14

Overview of Impact on Landscape Character

14.0 Overview of Impact on Landscape Character

14.1 Overview of Visual Impacts on Landscape Character

The impact on landscape character addresses the scoping requirements that are relevant to landscape and visual impacts as part of the EES, specifically the existing environment requirements (refer **Table 1**).

The proposed development is to be located within a predominantly rural landscape that has not been identified as significant or rare. The broad landscape character is dominated by established rural land which consists primarily of modified flat to gently undulating hills. Generally, the Scenic Quality Classes of the Landscape Character Units (LCU) within the Study Area have been rated as low or moderate with one area defined as low (refer to **Section 5.0**).

State Significant viewing locations were identified to the east, southeast and northwest of the Project (in excess of 12 km of the Project). At this distance, the Project is unlikely to be a noticeable element in the landscape and if visible would be viewed in the context of nearby wind farms. The Project Site itself is not located within a significance investigation area. The Project Site is largely farming land which has been highly modified and used for agricultural activities. The Project will not impact on the character of any landscapes that have been determined to be of regional or state significance.

The fact that the proposed wind turbines are generally positioned within a landscape that has remained largely unchanged for decades means that the potential for contrast is significant. There is little doubt that the Project, regardless of how visible it actually is, would become a feature of the area. However, the degree to which the existing landscape character and significance is altered as a result of the proposal, is determined by the dominance of the proposal in relation to the existing landscape features.

It is undeniable the proposed wind farm would become a feature of the visual landscape however, it is likely the broader character of area which is highly modified due to the agricultural land use, will remain intact. Regionally, significant landscape features identified in **Section 5.0** of this report, would remain dominant features of the landscape and it is unlikely the proposal would degrade the scenic quality of these landscape features.

14.2 Overview of the Visual Impact on LCUs

Table 16 provides an overview of the assessment of the potential visual impacts on the existing landscape character of the local area for each LCU as defined in **Section 5.8** of this report. An evaluation of the potential visual impacts has been undertaken.

Of the six (6) LCU's identified and assessed, the Project is likely to be visible from all, to varying degrees. Due to the flat to gently undulating topography surrounding the Project Area, there are opportunities for open views the Project, however, existing vegetation and structures will limit opportunities to view the project in its entirety.

Overview of Impacts on Landscape Character Units			
LCU:	**Scenic Quality Rating:**	**Overview of Impact on Landscape Character:**	**Key Landscape Features:**
LCU01 **Volcanic Plains**	Low	The Volcanic Plains LCU is characterised by highly modified, windswept plains that are flat to gently undulating and used predominantly for agricultural purposes. Views to the Project are likely to be available due to the relatively flat topography. The Project will result in a change to the existing landscape character from rural grazing land to a landscape with a dominant wind energy use. Publicly accessible land is generally limited to Hamilton Highway and Warrnambool-Caramut Road, where the Project is anticipated to be a dominant element from some locations. Roadside vegetation and windbreak vegetation is likely to limit some views.	Flat to gently undulating Agricultural land Fertile volcanic soils
LCU02 **Stony Rises**	Moderate	The Stony Rises Hills LCU has been defined by clusters of exposed basalt rock that are scattered across farmland, as a result of past volcanic activity. Land is flat to gently undulating with scattered vegetation. Distant views to the Project may be available from some locations along the roads, however the Project would form a small element in the landscape and the character of the LCU would remain intact.	Rocky outcrops
LCU03 **Volcanic Lakes and Swamps**	Low	The Volcanic Lakes and Swamps LCU is characterised by a concentration of volcanic lakes and swamps across the area. The land is generally flat to gently undulating and highly modified as a result of agricultural activity. Distant views to the Project may be available from some locations along the roads, however the Project would form a minor element in the landscape and the character of the LCU would remain intact.	Concentration of lakes and swamps Agricultural land
LCU04 **Waterways and Wetlands**	Moderate	The Waterways and Wetlands LCU is generally defined by rivers, creeks, lakes and wetlands located to the east of the Project Site including Salt Creek, Mustons Creek and Limestone Creek. Views will be available from some locations where in close proximity to the Project, however some views will be limited due to the riparian vegetation typical of the LCU. The Waterways and Wetlands identified are likely to remain the key features from within this LCU.	Rivers, creeks, lakes and wetlands Riparian vegetation
LCU05 **Plantations**	Low	The Plantations LCU is defined as areas of dense vegetation found within tree plantations. It is noted that the character of these areas may vary at different stages of the plantation process. Land in this area is flat to gently undulating and is predominantly located to the east of the Project Site. The LCU is a highly modified landscape with a low scenic quality rating. There is no public access available within these plantations. Views to the Project will be limited by vegetation associated with the plantations. The Project will not alter the existing character of the Plantations LCU.	Dense plantation of singular tree species
LCU06 **Townships**	Low	The Townships LCU is defined as the towns and villages including Mortlake, Woolsthorpe, Caramut, Hawkesdale, Ellerslie and Hexham. Although the proposed wind turbines are likely to be discernible from some areas within this LCU, the Project will not dominate the visual catchment. Existing vegetation and built form within the villages are likely to fragment or screen views. Due to the distance, the Project will form a minor element in the overall visual landscape.	Highly modified landscapes Scattered vegetation

