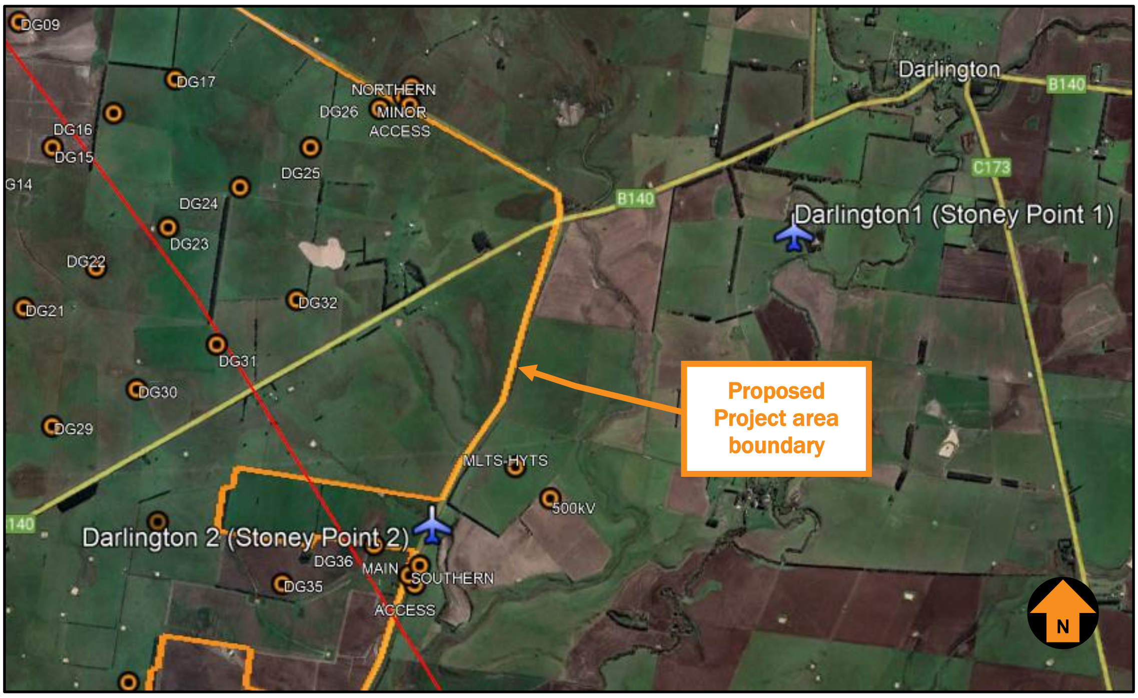

Figure 3 Aircraft Landing Areas within 3 nm of wind farm boundary

1.8. Potential Wake Turbulence Impacts

National Airports Safeguarding Framework (NASF) Guideline D provides guidance regarding wind turbine wake turbulence states:

> *Wind farm operators should be aware that wind turbines may create turbulence which are noticeable up to 16 rotor diameters from the turbine. In the case of one of the larger wind turbines with a diameter of 125 metres, turbulence may be present two kilometres downstream. At this time, the effect of this level of turbulence on aircraft in the vicinity is not known with certainty. However, wind farm operators should be conscious of their duty of care to communicate this risk to aviation operators in the vicinity of the wind farm…*

NASF Guideline D details that *"wind turbines may create turbulence which is noticeable up to 16 rotor diameters from the turbine"* .

In accordance with NASF Guideline D, downwind turbulence from the nearest turbines may still exist in the area described as the normal circuit area of the ALA in a south-westerly wind.

The NASF Guideline D turbulence figure is based on United Kingdom (UK) Civil Aviation Authority (CAA) Civil Aviation Publication (CAP) 764 – CAA Policy and Guidelines on Wind Turbines, which in turn is based on *"research activity or modelling and studying the wake characteristics…..using computational fluid dynamics techniques, wind tunnel tests and on site LIDAR measurements."*

This CAP recognises that the extent of the turbulence diminishes to less than 10% of what exists immediately behind the turbine within 5 rotor diameters (RD). This study was based on a 30 m diameter turbine.

