INDEPENDENT EXPERT REVIEW

HILLS OF GOLD WIND FARM (SSD-9679)

PREPARED FOR

NSW DEPARTMENT OF PLANNING & ENVIRONMENT

29 November 2023
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REVISION 04 FINAL

INDEPENDENT EXPERT REVIEW

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DOCUMENT CONTROL

Revision	Date	Purpose	Prepared by	Reviewed by
02 DRAFT	15 August 2023	Internal Review – Not for External Distribution.	Edward O'Hanlon	Will Francis
02 DRAFT	18 August 2023	External Review for co-ordination	Edward O'Hanlon	Will Francis
03 Draft A	10 Sept 2023	Internal Review for co-ordination	Edward O'Hanlon	Will Francis
03 Draft B	05 October 2023	External Review for co-ordination and release to DPE	Edward O'Hanlon	Will Francis
04 Draft	31 October 2023	Draft report	Edward O'Hanlon	Will Francis
04 Final	29 November 2023	Final report	Edward O'Hanlon	Will Francis

1 SECTION 1 – ENGAGEMENT AND METHODOLOGY

1.1 Engagement Overview

O'Hanlon Design Pty Ltd (OHD) has been engaged by the NSW Department of Planning and Environment (DPE) to review and comment on the quality and accuracy of the Landscape and Visual Impact Assessment (LVIA) Report for the proposed Hills of Gold Wind Farm (HGWF) submitted for State Significant Development (SSD-9679) approval by Wind Energy Partners Pty Ltd.

The engagement specifies the provision of an independent expert review report including:

- Review and commentary on the proponents LVIA methodology, assumptions and assessments of visual impacts,
- Where appropriate assessment of compliance with the Performance Objectives of the Visual Assessment Bulletin (VAB)
- Commentary on the suitability of the proposed mitigation and management measures,
- Identification of residences or public viewpoints where the visual impacts exceed the Performance Objective thresholds that cannot be reasonably mitigated by landscaping or screening, and
- Recommendations for any additional mitigation measures or design changes to inform the Department's assessment.

1.2 Terms and Abbreviations

Term / Abbreviation	Meaning
AHD	Australian Height Datum
AHL	Aircraft Hazard Lighting
BESS	Battery Energy Storage System
CASA	Civil Aviation Safety Authority
Consolidated LVIA	The LVIA Report 16 Nov 2020 and subsequent Addendums and Amendments up to August 2023
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement including all updates and amendments noted listed in the assessment documents.
EP&A Act 1979	NSW Environmental Planning and Assessment Act 1979
the LVIA	The post SEARs LVIA: Moir Landscape Architecture: 16 Nov 2020
HGWF	Hills of Gold Wind Farm
km	Kilometre
LEP	Local Environmental Plan
LCU	Landscape Character Unit
LGA	Local Government Area
LVIA	Landscape and Visual Impact Assessment
OHD	O'Hanlon Design Pty. Ltd.- Landscape Architects
OMC	Operations and Management Centre
PEP	Plant Establishment Period
Preliminary LVA	The pre-SEARS Preliminary Landscape and Visual Assessment: Arup: 18 May 2018
REZ	Renewable Energy Zone
RL	Reduced Level
SEARs	Secretary's Environmental Assessment Requirements
VAB	Wind Energy: Visual Assessment Bulletin (DPE 2016)
VIZ	Visual Impact Zone as described in Wind Energy: Visual Assessment Bulletin Table 8
WTG or **WP**	Wind Turbine
ZVI	Zone of Visual Influence

1.3 Review Methodology

Our preparation for site inspection as part of this review included one, two day site visit as described below:

- Site Visit Day 1 – 19/05/2021
    - Edward (Terry) O'Hanlon accompanied DPE representatives and travelled throughout the project site on publicly accessibly roads. Individual residences inspected from adjacent public roads or on properties visited included: NAD3, AD9, NAD8, NAD11, NAD12, AD15, NAD18, NAD19 and NAD20.
    - Sunny conditions were experienced for most of the day with high visibility.
- Site Visit Day 2 – 20/05/2021
    - Edward (Terry) O'Hanlon accompanied DPE representatives and travelled throughout the project site on publicly accessibly roads. Individual residences inspected from adjacent public roads or on properties visited included: NAD1, NAD5, NAD10, AD17, NAD22, NAD33, NAD66, NAD69, NAD72, AD73, and The DAG Station (NAD34).
    - Sunny conditions all day with high visibility.

A desktop review of remaining residences and potential viewing locations has been completed based on a review of ;

- The Hills of Gold Windfarm LVIA – Moir Landscape Architecture; Nov 2020,
- the Preliminary LVA – Arup; May 2018, and
- NSW Spatial Services Topographical maps 1:25,000 Edition 2017 Nundle, Crawney Pass and Isis River,
- the Wind Energy: Visual Assessment Bulletin (VAB) 2016 - DPI&E,
- the Tamworth Regional LEP, the Upper Hunter LEP, the Liverpool Plains Shire LEP including the associated heritage mapping for each LEP, and
- the Consolidated LVIA including subsequent Amendments and submissions (refer to 'Assessment Documents').

OHD also analysed topographic maps of the study area and wider areas to identify possible local issues and potential cumulative or regional issues. The purpose of these reviews was to provide background information, a reference for the methodology and depth of assessment that could be considered reasonable for consideration of the individual and cumulative impacts.

1.4 Project Overview

The Hills of Gold Wind Farm project as originally submitted (2020) proposed 70 wind turbines to be located within the NSW Northern Tablelands in the Tamworth Regional Council Area, situated approximately 8km south of the township of Nundle. The proponents final Amended LVIA and adjusted Addendum Issue I dated 5th April 2023 is based on 64 wind turbines. This review has been based on the information up to and including Addendum Issue and the subsequent issue of HOG Wireframe Diagrams NAD 07, NAD 08 and NAD 11, issued August 2023.

Key Project Statistics:

- Originally proposed 70 turbines, the layout has been amended twice, with additional repositioning of 20 turbines, resulting in the Proponent's final proposed total number of 64 turbines. (Turbines WTG 1, 19, 23, 27, 31, and 41 all removed.)
- Maximum overall height: (top of tip) 230m.
- Hub height: 150m.
- Rotor diameter: 160m
- Associated 330kv overhead and underground transmission line, overhead and underground reticulation powerlines, substations, access road works and an Operations and Maintenance Facility.
- Aircraft Hazard Lighting of low intensity hazard lights required by CASA to 28 WTGs.
- There are no approved windfarms within the immediate visual catchment.

1.5 Residential Assessment - Conceptual Framework

In setting a conceptual framework for the review of the project, and for consideration of the impacts on individual residences, their curtilages and surrounding areas we have subdivided the view catchments into more closely defined viewer characteristics. This generally results in potentially similar turbine impacts for each related group of residences with individual viewing and screening variations likely to be similar at each residence.

. **Section 3** provides commentary on individual residences, including commentary around:

- the LVIA assessed visual impact at selected residences,
- The proponent's mitigation proposals associated with selected residences, and
- Any unidentified impacts or suggested additional mitigation measures.

Diagram 1: Residential Cluster Map on Page 15 identifies the location of each residential cluster within the overall Study Area. **For turbine numbers, identification of residences, locations, landscape character descriptions, LCU mapping and references to allotment numbers refer to the original LVIA and the Consolidated LVIA set**.

2 SECTION 2 - REVIEW OF LVIA METHODOLOGY

2.1 Review of LVIA Methodology

The methodology of the LVIA is clearly outlined in Section 2, Table 1 of the Moir LVIA dated 16th November 2020. Generally, the LVIA incorporates the key elements and terminology of a standard visual impact assessment using a methodology specific to the proponent's landscape team. The methodology appears thorough and well considered to meet the requirements of the VAB. The LVIA methodology is consistent with similar methodologies being implemented in response to the VAB requirements but in some areas appears more rigorous than other contemporary assessments. The methodology provides an assessment of compliance with the Visual Performance Objectives outlined in the Visual Assessment Bulletin (VAB) and where possible provides a quantitative assessment methodology balanced with the associated professional opinion and assessment.

The methodology for assessment of individual residences is based on the Performance Objectives outlined in the Visual Assessment Bulletin and a project specific methodology. The LVIA provides identification and assessment of possible mitigation measures.

2.2 General Methodology

In *Section 2* of the LVIA it is noted that the LVIA has been prepared in accordance with the NSW Department Planning and Environment and (DPE) the Wind Energy: Visual Assessment Bulletin (VAB).

Following issue of the LVIA and in response to community submissions, project development and requests from the DPE, a significant number of Addendums, further studies, photomontages, wireframe diagrams and additional assessment responses have been added to the LVIA assessment. We consider that the Consolidated LVIA documents, including Addendums, updated layouts and responses to DPE requests for information, address the VAB requirements. The Consolidated LVIA contains sufficient detail to meet the requirements of the VAB in relation to impact assessment at each residence within the required distances or Visual Zones and from a wide range of public viewpoints outside the Site Boundary. Notably, the LVIA does not identify or assess any impacts on public viewpoints within the Site Area.

2.3 Project Description

The Consolidated LVIA documents provide an extensive project description of the initial proposal and the proposed modifications to the project including associated infrastructure. It is our opinion that the project description is adequate to define the project and to allow appropriate consideration and assessment of the likely impacts.

2.4 Community Consultation

Direct community consultation focused on residents' concerns and identification of significant viewing locations was carried out in 2018 by the Proponent and by independent consultant survey. This information was collated and summarised in a Preliminary VIA prepared by Arup in May 2018. The LVIA appears to have primarily relied on the 2018 Preliminary VIA consultations for the identification of Community Perceptions and Landscape Values. Notable significant viewing locations identified in 2018 included Hanging Rock, Yellow Rock, the Sheba Dam area, Nundle Township, the historic central area of Nundle, residents and properties along Morrisons Gap Road, a range of surrounding homesteads and locally listed heritage sites.

The LVIA notes that assessment of landscape values and perceptions of wind farms generally can be highly subjective, determined by a wide range of influences. In view of the subjective nature of responses the Proponent appears to have provided a range of opportunities for community input and gathering of community feedback within the VAB parameters. Community input into the value of the landscape seems to have been limited to the 2018 Preliminary VIA consultations and the Applicant has not documented public viewpoints beyond those identified in the feedback received in 2018.

