

Schedule 2A - Fast Track Approval Bill – Kaimai Wind Farm

3 May 2024

From: Craig Shearer
To: Ventus Energy
Subject: Adverse Effects – Change in turbine dimension

You have requested that I assess, from a planning perspective whether there will be significant adverse effects upon the environment of changing the dimensions of the turbines, as originally assessed, at the proposed Kaimai Wind Farm. The proposal is to increase the dimensions of the turbines as originally assessed as follows:

Table 1: Original v Proposed turbine dimensions.

	Original application		May 2024 Proposal	
	Turbines 1-17	Turbines 18-25	Turbines 1-17	Turbines 18-24
Tip height	207m	180m	220m	190m
Diameter	160m	146m	185m	175m

In my opinion the only potential adverse effects from these changes in the dimensions of the turbines would be noise, landscape and visual effects. Accordingly, advice from experienced consultants in these fields has been sought to determine what effect, if any, the increased dimensions of the turbines would have on the potential noise and landscape and visual effects.

Altissimo Consulting (Michael Smith, 2 May 2024) – see attachment - has commented on the changes from a noise perspective. His summary is that the 2018 Acoustics Assessment and proposed controls remain valid for the new turbine options. The noise effects of the new turbine options are within the envelope previously assessed and presented in his 2018 report, in which he assessed the slightly smaller turbines.

Mike Moore (1 May 2024), Landscape Architect – see attachment - has assessed the comparative landscape and visual effects of the proposed larger turbines. His assessment is that the larger dimension will make the overall visual effect of the turbines a little more dominant but this effect will be less than minor, given their light visual mass. He also considers that any effect of slower rotation from larger turbines will also be beneficial in terms of amenity impacts.

After taking this advice my conclusion is the changes in the overall design are small, the only discernible change in effects will be visual and the advice is this will be less than minor, which I consider means to be barely noticeable.

Overall, including consideration these changes I have not changed my opinion that the effects of the proposed Kaimai Wind Farm are acceptable.

Craig Shearer

MIKE MOORE

BSc, Dip LA, MRRP, ANZILA

LANDSCAPE ARCHITECT

Memorandum

To Glenn Starr

From Mike Moore

Date 1 May 2024

SUBJECT KWF AMENDED BLADE DIAMETER

Further to your email dated 19 April 2024, I have assessed the comparative landscape and visual effects of the proposed larger turbines. My assessment is based on:

- Review of the comparison diagrams sent 1 May 2024.
- Review of the comparative simulations prepared by Energy3 Ltd for viewpoints B1, B8, B11, and B17 (prepared / modified 2018 and April 2024).
- Previous advice that there will not be need for significantly increased scale of earthworks associated with access roads, turbine platforms and laydown areas (emails from Jack Turner and Craig Shearer, both dated 27 August, 2020, and telephone conversation with Glenn Starr, 14 September 2020).
- Previous advice that the proposed larger diameter turbines will rotate more slowly than those as currently in the application (telephone conversation with Glenn Starr, 14 September 2020).

I understand that the amendment proposed will result in:

- an increase in the overall height of the turbines as follows:
 - Turbines 1 – 17 – increase from 207m to 220m (increase of 6.3%)
 - Turbines 18 – 24 – increase from 180m to 190m (increase of 5.5%)
- an increase in the diameter of the rotors as follows:
 - Turbines 1 – 17 – an increase from 160m to 185m (increase of 15.6%)
 - Turbines 18 – 24 – an increase from 146m to 175m (increase of 19.8%)

In my assessment this will make the overall visual effect of the turbines a little more dominant but this effect will be less than minor, given their light visual mass. I also consider that any effect of slower rotation will also be beneficial in terms of amenity impacts.

A handwritten signature in blue ink, appearing to read 'Mike Moore', with a long horizontal flourish extending to the right.

Mike Moore

Registered NZILA Landscape Architect.

Project	Kaimai Wind Farm
Subject	Wind turbine types
Attention	Glenn Starr
Date	2 May 2024
Prepared by	Michael Smith, Principal Acoustics Engineer

1 Introduction

Kaimai Wind Farm Ltd is proposing a 24-turbine wind farm in the Kaimai Range, south of Paeroa. An acoustics assessment was undertaken by Chiles Ltd at the time, and included in the resource consent application, which was publicly notified in 2018.

