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Date: 30 July 2024 **Our reference:** 10361261-AUMEL-L-01-C **Your reference:** N/A

RE: Electromagnetic interference review for amended layout for the Winterbourne Wind Farm

Dear Mark Davey,

Environmental Resources Management Australia Pty Ltd (“the Customer”) has instructed DNV Australia Pty Ltd (DNV) to carry out a review of the electromagnetic interference (EMI) impacts for the proposed Winterbourne Wind Farm (“the Project”), based on a revised wind turbine generator (WTG) layout provided by the Customer.

DNV has previously carried out an EMI assessment for the Project (“the previous assessment”), as reported in DNV report 10361261-AUMEL-R-01-E dated 7 October 2022, which formed Appendix N of the Environmental Impact Statement (EIS) for the Project. This letter summarises the results of a review (“the current review”) of the expected change in EMI-related impacts associated with changes to the WTG layout and the current radiocommunication environment in the vicinity of the Project compared to the results of the previous assessment.

DNV notes the following regarding the current review:

- The WTG layout considered in the current review (“the amended layout”) consists of 118 WTGs, which is one WTG less than the layout of 119 WTGs considered in the previous assessment (“the EIS layout”). Although the overall number of WTGs has not changed significantly, several WTGs have been relocated. Consequently, there are some parts of the Project Area where the aggregated radar cross section (RCS) of the WTGs may have increased compared to the EIS layout, and other parts where the aggregated WTG RCS may have decreased.
- The WTG dimensions considered in the current review are the same as those considered in the previous assessment, and consist of a rotor diameter of 162 m and an upper tip height of 230 m.
- The current review has been carried out based on a copy of the Australian Communications and Media Authority (ACMA) Register of Radiocommunication Licences (RRL) database dated 22 January 2024 and a copy of the ACMA Broadcast Transmitter Database dated 11 July 2023 (“the current radiocommunications environment”). The previous assessment was based on copies of the ACMA RRL database and Broadcast Transmitter Database dated 27 April 2022 and 6 April 2022 respectively (“the previous radiocommunications environment”). Therefore, the results presented in this letter for the amended WTG layout take into account any changes in nearby radiocommunication licences or

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Page 2 of 8

services (such as the existence or discovery of new services) since the previous assessment report was issued.

- Since the previous assessment report was issued and exhibited as part of the EIS for the Project, DNV understands that the Customer has engaged with the New South Wales Government Telecommunications Authority (NSW Telco Authority) to address concerns raised by the NSW Telco Authority regarding the potential for impact to their point-to-point links crossing the Project Area. In response to these concerns, the Customer proposed revised locations for five WTGs which were subsequently endorsed by the NSW Telco Authority as acceptable. DNV has reviewed the locations of these WTGs (B138A, B139A, B152A, B153A, B154A) and is satisfied that the locations presented in the amended layout are consistent with those endorsed by the NSW Telco Authority, based on the understanding that the coordinates are referenced against the GDA2020 datum.
- Where appropriate, the current review considers feedback received from the operators of nearby radiocommunication licences and services through the stakeholder consultation undertaken as part of the previous assessment but, apart from the additional engagement with the NSW Telco Authority noted above, no further consultation has occurred. DNV recommends further consultation with those operators who have not yet provided feedback on the potential for the Project to impact on their operations and services, or where the advice provided by the operator may be sensitive to the proposed WTG locations, as outlined in the previous assessment report.

The key findings of the current review with respect to the changes in the WTG layout and current radiocommunication environment in the vicinity of the Project are:

- For *point-to-point links operated by the NSW Telco Authority and associated radiocommunication towers within 2 km of the proposed WTG locations*: impact is expected to be reduced. Through the stakeholder consultation undertaken as part of the previous assessment, and submissions made following the exhibition of the EIS for the Project, the NSW Telco Authority expressed concerns about the potential for WTGs in the EIS layout to interfere with their point-to-point links crossing the Project Area. The WTGs close to both the links and the associated radiocommunication towers have been relocated in consultation with the NSW Telco Authority, who have confirmed that the WTG locations in the amended layout considered in the current review are acceptable.
- For *other point-to-point links and radiocommunication towers within 2 km of the proposed WTG locations, other emergency services, meteorological radar, trigonometrical stations, citizen's band radio services, NBN fixed wireless internet services, and satellite television and internet services*: no change in impact is expected. For most of these assets and services, impacts are either not expected or are considered unlikely. Although there is potential for impact to meteorological radar, point-to-point links, and radiocommunication towers within 2 km, the likelihood of interference evaluated in the current review is unchanged compared to the previous assessment. Feedback received from the operators of these services through the stakeholder consultation undertaken as part of the previous assessment suggested that impacts were either unlikely or not expected.
- For *fixed point-to-multipoint links*: it is not possible to evaluate the change in impact based on the currently available information. Additional information from the operators of these services is required to determine whether the link paths cross the Project Area in the vicinity of WTGs, and hence any potential relative change in impact. DNV recommends further engagement with those operators who have not yet provided feedback on the potential for the Project to impact on their point-to-multipoint networks, as outlined in the previous assessment report.