2.5 Visual Baseline Study

The Visual Baseline Study relies to some degree on the 2018 Preliminary LVA particularly the initial community engagement with focus on the areas suggested for further assessment. The LVIA identifies and highlights the difference between State Forests, Nature Reserves and National Parks. Notable additional items included in the LVIA are Nundle Cemetery, a local heritage item, identification and the mapping of the Tamworth E2 Environmental Conservation Area through Crawney Pass and north along Crawney Road. The only addition to both studies would be identification of the National Bicentennial Trail (following Crawney Road) and the associated camping location south of Nundle, identified as the Teamster's Rest, both level 3 sensitivity elements under the VAB.

The Liverpool Range, as part of the Great Dividing Range, is identified in *Section 5.4.6* of the LVIA as a *Key Landscape Feature.* The visual prominence of this section of the Great Dividing Range is a result of the defining shape, line and colour contrast along the ridgeline all of which combine to create the dramatically articulated and heavily vegetated

ridgeline. *Section 15 Table 18* further highlights that "*the valued features of this LCU include the densely vegetated ridgeline which provides a backdrop from the surrounding areas*." *Section 5.3.4 Landform* in the Preliminary LVA and the associated mapping also identifies the ridgeline as the primary landform and maps it running north-south and extending east-west toward Crawney National Park, while noting that a more detailed assessment of Landscape Character would be provided in the LVIA.

Mapping of the Landscape Character Units (LCU's) in the LVIA differs slightly from the methodology and outcomes of the Preliminary LVA. The notable anomaly is in the classification of the western extension of the ridgeline of the Great Dividing Range. This anomaly is created by a change to the mapped form and extent of the *Forested Mountain Range* LCU as mapped in the Preliminary LVA. The reclassification in the LVIA of the extent of LCU05 *Forested Mountain Ranges* to the west along the Great Dividing Range from the Head of the Peel River past the Wombramurra and east towards Crawney Pass appears to be based on the perception in the LVIA character assessment of a visual change in the topography, particularly the slope and vegetation density. *Section 5.3.4*. of the LVIA refers to the height of the Wombramurra Mountain within the east-west ridgeline landform without identifying the feature. Neither our site inspection nor photographic assessment of the Great Dividing Range ridgeline indicates any significant change in the observable Visual Character between the two areas until at least west of the Wombramurra (refer 1:25000 Topographical Map 9134-4S Isis River).

The continuity of the height and character of the ridgeline can be confirmed from many viewing locations and several of the photomontages demonstrate the continuity of the landscape character. The Wombramurra at AHD 1418 on the ridgeline approximately 3400m west of Ben Halls Gap is located within the area classified in the LVIA as "LCU04 *Nundle Rolling Foothills'*. We consider the east-west ridgeline descending to around RL 1200, approximately 4500m west of the Wombramurra, should be considered as an extension of the *Forested Mountain Ranges* LCU 05.

The Baseline assessment of the existing Scenic Quality will not be affected by this extension to LCU 05 and it is important to note that due to the distance of most residential viewpoints from the turbine array, the threshold parameters identified in *Table 8-Visual Influence Zones* of the VAB remain consistent and the resultant VIZ Performance Objectives will remain unchanged for residential viewers.

2.6 Visual Catchment

The VAB seeks to manage the control of visual impacts within the visual catchment of viewpoints primarily using distance from the impact as a key factor in the assessment. The use of distance parameters combined with viewer sensitivity creates a set of Visual Influence Zones identified in VAB Table 8, that in turn set the visual parameters for assessing and managing the potential impacts. The VAB methodology is based on the principle that dominance of the elements in the landscape recedes as the distance increases. The dominance of elements is most pronounced when the viewer experiences that a particular element(s) in the landscape impacts over a significant proportion of the visual field. The associated tool for preliminary impact assessment in the VAB is the 60° sector analysis -multiple turbine tool. If the element is intrusive then the result is likely to be a higher influence on the visual catchment and a resultant higher degree of difficulty in avoiding undesirable impacts on the quality of the landscape.

The LVIA addresses visual magnitude impacts as part of the assessment tables throughout the LVIA and subsequent responses to requests. In many cases where impacts are determined as significant or above Moderate, compliance is proposed to be achieved using impact mitigation in the form of neighbour agreement and/or screening. **Section 3** provides more commentary on individual residences assessment and mitigation proposals.

2.7 Zone of Visual Influence

In *Section 2* of the LVIA diagrams showing Zones of Visual Influence for both turbine tip heights and the nacels have been provide using standardized software. The diagrams clearly demonstrate that the highest potential visibility is down the Peel Valley and out to the west and north-west of the project area. This demonstrates the influence of the topography on visibility of the HGWF. In some cases, viewpoints closer to the turbines are more shielded by the undulating topography around the base of the Ranges. Further out, commencing around 8km from the turbines, a range of viewers in Nundle and north-west of the project along Crawney Road and the associated local roads may potentially have expansive views of the whole or significant components of the project, subject to a range of localised factors.

2.8 Viewpoint Analysis

Section 8 of the LVIA has provided a very wide range of viewpoints and photomontages associated with individual viewpoints from outside the Project boundary. The analysis and selection of viewpoints outside the Project Area appears rigorous, well considered and reasonably balanced in relation to viewer numbers and potential sensitivity. Viewpoints appear to be selected and distributed based on a representative assessment of places of public or private interest and reflects requests made in the Community Consultation identified in the Preliminary LVA. Where appropriate, specific references are made to National Parks, local environmental areas, heritage items and their curtilage, with several viewpoints located adjacent to locally listed heritage items and adjacent to public roads within Crawney Pass National Park.

The 1:25000 topographical map 9134-4N "Crawney Pass" indicates a formed and in parts, unformed public road along the ridge line to the top of the Wombramurra, identified on the mapping as Morrison's Gap Road. The initial formed section of Morrison's Gap Road provides access to Shearer's Road and further south on to the gate adjacent to McDivitts Creek. The less formed section of the road commencing adjacent to the gate at McDivitts Creek continues to the boundary of Ben Halls Gap Nature Reserve and on to the proposed location of the BESS adjacent to the Wombramurra. The less formed section of the road shows access to a selection of walking trails into Ben Halls Gap Nature Reserve at the south end of Shearer's Road. From Ben Halls Gap the track connects down into the valley to the Head of the Peel Road. The track loosely follows the course of the public road easements however in many locations the track deviates onto private lands that form part of the Project adjacent to the road easements.

No public viewpoints have been selected and analysed in the LVIA along Morrison's Gap Road or Shearer's Road within the Project Area. Several photomontages of road upgrade works were provided in the LVIA Addendum dated 25th October 2021.

2.9 Photomontage and Wireframe Models

The description of the photomontage background photograph and preparation appears to meet the guidelines set in the VAB for using the Scottish Heritage Guidelines for Visual Representation of Windfarms V2.1 2014. Due to the size and extent of the Project most photomontages have been prepared as a wide-angle landscape view to provide an overall impression of the landscape, and then in many cases a selected area of the view is rendered with a more limited 60 degree "Field of View". This 60 degree "Field of View" approximates the Scottish Heritage requirements of a 53.5 degree "Field of View" and is considered an acceptable variation to the requirements of the VAB. To understand the scale of the impacts on the landscape, if using the photomontages as an assessment tool, it is important to use only the 60 degree "Field of View" copies and have them printed onto A3 sheets for assessment.

The background photography and resultant montages are highly variable due to locational and atmospheric factors specific to each location and time of preparation. The LVIA team appear to have attempted to select photomontage locations that are representative of the likely views however views and impacts can change significantly, often with only minor adjustments to the location of the background viewpoint. For these reasons assessment based primarily on the photomontages, is discouraged as they form just one element of a Visual Assessment.

2.10 Shadow Flicker and Blade Glint

In *Section 10* of the LVIA a table addressing the potential for shadow flicker impacts has been provided using standardized software. The issue of Blade Glint has been addressed by reference to the current industry standard of Matt finishing the blades. The LVIA contains detailed assessment of the limited potential for shadow flicker and blade glint impacts on residences.

2.11 Aviation Hazard Lighting Assessment

The LVIA notes that dependent on DPE determination, the proposed Aviation Hazard Lighting has the potential to change the character of the night-time environment of the Study Area and adjacent areas up to 20km distant from the light source in fine conditions. Impacts are expected to affect residences, towns and public viewpoints at even greater distances than daylight effects due to the contrast of the lighting against the existing dark night sky. The relatively elevated locations of the aviation hazard lighting compared to most viewing locations does provide the opportunity for some downward shielding of the aviation hazard lighting. The shielding is noted at a maximum downward angle of between 5 and 10 degrees. Residents at greater distances are less likely to be shielded if the shields are set at 10 degrees.

The *LVIA Addendum 16 February 2023* and the *ERM Submissions Report dated 28 Feb 2023* identifies the number of aviation hazard lighting locations and the intensity of the proposed source lighting. *Section 11* of the Initial LVIA provides some background analysis and *Table 17* highlights a potential worst-case scenario assuming low visibility. The assessment methodology appears clear and appropriate for determining the wider aviation hazard lighting effects. The *Submissions Report* pages B13, B14 and B15 highlights the mitigation measures proposed for the Night Lighting and Aviation Hazard Lighting Impacts. We anticipate that any approval would include all these mitigation measures. A key measure is the CASA agreed reduction of the intensity of the aviation hazard lighting to 200 candelas from the previously required intensity level of 2000 candelas.

For comments on light spill from Associated Infrastructure refer to **Section 2.13** Below

2.12 Cumulative Effects

In *Section 12* the LVIA outlines the contributory factors that could lead to Cumulative Impacts. OHD is not aware of any approved or proposed windfarms in proximity to the HGWF project not addressed by the assessment. The LVIA identifies the nearest windfarm projects and reasonably concludes that cumulative impacts are unlikely to occur due to the combined impacts with other windfarm projects.

Section 12.3 of the LVIA identifies that the Project Area of the HGWF does not fall within any of the three relevant key Renewable Energy Zones (REZ) identified by the State Government however it notes HGWF is situated south of the New England REZ Area.

Noting the lack of other windfarms within the Study Area, we agree with the LVIA conclusion that cumulative effects are unlikely, however the placement of a new windfarm in the Nundle area does increase the visual spread of windfarms and energy infrastructure beyond the REZ and toward Armidale. **Section 2.15** herein notes introduction of industrial elements may also affect the visual Descriptors of Landscape Character. The potential Cumulative Effects with secondary wind farms are not a determining factor in assessing the HGWF project but the location of the HGWF beyond the REZ should be considered as one element in the overall determination of consent.