Since this time, new turbine types have come to the market and are being considered for this wind farm. This letter evaluates whether the above acoustics assessment remains valid.

2 Turbine details

2.1 2018 assessment

The 2018 Acoustics Assessment was not based on a specific turbine type. The modelling used a candidate turbine (Siemens) with a sound power level (106 dB L_{AW}), but with the expectation other makes and models would be considered after consent was granted. Consent conditions are proposed that either turbines would have to comply with this sound power level, or a prediction report would be required to demonstrate compliance with noise limits at receivers. These controls remain applicable to the new turbine options.

The turbine details were set out in Table 1 of the Chiles Ltd report (shown below).

Table 1 Wind turbine data

Parameter	Turbines 1-17	Turbines 18-24
Power regulation	Pitch control, variable speed	Pitch control, variable speed
Gears	Direct drive	Direct drive
Number of turbines	17	7
Maximum A-weighted sound power level	106.0 dB	106.0 dB
Special audible characteristics	None	None
Maximum turbine hub height (AGL)	132 m	112 m
Maximum turbine blade tip height (AGL)	207 m	180 m

2.2 2024 proposal

Turbines with the following geometric parameters are being considered. The turbines have a larger diameter blade, but the hub height has been reduced. Noise modelling is undertaken with a point source at the hub height, and therefore the revised scheme is likely to have (marginally) more terrain scheme than the original design.

No change to the turbine sound power levels is proposed.

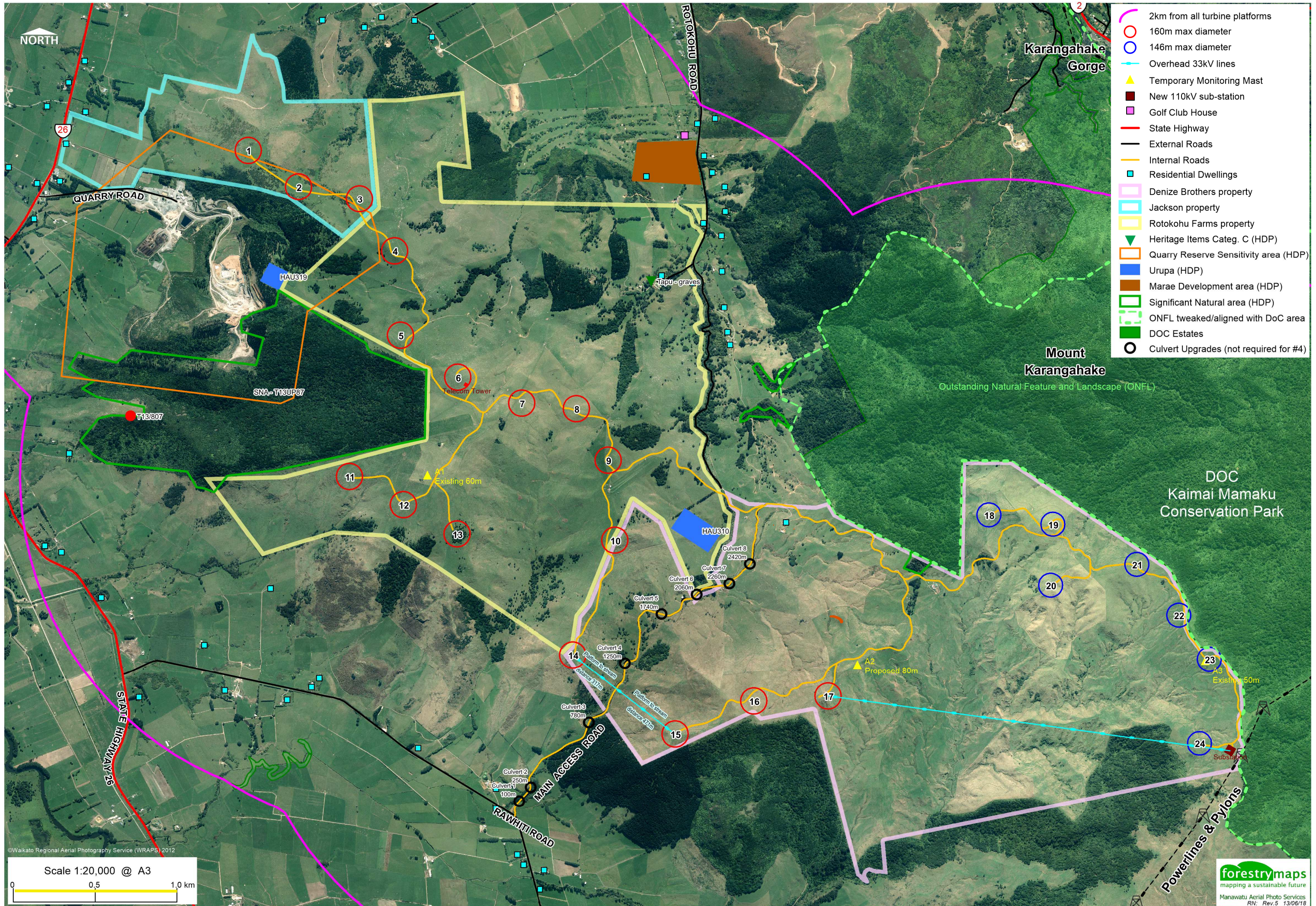
	Turbines 1-17	Turbines 18-24
Tip height	220m	190m
Diameter	185m	175m
Hub height	127.5m	102.5m

