

From: "Records"
Sent: Mon, 31 Aug 2026 07:12:47 +1000
To: "Planning Admin" <Plan.Admin@wdrc.qld.gov.au>
Subject: CHRISS - FW: Development Application (363 Grahams Road, Kogan, QLD, 4406)
Categories: * New Applications

From: Riordan, Liam <Liam.Riordan@alintaenergy.com.au>
Sent: Friday, 28 August 2026 4:51 PM
To: Info <info@wdrc.qld.gov.au>
Cc: Dent, Nicholas <Nicholas.Dent@alintaenergy.com.au>
Subject: Development Application (363 Grahams Road, Kogan, QLD, 4406)

To the Western Downs Regional Council planning department,

Please find in the link below a Development Application for 363 Grahams Road, Kogan, QLD, 4406:

 [5 Submitted application](#)

Should you have any questions, please contact me on the details below.

Regards,

Liam Riordan
Planning & Environment Manager



Level 16, 40 City Road, Southbank VIC 3006

M 0448 117 123
E liam.riordan@alintaenergy.com.au
W www.alintaenergy.com.au

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MATERIAL CHANGE OF USE

Recvd Date: 31/08/2026

Application: 030.2026.563.001

Customer: NAR No. 931335 Braemar Power Project Pty Limited

Property: A43894

Subject: LG7.6.1

Precis: Development Application Material Change Use Lot 128 SP214053 363

Grahams Road Kogan Braemar Power Project Pty Ltd New

Task Action: Planning

**Company owner's consent to the making of a development application
under the *Planning Act 2016***

I, Jessica Dyer

Company Secretary of the company mentioned below.

I, Ken Woolley

Director of the company mentioned below.

Of:

Braemar Power Project Pty Ltd

ACN: 113 386 600

ABN: 54 113 386 600

the company being the owner of the premises identified as follows:

363 Grahams Road, Kogan, QLD, 4406

Lot 128 Plan SP214053

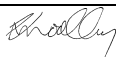
consent to the making of a development application under the *Planning Act 2016* by:

Braemar Power Project Pty Ltd

on the premises described above for:

Material change of use for the expansion of the existing gas fired power station

Company Name and ACN: Braemar Power Project Pty Ltd / ACN: 113 386 600



Signature of Director

27-Aug-2026

Date



Signature of Company Secretary

27-Aug-2026

Date



27 August 2026

Todd Summerville

Planning & Environment Manager
Western Downs Regional Council
30 Marble Street,
Dalby QLD 4405
via email: info@wdrc.qld.gov.au

Dear Todd,

**DEVELOPMENT APPLICATION FOR A MATERIAL CHANGE OF USE - SPECIAL INDUSTRY
363 GRAHAMS ROAD, KOGAN QLD 4406 (LOT 128 SP214053)**

Braemar Power Project Pty Ltd (the Applicant), a company owned by Alinta Energy Pty Ltd (Alinta Energy), submits a development application for a Material Change of Use – Development Permit for Special Industry to be located on the above mentioned address.

The application has been prepared in accordance with Chapter 3, Part 2, Division 51 of the *Planning Act 2016*, being the mandatory information required for a 'properly made application'. The required information is as follows:

- The application has been made using the approved forms to the Assessment Manager (Western Downs Regional Council).
- The application is accompanied by the documents required to be provided.
- The application fee will be paid in accordance with Council's Fees and Charges Schedule 2026/27.
- Landowner's consent has been provided as part of this application.

We have enclosed a Planning Assessment Report and associated attachments to support the application. If you have any queries regarding this matter, please do not hesitate to contact me by email: liam.riordan@alintaenergy.com.au or via phone on 0448 117 123.

We look forward to receiving Council's acknowledgment of this application.

Yours sincerely

Liam Riordan

Planning & Environment Manager

Braemar Power Project Pty Ltd ABN 54 113 386 600

Braemar Power Station, 363 Grahams Road, Dalby, QLD 4405, PO Box 745, Dalby, QLD 4405 Australia

T +61 7 3020 7700 **F** +61 7 4668 1744 **W** alintaenergy.com.au

DA Form 1 – Development application details

Approved form (version 1.6 effective 2 August 2024) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application **involving code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use *DA Form 2 – Building work details*.

For a development application involving **building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot)**, use this form (*DA Form 1*) and parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (individual or company full name)	Braemar Power Project Pty Limited
Contact name (only applicable for companies)	Liam Riordan
Postal address (P.O. Box or street address)	Level 16, 40 City Road
Suburb	Southbank
State	VICTORIA
Postcode	3006
Country	AUSTRALIA
Contact number	0448 117 123
Email address (non-mandatory)	liam.riordan@alintaenergy.com.au
Mobile number (non-mandatory)	
Fax number (non-mandatory)	
Applicant's reference number(s) (if applicable)	
1.1) Home-based business	
☐ Personal details to remain private in accordance with section 264(6) of <i>Planning Act 2016</i>	
2) Owner's consent	
2.1) Is written consent of the owner required for this development application?	
☒ Yes – the written consent of the owner(s) is attached to this development application	
☐ No – proceed to 3)	

PART 2 – LOCATION DETAILS

3) Location of the premises (complete 3.1) or 3.2), and 3.3) as applicable)

Note: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see [DA Forms Guide: Relevant plans](#).

3.1) Street address and lot on plan

- ☒ Street address **AND** lot on plan (all lots must be listed), **or**
☐ Street address **AND** lot on plan for an adjoining or adjacent property of the premises (appropriate for development in water but adjoining or adjacent to land e.g. jetty, pontoon. All lots must be listed).

a)	Unit No.	Street No.	Street Name and Type	Suburb
		363	Grahams Road	Kogan
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)
	4406	128	SP214053	Western Downs Regional Council
b)	Unit No.	Street No.	Street Name and Type	Suburb
	Postcode	Lot No.	Plan Type and Number (e.g. RP, SP)	Local Government Area(s)

3.2) Coordinates of premises (appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay)

Note: Place each set of coordinates in a separate row.

☐ Coordinates of premises by longitude and latitude

Longitude(s)	Latitude(s)	Datum	Local Government Area(s) (if applicable)
		☐ WGS84 ☐ GDA94 ☐ Other:	

☐ Coordinates of premises by easting and northing

Easting(s)	Northing(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)
		☐ 54 ☐ 55 ☐ 56	☐ WGS84 ☐ GDA94 ☐ Other:	

3.3) Additional premises

- ☐ Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application
☐ Not required

4) Identify any of the following that apply to the premises and provide any relevant details

☐ In or adjacent to a water body or watercourse or in or above an aquifer	
Name of water body, watercourse or aquifer:	
☐ On strategic port land under the <i>Transport Infrastructure Act 1994</i>	
Lot on plan description of strategic port land:	
Name of port authority for the lot:	
☐ In a tidal area	
Name of local government for the tidal area (if applicable):	
Name of port authority for tidal area (if applicable)	

☐ On airport land under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i>
Name of airport:
☐ Listed on the Environmental Management Register (EMR) under the <i>Environmental Protection Act 1994</i>
EMR site identification:
☐ Listed on the Contaminated Land Register (CLR) under the <i>Environmental Protection Act 1994</i>
CLR site identification:

5) Are there any existing easements over the premises?

Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see [DA Forms Guide](#).

- ☒ Yes – All easement locations, types and dimensions are included in plans submitted with this development application
- ☐ No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect

a) What is the type of development? *(tick only one box)*

- ☒ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

- ☒ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☒ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

Special Industry – gas generating equipment

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms guide: Relevant plans](#).

- ☒ Relevant plans of the proposed development are attached to the development application

6.2) Provide details about the second development aspect

a) What is the type of development? *(tick only one box)*

- ☐ Material change of use ☐ Reconfiguring a lot ☐ Operational work ☐ Building work

b) What is the approval type? *(tick only one box)*

- ☐ Development permit ☐ Preliminary approval ☐ Preliminary approval that includes a variation approval

c) What is the level of assessment?

- ☐ Code assessment ☐ Impact assessment *(requires public notification)*

d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):

e) Relevant plans

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).

- ☐ Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

- ☐ Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application
- ☐ Not required

6.4) Is the application for State facilitated development?

- ☐ Yes - Has a notice of declaration been given by the Minister?
- ☐ No

Section 2 – Further development details**7) Does the proposed development application involve any of the following?**

Material change of use	☐ Yes – complete division 1 if assessable against a local planning instrument
Reconfiguring a lot	☐ Yes – complete division 2
Operational work	☐ Yes – complete division 3
Building work	☐ Yes – complete <i>DA Form 2 – Building work details</i>

Division 1 – Material change of use

Note: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.

8.1) Describe the proposed material change of use

Provide a general description of the proposed use	Provide the planning scheme definition (include each definition in a new row)	Number of dwelling units (if applicable)	Gross floor area (m ²) (if applicable)
Gas Generating Equipment	Special Industry	0	0

8.2) Does the proposed use involve the use of existing buildings on the premises?

- ☐ Yes
- ☒ No

8.3) Does the proposed development relate to temporary accepted development under the Planning Regulation?

- ☐ Yes – provide details below or include details in a schedule to this development application
- ☒ No

Provide a general description of the temporary accepted development	Specify the stated period dates under the Planning Regulation

Division 2 – Reconfiguring a lot

Note: This division is only required to be completed if any part of the development application involves reconfiguring a lot.

9.1) What is the total number of existing lots making up the premises?

--

9.2) What is the nature of the lot reconfiguration? (tick all applicable boxes)

☐ Subdivision (complete 10)	☐ Dividing land into parts by agreement (complete 11)
☐ Boundary realignment (complete 12)	☐ Creating or changing an easement giving access to a lot from a constructed road (complete 13)

10) Subdivision**10.1) For this development, how many lots are being created and what is the intended use of those lots:**

Intended use of lots created	Residential	Commercial	Industrial	Other, please specify:
Number of lots created				

10.2) Will the subdivision be staged?

- ☐ Yes – provide additional details below
- ☐ No

How many stages will the works include?

What stage(s) will this development application apply to?

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?

Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:
Number of parts created				

12) Boundary realignment**12.1) What are the current and proposed areas for each lot comprising the premises?**

Current lot		Proposed lot	
Lot on plan description	Area (m ²)	Lot on plan description	Area (m ²)

12.2) What is the reason for the boundary realignment?**13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement?**
(attach schedule if there are more than two easements)

Existing or proposed?	Width (m)	Length (m)	Purpose of the easement? (e.g. pedestrian access)	Identify the land/lot(s) benefitted by the easement

Division 3 – Operational work**Note:** This division is only required to be completed if any part of the development application involves operational work.**14.1) What is the nature of the operational work?**

- | | | |
|--|-------------------------------------|--|
| ☐ Road work | ☐ Stormwater | ☐ Water infrastructure |
| ☐ Drainage work | ☐ Earthworks | ☐ Sewage infrastructure |
| ☐ Landscaping | ☐ Signage | ☐ Clearing vegetation |
| ☐ Other – please specify: _____ | | |

14.2) Is the operational work necessary to facilitate the creation of new lots? (e.g. subdivision)☐ Yes – specify number of new lots: _____☐ No

14.3) What is the monetary value of the proposed operational work? (include GST, materials and labour)

\$

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application

Western Downs Regional Council

16) Has the local government agreed to apply a superseded planning scheme for this development application?

- ☐ Yes – a copy of the decision notice is attached to this development application
- ☐ The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
- ☒ No

PART 5 – REFERRAL DETAILS

17) Does this development application include any aspects that have any referral requirements?

Note: A development application will require referral if prescribed by the Planning Regulation 2017.

- ☐ No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6

Matters requiring referral to the **Chief Executive of the Planning Act 2016:**

- ☐ Clearing native vegetation
- ☐ Contaminated land (*unexploded ordnance*)
- ☒ Environmentally relevant activities (ERA) (*only if the ERA has not been devolved to a local government*)
- ☐ Fisheries – aquaculture
- ☐ Fisheries – declared fish habitat area
- ☐ Fisheries – marine plants
- ☐ Fisheries – waterway barrier works
- ☐ Hazardous chemical facilities
- ☐ Heritage places – Queensland heritage place (*on or near a Queensland heritage place*)
- ☒ Infrastructure-related referrals – designated premises
- ☐ Infrastructure-related referrals – state transport infrastructure
- ☒ Infrastructure-related referrals – State transport corridor and future State transport corridor
- ☐ Infrastructure-related referrals – State-controlled transport tunnels and future state-controlled transport tunnels
- ☐ Infrastructure-related referrals – near a state-controlled road intersection
- ☐ Koala habitat in SEQ region – interfering with koala habitat in koala habitat areas outside koala priority areas
- ☐ Koala habitat in SEQ region – key resource areas
- ☐ Ports – Brisbane core port land – near a State transport corridor or future State transport corridor
- ☐ Ports – Brisbane core port land – environmentally relevant activity (ERA)
- ☐ Ports – Brisbane core port land – tidal works or work in a coastal management district
- ☐ Ports – Brisbane core port land – hazardous chemical facility
- ☐ Ports – Brisbane core port land – taking or interfering with water
- ☐ Ports – Brisbane core port land – referable dams
- ☐ Ports – Brisbane core port land – fisheries
- ☐ Ports – Land within Port of Brisbane's port limits (*below high-water mark*)
- ☐ SEQ development area
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – tourist activity or sport and recreation activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – community activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – indoor recreation
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – urban activity
- ☐ SEQ regional landscape and rural production area or SEQ rural living area – combined use
- ☐ SEQ northern inter-urban break – tourist activity or sport and recreation activity



Queensland
Government

- ☐ SEQ northern inter-urban break – community activity
- ☐ SEQ northern inter-urban break – indoor recreation
- ☐ SEQ northern inter-urban break – urban activity
- ☐ SEQ northern inter-urban break – combined use
- ☐ Tidal works or works in a coastal management district
- ☐ Reconfiguring a lot in a coastal management district or for a canal
- ☐ Erosion prone area in a coastal management district
- ☐ Urban design
- ☐ Water-related development – taking or interfering with water
- ☐ Water-related development – removing quarry material *(from a watercourse or lake)*
- ☐ Water-related development – referable dams
- ☐ Water-related development – levees *(category 3 levees only)*
- ☐ Wetland protection area

Matters requiring referral to the **local government**:

- ☐ Airport land
- ☐ Environmentally relevant activities (ERA) *(only if the ERA has been devolved to local government)*
- ☐ Heritage places – Local heritage places

Matters requiring referral to the **Chief Executive of the distribution entity or transmission entity**:

- ☒ Infrastructure-related referrals – Electricity infrastructure

Matters requiring referral to:

- The **Chief Executive of the holder of the licence**, if not an individual
- The **holder of the licence**, if the holder of the licence is an individual
- ☐ Infrastructure-related referrals – Oil and gas infrastructure

Matters requiring referral to the **Brisbane City Council**:

- ☐ Ports – Brisbane core port land

Matters requiring referral to the **Minister responsible for administering the Transport Infrastructure Act 1994**:

- ☐ Ports – Brisbane core port land *(where inconsistent with the Brisbane port LUP for transport reasons)*
- ☐ Ports – Strategic port land

Matters requiring referral to the **relevant port operator**, if applicant is not port operator:

- ☐ Ports – Land within Port of Brisbane's port limits *(below high-water mark)*

Matters requiring referral to the **Chief Executive of the relevant port authority**:

- ☐ Ports – Land within limits of another port *(below high-water mark)*

Matters requiring referral to the **Gold Coast Waterways Authority**:

- ☐ Tidal works or work in a coastal management district *(in Gold Coast waters)*

Matters requiring referral to the **Queensland Fire and Emergency Service**:

- ☐ Tidal works or work in a coastal management district *(involving a marina (more than six vessel berths))*

18) Has any referral agency provided a referral response for this development application?

- ☐ Yes – referral response(s) received and listed below are attached to this development application
- ☒ No

Referral requirement	Referral agency	Date of referral response

Identify and describe any changes made to the proposed development application that was the subject of the referral response and this development application, or include details in a schedule to this development application *(if applicable)*.

PART 6 – INFORMATION REQUEST

19) Information request under the DA Rules

☒ I agree to receive an information request if determined necessary for this development application

☐ I do not agree to accept an information request for this development application

Note: By not agreeing to accept an information request I, the applicant, acknowledge:

- that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties
- Part 3 under Chapter 1 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules or
- Part 2 under Chapter 2 of the DA Rules will still apply if the application is for state facilitated development

Further advice about information requests is contained in the [DA Forms Guide](#).

PART 7 – FURTHER DETAILS

20) Are there any associated development applications or current approvals? (e.g. a preliminary approval)

☐ Yes – provide details below or include details in a schedule to this development application

☒ No

List of approval/development application references	Reference number	Date	Assessment manager
☐ Approval			
☐ Development application			
☐ Approval			
☐ Development application			

21) Has the portable long service leave levy been paid? (only applicable to development applications involving building work or operational work)

☐ Yes – a copy of the receipted QLeave form is attached to this development application

☐ No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid

☒ Not applicable (e.g. building and construction work is less than \$150,000 excluding GST)

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
\$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

☐ Yes – show cause or enforcement notice is attached

☒ No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an **Environmentally Relevant Activity (ERA)** under section 115 of the *Environmental Protection Act 1994*?

- ☒ Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below
- ☐ No

Note: Application for an environmental authority can be found by searching “ESR/2015/1791” as a search term at www.qld.gov.au. An ERA requires an environmental authority to operate. See www.business.qld.gov.au for further information.

Proposed ERA number:	14	Proposed ERA threshold:	≥10 MW electrical
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Proposed ERA name:	Electricity generation
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- ☐ Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Hazardous chemical facilities

23.2) Is this development application for a **hazardous chemical facility**?

- ☐ Yes – *Form 536: Notification of a facility exceeding 10% of schedule 15 threshold* is attached to this development application
- ☒ No

Note: See www.business.qld.gov.au for further information about hazardous chemical notifications.

Clearing native vegetation

23.3) Does this development application involve **clearing native vegetation** that requires written confirmation that the chief executive of the *Vegetation Management Act 1999* is satisfied the clearing is for a relevant purpose under section 22A of the *Vegetation Management Act 1999*?

- ☐ Yes – this development application includes written confirmation from the chief executive of the *Vegetation Management Act 1999* (s22A determination)
- ☒ No

Note: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development.
2. See <https://www.qld.gov.au/environment/land/vegetation/applying> for further information on how to obtain a s22A determination.

Environmental offsets

23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a **prescribed environmental matter** under the *Environmental Offsets Act 2014*?

- ☐ Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter
- ☒ No

Note: The environmental offset section of the Queensland Government's website can be accessed at www.qld.gov.au for further information on environmental offsets.

Koala habitat in SEQ Region

23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?

- ☐ Yes – the development application involves premises in the koala habitat area in the koala priority area
- ☐ Yes – the development application involves premises in the koala habitat area outside the koala priority area
- ☒ No

Note: If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at www.desi.qld.gov.au for further information.

Water resources

23.6) Does this development application involve **taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the *Water Act 2000***?

- ☐ Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the *Water Act 2000* may be required prior to commencing development
- ☒ No

Note: Contact the Department of Resources at www.resources.qld.gov.au for further information.

DA templates are available from planning.statedevelopment.qld.gov.au. If the development application involves:

- Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1
- Taking or interfering with water in a watercourse, lake or spring: complete DA Form 1 Template 2
- Taking overland flow water: complete DA Form 1 Template 3.