2.13 Associated Infrastructure.

Generally, as outlined in *Section 13*, the LVIA highlights that transmission lines and permanent infrastructure is not expected to be visible, or when visible, not expected to create any significant impacts. LVIA Addendum 2 dated 7 Nov 2022 amends, clarified and assessed the associated infrastructure in greater detail than the LVIA. LVIA *Section 3* also provides useful generic images of the infrastructure elements indicating likely scale and character.

The LVIA assesses the key Associated Infrastructure including access roads, transmission lines and the Operations and Maintenance Centre (OMC). The LVIA offers a series of possible mitigation measures for each element. The mitigation measures require further careful assessment and analysis by the design team at the detailed design stage. The proposed mitigation measures would significantly assist in reduction of the visual impacts. However, it is not clear which measures are accepted by the Proponent for implementation. If the Project is determined for Approval, we anticipate that the Consent Conditions would include requirements for implementation of all the detailed mitigation measures outlined in the LVIA.

The BESS, the OMC and the Switching Station all insert significant industrial elements and industrial buildings into the Landscape. The Switching Station is proposed in a reasonably remote rural valley well beyond the Study Area and is likely to be inconsistent with any surrounding structures in the associated visual catchment. The relocated (LVIA Amendment 1 2021) OMC is located on the ridgeline within the mapped extent of LCU05 *'Forested Mountain Ranges'* along the north-south ridgeline between turbines 55 and 56. The proposed location is a cleared area on top of the ridgeline where light spill from building and safety lighting could be visible to a wide range of residences to the north and west. The LVIA suggests perimeter screening of each of these industrial elements is a mitigation option which would reduce light spill and complement the surrounding vegetated ridgeline. Perimeter screening identified in the LVIA should be implemented as an approval condition.

330kV transmission lines are proposed internally and externally to the project area running east to west between the Substation and the Switching Station. These lines are proposed parallel to the Liverpool Range and crossing Crawney Road just north of Crawney Pass. The lines and towers are not high impact visual elements however the associated clearing of between 60m and 90m width will create significant visible cuttings through the north facing existing vegetation in some parts of the Range within the area we consider to be part of LCU05 *Forested Mountain Ranges.* These impacts are described and montaged in the LVIA Addendum Nov 2022. It is clear the transmission clearings will be visible from a wide range of the selected viewpoints identified in the Addendum (refer *Figures B1.1.1 to B2.2.2 inclusive*). The straight man-made nature of the edges combined with the colour and texture change will highlight the clearings, and incrementally contribute to a reduction in the scenic quality of the LCU.

33kV lines transmission lines internal to the project are identified in *Section 3.13* of the LVIA as a mixture of underground and overhead lines, exact locations of underground sections are not defined. The lines will generally follow service roads between the turbine locations. As the lines and service roads are located along the spine of the Great Dividing Range care is required to ensure that vegetation that forms part of the visual edge of the horizon line is not cleared as part of the vehicular access and transmission line route. Removal of trees that contribute to the cutting edge of the skyline could incrementally contribute to a reduction in the scenic quality of the LCU.

Roadworks, in selected parts of the site, are described in the response to Request for Information appendixes. Roadside vegetation clearing is required for site access. Crane hardstand areas will also require significant clearing adjacent to each turbine location (*refer LVIA Section 3, Image 4*) Both activities could result in significant visual impacts along the ridgeline for both foreground and more distant viewers.

The LVIA proposed significant roadworks up through the Devil's Elbow on Barry Road and along Morrison's Gap Road, these works would have resulted in significant tree removal which would have opened up views to the turbines along the ridgeline. Following further consideration, the main construction access route has been shifted to Crawney Road. It is anticipated this route change will significantly reduce the roadside clearing on Barry Road. The *Amendment Report* concludes that the change of access route does result in additional clearing along the proposed access route across the base of the east-west ridgeline.

2.14 Individual Dwelling Assessment

For OHD comments on individual dwelling assessments refer to **Section 3**.

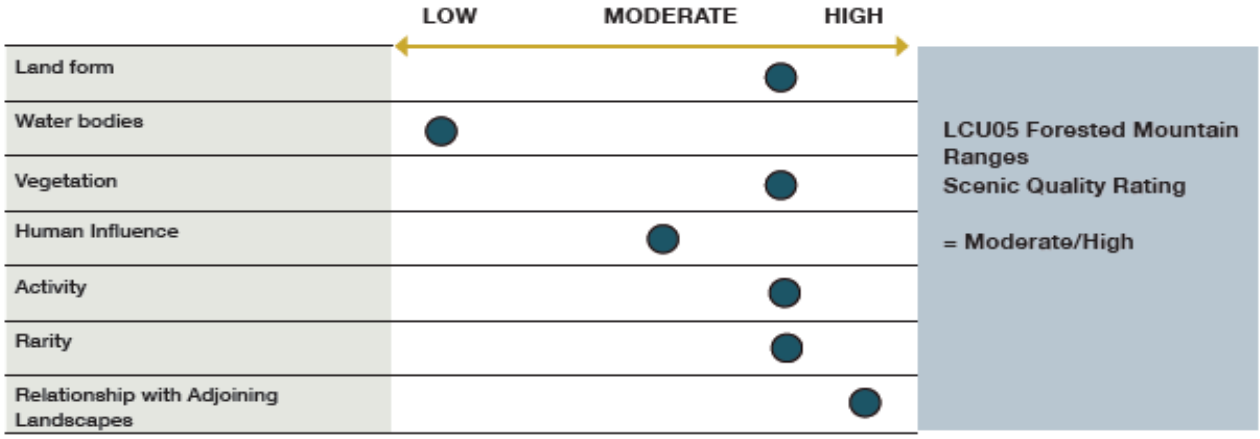
2.15 Impact on Landscape Character

2.15.1 Individual LCU Impacts

The anticipated impacts of the proposal on the Landscape Character are clearly documented in LVIA *Appendix F* and *Table 18*, *Appendix F* with assessment of the impact on the landscape character of each individual LCU. The LVIA uses a quantitative methodology to assess potential changes in impacts within individual LCUs against the Scenic Quality parameters identified in the Visual Baseline Study *Section 5,* using the associated Descriptors which appear to have been created specifically for this LVIA.

The seven LVIA Scenic Quality '*'Rating Frame of Reference''* Descriptors are outlined in *Appendix B, Section 5, Table 5* of the LVIA. In LCU05 *Forested Mountain Ranges* the Descriptors for *Landform, Human Influence, Vegetation, Activity and Rarity* combine, resulting in a *Moderate to High* ranking with the Descriptor *Relationship to the Adjoining Landscape* rated *High.* The LVIA assesses LCU05 *Forested Mountain Ranges* to be in a predominantly natural state and in LVIA *Section 5.5, Table 5 - LCU05* is assessed as contributing to the surrounding landscape units, due to:

- *Highly visibility with the adjoining landscapes*
- *High variability and contrast with adjoining (landscapes)*, and
- *Landscape features (that) contribute significantly to (the) amenity of the adjoining landscapes.*



Appendix B, Section 5, Table 5

The LVIA concludes that in the case of each individual LCU the changes to each LCU created by the Project are within an acceptable range. We agree with the LVIA conclusions related to the effects of change on the individual LCU's, except for the changes in LCU05 *'Forested Mountain Ranges'.* The *Moderate to High* Scenic Quality rating provided in the LVIA acknowledges the value and contribution of LCU05 to the Landscape Character of the Study Area. The *High* value placed on *Relationship with Adjoining Landscapes* confirms the visual contribution of LCU 05 to the visual, recreational and tourism amenity within the adjoining landscapes.

Construction of the turbine array along the ridgelines would introduce significant vegetation clearing, large turbine elements, associated infrastructure, industrial operations and additional traffic into LCU05 *'Forested Mountain Ranges.'* These changes would impact on a key landscape feature of the Study Area, the densely vegetated ridgeline, identified in the Visual *Baseline Study Section 5.4.6* and in *Section 5 Table 18.* During construction and on completion those changes will affect the Descriptors for *Vegetation, Human Influence* and *Activity.* We consider the changes in LCU05 will create reductions to the value of some of the Descriptors resulting in a reduction of the assessed Scenic Quality for LCU05 *'Forested Mountain Ranges'.*

2.15.2 Broader Landscape Character Impacts

The issue of the perception of the broader landscape character of the region created by the interaction of the individual LCU's is addressed in LVIA *Section 15.1 Overview of Visual Impacts on Landscape Character. LVIA Section 15.1* and the LVIA identifies that *''the broader landscape character is dominated by established rural land which consists primarily of modified undulating hills''.* OHD agrees with that assessment. Using the terminology of the VAB Appendix 1, Table 4 we consider the combination of elements that form the existing Broader Landscape Character to be best described in parts as *Natural Appearing* and *Pastoral.*

We consider that the key landscape feature creating the unique character of the Study Area, and the key visual landform within the landscape from many viewpoints in, around and beyond the Study Area, is the ridgeline of the Liverpool/Great Dividing Range within LCU05 *Forested Mountain Ranges* and the ridgeline of LCU 04 *Nundle Rolling Foothills*. Onto this key feature will be added the turbine array which *LVIA Section 15.1* concedes will be "*a feature of significant contrast and possibly a dominant element.*" The change as noted in the LVIA does not vary the broader landscape character and does not completely vary the character of the affected LCUs. We consider the resultant landscape character of the most prominent LCUs within the Study Area are likely to continue to be described as

predominantly *Natural Appearing*. However, upon project completion the overall character of LCU04 and LCU05 could be re-evaluated and best described, in the terms used in VAB Appendix 1, Table 4 as combination of *Natural Appearing* and *Wind Energy Character*.

As a result of the changes identified in the Scenic Quality of LCU04 and LCU05 noted in **2.15.1** and the potential adjustment to the description of the landscape character noted above, we consider that the LVIA conclusion in *Section 15.1* that *"the character of the areas which are valued for their high landscape quality (LCU04 and LCU05) ..... will remain intact"* to be inconsistent with our professional opinion.

2.16 Mitigation Measures

Section 16 of the LVIA outlines the Mitigation Measures for the Project. The LVIA identifies that the mitigation measures consist of two separate elements Primary Measures and Secondary Measures. The Primary Measures are highlighted as the changes that were made to the layout during the design development process and identified in *LVIA Addendum 2 dated 7 Nov 2022*, these consist of turbine relocations and removals. The Secondary Measures are those designed to address the residual impacts of the development.

During the development of the Project layout the proponent has removed a number of turbines and relocated approximately twenty turbines. The LVIA considers these as Primary Measures to reduce impacts. The Proponent has made these changes for a range of reasons. Regardless of the motivation for the removals they contribute to a reduction of the overall visual impacts and assist in meeting the Visual Performance Objectives.