Table 16 Overview of Impact on Landscape Character Units

14.3 Overview of the Visual Impact During the Construction Phase

The construction phase of a Project has the potential to cause temporary visual impacts due to the activities and infrastructure involved. These impacts often vary depending on the scale of the project, the sensitivity of the surrounding landscape, and the proximity of receptors.

Key impacts include:

- Presence of Construction Equipment and Machinery through the landscape.
- Temporary construction related compounds including temporary site offices,storage areas, stockpiles.
- Earthworks for turbine foundations, access roads and infrastructure.
- Temporary lighting associated with site security or night works.
- Dust associated with construction activities.
- Movement of large scale infrastructure through the landscape.

As the construction period is a temporary phase of the Project, the visual impacts associated with the construction period are considered to be low. The landscape in the study area has existing infrastructure elements and operating wind energy projects. Large scale machinery associated with agricultural land use is an existing element in the landscape.

15
Mitigation Measures

15.0 Mitigation Measures

15.1 Overview of Mitigation Measures

This section of the report provides recommendations which seek to achieve a better visual integration of the proposal and the existing visual character at both local and regional scales. The mitigation measures attempt to lessen the visual impact of the proposed wind farm whilst enhancing the visual character of the surrounding environment.

Mitigation measures are best considered as two separate phases. These include:

- Primary measures that form part of the development of the wind farm design through an interactive process;
- Secondary measures designed to specifically address the remaining (residual) negative (adverse) effects of the final development proposals (The Landscape Institute et al 2008).

It is important to note that the mitigation methods proposed in this report are made notwithstanding issues raised by other consultants (eg. engineering, ecology, geology etc.). During the planning and design phase of a wind farm mitigation strategies should also be considered to lessen the visual impact of the proposal. This is by no means an exhaustive list, however the adoption of these recommendations will assist considerably in ensuring the proposal contributes positively to the visual quality and character of the area.

Mitigation methods considered for associated infrastructure has been included in Section 13.0.

15.2 Project Layout and Design

The design of the proposed wind farm is a primary measure of mitigation. The general principles employed through the project design phase can significantly reduce the visual impact. These include siting, access, layout and other principles which directly impact the appearance of the proposed development. General guidelines for the design development of the Project have been outlined in the following section.

15.2.1 Wind Farm Layout and Size

The layout and size of the wind farm is a significant factor in the visual impact on the landscape. According to Stanton (1995) the intrusiveness of a wind farm is not directly proportional to the number of turbines in an array, and instead, more a factor of design feature. For example, large wind farms may appear less dominating than a smaller project when the large wind farm is subdivided into several visually comprehensible units.

It is suggested that fewer and more widely spaced turbines present a more pleasing appearance than tightly packed arrays (URBIS, 2009). The following principles should guide the design process of the wind farm:

- Controlling the location of different turbine types, densities and layout geometry to minimise the visual impacts.
- The lines of turbines should reflect the contours of the natural landscape as best as possible.
- Ensure the turbines are evenly spaced to give a regular pattern creating a better balance within the landscape.

It is important to note that as a result of community consultation during the development period, the Project has undergone many changes. The above design principles have been considered in the siting of the proposed turbines to provide a balanced appearance along the plains.

15.2.2 Wind Turbine Design and Colouring

Turbine design and colouring are an important factor. The turbines will have a matte white finish and consist of three blades which is consistent with the current turbine models being considered.

The important factors to achieving a visual consistency through the landscape include:

- Uniformity in the colour, design, rotational speed, height and rotor diameter.
- The use of simple muted colours and non-reflective materials to reduce distant visibility and avoid drawing the eye.
- Blades, nacelle and tower to appear as the same colour.
- Avoidance of unnecessary lighting, signage, logos etc

15.3 Mitigation Measures - Residences

A detailed assessment of dwellings identified within the visual catchment has been undertaken and (where possible) mitigation methods have been recommended to assist in reducing any residual impacts.