A study by the European Academy of Wind Energy - *Do Wind Turbines Pose Roll Hazards to Light Aircraft, 2018*, used a large-eddy simulations (LES) to assess wind-generated roll hazards to small aircraft from the wake of a utility-scale wind turbine – a GE 1.5 MW turbine with three bladed rotor of 77 m in diameter and a hub height of 80 m. A typical aircraft was used in the study, a Cessna 172.

This study is considered a simple method for quantifying turbine-wake-induced roll hazards on general aviation aircraft.

The *"assessment criteria are based on the maximum rolling moment that the aileron on a typical aircraft can generate to counteract a moment induced by the wake field."*

This study determined:

- Turbine wakes tend to diffuse more rapidly in convective conditions as the mechanical mixing of the air erodes the wake (Baker and Walker 1984, Magnusson and Smedman 1994, Mirocha et al., 2015)
- The worst case for longer-persisting wakes exist in stable atmospheric conditions (Bodini et al., 2018)
- 99.99% of all calculations exist within the low hazard threshold
- No moments reached the high hazard threshold
- In stable conditions the largest roll hazards occur most frequently about 5 D downwind of the turbine
- All of the peak hazards are located in the high-shear zone at the edge of the wake between 3 and 7 D downwind from the turbine
- Normal control inputs by pilots when first noticing the roll movement will alleviate the wake impact.

The advice provided by the NASF Guideline D, and the data and conclusions contained in the above study is clear that any turbulence downwind of a turbine is significantly decreased beyond approximately 7 rotor diameters.

After consideration of available reports, Aviation Projects considers that a conservative distance of 10 rotor diameters is an appropriate distance to consider that the turbulence is dissipated to an extent less than the effect of the turbulence generated by the wind flow over hills, trees and other natural objects.

The proposed WTGs may have a rotor diameter of 172 m. Considering the conservative 10 rotor diameters (1720 m), the location of the Darlington 1 ALA, 3.4 km from the nearest WTG, is located outside the likely area that downwind turbulence is dissipated below ambient levels – 1.72 km.

Darlington 2 is unlikely to be used due the gully and very close high-tension power line. The line of trees immediately to the west of the runway would create turbulence on the runway during south-westerly winds.

The Project is unlikely to create any adverse turbulence impacts to the Darlington 1 ALA.

1.9. Obstacle limitation surfaces (OLS)

Certified aerodromes are generally provided with OLS that protect aircraft during take-off and landing flight operations. They can extend to 15 km from the aerodrome.

The proposed Darlington wind farm is located further than 15 km from any certified aerodrome and will not have an impact on them.

1.10. Instrument Approach Procedures – Warrnambool aerodrome

This assessment considers the importance of Warrnambool aerodrome as a frequent site for RFDS medical retrievals and regular air transport flights.

A non-precision instrument approach provides horizontal (lateral) guidance to an aircraft flying the published approach procedure and in general terms allows an aircraft to descend lower while in cloud or in low visibility conditions than what would otherwise be permitted when flying a visual approach whilst in sight of the ground or water.

The instrument approach procedures are designed to provide a specified minimum obstacle clearance over the tallest objects within protection areas applied to the instrument approach procedure paths and are designed in accordance with the requirements of CASR Part 173.

The southern section of the proposed wind farm is located within the 25 nm Minimum Safe Altitude (MSA) which extends to 30 nm from the reference point at Warrnambool aerodrome. The published minimum altitude for the 25 nm MSA is 3300 ft (1005 m) AMSL. The minimum obstacle clearance height for the 25 nm MSA is 300 m, resulting in a PANS-OPS surface of 705 m AHD, as specified by the International Civil Aviation Organization (ICAO) in Doc 8168 *Procedures for Air Navigation Services—Aircraft Operations (PANS-OPS).*

At a maximum height of 410 m AHD, the wind turbines do not infringe the PANS-OPS surfaces at Warrnambool aerodrome.

1.11. Aircraft operations at non-controlled aerodromes

Advisory Circulars (ACs) provide advice and guidance from CASA to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements. Advisory Circular AC 91-10 v1.1 *Operations in the vicinity of non-controlled aerodromes* provides guidance for pilots flying at or in the vicinity of non-controlled aerodromes, with respect to CASR 91.