The Secondary Measures are primarily identified in LVIA *Sections 2.14 the Individual Dwelling.* and *2.11 Night Lighting* and are summarised in the *LVIA Addendum Apr 2023 Section 2*. These proposals provide localised mitigation to affected properties that do not meet the Visual Performance Objectives and particularly those residences where the proponent proposes to reduce any Moderate to High residual impacts. The Secondary Measures consist almost exclusively of vegetative screening for specific views from individual residences and associated curtilages. *The LVIA Addendum April 2023* includes a selection of wireframes with indicative screening overlays. The accuracy of these overlays should be considered as indicative level only as the associated plan layouts are at various scales around 1:5000. Therefore, very small changes in distance from the screening to the observer will result in significant differences in the screening capability of the proposed vegetation. For these reasons the indicative screening on the overlays can only indicate potential screening subject to final distances from the viewer. The screening proposals, appear to be computer generated using topographical models, are conceptually well considered and are likely to be generally indicative of the effectiveness of the proposal if the vegetation is installed correctly and well maintained.

Generally, vegetative screening mitigation proposals should only be associated with private property as the screening can be linked to the anticipated impacts on a level 1 or 2 receivers' property. Screening within private property allows the screening outcome to be controlled between the proponent and the property owner. Reliance on existing or new vegetative screening within road reserves should be avoided as the authorities who manage or work within these road reserves may have development plans or maintenance requirements for the road reserve that may reduce the effectiveness of the proposed mitigation, leaving viewers exposed to unintended visual impacts.

If the Project is approved, the Proponent should be required to undertake consultation with all landowners proposed to receive screening to agree the proposed screening species, specific layouts and locations, management, and timeframes to achieve effective screening outcomes. The installations should be the subject of an agreed Plant Establishment Period (PEP). The design and consultation process should be undertaken by qualified landscape/horticultural professional with experience in *Planning for Bushfire Protection* (by RFS) and with extensive knowledge of local species and the local environment to ensure maximum growth rates and benefits for the affected properties. The planting should be subject to the principles outlined in the First Addendum to the LVIA *Revision E Section 3.3 Landscaping Principles* dated April 2022 and as supplemented in the Second Addendum *Section 2.3 Landscaping Principles and Proposed Mitigation Measures* dated April 2023.

Proposals for vegetative screens on the HGWF project are extensive and are designed to benefit a significant number of properties. Failure of some of the vegetative screens would result in low efficiency of the proposed mitigation outcomes across the project when viewed from affected residences. We have no data or direct feedback on the success rates of vegetative screening on similar projects however anecdotal evidence indicates a manageable level of variability. If vegetative screening is considered acceptable, success of the screening will depend on the design, plant selection, initial plant health and on-going maintenance regimes, particularly in the early years of the PEP. The PEP should consist of a high degree of regular care and maintenance over at least a three-year period.

In some locations, due to the topographical conditions at the specific viewing location, we believe long lead times for maturity of vegetative screening will be necessary for the screens to reach the heights and density required for appropriate mitigation. In those cases, the success of the screening is highly dependent on regular attention during the PEP. In a limited number of cases the screening could take more than 10 years to become effective, In such cases vegetative screening is unlikely to adequately mitigate the impacts. If screening develops and thrives as anticipated the resultant vegetative screens should effectively reduce the impacts as noted in the *LVIA Addendum Apr 2023 Section 2* If planting fails to thrive within the three-year PEP, it would be reasonable for the screen to be replicated with an extended complimentary 3-year PEP. This would provide an opportunity to replace or supplement less successful screen elements.

2.17 Evaluation of Visual Performance Objectives

LVIA Section 17 provides an evaluation of the Visual Performance Objectives set out in the VAB. The tables in *Section 17* provide evaluation of six visual performance measures; Visual Magnitude, Landscape Scenic Integrity, Key Feature Disruption, Multiple Wind Turbine Effects, Shadow Flicker and Aviation Hazard Lighting against the varying levels of landscape significance established in the LVIA Baseline Study. The LVIA provides a professional opinion that for each of these six measures the HGWF meets the performance objectives established in the VAB.

We consider that the Visual Performance Objectives, **Visual Magnitude, Landscape Scenic Integrity and Key Feature Disruption** are unlikely to be satisfied from all viewing locations.

2.17.1 For Visual Influence Zone 1 the **Visual Magnitude Objective** is,
" Avoid turbines or provide detailed justification of turbines below the blue line".

We consider that at several VIZ1 residential locations proposed screening would be ineffective or not justifiable due to effects on the viewing locations and as a result some turbines should be avoided. The affected residences include DAD01(an approved DA with no residence), DAD03 (an approved DA with no residence), NAD05 and its associated additional dwelling entitlement.

Along the north south ridgeline most turbines are located within 500m of Morrison's Gap Road. In *Table 8* of *Appendix 1* to the VAB, Level 3 sensitivity viewpoints, including local roads, walking tracks and low use travel routes, located within 500m of the turbine array become the subject of VIZ 1 Performance Objectives. *Table 8* of *Appendix 1* is formulated on just two factors the distance of the viewer to the object and the perceived sensitivity of the viewers, not the more common standard three factors that also include viewer numbers. The sensitivity rating system groups all travel and walking routes in the same Level 3 Sensitivity thereby removing the number of viewers as a modifying parameter in in the determination of the appropriate Visual Impact Zone.

With the exception of the notes in *LVIA Section 15, Table 18* related to Landscape Character, no assessment or detailed justification was provided in the LVIA for non-residential public viewpoints inside the Project Area for either the sealed or unsealed sections of Morrison's Gap Road. Despite the existing dense vegetation in some locations, due to the proximity of turbines to the road, the clearing works for access and crane hardstand areas associated with turbine installation, we anticipate a variety of visual magnitude impacts will occur along the length of Morrison's Gap Road.

LVIA Table 18 states "*that the dense vegetation limits opportunities for these views from within the public domain"* and that "*the close proximity reduces views to include (only) a small portion of the Project Area."* In the area around turbines 65-70 adjacent to the Morrison's Gap/Shearer's Road intersection the vegetation is in places less dense than some other locations, several turbines are potentially highly visible and would dominate the view catchment. In other locations vegetation clearing for access and crane hardstand could also be significant. Therefore the turbines and associated works located within 500m of Morrison's Gap Road do not appear to comply with the Visual Magnitude Performance Objective of the VAB.

Justification for the non-compliance has been provided in the response to the DPE *Request for Additional Information* in the letter from Moir LA dated 10 Nov 2023. The justification provided relies on consideration of the low frequency of use, low viewer sensitivity and short-term duration of visibility. Adjustment of these parameters does not reduce the Visual Magnitude but should reduce the assessable visual impact. Noting that viewer sensitivity is already determined at low level by placement of the travel routes in Level 3 sensitivity, frequency of use and duration of visibility are reasonable considerations when assessing the overall visual impact. Combined these parameters would reduce the overall visual impact of the turbine array for viewers travelling along Morrison's Gap and Shearer's Roads.

2.17.2 For Visual Influence Zone 2 the **Visual Magnitude Objective** is,
" Manage impacts as far as practicable, justify residual impacts and describe proposed mitigation measures below the black line".

We consider, assuming all the proposed secondary mitigation measures are provided and effective, that all residences in VIZ2 zones excepting NAD69 and NAD72 can meet the Visual Magnitude Objectives.

2.17.3 For Visual Influence Zone 1 the **Landscape Scenic Integrity Performance Objective** is,
"Wind turbines should not cause more than a low-level modification of the visual catchment. Turbines are seen as either very small and or faint or as of a size and colour contrast (under clear haze free atmospheric conditions) that they would not compete with major elements of the existing visual catchment."

We consider that from residential viewing locations DAD01, DAD03, NAD05 and the associated additional dwelling entitlement the turbines along the ridgeline within LCU05 *'Forested Mountain Ranges'* will not be perceived from those locations as very small or faint within the landscape and that the turbines would compete with a major landscape element of the visual catchment.

When viewed from the Level 3 sensitivity non-residential public viewpoints inside the Site Area along Morrison's Gap Road, most turbines will fall within the VIZ1 Performance Objective Zone. The nearest viewpoint on Morrison's Gap

Road is at HOG 42, assessed in the *LVIA Appendix C* as approximately 1400m from the nearest turbine. At HOG42 the LVIA assesses the turbines as "*likely to become a dominant feature in the landscape"*. With the exception of the notes in *LVIA Section 15, Table 18* related to Landscape Character, no assessment was provided for non-residential public viewpoints inside the Project Area closer to the turbines.

The response to the DPE *Request for Additional Information* in the letter from Moir LA dated 10 Nov 2023 acknowledges that the landscape character of the area will be modified. We consider the turbines from many public viewing locations along Morrisons Gap Road will cause more than a low-level modification of the visual catchment and therefore along Morrison's Gap Road do not meet the VIZ 1 Landscape Scenic Integrity Performance Objective of the VAB. The justification provided for the non-compliance is the low frequency of use combined with the short duration of exposure to the resultant impact.

2.17.4 For Visual Influence Zone 2 the **Landscape Scenic Integrity Performance Objective** is;
"Wind turbines should not cause significant modification of the visual catchment. Turbines may be visually apparent and could be a major element in the landscape but should not dominate the existing visual catchment."
It is our professional opinion that from some VIZ2 residential viewing locations around NAD72 that the turbine array along the ridgeline of the Great Dividing Range is likely to dominate the visual catchment. Residences closer to but just outside the VIZ 1 threshold at NAD 67, NAD69 and NAD72 where the topography, potential use of the property curtilages, direction of the view catchment with potential screening limitations, all combine to result in residual impacts that do not appear justifiable or manageable with the proposed vegetative screening and within a reasonable timeframe.

2.17.5 For both Visual Influence Zone 1 and 2 the **Key Feature Disruption Performance Objective** are,
to (for VIZ1) avoid and (for VIZ2) to minimise the impact of *wind turbines or ancillary facilities that result in the removal or visual alteration/disruption of identified key landscape features. This includes any major or visually significant landform, waterform, vegetation or cultural features that have visual prominence or are focal points*".

The installation of turbines along the ridgeline will alter the appearance of the cutting edge of the horizon line. Clearing for access and crane hardstand areas and along transmission lines may also disrupt the continuity of the vegetation along the horizon line. For VIZ 1 designated or DA approved residential locations, DAD01, DAD03, NAD05 and the associated additional dwelling entitlement and NAD10A, this requires that the works and or turbines should be avoided.

