# Ground Vibration & Infrasound Measurements from a Modern Wind Turbine – Results from NZ

*Paul Botha. Wind Technical Strategy Manager*
*Meridian Energy*

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# Flash

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# Sally

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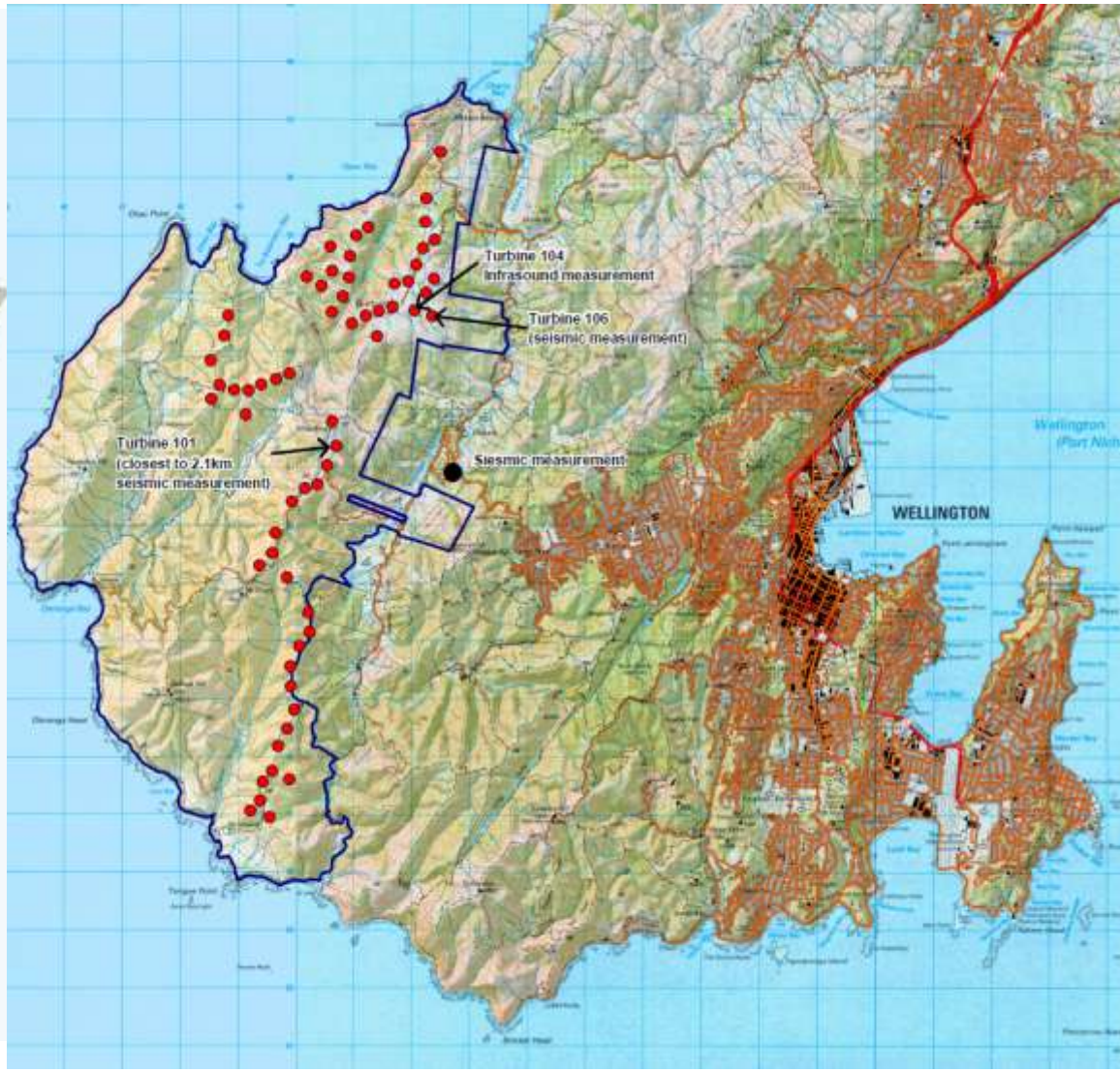
# West Wind


Auckland
Wellington
Christchurch
Dunedin


Turbine 104
Infrasound measurement
Turbine 106
(seismic measurement)
Turbine 101
(closest to 2.1km
seismic measurement)
Siesmic measurement
WELLINGTON

# West Wind

| | |
|---|---|
| Number of turbines | 62 |
| Turbine type | Siemens SWT2.3-82VS |
| Turbine capacity | 2.3 MW |
| Wind farm capacity | 142.6 MW |
| Hub height | 68.3 m |
| Rotor diameter | 82 m |
| Power control | Pitch (variable speed) |