Page 3 of 8

- For *mobile phone services, wireless internet provided by mobile phone networks, and radio and television broadcasting services*: there may be reduced potential for impact in some locations due to a reduction in the aggregated WTG RCS in some parts of the Project and the potential for increased impact in other locations due to an increased aggregated WTG RCS. In general, impacts to these services are considered unlikely in areas with good signal coverage, but may occur in areas with marginal reception if a WTG intercepts the signal between the user and the transmitter. However, feedback received from the operators of these services through the stakeholder consultation undertaken as part of the previous assessment suggested that impacts were either unlikely or not expected. It is expected that any impacts to these services can be managed through the mitigation options outlined in the previous assessment report.

The results of the current review are summarised in the table on the following pages.

Sincerely
for DNV Australia Pty Ltd

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Summary of EMI assessment results for the Project

Licence/ service type	Findings of previous assessment (based on the EIS layout and previous radiocommunications environment)	Findings of current review (based on the amended layout and current radiocommunications environment)	Expected change in impact
Radio- communication towers	<p>4 towers within 2 km of proposed WTG locations, hosting point-to-point links and point-to-area style communications operated by:</p> <p>Brian Smith Timber Transport Pty Ltd Edwin Scott Dening (Coffs Harbour and District Amateur Radio Club) Goodcom Communications Pty Ltd New South Wales Government Telecommunications Authority (NSW Telco Authority) NSW Rural Fire Service Telstra Corporation Limited (Telstra) Walcha Council Walcha Radio Group</p> <p>Point-to-point links: see findings for point-to-point links</p> <p>Point-to-area style communications: high likelihood of impact through reflection or scattering of signals based on DNV assessment</p> <p>Concerns raised by NSW Telco Authority Advice from NSW Rural Fire Service and Walcha Council suggested impact was unlikely or not expected No feedback received from other operators</p>	<p>4 towers within 2 km of proposed WTG locations, hosting point-to-point links and point-to-area style communications operated by:</p> <p>Brian Smith Timber Transport Pty Ltd Edwin Scott Dening (Coffs Harbour and District Amateur Radio Club) Goodcom Communications Pty Ltd New South Wales Government Telecommunications Authority (NSW Telco Authority) NSW Rural Fire Service Telstra Corporation Limited (Telstra) Walcha Council Walcha Radio Group</p> <p>Point-to-point links: see findings for point-to-point links</p> <p>Point-to-area style communications: high likelihood of impact through reflection or scattering of signals based on DNV assessment</p> <p>WTG locations endorsed by NSW Telco Authority No further feedback received from other operators</p>	<p>Point-to-point links: see findings for point-to-point links</p> <p>Point-to-area style communications operated by NSW Telco Authority: reduced potential for impact</p> <p>Other point-to-area style communications: no change expected</p>