A conventional circuit pattern and heights are provided in AC 91-10 v1.1. The standard circuit consists of a series of flight paths known as *legs* when departing, arrival or when conducting circuit practice. Illustrations of the standard aerodrome traffic circuit procedures provided in AC 91-10 v1.1. are shown in Figure 4 and Figure 5.

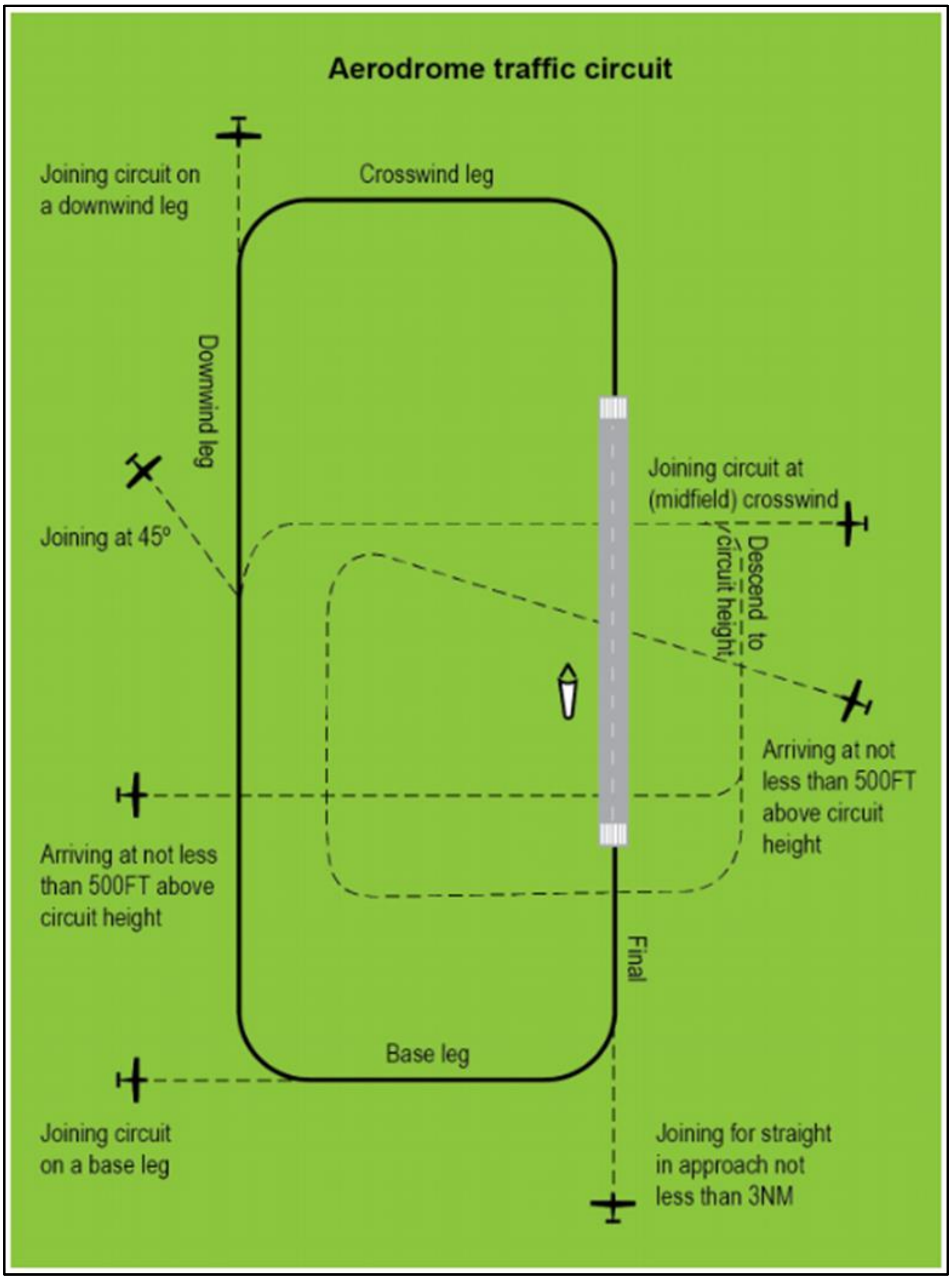

Figure 4 Aerodrome standard traffic circuit, showing arrival and joining procedures

