Friday, 28 March 2025

Project number: S230482
Reference: S230482LT2B

Glyn Diwell
Arcadis Australia Pacific Pty Limited
Level 16, 580 George Street
Sydney NSW 2000

Dear Glyn,

Kingswood BESS EIS
Environmental Noise Assessment for Amendment Report

1 Introduction

Additional solutions are being investigated for the connection between Kingswood BESS and the transmission line. Therefore, this amendment letter presents our assessment to determine if the proposed solutions would have adverse noise impacts on nearby sensitive receivers and if additional noise mitigation would be required. The assessment is based on the methodology provided in the EIS Noise and Vibration Impact Assessment Revision B, dated 27/05/2024, prepared by Resonate Consultants.

The following options require an acoustic review as they have been deemed to be modifications from the EIS Noise and Vibration Impact Assessment:

Underground cable northern bay alignment (Option 2)

- The underground cable northern bay alignment would be located within the amended development envelope (refer to Figure 1). The key elements of this connection include:
  - A 330 kV underground transmission line of approximately 1,150 metres that would extend from the Kingswood BESS substation to the Tamworth substation
  - The disturbance area for the connection would be in accordance with Transgrid requirements for 330 kV lines
  - A section of the underground cable would be within the amended development envelope and tie into the Tamworth substation from the north
  - The trench would be approximately one to two metres wide and about 1.5 metres deep (with cables buried approximately one meter underground to the top of the cable)
  - Once the trenching is complete, the surface above the cable would be returned to its pre-construction state
  - The final alignment of the transmission connection is subject to consultation and agreement with Transgrid but would be located within the development envelope.

Connection to existing overhead transmission line (Option 3)

- The proposed overhead connection to the existing transmission line would be located within the current development envelope (refer to Figure 2). The key elements of this connection include:
  - Connection to the existing 330kV transmission line that runs through the existing development envelope.

- The connection into the existing transmission line would require the construction of a 330kV switching station to facilitate the integration of the proposed BESS. This infrastructure would include essential components such as circuit breakers, disconnectors, and other necessary equipment to ensure safe and reliable operation. The switching station will be located at a distance of approximately 350 metres from the nearest residential receiver.
- The solution would also require the installation of two 330kv poles/towers, each approximately 30-40 metres in height, to stabilise and re-direct the existing transmission line into and out of the switching station.
- At the connection point to the existing overhead transmission line, the distance to the nearest residential receiver R2 is approximately 280 metres.