Waterway barrier works

23.7) Does this application involve **waterway barrier works**?

- ☐ Yes – the relevant template is completed and attached to this development application
- ☒ No

DA templates are available from planning.statedevelopment.qld.gov.au. For a development application involving waterway barrier works, complete DA Form 1 Template 4.

Marine activities

23.8) Does this development application involve **aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants**?

- ☐ Yes – an associated resource allocation authority is attached to this development application, if required under the *Fisheries Act 1994*
- ☒ No

Note: See guidance materials at www.daf.qld.gov.au for further information.

Quarry materials from a watercourse or lake

23.9) Does this development application involve the **removal of quarry materials from a watercourse or lake under the *Water Act 2000***?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
- ☒ No

Note: Contact the Department of Resources at www.resources.qld.gov.au and www.business.qld.gov.au for further information.

Quarry materials from land under tidal waters

23.10) Does this development application involve the **removal of quarry materials from land under tidal water under the *Coastal Protection and Management Act 1995***?

- ☐ Yes – I acknowledge that a quarry material allocation notice must be obtained prior to commencing development
- ☒ No

Note: Contact the Department of Environment, Science and Innovation at www.desi.qld.gov.au for further information.

Referable dams

23.11) Does this development application involve a **referable dam** required to be failure impact assessed under section 343 of the *Water Supply (Safety and Reliability) Act 2008* (the *Water Supply Act*)?

- ☐ Yes – the 'Notice Accepting a Failure Impact Assessment' from the chief executive administering the *Water Supply Act* is attached to this development application
- ☒ No

Note: See guidance materials at www.resources.qld.gov.au for further information.

Tidal work or development within a coastal management district

23.12) Does this development application involve **tidal work or development in a coastal management district**?

- ☐ Yes – the following is included with this development application:
- ☐ Evidence the proposal meets the code for assessable development that is prescribed tidal work (*only required if application involves prescribed tidal work*)
 - ☐ A certificate of title

☒ No

Note: See guidance materials at www.desi.qld.gov.au for further information.

Queensland and local heritage places

23.13) Does this development application propose development on or adjoining a place entered in the **Queensland heritage register** or on a place entered in a local government's **Local Heritage Register**?

☐ Yes – details of the heritage place are provided in the table below

☒ No

Note: See guidance materials at www.desi.qld.gov.au for information requirements regarding development of Queensland heritage places.

For a heritage place that has cultural heritage significance as a local heritage place and a Queensland heritage place, provisions are in place under the Planning Act 2016 that limit a local categorising instrument from including an assessment benchmark about the effect or impact of, development on the stated cultural heritage significance of that place. See guidance materials at www.planning.statedevelopment.qld.gov.au for information regarding assessment of Queensland heritage places.

Name of the heritage place:		Place ID:	
-----------------------------	--	-----------	--

Decision under section 62 of the Transport Infrastructure Act 1994

23.14) Does this development application involve new or changed access to a state-controlled road?

- ☐ Yes – this application will be taken to be an application for a decision under section 62 of the *Transport Infrastructure Act 1994* (subject to the conditions in section 75 of the *Transport Infrastructure Act 1994* being satisfied)

☒ No

Walkable neighbourhoods assessment benchmarks under Schedule 12A of the Planning Regulation

23.15) Does this development application involve reconfiguring a lot into 2 or more lots in certain residential zones (except rural residential zones), where at least one road is created or extended?

- ☐ Yes – Schedule 12A is applicable to the development application and the assessment benchmarks contained in schedule 12A have been considered

☒ No

Note: See guidance materials at www.planning.statedevelopment.qld.gov.au for further information.

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist

I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17

☒ Yes

Note: See the *Planning Regulation 2017* for referral requirements

If building work is associated with the proposed development, Parts 4 to 6 of [DA Form 2 – Building work details](#) have been completed and attached to this development application

☐ Yes

☒ Not applicable

Supporting information addressing any applicable assessment benchmarks is with the development application

Note: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see [DA Forms Guide: Planning Report Template](#).

☒ Yes

Relevant plans of the development are attached to this development application

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see [DA Forms Guide: Relevant plans](#).

☒ Yes

The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (see 21)

☐ Yes

☒ Not applicable

25) Applicant declaration

- ☒ By making this development application, I declare that all information in this development application is true and correct
- ☒ Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*

Note: It is unlawful to intentionally provide false or misleading information.

Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.

Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where:

- such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or
- required by other legislation (including the *Right to Information Act 2009*); or
- otherwise required by law.

This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received: Reference number(s):

Notification of engagement of alternative assessment manager

Prescribed assessment manager	
Name of chosen assessment manager	
Date chosen assessment manager engaged	
Contact number of chosen assessment manager	
Relevant licence number(s) of chosen assessment manager	

QLeave notification and payment

Note: For completion by assessment manager if applicable

Description of the work	
QLeave project number	
Amount paid (\$)	Date paid (dd/mm/yy)
Date receipted form sighted by assessment manager	
Name of officer who sighted the form	

Application form

Environmental Protection Act 1994

Development application Form 1 - Application details - attachment for an application for an environmental authority

This form is to be attached to the Development application Form 1 - Application details when making a development application for prescribed environmentally relevant activities (ERAs). Under section 115 of the Environmental Protection Act 1994 (EP Act) the development approval (DA) application is taken to be an application for an environmental authority (EA) for the prescribed ERAs.

It is recommended that prior to making an application for an environmentally relevant activity (ERA), you read the information on what to provide with an application. This information is located on the Business Queensland website at www.business.qld.gov.au (use the search term “Environmental licence”). This website also has a diagnostic tool called the “forms and fees finder” which will help identify any fees and supporting information you need to make an application.

Important notes:

- ☒ The application can't be to dredge or extract more than 10,000 tonnes of material a year in the North Stradbroke Island region. This is prohibited development under the Planning Regulation 2017.
- ☒ All applicants must be registered as suitable operators¹. A suitable operator is a person or a corporation assessed under section 318I of the EP Act as being suitable to carry out an ERA and is listed on the suitable operator register².
- ☒ If more than one ERA is being applied for, the ERAs must be carried out as part of a single integrated operation. ERAs are carried out as a single integrated operation if:
 - the ERAs will be carried out under the day to day management of a single responsible individual (e.g. a site manager or operations manager); and
 - all of the ERAs are operationally interrelated, that is, the operation cannot function without all of the ERAs. Separate applications will need to be made for the ERAs that cannot be carried out as a single integrated operation; and
 - the ERA/s are, or will be, carried out at one or more places; and
 - the places where the ERAs will be carried out are close enough to make the integrated day to day management of the activities feasible.
- ☒ All the ERAs that will be on the EA must be prescribed ERAs. Prescribed ERAs are ERAs listed in schedule 2 of the Environmental Protection Regulation 2019.

¹ Your EA application must be refused if you are not a registered suitable operator when the application is decided. To become a registered suitable operator, apply using the form “Application to be a registered suitable operator - ESR/2015/1771” (available at www.qld.gov.au, using the publication number ESR/2015/1771 as a search term).

² The register is available on the Queensland Government website at www.qld.gov.au, using the search term “suitable operator register”.

Application form

Development application Form 1 - Application details - attachment for an application for an environmental authority

Privacy statement

Where ERAs are administered by the Queensland Government:

The Department of the Environment, Tourism, Science and Innovation and Department of Primary Industries are collecting the information on this form to process your application for an EA. The collection is authorised under Chapter 5 of the EP Act.

Please note that the administering authority is required to keep this application on a register of documents open for inspection by members of the public under section 540 of the EP Act, and must permit a person to take extracts from the register pursuant to section 542 of the EP Act. Your personal information will not be otherwise disclosed to any other parties unless authorised or required by law. For queries about privacy matters please email privacy@detsi@detsi.qld.gov.au or telephone: 13 74 68.

Where ERAs are administered by a local government:

Contact the local government for their privacy information.

Pre-lodgement meeting

Where ERAs are administered by the Queensland Government:

You can arrange a pre-lodgement meeting through the Department of State Development, Infrastructure and Planning prior to lodging this application if you have not already done so. For more information contact the Department of State Development, Infrastructure and Planning (for contact details go to <https://www.planning.qld.gov.au/contact-us>).

Where ERAs are administered by a local government:

Contact the local government about pre-lodgement meetings.

The fields marked with an asterisk * are mandatory, if they are not completed then your application may be considered not properly made under the Planning Act 2016.

1 Applicant details

To nominate a site or application contact for this application please provide details at Questions 14 and 15.

Is there more than one applicant? *	☒ No—provide applicant's details below. ☐ Yes—provide the principal applicant's details below and all other applicants' details in Attachment 1—"Joint applicants and appointment of principal applicant"	
Name - individual or contact person if applicant is a organisation *	Suitable Operator Reference Number*	
Liam Riordan	546286	
Organisation name, including any trading name (*if an organisation)	ABN/ACN (*if an organisation)	
Braemar Power Project Pty Limited	64 6149 756 29	
Residential or registered business address (not a post office box) *	Phone *	
Level 16, 40 City Road, Southbank VIC 3006	0447 446 157	
Postal address (if same as above, write "AS ABOVE") *	Facsimile	
AS ABOVE		
Email *	☒ Indicate if you want to receive correspondence via email	
liam.riordan@alintaenergy.com.au		

1.1 Nomination of an agent for this application

I/we nominate the below agent to act on my/our behalf and to receive correspondence relating to this application.

Do you want to nominate an agent for this application? *	
☒ No → Go to Question 2 ☐ Yes → Complete the agent's details here.	
Name of agent – individual or contact person if agent is an organisation	
Organisation name, including trading name if an organisation	ABN/ACN (if an organisation)
Postal address	Phone
Email	☐ Indicate if you do not want to receive correspondence via email

2 Details of the ERA(s) that you want to operate

Please list all of the ERAs that will be undertaken on site, including:

- Any existing ERAs will continue to operate unchanged on the site (select "Existing" in the table below);
- ERAs that are proposed to be undertaken on the site as part of the application (select "New - DA" in the table below); and
- ERAs that are proposed to be undertaken on this site, that don't form part of this application as they do not require a DA (select "New - EA" in the table below).

Listing all the ERAs that will be undertaken on site will help enable them to all be included on the one EA

If the ERA has eligibility criteria and standard conditions³, identify whether you can comply with them. Select “N/A” where there are no eligibility criteria and standard conditions for that ERA. If you cannot comply with all of the applicable standard conditions, select “no” and attach details of the standard conditions you cannot comply with.

ERA number*	Threshold*	Name of ERA*	New or existing ERA(s)	I can comply with the eligibility criteria*	I can comply with all the standard conditions*
14	≥10 MW electrical	Electricity generation	☒ New - DA ☐ New - EA ☐ Existing	☐ Yes ☒ N/A	☐ Yes ☒ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No
			☐ New - DA ☐ New - EA ☐ Existing	☐ Yes ☐ N/A	☐ Yes ☐ No

☐ The EA number for existing ERA(s) listed above is

If there are new ERAs and your existing EA is an amalgamated EA, the application for ERAs associated with the DA application will create a new EA for the new ERAs. An application to amalgamate the current and new EAs may then be required.

☐ I have attached details of the standard conditions that I cannot comply with.

³ ERAs with eligibility criteria and standard conditions are listed at: www.business.qld.gov.au (use the search term “eligibility criteria”).

3 Will the ERAs be carried out as a single integrated operation?

Will more than one ERA be operated at the location?*		
☒ No	Go to <i>Question 4</i> .	
☐ Yes	Will any of the ERAs be operated as a single integrated operation (see definition on page one)?*	
	☐ No	Go to <i>Question 4</i> .
	☐ Yes	Provide details of the ERAs that are operated as a single integrated operation and supporting information showing they are a single integrated operation then go to <i>Question 4</i> .

4 Description of land where the ERA/s will be carried out

Where activities will be undertaken at more than one location, provide details in Attachment 2.

Number*	Street Name*	Suburb/Town*	Postcode*
363	Grahams Road	KOGAN	4406
Real Property Description*		Specific area within the location ie GPS or other descriptor*	
Lot 128 Plan SP214053			
Port (*if applicable)		Project Name (*if applicable)	

5 Details of contaminated land

Is there a site management plan in effect for contaminated land that relates to the land that is the subject of this application? *			
☒ No	Go to <i>Question 6</i> .		
☐ Yes	Description of land*		
	Lot and plan number(s)		Local Government Area*
	Lot	Plan	
	Lot	Plan	
	Lot	Plan	
Lot	Plan		

6 Environmental offsets

An environmental offset, under the *Environmental Offsets Act 2014*, may be required for an ERA where, despite all reasonable measures to avoid and minimise impacts on certain environmental matters, there is still likely to be significant residual impact on one or more of those matters.

You must verify the presence, whether temporary or permanent, of those environmental matters. For more information refer to the Queensland Environmental Offsets Policy and the Significant Residual Impact Guideline at the Queensland Government website at www.qld.gov.au, using the search term "environmental offsets".

Will the ERA(s) being applied for result in a significant residual impact to a matter of State environmental significance (MSES)?*	
☒ No	Go to <i>Question 7</i> .
☐ Yes	You must attach supporting information that: 1. Details the magnitude and duration of the likely significant residual impact on each prescribed environmental matter (other than matters of local environmental significance) for the entire activity; and 2. Demonstrates that all reasonable measures to avoid and minimise impacts on each of those matters will be undertaken.

6.1 Notice of election

Has a notice of election been submitted to the administering authority, or is being submitted as part of this application?	
☒ No	Go to <i>Question 6.2</i> .
☐ Yes	☐ You can attach the notice of election, if it has not been submitted to the department. Go to <i>Question 6.3</i> .

6.2 Staged environmental offsets

Offset delivery can be staged, however for this to occur, the condition of any approved environmental authority needs to state that both the activity and the offset may be staged. As part of your notice of election for each stage under the *Environmental Offsets Act 2014*, you are required to provide a detailed assessment of the quantum of impact of that stage and the offset obligation requirement to be delivered for that stage.

Will the proposed ERA(s) and delivery of an environmental offset be undertaken in stages?	
☒ No	Go to <i>Question 6.3</i> .
☐ Yes	You must attach supporting information that details of how the activity/activities are proposed to be staged.

6.3 Nature conservation environmental offset

Will the proposed ERA(s) and delivery of an environmental offset be undertaken in stages?	
☒ No	Go to <i>Question 6.4</i> .
☐ Yes	Provide permit number:

6.4 Marine parks environmental offset

Has marine park permit issued under the Marine Parks Act 2004 required an environmental offset for the same, or substantially the same, impact and the same, or substantially the same, MSES?	
☒ No	Go to <i>Question 7</i> .
☐ Yes	☐ You must attach a copy of the marine park permit to this application.

7 Matters of national environmental significance

There are currently nine matters of national environmental significance (MNES) which have been defined in the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act). These are:

- world heritage properties
- national heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and ecological communities
- migratory species protected under international agreements
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development

To determine whether the proposed ERA(s) will have a significant impact on MNES and for referral requirements, please refer to the guidance provided by the Federal Government's Department of Environment on www.environment.gov.au.

Would the carrying out of the proposed ERA(s) be likely to have a significant impact on a MNES? *	
☒ No	Go to <i>Question 9</i> .
☐ Yes	Has the proposal been referred to the Federal Department of Environment for formal assessment and approval? ☐ No → Go to <i>Question 8</i>. ☐ Yes → Go to <i>Question 7.1</i>.

7.1 EPBC Act approval for environmental offsets

Has an approval issued under the EPBC Act required an environmental offset for the same, or substantially the same, impact and the same, or substantially the same, MNES?	
☒ No	Go to <i>Question 8</i> .
☐ Yes	I have attached a copy of the approval under the EPBC Act. Are there any MNES which were assessed under the EPBC Act which are the same, or substantially the same as an MNES, but that were not conditioned in the approval? ☐ No → Go to <i>Question 8</i>. ☐ Yes → List these MNES:

8 Environmental impact statement under the State Development and Public Works Organisation Act 1971

Certain stages of the EA application process may not apply if the proposed activities were assessed as part of a coordinated project declared under the *State Development and Public Works Organisation Act 1971* (State Development Act), you are only required to answer Questions 8 to 8.1 if you have a current Co-ordinator General's (CG's) evaluation report for the project.

Has an environmental impact statement (EIS) process under State Development Act been completed?*	
☒ No	Go to <i>Question 9</i> .
☐ Yes	What is the title and project name of the completed EIS?*
	The EIS was completed for all activities that are the subject of this application. ☐ The environmental risks or the way the activity/activities are proposed to be carried out have not changed since the EIS was completed. ☐ The environmental risks or the way the activity/activities are proposed to be carried out have changed since the EIS was completed.
	The EIS was not completed for all activities that are the subject of this application. ☐ The environmental risks or the way the activity/activities are proposed to be carried out have not changed since the EIS was completed. ☐ The environmental risks or the way the activity/activities are proposed to be carried out have changed since the EIS was completed.
	Was the EIS completed for all activities that are the subject of this application?*
	☐ No Please list the activities that were not included in the EIS or attach documentation with this information to this application: ☐ I have attached the required supporting information.
☐ Yes	

8.1 Coordinator-General's conditions

Are there CG's conditions that relate to the ERA(s) being applied for? *	
☒ No	Go to <i>Question 9</i> .
☐ Yes	Name of the CG's evaluation report:

9 Assessment of the environmental impact

This question is **not applicable** if an EIS process under the State Development Act has been completed for all the ERA(s) that are the subject of this application and the environmental risks of the activities **and** the way they are proposed to be carried out has not changed since the EIS was completed.

You must attach to this application an assessment of the likely impact of each new ERA (whether from the DA application or another new ERA you want included on the EA that does not require a DA) on environmental values (*if applicable), including:

- a description of the environmental values likely to be affected by each relevant activity
- details of any emissions or releases likely to be generated by each relevant activity
- a description of the risk and likely magnitude of impacts on the environmental values
- details of the management practices proposed to be implemented to prevent or minimise adverse impacts
- details of how the land the subject of the application will be rehabilitated after each relevant activity ceases

☒ I have attached an assessment of the environmental impact and specific supporting information.

10 Details of waste management

Describe the proposed measures for minimising and managing waste generated by the activity/ies below*

Waste generated by the proposed extension to the existing gas-fired power station will be minimised and managed through the application of the existing facility's waste management practices and procedures, supplemented by project-specific controls where required. The extension will make use of existing infrastructure and operational arrangements where practicable, reducing the potential for additional waste generation.

During construction, waste streams may include general construction and demolition waste, packaging, surplus materials, scrap metal, cleared vegetation and general domestic waste. Waste will be minimised through appropriate material procurement, reuse and recycling where practicable, with waste segregated at source and stored in designated areas prior to removal by appropriately licensed waste contractors.

Waste management will prioritise the waste hierarchy, including avoidance and reduction, reuse and recycling, followed by recovery, treatment and disposal where other options are not practicable. Waste quantities and disposal arrangements will be monitored as part of the facility's existing environmental management and operational procedures to minimise potential impacts on the environment.

11 Take effect date (when fees will commence being charged)

You may nominate when the EA will take effect should it be approved. The date the environmental authority takes effect will be the date from which you can commence the activities as well as the date your annual fees will commence to be charged (your anniversary date). Under section 200 of the EP Act, if a development permit for a material change of use under the *Planning Act 2016* or a State development area (SDA) approval is required in order to carry out the ERA, the EA cannot take effect until the development permit or SDA approval takes effect (known as taking effect pending development approval).