Of the 27 non-involved dwellings assessed within 3,000 m of the nearest turbine a total of nine (9) non-involved dwellings were identified through the visual assessment as having the potential for a moderate or high visual impact. Mitigation measures have been suggested for all nine (9) non-involved dwellings. It is noted that provision of screen planting would potentially reduce the impact of these non-involved dwellings to low.

Proposed mitigation measures have been included in **Appendix A** and will be undertaken in consultation with the landowners. Principles for screen planting and supplementary planting have been included as follows. These principles can be implemented to reduce the potential visual impacts at dwellings in excess of 3,000 m of the nearest turbine post construction is deemed necessary.

15.3.1 Residence Screen Planting

In circumstances where residences are subject to visual impact, screen planting is an option proposed to assist in mitigating views of turbines from residential properties. As the viewing location of the proposal would be generally fixed, there is opportunity to significantly reduce potential visual impact from the proposal.

It is noted that the planning permit conditions for the Delburn Wind Farm (Victoria) included a condition requiring the developer to offer screening planting to dwellings within 6 km. Therefore the Proponent has committed to offering screen planting to all neighbouring dwellings within 6 km of the nearest turbine for the Project.

In order to achieve visual screening planting between the intrusive element and the homestead, tree planting could be undertaken in consultation with the relevant landowners to ensure that desirable views are not inadvertently eroded or lost in the effort to mitigate views of the turbines.

An example of how screen planting could be used to mitigate potential views towards visible turbines from Dwelling 295 - Refer to **Figure 29**. Note, this is an example only and a detailed analysis would be required to determine the extent of visibility, existing planting and orientation of the residence.

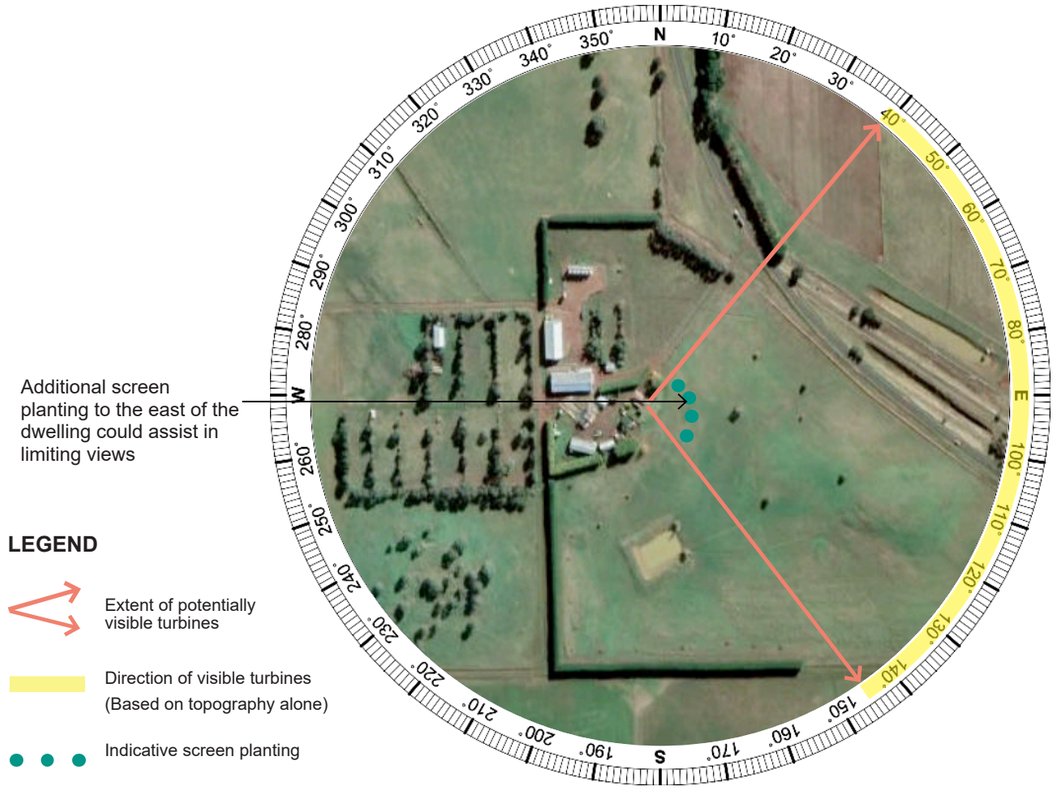

Figure 29 Example of Screen Planting - D295 (Source: Google Earth 2022)

15.3.2 Residence Supplementary Planting

Due to windbreak and hedgerow planting being prominent character element of the Project Area, views to the Project are likely to be fragmented or screened by vegetation from a number of dwellings. Where turbines are located close to the dwelling or existing intervening vegetation is insufficient, supplementary planting has been proposed as a mitigation method. Supplementary planting should be in keeping with the existing landscape character.