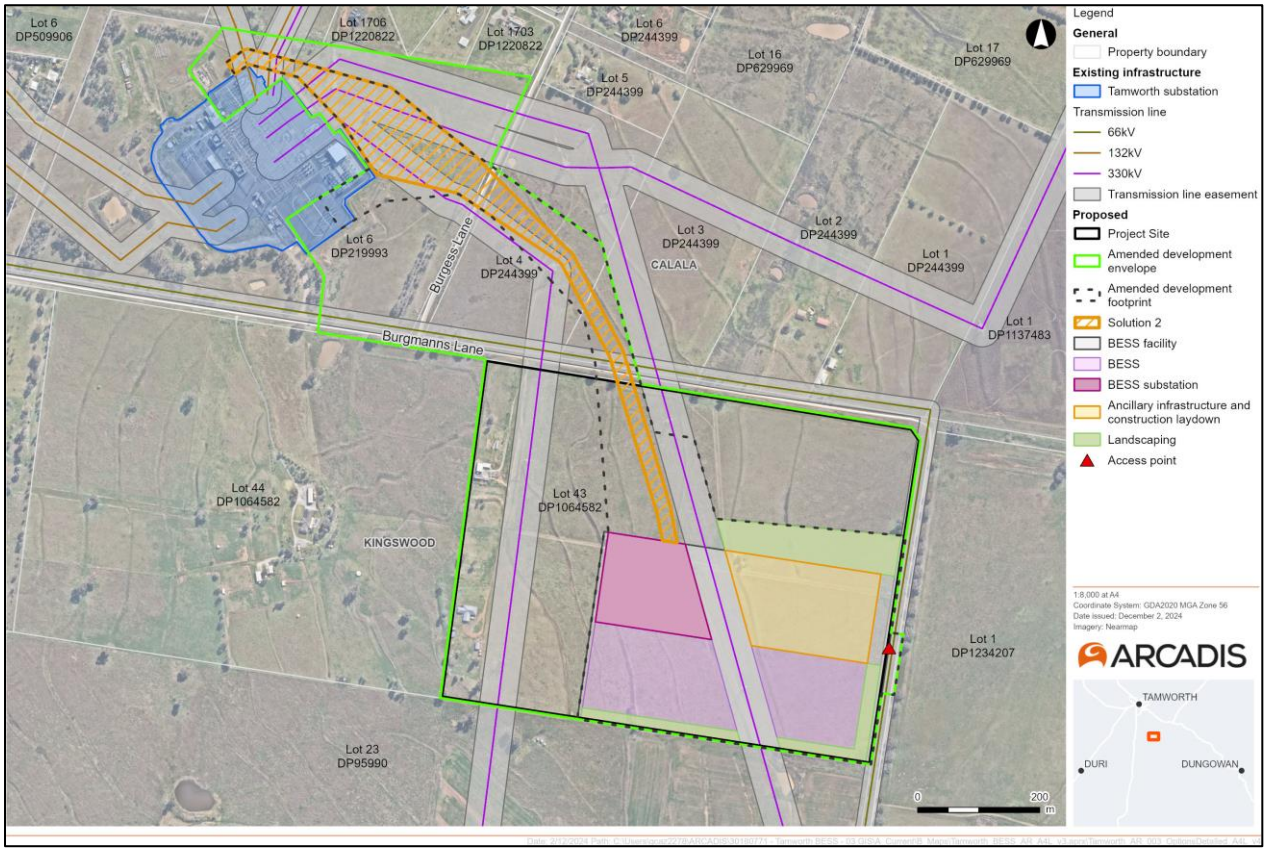

Figure 1 Overview of Option 2

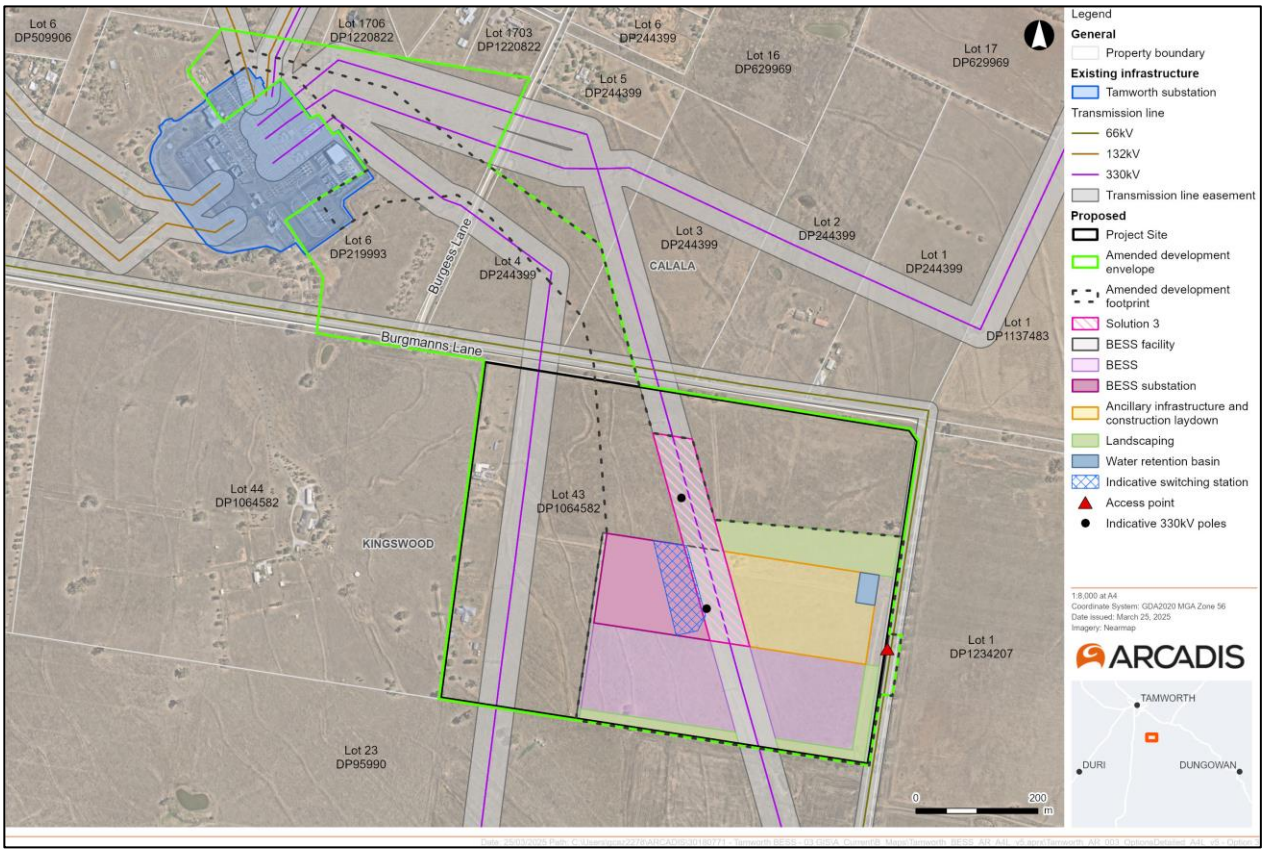

Figure 2 Overview of Option 3

2 Methodology

The assessment conducted in this amendment letter utilises the same methodology that was applied in the EIS Noise and Vibration Impact Assessment.

2.1 Underground cable northern bay alignment

Whilst this solution is expected to have no changes to the operational impacts, there could be changes to the construction noise impacts. Therefore, updated construction noise impact predictions for the amended layout of the underground cable are provided. See Figure 3 for a comparison of the existing and amended footprint.

2.2 Connection to existing overhead transmission line

The construction footprint of the site has been slightly amended due to the required construction of a 330kv switching station and two 330 kv poles/towers to connect to the existing transmission lines. Construction scenario 2 of the EIS Noise and Vibration Impact Assessment has been used for the noise calculation based on the amended construction footprint. This scenario is best suited to show the worst-case construction noise impacts. See Figure 3 for a comparison of the existing and amended footprint.

This option could impact operational noise. Therefore, the components have been reviewed to see if any of the equipment is noise-intensive and potentially increases the operational noise impacts at nearby sensitive receivers.