Note that where you are applying new ERAs, and your existing EA is an amalgamated EA, the application for ERAs associated with the DA application will create a new EA for the new ERAs. In this case you may wish to nominate a take effect date in the future which, post approval of this application, will provide you with enough time to amalgamate your current and new EAs. Amalgamating your EAs prior to the take effect date of your new EA will prevent you being required to pay the first annual fee for your new EA.

Do you want the EA to take effect on the decision date, nominated date, or pending development approval?*

☐ Decision date The take effect date will be the date of the decision.

☐ Nominated date Details of nominated take effect date:

12 Nomination of site contact

An alternative contact nominated by the legal person which holds, or will in future hold, a relevant authority issued by the department. The department may direct correspondence relating to actual or potential compliance matters to the site contact.

Application form

Development application Form 1 - Application details - attachment for an application for an environmental authority

Do you want to nominate a site contact?*			☐ No ☒ Yes, provide details below
Title*	First Name*	Surname*	
Mr	John	McCullough	
Email Address*			☒ Indicate if you want to receive correspondence via email
john.mccullough@alintaenergy.com.au			
Phone			
07 3020 7716			

13 Nomination of application contact

An alternative contact nominated by the legal person which has submitted, or will in future submit, applications to be assessed by the department. All departmental correspondence relating to the assessment of applications will be directed to the application contact, however, if the application results in the issuing of a relevant authority, the relevant authority will be sent to the applicant.

Name or Position*
Liam Riordan
Primary Phone*
0448 117 123
Secondary Phone
Email Address*
liam.riordan@alintaenergy.com.au

14 Applicant declaration

I declare that the information I have provided is true and correct. I understand that it is an offence under the *Environmental Protection Act 1994* to give information that I know is false, misleading or incomplete.

I will comply with all conditions on my environmental authority as well as any relevant provisions in the *Environmental Protection Act 1994*.

I understand that I am responsible for managing the environmental impacts of these activities, and that approval of this application is not an endorsement by the administering authority of the effectiveness of the management practices proposed or implemented.

Applicant's full name*	Applicant's position*
Liam Riordan	Planning & Environment Manager
Applicant's signature*	Date*
	28 August 2026

Submit attachment, together with any additional information, with all relevant Development application Forms to the assessment manager for the development application.

Attachment 1**Joint applicants and appointment of principal applicant**

We are joint applicants for this environmental authority application and hereby appoint _____ as the principal applicant to receive statutory documents relating to this application.

Name - individual or contact person if applicant is an organisation*	Suitable Operator Reference Number*
Organisation name, including trading name (*if an organisation)	ABN/ACN (*if an organisation)
Residential or registered business address (not a post office box)*	Phone*
Postal address (if same as above, state "AS ABOVE") *	Facsimile
Email*	☐ Indicate if you want to receive correspondence via email
Signature*	Date*

Name - individual or contact person if applicant is an organisation*	Suitable Operator Reference Number*
Organisation name, including trading name (*if an organisation)	ABN/ACN (*if an organisation)
Residential or registered business address (not a post office box)*	Phone*
Postal address (if same as above, state "AS ABOVE") *	Facsimile
Email*	☐ Indicate if you want to receive correspondence via email
Signature*	Date*

Name - individual or contact person if applicant is an organisation*	Suitable Operator Reference Number*
Organisation name, including trading name (*if an organisation)	ABN/ACN (*if an organisation)
Residential or registered business address (not a post office box)*	Phone*
Postal address (if same as above, state "AS ABOVE") *	Facsimile
Email*	☐ Indicate if you want to receive correspondence via email
Signature*	Date*

Attachment 2**List of locations where the ERA(s) will be carried out.**

Where there is more than one location list all locations and which ERA(s) will be conducted at each location.

Number*	Street Name*	Suburb/Town*	Postcode*	ERA/s*
Real Property Description*		Specific area within the location ie GPS or other descriptor (*if applicable e.g. dredging)		
Lot	Plan			

Number*	Street Name*	Suburb/Town*	Postcode*	ERA/s*
Real Property Description*		Specific area within the location ie GPS or other descriptor (*if applicable e.g. dredging)		
Lot	Plan			

Number*	Street Name*	Suburb/Town*	Postcode*	ERA/s*
Real Property Description*		Specific area within the location ie GPS or other descriptor (*if applicable e.g. dredging)		
Lot	Plan			

Number*	Street Name*	Suburb/Town*	Postcode*	ERA/s*
Real Property Description*		Specific area within the location ie GPS or other descriptor (*if applicable e.g. dredging)		
Lot	Plan			

Number*	Street Name*	Suburb/Town*	Postcode*	ERA/s*
Real Property Description*		Specific area within the location ie GPS or other descriptor (*if applicable e.g. dredging)		
Lot	Plan			

Number*	Street Name*	Suburb/Town*	Postcode*	ERA/s*
Real Property Description*		Specific area within the location ie GPS or other descriptor (*if applicable e.g. dredging)		
Lot	Plan			

Number*	Street Name*	Suburb/Town*	Postcode*	ERA/s*
Real Property Description*		Specific area within the location ie GPS or other descriptor (*if applicable e.g. dredging)		
Lot	Plan			

Planning Assessment Report

Braemar Energy Hub – Gas fired generation

Prepared for Alinta Energy Pty Ltd
August 2026



Planning Assessment Report

Braemar Energy Hub - Gas fired generation

Alinta Energy Pty Ltd

E260055 RP2

August 2026

Version	Date	Prepared by	Reviewed by	Comments
1	21 August 2026	Sigrid Pembroke	Kay Casson	Draft
2	28 August 2026	Sigrid Pembroke	Ron Dela Pena	Final

Approved by



Ron Dela Pena
Associate Director
28 August 2026

Level 2 95 North Quay Brisbane QLD 4000
ABN: 28 141 736 558

This report has been prepared in accordance with the brief provided by Alinta Energy Pty Ltd and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. This report is to only be used for the purpose for which it has been provided. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM’s prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Alinta Energy Pty Ltd (and subject to the terms of EMM’s agreement with Alinta Energy Pty Ltd).

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ABN: 28 141 736 558

Application Summary

The table below provides a summary of this application – Development Permit for a Material Change of Use (MCU) for special industry (gas-fired generation).

Proposed development	
Proposal	Special industry (Gas-fired generation)
Application type	- Development permit for a Material Change of Use for Special Industry - Development permit for a Material Change of Use for an Environmentally Relevant Activity
Site details	
Address	363 Grahams Road, KOGAN QLD 4406
Real property description	Lot 128 on SP214053
Tenure	Freehold
Existing use	Existing Power Station
Local government area	Western Downs Regional Council
Proponent details	
Proponent	Braemar Power Project Pty Ltd
Contact name	Liam Riordan
Contact details	liam.riordan@alintaenergy.com.au
Consulting team	EMM Consulting Pty Ltd
Landowner	Braemar Power Project Pty Ltd
Regional plan	
Darling Downs	Darling Downs Regional Plan 2013
State referrals	
Referral triggers	- Material change of use for an Environmentally Relevant Activity. - Material Change of Use near a State transport corridor (premises within 25 metres of a State transport corridor). - Material Change of Use of premises near a substation site or subject to an easement. - Development on premises that are the subject of a Ministerial designation.
State codes	- SDAP 1: Development in a state-controlled road environment - SDAP 6: Protection of state transport networks - SDAP 22: Environmentally relevant activities
Local planning instrument	
Zone	Rural
Precinct	Special Industrial Area
Level of assessment	Code assessment

Proposed development	
Applicable overlays to the Project area	OM-002 – Biodiversity OM-003 – Bushfire Risk OM-006 – Infrastructure OM-010 – Stock Routes OM-011 – Scenic Amenity
Key outcomes	
Braemar Power Project Pty Ltd is proposing to expand the existing gas power station through the inclusion of up to an additional 250 megawatts (MW) of gas-fired generation. The development application provides a comprehensive assessment against the Western Downs Regional Council Planning Scheme 2017, Darling Downs Regional Plan 2013 and State Development Assessment Provisions, of which compliance is achieved for all performance outcomes. The Project is consistent with the intended land use and development outcomes of the Special Industrial Area precinct. Co-located within the existing gas-fired power station allotment and approximately 1.2 kilometres from the nearest sensitive receiver, the Project is suitably located and accords with the strategic intent of the precinct. In support of this development application, environmental impact assessments have been prepared. Detailed acoustics, bushfire, stormwater and air quality and ecological assessments have been undertaken to determine the likely impacts of the Project and how these impacts will be managed. Overall, the Project will contribute positively to the economy of the region, with all potential impacts of the Project appropriately managed. It is recommended that Western Downs Regional Council, as Assessment Manager, considers this development application on its planning and environmental merits and approves the Project, subject to reasonable and relevant conditions on the development permit.	

Abbreviations

Abbreviation	Full term
AEP	annual exceedance probability
AHD	Australian Height Datum
Air NEPM	National Environment Protection (Ambient Air Quality) Measure
Alinta Energy	Alinta Energy Pty Ltd
APZ	Asset Protection Zone
AQIA	Air Quality Impact Assessment
BESS	Battery Energy Storage System
DETSI	Department of Environment, Tourism, Science and Innovation
DTMR	Department of Transport and Main Roads
EA	Environmental Authority
EMM	EMM Consulting Pty Limited
EP Act	<i>Environmental Protection Act 1994</i>
EP Reg	Environmental Protection Regulation 2019
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
EPP Air	Environmental Protection (Air) Policy 2019 (Qld)
EPP Noise	Environmental Protection Policy (Noise) 2019
ERA	Environmentally Relevant Activities
ha	hectare
IFD	intensity frequency duration
km	kilometre
kV	kilovolt
m	metre
MCU	Material Change of Use
MLES	Matters of Local Ecological Significance
MNES	Matters of National Ecological Significance
MSES	Matters of State Ecological Significance
MW	megawatt
MWh	megawatt-hour
NIA	Noise Impact Assessment
Nox	nitrogen oxides
NPI	National Pollutant Inventory
PAR	Planning Assessment Report

Abbreviation	Full term
Planning Act	<i>Planning Act 2016</i>
PMST	Protected Matters Search Tool
Regional Plan	Darling Downs Regional Plan 2013
SARA	State Assessment and Referral Agency
SDAP	State Development Assessment Provisions
SMP	Stormwater Management Plan
SPP 2017	State Planning Policy 2017
TEC	threatened ecological communities
WDRC	Western Downs Regional Council

TABLE OF CONTENTS

Application Summary	I
Abbreviations	i
1 Introduction	1
1.1 Purpose of the report	1
1.2 Development overview	1
1.3 Definition of Project	1
1.4 Project terminology	2
1.5 Applicant details	2
1.6 Supporting documentation	3
2 Project area and local setting	4
3 Proposed development details	6
3.1 Project components	7
3.2 Project phases	7
4 Engagement	10
4.1 Western Downs Regional Council	10
4.2 Voluntary social impact assessment	10
5 Statutory context – planning	12
5.2 State development assessment	12
5.3 WDRC planning assessment	13
6 Statutory Context – environmentally relevant activity	17
6.1 General requirements for an Environmental Authority application	17
6.2 Standard criteria	18
7 Risk assessment	20
7.1 Risk assessment method	20
7.2 Risk assessment outcomes	21
8 Assessment of impacts	22
8.1 Ecology	22
8.2 Bushfire	23
8.3 Traffic	23
8.4 Surface water	24
8.5 Air quality	26

8.6	Noise	28
9	Conclusion	31

Appendices

Appendix A	Relevant plans	A.1
Appendix B	State development assessment provision responses	B.1
Appendix C	Western Downs Regional Council code responses	C.1
Appendix D	Environmental risk assessment	D.1
Appendix E	Ecology memorandum	E.1
Appendix F	Bushfire impact assessment and management plan	F.1
Appendix G	Traffic impact assessment	G.1
Appendix H	Stormwater management plan	H.1
Appendix I	Air quality impact assessment	I.1
Appendix J	Noise impact assessment	J.1

Tables

Table 1.1	Definition of Project	2
Table 1.2	Project terms and definitions	2
Table 1.3	Summary of Applicant details	3
Table 1.4	Supporting documentation	3
Table 2.1	Project area description	4
Table 3.1	Project description summary	6
Table 4.1	SIA interview feedback	11
Table 5.1	Land use definitions	12
Table 5.2	State assessment benchmarks	12
Table 5.3	Referral agency triggers	13
Table 5.4	Assessment against the Rural Zone Code overall outcomes	14
Table 5.5	Summary of assessment against overlay codes	16
Table 6.1	ERA's triggered by the Project	17
Table 6.2	EA application requirements	17
Table 6.3	Standard criteria as defined under Schedule 4 of the EP Act	19
Table 7.1	Likelihood criteria	20
Table 7.2	Consequence criteria	20
Table 7.3	Risk assessment matrix	21
Table 8.1	Guidelines summary used to determine assessment criteria	28
Table 8.2	Noise modelling parameters	29
Table D.1	Environmental risk assessment	D.1

Figures

Figure 2.1	Project area context	5
Figure 3.1	Project layout	9

1 Introduction

1.1 Purpose of the report

EMM Consulting Pty Ltd (EMM) has been engaged by Braemar Power Project Pty Ltd (the Applicant), a wholly owned company of Alinta Energy Pty Ltd (Alinta Energy), to prepare this Planning Assessment Report (PAR) in support of a development application to Western Downs Regional Council (WDRC) pursuant to the *Planning Act 2016* (Planning Act). The application seeks approval from the Assessment Manager, for the expansion to the existing operational Braemar Power Station through the installation of up to an additional 250 megawatts (MW) of gas-fired generation (the Project). The Project will be located within the existing power station allotment, predominantly on existing hardstand and previously disturbed land.

This development application seeks:

- Development permit for Material Change of Use (MCU) of a premises for a Special Industry (gas-fired generation).
- Development permit for MCU of a premises for an Environmentally Relevant Activity.

This PAR supports the combined development application and environmental authority (EA) for the Braemar Energy Hub Project (the Project). Under section 115 of the *Environmental Protection Act 1994* (EP Act), a development application for a development permit for a MCU is also taken to be an application for an environmental authority for the prescribed Environmentally Relevant Activities (ERAs). Further details regarding the statutory framework relevant to the Project are provided in Section 5 and Section 6.

1.2 Development overview

Alinta Energy is a leading Australian utility with an owned and contracted generation portfolio of more than 3,000 MW, over 1.1 million combined electricity and gas retail customers, and around 1,000 employees across Australia and New Zealand. Alinta Energy has been supplying energy in Australia for over 20 years.

As part of Alinta Energy's commitment to securing an energy mix that delivers reliability, affordability, and sustainability, Alinta Energy is proposing to extend the existing 564 MW Braemar Power Station through the installation of up to an additional 250 MW of gas-fired generation capacity. The Project will use the existing power station allotment, access arrangements and established energy infrastructure, with the Project footprint located predominantly on existing hardstand and previously disturbed land.

The gas-fired generation development forms part of Alinta Energy's broader Braemar Energy Hub concept, which may also include a future 2,000 megawatt hour (MWh) battery energy storage system (BESS). The potential BESS does not form part of this development application and would be subject to a separate approvals process.

1.3 Definition of Project

The Project has been determined to be assessable development subject to the provisions of the Western Downs Regional Council Planning Scheme 2017 (Version 4, July 2025). It comprises an extension to the existing operational Braemar Power Station within Lot 128 on SP214053. A summary of the development application details is included in Table 1.1.

Table 1.1 Definition of Project

Proposed development	Detail
Type of approval sought	• Development permit for MCU of a premises for a Special Industry (gas-fired generation) • Development permit for MCU of premises for an Environmentally Relevant Activity
Site address	363 Grahams Road, Kogan QLD 4406
Real property description	Lot 128 on SP214053
Assessment manager	Western Downs Regional Council
Landowner and applicant	Braemar Power Project Pty Ltd

1.4 Project terminology

Table 1.2 provides a description of Project terms used throughout this report.

Table 1.2 Project terms and definitions

Terminology	Definition
The Project	The installation, operation, maintenance and decommissioning of up to an additional 250 MW of gas-fired electricity generation capacity within the existing Braemar Power Station.
Project area	The Project area encompasses an area of 39.71 hectares (ha), which comprises the total extent of the lot boundaries that are defined as the real property description.
Project footprint	The Project footprint is the area within the Project area that may be directly impacted by the construction and operation of the Project. The Project footprint encompasses an area of approximately 1.82 ha.

1.5 Applicant details

Braemar Power Project Pty Ltd is owned by Alinta Energy. Alinta Energy is a major Australian energy provider with an established portfolio of generation assets and a demonstrated focus on investments that improve system reliability, support renewable energy integration, and strengthen grid security.

Across its energy developments, the Applicant maintains a strong commitment to long-term investment, technical compliance, and responsible project delivery. This includes a focus on environmental stewardship, risk-based design, and transparent engagement with stakeholders and landholders, as demonstrated through the pre-lodgement processes, technical assessments and landowner notifications undertaken for this application.

A summary of the applicant details is provided in Table 1.3.

Table 1.3 Summary of Applicant details

Attribute	Description
Developer and Applicant Name	Braemar Power Project Pty Ltd
Address	Alinta Servco Pty Limited, Grosvenor Place, Level 13, 225 George Street, SYDNEY NSW 2000
ABN	54 113 386 600
Key contact name	Liam Riordan, Planning & Environment Manager
Key contact details	0448 117 123 liam.riordan@alintaenergy.com.au

1.6 Supporting documentation

Table 1.4 outlines the appendices that support this PAR.

Table 1.4 Supporting documentation

Appendix	Document title	Version	Date	Author
A	Relevant Plans			
B	State Development Assessment Code response	-	-	EMM Consulting Pty Ltd
C	Western Downs Regional Council Code response	-	-	EMM Consulting Pty Ltd
D	Environmental risk assessment	-	-	EMM Consulting Pty Ltd
E	Ecology Memorandum	2	27/08/2026	EMM Consulting Pty Ltd
F	Bushfire Impact Assessment	E	02/04/2026	Green Tape Solutions
G	Traffic Impact Assessment	B	25/08/2026	Pekol Traffic and Transport
H	Stormwater Management Plan	B	26/08/2026	Topo
I	Air Quality Impact Assessment	2	27/08/2026	EMM Consulting Pty Ltd
J	Noise Impact Assessment	2	27/08/2026	EMM Consulting Pty Ltd

2 Project area and local setting

The Project is located within Lot 128 on SP214053 and contains the existing operational Braemar Power Station and associated energy infrastructure. The allotment comprises a total area of approximately 39.71 ha. The locality is characterised by large rural holdings, and extensive energy generation infrastructure which is interspersed with pockets of established vegetation. Existing land uses include Alinta Energy's existing Braemar Power Station, Powerlink's Braemar Substation and high voltage transmission infrastructure.

Two existing 275 kilovolt (kV) transmission lines traverse the Project area within an established corridor, connecting directly to the Powerlink Braemar Substation along the southern boundary. Additional major energy infrastructure, include the Darling Downs Power Station and associated solar farms located to the west of the Project area across Grahams Road, and Arrow Energy's 450 MW gas-fired power station located on the southern boundary of the Project area. The Project area is not proximate to residential areas, with the nearest small communities located more than 10 kilometres (km) from the Project area.