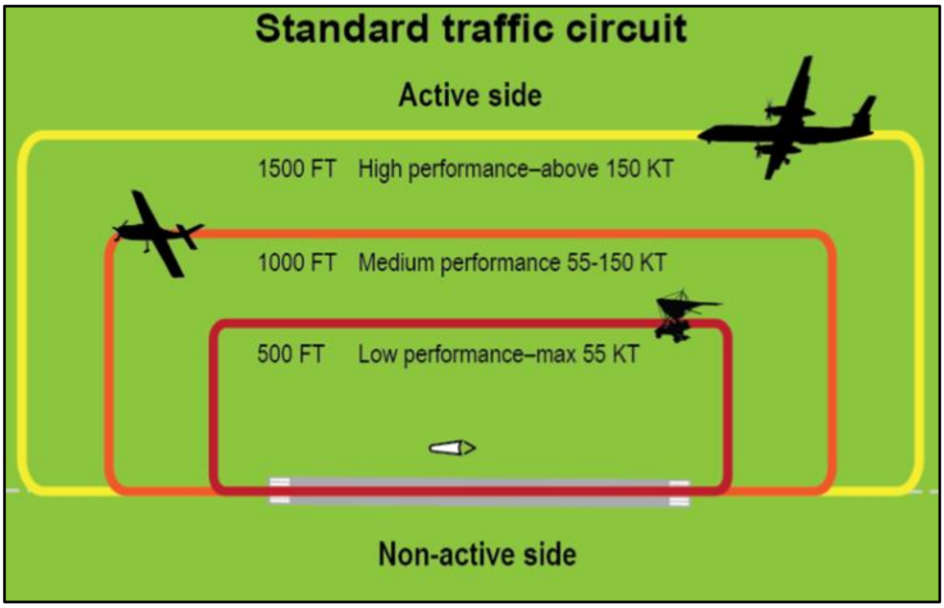

Figure 5 Lateral and vertical separation in the standard aerodrome traffic circuit

AC 91-10 v1.1. paragraph 7.10 makes reference to a distance that is "normally" well outside the circuit area and where no traffic conflict exists, which is at least 3 nm (5556 m). The paragraph is copied below:

> *7.10 Departing the circuit area*
>
> *7.10.1 Aircraft should depart the aerodrome circuit area by extending one of the standard circuit legs or climbing to depart overhead. However, the aircraft should not execute a turn to fly against the circuit direction unless the aircraft is well outside the circuit area and no traffic conflict exists. This will normally be at least 3 NM from the departure end of the runway, but may be less for aircraft with high climb performance. In all cases, the distance should be based on the pilot's awareness of traffic and the ability of the aircraft to climb above and clear of the circuit area.*

1.12. Rules of flight

According to Aeronautical Information Publication (AIP) the meteorological conditions required for visual flight in the applicable (Class G) airspace at or below 3000 ft AMSL or 1000 ft AGL whichever is the higher are: 5000 m visibility, clear of clouds and in sight of ground or water.

Civil Aviation Safety Regulation (1998) 91.267 (Minimum height rules—other areas) prescribes the minimum height for flight. Generally speaking, and unless otherwise approved, aircraft are restricted to a minimum height of 500 ft AGL above the highest point of the terrain and any object on it within a radius of 300 m in visual flight during the day when not in the vicinity of built-up areas, and 1000 ft AGL over built up areas (within a horizontal radius of 600 m of the point on the ground or water immediately below the aeroplane).

These height restrictions do not apply if through stress of weather or any other unavoidable cause it is essential that a lower height be maintained.

Flight below these height restrictions is also permitted in certain other circumstances.