Where screening may be required from a static position (ie. kitchen / living room window) screen planting sited away from the residence ensures desirable views across land are retained where possible, whilst selectively screening views to WTGs.

An example of how screen planting could be used to mitigate potential views towards visible turbines from Dwelling 339 - Refer to **Figure 30**. Note this is an example only and a detailed analysis would be required to determine the extent of visibility, existing planting and orientation of the residence.

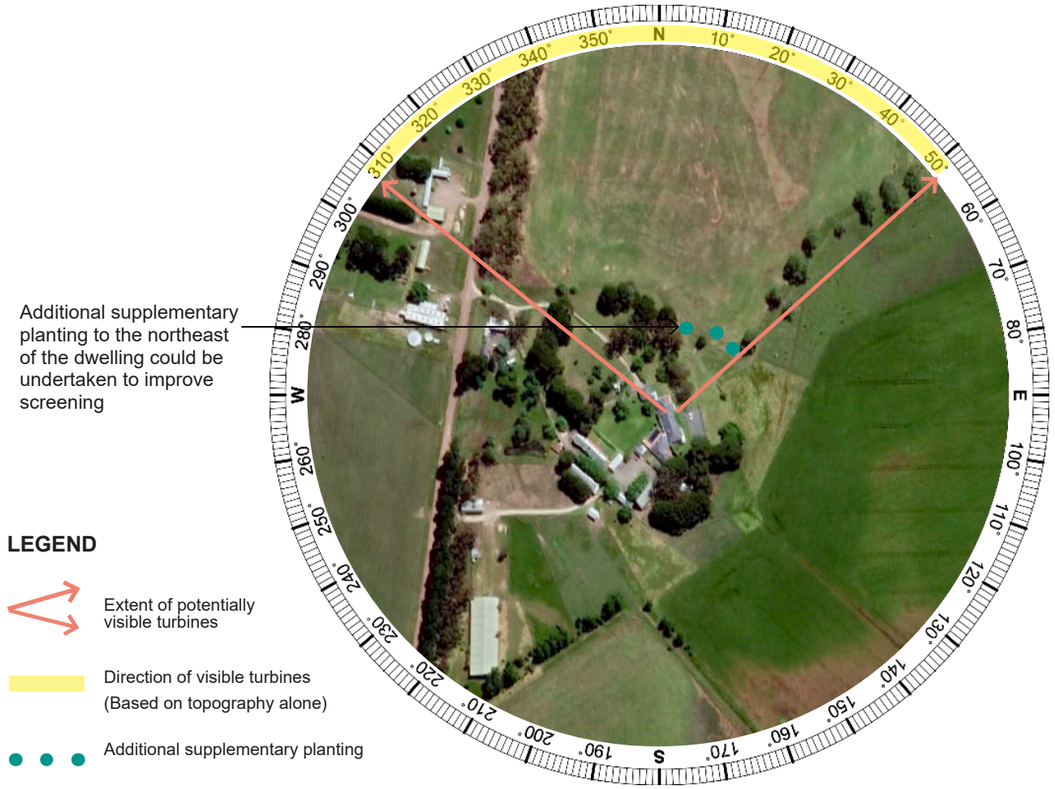

Figure 30 Example of Supplementary Planting - D339 (Source: Google Earth 2022)

15.4 Landscaping Principles

The existing character of the landscape allows for a variety of methods of landscaping and visual screening which will remain in keeping with the landscape character. General guidelines to adhere to when planning for landscaping and visual screening include:

- Planting is recommended post construction in consultation with the landowner.
- Planting should remain in keeping with existing landscape character.
- Species selection is to be typical of the area.
- Planting layout should avoid screening views of the broader landscape.
- Avoid the clearing of existing vegetation. Where appropriate reinstate any lost vegetation.
- Allow natural vegetation to regrow over any areas of disturbance.

Locally native plant species are preferred, as they help to preserve the landscape character and scenic quality of the area as well as building habitat for local fauna. Native species are also well-suited to local conditions (ie. soil, climate, etc.) and will build on the existing vegetation assemblages in the area.