Access to the Project area is provided via existing private driveways from Grahams Road, a sealed local road. The Project area is not serviced by WDRC's reticulated water or sewer infrastructure, consistent with the rural context and existing industrial land uses.

An overview of the Project area and surrounding properties is provided in Table 2.1 and shown on Figure 2.1.

Table 2.1 Project area description

Characteristic	Description
Existing land use	Braemar Power Station is an existing operational 564 MW open-cycle natural gas turbine power station owned by Alinta Energy.
Existing structures	Gas-fired power generation facilities, gas pipeline infrastructure and connections, office buildings, storage warehouse, operational car parks, laydown areas, internal access roads and security fencing.
Frontage and access	- The Project area fronts Grahams Road; a sealed local road located to the west of the Project area. - Access is via private internal driveways from Grahams Road; no access is permitted or proposed from Dalby-Kogan Road to the north.
Topography	The Project area contains levelled and previously disturbed areas associated with existing power station operations (approximately 345 to 365 metres Australian Height Datum (m AHD)).
Existing vegetation	The vegetated area to the east includes areas of closed tall Eucalyptus-Callitris-Allocasuarina woodland, with approximately 70% comprising regrowth.
Existing waterways	There are no waterways located within the Project area.
Surrounding land uses	Surrounding land uses are dominated by energy generation and transmission infrastructure and include: - Braemar 2 Power Station –situated to the south of the Project area - Braemar Substation – situated to the south- west of the Project area - Darling Downs Power Station and Solar Farm – situated to the west of the Project area - Wambo Feedlot - situated to the north of the Project area.
Easements	Multiple easements traverse the Project area: - DSP121102 - CSP121102 - CSP121102 - BSP109060
Surrounding sensitive receptors	- No sensitive receivers are located within 1.2 km of the Project area. - The nearest small communities are Beelbee, Kogan, Ranges Bridge, MacAlister and Dalby, which are located approximately 10 km or more from the Project area.



KEY

- Project area
- Project footprint
- Existing environment
- Cadastral boundary
- Named watercourse
- State forest

Project area context

Braemar Energy Hub
Planning Assessment Report
Figure 2.1

3 Proposed development details

Alinta Energy proposes to extend the existing 564 MW Braemar Power Station through the installation of up to an additional 250 MW of gas-fired generation capacity. The Project forms part of the broader Braemar Energy Hub concept but is confined to the gas-fired generation development described in this application. The Project will be located within the existing power station allotment and will utilise established site access, utility connections and supporting infrastructure.

The Project includes the installation, operation, maintenance and eventual decommissioning of the power station which is further detailed within Table 3.1. Relevant plans for the Project are provided in Figure 3.1 and Appendix A.

Table 3.1 **Project description summary**

Project element	Description
Overview	
Project area	39.71 ha
Project footprint	1.82 ha
Gas-fired generation equipment	
Number of turbine(s) / Reciprocating engines	4/10 (subject to final technology selection)
Individual unit generation capacity	4.5 MW to 185 MW
Facility generation capacity	Up to 250 MW
Construction	
Construction period	Approximately 18 to 24 months
Construction workforce peak	Up to 100 workers
Temporary site access	Existing Grahams Road entry
Operations	
Project lifespan	20+ years
Operations workforce	Existing Braemar Power Station site staff (8 to 10)
Permanent site access	Existing Grahams Road entry
Decommissioning	
Decommissioning period	Approximately 18 to 24 months

3.1 Project components

3.1.1 Gas-fired generators

The development of the Project will include:

- up to 250 MW gas-fired generators – either gas turbines or reciprocating engines, subject to procurement processes
- gas pipeline connection – the generators will connect to the existing gas pipeline servicing Braemar Power Station.

3.1.2 Site access and carparking

Access to the Project area is provided from Grahams Road via existing private internal driveways servicing the Braemar Power Station. No access to Dalby–Kogan Road is proposed.

Existing internal circulation tracks will be used to facilitate construction, operations and emergency access. No new internal or external access tracks are proposed as part of the Project.

3.2 Project phases

3.2.1 Construction

Construction of the Project is expected to occur over an approximate 18 to 24 month period.

Activities will generally include site preparation, establishment of hardstand pads, drainage works, and installation of equipment. Up to 100 workers may be required during peak construction, with access managed via existing private driveways from Grahams Road.

Construction impacts such as dust, noise, traffic movements and stormwater runoff are anticipated to be manageable given the context of the Project area. A construction environmental management plan (CEMP) will be prepared prior to commencement of works by the appointed contractor to ensure compliance with relevant environmental requirements.

3.2.2 Operations

The Project will operate as an extension of the existing Braemar Power Station, having the ability to operate seven days a week, 365 days a year. The operational lifespan of the Project is expected to be 20+ years.

Operational activities will be carried out by existing Braemar Power Station site staff, and will comprise regular maintenance of Project infrastructure, cleaning, equipment calibration and internal road maintenance. The likely operational process for the Project involves the following activities:

- weekly and monthly inspections or maintenance
- testing and replacing of faulty plant components
- site safety and security includes CCTV and locked gate and fenced area.

Light vehicle access will be required throughout operations, with a maximum of 10 movements per day. Occasional heavy vehicle movements may also be required for maintenance works, with a maximum of five movements per day.

3.2.3 Decommissioning

At the end of the Project's operational life, the additional generation infrastructure installed as part of the Project will be decommissioned over an approximate 18 to 24 month period. During this phase, all above ground equipment built as part of the Project will be removed and the site's condition will be made consistent with the surrounding land uses.

It is proposed that a decommissioning plan is developed and submitted for approval at least one year prior to decommissioning. The plan will provide the level of detail required to guide the restoration of the Project footprint to align with the surrounding land uses. The plan will adopt industry best practice at the time of writing and will include performance criteria and an action plan for aspects such as the timing for remedial works, equipment or structure removal.



- KEY
- Project area
 - Project footprint
 - Asset protection zone buffer
 - Existing environment
 - Named watercourse
 - Cadastral boundary

Project layout

Braemar Energy Hub
Planning Assessment Report
Figure 3.1



4 Engagement

4.1 Western Downs Regional Council

A pre-lodgement meeting was held with WDRC's Planning and Environment Manager and Economic Development Manager on 24 June 2026 to provide an introductory briefing on the Project, proposed expansion of the existing Braemar Power Station and discuss key considerations relevant to the development application.

WDRC feedback was aligned to two key themes:

- Workforce and accommodation strategy – WDRC highlighted housing and workforce accommodation as a key consideration and concern for projects of this nature and recommended that these matters be addressed within the application.
- Technical matters – WDRC flagged some technical matters for consideration as part of the application preparation:
 - WDRC noted that traffic-related queries raised during its review of previous applications had been provided to Alinta, although it was acknowledged that traffic impacts associated with the current gas application are largely limited to the construction phase.
- WDRC noted previous concerns raised by Department of Environment, Tourism, Science and Innovation (DETSI) regarding the management of adverse nitrogen oxides (Nox), as identified in cumulative impact assessment results, particularly given the proximity of Braemar Power Station, Braemar 2 Power Station and Darling Downs Power Station.

4.2 Voluntary social impact assessment

Alinta Energy manages social performance in accordance with jurisdictional requirements and its internal Stakeholder Engagement and Social Performance Standard. Where jurisdictional requirements for matters specific to social performance do not fully align with Alinta Energy's internal standard, the internal standard is implemented to bridge any gaps. To support the Project, a Social Baseline and Social Impact Assessment has been prepared to understand local conditions and stakeholder perspectives.

EMM was engaged to complete the Social Baseline and Social Impact Assessment for this Project. EMM undertook a total of 16 stakeholder interviews, comprising 13 in-person interviews and three phone interviews in mid-June 2026. The interviews identified four key themes: community and stakeholder values, workforce development and management, housing and accommodation, and local business and industry. A summary of the key feedback received in these social impact assessment (SIA) interviews is provided in Table 4.1.

Table 4.1 **SIA interview feedback**

Key theme	Summary of interview feedback
Community and Stakeholder	Interviews indicated that the Kogan community is generally familiar with and accepting of the energy sector, reflecting the long-standing presence of gas operations within the region. While stakeholders acknowledged broad support for existing industries, some concerns remain regarding gas exploration activities and potential impacts on agricultural land.
Workforce Development and Management	Workforce availability was consistently identified as a key regional challenge. Stakeholders reported constrained local skills capacity and strong competition for workers across industries, despite pockets of higher unemployment in communities such as Kogan and Tara. Agricultural businesses were generally described as family-operated with limited external labour requirements, while larger farming operations often rely on seasonal backpacker workers. Existing education and training pathways, including TAFE programs in Dalby and Chinchilla, the Country Universities Centre in Chinchilla, and employment readiness initiatives delivered by the Chinchilla Community Commerce and Industry, were recognised as important contributors to workforce development.
Housing and Accommodation	Stakeholders identified housing and accommodation availability as an ongoing regional constraint. Key issues raised included low rental vacancy rates, increasing house prices and high occupancy levels within short-term accommodation. Workforce accommodation is largely supported by privately operated camp facilities in Chinchilla and Dalby, which experience strong demand and competition from multiple industry users.
Local Business and Industry	Interviews highlighted a diverse and resilient local economy supported by agriculture, power generation, construction, renewable energy, manufacturing and associated service industries. Agriculture continues to be viewed as a profitable and important land use across the region. Stakeholders identified strong demand for skilled labour as a key challenge, with workforce competition affecting the ability of local businesses to recruit and retain reliable staff.

The engagement outcomes indicate that workforce availability and accommodation remain important regional considerations. However, the Project will be developed within an existing operational power station and will utilise established infrastructure and an existing operational workforce, reducing the extent of long-term workforce and accommodation demands associated with the development.

5 Statutory context – planning

The following addresses the relevant requirement of the Planning Act by assessing the Project against the relevant assessment benchmarks.

5.1.1 Assessment manager

Schedule 8, table 2, item 1 (b)(i) of the Planning Regulation 2017 states that where development is made assessable by a local categorising instrument, the local government is the assessment manager. Consequently, the assessment manager for the Project is WDRC.

5.1.2 Use definition and level of assessment

The WDRC Planning Scheme defines the proposed land use as summarised in Table 5.1. In accordance with the table 5.5.10 – Rural zone of part 5 of the WDRC Planning Scheme, the proposed use is subject to Code Assessment.

Table 5.1 Land use definitions

Use term	Definition	Level of assessment
Special Industry	Use of premises for an industrial activity: a) that is the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products; and b) that a local planning instrument applying to the premises states is a special industry; and c) that complies with any thresholds for the activity stated in a local planning instrument applying to the premises, including, for example, thresholds relating to the number of products manufactured or the level of emissions produced by the activity.	Code
<i>Note—SC1.1.2 provides thresholds for industrial uses.</i>		

5.2 State development assessment

The Planning Act details the assessment benchmarks which the assessment manager must assess the proposed development against. These State assessment benchmarks are summarised in Table 5.2.

Table 5.2 State assessment benchmarks

Document	Assessment benchmark	Addressed in report
State Planning Policy 2017 (SPP 2017)	In accordance with section 2.1 – <i>State Planning Policies</i> of the WDRC Planning Scheme, the Minister has identified that all aspects of the SPP 2017 have been integrated into the planning scheme.	No further assessment required.
Darling Downs Regional Plan 2013 (Regional Plan)	In accordance with section 2.2 – <i>Regional Plan</i> of the WDRC Planning Scheme, the Minister has identified that all aspects of the Regional Plan have been integrated into the planning scheme.	No further assessment required.

Document	Assessment benchmark	Addressed in report
State Development Assessment Provisions (SDAP)	The SDAP Version 3.1 is prescribed under the Planning Act and provides assessable benchmarks being State codes, for assessment of a development by either the assessment manager (WDRC) or a referral agency where applicable under the Planning Regulation. The following State codes are applicable to the Project: • SDAP Code 1 – Development in a State-controlled road environment • SDAP Code 6 – Protection of State transport networks • SDAP Code 22 – Environmentally relevant activity.	Assessment against the relevant SDAP codes is provided in Appendix B.

5.2.1 Referral agencies

In accordance with Schedule 10 of the Planning Regulation, Table 5.2 identifies the referral agency triggers for the Project.

Further discussion of the ERAs triggered by the Project are provided in Section 6.

Table 5.3 Referral agency triggers

Planning Regulation reference	Description	Referral agency
Schedule 10, Part 9, Division 4, Subdivision 2, Table 1	MCU near a State transport corridor (premises within 25 m of a State transport corridor.	State Assessment and Referral Agency (SARA)
Schedule 10, Part 9, Division 1, Table 1, Item 8	Development on premises that are the subject of a Ministerial designation.	SARA
Schedule 10, Part 9, Division 2, Table 2	MCU of premises near a substation site or subject to an easement.	Powerlink Queensland
Schedule 10, Part 5, Division 4, Table 2	MCU for an ERA.	SARA

5.3 WDRC planning assessment

5.3.1 Rural zone code

The Project is consistent with the purpose of the Rural zone as it represents a non-rural use which is compatible with the surrounding agricultural activities and is consistent with the established character of the area. A detailed assessment against the Performance Outcomes and Acceptable Outcomes of the Rural Zone Code is provided in Appendix C.

Table 5.4 **Assessment against the Rural Zone Code overall outcomes**

Overall outcomes	Response
The purpose of the Rural zone is to: a) provide for rural uses and activities; and b) provide for other uses and activities that are compatible with: • existing and future rural uses and activities; and • the character and environmental features of the zone; and c) maintain the capacity of land for rural uses and activities by protecting and managing significant natural resources and processes.	The Project is proposed within the existing extent of the Braemar Power Station allotment. It represents an extension to the existing operations and does not encroach on surrounding agricultural land or activities.
The overall outcomes sought for the Rural zone code are as follows: 1. The zone primarily accommodates cropping or animal husbandry and ancillary detached dwellings.	The Project footprint is wholly located on the existing Braemar Power Station allotment and will not encroach upon land used for cropping or animal husbandry.
2. All rural land is protected from alienation and fragmentation. A lack of viability for existing farming operations and small holdings does not provide suitable and sufficient planning justification for further subdivision or uses for non-rural purposes.	The Project proposes to extend the existing operations of Braemar Power Station. The Project does not propose further subdivision of land and will not adversely impact on surrounding agricultural issues.
3. Residential development within the rural zone only occurs to the extent that it supports and is ancillary to the productive use of the land. Urban and residential development is contained within designated zonings for such uses and will not be permitted to expand into rural areas.	Not applicable – The Project does not propose any residential development.
4. New enterprises, such as rural service industries and tourism activities, are accommodated where: a) they are directly associated with rural production, a natural resource or the natural environment or need to be remote from urban uses as a result of their impacts; b) the productive capacity of the land is not diminished and conflicts with existing and intended activities in the surrounding area are avoided. c) the existing landscape and natural resource values of the land are maintained; and d) the proposed use could not be more appropriately located in another zone.	Not applicable – The Project does not propose any new enterprises (i.e. rural service industries or tourism activities).
5. Extractive resources and existing extractive operations on rural land are protected from encroachment from incompatible land uses.	Not applicable – The Project does not include extractive resources or operations and does not encroach on existing extractive resources or operations.
6. The environmental, character and landscape values of all rural land are protected from encroachment by incompatible land uses.	The Project proposes to extend the existing operations of Braemar Power Station and is wholly located within the existing Braemar Power Station allotment. Consequently, the Project upholds the established character of the area and will not adversely impact upon the surrounding rural uses.
7. Adequate separation and buffering is provided by new development in nearby or adjoining urban or rural residential zone land to ensure that encroachment, fragmentation or alienation of rural land by these uses is avoided.	Not applicable – The Project is not proposed nearby or adjoining urban or rural residential land.

Overall outcomes	Response
8. Special industry uses that require separation distances from sensitive land uses are supported and encouraged to locate in areas identified as Special Industrial Area identified on Strategic Plan Map 1 – Settlement Pattern.	The Project proposes to extend the existing operations of Braemar Power Station and is wholly located within the existing Braemar Power Station allotment which is mapped within the Special Industrial Area as identified on the Strategic Plan Map 1.
9. Any proposed reconfiguring of lots must facilitate allotments to ensure that battle-axe allotments are not created and that the location of any proposed future dwelling will allow for the front entrance of the building to address the street. Any proposed reconfiguration should take into account the direction of prevailing winds to ensure climate-responsive building design.	Not applicable – The Project does not propose any further reconfiguration of the Project allotment.
10. Development is connected to available urban infrastructure networks or is provided with suitable onsite potable water supply and a sustainable waste water disposal system to ensure the protection and maintenance of environmental health and human wellbeing and safety.	Not applicable – The Project is confined to the addition of gas generating equipment. Connection to water and sewer services for operation and maintenance buildings and fire water is provided as per existing Braemar Power Station operations.
11. Ecologically significant features including waterways, wetlands and significant vegetation are retained and buffered from the impacts of development or where appropriate, vegetation is integrated within the development to ensure the long term protection of these features.	The Project footprint is contained within existing cleared areas. Vegetation required to be cleared for the Asset Protection Zone is limited to unmapped Category X vegetation. Appropriate sediment and erosion controls will be implemented throughout the construction phase to ensure impacts to nearby mapped vegetation and waterways is mitigated as far as practicable.
12. Development is located and designed to achieve ecological sustainability by ensuring that the proposed development incorporates the objectives and principles of energy efficiency, water conservation, water quality management and the principles Crime Prevention through Environment Design.	The Project achieves ecological sustainability through its siting within a disturbed area of the existing Braemar Power Station, which benefits from established lighting, security and 24-hour monitoring.
13. Places, buildings or items of heritage character or heritage significance are protected and enhanced by development to preserve the historic character, amenity and identity of the locality.	The Project does not propose any impact to place, buildings or items of heritage character.
14. Development responds to land constraints such as topography, bushfire and does not impact on the flood capacity or impede the flood conveyance function of land. Development is not located where it will increase the number of people or structures at risk of natural hazards.	The Project proposes to extend the existing operations of Braemar Power Station and is wholly located within the existing Braemar Power Station allotment. The Project footprint is proposed on cleared land which is not constrained by flood, bushfire, or ecological mapping.
15. Where development is not consistent with the purpose and intent of the Rural zone, overriding community need will need to be demonstrated as well as valid planning justification provided as to why the proposed use cannot be reasonably established in a more appropriate zone.	Not applicable – The Project is consistent with the purpose and intent of the Rural zone and Strategic Plan Map 1.

5.3.2 Overlays

A summary of the applicable overlay codes is provided in Table 5.5. A full assessment against these assessment benchmarks is provided in Appendix C.

Table 5.5 Summary of assessment against overlay codes

Overlay	Sub-Class	Response
OM-002 – Biodiversity	- Matters of State Ecological Significance (MSES) Regulated Vegetation - MSES Wildlife Habitat	The Project area includes two small patches of vegetation on the eastern side of the allotment which are mapped within the OM-002 biodiversity overlay. The Project footprint is wholly contained within the cleared area to the west. Clearing for the Asset Protection Zone is also located outside the mapped areas and is mapped by the State as Category X Vegetation. An ecology memorandum is provided in Appendix E.
OM-003 – Bushfire Risk	Medium Potential Bushfire Intensity	The vegetated areas to the east and west of the Project footprint are mapped as medium potential bushfire intensity. The Project footprint is wholly contained to the pre-cleared area to the west. A Bushfire Impact Assessment (Appendix F) has been undertaken and concludes the Project will not increase the severity or cause potential bushfire damage to other properties.
OM-006 – Infrastructure	- Pipeline Buffer - Pipeline Licences - Power Station - Substation - Transmission Corridor	The Project proposes to extend the existing operations of Braemar Power Station and is wholly located within the existing Braemar Power Station allotment. Consequently, the Project is considered consistent and compatible with the established character of the area.

