IS BIGGER BETTER?

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- Increasing turbine heights and efficiency will continue
- 38 wind farms have been consented but 17 of these remain unbuilt
- Some of the unbuilt wind farms date back to 2005
- Turbine heights of consented but unbuilt windfarms varies

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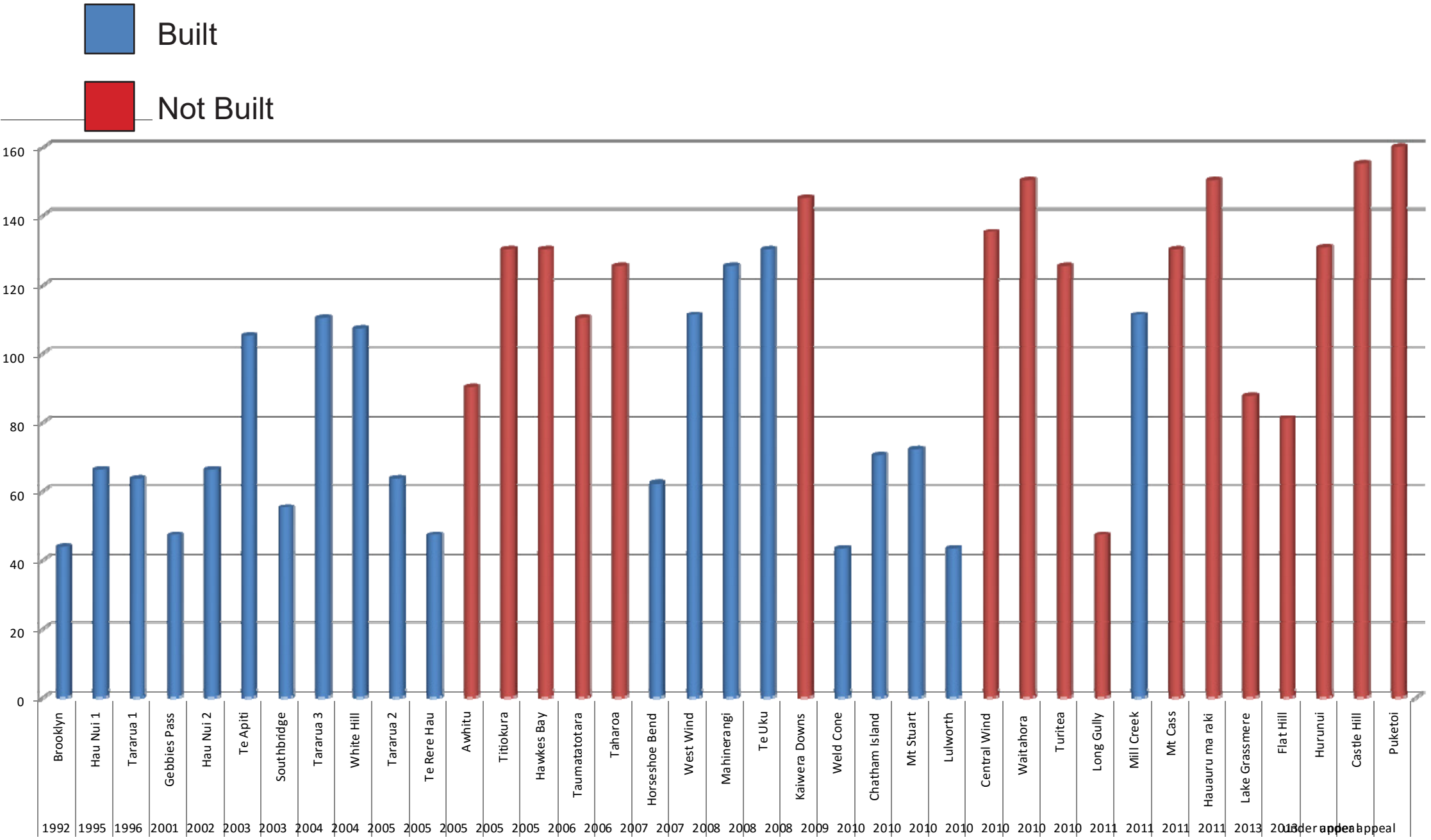
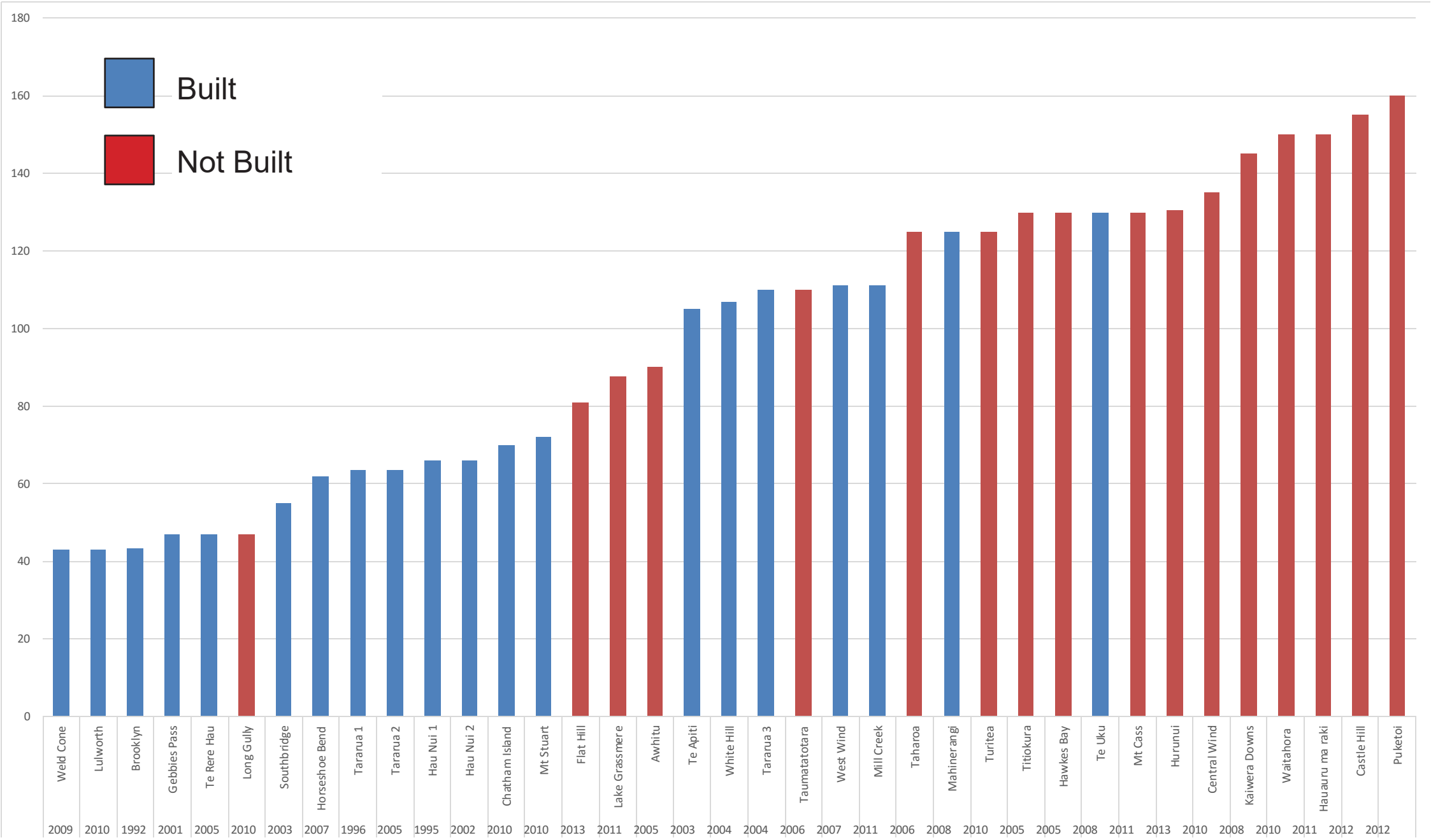
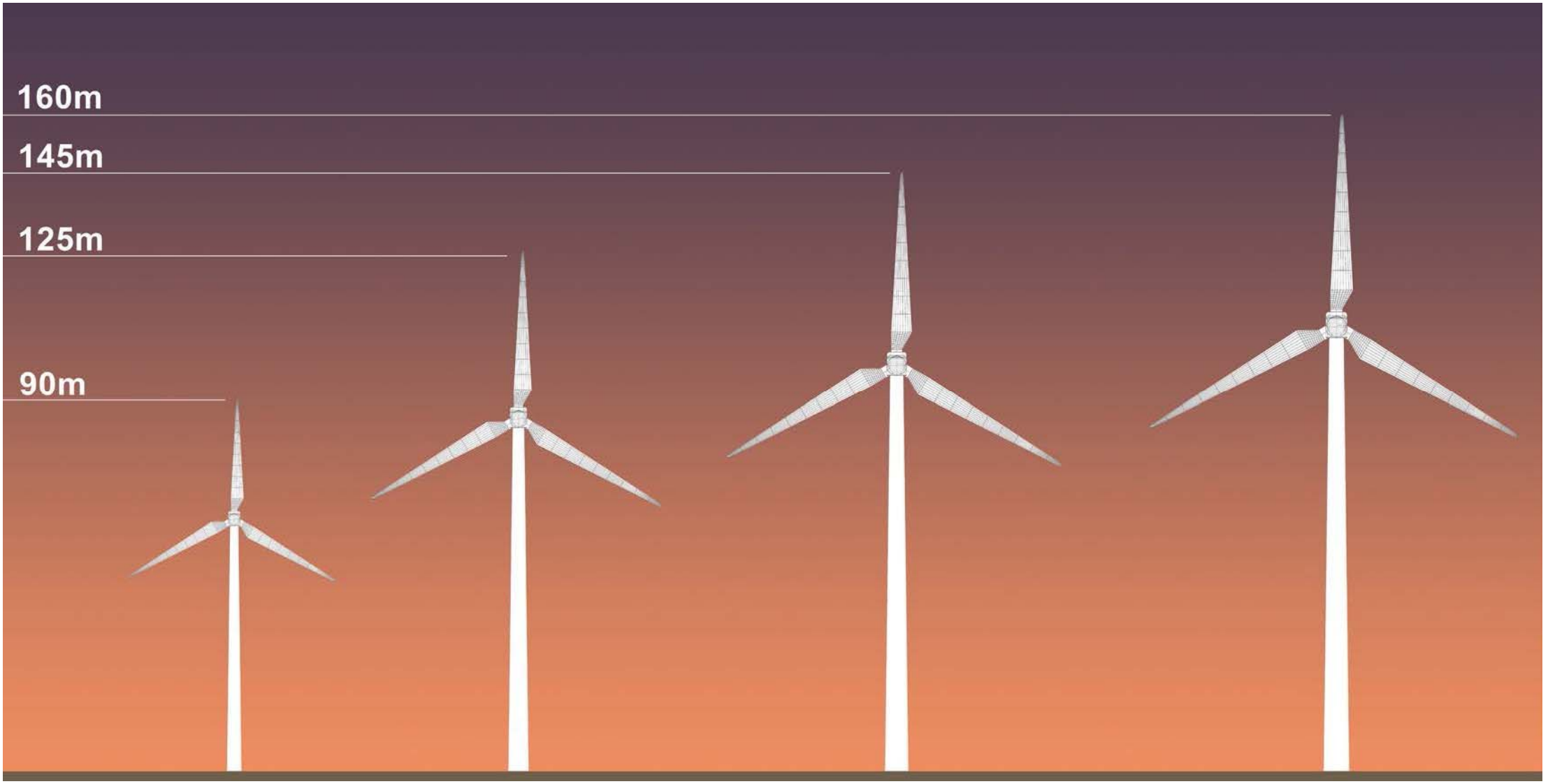