For residential viewing locations where turbines are in VIZ2, the installation of turbines along the ridgeline within LCU05 *'Forested Mountain Ranges'* results in the visual alteration of the appearance of a landform of visual prominence and a key landscape feature identified in the LVIA. Where possible the impacts should be minimised. Residents with extended views of large numbers of turbines such as NAD33 are likely to benefit most from minimisation of the alteration of the cutting edge of the skyline. Minimisation should include reduced clearing along the ridgeline, and where existing vegetation forms part of the horizon line, suitable micro-siting and detailed design to avoid vegetation removal that will impact the cutting edge of the horizon line. Similarly, care should be exercised in locating and clearing for transmissiion line easements. Residences close to but just beyond the VIZ 1 threshold at NAD69 and NAD72, where reduced setback distance creates a closer and narrower field of view within the primary view catchment, will also be affected. Reduction in turbine numbers would assist in mitigating some impacts at those locations.

2.17.6 For Visual Influence Zone 1 and 2 the **Multiple Wind Turbine Effects** are,
Avoid views to the proposed, existing and approved turbines within eight kilometres from Level 1 and Level 2 viewpoints, exceeding the following thresholds, or provide detailed justification:

- *Level 1 (high sensitivity) – wind turbines visible within the effective horizontal view of two or more 60-degree sectors*
- *Level 2 (moderate sensitivity) – wind turbines visible within the effective horizontal views in 3 or more 60-degree sectors.*

The *LVIA Addendum dated Nov 2022 Table 2* provides an updated of the with 60-degree sector analysis of the amended turbine layout. The Sector analysis indicates the likely number of 60-degree sectors affected in both 2D and 3D. The 3D analysis in the *Addendum dated Nov 2022 Table 2* identifies that all VIZ 1 and VIZ 2 rated residences, within a distance of 4550m of any turbine, will comply with the Performance Objectives set for Multiple Wind Turbine Effects. This Table does not address DAD01which will have turbines in four 60-degree sectors and is therefore non-compliant (refer Item B12 in Addendum Apr 2023).

Table 2 also notes that for residences beyond 4550m, NAD33 has turbines potentially visible in three sectors and the Project is non-compliant with the Performance Objectives. Considering the layout of the turbine array and the topography it is likely other residences beyond 4550m will meet the Multiple Turbine Effects Performance Objectives of the VAB.

Viewers at public viewing points around the intersection of Morrison's Gap Road and Shearer's Road in the VIZ 1 area will be impacted by the non-compliance of turbines with both Multiple Wind Turbine and Visual Magnitude Objectives.

2.17.7 For Visual Influence Zone 1, 2 and 3 the **Shadow Flicker and Blade Glint Performance Objective** are,
Finish turbine blades with a low reflectivity surface treatment to ensure that blade glint is minimised, and minimise shadow flicker to not more than 30 hours per year and utilise available mitigation options to minimise shadow flicker at dwellings.

The LVIA contains detailed assessment of the potential for shadow flicker and blade glint impacts. *Section 10, Table 12* of the LVIA has been prepared using standardized software address the potential for shadow flicker impacts. The issue of Blade Glint has been addressed by reference to the current industry standard for matt finishes. Section 10 of the LVIA and *Appendix E* identifies that shadow flicker at NAD08 potentially exceeds 30 hours per year and could exceed the Performance Objectives of the VAB. That assessment is without consideration of the existing vegetation or proposed screening. For a details of potential screening at NAD08 refer **Table 3.2.4.1.** Vegetative screening should significantly reduce those impacts.

The LVIA Section10 identifies that '*shadow flicker has the potential to cause annoyance to road users.'* A small extent of Crawney Pass Road is identified in the LVIA as potentially experiencing shadow flicker impacts and the impacts are justified by the short duration nature of the impact. 'No assessment has been provided of the potential shadow flicker impacts along Morrison's Gap Road which according to *Figure 16 The Shadow Flicker Assessment Diagram* could potentially experience significant levels of shadow flicker impacts throughout the year. Similarly, to the effects at NAD08, vegetation should mitigate some of those impacts.

As travel routes are not included within the Shadow Flicker and Blade Glint Performance Objectives, the proposal meets the Performance Objective of the VAB.

2.17.8 For Visual Influence Zone 1,2 and 3 the **Aviation Hazard Lighting Performance Objective** are,
Aviation Hazard Lighting must meet the requirements of AS 4282-1997 and any prescribed and notified CASA requirement. Shield all AHL within two kilometres from any dwellings, avoid strobe lighting.

Section 4.3 of the LVIA Addendum dated 25 October 2021 outlines the discussions with CASA and the opportunities for mitigating the impacts of Aircraft Hazard Lighting. AS 4282-1997 has been updated to AS 4282 -2019 however lighting for aviation safety no longer falls within the scope of the Standard.

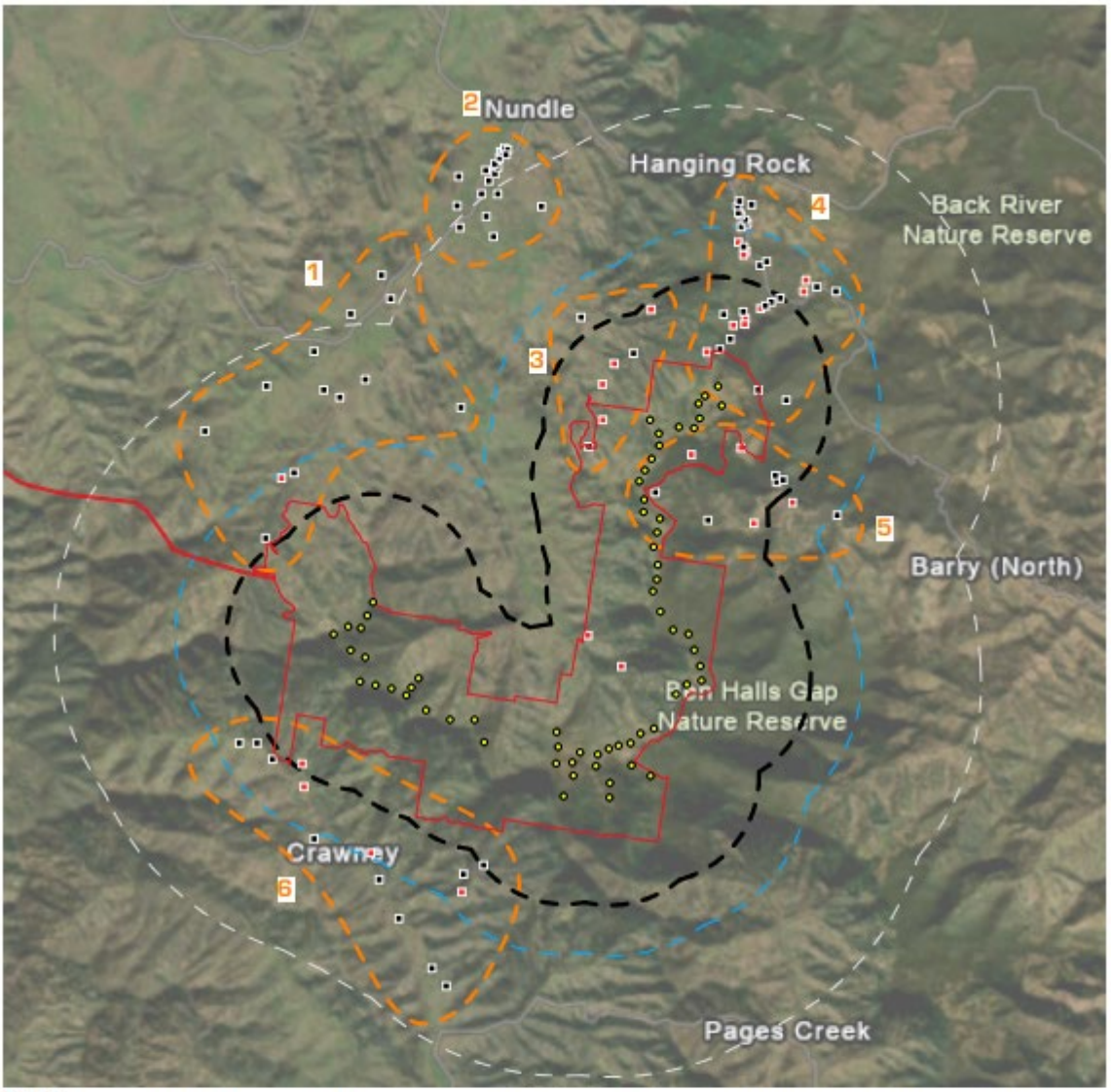
As the proposed turbines are located on a landform significantly elevated above most residences it is highly likely that in addition to shielding residences up to two kilometres from the light source, residences well beyond two kilometres will benefit from the any shielding installed between 5 and 10 degrees. This extended benefit is demonstrated by the Example of Aviation Lighting Effects at NAD05 provided on Page 20 Figure 13 of the LVIA Addendum dated 25 October 2021.

CASA has issued a CASA Advisory Circular AC139.E-05 V1.0 providing advice on aircraft hazard lighting and shielding. If CASA accepts the use of 200 candela light sources and the discernibility of a 200 candela fitting is not significant beyond 3000m as suggested in the *LVIA Addendum 25 October 2021* then the combination of reduced discernibility and shielding would limit the number of affected residents. If mitigation is implemented as proposed in LVIA Addendum Section 4.3 the impacts will be minimised as concluded in the Addendum and the outcome would meet the Aviation Hazard Lighting Performance Objective of the VAB.

3 SECTION 3 - REVIEW OF RESIDENTIAL IMPACTS

3.1 Review of Residential Impacts

The tables set out below provide commentary related to the non-associated existing and approved residential locations identified in *LVIA Section 15 Tables 15 and 16*. Distances to residential locations vary and extend out beyond 8km. Comments by OHD related to the effectiveness and impact reduction of individual screening elements assumes the screening is installed to final heights and densities suggested within the LVIA documents. For further mitigation comments refer to **Section 2.16 Mitigation Measures.**



NOTE
Refer to Proponent LVIA produced by Moir Landscape Architects for mapping containing wind turbine and residence reference numbers

KEY
1. Wombramurra Cluster
2. Nundle Cluster
3. Nundle Creek Road Cluster
4. Morrison's Gap/Barry Road Cluster
5. Shearer's Road Cluster
6. Timor Crawney Road Cluster

- Wind Turbine
- Non-Associated Residences
- Associated Residences
- Project Site
- Residential Cluster

OHD LANDSCAPE ARCHITECTS PROPRIETARY LIMITED

SCALE: APPROX (KILOMETRE) 0 5

IMAGE/SCALE: EARTHSTAR GRAPHICS, ESRI VIA SPATIAL.NSW.GOV.AU

NORTH

MAPPING
DIAGRAM 1: RESIDENTIAL CLUSTER MAP
HILLS OF GOLD WIND FARM
OHD #: 1034

3.1.1 Wombramurra Cluster

Generally, this group of residences is located along Crawney Road and Back Creek Road north-west of the Project Area. The elevations of residential viewing locations vary between 650 AHD and 750 AHD. This area also encompasses the Teamsters Rest and a section of the Bicentennial Trail. Notable, are the buildings of the DAG Station (NAD 34) adjacent to viewpoint HOG14 where tourism-based viewers could potentially be more sensitive to the impacts than general residents.