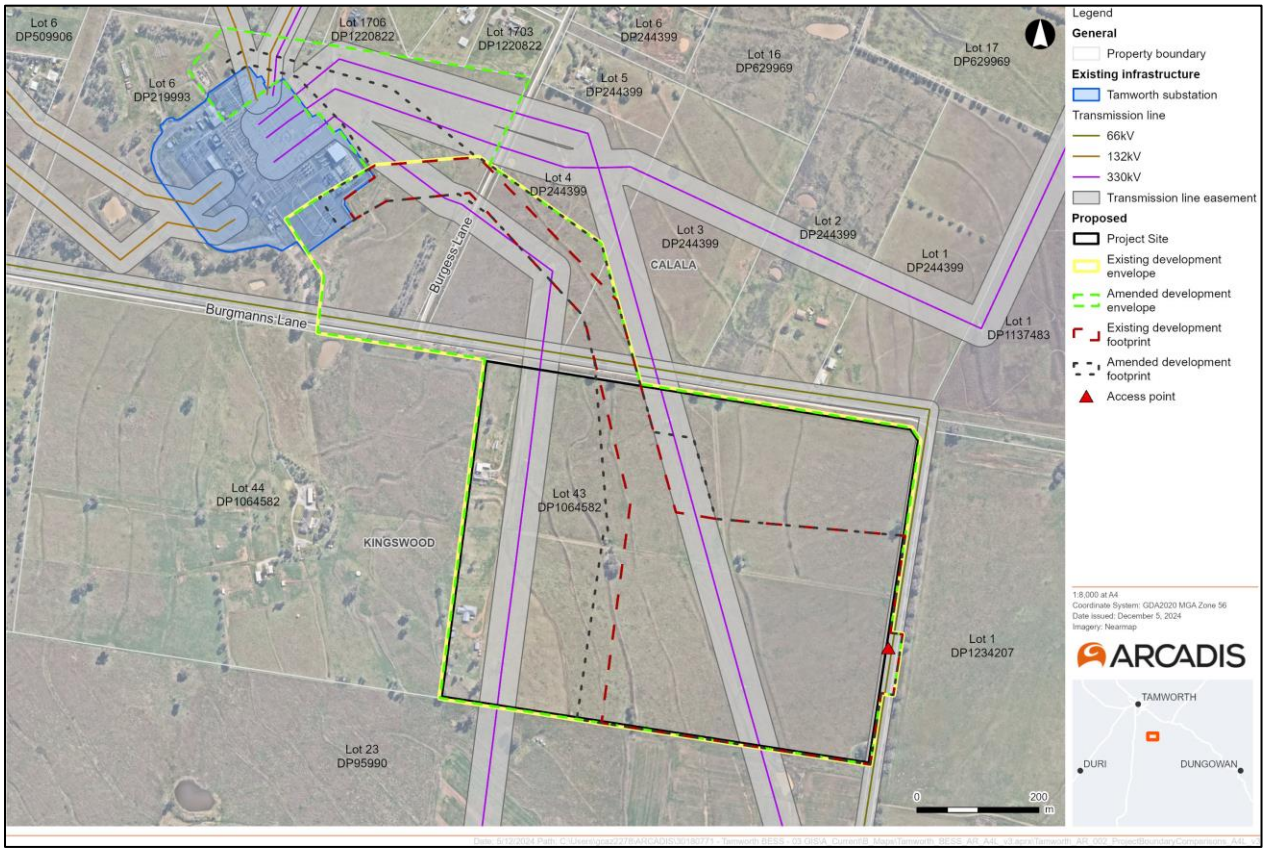

Figure 3 Comparison of existing and amended development footprint

3 Construction noise and vibration assessment

3.1 Construction noise

3.1.1 Predicted construction noise levels underground cabling

Table 1 shows the updated noise impact predictions based on the amended underground cabling footprint.
A summary of the outcome of the assessment is as follows:

- Due to the expanded layout, some receivers have reduced distance attenuation. Construction noise levels could temporarily increase between 1 and 7 dB(A).
- No receivers are highly noise affected.
- The construction noise management and mitigation measures specified in the EIS Noise and Vibration Assessment Section 6.4 remain unchanged and are still applicable to the project.

Table 1 Predicted construction noise levels for installation of underground cabling

Receiver ID	Predicted L_{eq} range – dB(A)		Standard hours			Change in noise level in Amendment Letter compared with EIS – dB(A)
	Low	High	NML – dB(A)	Exceedance – dB(A)	Compliance Yes / No	
10 Installation of underground cabling						
R02	31	51	45	6	No	0
R03	30	50	45	5	No	0
R04	26	46	45	1	No	-3
R05	34	54	45	9	No	1
R06	35	55	45	10	No	2
R07	37	57	45	12	No	3
R08	31	51	45	6	No	1
R09	20	40	45	0	Yes	0
R10	35	55	45	10	No	4
R11	36	56	45	11	No	6
R12	28	48	45	3	No	1
R13	31	51	45	6	No	1
R14	31	51	45	6	No	2
R15	29	49	45	4	No	1
R16	20	40	45	0	Yes	0
R17	32	52	45	7	No	4
R18	29	49	45	4	No	2
R19	26	46	45	1	No	1
R20	30	50	45	5	No	3
R21	23	43	45	0	Yes	-1
R22	33	53	45	8	No	7
R23	28	48	45	3	No	2

Receiver ID	Predicted L_{eq} range – dB(A)		Standard hours			Change in noise level in Amendment Letter compared with EIS – dB(A)
	Low	High	NML – dB(A)	Exceedance – dB(A)	Compliance Yes / No	
R24	32	52	45	7	No	6
R25	17	37	45	0	Yes	0
R26	25	45	45	0	Yes	0
R27	25	45	45	0	Yes	1
R28	29	49	45	4	No	4
R29	26	46	45	1	No	2
R30	27	47	45	2	No	2
R31	28	48	45	3	No	3
R32	31	51	45	6	No	7
R33	32	52	45	7	No	7
R34	25	45	45	0	Yes	1
R35	23	43	45	0	Yes	0
R36	24	44	45	0	Yes	1
R37	28	48	45	3	No	5

3.1.2 Predicted construction noise levels amended site layout due to connection to existing overhead transmission line

Table 2 shows the updated noise impact predictions based on the amended site layout required to be able to connect to the existing overhead transmission line. A summary of the outcome of the assessment is as follows:

- Due to the extended site footprint, some receivers experience reduced distance attenuation of construction noise. Construction noise levels could temporarily increase between 1 and 4 dB(A) at some receivers.
- No receivers are highly noise affected.
- The construction noise management and mitigation measures specified in the EIS Noise and Vibration Assessment Section 6.4 remain unchanged and are still applicable to the project.