**Summary of EMI assessment results for the Project
(continued)**

Licence/ service type	Findings of previous assessment (based on the EIS layout and previous radiocommunications environment)	Findings of current review (based on the amended layout and current radiocommunications environment)	Expected change in impact
Fixed point-to-point links	<p>11 links crossing Project Area, operated by: Bureau of Meteorology (the Bureau) NSW Telco Authority NSW Rural Fire Service Office of Environment and Heritage (NSW National Parks and Wildlife Service) Telstra Corporation Limited (Telstra) Walcha Council</p> <p>Diffraction effects: 14 WTGs in exclusion zones established by DNV for links operated by NSW Telco Authority, NSW Rural Fire Service, NSW National Parks and Wildlife Service, Walcha Council – high likelihood of interference based on DNV assessment</p> <p>Reflection/scattering effects: 8 WTGs in interference zones established by DNV for links operated by NSW Telco Authority, NSW Rural Fire Service, Walcha Council – low likelihood of interference based on DNV assessment</p> <p>Near-field effects: no WTGs in interference zones established by DNV – impact not expected</p> <p>Concerns raised by NSW Telco Authority Advice from the Bureau, NSW Rural Fire Service, National Parks and Wildlife Service, and Walcha Council suggested impact was unlikely or not expected No feedback received from other operators</p>	<p>12 links crossing Project Area, operated by: Bureau of Meteorology (the Bureau) NSW Telco Authority NSW Rural Fire Service Office of Environment and Heritage (NSW National Parks and Wildlife Service) Telstra Corporation Limited (Telstra) Walcha Council</p> <p>Diffraction effects: 10 WTGs in exclusion zones established by DNV for links operated by NSW Telco Authority, NSW Rural Fire Service, NSW National Parks and Wildlife Service, Walcha Council – high likelihood of interference based on DNV assessment</p> <p>Reflection/scattering effects: 5 WTGs in interference zones established by DNV for links operated by NSW Telco Authority, NSW Rural Fire Service, Walcha Council – low likelihood of interference based on DNV assessment</p> <p>Near-field effects: no WTGs in interference zones established by DNV – impact not expected</p> <p>WTG locations endorsed by NSW Telco Authority No further feedback received from other operators</p>	<p>Links operated by NSW Telco Authority: reduced potential for impact</p> <p>Other links: no change expected</p>

**Summary of EMI assessment results for the Project
(continued)**

Licence/ service type	Findings of previous assessment (based on the EIS layout and previous radiocommunications environment)	Findings of current review (based on the amended layout and current radiocommunications environment)	Expected change in impact
Fixed point-to- multipoint links	<p>64 assignments within 75 km of Project Area</p> <p>3 base stations within 20 km of Project Area, operated by Walcha Council</p> <p>Mapping of link paths required to determine impacts – potential for interference if links cross the Project near WTGs</p> <p>Advice from the Bureau and Walcha Council suggested impact was unlikely or not expected</p> <p>No feedback received from other operators</p>	<p>58 assignments within 75 km of Project Area</p> <p>3 base stations within 20 km of Project Area, operated by Walcha Council</p> <p>Mapping of link paths required to determine impacts – potential for interference if links cross the Project near WTGs</p> <p>No further feedback received from operators</p>	<p>Not possible to evaluate expected change based on available information</p> <p>DNV recommends further engagement with operators to determine link paths and hence potential change in impact</p>
Other licence types	<p>Point-to-area style communications: see findings for emergency services, mobile phones, radio broadcasting, and television broadcasting</p>		-
Emergency services	<p>Point-to-point links: NSW Telco Authority, NSW Rural Fire Service, and NSW National Parks and Wildlife Service links crossing Project Area (see findings for point-to-point links)</p> <p>Mobile telephony systems within 2 km of WTGs: NSW Telco Authority towers within 2 km of WTGs (see findings for radiocommunication towers)</p> <p>Other emergency services licences: unlikely to be affected</p> <p>Concerns raised by NSW Telco Authority</p> <p>Advice from NSW Ambulance, NSW National Parks and Wildlife Service, NSW Police Force, NSW Rural Fire Service, and St John Ambulance suggested impact was unlikely or not expected</p> <p>Need for internal assessment raised by NSW SES</p>	<p>Point-to-point links: NSW Telco Authority, NSW Rural Fire Service, and NSW National Parks and Wildlife Service links crossing Project Area (see findings for point-to-point links)</p> <p>Mobile telephony systems within 2 km of WTGs: NSW Telco Authority towers within 2 km of WTGs (see findings for radiocommunications towers)</p> <p>Other emergency services licences: unlikely to be affected</p> <p>WTG locations endorsed by NSW Telco Authority</p> <p>No further feedback received from other operators</p>	<p>Point-to-point links: see findings for point-to-point links</p> <p>Mobile telephony systems within 2 km of WTGs: reduced potential for impact</p> <p>Other emergency services licences: no change expected</p>