# Noise Monitoring

# Plenty of discussion with local residents

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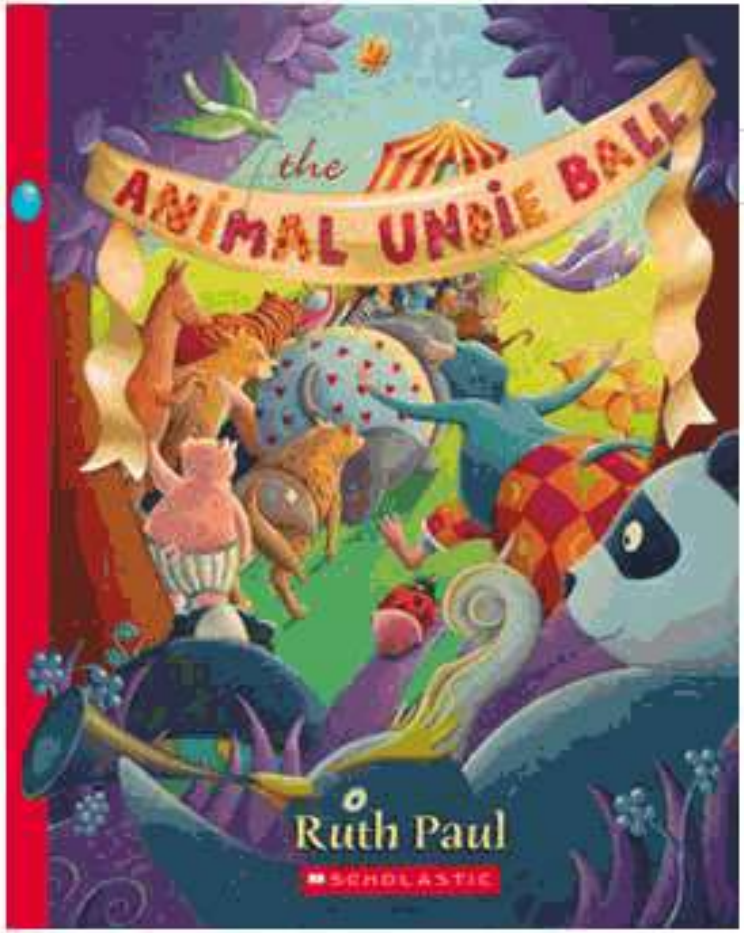