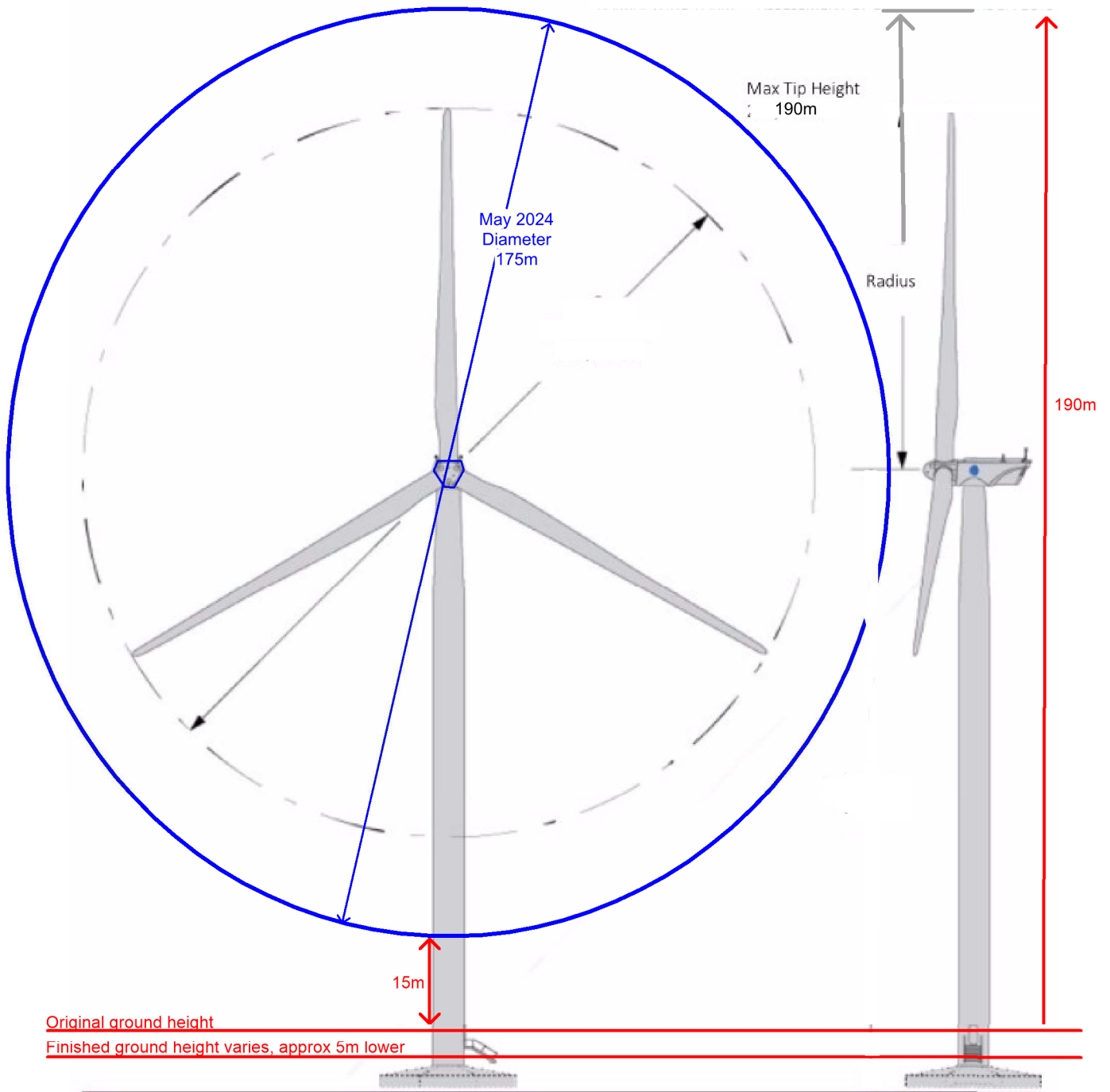
3 Conclusion

In summary, the 2018 Acoustics Assessment and proposed controls remain valid for the new turbine options. The noise effects of the new turbine options are within the envelope previously assessed and presented in the 2018 report.

The conditions remain appropriate for ensuring that the constructed wind farm remains within the consented envelope of effects.







Wind Turbine Diameter Change

Drawing 1

(Scale approx 1:1200 at A4)