**Summary of EMI assessment results for the Project
(continued)**

Licence/ service type	Findings of previous assessment (based on the EIS layout and previous radiocommunications environment)	Findings of current review (based on the amended layout and current radiocommunications environment)	Expected change in impact
Meteorological radar	Nearest radar: "Namoi", 135 km from Project Advice from the Bureau suggested impact would be manageable	Nearest radar: "Namoi", 135 km from Project No further feedback received from the Bureau	No change expected
Trigonometrical stations	Unlikely to be affected	Unlikely to be affected	No change expected
Citizen's band radio	Unlikely to be affected	Unlikely to be affected	No change expected
Mobile phones	Unlikely to be affected in areas with good coverage, low likelihood of interference in areas with marginal coverage Advice from Optus, Vodafone, and Field Solutions Group suggested impact was unlikely or not expected No feedback received from other operators	Unlikely to be affected in areas with good coverage, low likelihood of interference in areas with marginal coverage No further feedback received from operators	Reduced aggregated WTG RCS in some parts of the Project may reduce impact, but increased aggregated RCS in other areas may have potential to increase impact
Wireless internet	Mobile broadband services: unlikely to be affected in areas with good coverage, low likelihood of interference in areas with marginal coverage NBN: available as a satellite service only – no impact expected Advice from Optus, Vodafone, Field Solutions Group, and NBN Co suggested impact was unlikely or not expected No feedback received from other operators	Mobile broadband services: unlikely to be affected in areas with good coverage, low likelihood of interference in areas with marginal coverage NBN: available as a satellite service only – no impact expected No further feedback received from operators	Mobile broadband services: reduced aggregated WTG RCS in some parts of the Project may reduce impact, but increased aggregated RCS in other areas may have potential to increase impact NBN: no change expected
Satellite television and internet	Services intended for Australian audiences: unlikely to be affected Services intended for international audiences: low likelihood of interference to signals from 15 satellites at up to 23 dwellings, but nearby residents are unlikely to be using these services	Services intended for Australian audiences: unlikely to be affected Services intended for international audiences: low likelihood of interference to signals from 15 satellites at up to 19 dwellings, but nearby residents are unlikely to be using these services	No change expected

**Summary of EMI assessment results for the Project
(continued)**

Licence/ service type	Findings of previous assessment (based on the EIS layout and previous radiocommunications environment)	Findings of current review (based on the amended layout and current radiocommunications environment)	Expected change in impact
Radio broadcasting	<p>AM and FM signals: low likelihood of interference in close proximity to WTGs</p> <p>FM signals from nearby transmitter: potential for interference in areas to northwest of Project with marginal reception based on DNV assessment</p> <p>Digital radio signals: Project is outside the intended coverage area – no impact expected</p> <p>Advice from BAI Communications suggested impact to signals from nearby FM transmitter was unlikely</p>	<p>AM and FM signals: low likelihood of interference in close proximity to WTGs</p> <p>FM signals from nearby transmitter: potential for interference in areas to northwest of Project with marginal reception based on DNV assessment</p> <p>Digital radio signals: Project is outside the intended coverage area – no impact expected</p> <p>No further feedback received from BAI Communications</p>	<p>AM and FM signals: reduced aggregated WTG RCS in some parts of the Project may reduce impact, but increased aggregated RCS in other areas may have potential to increase impact</p> <p>Digital radio signals: no change expected</p>
Television broadcasting	<p>May experience interference in areas with poor or marginal reception</p> <p>Armidale (Dumaresq) transmitter: 55 dwellings in potential interference zone, although some dwellings may be able to receive a stronger alternative signal from Walcha – high likelihood of interference based on DNV assessment</p> <p>Upper Namoi (Mount Dowe) transmitter: 34 dwellings in potential interference zone, but identified dwellings are unlikely to be receiving signals from this transmitter – low likelihood of interference based on DNV assessment</p> <p>Walcha transmitter: 34 dwellings in potential interference zone, but most identified dwellings are unlikely to be receiving signals from this transmitter – low likelihood of interference based on DNV assessment</p> <p>Advice from BAI Communications suggested impact was not expected for all three transmitters</p>	<p>May experience interference in areas with poor or marginal reception</p> <p>Armidale (Dumaresq) transmitter: 50 dwellings in potential interference zone, although some dwellings may be able to receive a stronger alternative signal from Walcha – high likelihood of interference based on DNV assessment</p> <p>Upper Namoi (Mount Dowe) transmitter: 33 dwellings in potential interference zone, but identified dwellings are unlikely to be receiving signals from this transmitter – low likelihood of interference based on DNV assessment</p> <p>Walcha transmitter: 33 dwellings in potential interference zone, but most identified dwellings are unlikely to be receiving signals from this transmitter – low likelihood of interference based on DNV assessment</p> <p>No further feedback received from BAI Communications</p>	<p>Reduced aggregated WTG RCS in some parts of the Project may reduce impact, but increased aggregated RCS in other areas may have potential to increase impact</p>