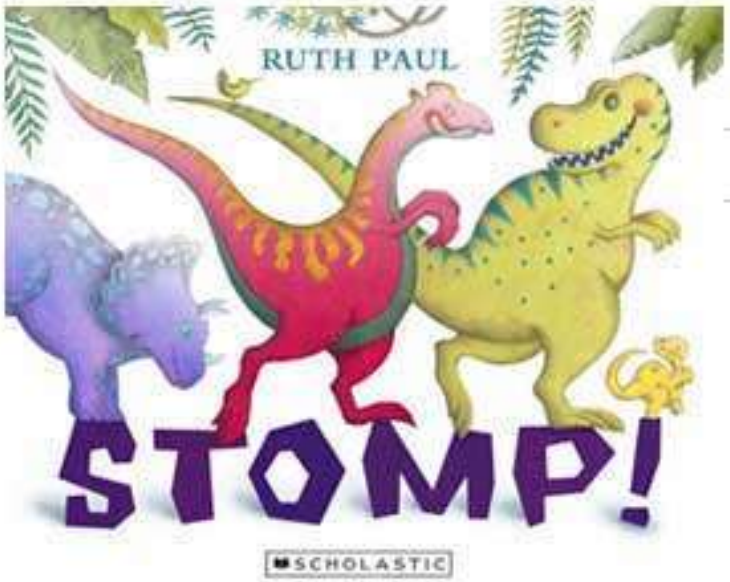

# Concerns that are difficult to address

- Ground vibration

- Infrasound

# Seismometer at 90m

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# Seismometer at 2 km

