

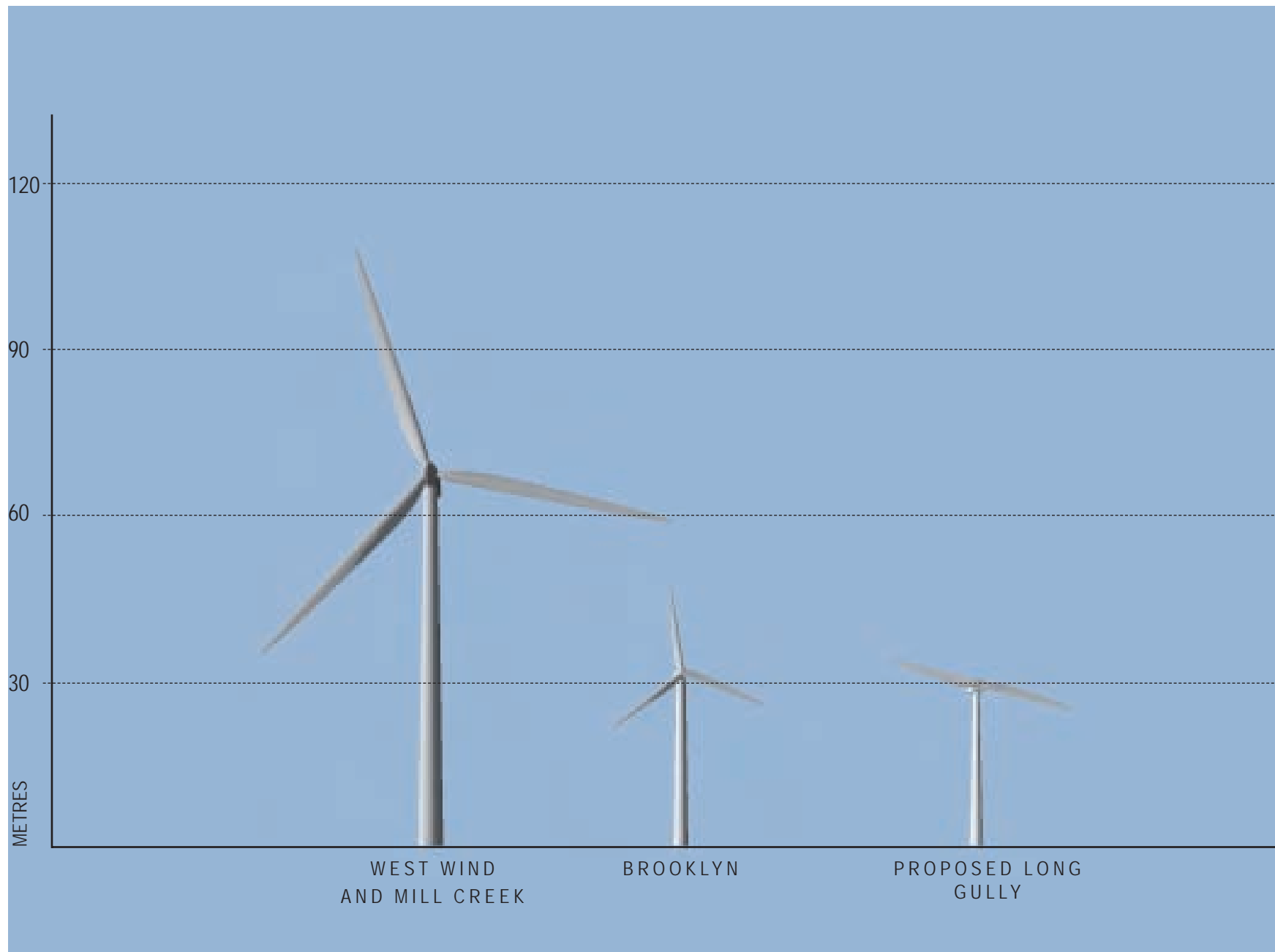
SECTION FIVE - APPENDIX A AND B

LONG GULLY WIND FARM MAY 2009 JOB NUMBER 2700



Appendix A Photograph Simulations Methodology

- Photographs were taken with a 50mm fixed lens on Nikon D40x Digital SLR camera. Locations identified were fixed using GPS with accuracy of 5m. Reference points in the landscape were also located to assist referencing of the photograph to the digital terrain model.
- A sequence of photographs were taken from each viewpoint and later stitched together to form a panorama. Photographs were overlapped by approximately 30%, edges cropped prior to stitching to eliminate edge distortion, and stitching was undertaken manually.
- A digital terrain model was created incorporating 3D models of the wind turbines using WindPRO software. The model used 5m and 2m contour information within the wind farm area, and 20m contour for the surrounding landscape.
- Computer images were generated within the digital model from the same locations as the photographic viewpoints. The image was overlaid and aligned with the photograph using reference points and visual terrain matching.
- The time and weather when the photograph was taken was entered into the programme in order to replicate lighting conditions. Photographs represent a range of conditions including blue and overcast skies, and a range of backlit and front lit situations.
- The wire-frame digital terrain was then switched off leaving the wind turbines in their correct location and scale relative to the photo. Lower parts of wind turbines were erased where they would be behind foreground topography or vegetation, using 'Photoshop' software.
- The completed photomontage is presented over two pages as before and after images shown at the same scale.
- The photomontages are reproduced so that the image appears similar in scale when viewed from the specified 'reading distance' (i.e. 400mm) as the view would appear in reality. This is calculated as a function of lens field of view, digital sensor size, and 'reading distance'.
- A set of enlarged photograph simulation images have been created to provide further clarification to where each turbine is located within the original photomontage. These images are to be used as a reference guide only and do not portray what would be seen with the human eye.



APPENDIX B
SCALE COMPARISON OF PROPOSED AND EXISTING WIND TURBINES IN THE WELLINGTON REGION