6 Statutory Context – environmentally relevant activity

The EP Act is supported by the Environmental Protection Regulation 2019 (EP Reg), which provides a framework for the effective and efficient administration and enforcement of the object and provisions of the EP Act. The EP Reg identifies a list of prescribed ERAs that have the potential to cause environmental harm.

The Project triggers the following ERAs in Table 6.1.

Table 6.1 ERA's triggered by the Project

ERA	Level of activity
ERA 14 (1), Electricity Generation	Generating electricity by using gas at a rated capacity of 10 MW electrical or more.

6.1 General requirements for an Environmental Authority application

The general EA application requirements under section 125 of the EP Act and responses are described in Table 6.2.

Table 6.2 EA application requirements

Section 125 requirement	Applicant response
(a) be made to the administering authority	The EA application has been lodged with DETSI who is the administering authority for the EP Act.
(b) be made in the approved form	The application was made using the approved form.
(c) describe all environmentally relevant activities; and	The EA application is in relation to carrying out ERA 14 – refer Table 6.1 of this report.
(d) describe the land on which each activity will be carried out; and	Refer Section 1, Table 1.2 of this report.
(e) be accompanied by the fee prescribed under a regulation	The prescribed application fee was paid at lodgement of the EA application.
(f) if 2 or more entities (joint applicants) jointly make the application—nominate 1 joint applicant as the principal applicant; and	The EA application form nominates the principal applicant.
(g) state whether the application is – (i) a standard application; or (ii) a variation application; or (iii) a site-specific application; and	The application is for a site-specific EA.
(h) state whether the applicant is a registered suitable operator; and	The approved form identifies the registered suitable operators.
(i) if a development permit under the Planning Act, or an SDA approval under the State Development Act, is required under either of those Acts for carrying out the environmentally relevant activities for the application—describe the permit or approval; and	The application has been prepared in accordance with the Planning Act. Alinta Energy is seeking a Development Permit for a MCU: special industry from WDRC.
(j) if the application is a standard or variation application – include a declaration that each relevant activity complies with the eligibility criteria; and	Not applicable – the application is not for a standard or variation application.

Section 125 requirement	Applicant response
(k) if the application is a variation application – (i) for a variation application under section 123 (1) – state the standard conditions for the activity or authority the applicant seeks to change; or (ii) for a variation application under section 123(2)—state the standard conditions that are not the same as the Coordinator-General’s conditions; and	Not applicable – the application is not for a variation application.
(l) if the application is a variation or site-specific application— (i) include an assessment of the likely impact of each relevant activity on the environmental values, including— A. a description of the environmental values likely to be affected by each relevant activity; and B. details of any emissions or releases likely to be generated by each relevant activity; and C. a description of the risk and likely magnitude of impacts on the environmental values; and D. details of the management practices proposed to be implemented to prevent or minimise adverse impacts; and E. if paragraph (n) does not apply—details of how the land the subject of the application will be rehabilitated after each relevant activity ceases; and (ii) include a description of the proposed measures for minimising and managing waste generated by each relevant activity; and (iii) include details of any site management plan that relates to the land the subject of the application; and	This PAR and supporting technical assessments (appendices) provide detailed descriptions of the environmental values likely to be affected by the Project. These assessments address: • Emissions or releases likely to be generated by the Project. • Environmental impacts and risks potentially generated by the Project. • Mitigations and management practices proposed to ameliorate the environmental impacts generated by the Project. At the end of the Project's operational life, the additional generation infrastructure installed as part of the Project will be removed and the site restored in accordance with a decommissioning plan prepared prior to decommissioning. Further detail is provided in Section 3.2.
(m) if the application is for a prescribed ERA—state whether the applicant wants any environmental authority granted for the application to take effect on a day nominated by the applicant; and	Yes – Alinta Energy seeks to confirm the anniversary date for the EA in consultation with administering authority.
(n) if the application is a site-specific application for a mining activity relating to a mining lease—be accompanied by a proposed PRC plan that complies with this division; and	Not applicable – the Project is not a resource project.
(o) include any other document relating to the application prescribed under a regulation.	This PAR and supporting appendices provide comprehensive documentation to address guidelines relevant to the Project.

6.2 Standard criteria

Section 176 of the EP Act requires the determining authority, in deciding an EA application, to consider any relevant regulatory requirement having regard to:

- the application
- the standard conditions for the relevant activity or authority
- any response given for an information request
- the standard criteria.

Schedule 4 of the EP defines the standard criteria. Table 6.3 considers the relevance of these criteria in relation to the proposed Project activities.

Table 6.3 **Standard criteria as defined under Schedule 4 of the EP Act**

The standard criteria means	Applicant response
(a) the following principles of environmental policy as set out in the Intergovernmental Agreement on the Environment – (i) the precautionary principle; (ii) intergenerational equity; (iii) conservation of biological diversity and ecological integrity; and	The Project has been designed to avoid and minimise environmental impacts through its location within an existing operational power station and predominantly disturbed areas. Environmental impacts have been assessed and mitigation measures identified where required.
b) any Commonwealth or State government plans, standards, agreements or requirements about environmental protection or ecologically sustainable development; and	The proposed activities would be undertaken in accordance with applicable requirements of other Commonwealth and State permits and approvals as required and as referenced throughout this application.
c) any relevant environmental impact study, assessment or report; and	This PAR and the supporting technical assessments evaluate the potential environmental impacts of the Project and identify measures to avoid, minimise and manage those impacts.
d) the character, resilience and values of the receiving environment; and	The Project is located within an existing operational power station and predominantly within existing hardstand and previously disturbed areas. Environmental values potentially affected by the Project have been assessed in the supporting technical assessments.
e) all submissions made by the application and submitters; and	Where required by assessing authorities, Alinta Energy would consider any submissions made on the application.
(f) the best practice environmental management for activities under any relevant instrument, or proposed instrument, as follows- (i) an environmental authority; (ii) a transitional environmental program; (iii) an environmental protection order; (iv) a disposal permit; (v) a development approval; and	Best practice environmental management of the proposed activities would be achieved through compliance with the conditions of the EA and implementation of management measures as described in this document and supporting appendices.
g) the financial implications of the requirements under an instrument, or proposed instrument, mentioned in paragraph (g) as they would relate to the type of activity or industry carried out, or proposed to be carried out under the instrument; and	Alinta Energy will continue to provide adequate funds, equipment and staff time to comply with the conditions of its environmental authorities.
(h) the public interest; and	The Project is in the public interest as it supports additional dispatchable generation capacity within an existing energy generation precinct while making use of established infrastructure and minimising environmental disturbance.
(i) any relevant site management plan; and	The existing Braemar Power Station has an Environmental Management Plan that will be used to operate the extension to the existing facility.
j) any relevant integrated environmental management system or proposed integrated environmental management system; and	Alinta Energy uses systems and tools such as DoneSafe, ChemAlert and InControl to manage risks associated with the existing Braemar Power Station.
k) any other matter prescribed under a regulation.	Not applicable.

7 Risk assessment

7.1 Risk assessment method

A risk assessment was completed to identify key risks of the Project on the receiving environment and inform further assessments, or mitigation measures necessary for consideration as part of this PAR.

The risk-based approach involved developing an understanding of the likelihood and consequences of an impact occurring using the likelihood criteria provided in Table 7.1 and consequence criteria provided in Table 7.2.

Table 7.1 Likelihood criteria

Likelihood	Description
A) Almost certain	Can be expected to occur in most circumstances
B) Likely	Will probably occur in most circumstances
C) Possible	Might occur at some time
D) Unlikely	Could occur at some time
E) Rare	May only occur in exceptional circumstances

Table 7.2 Consequence criteria

Rating	Description
5. Severe: <i>Widespread serious permanent effect</i>	Incident is reportable to the regulator, serious permanent/persistent and irreversible damage is caused, significant public interest and media coverage and/or uncontained impacts.
4. Major: <i>Widespread, moderate to long-term effect</i>	Incident is reportable to the regulator and notable damage is caused to an area or asset from which it will take more than 10 years to recover with long-term evidence of the incident resulting. Or Incident is reportable to the regulator or public concern is raised.
3. Moderate: <i>Localised, short-term to moderate effect</i>	Moderate but repairable damage that will take up to 10 years to recover OR Incident is reportable to the regulator.
2. Minor: <i>Localised short-term effect</i>	Minor damage to the environment or heritage asset or area that is immediately contained on site. It will take less than two years for the resource or asset to fully recover, or it will only require minor repair OR Disturbance to scarce or sensitive environment and heritage resources.
1. Insignificant: <i>No impact or no lasting effect</i>	Negligible damage is contained on-site OR the damage is fully recoverable with no permanent effects, taking less than three months to fully recover.

The risk assessment matrix in Table 7.3 was used to combine the likelihood and consequence rating, to give a risk assessment score.

Table 7.3 Risk assessment matrix

Likelihood	Consequence				
	1) Insignificant	2) Minor	3) Moderate	4) Major	5) Severe
A) Almost certain	Medium A1	Medium A2	High A3	Extreme A4	Extreme A5
B) Likely	Low B1	Medium B2	High B3	Extreme B4	Extreme B5
C) Possible	Low C1	Low C2	Medium C3	High C4	High C5
D) Unlikely	Low D1	Low D2	Low D3	Medium D4	Medium D5
E) Rare	Low E1	Low E2	Low E3	Low E4	Medium E5

7.2 Risk assessment outcomes

The risk assessment completed for the Project is provided as Appendix D.

The risk assessment identified that, prior to the implementation of additional mitigation measures, the Project represented:

- a high risk of impact resulting from greenhouse gas emissions
- a high risk of impact to sensitive receivers from operational noise (Scenario 2 only).

All other environmental risks, including air quality, waste management, traffic, surface water and community impacts, were assessed to be a low risk of impact.

Following the implementation of additional mitigation measures, all impacts associated with Project were considered to be a low risk of impact to the receiving environment except for greenhouse gas which was reduced to medium risk. Profiling of the emissions and the undertaking of a greenhouse gas assessment, and if required, abatement plan will likely see the risk rating reduced to low risk.

An assessment of the impacts of the Project on the receiving environment, including the identification of management and mitigation measures that will be adopted, is provided in Section 8.

8 Assessment of impacts

A summary of the technical impact assessments that have been undertaken for the purpose of this development application are provided in the subsequent sections. The relevant impact assessments in their entirety are provided within Appendix E to Appendix J.

8.1 Ecology

EMM was engaged to complete a desktop ecological assessment of the ecological values with potential to be impacted by the Project. The Project is located within the existing Braemar Power Station and is proposed predominantly within an existing hardstand area and previously disturbed land (Appendix E).

The key ecology constraints include Matters of National Environmental Significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Matters of State Environmental Significance (MSES) prescribed under the *Environmental Offset Regulation 2014* and Matters of Local Environmental Significance (MLES) prescribed under the WDRC Planning Scheme.

The Project footprint is highly disturbed and is located within the existing Braemar Power Station. The Project will be installed almost entirely within an existing hardstand area that has been previously cleared and developed. The entire Project footprint is mapped as non-remnant and is not mapped as being consistent with a regional ecosystem. The area adjacent to the hardstand includes a small area of trees which is mapped as non-remnant, Category X vegetation and will require clearing to establish an asset protection zone (APZ).

A Protected Matters Search Tool (PMST) and relevant Queensland environmental mapping indicate that the Project footprint does not contain mapped:

- threatened ecological communities (TECs)
- threatened flora, threatened or migratory fauna species or associated habitat
- essential habitat
- high-risk areas under the Protected Plants Flora Survey Trigger Map
- protected areas
- existing offset areas, and no land-based offsets.

On this basis, the Project is expected to result in negligible direct impacts to ecological values, with the majority of works confined to an existing developed hardstand area.

While no MNES or MSES are directly impacted, temporary indirect impacts to surrounding ecological values may occur during construction activities. These may include localised increases in dust, noise and artificial lighting which can be effectively managed through the implementation of mitigation measures such as:

- dust will be managed through measures such as wetting of unsealed roads and access tracks and reducing vehicle speeds where required
- construction and operational noise will be managed through appropriate equipment maintenance and standard industry noise suppression measures
- lighting will be minimised to that required for safety and security, with low-luminance and directional lighting used where practicable to avoid environmentally sensitive areas.

8.2 Bushfire

The Project area is identified as being constrained by the WDRC Planning Scheme bushfire hazard buffer overlay. A Bushfire Hazard Assessment and Management Plan has been undertaken by Green Tape Solutions and is provided in Appendix F.

The Project area is constrained by two patches of vegetation to the east of the Project footprint and vegetation to the south of the Project footprint which consists of a eucalypt woodland community (Vegetation Habitat Class 12.2). This vegetation has a potential bushfire hazard rating of 'Medium'. All other vegetation within the 150 m assessment area is not classified as bushfire-prone therefore, calculation of radiant heat flux/BAL is not applicable.

The Project qualifies under the SPP 2017 as essential community infrastructure as it forms part of the electricity transmission grid or supply network. The Rural Fire Service Queensland Bushfire Resilient Communities document requires that such uses should not be subject to a radiant heat flux of greater than 10 kilowatts per square metre (kW/m^2). Therefore, an APZ of 40.1 m has been established around the Project footprint to achieve this maximum radiant heat flux exposure.

Additionally, the Project meets site emergency access requirements and firefighting water provision requirements. The Project will be connected to the reticulated water supply network supplied by the existing bore under an approved water license. Fire hydrants will be provided and located within the Project area so that every part of the Project is within reach of fire hoses connected to a fire hydrant outlet.

Outcomes from this assessment have determined that the Project is compliant with SPP 2017 assessment benchmarks for Natural Hazards, Risk and Resilience, and the WDRC Planning Scheme Bushfire Risk Areas Overlay and Rural Zone Codes.

Subject to implementation of the recommended bushfire mitigation measures, the Project is not expected to increase bushfire risk to surrounding properties and is considered consistent with the relevant planning and bushfire assessment benchmarks.

8.3 Traffic

A Traffic Impact Assessment has been undertaken by Pekol Traffic and Transport and is provided in Appendix G. The purpose of this assessment was to evaluate the Project's access arrangements, construction and operational phase requirements, traffic generation and potential for impact on the surrounding road network.

The Project has been designed to make use of the existing road network and established access arrangements associated with the operational Braemar Power Station. Access will continue to be provided via the existing priority-controlled intersection with Grahams Road and no changes to the existing access arrangement are proposed or considered necessary.

Construction of the Project is expected to occur over approximately 18 months, with the most intensive construction activities occurring over a seven-week peak period. During this period, up to 100 workers may be required on site, generating an estimated maximum of approximately 92 vehicle movements per day. Peak-hour traffic generation is expected to be approximately 10 vehicles per hour during the external road network peak and up to 33 vehicles per hour during the Project peak. While construction will result in a temporary increase in traffic on the surrounding road network, the assessment indicates that this increase can be accommodated without significant impacts on network operations.

Once operational, the Project is expected to generate minimal traffic. Operations will be undertaken by the existing Braemar Power Station staff and no material increase in operational traffic is anticipated.

The existing road network has also been assessed in terms of road safety. Historic crash data identified no recorded crashes within 200 m of the assessed intersections, resulting in a KSI rate of zero at each location. This indicates that there are no identified existing road safety issues in the vicinity of the Project area that would be exacerbated by the Project.

Overall, the Project will utilise existing access infrastructure and established road connections associated with the operational Braemar Power Station. Temporary construction related traffic increases and negligible operational traffic generation are expected to be readily accommodated by the surrounding road network without adverse impacts on network performance or road safety.

The Project is therefore not expected to result in a significant adverse impact on road network operations or road safety.

8.4 Surface water

A Stormwater Management Plan (SMP) has been prepared by Topo for the Project and is provided in Appendix H. The SMP assesses existing drainage conditions and demonstrates that the Project can be developed without adversely affecting surrounding drainage patterns or flood behaviour.

8.4.1 Existing environment

The Project area encompasses approximately 39.71 ha, with the Project footprint occupying approximately 1.82 ha.

The Project area is predominantly impervious and forms part of the existing Braemar Gas Power Station and associated ancillary infrastructure, including access driveways, operational and maintenance areas and stormwater detention basins. Two patches of vegetation occur within the western portion of the Project area and represent the only areas not occupied by infrastructure.

The Project area forms part of the existing Braemar Power Station and contains established power generation, access and stormwater infrastructure and receives runoff from external catchments to the west and south. These catchments convey runoff through the western portion of the Project area, with flows passing through the centre before discharging via the northern boundary.

8.4.2 Methodology

The assessment methodology has been developed to demonstrate that the Project will maintain pre-development peak flow rates across the range of design storm events and will not result in adverse drainage or flooding impacts. The assessment also considers the potential for actionable nuisance associated with stormwater drainage as a result of the Project.

To achieve this, an integrated hydrologic and hydraulic model was constructed using XP-SWMM. The model represents the sub-catchments as a network of nodes linked to 1D drainage elements. The design rainfall is routed through the network after appropriate losses (initial and continuing) and roughness factors are applied, resulting in a surface runoff hydrograph for each sub-catchment.

- The XP-SWMM runoff-routing model has been used to estimate design flood discharges within the study area, and a peak flow comparison carried out using the Rational Method.
- Intensity Frequency Duration (IFD) data for the site has been derived using the Bureau of Meteorology (BOM) 2016 Rainfall IFD Data System.
- Hydrologic modelling has been undertaken using the Laurenson runoff routing method.

- The Manning's roughness coefficients have been varied for the impervious and pervious portions of the catchment.
- Initial Loss (IL) and Continuing Losses (CL) have been applied to the modelling, and these values have been varied for the impervious and pervious portions of the catchment.
- A combination of detailed LiDAR (recently flown) across the site, and Shuttle Radar Topography Mission LiDAR data (30 m gridded data) together with aerial imagery was used to define the site catchments and any external catchments contributing runoff to the study area. The site has been considered as three internal catchments and three external catchments in both the pre- and post-development scenarios.

8.4.3 Potential for impact

The Project area is not affected by mapped flooding, overland flow paths, wetlands or major waterways. The Project area is largely developed, with the Project footprint comprising a mix of existing hardstand and disturbed ground surfaces. As a result, the Project is expected to result in an insignificant increase in peak flow rates.

On-site detention has been sized to maintain pre-development peak flow rates at existing discharge locations. Accordingly, the Project is not expected to result in adverse impacts to drainage, flooding or scour affecting adjoining properties, roadways or public safety.

Site observations indicate that soils in the vicinity of existing culverts and drainage lines may be dispersive. If unmanaged, dispersive soils have the potential to increase erosion and sediment mobilisation during construction and operation.