With respect to flight under the VFR at night, Civil Aviation Safety Regulations (1998) 91.277 requires that the pilot in command of an aircraft flying VFR at night must not fly below the following heights (unless during take-off and landing operations, within 3 nm of an aerodrome, or with an air traffic control clearance):

- *the published lowest safe altitude for the route or route segment (if any);*
- *the minimum sector altitude published in the authorised aeronautical information for the flight (if any);*
- *the lowest safe altitude for the route or route segment;*
- *1,000 ft above the highest obstacle on the ground or water within 10 nautical miles ahead of, and to either side of, the aircraft at that point on the route or route segment;*
- *the lowest altitude for the route or route segment calculated in accordance with a method prescribed by the Part 91 Manual of Standards for the purposes of this paragraph.*

Instrument Flight Rules (Day or night) (IFR)

According to CASR 91, flight under the instrument flight rules (IFR) requires an aircraft to be operated at a height clear of obstacles that is calculated according to an approved method. Obstacle lights on structures not within the vicinity of an aerodrome are effectively redundant to an aircraft being operated under the IFR.

1.13. Air routes and Lowest Safe Altitudes (LSALT)

MOS 173 requires that a minimum obstacle clearance of 1000 ft is applied above the highest terrain or obstacle within the lateral tolerance area of the individual air route to determine the applicable LSALT. This MOC is applied in the same manner within a 1° by 1° graticle, to determine the Grid LSALT.

Figure 6 illustrates the grid LSALT and air routes in proximity to the Project area (source: ERC Low 2, Air Services Australia, effective 16 June 2022).

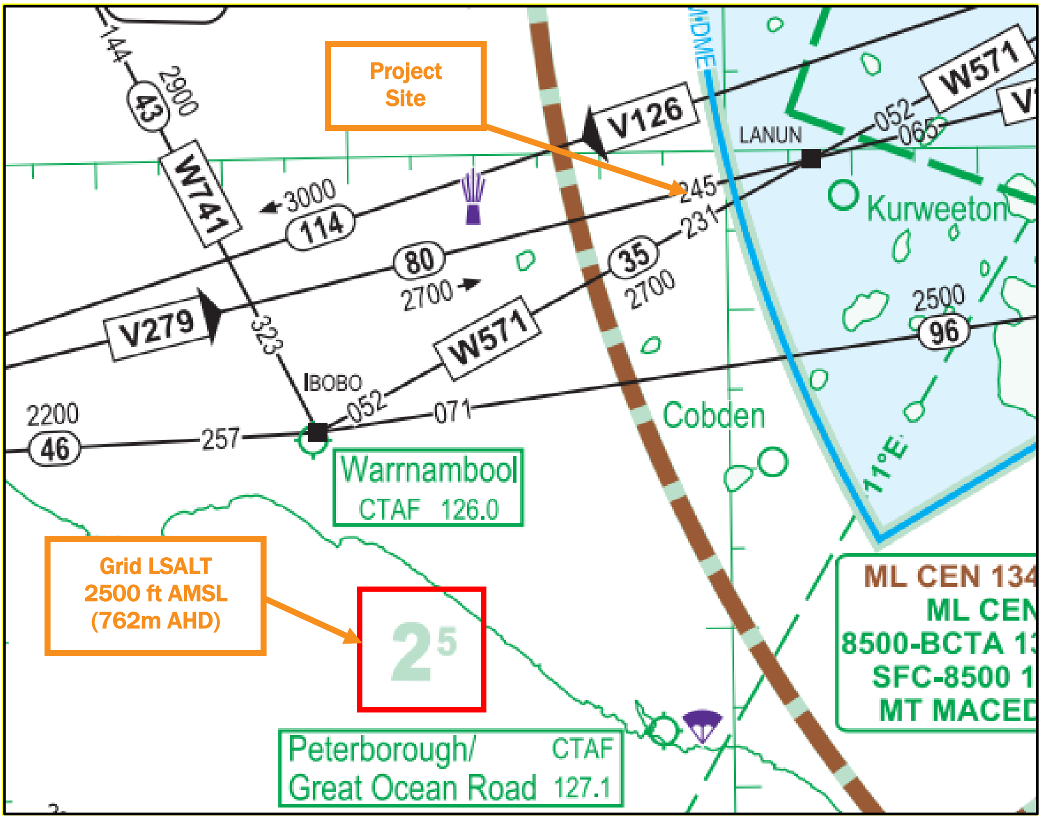

Figure 6 Enroute Chart L2

An impact analysis of the surrounding air routes is provided in Table 1.