Tip Heights of Wind Turbines (NZ 1992 - 2013)



Increasing Turbine Heights



Turbine Heights Vary

- What is the situation if a developer with a consented but unbuilt wind farm wants to erect taller more efficient turbines
- Seek a variation?
- Lodge a new consent application?
- Build turbines with shorter tower but longer blades with increased efficiency and improved output but within consented tip height?

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- Planning implications of increased tip heights
- Effects of larger turbines in the landscape
- Visual effects of shorter tower and longer rotor blades

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PLANNING CONTEXT

- Recognition of renewable energy within the RMA and policy framework
- RMA S7(j) identifies the befits to be derived from the use of development of renewable energy
- NPS for Renewable Electricity generation 2011
- Wind farms are generally discretionary activity status in many district plans
- Discretionary activity status infers that it's generally an efficient use and development of resources but not necessarily appropriate in all locations
- No standards relating to height or area limits

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ACCOMMODATING CHANGES

- Consents have conditions relating to height
- Height is often a fundamental issue to the consent
- Two options to increase height:

1. Change of condition under S127 (variation)
2. New resource consent

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LANDSCAPE AND VISUAL IMPLICATIONS

- Visual perceptions of structures in our environments change in relation to:

1. Distance
2. Context
3. Time

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- Increased turbine tip height potential for increase in visual catchment
- ZTV first step
- Visibility assessment needed
- Increased visibility does not equate to an increase in visual effects

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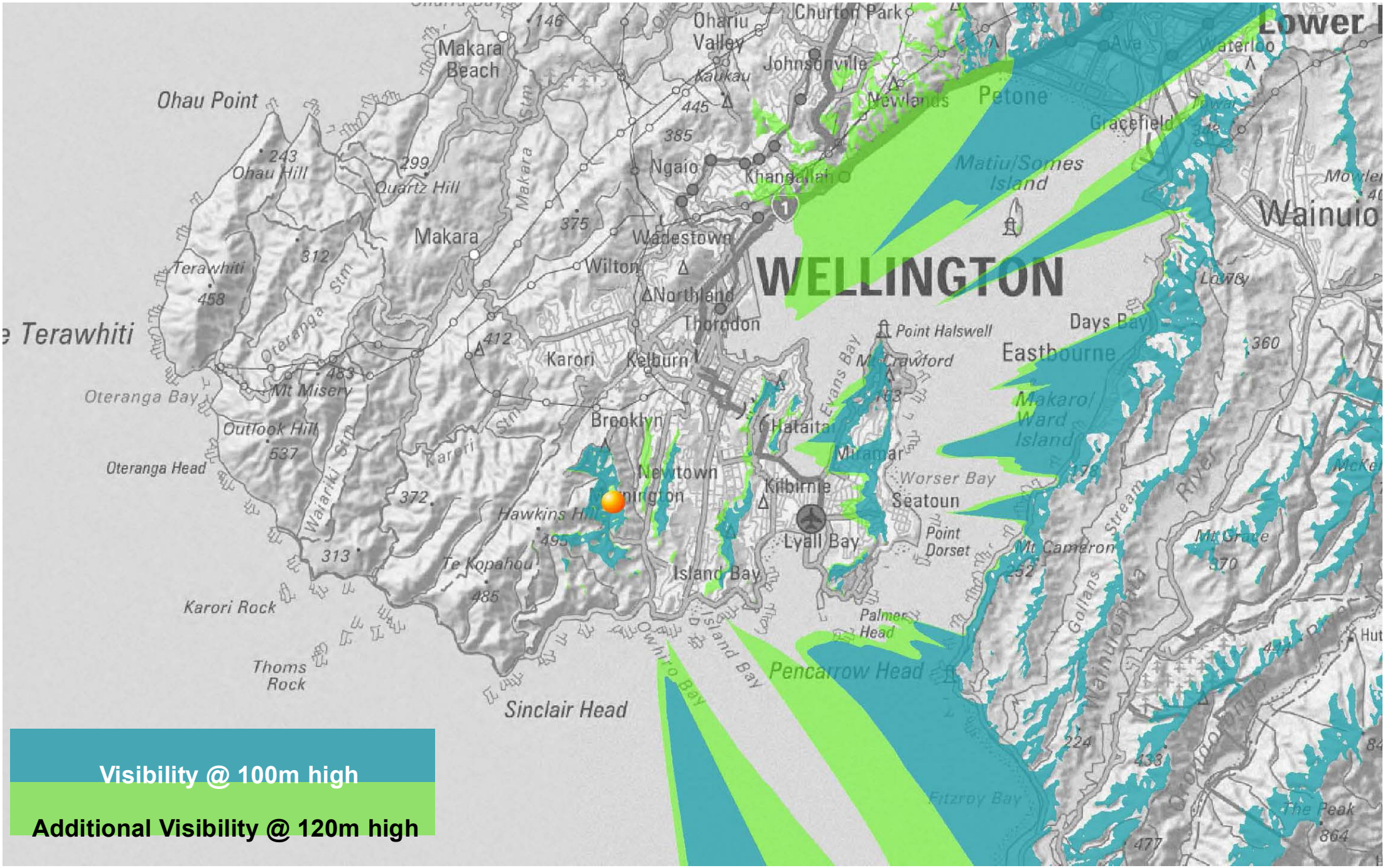

Visible affects of increased turbine height (100m vs 120m)


Distance = 5 km


Distance = 10 km


Distance = 20 km


Distance = 30 km


Distance = 40 km