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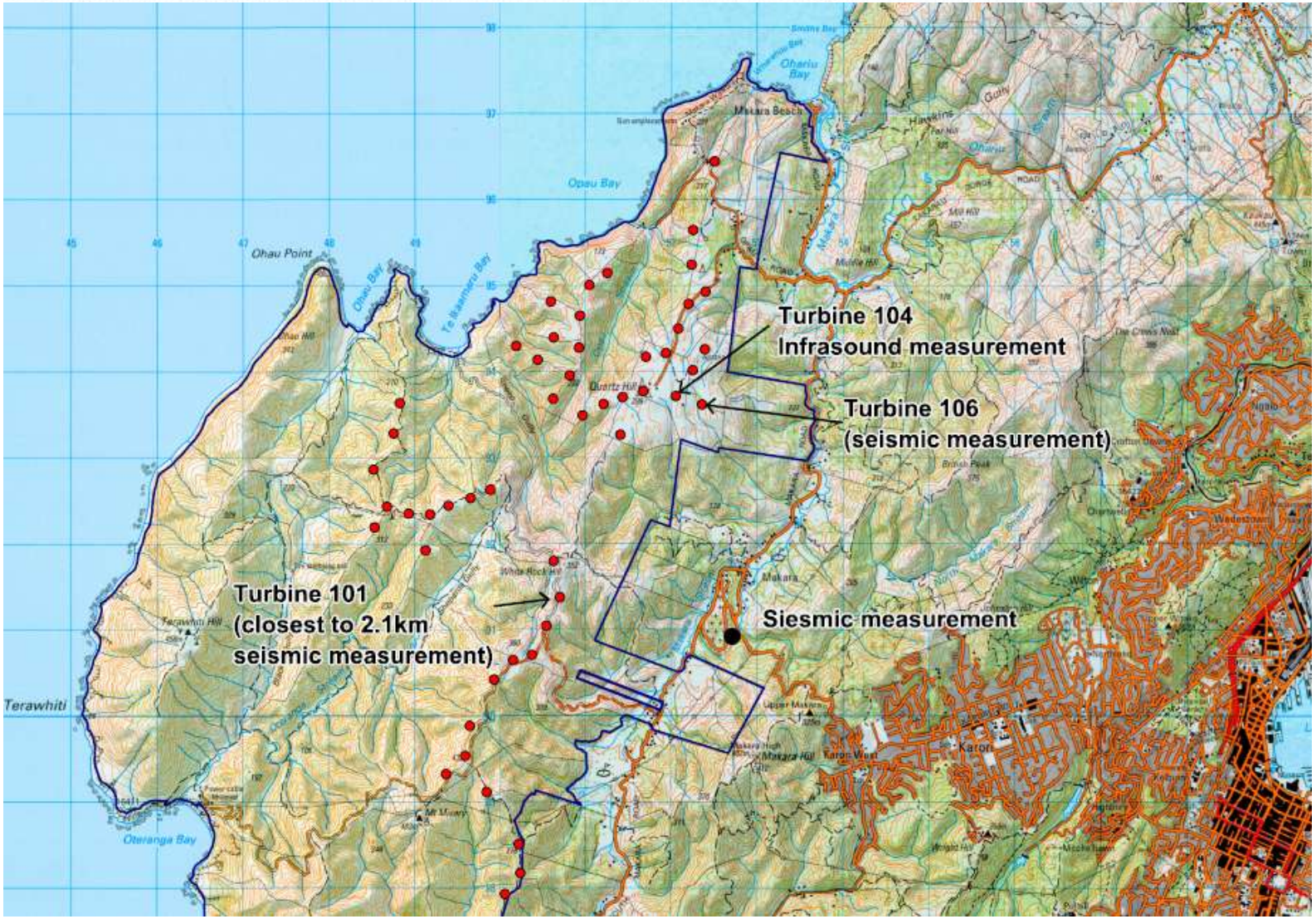
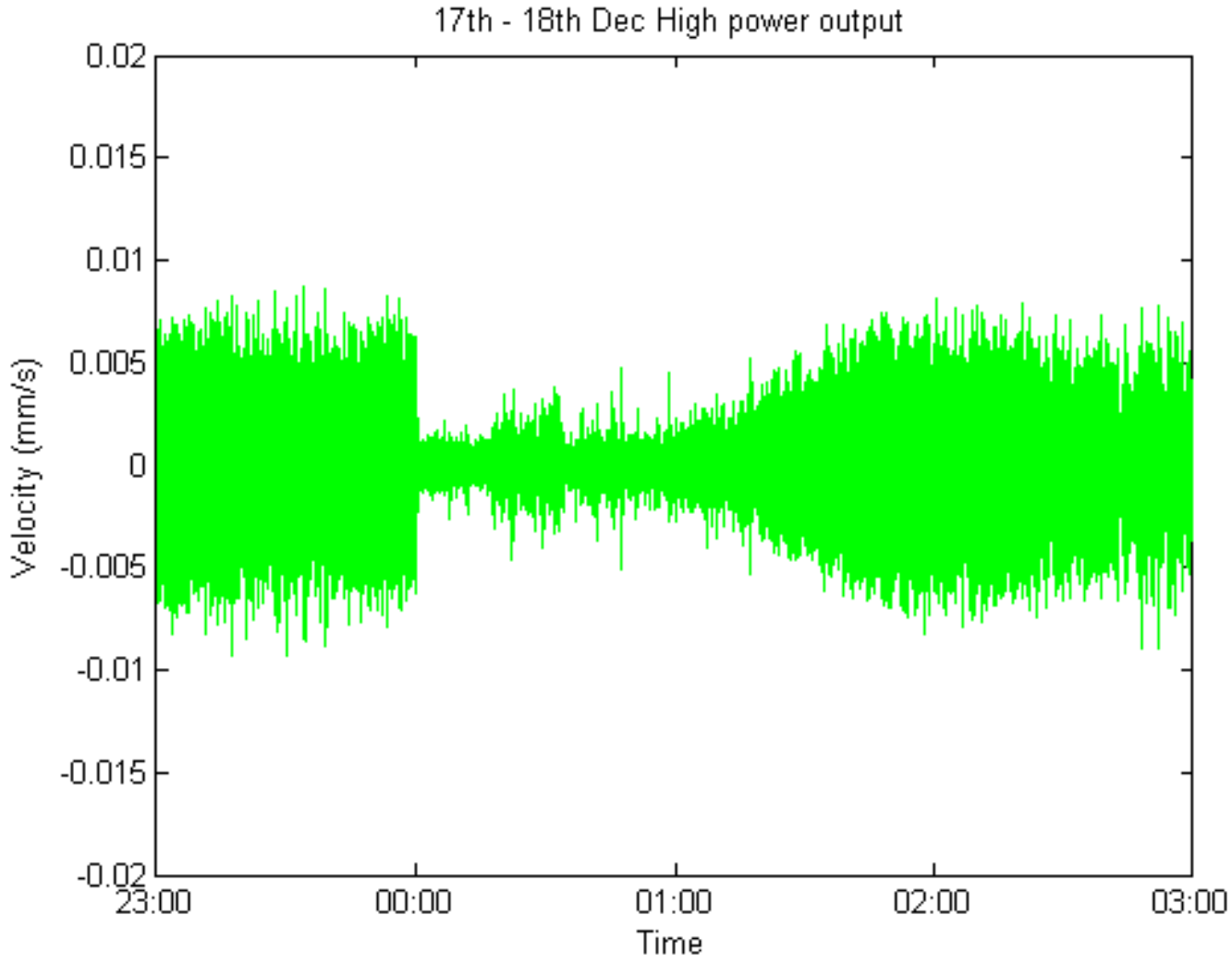
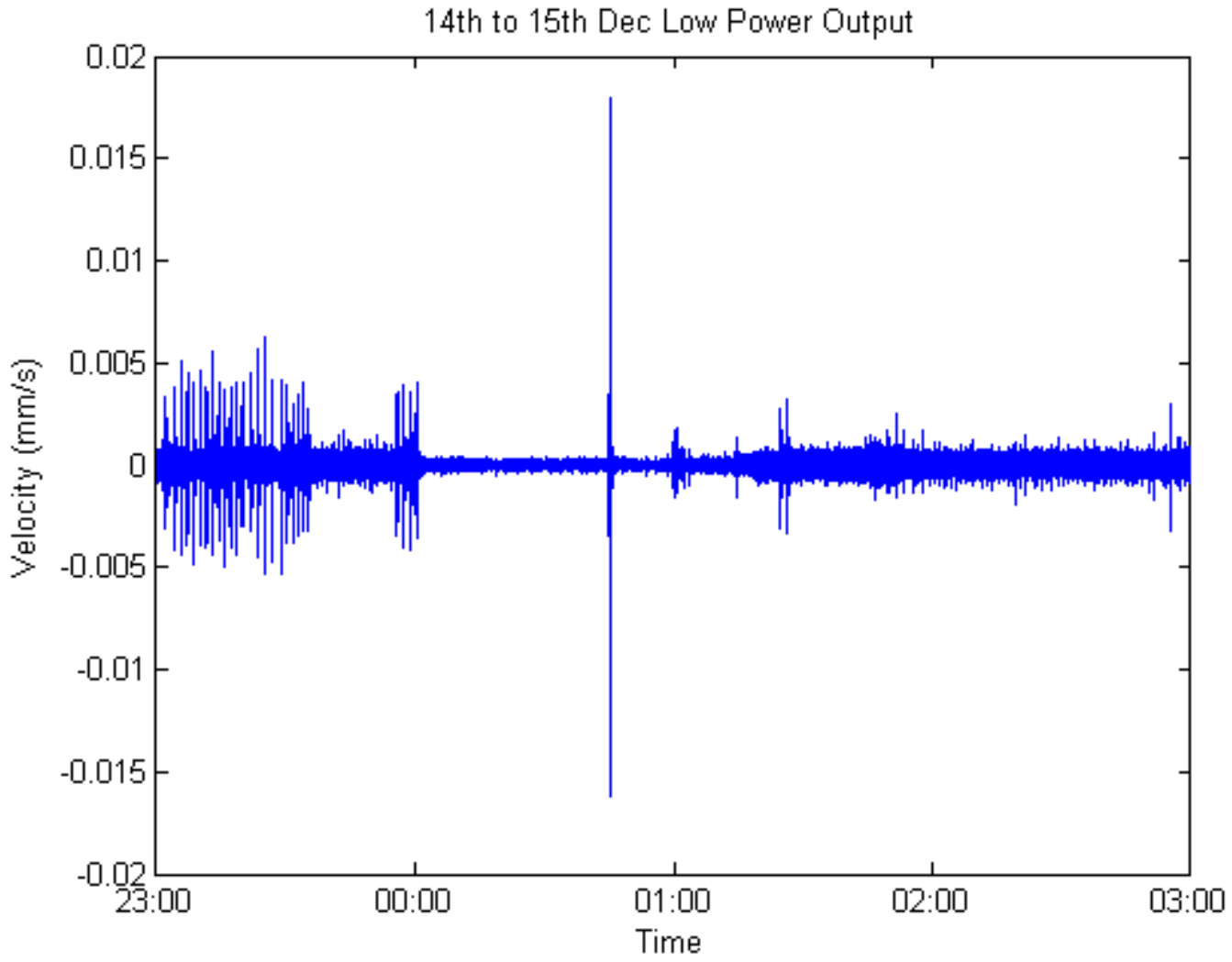
# Measurement locations