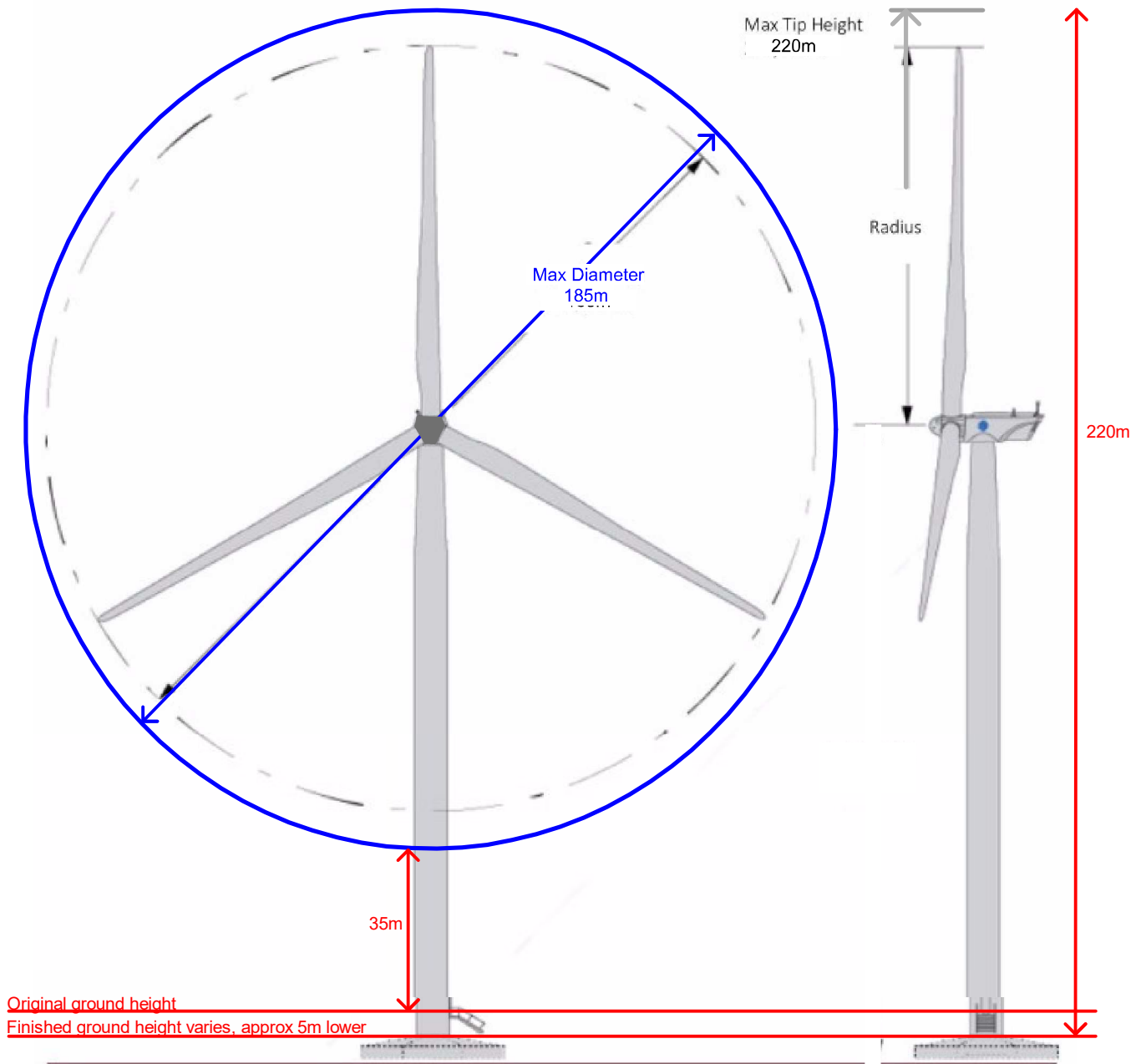


Figure 4. Wind Turbine Schematic

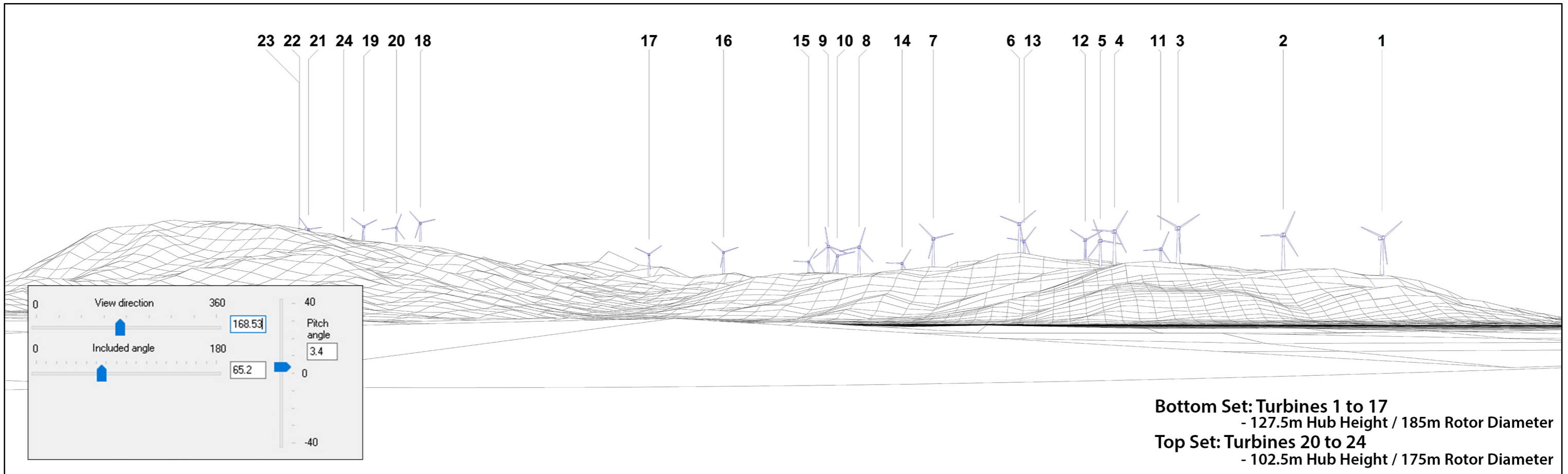
Wind Turbine Diameter Change

Drawing 2

(Scale approx 1:1300 at A4)

Viewpoint B1

Recommended Viewing Distance 31.3cm when printed A3 Landscape (40cm image width)



Kaimai Wind Farm

Photomontages from
Viewpoint B1
Rotokohu Rd, Paeroa

Photomontage details:

- Grid Reference - 1836627 East
- 5858780 North
- Nearest Turbine - 4781 m
- Turbines Visible - 24
- Rotor Diameter - 185 m / 175m
- Hub Height Option - 127.5/102.5 m



Prepared By:

Energy3 Services Limited



For:

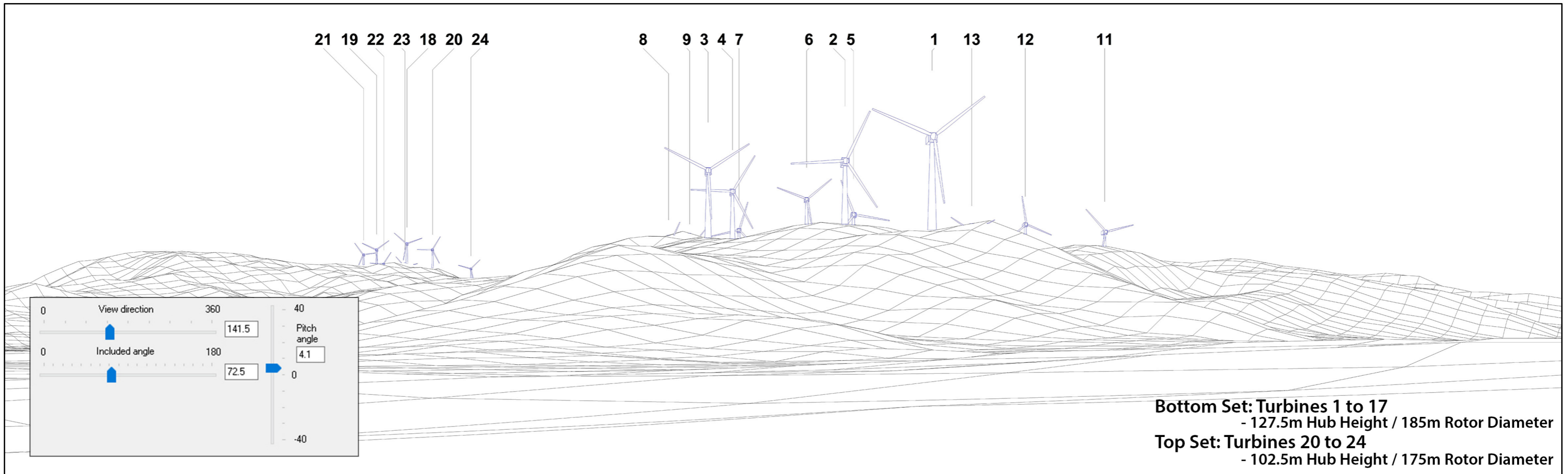
Kaimai Wind
Farm Limited

KAIMAI WIND FARM



Viewpoint B8

Recommended Viewing Distance 27.3cm when printed A3 Landscape (40cm image width)



Kaimai Wind Farm

Photomontages from
Viewpoint B8
State Highway 26, Tirohia

Photomontage details:

- Grid Reference - 1834626 East
- 5855588 North
- Nearest Turbine - 1715 m
- Turbines Visible - 19
- Rotor Diameter - 185 m /175m
- Hub Height Option - 127.5/102.5 m



Prepared By:

Energy3 Services Limited



For:

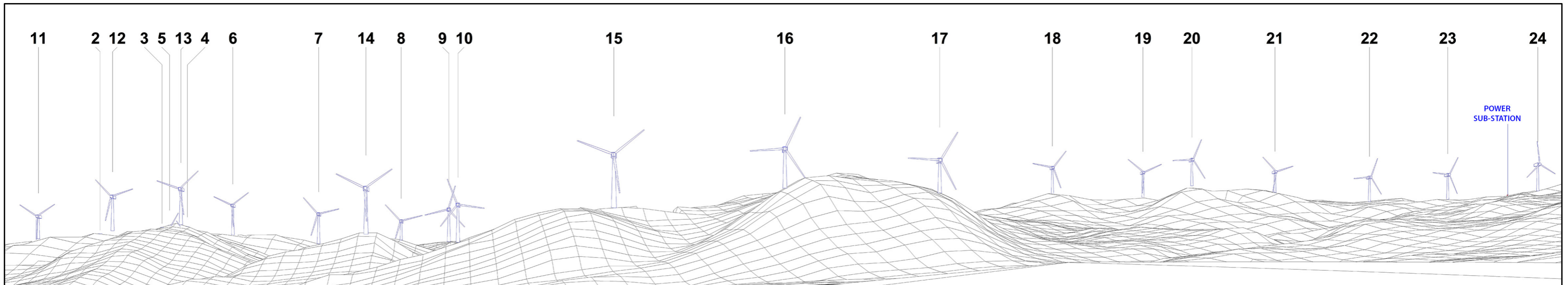
Kaimai Wind
Farm Limited

KAIMAI WIND FARM



Viewpoint B11

Recommended Viewing Distance 24.6cm when printed A3 Landscape (40cm image width)



0 View direction 360
 15.8
 0 Included angle 180
 78.3
 -40 Pitch angle
 2.95
 0
 -40

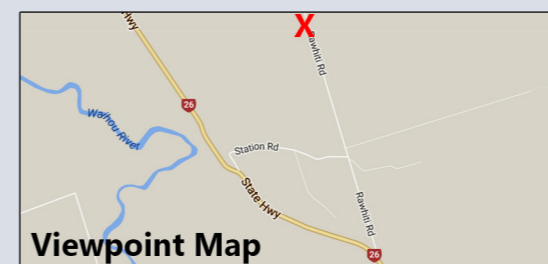
Bottom Set: Turbines 1 to 17
 - 127.5m Hub Height / 185m Rotor Diameter
Top Set: Turbines 20 to 24
 - 102.5m Hub Height / 175m Rotor Diameter