3.1.1.1 Wombramurra Cluster Table:

Residence #	Distance to nearest WTG	Closest WTG	LVIA VIZ	Sensitivity	OHD Comment
NAD 21	3.23 km	WP 2	VIZ2	Level 2	LVIA description at Viewpoint HOG 12. Views immediately adjacent to the residence are limited due to surrounding vegetation. The wider curtilage is likely to have more extensive views.
NAD 22	4.4 km	WP 6	VIZ2	Level 2	LVIA description at Viewpoint HOG 13. Views of up to 27 turbines many be possible along the east-west ridge to the south-east.
NAD 33	5.62 km	WP 63	VIZ2	Level 2	LVIA description at Appendix E 23 photomontage 21. Views of up to 70 turbines many be possible around the property and on parts of the property along the Head of the Peel Road. Two additional Dwelling Entitlements similarly affected are attached to this property. Refer **Section 18.1**.1 **Crawney Valley Entitlements.** The VIZ2 performance objective threshold for multiple wind turbine effects will be exceeded at each of these 3 locations. Some existing screening is adjacent east and south of the dwelling, at least 30 turbines are likely to be remain visible at the residence and curtilage. The LVIA Appendix E23 notes that parts of the turbine string will be a dominant feature on the ridgeline. Existing screening will screen some turbines from view however the screen is not continuous and will result in varying visibility from the curtilage of the residence. Supplementary screening can reduce the impacts however will also result in an extensive reduction of the views of the ridgeline to the east and south.
NAD 34, 35, 49, 54, 55, 56, 78, 82, 83, 97.	Varies, closest approx. 5.2km	WP 6 and WP 63	VIZ2	Level 2	LVIA descriptions in Viewpoints HOG 14, 15, 16, 17 18 and 32. Views are potentially extensive due to the surrounding cleared farming areas but often punctuated with intervening topography. Due to the relative elevation and distance many of these properties will view large numbers of the turbine array. Turbines are unlikely to dominate the existing Visual Catchment.

3.1.1.2 Summary:

- Due to the distances and orientation the individual impacts for most residences in this cluster, with the exception of NAD 33, appear manageable and should meet the individual Visual Performance Objectives of the VAB.

- Due to the high visibility of the greater expanse of both ridges of the Great Dividing Range, the residences on and outside the southern edge of the Nundle township along with those of the Wombramurra and Nundle Creek Clusters are those more likely to be affected by the potential changes to the Broader Landscape Character outlined in **Section 2.15.2 "Broader Landscape Character".**

3.1.2 Nundle Cluster

Generally, this group of buildings are located within and around the Township Zoning with the closest turbines generally around and just beyond 8km from the nearest turbines. The topography rises to the south-east with most residences located between RL 620 and RL 650.

3.1.2.1 Nundle Cluster Table:

Residence #	Distance to nearest WTG	Closest WTG	LVIA VIZ	Sensitivity	OHD Comment
Township of Nundle	Around 8km+and beyond	WP63 and WP69	VIZ2	Level 1	LVIA descriptions in Viewpoints HOG 22, 23 ,25, 27, 28, and 29. Views within the township are predominantly limited by structures and vegetation. The local heritage listed Nundle Cemetery is assessed at Viewpoint HOG 34. Turbines are unlikely to dominate the existing Visual Catchment.
NAD 45, 47, 68, 75, 76, 77, 79, 80, 81, 87, 89, 91, 92, and 94.	Varies 7-8.5 km	WP63 and WP69	VIZ2	Level 2	LVIA descriptions of the impacts at Viewpoints HOG 21, 26, 33, 35, and 44. Topography is generally flat and open rural uses with interspersed patches of screening vegetation. High variability of viewing locations, however between 45 and 70 turbines are potentially visible at around 8km forming a string along the top of the ridgeline to the south and south-east. Turbines are unlikely to dominate the existing Visual Catchment.

3.1.2.2 Summary:

- In this cluster the impacts will vary considerably due to localised factors at each viewing point. Individually, the outcomes appear to meet the Visual Performance Objectives.
- Due to the high visibility of the greater expanse of the ridges of the Great Dividing Range the residences on and outside the southern edge of the Nundle township along with those of the Wombramurra and Nundle Creek Clusters are those more likely to be affected by any potential changes to the Broader Landscape Character outlined in **Section 2.15 "Broader Landscape Character".**

3.1.3 Nundle Creek Road Cluster

Generally, this cluster sits in the Nundle Creek Valley immediately north-west of the northern end of the proposed turbine string. The topography rises towards the south with initial levels around RL 700 AHD and at NAD 05 in the order of RL 800 AHD.

3.1.3.1 Nundle Creek Road Cluster Table

Residence #	Distance to nearest WTG	Closest WTG	LVIA VIZ	Sensitivity	OHD Comment
NAD 05	1.79km	WP 63	VIZ1	Level 2	Parameters identified LVIA Appendix E Table 4 and Item B1 and C1. Located in a VIZ 1 Performance Objective Zone, with the turbine string curving around the residence from WP58 to WP63. Screening for the residence and entry area is less likely to be reasonable option given the sense of enclosure created by the existing vegetation, particularly to the east, the area of greatest impact. Existing vegetation could provide a moderate degree of curtilage screening, to the south-east and south.
NAD 10	2.74km	WP 63	VIZ2	Level 2	Parameters identified LVIA Appendix E Table 4 and Item E8. The residence is situated at a low point adjacent to Nundle Creek with views south-east. Successful screening immediately adjacent to the residence appears achievable due to the surrounding topography and limited area to be screened.. The most impacting turbine being WP63.
NAD 66	3.65km	WP 63	VIZ2	Level 2	Parameters identified LVIA Appendix E Table 4 and Item B6. Successful screening immediately adjacent

					to the residence appears achievable due to the surrounding topography and limited area to be screened. It appears more difficult to screen extended curtilage areas due to topography. The most impacting turbines being WP63 and WP62.
DAD 03	2.81km	WP 63	VIZ2	Level 2	Parameters and potential screening identified LVIA Addendum April 202 Item B13. Screening immediately adjacent to the south-east of the location of the proposed residence appears achievable due to the surrounding topography and limited field of view to be screened. The final location of the proposed residence will significantly determine the extent of required screening. WP 60 to 64 will likely remain visible.

3.1.3.2 Summary:

- In this cluster given NAD10A and NAD17 are now associated, proposed screening appears possible to mitigate the bulk of the impacts to a reasonable level except NAD05 and subject to final location, the approved site at DAD03.
- NAD05 would require a more dense and taller selective screen due to its proximity to the encircling turbine string from WP58 to WP63.
- Screening however may be unacceptable to the residents given the enclosing format of the existing vegetation and the requirement for the new taller screening to infill the gap in the vegetation to the east of the residence. This screening would potentially reduce morning sun to the property, particularly in winter. Primary mitigation by removal of some turbines would be appropriate.
- Turbine removal proposed to address issues at DAD01 in the **Shearers Road Cluster 3.2.5** will require removal of many of the same turbines as those creating impacts at NAD05 and the potential impacts at DAD03. Removal of those turbines would substantially benefit several locations and remove many of the requirements for screening at NAD 05.

3.1.4 Morrison's Gap/Barry Road Cluster

Generally, this cluster is located around the village of Hanging Rock, north of the turbine array. The area is intermittently heavily vegetated with restricted longer distance viewing opportunities. Most residences sit along the ridge at around RL 1120, approximately the same elevation as the turbine bases. NAD07 and NAD08 are located west of the ridgeline at elevations generally below the base of the turbines.

3.1.4.1 Morrison's Gap/Barry Road Cluster Table:

Residence #	Distance to nearest WTG	Closest WTG	VIZ	Sensitivity	OHD Comment
NAD 07	1.74km	WP70	VIZ1	Level 2	Parameters identified LVIA Appendix E6. Desktop analysis indicate that the residence is surrounded by dense vegetation to the north, east and south, but with more open views to the west. The curtilage appears to be cleared for up to 60m to the west of the residence. The topography to the west has a very slight fall. Trigonometrical analysis indicates that trees of approximately 15-20m high will screen turbines if located within 60m distant from the viewer. Trees 10-15m high will provide partial screening. There is a high probability the turbines will not be visible from the residence. *HOGWF Wireframes Diagrams - August 2023*. Appears to confirm this assessment.
NAD 08	1.16km	WP70	VIZ1	Level 2	Parameters identified LVIA Appendix E7. Desktop analysis indicates that the residence is surrounded by dense vegetation to the north, east and south, but with more open views to the west. The curtilage appears to be cleared for up to 50m to the west of the residence. The ground falls away to the west toward the Barnard River. Views of the turbines could be possible. Trigonometrical analysis indicates that trees beyond 50m from the residence and less than 20m high will not screen turbines WP66, 67, 68, 69 and 70. Trees between 20 and 30 m high will provide partial screening.

					Full screening would be achieved for tree height in the order of 30m which is within the range of the Lidar average heights noted in the *HOGWF Wireframes Diagrams - August 2023*.
NAD 11	1.05km	WP 69	VIZ1	Level 2	Parameters identified LVIA Appendix E10 When viewed from the residence and curtilage of WP67, WP68, WP69, WP70 fall within the VIZ1 zone and require detailed justification which is provided in *HOGWF Wireframes Diagrams - August 2023*. Existing vegetation will provide a moderate to high degree of curtilage screening, to the south-east and south subject to viewing location some residual impacts from WP69 are likely. Additional screening for the curtilage area may not be a reasonable option given the use of the curtilage and surrounds on the southern side of the site. Further screening would create a greater sense of enclosure than may be unacceptable to the landowner. If screening is not acceptable turbine removal may be required for turbines visible within the VIZ1 area.
NAD 18 **NAD 19**	2.69km 2.93km	WP 69	VIZ2	Level 2	Parameters identified original LVIA Appendix E17 To mitigate impacts screen planting in a narrow band south-east of the dwellings would be necessary. The screening would need to be relatively close to the residence. Consultation with the landowners would be required.
NAD 20	3.05km	WP 69	VIZ2	Level 2	Parameters identified original LVIA Appendix E19 Verification on site would be required to ensure WP69 was not visible from the residence. Consultation with the landowners would be required.
NAD 25, 26, 35, 36, 37, 38, and 40	Vary from 3.85km to 4.1km	WP 69	VIZ2	Level 2	As described in the original LVIA. The turbines are anticipated to be fully screened when viewed from these residences.