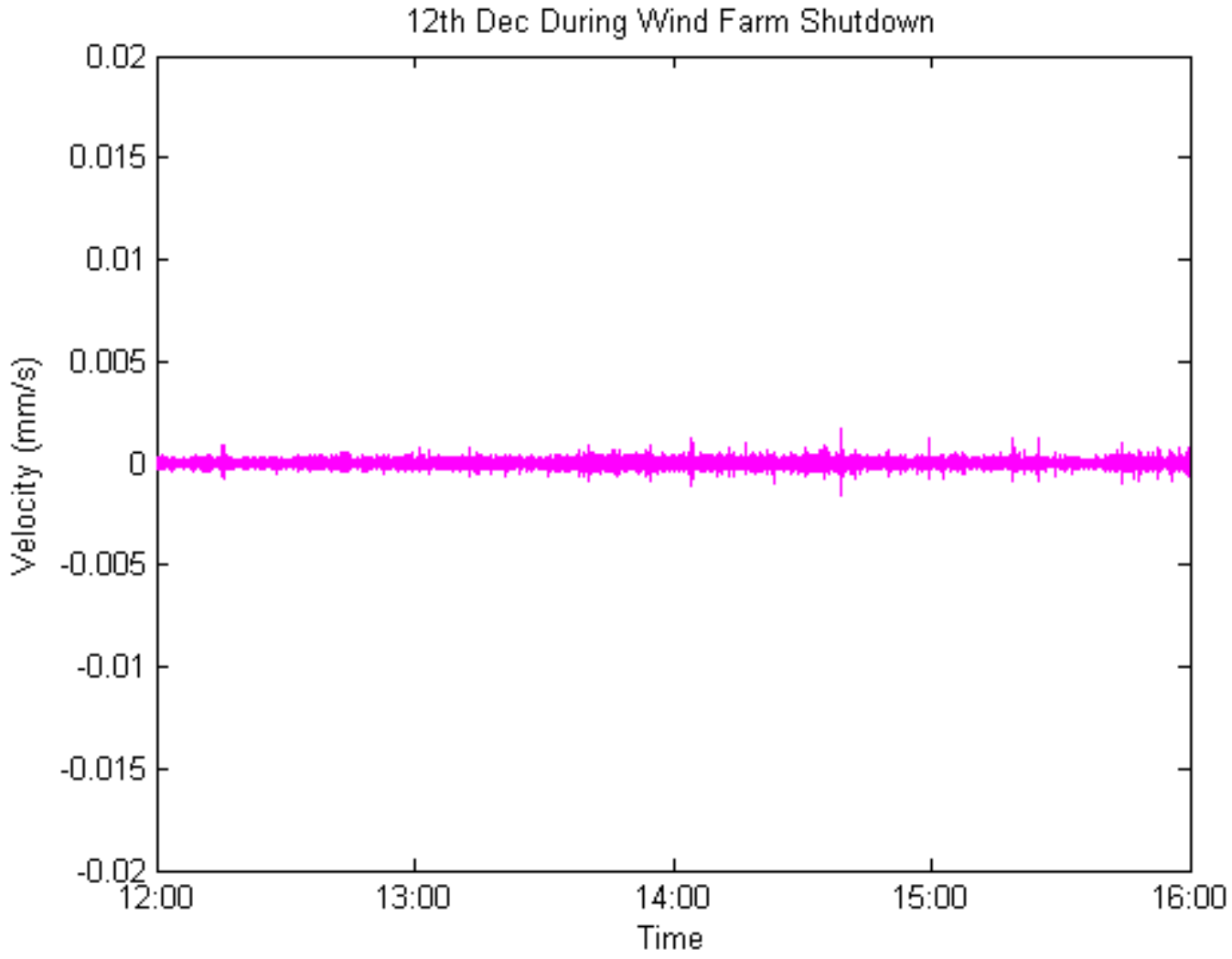
# High power – ground vibration



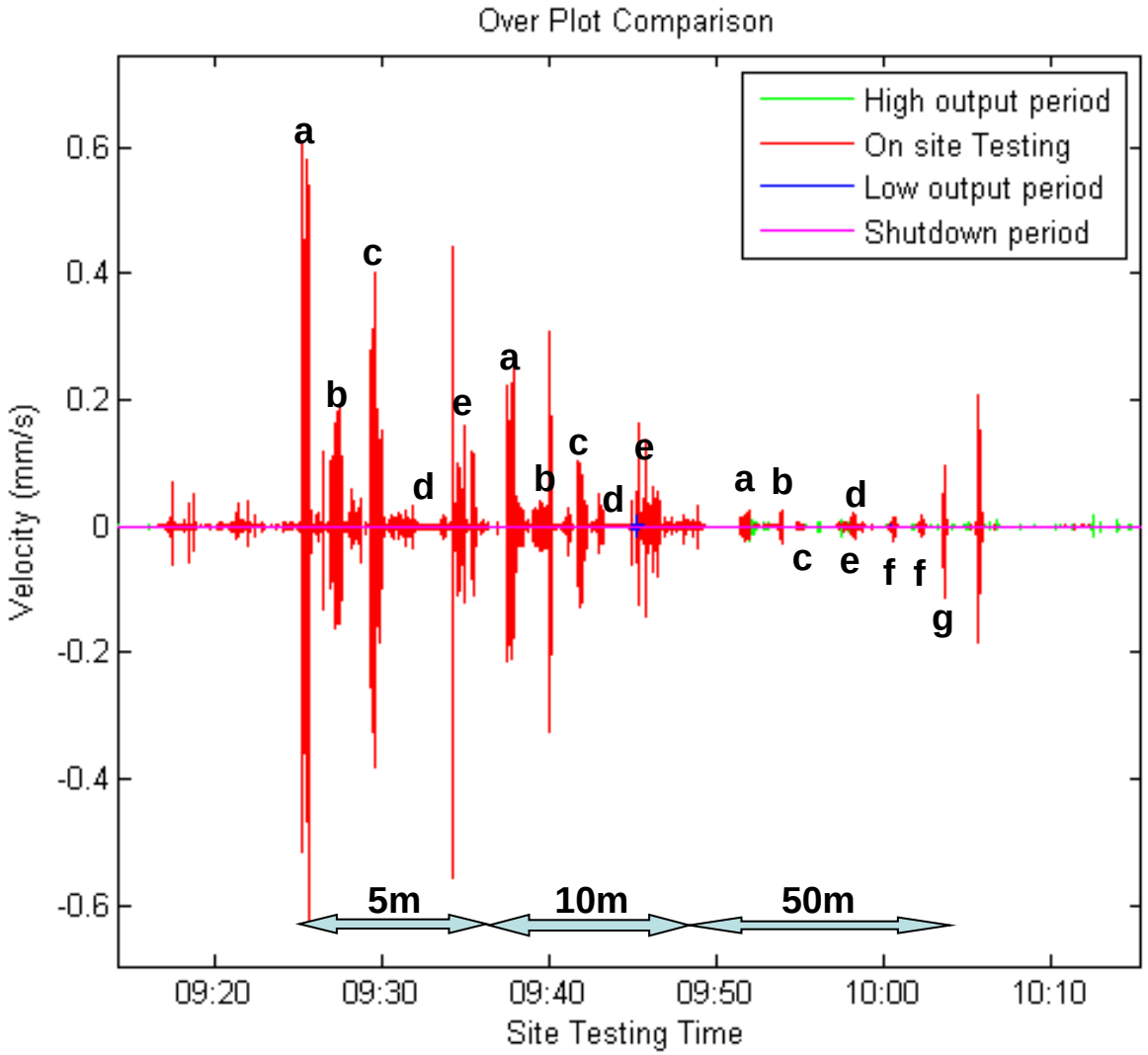
# Low power – ground vibration



# Wind Farm Shut-down – ground vibration



# Ground vibration