Appendices

Appendix C Report of Photomontage Methodology

Specific Landscape Areas

- 1 Taralga township
- 2 Goulburn Road
- Quiggs Road 3
- 4 Stonequarry Cemetery

- 5 Omaru
- 6 Bannaby Hill
- Alders and Crees Road 7



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Figure 3: Specific Landscape Areas

The following report was prepared by RES Southern Cross to demonstrate the use of site photographs, digital terrain data and computer software to produce the photomontages of the proposed wind farm development.

Photomontages using ReSoft's WindFarm software package

Introduction

This report summarises the technique used by RES Southern Cross to produce the photomontages for the environmental impact studies of the Taralga windfarm.

The technique is summarised in four steps. Details of the validation of this technique are also provided.

Step 1 - photograph

A photograph is taken on site, and the following information is noted at the location of the photograph

- Easting and northing co-ordinates using a GPS
- View direction using a high resolution compass
- Included angle of view derived from camera lens setting

For this example the following information was recorded for the photograph in Figure 1.

Location: 762177, 6190983 View direction: 63.0 degrees Included angle of view: 54.0 degrees



Figure 1 Photograph taken on site

Step 2 – software setup

Digital terrain data, the turbine locations and their geometry are loaded in to the software.

The setup for Taralga used the following information

- Digital terrain data from LPI (on an 25m grid, vertical accuracy <1m)
- 3D geometry of the NM82 wind turbine (69m hub height and 82m rotor diameter)

Once the information is loaded, a virtual "wireline" representation of the windfarm can be viewed. An example of the wireline output for Taralga is shown in Figure 2.

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Figure 2 wireline output

Step 3 – photograph alignment

To ensure that the locations of the turbines are accurately represented, it is important to check that the photograph is aligned with the terrain. To do this the viewer's pitch angle and the rotational angle of the photograph are adjusted until the wireline terrain matches the terrain in the photograph. It is important to note that the digital terrain data does not include vegetation, so the adjustments should be made to fit the terrain and not the tree tops.

The results of this alignment are shown in Figure 3.



Figure 3 photograph alignment

Step 4 – wind turbine rendering

Once the photograph is correctly aligned, the final stage is to render the turbines. This takes the 3D wind turbine geometry and creates a real world representation on the photograph. At this stage the angle of the rotor, the location and strength of the sun and the turbine's colour are set to ensure a realistic representation. To do this, the rendered turbines are checked against photographs of existing windfarms.

The rendered output is shown in Figure 4. Once rendered, the image can be exported for use in reports. The final exported image is show in Figure 5.



Figure 4 rendered output

Figure 5 final photomontage



Software validation

ReSoft's WindFarm package is a complete windfarm design tool. One part of this package is the photomontage tool. RES Southern Cross use this software for photomontages since we have found this to be the most accurate tool available.

This software is entirely independent of RES Southern Cross and has been rigorously validated by ReSoft. It has been used in the successful planning applications of many windfarms worldwide.

As a further validation for the Taralga photomontages, the existing 70m wind monitoring mast can be used as a check on the rendered wind turbine dimensions. Figure 6 shows that the 70m wind monitoring mast is consistent with the 69m rendered wind turbine towers.



Figure 6 rendered 69m towers next to existing 70m mast