8.4.4 Mitigation and management measures

Given the Project is located within an existing operational power station and is not affected by mapped flooding or major waterways, mitigation measures are focused on construction-phase erosion, sediment and drainage management. The following measures will be implemented to manage potential flooding, drainage, erosion and sedimentation impacts:

- A geotechnical investigation, including testing for dispersive soils, will be undertaken prior to construction. Where dispersive soils are identified, they will be managed and ameliorated in accordance with a Dispersive Soil Management Plan.
- Internal drainage infrastructure will be designed to accommodate, as a minimum, the 10% annual exceedance probability (AEP) critical storm event.
- Permanent drainage infrastructure, including lined drains where required, will be designed to appropriate engineering standards to minimise erosion and scour.
- Energy dissipaters and scour protection will be incorporated at concentrated flow discharge points, where required, in accordance with the Queensland Urban Drainage Manual.
- On-site detention measures will maintain pre-development peak flow rates at existing discharge locations.
- Clean water diversion drains will be provided around construction areas to minimise the volume of runoff requiring treatment.
- Temporary construction drainage will be designed to convey design flows in a non-erosive manner, consistent with IECA (2025).

- Best-practice erosion and sediment controls will be implemented during construction, with treated runoff managed to achieve appropriate water quality standards, including Total Suspended Solids (TSS) below 50 milligrams per litre (mg/L) and pH between 6.5 and 8.5.
- Fire-fighting containment systems will be designed and implemented in accordance with relevant guidelines and Australian Standards to minimise risks to people, property and the environment.

8.5 Air quality

An Air Quality Impact Assessment (AQIA) has been completed for the Project and included in Appendix I. A summary is provided below.

8.5.1 Existing environment

The Project is located within an established energy generation area, with existing gas-fired electricity generation at the Braemar Power Station, Braemar 2 Power Station and Darling Downs Power Station. For the purpose of assessing potential air quality impacts, 18 representative residential properties surrounding the Project have been identified as sensitive receptor locations and adopted as assessment locations for the AQIA.

A search of the National Pollutant Inventory (NPI) Digital Atlas of Australia website was completed to determine potential sources of air quality emissions within a 5 km radius of the Project. The sources identified were:

- Braemar Power Station – immediately adjacent to the Project
- Braemar 2 Power Station – 150 m south of the Project
- Darling Downs Power Station – 1.3 km south-west of the Project
- Daandine Operations (coal seam gas production and compression) – 3.9 km north-east of the Project
- Daandine Power Station – 4.5 km north-east of the Project.

8.5.2 Methodology

The AQIA assesses potential operational impacts from the Project on oxides of nitrogen (NO_x), including nitrogen dioxide (NO₂), carbon monoxide (CO) and volatile organic compounds (VOCs).

The existing meteorological environment was characterised using wind speed and wind direction data recorded at the on-site Braemar meteorological station for the period April 2025 to March 2026.

As Alinta Energy is considering either gas turbines or reciprocating gas engines for electricity generation, two conservative operating scenarios were assessed to represent potential worst-case emissions:

- **Scenario 1:** electricity generation using four gas turbines.
- **Scenario 2:** electricity generation using 10 reciprocating gas engines.

For both operating scenarios, Project emissions from gas combustion sources were estimated using a combination of manufacturer-specified emission rates and information from existing air quality impact assessments.

Atmospheric dispersion modelling was then undertaken using the AMS/US EPA regulatory model AERMOD (v24142). Meteorological inputs were generated using the AERMET (v24142) meteorological processor, incorporating local surface observations from the Bureau of Meteorology Dalby Airport station and upper-air profiles generated using the CSIRO TAPM meteorological modelling module.

The dispersion model was then used to predict NO_x concentrations associated with the Project and neighbouring emission sources. For the assessment, it was conservatively assumed that 100% of emitted NO_x converts to NO₂, providing a conservative basis for assessing potential impacts. This represents a conservative assessment approach and is likely to overestimate actual concentrations.

8.5.3 Potential for impact

Air quality modelling assessment outputs indicate that the Project has a low potential to adversely impact surrounding air quality.

The emissions sources for the Project primarily relate to particulate matter, including dust and fine particulates from earthworks, exposed surfaces, material handling and vehicle movements, and combustion-related emissions such as nitrogen dioxide or other exhaust pollutants from gas-fired generating equipment.

The predicted concentrations and deposition rates comply with the relevant assessment criteria under the Environmental Protection (Air) Policy 2019 (Qld) (EPP Air) and by the National Environment Protection (Ambient Air Quality) Measure (Air NEPM), which provides national ambient air quality standards for key pollutants. The key assessment criteria include limits for particulate matter as PM₁₀, PM_{2.5} and TSP, as well as dust deposition and combustion-related pollutants such as nitrogen dioxide.

The modelling results indicate that predicted concentrations remain below the relevant assessment criteria at surrounding sensitive receptors; accordingly, the potential for adverse air quality impacts is considered low and within manageable limits.

8.5.4 Mitigation and management measures

The Project will implement measures to minimise air quality impacts during both construction and operation.

During construction, a construction environmental management plan (CEMP) will be implemented to manage potential dust impacts. Measures will include the use of water sprays, minimising haul routes and reducing unnecessary vehicle and equipment idling.

During operation, plant and equipment, including pollution control equipment, will be maintained in good working condition. As start-up and shutdown of gas-fired generator units may result in elevated pollutant emissions, equipment- and process-specific procedures will be implemented to minimise emissions during these periods. These procedures will include:

- establishing start-up and shutdown procedures for processes with the potential to generate air emissions
- minimising the duration and frequency of start-up and shutdown activities where emissions are expected to be higher than during normal operation
- maintaining contemporaneous operating logs and relevant records documenting start-up and shutdown activities.

8.6 Noise

A Noise Impact Assessment (NIA) has been completed for the Project and included in Appendix J. A summary is provided below.

8.6.1 Existing environment

The Project is located within an established energy generation precinct containing existing operational power stations and associated infrastructure. A total of 21 potential assessment locations were identified within approximately 8 km of the Project area. The nearest assessment location is Braemar State Forest, located approximately 1.8 km south of the Project, while the nearest residential assessment location is approximately 1.9 km north-east of the Project boundary.

Assessment locations were provided by Alinta Energy, with additional protected state forest locations identified through aerial photography and available land use planning and zoning information. While the identified locations may not capture every existing or future sensitive receptor within the surrounding area, they are considered representative of the nearest potentially affected receptors and provide an appropriate basis for assessing potential noise impacts from the Project.

8.6.2 Methodology

Noise criteria for this assessment have been developed in accordance with the guidelines and definitions outlined in the EP Regulation, the EP Act and the EPP (Noise).

The documents used to determine the project specific noise objectives are summarised in Table 8.1 and are detailed in the following sections.

Table 8.1 Guidelines summary used to determine assessment criteria

Impact	Document
Construction airborne noise	<i>Environmental Protection Act 1994</i> (Qld) (EP Act) <i>Environmental Protection (Noise) Policy 2019</i> (Qld) (EPP (Noise)) <i>ESR/2020/5305 – Noise and vibration—EIS information guideline</i>
Operational airborne noise	<i>Environmental Protection (Noise) Policy 2019</i> (Qld) (EPP (Noise)) <i>Environmental Protection Regulation 2019</i> (Qld) (EP Regulation) NSW Environment Protection Authority (NSW EPA) 2017, <i>Noise Policy for Industry</i> (NPfi)
Operational road traffic	Department of Transport and Main Roads (DTMR) Transport Noise Management Code of Practice Volume 1 – Road Traffic Noise (2013) Department of Transport and Main Roads (DTMR) 2023, Transport Noise Management Code of Practice: Volume 2 – Construction Noise and Vibration, Queensland Government.
Cumulative noise impacts	<i>Environmental Protection Policy (Noise)</i> (2019)

The assessment is undertaken through noise modelling of the Project's operational, construction, and traffic activities, with predicted noise levels evaluated against the relevant criteria at assessment locations.

Noise modelling parameters for this assessment are provided in Table 8.2.

Table 8.2 Noise modelling parameters

Modelling component	Assumption
Noise model	SoundPLAN version 9.1
Prediction algorithm	ISO 9613-2 (1996)
Terrain	1 m digital elevation model - Elvis
Modelling period	Typical worst case 1 hour period of operation where each item of equipment is running at full power
Ground absorption coefficient	G = 0.7
Atmospheric absorption	As detailed in Section 8.5.2
Receptor heights	1.5 m above building ground level (representing ground floor)

As Alinta Energy is considering either gas turbines or reciprocating gas engines for electricity generation, two conservative operating scenarios were assessed to represent potential worst-case noise emissions:

- **Scenario 1:** electricity generation using four gas turbines.
- **Scenario 2:** electricity generation using 10 reciprocating gas engines.

8.6.3 Potential for impact

Noise modelling was undertaken to assess the potential construction and operational noise impacts of the Project at nearby sensitive assessment locations. The assessment considered noise-enhancing meteorological conditions and represents a conservative, worst-case assessment.

Construction noise levels are predicted to comply with the relevant acoustic quality objectives at all assessment locations. Construction-related road traffic noise on Dalby Kogan Road and Grahams Road is also predicted to comply with the Department of Transport and Main Roads (DTMR) criteria at all sensitive receptors.

Predicted operational noise levels are expected to meet the acoustic quality objectives at all assessment locations under both the gas turbine and reciprocating engine scenarios. While neither scenario satisfies the cumulative assessment criteria, this conservative, screening-level test does not indicate that the acoustic quality objectives would be exceeded cumulatively but does indicate that the Project may use a substantial proportion of the available acoustic amenity at some locations.

8.6.4 Mitigation and management measures

Construction noise levels are predicted to comply with the adopted acoustic quality objectives at all assessment locations. Construction noise will be managed through the application of the noise management hierarchy, prioritising avoidance and minimisation of noise, followed by management measures where required.

Measures may include:

- use of low-noise plant and equipment
- appropriate equipment maintenance
- strategic site layout and shielding
- scheduling of noisy activities

- community notification and complaint management.

Operational noise levels are also predicted to meet the acoustic quality objectives at all assessment locations for both the gas turbine and reciprocating engine scenarios. The operational assessment is based on preliminary design information, with final equipment specifications and configuration subject to procurement and detailed design.

Acoustic attenuation and reduced equipment sound power levels have been assumed for the reciprocating engine scenario to achieve the acoustic quality objectives. These requirements will be confirmed during detailed design, with consideration given to low-emission equipment, acoustic enclosures and silencers, source orientation and location, and other manufacturer-led noise reduction measures. Ongoing equipment maintenance, identification of noisy activities and community consultation will also support effective noise management during Project operation.

9 Conclusion

Braemar Power Project Pty Ltd, a wholly owned company of Alinta Energy proposes to extend the existing operational Braemar Power Station through the installation of up to an additional 250 MW of gas-fired generation capacity. The Project will be located within the existing power station allotment and predominantly within existing hardstand and previously disturbed areas.

This application seeks development approvals for:

- Development permit for Material Change of Use of a premises for a Special Industry (gas-fired generation).
- Development permit for Material Change of Use of premises for an Environmentally Relevant Activity.

This report and its supporting documents have been prepared in accordance with the provisions of the *Planning Act 2016* and the relevant requirements of the WDRC Planning Scheme. An overall assessment of the Project against the WDRC Planning Scheme confirms that the Project represents a suitable and compatible land use outcome and upholds the strategic intent of the special industry precinct.

The technical assessments undertaken for the Project demonstrate that environmental impacts can be appropriately avoided, minimised and managed. The Project will be developed within an existing operational power station and predominantly within existing hardstand and previously disturbed areas, substantially reducing the potential for environmental impacts when compared with a greenfield development.

Where environmental impacts have been identified through the assessment process, efforts have, in the first instance, been made when practicable to avoid or minimise those impacts through refinement of the design and technology choice.

The findings of this assessment demonstrate that the Project:

- is consistent with the objectives of the relevant Queensland planning and environmental legislation and policies
- is highly compliant with relevant statutory instruments and land use planning controls, making use of existing infrastructure, access arrangements and utility connections
- ameliorates all potential impacts to environmental values of the Project area and surrounds through the application of best practice environmental mitigation measures.

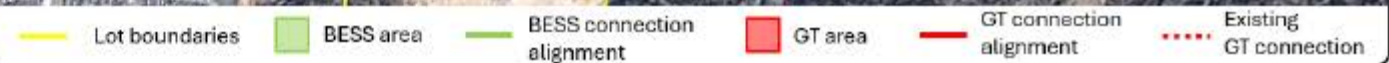
Accordingly, the Project is recommended to be approved subject to reasonable and relevant conditions.

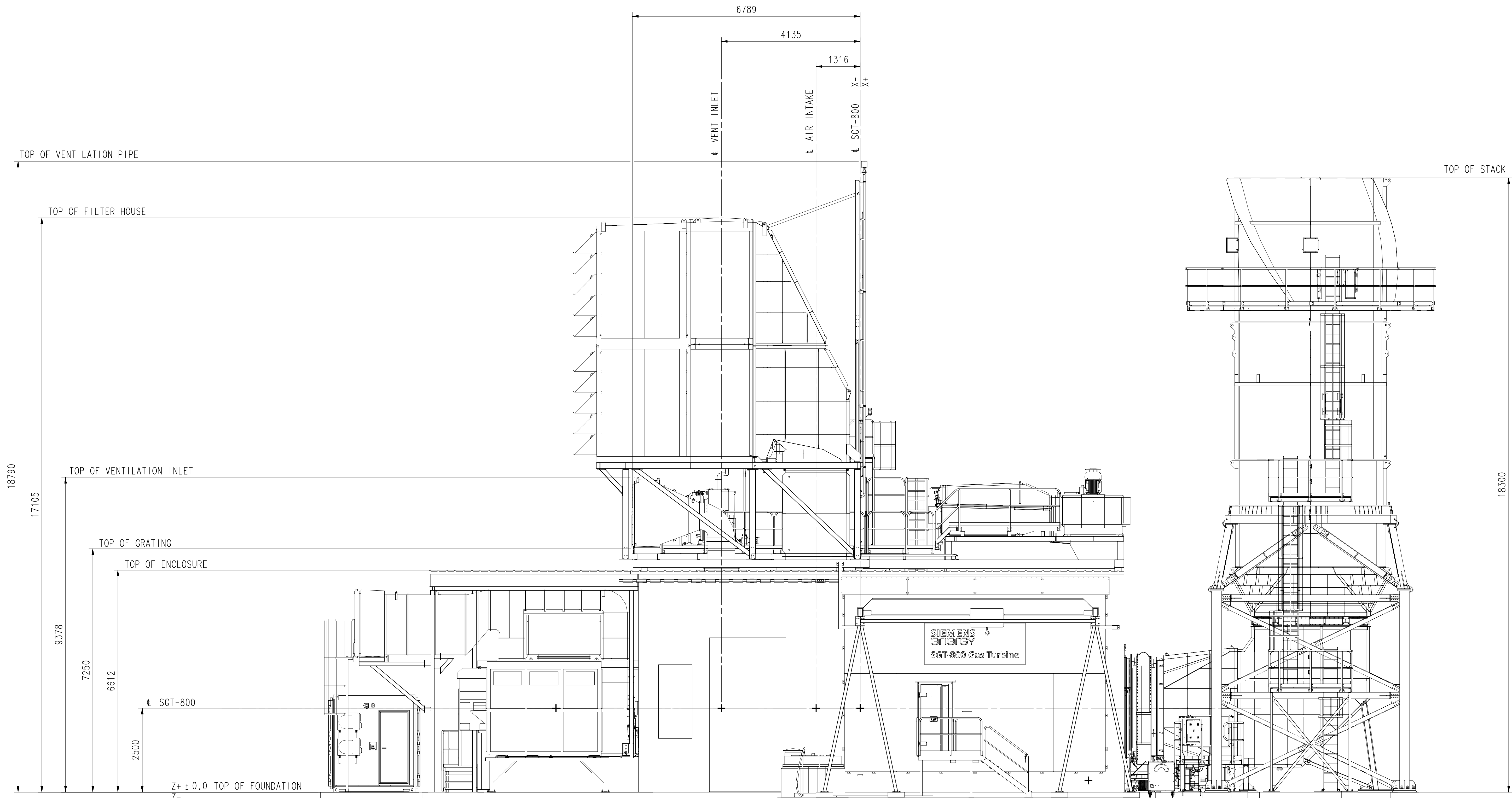
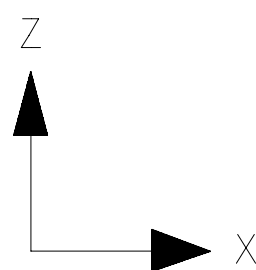
Appendix A

Relevant plans



Figure 1 Project area





LUBE OIL COOLERS OMITTED IN VIEW

PRELIMINARY
LAYOUT MIGHT DIFFER WITH REGARDS TO
ITEMS INCLUDED IN SCOPE OF SUPPLY

Appendix B

State development assessment provision responses

State code 1: Development in a state-controlled road environment

State Development Assessment Provisions guideline - State Code 1: Development in a state-controlled road environment. This guideline provides direction on how to address State Code 1.

Table 1.1 Development in general

Performance outcomes	Acceptable outcomes	Response
Buildings, structures, infrastructure, services and utilities		
PO1 The location of the development does not create a safety hazard for users of the state-controlled road .	AO1.1 Development is not located in a state-controlled road . AND AO1.2 Development can be maintained without requiring access to a state-controlled road .	COMPLIES The Project is not located on a state-controlled road and can be maintained without requiring access to the state-controlled road.
PO2 The design and construction of the development does not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The design and construction of the Project will not impact on the physical condition or structural integrity of the state-controlled road.
PO3 The location of the development does not obstruct road transport infrastructure or adversely impact the operating performance of the state-controlled road .	No acceptable outcome is prescribed.	COMPLIES The Project is wholly contained within the lot boundaries.
PO4 The location, placement, design and operation of advertising devices, visible from the state-controlled road , do not create a	No acceptable outcome is prescribed.	COMPLIES The Project does not include the provision of advertising devices.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 1 of 18

Performance outcomes	Acceptable outcomes	Response
safety hazard for users of the state-controlled road .		
PO5 The design and construction of buildings and structures does not create a safety hazard by distracting users of the state-controlled road .	AO5.1 Facades of buildings and structures fronting the state-controlled road are made of non-reflective materials. AND AO5.2 Facades of buildings and structures do not direct or reflect point light sources into the face of oncoming traffic on the state-controlled road. AND AO5.3 External lighting of buildings and structures is not directed into the face of oncoming traffic on the state-controlled road. AND AO5.4 External lighting of buildings and structures does not involve flashing or laser lights.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and as such, will not create a safety hazard or cause distraction for users of the state-controlled road.
PO6 Road, pedestrian and bikeway bridges over a state-controlled road are designed and constructed to prevent projectiles from being thrown onto the state-controlled road .	AO6.1 Road, pedestrian and bikeway bridges over the state-controlled road include throw protection screens in accordance with section 4.11 of the Design Criteria for Bridges and Other Structures Manual, Department of Transport and Main Roads, 2020.	NOT APPLICABLE The Project does not include the provision of road, pedestrian and bikeway bridges.
Landscaping		
PO7 The location of landscaping does not create a safety hazard for users of the state-controlled road .	AO7.1 Landscaping is not located in a state-controlled road .	NOT APPLICABLE The Project does not include any provision for landscaping within the road or road corridor.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 2 of 18

Performance outcomes	Acceptable outcomes	Response
	AND A07.2 Landscaping can be maintained without requiring access to a state-controlled road. AND A07.3 Landscaping does not block or obscure the sight lines for vehicular access to a state-controlled road.	
Stormwater and overland flow		
PO8 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of the state-controlled road .	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a change to the approved/current stormwater run-off and overflow scenario.
PO9 Stormwater run-off or overland flow from the development site does not result in a material worsening of the operating performance of the state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a change to the approved/current stormwater run-off and overflow scenario.
PO10 Stormwater run-off or overland flow from the development site does not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a change to the approved/current stormwater run-off and overflow scenario.
PO11 Development ensures that stormwater is lawfully discharged.	A011.1 Development does not create any new points of discharge to a state-controlled road. AND	COMPLIES The Project is proposed on an existing industrially developed site as such, there will be no change to the approved lawful point of discharge.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 3 of 18

Performance outcomes	Acceptable outcomes	Response
	AO11.2 Development does not concentrate flows to a state-controlled road. AND AO11.3 Stormwater run-off is discharged to a lawful point of discharge. AND AO11.4 Development does not worsen the condition of an existing lawful point of discharge to the state-controlled road.	
Flooding		
PO12 Development does not result in a material worsening of flooding impacts within a state-controlled road.	AO12.1 For all flood events up to 1% annual exceedance probability, development results in negligible impacts (within +/- 10mm) to existing flood levels within a state-controlled road. AND AO12.2 For all flood events up to 1% annual exceedance probability, development results in negligible impacts (up to a 10% increase) to existing peak velocities within a state-controlled road. AND AO12.3 For all flood events up to 1% annual exceedance probability, development results in negligible impacts (up to a 10% increase) to	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a material worsening of flooding impacts.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
	existing time of submergence of a state-controlled road .	
Drainage Infrastructure		
PO13 Drainage infrastructure does not create a safety hazard for users in the state-controlled road .	AO13.1 Drainage infrastructure is wholly contained within the development site, except at the lawful point of discharge . AND AO13.2 Drainage infrastructure can be maintained without requiring access to a state-controlled road .	COMPLIES The Project is proposed on an existing industrially developed site as such, there will be no change to the approved lawful point of discharge.
PO14 Drainage infrastructure associated with, or within, a state-controlled road is constructed, and designed to ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose drainage infrastructure associated with or within a state-controlled road.