tests




a – hitting ground with sledge hammer

b – hitting in warratah

c – 5 people jumping

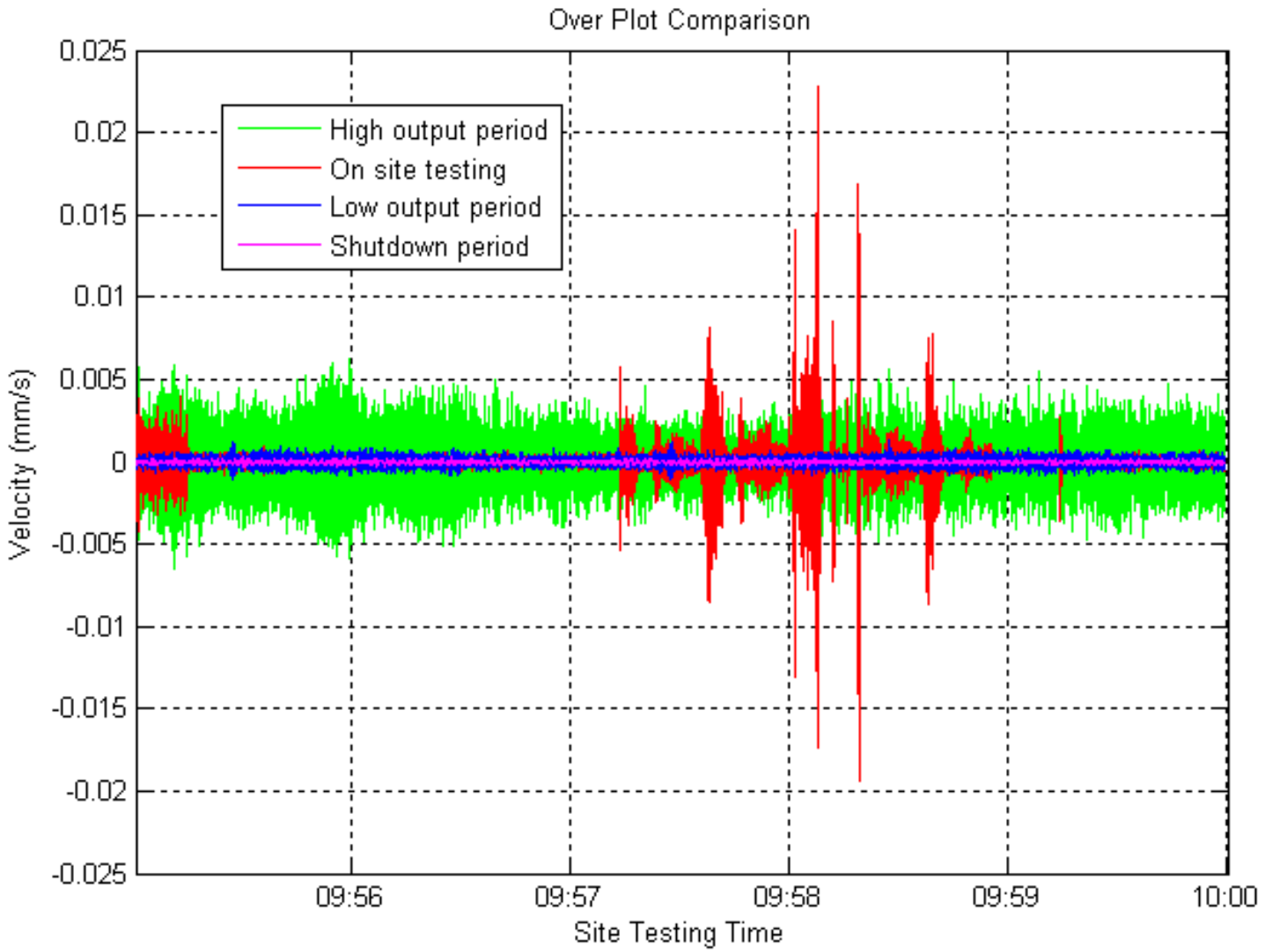
d – car idling

e – car driving forward & backwards

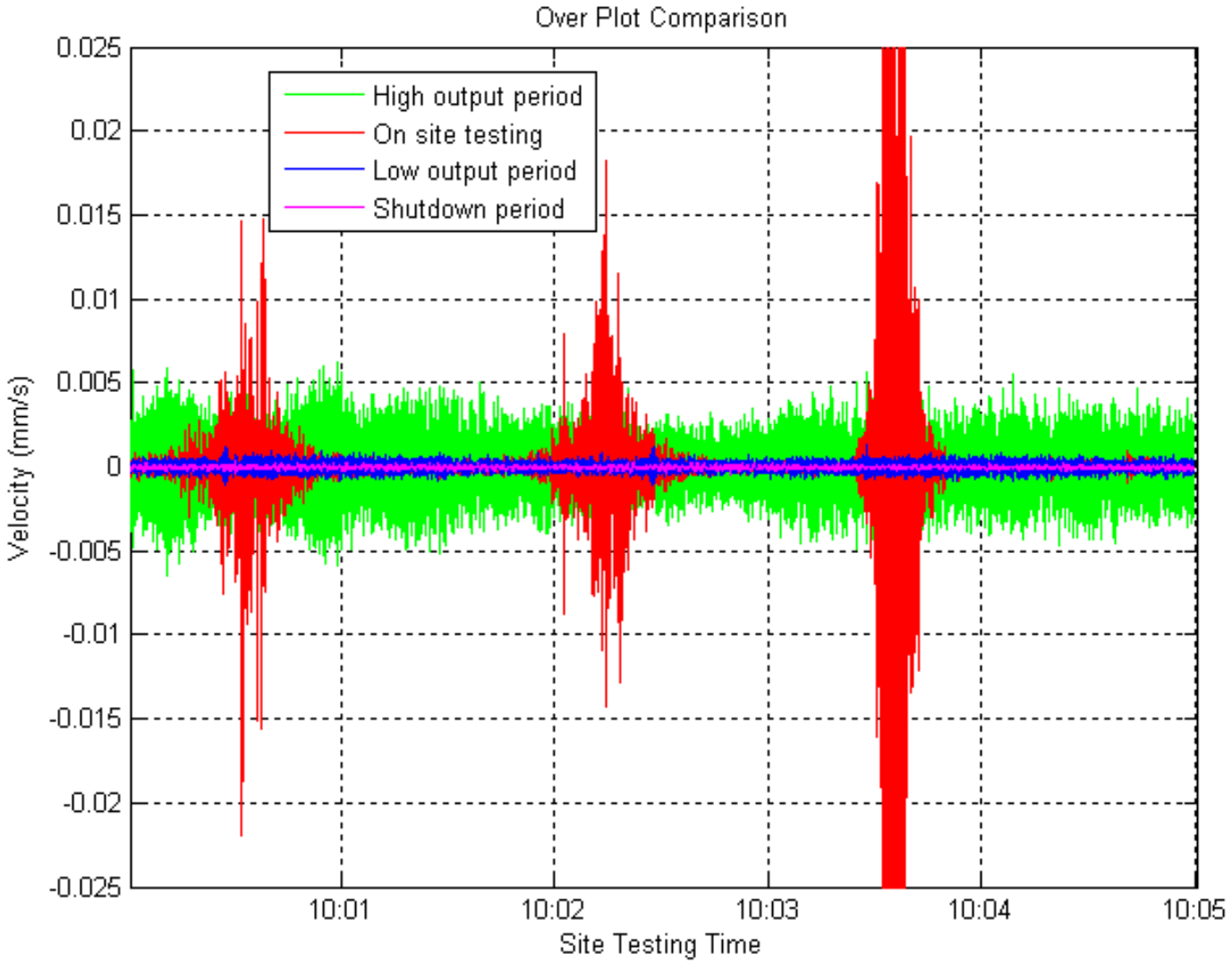