3.1.4.2 Summary:

- Many of the houses in this cluster are heavily screened by significant surrounding vegetation.
- Supplementary screening of residences and curtilages with turbines within 2km will be difficult as the height will require tall, fast-growing species to be planted close to residences to mitigate significant magnitude and dominance impacts.
- Agreement to screening by the landowner should be sought prior to installation. If not resolved the project risks creating long term unmitigated impacts in the VIZ1 Zone for NAD11. The alternative would be removal of any turbine within the VIZ1 Zone which cannot be screened.
- NAD 67 is located close to the VIZ1 and VIZ 2 boundary and dominance of the closest turbines is likley

3.1.5 Shearers Road Cluster

This is the geographic area located to the east of the Project site. Fewer residences are located within this area and the topography falls away to the east. The residence at NAD67 sits around 1100 AHD and DAD 1 is located around 1280 AHD. NAD48 is located much lower around 850AHD.

3.1.5.1 Shearers Road Cluster Table:

Residence #	Distance to nearest WTG	Closest WTG	LVIA VIZ	Sensitivity	OHD Comment
NAD 4A **NAD 4B** **NAD 4C**	2.79km 2.89km 2.66km	WP70 WP70	VIZ2 VIZ2	Level 2	Parameters identified original LVIA Appendix E items E3, E4 and E5. Desktop analysis indicates that residences are surrounded by relatively dense vegetation to the south and west. Views of the turbines from the

					residences and curtilage are likely minimal and visible as parts of blades above the nacel only.
DAD01	Less than 250m	WP 57	VIZ1	Level 2	Descriptions at LVIA Appendix E Table 4 and B12a and B12b with screening proposals Addendum April 2022 at B12 Impacts at this CDC approved residence do not meet several of the criteria set in the Visual Performance Objectives. The impacts due to turbine locations are High and could be partially mitigated by vegetative screening, however the proximity and the required extent of screening would form a high level of enclosure. Dominance of the turbines would be evident in open areas around the curtilage. Even with screening the impacts are likely to remain at least Moderate to High as noted in the LVIA. Additional Primary mitigation in the form of turbine removal in the VIZ 1 Zone appears to be the only viable option to reduce the impacts.
NAD 48	4.50km	WP 55	VIZ2	Level 2	Descriptions at LVIA Appendix E Item A2 and HOG45. Exposure of the turbine string would be limited due to the topography and heavy vegetation surrounding the property. Selective screening is likely to be successful but creating a moderate sense of enclosure. Loss of sunlight due to screening to the north-west may be unacceptable to the residents.
NAD 67	1.45km 2.35km	WP55 Nearest visible turbine WP60	VIZ1 VIZ2	Level 2 Level2	Parameters identified LVIA Appendix E Table 4 and Item B13, E21 and wireframes Addendum April 22 Effective screening of the Turbines numbered below WP60 is provided by the rising topography due west resulting in a likely greater distance than that identified in the LVIA to the nearest visible turbine WP60. The resultant exposure to the turbine string is limited and could be effectively managed by screening. Screening to the north and north-west would be required relatively close to the building. As existing vegetation is closely located to the south and east of the residence loss of sunlight due to screening to the north and north-west may be unacceptable to the residents.

3.1.5.2 Summary:

- Primary Mitigation using turbine removal is highly likely to be required to address the issues of dominance and sense of enclosure at DAD01. The LVIA indicates impacts are High and relatively similar both north and south of the proposed residential site. Removal of turbines WP 53-WP57 to the south and WP 58-WP63 to the North appear to be required to meet the VIZ 1 Visual Performance Objectives for DAD01.
- Removal of WP58-WP63 would also mitigate the most immediate impacts on NAD67 which falls close to the VIZ1 threshold and on NAD05 in the Nundle Creek Cluster, to the east of the ridgeline.
- Additional benefits from the turbine removal related to DAD01 would be a reduction of impacts for most residences in the Nundle Crawney Valley visual catchment, particularly NAD33 and NAD66.

3.1.6 Timor Crawney Road Cluster

Generally, this cluster of residences is located south and south-west of the of the of the project site with viewing levels between 620 AHD and 650 AHD. Three residences NAD01, Dwelling B and NAD69 are located along Mountain View Road with viewing levels between 720 AHD and 750 AHD.

3.1.6.1 Timor Crawney Road Cluster Table:

Residence #	Distance to nearest WTG	Closest WTG	LVIA VIZ	Sensitivity	OHD Comment
NAD 01	2.58km	WP24	VIZ2	Level 2	Description in LVIA Appendix E, item E1 and amended in the LVIA Addendum Appendix B dated 25th October 2021. Views of some turbines from the private recreation spaces at the rear of the property appear to have been mitigated by the removal of Turbines WP19 and WP 63. WP 24 appears to be predominantly screened by the landform, with WP 20, and 21 both possibly visible as blade tips.
Dwelling B	2.52km	WP24	VIZ2	Level 2	Descriptions in LVIA Addendum Apr 2022 Appendix A Item A1. Vegetation appears close to the residence on the north and north-west sides and appears adequate for screening.
NAD 69	3.26km	WP24	VIZ2	Level 2	Description in LVIA Appendix E item B8 and amended in the LVIA Addendum Appendix B dated 25th October 2021. A very open and elevated location. Views of the Project visible from the front of the residence, the entry and curtilage. Primary mitigation by removal of turbine WP19 noted in the LVIA Addendum dated 25th October 2021 has reduced the potential impacts. Screening could potentially further reduce residual impacts to acceptable levels when assessed against the Performance Objectives of the VAB if screening is acceptable to the residents.
NAD 72	3.37km	WP9	VIZ2	Level 2	Descriptions at LVIA Appendix E item B9 and amended in the LVIA Addendum Appendix A items A.1 and A.2 dated 25th October 2021. Turbine string is visible to north, north-east from the entry, habitable rooms, outdoor spaces and the wider curtilage. The topography drops away in the direction of the view making screening less effective. The LVIA identifies screening will take longer to become effective due to the required proximity of screening to the east. Proposed screening on the north-eastern side of the residence is likely to affect morning sun in winter. The screening is therefore unlikely to be acceptable to residents.
Dwelling A + NAD 98	Approx 4.0km	WP9	VIZ2	Level 2	Descriptions at LVIA Addendum Apr 2023 Appendix A Item A1, A10 and A11. Topographical mapping indicates land falls slightly to the north and view is open to view the turbine array to the north-east. Screening to the north-east would be possible, however due to the topography and the required proximity on the north-eastern side of the residences screening is likely to affect morning sun.
Dwelling C	5.0km	WP24	VIZ2	Level 2	Descriptions at LVIA Addendum Apr 2022 Appendix A Item A3. Topographical mapping indicates land falls slightly in the direction of the view with intervening rolling hills to the north-west. OHD desktop topographical assessment: Limited turbine visibility as noted in the LVIA.

3.1.6.2 Summary:

Due to the distances and orientation the impacts are relatively consistent in this cluster. Impacted residences are generally located in the range from around 2.5km to 4.0km. Where topography allows for appropriate screening, the most impacts can be managed as noted in the LVIA to meet the Visual Performance Objectives of the VAB.

However, due to,

- the potential for a greater extent of the east-west ridgeline to be considered at least *High to Moderate* scenic quality due to the extension of the Landscape Character area of LCU05 as described in **Section 2.15 Impact on Landscape Character,**
- the proximity of NAD69 and NAD 72 to the VIZ 1/ VIZ 2 threshold in Table 8 of the VAB,
- the requirement due to topography, for screening very close to the residence at NAD 72 and the resultant likely impacts on both the primary view and morning sun availability at that residence,
- the extended timeframes for development of effective screening at NAD 72,
- the proximity of turbines WP9, WP10 and WP11 to NAD 69 and NAD 98, and
- the proximity of turbine WP24 to NAD 69,

We suggest that removal of turbines WP9, WP10, WP11 and WP24 should be considered to provide additional mitigation to compliment the proposed selective vegetative screening provided at each location. This would,

- reduce the potential dominance of the turbine array,
- minimise Key Feature Disruption, and
- ensure the proposal more closely meets the Performance Objectives for Landscape Scenic Integrity.

3.2 Lots with Dwelling Entitlements

In response to the DPE request for further information, *Addendum E to the LVIA dated 22 April 2022,* pages 10-12 provide an assessment of approximately 20 lots with dwelling entitlements in addition to any existing residences on the allotment. The LVIA assesses the lots that may be affected by magnitude in two groups using the preliminary magnitude tools from the VAB. The assessment determines the percentage of the lot covered by the associated ZVI band and tabulates the results in Table 5. As the footprint, orientation and final location of any future dwelling development on these lots is unknown this appears to be a reasonable method of identifying the extent of some of the possible impacts.

Identification of the impacts is difficult without exact building locations. Impacts will vary very significantly with topography and vegetation cover however design principles of any new dwelling are more likely to be consistent. It is reasonable to assume that residences would be designed to avoid views of the turbine array, be located on higher ground, possibly to seek expansive or iconic views. Many residents will hope to capture the environmentally advantageous north and north-eastern aspect on the property for habitable rooms and outdoor spaces, western aspects are likely to be avoided. Vegetative screening could assist in mitigating views depending on the topography, aspect and local environment. Where views of the turbine array are avoided, each entitlement will sacrifice their existing potential view toward the highly valued ridgeline of the Great Dividing Range which is identified in The LVIA as a key landscape feature.

The Dwelling Entitlements fall into three distinct visual catchments,

- The Nundle Crawney Valley Catchment west and north of the Project TRC 01, 03, 04 and 05,
- The Hanging Rock Visual Catchment: TRC 02, and
- The Crawney Catchment south and south-west of the Project: UHS 01- UHS 15.