Table 1.2 Vehicular access, road layout and local roads

Performance outcomes	Acceptable outcomes	Response
Vehicular access to a state-controlled road or within 100 metres of a state-controlled road intersection		
PO15 The location, design and operation of a new or changed access to a state-controlled road does not compromise the safety of users of the state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose any new or changed access to a state-controlled road.
PO16 The location, design and operation of a new or changed access does not adversely impact the functional requirements of the state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose any new or changed access to a state-controlled road.
PO17 The location, design and operation of a new or changed access is consistent with the future intent of the state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose any new or changed access to a state-controlled road.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 5 of 18

Performance outcomes	Acceptable outcomes	Response
PO18 New or changed access is consistent with the access for the relevant limited access road policy : 1. LAR 1 where direct access is prohibited; or 2. LAR 2 where access may be permitted, subject to assessment.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose any new or changed access to a state-controlled road.
PO19 New or changed access to a local road within 100 metres of an intersection with a state-controlled road does not compromise the safety of users of the state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose any new or changed access to the local road within 100m of the state-controlled road intersection.
PO20 New or changed access to a local road within 100 metres of an intersection with a state-controlled road does not adversely impact on the operating performance of the intersection.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose any new or changed access to the local road within 100m of the state-controlled road intersection.
Public passenger transport and active transport		
PO21 Development does not compromise the safety of users of public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project will not compromise the safety of public transport users.
PO22 Development maintains the ability for people to access public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project will not compromise the accessibility of public transport services.
PO23 Development does not adversely impact the operating performance of public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project will not compromise the operating performance of public transport services.
PO24 Development does not adversely impact the structural integrity or physical condition of public passenger transport infrastructure and active transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project will not compromise the structural integrity of public transport services.

Table 1.3 Network impacts

Performance outcomes	Acceptable outcomes	Response
PO25 Development does not compromise the safety of users of the state-controlled road network .	No acceptable outcome is prescribed.	COMPLIES The Project will not compromise the safety of users of the state-controlled road.
PO26 Development ensures no net worsening of the operating performance of the state-controlled road network .	No acceptable outcome is prescribed.	COMPLIES The Project will not result in a net worsening of the operating performance of the state-controlled road.
PO27 Traffic movements are not directed onto a state-controlled road where they can be accommodated on the local road network .	No acceptable outcome is prescribed.	COMPLIES All access will be off Grahams Road.
PO28 Development involving haulage exceeding 10,000 tonnes per year does not adversely impact the pavement of a state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not include the haulage of 10,000 tonnes per year.
PO29 Development does not impede delivery of planned upgrades of state-controlled roads .	No acceptable outcome is prescribed.	COMPLIES All access will be off Grahams Road.
PO30 Development does not impede delivery of corridor improvements located entirely within the state-controlled road corridor .	No acceptable outcome is prescribed.	COMPLIES All access will be off Grahams Road.

Table 1.4 Filling, excavation, building foundations and retaining structures

Performance outcomes	Acceptable outcomes	Response
PO31 Development does not create a safety hazard for users of the state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project is setback 3.5km from the state-controlled road and as such, does not create a safety hazard for uses of the state-controlled road or road transport infrastructure.
PO32 Development does not adversely impact the operating performance of the state-controlled road .	No acceptable outcome is prescribed.	COMPLIES The Project is setback 3.5km from the state-controlled road and as such, will not adversely impact the operating performance of the state-controlled road.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 7 of 18

Performance outcomes	Acceptable outcomes	Response
PO33 Development does not undermine, damage or cause subsidence of a state-controlled road .	No acceptable outcome is prescribed.	COMPLIES The Project is setback 3.5km from the state-controlled road and will not undermine, damage or cause subsidence of a state-controlled road.
PO34 Development does not cause ground water disturbance in a state-controlled road .	No acceptable outcome is prescribed.	COMPLIES The Project is setback 3.5km from the state-controlled road and will not cause ground water disturbance in a state-controlled road.
PO35 Excavation, boring, piling, blasting and fill compaction do not adversely impact the physical condition or structural integrity of a state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project is setback 3.5km and will not adversely impact the physical condition or structural integrity of the state-controlled road.
PO36 Filling and excavation associated with the construction of new or changed access do not compromise the operation or capacity of existing drainage infrastructure for a state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose any new or changed access to a state-controlled road.

Table 1.5 Environmental emissions

Statutory note: Where a **state-controlled road** is co-located in the same transport corridor as a railway, the development should instead comply with Environmental emissions in State code 2: Development in a railway environment.

Performance outcomes	Acceptable outcomes	Response
Reconfiguring a lot		
Involving the creation of 5 or fewer new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO37 Development minimises free field noise intrusion from a state-controlled road .	AO37.1 Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with:	NOT APPLICABLE The Project does not include the reconfiguration of a lot.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 8 of 18

Performance outcomes	Acceptable outcomes	Response
	a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO37.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound. OR AO37.3 Development provides a solid gap-free fence or other solid gap-free structure along the full extent of the boundary closest to the state-controlled road.	
Involving the creation of 6 or more new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO38 Reconfiguring a lot minimises free field noise intrusion from a state-controlled road .	AO38.1 Development provides noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with:	NOT APPLICABLE The Project does not include the reconfiguration of a lot.

Performance outcomes	Acceptable outcomes	Response
	a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO38.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	
Material change of use (accommodation activity)		
Ground floor level requirements adjacent to a state-controlled road or type 1 multi-modal corridor		
PO39 Development minimises noise intrusion from a state-controlled road in private open space .	AO39.1 Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.2) for private open space at the ground floor level; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013;	NOT APPLICABLE The Project is not for an accommodation activity.

Performance outcomes	Acceptable outcomes	Response
	b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO39.2 Development achieves the maximum free field acoustic level in reference table 2 (item 2.2) for private open space by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	
PO40 Development (excluding a relevant residential building or relocated building) minimises noise intrusion from a state-controlled road in habitable rooms at the facade.	AO40.1 Development (excluding a relevant residential building or relocated building) provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.	NOT APPLICABLE The Project is not for an accommodation activity.

Performance outcomes	Acceptable outcomes	Response
	OR AO40.2 Development (excluding a relevant residential building or relocated building) achieves the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	
PO41 Habitable rooms (excluding a relevant residential building or relocated building) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for an accommodation activity.
Above ground floor level requirements (accommodation activity) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO42 Balconies, podiums, and roof decks include: 1. a continuous solid gap-free structure or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); 2. highly acoustically absorbent material treatment for the total area of the soffit above balconies, podiums, and roof decks.	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for an accommodation activity.
PO43 Habitable rooms (excluding a relevant residential building or relocated building) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for an accommodation activity.
Material change of use (other uses)		
Ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO44 Development: 1. provides a noise barrier or earth mound that is designed, sited and constructed:	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for one of the listed uses.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 12 of 18

Performance outcomes	Acceptable outcomes	Response
a. to achieve the maximum free field acoustic level in reference table 2 (item 2.3) for all outdoor education areas and outdoor play areas; b. in accordance with: i. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; ii. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; iii. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or 2. achieves the maximum free field acoustic level in reference table 2 (item 2.3) for all outdoor education areas and outdoor play areas by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.		
PO45 Development involving a childcare centre or educational establishment: 1. provides a noise barrier or earth mound that is designed, sited and constructed: 2. to achieve the maximum building facade acoustic level in reference table 1 (item 1.2); 3. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for one of the listed uses.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or 4. achieves the maximum building facade acoustic level in reference table 1 (item 1.2) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.		
PO46 Development involving: 1. indoor education areas and indoor play areas; or 2. sleeping rooms in a childcare centre; or 3. patient care areas in a hospital achieves the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for one of the listed uses.
Above ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO47 Development involving a childcare centre or educational establishment which have balconies, podiums or elevated outdoor play areas predicted to exceed the maximum free field acoustic level in reference table 2 (item 2.3) due to noise from a state-controlled road are provided with: 1. a continuous solid gap-free structure or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia);	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for one of the listed uses.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
2. highly acoustically absorbent material treatment for the total area of the soffit above balconies or elevated outdoor play areas .		
PO48 Development including: 1. indoor education areas and indoor play areas in a childcare centre or educational establishment ; or 2. sleeping rooms in a childcare centre ; or 3. patient care areas in a hospital located above ground level, is designed and constructed to achieve the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.	NOT APPLICABLE The Project is not for one of the listed uses.
Air, light and vibration		
PO49 Private open space, outdoor education areas and outdoor play areas are protected from air quality impacts from a state-controlled road .	AO49.1 Each dwelling or unit has access to a private open space which is shielded from a state-controlled road by a building, solid gap-free fence , or other solid gap-free structure . OR AO49.2 Each outdoor education area and outdoor play area is shielded from a state-controlled road by a building, solid gap-free fence , or other solid gap-free structure .	NOT APPLICABLE The Project is not for one of the listed uses.

Performance outcomes	Acceptable outcomes	Response
PO50 Patient care areas within hospitals are protected from vibration impacts from a state-controlled road or type 1 multi-modal corridor .	AO50.1 Hospitals are designed and constructed to ensure vibration in the patient treatment area does not exceed a vibration dose value of $0.1\text{m/s}^{1.75}$. AND AO50.2 Hospitals are designed and constructed to ensure vibration in the ward of a patient care area does not exceed a vibration dose value of $0.4\text{m/s}^{1.75}$.	NOT APPLICABLE The Project is not for one of the listed uses.
PO51 Development is designed and sited to ensure light from infrastructure within, and from users of, a state-controlled road or type 1 multi-modal corridor, does not: 1. intrude into buildings during night hours (10pm to 6am); 2. create unreasonable disturbance during evening hours (6pm to 10pm).	No acceptable outcomes are prescribed.	NOT APPLICABLE The Project is not for one of the listed uses.

Table 1.6: Development in a future state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
PO52 Development does not impede delivery of a future state-controlled road .	AO52.1 Development is not located in a future state-controlled road. OR ALL OF THE FOLLOWING APPLY: AO52.2 Development does not involve filling and excavation of, or material changes to, a future state-controlled road.	NOT APPLICABLE The Project is not located within or adjacent to a future state-controlled road corridor.

State Development Assessment Provisions v3.6

State code 1: Development in a state-controlled road environment

Page 16 of 18

Performance outcomes	Acceptable outcomes	Response
	AND AO52.3 The intensification of lots does not occur within a future state-controlled road. AND AO52.4 Development does not result in the landlocking of parcels once a future state-controlled road is delivered.	
PO53 The location and design of new or changed access does not create a safety hazard for users of a future state-controlled road .	AO53.1 Development does not include new or changed access to a future state-controlled road .	NOT APPLICABLE The Project is not located within or adjacent to a future state-controlled road corridor.
PO54 Filling, excavation, building foundations and retaining structures do not undermine, damage or cause subsidence of a future state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located within or adjacent to a future state-controlled road corridor.
PO55 Development does not result in a material worsening of stormwater, flooding, overland flow or drainage impacts in a future state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located within or adjacent to a future state-controlled road corridor.
PO56 Development ensures that stormwater is lawfully discharged.	AO56.1 Development does not create any new points of discharge to a future state-controlled road. AND AO56.2 Development does not concentrate flows to a future state-controlled road. AND	NOT APPLICABLE The Project is not located within or adjacent to a future state-controlled road corridor.

Performance outcomes	Acceptable outcomes	Response
	AO56.3 Stormwater run-off is discharged to a lawful point of discharge. AND AO56.4 Development does not worsen the condition of an existing lawful point of discharge to the future state-controlled road.	

State code 6: Protection of state transport networks

Table 6.2 Development in general

Performance outcomes	Acceptable outcomes	Response
Network impacts		
PO1 Development does not compromise the safety of users of the state-controlled road network.	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and as such, will not create a safety hazard for users of the state-controlled road.
PO2 Development does not adversely impact the structural integrity or physical condition of a state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and as such, will not adversely impact the structural integrity or physical condition of a state-controlled road or road transport infrastructure.
PO3 Development ensures no net worsening of the operating performance the state-controlled road network.	No acceptable outcome is prescribed.	COMPLIES The Project will not compromise the operating performance of the state-controlled road network.
PO4 Traffic movements are not directed onto a state-controlled road where they can be accommodated on the local road network.	No acceptable outcome is prescribed.	COMPLIES All access will be off Grahams Road.
PO5 Development involving haulage exceeding 10,000 tonnes per year does not damage the pavement of a state-controlled road .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not include the haulage of 10,000 tonnes per year.
PO6 Development does not require a new railway level crossing.	No acceptable outcome is prescribed.	COMPLIES The Project does not propose a new railway level crossing.
PO7 Development does not adversely impact the operating performance of an existing railway crossing .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located near a railway crossing.
PO8 Development does not adversely impact on the safety of an existing railway crossing .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located near a railway crossing.

Performance outcomes	Acceptable outcomes	Response
PO9 Development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a railway crossing .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located near a railway crossing.
PO10 Development does not create a safety hazard within the railway corridor .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located near a railway corridor.
PO11 Development does not adversely impact the operating performance of the railway corridor .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located near a railway corridor.
PO12 Development does not interfere with or obstruct the railway transport infrastructure or other rail infrastructure .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located near rail transport infrastructure or other rail infrastructure.
PO13 Development does not adversely impact the structural integrity or physical condition of a railway corridor or rail transport infrastructure .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is not located near rail transport infrastructure or other rail infrastructure.
Stormwater and overland flow		
PO14 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of a state transport corridor or state transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a change to the approved/ current stormwater run-off and overflow scenario.
PO15 Stormwater run-off or overland flow from the development site does not result in a material worsening of operating performance of a state transport corridor or state transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a change to the approved/ current stormwater run-off and overflow scenario.
PO16 Stormwater run-off or overland flow from the development site does not interfere with the structural integrity or physical condition of the state transport corridor or state transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a

Performance outcomes	Acceptable outcomes	Response
		change to the approved/ current stormwater run-off and overflow scenario.
PO17 Development associated with a state-controlled road or road transport infrastructure ensures that stormwater is lawfully discharged.	AO17.1 Development does not create any new points of discharge to a state transport corridor or state transport infrastructure. AND AO17.2 Development does not concentrate flows to a state transport corridor. AND AO17.3 Stormwater run-off is discharged to a lawful point of discharge. AND AO17.4 Development does not worsen the condition of an existing lawful point of discharge to a state transport corridor or state transport infrastructure.	COMPLIES The Project is proposed on an existing industrially developed site as such, there will be no change to the approved lawful point of discharge.
Flooding		
PO18 Development does not result in a material worsening of flooding impacts within a state transport corridor or state transport infrastructure	<i>For a state-controlled road or road transport infrastructure, all of the following apply:</i> AO18.1 For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (within +/- 10mm) to existing flood levels within a state transport corridor. AND AO18.2 For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (up to a 10%	COMPLIES The Project footprint is setback approximately 3.5km from the state-controlled road and on an existing industrially developed site. Consequently, the Project will not result in a material worsening of flooding impacts.

Performance outcomes	Acceptable outcomes	Response
	increase) to existing peak velocities within a state transport corridor. AND AO18.3 For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (up to a 10% increase) to existing time of submergence of a state transport corridor. <i>No acceptable outcome is prescribed for a railway corridor or rail transport infrastructure.</i>	
Drainage infrastructure		
PO19 Drainage infrastructure does not create a safety hazard in a state transport corridor .	<i>For a state-controlled road environment, both of the following apply:</i> AO19.1 Drainage infrastructure associated with, or in a state-controlled road is wholly contained within the development site, except at the lawful point of discharge. AND AO19.2 Drainage infrastructure can be maintained without requiring access to a state transport corridor. <i>For a railway environment both of the following apply:</i> AO19.3 Drainage infrastructure associated with a railway corridor or rail transport infrastructure is wholly contained within the development site. AND	NOT APPLICABLE The Project does not propose drainage infrastructure associated with or within a state-controlled road.

Performance outcomes	Acceptable outcomes	Response
	AO19.4 Drainage infrastructure can be maintained without requiring access to a state transport corridor .	
PO20 Drainage infrastructure associated with, or in a state-controlled road or road transport infrastructure is constructed and designed to ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network is maintained.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project does not propose drainage infrastructure associated with or within a state-controlled road.
Planned upgrades		
PO21 Development does not impede delivery of planned upgrades of state transport infrastructure .	No acceptable outcome is prescribed.	COMPLIES The Project will not impede on the delivery of planned upgrades.

Table 6.3 Public passenger transport infrastructure and active transport

Performance outcomes	Acceptable outcomes	Response
PO22 Development does not damage or interfere with public passenger transport infrastructure, active transport infrastructure or public passenger services .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO23 Development does not compromise the safety of public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO24 Development does not adversely impact the operating performance of public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO25 Development does not adversely impact the structural integrity or physical condition of	No acceptable outcome is prescribed.	NOT APPLICABLE

Performance outcomes	Acceptable outcomes	Response
public passenger transport infrastructure and active transport infrastructure.		The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO26 Upgraded or new public passenger transport infrastructure and active transport infrastructure is provided to accommodate the demand for public passenger transport and active transport generated by the development.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO27 Development is designed to ensure the location of public passenger transport infrastructure prioritises and enables efficient public passenger services .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO28 Development enables the provision or extension of public passenger services, public passenger transport infrastructure and active transport infrastructure to the development and avoids creating indirect or inefficient routes for public passenger services .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO29 New or modified road networks are designed to enable development to be serviced by public passenger services .	AO29.1 Roads catering for buses are arterial or sub-arterial roads , collector or their equivalent. AND AO29.2 Roads intended to accommodate buses are designed and constructed in accordance with: 1. Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design; Department of Transport and Main Roads; 2. Supplement to Austroads Guide to Road Design (Parts 3, 4-4C and 6), Department of Transport and Main Roads;	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.