Table 2 Predicted construction noise levels for construction due to amended site layout

Receiver ID	Predicted L_{eq} range – dB(A)		Standard hours			Change in noise level in Amendment Letter compared with EIS – dB(A)
	Low	High	NML – dB(A)	Exceedance – dB(A)	Compliance Yes / No	
2 Clearing and bulk earthworks						
R02	44	65	45	20	No	2
R03	42	63	45	18	No	3
R04	34	55	45	10	No	4
R05	36	57	45	12	No	4
R06	34	55	45	10	No	4
R07	33	54	45	9	No	4
R08	34	55	45	10	No	4

Receiver ID	Predicted L_{eq} range – dB(A)		Standard hours			Change in noise level in Amendment Letter compared with EIS – dB(A)
	Low	High	NML – dB(A)	Exceedance – dB(A)	Compliance Yes / No	
R09	35	56	45	11	No	1
R10	32	53	45	8	No	3
R11	32	53	45	8	No	3
R12	33	54	45	9	No	3
R13	32	53	45	8	No	3
R14	32	53	45	8	No	3
R15	32	53	45	8	No	3
R16	32	53	45	8	No	0
R17	31	52	45	7	No	3
R18	31	52	45	7	No	3
R19	31	52	45	7	No	3
R20	30	51	45	6	No	3
R21	28	49	45	4	No	1
R22	29	50	45	5	No	3
R23	30	51	45	6	No	3
R24	28	49	45	4	No	2
R25	30	51	45	6	No	0
R26	30	51	45	6	No	3
R27	30	51	45	6	No	3
R28	29	50	45	5	No	3
R29	27	48	45	3	No	2
R30	29	50	45	5	No	3
R31	28	49	45	4	No	3
R32	28	49	45	4	No	2
R33	27	48	45	3	No	3
R34	29	50	45	5	No	3
R35	29	50	45	5	No	3
R36	29	50	45	5	No	3
R37	27	48	45	3	No	3

3.2 Construction vibration

No vibration intensive activities are proposed to occur near any receiver. Hence, no impacts are expected to occur given the significant intervening distance to the nearest receiver building, which is approximately 230 m from the site boundary.

4 Operational noise

The components required for the proposed overhead connection, as shown in Option 3 on Figure 2 is a 330 kV switching station that includes circuit breakers, disconnectors, and other necessary equipment to ensure safe and reliable operation. In addition, there will be two 330 kV poles/towers, each approximately 30-40 m in height.

The Irish EirGrid guidelines[1] have been used to review distances between the noise sources in Option 3 and the nearest receivers:

- According to the EirGrid guidelines, a setback distance of 150 m is recommended from a 400 kV substation. We understand that the noise impacts from the switching station are likely to be less significant compared to those from a 400 kV substation. The distance between the switching station and the nearest residential receiver, R2, is approximately 350 m, which is more than double the recommended setback distance.
- The guidelines further suggest a setback distance of 100 m from 400 kV transmission lines and 200 m from 400 kV transmission poles. The distance of approximately 280 meters between the transmission pole and the nearest residential receiver R2 exceeds these recommended setbacks. Additionally, the existing transmission line operates at a lower voltage rating of 330 kV, which likely results in lower noise impacts than those indicated by the guidelines for 400 kV. The distance between the existing transmission line and receiver R2 is about 240 m, which also surpasses the minimum recommended setback distance of 100 m for a 400 kV transmission line.

Upon reviewing the proposed equipment and the distances between this equipment and the receivers, it is concluded that, due to the separation between the noise sources and the receivers, adverse noise impacts are not expected for any surrounding residential areas.

5 Conclusion

The proposed amendments to the Kingswood BESS and its connection to the transmission line, including both the underground cable alignment option and the overhead connection to the existing transmission line option, have been assessed for potential noise and vibration impacts. While some receivers may experience a slight increase in construction noise due to the expanded layout, no receivers are expected to be highly noise affected by the amendment.

Furthermore, no adverse operational noise impacts are expected from the necessary switching station equipment and the connection to the existing overhead transmission line for Option 3. The setback distance surpasses the recommended distances outlined in the EirGrid guidelines.

The noise management and mitigation measures previously outlined remain unchanged and are still applicable, ensuring compliance with established noise levels throughout the project. Therefore, the proposed amendment has been assessed to result in minimal noise-related concerns to nearby sensitive receivers.

[1] EirGrid Evidence Based Environmental Studies Study 8: Noise - Literature review and evidence based field study on the noise effects of high voltage transmission development , May 2016

Please let me know if you have any queries or wish to discuss the above.

Yours sincerely,

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