SUMMARY OF MITIGATION MEASURES	
Associated Infrastructure	• Where possible a recessive colour palette will be selected for structures such as the O&M Facilities to integrate into the existing landscape. The colours of the ancillary infrastructure will be considered in the detailed design phase to ensure minimal contrast and to help blend into the surrounding landscape to the extent practicable. • Avoidance of unnecessary lighting, signage, logos on associated infrastructure. • Use of subtle colours and a low reflectivity surface treatment on power poles to ensure that glint is minimised. • All ancillary structures not required for the ongoing operations and maintenance of the Project will be removed and the land rehabilitated so that it can return to agricultural use. • Consideration will be given to controlling the type and colour of building materials used.
Access Tracks	• Any new roads / access tracks will be constructed to minimise cut and fill and avoid the loss of vegetation. • Allow for the provision for down sizing roads or restoring access tracks to existing condition following construction where possible. • Utilise local materials where possible and practical.
Aviation Hazard Lighting	• Where possible, careful consideration of WTGs upon which Aviation Hazard Lighting is installed to avoid unnecessary impact upon residences. • Treatment of the rear of blades with a non-reflective coating to reduce reflection off the rotating blade at night. • Use of the lowest candela intensity allowed by CASA. • Permanent light shielding is also an option to reduce impact on residences within six (6) km of the installation.
Lighting	• Control the level of lighting used and only light areas that are required. • Reduce the duration of lighting and switch off lighting when it is not required. • Use the lowest intensity required for the job. • Consider lighting direction or utilising shields to avoid unnecessary light spill. • Use non-reflective dark coloured surfaces to reduce reflection of lighting.
Construction	• Where possible minimise visual clutter during the construction phase by limiting the number of construction vehicles, cranes, and equipment visible on-site at any given time. Store equipment away from visible areas. • Minimise dust to reduce light pollution.
Landscape Screening - Residences	• Landscape screening will be offered to dwellings identified as having a moderate or high visual impact rating. • Landscape screening will be undertaken in consultation with the landowners.

Table 17 Summary of Commitments to Mitigation Measures

16.0 Conclusion

It is inevitable that the placement of large scale wind turbines in a rural landscape will alter the existing landscape character of the area to some degree. The Project is located in an area that is highly modified and consists of typically rural, pastoral land with isolated patches of scattered and dense vegetation.

With all visual impact assessments the objective is not to determine whether the Project is visible or not visible, but to determine how the Project will impact on the visual amenity and landscape. If there is potential for negative impact, this impact, and any mitigation methods must be investigated in order to reduce the impact to an acceptable level.

Although this LVIA determines the visual impact of the turbines and ancillary infrastructure, the overall visual impact of the Project will vary greatly depending on the individual viewer's sensitivity to and acceptance of change. The sensitivity towards change varies greatly depending on the user's connection with the landscape. For example visitors to the area may perceive the wind farm as an interesting feature of the landscape. This may contrast with a resident who passes the wind farm daily who may have a more critical perception of the visual presence of the wind farm.

The visual impact of the turbines are reduced as the distance of the vantage point from the Project is increased. This has been established through the preparation of photomontages from locations at varying distances. Although the area is characterised by large, flat to gently undulating land that is generally cleared, it is understood that the visibility decreases as one move further away from the turbines. Within the local setting, existing natural and introduced vegetation surrounding dwellings and along roadsides significantly reduces visibility towards the Project.

The greatest visual effect is most likely to be felt by residents in the immediate vicinity of the wind farm. In most instances, the homesteads have dense screening vegetation protecting the house from strong winds which may assist in screening views to the wind farm. The LVIA concludes that there are limited opportunities to view the Project from non-involved dwellings within 3,000 m of the Project. Of the 27 non-involved dwellings assessed, 18 are likely to have no views to the Project or a low visual impact. Seven (7) non-involved dwellings are likely to have a moderate visual impact, and two (2) dwellings have been assessed as having a high visual impact rating.

Mitigation methods incorporated into the design process in conjunction with landscape and visual screening will have a positive effect on reducing any visual impact of proposed wind farm from the non-involved dwellings identified as having a moderate or high visual impact. Through mitigation methods described it will be possible to significantly reduce the visual impact to an acceptable level at all non-involved dwellings.

When implemented with appropriate environmental management, the development of wind farms can be undertaken with low impact on the surrounding environment whilst providing positive local, regional and national benefits.

It is our opinion that the proposed Hexham Wind Farm would have a low visual impact on the regional context. Through the implementation of mitigation methods as recommended in the report and further defined through ongoing consultation with local residents, the potential visual impact from specific locations can achievably be diminished to an acceptable level.

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