Kaimai Wind Farm

Photomontages from
 Viewpoint B11
 Rawhiti Road (South End)

Photomontage details:

- Grid Reference - 1837778 East
- 5847812 North
- Nearest Turbine - 2757 m
- Turbines Visible - 23
- Rotor Diameter - 185 m /175m
- Hub Height Option - 127.5/102.5 m



Prepared By:

Energy3 Services Limited



For:

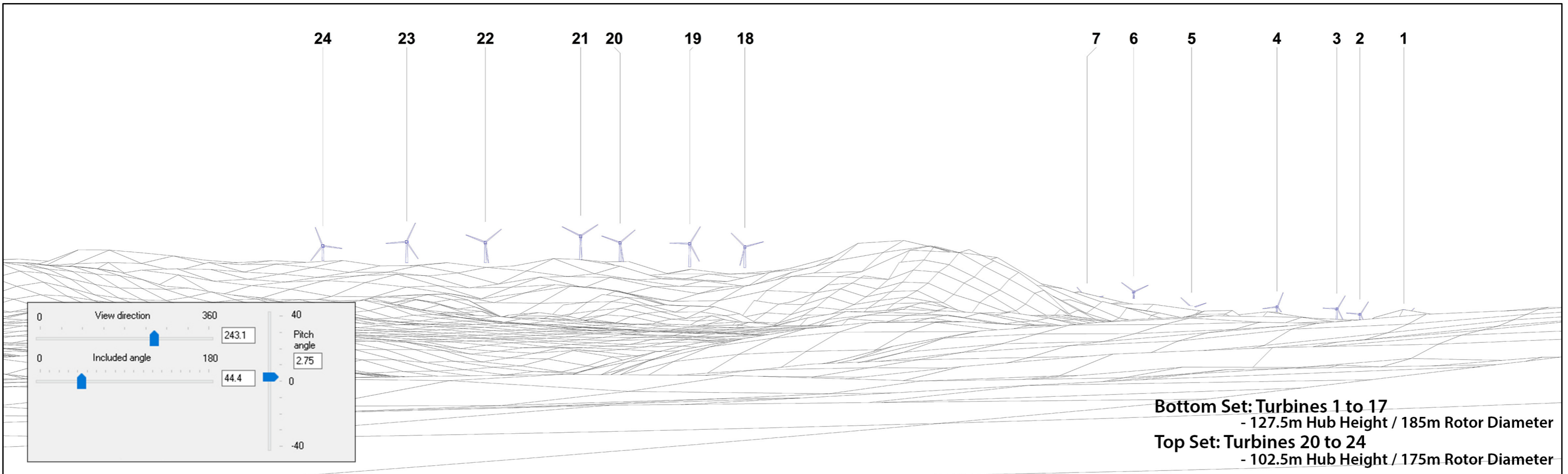
Kaimai Wind
 Farm Limited

KAIMAI WIND FARM



Viewpoint B17

Recommended Viewing Distance 49cm when printed A3 Landscape (40cm image width)

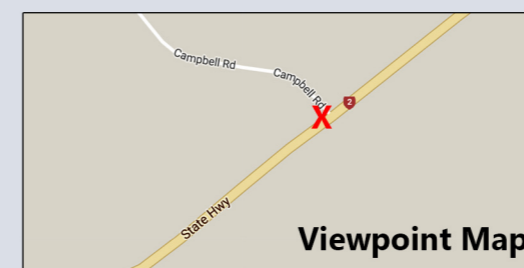


Kaimai Wind Farm

Photomontages from
Viewpoint B17
Cnr of Campbell Rd and Highway 2

Photomontage details:

Grid Reference	-	1848242 East
	-	5856238 North
Nearest Turbine	-	8587 m
Turbines Visible	-	14
Rotor Diameter	-	185 m /175m
Hub Height Option	-	127.5/102.5 m



Prepared By:

Energy3 Services Limited



For:

Kaimai Wind
Farm Limited

KAIMAI WIND FARM