f – walking from 50m & back

g – running from 50m & back

# Ground vibration comparison - Vehicle

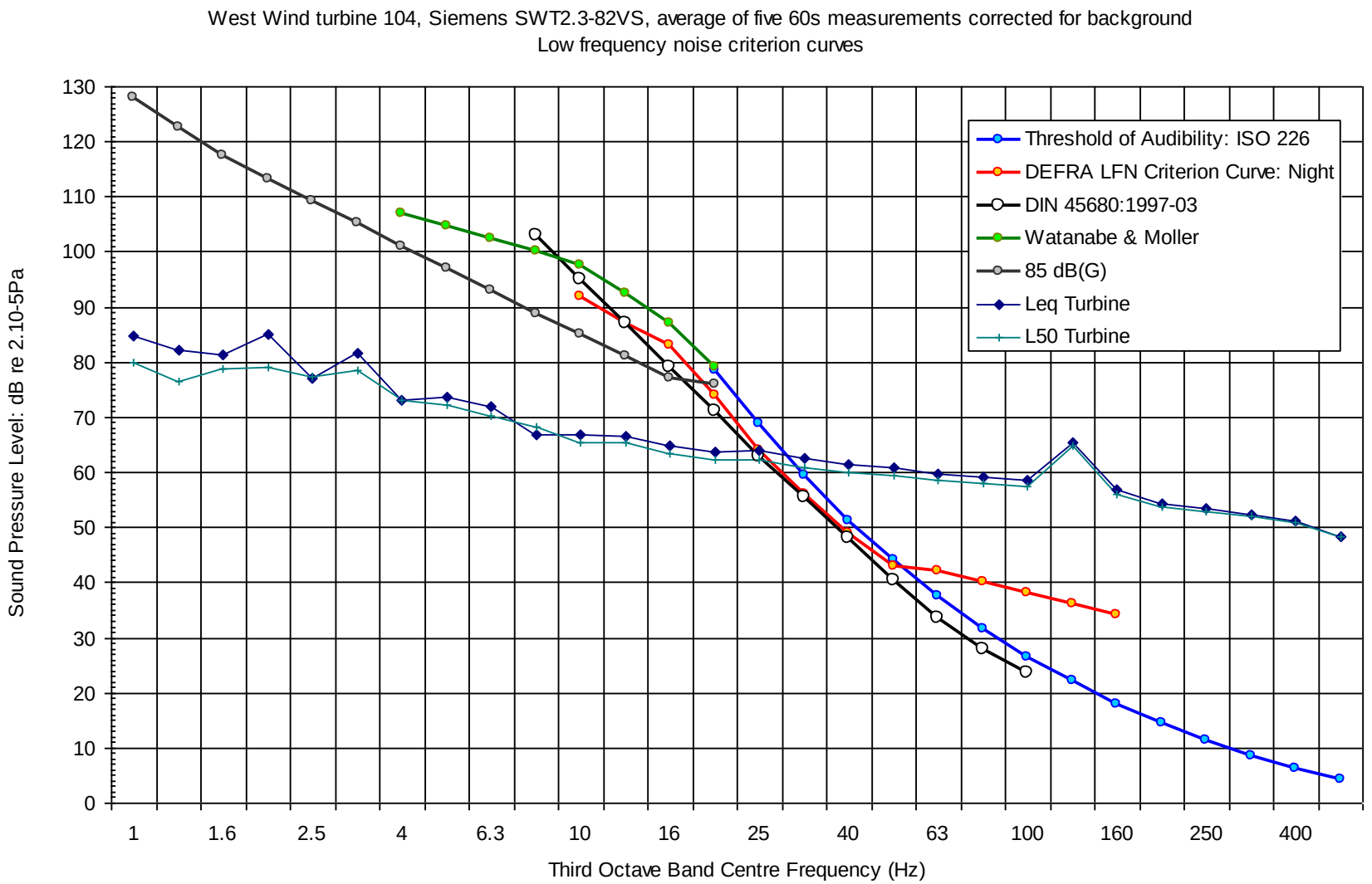


# Ground vibration comparison – Walking / Running