Table 1 Air Route Analysis

Air route	Waypoint pair	Route LSALT (ft AMSL)	LSLAT Protection Surface (ft/m AMSL)	Impact on airspace design	Potential solution	Impact on aircraft ops
V126	ESDIG - Portland	3000	2000/ 609	Nil – below surface	N/A	N/A
V279	Portland – LANUN	2700	1700/518	Nil – below surface	N/A	N/A
W571	Warrnambool – LANUN	2700	1700/518	Nil – below surface	N/A	N/A
Grid	N/A	2500	1500/457	Nil – below surface	N/A	N/A

The Project would not impact any air routes or the Grid LSALT.

1.14. Airspace Protection

The Project area is located wholly within Class G airspace (meaning non-controlled airspace). The Project will not impact any controlled airspace.

1.15. Aviation facilities

The Project site is outside restricted areas associated with aviation facilities of nearby aerodromes as specified in Part 139 MOS 2019 and the National Airports Safeguarding Framework.

1.16. Radar

Airservices Australia currently requires an assessment of the potential for wind turbine generators to affect radar line of sight.

With respect to aviation radar facilities, the closest radar is the Mt William Route Surveillance Radar (RSR) which is located approximately 42 nm (79 km) northwest of the Project Area.

EUROCONTROL guidelines for assessing the potential impact on wind turbines on radar surveillance sensors stipulate the following assessment requirements:

Primary Surveillance Radar (PSR)

- Zone 1 0-500 m: *Not permitted*
- Zone 2 500 m – 15 km: *Detailed assessment*

- Zone 3: Further than 15 km but within maximum instrumented range and in radar line of sight: *Simple assessment*
- Zone 4: Anywhere within maximum instrumented range but not in radar line of sight or outside the maximum instrumented range: *No assessment*

Secondary Surveillance Radar (SSR)

- Zone 1: 0-500 m: *Not permitted*
- Zone 2 500 m – 16 km but within maximum instrumented range and in radar line of sight: *Detailed assessment*
- Zone 4: Further than 16 km or not in radar line of sight: *No assessment*

(Zone 3 is not established for secondary surveillance radar)

The proposed wind farm is not anticipated to affect any radar facility. A simple assessment may be required by Airservices Australia, however due to the distance and terrain profile between the radar facility and the Project area, there is no impact anticipated.

1.17. Aircraft Operations

Air transport operations aircraft normally operate under instrument flying rules (IFR). There are no regular air transport operations anticipated in the vicinity of the Project area below 5,000 ft AMSL, except aeromedical aircraft.

Flying training may be conducted under either the IFR or visual flying rules (VFR). Other general aviation operations under either IFR or VFR are also likely to be conducted at various aerodromes in the area.

Low-level aerial firefighting and agriculture operations are possible in the vicinity of the Project and would be conducted under the visual flight rules (VFR). Operations conducted under the VFR are required to remain in visual meteorological conditions (VMC) and clear of the highest point of the terrain by 500 ft vertical distance and 300 m horizontal distance.

1.18. National Airports Safeguarding Framework

The National Airports Safeguarding Advisory Group (NASAG) was established by the Commonwealth Department of Infrastructure and Transport to develop a national land use planning framework called the National Airports Safeguarding Framework (NASF). The purpose of this framework is to enhance the current and future safety, viability, and growth of aviation operations at Australian airports through:

- the implementation of best practice in relation to land use assessment and decision making in the vicinity of airports
- assurance of community safety and amenity near airports
- better understanding and recognition of aviation safety requirements and aircraft noise impacts in land use and related planning decisions

- the provision of greater certainty and clarity for developers and landowners
- improvements to regulatory certainty and efficiency
- the publication and dissemination of information on best practice in land use and related planning that supports the safe and efficient operation of airports.

NASF Guideline D: *Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms)/Wind Monitoring Towers,* provides guidance to State/Territory and local government decision makers, airport operators and developers of wind farms to jointly address the risk to civil aviation arising from the development, presence and use of wind farms and wind monitoring towers.

The methodology for preparing the risk assessment is contained in the NASF Guideline D.