3.2.1 Crawney Valley Catchment

The four entitlements in the Nundle Crawney Valley Catchment lie west and north of the Project. TRC 01 and 03 are relatively close to the east-west ridgeline. The ZVI bands indicate it is likely between twenty and sixty-five turbines could be visible. New dwellings would be exposed to turbines in four 60-degree sectors and a significant percentage of the land falls within a likely VIZ 1 area due to turbines to the south. Therefore, new residences would potentially be non-compliant with the Performance Objectives for Visual Magnitude, Landscape Scenic Integrity and Multiple Wind Turbine Effects. Residences would also need to consider the impacts of the site access road and the transmission lines which would be installed relatively close to the entitlements. If development is designed to mitigate views of the turbine array, the principal rooms, views and outdoor areas are likely to be concentrated on the more environmentally advantageous but less scenic, north side of new dwellings. Notably, due to the high encirclement of these properties, some turbines would remain visible unless the buildings are designed with primary outlooks to the northwest.

TRC 04 and 05 are adjacent to the west side of the north-south ridgeline. The ZVI bands indicate it is likely that between nil and thirty turbines will be visible, however at the highest locations on the entitlement up to sixty-five turbines could be visible. New dwellings would be exposed to turbines in three 60-degree sectors and the whole of the entitlement appears to fall in VIZ 2 and therefore compliance with the Visual Performance Objectives is more likely. If development is designed to mitigate views of the turbine array the principal rooms, views and outdoor areas are likely to be concentrated on the more environmentally advantageous but less scenic, north side of any new dwellings.

3.2.2 Hanging Rock Catchment

TRC 02, the entitlement in the Hanging Rock Catchment, lies east of the Project adjacent to the north-south ridgeline. The ZVI bands indicate it is likely between twenty and sixty turbines will be visible. A dwelling would be exposed to turbines in two 60-degree sectors and the entitlement is likely to be completely located within a VIZ 2 area and therefore compliance with the Visual Performance Objectives is more likely. If development is designed to mitigate views of the turbine array the principal rooms, views and outdoor areas are likely to be concentrated on the environmentally advantageous, north-east side of any new dwelling.

3.2.3 Crawney Catchment

UHS 04 – UHS 15 all lie south, south-east and south-west of the project site. The majority of entitlements are likely to view less than twenty turbines within two 60-degree sectors. Entitlement UHS 05 and 06 are noticeable outliers as a significant amount of the site area could potentially view between twenty and sixty turbines but with almost all the visible turbines within one 60-degree sector. Notably, significant areas of UHS 01, 03, 07, 08, 10, 11 and 14 could potentially be located where turbines would be adjacent within VIZ 1. Lots UHS 04, 09, and 10 are identified on the Heritage Mapping in the Upper Hunter LEP Map HER 007. Significant areas, including the most open area of UHS 10 could potentially view turbines WP 28,29 and WP 32,33 within a VIZ1 zone. Therefore, new residences would potentially be non-compliant with the Performance Objectives for Visual Magnitude, Landscape Scenic Integrity.

If development upon these Lots with Dwelling Entitlements is designed to mitigate views of the turbine array the principal rooms, views and outdoor areas are likely to be concentrated on the less scenic and environmentally disadvantageous, south side of new dwellings with UHS 05, 06 and 07, likely to have principal rooms and outdoor spaces facing south south-west and UHS 04, 08-15 inc. with principal rooms facing or possibly on the north and north-east side of a proposed residence if existing screening is available.

4 SECTION 4 - SUMMARY

4.1 Summary

4.1.1 OHD considers that the LVIA and associated assessments that comprise the Consolidated LVIA have been thoroughly prepared within the guidelines of the Wind Energy: Visual Assessment Bulletin (VAB). The methodology used for the LVIA assessment is reasonable and with the supplementary Amendment Reports, the responses to requests for information, siting diagrams and the justification statement related to impacts along Morrison Gap Road, the LVIA provides sufficient information for the purpose of identifying the likely visual impacts.

4.1.2 In our opinion the proposed turbine layout of the HGWF project does not satisfy the Visual Performance Objectives for Visual Magnitude, Landscape Scenic Integrity and Multiple Wind Turbine Effects set in the VAB in relation to residence DAD01. It this case we do not consider vegetative screening capable of reducing the impacts to meet the VAB requirements and that turbine removal is the most appropriate method of mitigation at DAD01. Removal of turbines WP 53-57 to the south and WP 58-WP63 to the north appears to be required to meet the VIZ 1 Visual Performance Objectives for DAD01. Removal of those turbines will also remove the need for extensive screening at NAD05 and provide greater development opportunities at DAD03. This proposed turbine removal would also benefit residences NAD48, NAD66 and NAD76 where the Visual Performance Objectives of the VAB are proposed to be meet by implementation of screening adjacent to each residence.

4.1.3 To the south-west of the site, we consider that the Landscape Scenic Integrity Objective are unlikely to be meet in relation to residences NAD72, NAD69 and NAD98. We consider that removal of turbines WP9, WP10, WP11 and WP24 should be considered to provide additional mitigation to compliment the proposed selective vegetative screening provided at each location. These removals would,

- reduce the potential dominance of the turbine array,
- minimise Key Feature Disruption, and
- ensure the proposal more closely meets the VIZ 2 Performance Objectives for Landscape Scenic Integrity.

4.1.4 For most of Morrison's Gap Road and the northern section of Shearer's Road the turbine set back is less than 500m and the landscape within 500m of the road falls within a VIZ 1 area. In addition to the turbines, the associated clearing works for access, cranage and laydown hardstand areas create additional impacts in the VIZ1 area. Public viewing locations along those roads cannot achieve the VIZ 1 Visual Magnitude Objective or the VIZ 1 Landscape Scenic Integrity Objective, Justification for these non-compliances has been provided in the response to the DPE *Request for Additional Information* in the letter from Moir LA dated 10 Nov 2023 which relies on consideration of the low frequency of use, low viewer sensitivity and short-term duration of visibility. Frequency of use and duration of visibility are not contributory parameters in the VAB Sensitivity Rating. They are reasonable parameters to consider when assessing the overall visual impact of the development on the Public Domain. Combined, these parameters would reduce the overall visual impact of the turbine array for viewers travelling along Morrison's Gap and Shearer's Roads.

4.1.5 For most residential viewing locations the installation of turbines along the ridgeline within LCU05 *'Forested Mountain Ranges'* will result in the visual alteration of the appearance of a landform of visual prominence and a key landscape feature identified in the LVIA. The VIZ 2 Performance Objective for Key Feature Disruption requires minimisation of those impacts. The impact is comprised of two components, the turbine elements and the associated clearing. As the turbine elements are unalterable, if the project is considered for Approval, the DPE should consider insertion of conditions to ensure vegetation removal is minimised along Morrisons Gap Road. Minimisation of vegetation removal at the source of the impact along the ridgeline would reduce reliance on screening at some viewing locations. This approach would enhance the visual outcomes for all locations with a potential view of the Project.

4.1.6 Given the LVIA's significant commitments to extensive vegetative screen to manage residual impacts, the success of the bulk of the LVIA proposed mitigation measures will be heavily dependent on successful screen or spot planting. To enhance the likelihood of screening success the DPE should consider insertion of conditions to require landscape consultation and plans be prepared and agreed as part of the project pre-construction deliverables in accordance with the recommendations set out in the LVIA and **Section 15** of this report.

4.1.7 Changes in Landscape Character of an individual LCU do not form part of the assessment criteria in the VAB Visual Performance Objectives. The effect of the turbine array on the extended ridgeline of the Great Dividing Range which is as a Key Landscape Feature within the broader landscape will partially industrialise the character of LCU 05 *'Forested Mountain Ranges'*. The resultant change of character to a combination of *Natural Appearing* and *Wind Energy Character* is significant. This proposed change will be critical to the ongoing community perception of the value of the surrounding Landscape. The effect of this significant change of character should be carefully considered in the evaluation of the overall Project suitability and determination of Development Consent.

William Francis
Principal
AILA Registration No. 5768.

Edward O'Hanlon RAIA
Director
NSW ARB 4306

O'Hanlon Design Pty. Ltd

5 SECTION 5 - ASSESSMENT DOCUMENTS

This assessment is based on the following documents:

- *Hills of Gold Energy Project. Appendix F Preliminary Landscape and Visual Impact Assessment: Prepared by Arup Pty Ltd 18 May 2018.*
- *Hills of Gold Wind Farm Environmental Impact Statement. Prepared by ERM.*
    - *Specifically Including: Appendix F: Hills of Gold Wind Farm Landscape and Visual Impact Assessment. Prepared by Moir Landscape Architecture. 16 November 2020 Rev. D.*
- *Hills of Gold Wind Farm Turbine and Dwelling Co-ordinates. DPE 25 February 2021*
- *Hills of Gold Wind Farm Amendment Report. Prepared by ERM.*
    - *Specifically Including: Appendix G1: Hills of Gold Wind Farm Landscape and Visual Impact Assessment Addendum Report. Prepared by Moir Landscape Architecture. 25 October 2021.*
- *Submissions Report. Prepared by ERM. 20 December 2021.*
    - *Specifically Including: Appendix G – LVIA Assessment. Prepared by Moir Landscape Architecture. 23 February 2022.*
- *Response to Request for Additional Information. Prepared by ERM. 25 March 2022.*
    - *Specifically Including: Hills of Gold Wind Farm. Addendum to the Landscape and Visual Impact Assessment. Prepared by Moir Landscape Architecture. 22April 2022 Rev. E..*
- *Amendment Report N°2. Prepared by ERM. 7 November 2022.*
    - *Specifically Including: Appendix G – Visual Assessment. Prepared by Moir Landscape Architecture. 7 November 2022. Rev E*
- *Hills of Gold Windfarm. Submissions Report N°2. Prepared by Moir Landscape Architecture. 28 February 2023*
- *Response to Additional Information Request. Prepared by ERM. 25 May 2023.*
    - *Specifically Including: Appendix A – Second Addendum to Landscape and Visual Impact – prepared by Moir Landscape Architecture. 5 April 2023. Revision I.*
- *Hills of Gold Wind Farm – Wireframe Diagrams – August 2023 NAD-07 NAD-08 NAD-11.*
- *1:25,000 topographical maps (NSW Government Spatial Services)*
    - *9135-3S Nundle 2017 Edition*
    - *9135-4N Crawney Pass 2017 Edition.*
    - *9135-4S Isis River 2017 Edition*
    - *9133-4S Rouchel Brook 2017 Edition*
- *Response to a Request for Additional Information. Prepared by Moir Landscape Architecture. 10 November 2023.*
    - *Specifically providing justification for wind turbine towers within 500m of Morrison's Gap Road.*