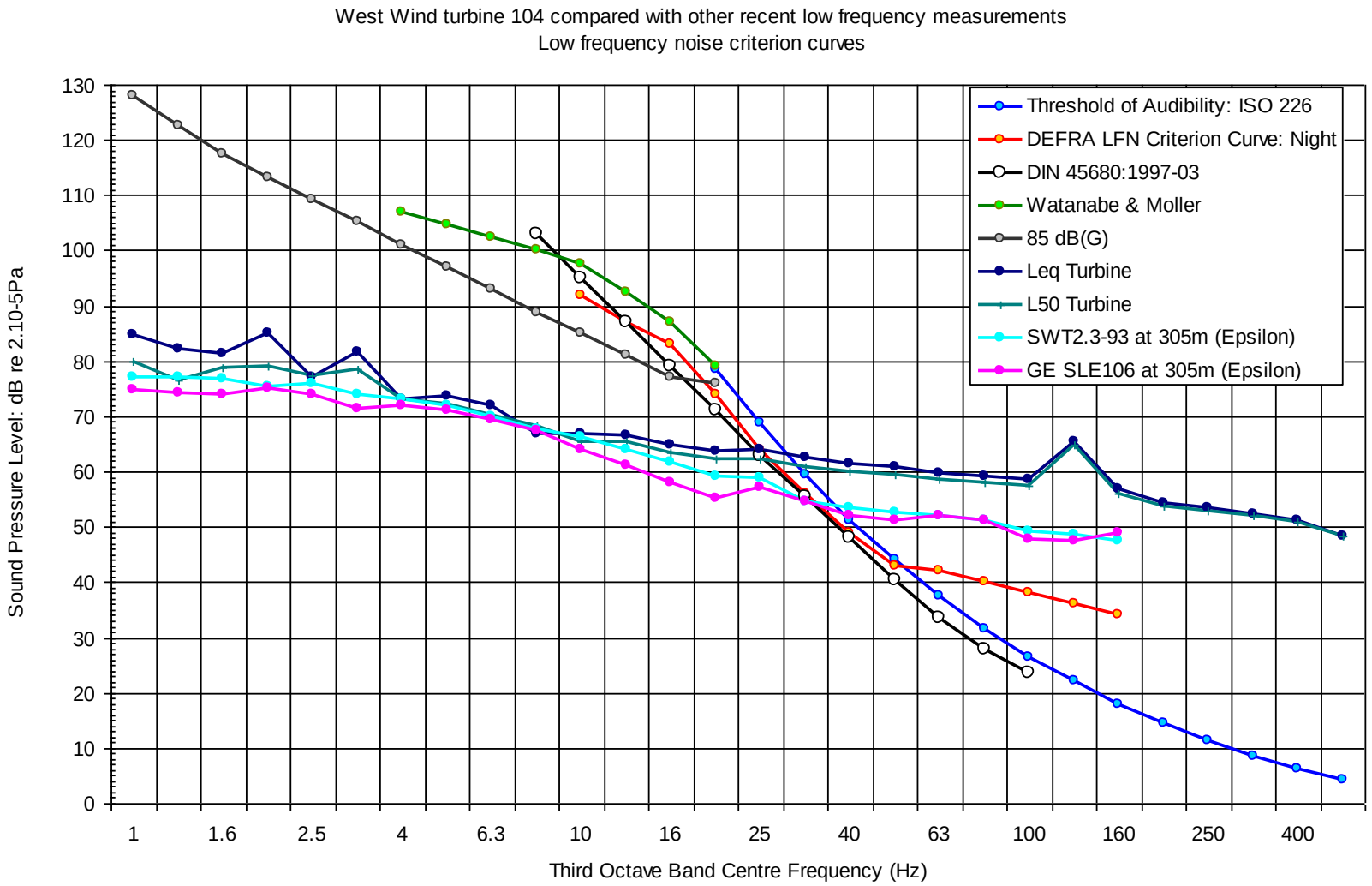


# Infrasound Measurements

# West Wind Infrasound Measurements



# West Wind Infrasound Measurements



# Thank you

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