It is expected that an Aviation Impact Assessment (AIA) would be undertaken in conjunction with the further development of the proposed Project and will include a risk assessment. The risk assessment will have regard to all potential aviation activities within the vicinity of the Project Area including recreation, commercial, civil (including for agricultural purposes) and military operations.

NASF Guideline D also specifies a distance of 16 times the rotor diameter of the WTGs that should be considered for potential wake turbulence impacts on aircraft. Refer to section 1.8 for consideration of this issue.

Consultation with the affected landowner, to ascertain the types of flight operations occurring on their property, will need to be undertaken.

1.19. Civil Aviation Safety Authority - regulatory context

The Civil Aviation Safety Authority (CASA) regulates aviation activities in Australia. Applicable requirements include the Civil Aviation Regulations 1988 (CAR), Civil Aviation Safety Regulations 1998 (CASR) and associated Manual of Standards (MOS) and other guidance material. Standards for Certified Aerodromes are established in Part 139 MOS 2019.

A certified aerodrome means an aerodrome certified under Part 139 (Aerodromes) Civil Aviation Safety Regulations 1998. An aerodrome must be certified if there is a terminal instrument flight procedure implemented at the aerodrome, except for specialised helicopter operations. The standards for the operation and maintenance of a certified aerodrome are provided in Part 139 Manual of Standards 2019 (Part 139 MOS 2019).

Standards relevant to the development of wind farms in proximity to a certified aerodrome include the control of tall and hazardous objects (as defined) located in the vicinity of an aerodrome and terminal instrument flight procedures, and specifications for lighting and marking obstacles.

Warrnambool aerodrome is the only certified aerodrome within 30 nm of the proposed Project area. The proposed wind farm would not have an impact on aviation safety for flight operations at the aerodrome.

Civil Aviation Safety Regulations 1998, Part 139—Aerodromes

CASR 139.165 requires the owner of a structure (or proponents of a structure) that will be 100 m or more above ground level to inform CASA. This must be given in written notice and contain information on the proposal, the height and location(s) of the object(s) and the proposed timeframe for construction. This is to allow CASA to assess the effect of the structure on aircraft operations and determine whether or not the structure will be hazardous to aircraft operations in the vicinity of the wind farm.

Manual of Standards Part 139—Aerodromes

Part 139 MOS 2019 does not apply to uncertified aerodromes but contains the specifications for lighting and marking of obstacles. Part 139 MOS Chapter 8.109 specifies when obstacles must be marked:

> *(1) The following objects or structures at an aerodrome are obstacles and must be marked in accordance with this Division unless CASA determines otherwise under subsections (3) and (5):*
>
> a) *any fixed object or structure, whether temporary or permanent in nature, extending above the obstacle limitation surfaces;*
>
> - *Note An ILS building is an example of a fixed object.*
>
> a) *(b) any object or structure on or above the movement area that is removable and is not immediately removed.*

Obstacle Lighting

Part 139 MOS 2019 specifies when obstacle lights are required in Chapter 9.27(1):

> *(1) Subject to subsection (2), for a runway intended to be used at night, the following artificial objects or structures are hazardous obstacles and must be provided with obstacle lighting:*
>
> a) *an object or structure that extends above the take-off climb surface within 3 000 m of the inner edge of the take-off climb surface;*
>
> b) *an object or structure that extends above the approach or transitional surface within 3 000 m of the inner edge of the approach surface;*
>
> c) *an object or structure that extends above the applicable inner, conical or outer horizontal surfaces;*
>
> d) *an object or structure that extends above the obstacle assessment surface of a T-VASIS or PAPI;*
>
> e) *an object or structure in the vicinity of a taxiway, an apron taxiway or a taxilane, that is a hazard to aircraft using the taxiway, apron taxiway or taxilane, except that obstacle lights must not be installed on elevated ground lights or MAGS.*

Part 139 MOS 2019 Chapter 9.27(4) specifies that:

> *(4) Despite subsection (1), CASA may determine in writing, following an assessment:*

a) *that an object or structure on, or within the immediate vicinity of, the aerodrome is a hazardous obstacle; and*

b) *what, if any, lighting is required for that hazardous obstacle.*

The requirements for obstacle lighting do not strictly apply to the proposed Project as it will not infringe any certified aerodrome's OLS or other surfaces as specified.

Advisory Circular 139-E-0.5 v1.0 Obstacles (including wind farms) outside the vicinity of a CASA certified aerodrome May 2021 (Under review April 2022)

This advisory circular guidance on matters that should be considered when assessing a wind farm development and other tall structure so that all necessary measures can be taken to protect aviation safety.

2.6 Hazard lighting

2.6.1 This section describes the reasoning behind CASA's preference to recommend aviation hazard lighting for tall structures and aircraft detection systems for wind farms.

2.6.2 Hazard lighting for wind farms and other tall structures is intended to alert pilots, flying at low altitude, to the presence of an obstacle allowing them sufficient awareness to safely navigate around or avoid it. The pilot is responsible for avoiding other traffic and obstacles based on the "alerted" see-and-avoid principle.

2.6.3 Unless the wind farm or tall structure is located near an airport, it is not expected to pose a risk to regular public transport operations. The kind of air traffic that is usually encountered at low altitude in the vicinity of a wind farm or tall structure includes light aircraft (private operators, flight schools, sport aviation, agricultural, survey, fire spotting and control) and helicopters (military, police, medical emergency services, survey, fire spotting and control). Hazard lights are therefore designed to provide pilots with sufficient awareness about the presence of the structure(s), so they can avoid it. This means that the intensity of the hazard lights should be such that the acquisition distance is sufficient for the pilot to recognise the danger, take evasive action and avoid the obstacle by a safe margin in all visibility conditions. This outcome considers the potential speed of an aircraft to determine the distance by which the pilot must become aware of the obstacle to have enough time and manoeuvrability to avoid it.

2.6.4 If CASA's wind farm or tall structure assessment recommends a need for hazard lighting to mitigate the risk to aviation activities, CASA will consider a light management system or plan submitted by the proponent to meet the requirement.

2.6.5 Light management systems to regulate hazard lights and their intensity are acceptable options in Australia. The two primary options are the use of visibility meters to reduce light intensity during high visibility conditions and the use of a radar detection system to allow the lights to activate when an aircraft is in the vicinity of the wind farm. Permanent light shielding is also an option to reduce impact on residences within six kilometres of the installation.

1.20. Summary

The following list of findings summarises the outcomes of this assessment:

- Warrnambool aerodrome is the only certified aerodromes within 30 nm of the Project. It is not impacted by the proposed project
- There are two uncertified aerodrome (aircraft landing area) located within 3.0 nm (5.5 km) east from the eastern edge of the Project area to the published aerodrome coordinates. The Project is unlikely to create downwind turbulence impacts on these aerodromes.
- The Project would not infringe the PANS-OPS surfaces associated with Warrnambool aerodrome
- The Project would not impact the LSALT of any low-level air route or the Grid LSALT overlying the Project area
- The Project site is located outside of controlled airspace (wholly within Class G airspace) and will not impact any controlled airspace
- The Project site is outside aviation facilities of nearby certified aerodromes
- The Project is not anticipated to affect the Mt William radar facilities. A simple assessment may be required by Airservices Australia
- Some low-level operations, including aerial application and/or aerial firefighting and low-level Defence aircraft are possible within the vicinity of the Project area. Consultation with local and regional aircraft operators would be undertaken during an aviation impact assessment to document potential impacts and identify required mitigation, as applicable.
- Due to exceeding 100 m AGL, details of the Project must be reported to CASA as soon as practicable after forming the intention to construct or erect the proposed object or structure, in accordance with CASR Part 139.165(1)(2). This is likely to be a condition on the Planning Approval and can be reported after Planning Approval is received.
- It is anticipated that the Project would not require obstacle lighting.

With respect to aviation impacts, further development of the Project remains feasible.

The proposed Darlington Wind Farm is unlikely to cause an adverse impact to aviation activity in the area.

If you wish to clarify or discuss the contents of this correspondence, please contact me on 0424 110 501 or Keith Tonkin on 0417 631 681.

Kind regards

Peter White

Specialist Airspace Safeguarding Consultant

14 September 2022