Performance outcomes	Acceptable outcomes	Response
	3. Austroads Guide to Road Design (Parts 3, 4-4C and 6); 4. Austroads Design Vehicles and Turning Path Templates; 5. Queensland Manual of Uniform Traffic Control Devices, Part 13: Local Area Traffic Management and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – Local Area Traffic Management; AND AO29.3 Traffic calming devices are not installed on roads used for buses in accordance with section 2.3.2 Bus Route Infrastructure, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
PO30 Development provides safe, direct and convenient access to existing and future public passenger transport infrastructure and active transport infrastructure .	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO31 On-site vehicular circulation ensures the safety of both public passenger transport services and pedestrians.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO32 Taxi facilities are provided to accommodate the demand generated by the development.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO33 Facilities are provided to accommodate the demand generated by the development for community transport services, courtesy transport	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger

Performance outcomes	Acceptable outcomes	Response
services, and booked hire services other than taxis.		transport infrastructure, active transport infrastructure or public passenger services.
PO34 Taxi facilities are located and designed to provide convenient, safe and equitable access for passengers.	AO34.1 A taxi facility is provided parallel to the kerb and adjacent to the main entrance. AND AO34.2 Taxi facilities are designed in accordance with: 1. AS2890.5–1993 Parking facilities – on-street parking and AS1428.1–2009 Design for access and mobility – general requirements for access – new building work; 2. AS1742.11–1999 Parking controls – manual of uniform traffic control devices 3. AS/NZS 2890.6–2009 Parking facilities –off street parking for people with disabilities; 4. Disability standards for accessible public transport 2002 made under section 31(1) of the Disability Discrimination Act 1992; 6. AS/NZS 1158.3.1 – Lighting for roads and public spaces, Part 3.1: Pedestrian area (category P) lighting – Performance and design requirements; 7. Chapter 7 Taxi Facilities, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.
PO35 Educational establishments are designed to ensure the safe and efficient operation of public passenger services , pedestrian and cyclist access and active transport infrastructure .	AO35.1 Educational establishments are designed in accordance with the provisions of the Planning for Safe Transport Infrastructure at Schools, Department of Transport and Main Roads, 2011.	NOT APPLICABLE The Project is located within a rural locality and as such does not interact with public passenger transport infrastructure, active transport infrastructure or public passenger services.

State code 22: Environmentally relevant activities

Guideline – SDAP State code 22: Environmentally Relevant Activities provides direction on how to address this code.

Table 22.1: All development

Performance outcomes	Acceptable outcomes	Response
All ERAs		
PO1 Development is suitably located and designed to avoid or mitigate environmental harm to the acoustic environment .	AO1.1 Development meets the acoustic quality objectives for sensitive receptors identified in the Environmental Protection (Noise) Policy 2019.	COMPLIES Noise modelling confirms that operational emissions comply with requirements of the Environmental Protection (Noise) Policy 2019, with no exceedances predicted at sensitive receivers. Potential impacts are considered minor and consistent with the Project's location within an established industrial precinct. Mitigation has been incorporated through technology selection and at-source controls and as such, the Project is not expected to result in significant adverse impacts on sensitive receivers in relation to noise. A Noise Impact Assessment has been prepared for the Project in accordance with the objectives of the Environmental Protection (Noise) Policy 2019. This assessment describes how the Project will be suitably located and designed to avoid or mitigate environmental harm to the acoustic environment.
PO2 Development is suitably located and designed to avoid or mitigate environmental harm to the air environment .	AO2.1 Development meets the air quality objectives of the Environmental Protection (Air) Policy 2019.	COMPLIES Atmospheric modelling confirms that operational emissions comply with the Environmental Protection (Air) Policy 2019,

Performance outcomes	Acceptable outcomes	Response
		with no exceedances predicted at sensitive receivers. Potential impacts are considered minor and consistent with the Project's location within an established industrial precinct. Mitigation has been incorporated through technology selection and at-source controls. As such, the Project is not expected to result in significant adverse impacts on sensitive receivers in relation to air quality or odour. An Air Quality Impact Assessment (AQIA) has been prepared for the Project in accordance with the objectives of the Environmental Protection (Air) Policy 2019. The AQIA describes how the Project is suitably located and designed to avoid or mitigate environmental harm to the air environment.
PO3 Development (other than intensive animal industry for poultry farming), is suitably located and designed to avoid or mitigate environmental harm on adjacent sensitive land uses caused by odour.	No acceptable outcome is prescribed.	COMPLIES Atmospheric modelling confirms that operational emissions comply with the Environmental Protection (Air) Policy 2019, with no exceedances predicted at sensitive receivers. Potential impacts are considered minor and consistent with the Project's location within an established industrial precinct. Mitigation has been incorporated through technology selection and at-source controls. As such, the Project is not expected to result in significant adverse impacts on sensitive receivers in relation to air quality or odour. An AQIA has been prepared for the Project in accordance with the objectives of the Environmental Protection (Air) Policy 2019.

Performance outcomes	Acceptable outcomes	Response
		The AQIA describes how the Project is suitably located and designed to avoid or mitigate environmental harm caused by odour.
PO4 Development is suitably located and designed to avoid or mitigate environmental harm to the receiving waters environment .	AO4.1 Development meets the management intent, water quality guidelines and objectives of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019.	COMPLIES The proposed development will not increase the existing impervious area and, therefore, is not expected to result in an increase in stormwater runoff volumes or pollutant loads relative to existing conditions. Accordingly, the Project will not materially alter the existing stormwater quality or quantity impacts on the receiving environment. A Stormwater Management Strategy has been prepared for the Project to document the proposed stormwater management measures and demonstrate that the Project can be appropriately managed without increasing impacts to the receiving water environment. The strategy considers the existing site conditions and confirms that the Project will maintain appropriate stormwater management outcomes.
PO5 Development is designed to include elements which: 1. prevent or minimise the production of hazardous contaminants and waste as by-products; or 2. contain and treat hazardous contaminants on-site rather than releasing them into the environment; and 3. provide secondary containment to prevent the accidental release of hazardous contaminants to the environment from spillage or leaks.	No acceptable outcome is prescribed.	COMPLIES The Project proposes an extension to the existing gas power station and as such does not include any ancillary development. The Project is subject to detailed design and commits to provide 100% spill containment for all hazardous contaminants. Project infrastructure, including fuel and gas storage facilities, will include suitable engineering controls required by relevant Australian Standards.

Performance outcomes	Acceptable outcomes	Response
PO6 Environmentally hazardous materials located on-site are stored to avoid or minimise their release into the environment due to inundation during flood events.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project proposes an extension to the existing gas power station. Therefore, the Project does not include any additional storage of environmentally hazardous materials.
All development – matters of state environmental significance		
PO7 Development is designed and sited to: 1. avoid impacts on matters of state environmental significance; or 2. minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and 3. provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development results in an acceptable significant residual impact on a matter of state environmental significance. Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the Brisbane Port LUP precinct plan.	No acceptable outcome is prescribed.	NOT APPLICABLE The Project is proposed on existing cleared hardstand area which is void of vegetation. Nevertheless, an Ecological Memorandum has been prepared for the Project to confirm there are no potential impacts to Matters of State Environmental Significance (MSES).
Intensive animal industry – poultry farming (ERA 4(2))		
PO8 Poultry farming development (where farming more than 200,000 birds) is suitably located and designed to avoid or mitigate environmental harm on adjacent sensitive land uses , caused by odour.	A08.1 For poultry farming involving 300,000 birds or less, development meets the separation distances as determined using the S-factor methodology to: 1. a sensitive land use in a rural zone; and 2. boundary of a non-rural zone. OR A08.2 Development meets the separation distances as determined by odour modelling using the following criteria: 1. 2.5 odour units, 99.5 percent, 1 hour average for a sensitive land use in a rural zone; or 2. 1.0 odour units, 99.5 percent, 1 hour average for the boundary of a non-rural zone.	NOT APPLICABLE Project is not a poultry farm.

Appendix C

Western Downs Regional Council code responses



Table 1 Rural zone code

Performance outcomes	Acceptable Outcomes	
For accepted, accepted subject to requirements and assessable development (code, code (fast tracked) and impact)		
Building Height		
PO1 A low-rise built form is maintained having regard to existing landscape character values.	AO1 Development has a maximum building height of 10 metres above natural ground level and no more than two (2) storeys. Editor's note—excluding windmills, silos and other rural structures ancillary to agricultural operations on site.	COMPLIES The Project comprises an extension to the existing gas power station within the Special Industry precinct. The proposed built form may include engine halls up to approximately 18 metres. Regardless the Project is consistent with the established industrial character and built form of the surrounding area. The Project therefore maintains the intent of PO1 having regard to the existing landscape character.
Accommodation Density		
PO2 Accommodation density and Residential density is complementary and subordinate to the rural and natural landscape values of the area.	AO2.1 Residential density does not exceed one dwelling house per lot. AO2.2 Residential density does not exceed two dwellings per lot and development is for: a) Caretaker’s accommodation and includes building work or minor building work with a maximum gross floor area of 100 m²; or b) Rural workers’ accommodation.	NOT APPLICABLE The Project does not include any residential development.
Setbacks		

Performance outcomes	Acceptable Outcomes	
PO3 Building setbacks are appropriate having regard to: a) the rural character of the area; b) overshadowing; c) privacy and overlooking; and d) the primary road frontage setbacks of adjoining premises.	AO3.1 Buildings and structures have a minimum setback of 20 metres to the primary road frontage. AO3.2 Buildings and structures have a minimum side and rear boundary clearance of 15 metres.	COMPLIES The extension to the existing gas power station is located approximately 600m to Grahams Road to the east and 3km from Dalby Kogan Road to the north. The extension to the existing gas power station is setback from the side boundaries by more than 15 metres.
PO4 The location of any dwelling does not compromise the continued operation of an existing or approved intensive animal industry, extractive industry or other uses that are incompatible with residential development	AO4.1 The dwelling is located at least 1,000 m from an existing or approved intensive animal industry operation. AO4.2 The dwelling is separated from an extractive industry by at least: a) 500 m from a hard rock extractive industry; b) 200 m from a sand and gravel extractive industry; and c) 100 m from a haul route. AO4.3 The dwelling is separated from a High impact industry use by a minimum of 500 metres.	NOT APPLICABLE The Project does not include any residential development.
For assessable development (code, code (fast tracked) and impact)		
Amenity Protection		

Performance outcomes	Acceptable Outcomes	
PO5 Development must not detract from the amenity of the local area, having regard to: a) noise; b) hours of operation; c) traffic; d) lighting; e) advertising devices; f) visual amenity; g) privacy; h) odour; or i) emissions.	AO5 No acceptable outcome.	COMPLIES The Project is within an established industrial area and is consistent with the existing surrounding non-rural uses. A Noise Impact Assessment (Appendix J) and Air Quality Impact Assessment (Appendix I) have been undertaken to support the application and evaluate the potential for impacts and any proposed mitigations.
PO6 Development must take into account and seek to ameliorate any existing negative environmental impacts, having regard to: a) noise; b) hours of operation; c) traffic; d) lighting; e) advertising devices; f) visual amenity; g) privacy; h) odour; or i) emissions.	AO6 No acceptable outcome.	COMPLIES The Project is within an established industrial area and is consistent with the existing surrounding non-rural uses. A Noise Impact Assessment (Appendix J) and Air Quality Impact Assessment (Appendix I) have been undertaken to support the application and evaluate the potential for impacts and any proposed mitigations.
Water Quality Management		
PO7 Development protects environmental values and facilitates the achievement of water quality objectives for Queensland waters.	AO7 No acceptable outcome.	COMPLIES The Project complies. Refer to Appendix H – Stormwater Management Plan.

Performance outcomes	Acceptable Outcomes	
PO8 Development achieves the storm water management design objectives specified in Table 6.2.10.2 – Construction Phase - Stormwater Management Design Objectives.	AO8 Development achieves objectives as specified in Table 6.2.10.2 – Construction Phase - Stormwater Management Design Objectives.	COMPLIES The Project complies. Refer to Appendix H – Stormwater Management Plan.
PO9 Land for urban purposes is located in areas which avoid or minimise the disturbance to natural drainage, areas subject to erosion risk and groundwater.	AO9 No acceptable outcome.	NOT APPLICABLE The Project does not include land for urban purposes.
PO10 Land for urban purpose is located, designed, constructed and managed to avoid impacts arising from altered stormwater quality or flow.	AO10 No acceptable outcome.	NOT APPLICABLE The Project does not include land for urban purposes.

Table 2 **Transport, access and parking code**

Performance outcomes	Acceptable Outcomes	
For accepted, accepted subject to requirements and assessable development (code, code (fast tracked) and impact)		
PO1 Vehicle crossovers to public roads are minimised to reduce: j) interference with the function and operation of public roads; k) pedestrian to vehicle conflict; and l) impacts on the character and amenity of the street.	AO1.1 Vehicle crossovers are constructed in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards. AO1.2 A maximum of one (1) vehicle crossover per lot is provided. OR AO1.3 A maximum of two (2) vehicle crossovers per lot where the frontage exceeds 15 metres. AO1.4 Vehicle crossovers are not located on a bend in the road with a radius of less than 450 metres. AO1.5 Vehicle crossovers are not located within:	COMPLIES The Project does not propose any new vehicle crossovers and will utilise the existing crossover off Grahams Road.

Performance outcomes	Acceptable Outcomes					
	a) 15.0 metres of a signalised road intersection; b) 12.0 metres of an un-signalised road intersection in an Industry zone or Centre zone or 10.0 metres in any other zone; c) metres of any adjoining property access, including shared property accesses; and d) metre of any street signage, power pole, street light, street tree, manhole, stormwater gully pit, or other Council asset					
PO2 Vehicle access is designed and constructed to ensure safe, all weather, functional operation for motorists and pedestrians.	AO2 Vehicle access is designed and constructed in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards.	NOT APPLICABLE The Project does not propose the construction of a new vehicle crossover.				
PO3 Vehicle access is provided to ensure the safe and functional operation for motorists and pedestrians.	AO3 All lots must have vehicle access to a formed road. Access is to be designed and constructed in accordance with SC6.2 - Planning Scheme Policy 1 - Design and Construction Standards.	COMPLIES The Project will access the Project area via the existing vehicle crossover off Grahams Road.				
PO4 Car parking is: a) adequate for the expected demand; b) designed to ensure safe and functional operation for motorists and pedestrians; c) allows for the safe and efficient servicing of the site; and d) located to protect the amenity of surrounding land uses.	AO4 Car parking is provided in accordance with the requirements identified in Table 9.3.5.2 – Car parking generation rates and service vehicle requirements. Note—car parking rates are to be rounded up to the nearest whole number.	COMPLIES The Project proposes an extension to the existing gas power station and does not propose any increase in operational staff. Nevertheless, 53 formalised light vehicle parks are provided onsite.				
For assessable development (code, code (fast tracked) and impact)						
Vehicular						
PO5 Vehicle crossovers are configured to satisfy the basic traffic design criteria having regard to: a) the volume of traffic generated at that driveway by the development;	AO5.1 Vehicle crossovers meet the minimum widths identified below: <table><tr><td>Number of spaces</td><td>Minimum width (metres)</td></tr><tr><td>1-5 spaces</td><td>3.5</td></tr></table>	Number of spaces	Minimum width (metres)	1-5 spaces	3.5	COMPLIES The Project does not propose any new vehicle crossovers and will utilise the existing crossover off Grahams Road.
Number of spaces	Minimum width (metres)					
1-5 spaces	3.5					

Performance outcomes	Acceptable Outcomes	
b) the type of road to which access is sought;	6-40 spaces	6.0
c) the existing and predicted future traffic volumes of the road to which access is sought;	41+ spaces	7.0
d) the number of carparking spaces served by the driveway;	A05.2 Where service vehicle spaces are required in accordance with Table 9.3.5.2 – Car parking generation rates and service vehicle requirements vehicle crossovers are constructed in accordance with Australian Standard AS2890.2— <i>Parking facilities – Off-street commercial vehicle facilities</i> .	
e) the size and type of the largest vehicle likely to use the driveway on a regular basis (usually a service vehicle);		
f) the number of service bays served by the driveway.		
Car Parking		
PO6 The provision of parking for disabled users is to be adequate for the proposed use.	A06 Provision of parking for persons with disability and general access is to be made in accordance with the requirements of Australian Standards AS1428— <i>Design for access and mobility</i> and AS2890.6— <i>Parking facilities – Off-street parking for people with disabilities</i> , in relation to parking space width and location, manoeuvring areas for mobility aides, gradients, location of stairs, ramps, doorways and signage.	NOT APPLICABLE The Project is not of a nature that necessitates the need for disability parking bays.
PO7 The provision of bicycle storage is adequate to meet the demand of proposed use.	A07 Bicycle parking is to be provided in accordance with the requirements identified in Australian Standard AS2890.3— <i>Parking facilities – Bicycle parking</i> and AUSTROADS <i>Guide to Traffic Management Part 11: Parking management techniques</i> .	NOT APPLICABLE The scale and nature of the Project does not necessitate the need for bicycle parking.
PO8 Service vehicle provision is adequate for the use and ensures safe and functional operation for motorists and pedestrians.	A08 Service vehicle spaces are to be provided in accordance with the requirements identified in Table 9.3.5.2 – Car parking generation rates and service vehicle requirements.	NOT APPLICABLE The Project proposes an extension to the existing gas power station and does not propose any change to existing operations
PO9 All car parking spaces are constructed with appropriate line marking to the correct size and standard.	A09.1 Car parking dimensions are designed and line-marked in accordance with Australian Standard AS2890.1— <i>Parking facilities – Off-street car parking</i> using a B99 as the design vehicle (Minimum Class 2 User Class). A09.2	NOT APPLICABLE The Project proposes an extension to the existing gas power station and does not propose any increase in operational staff. Nevertheless, 53 formalised light vehicle parks are provided onsite.

Performance outcomes	Acceptable Outcomes	
	Service vehicle spaces are designed in accordance with Australian Standard AS2890.2—<i>Parking facilities – Off-street commercial vehicle facilities</i>. AO9.3 Car parking spaces for people with disability are designed and constructed in accordance with Australian Standard AS2890.6—<i>Parking facilities – Off-street parking for people with disabilities</i>.	
PO10 Adequate car and service vehicle manoeuvrability is provided on site to ensure safe and functional vehicle movements on the: a) site; b) vehicle access; and c) road network.	AO10.1 Vehicles must enter and exit the site in a forward gear unless for a: a) dwelling house; or b) dual occupancy and the premises does not: i) adjoin a Collector Street or Arterial Road as defined in Table 9.3.5.3 – Road hierarchy levels and objectives; or ii) adjoin a road that contains a constructed pedestrian footpath at the frontage of the premises. AO10.2 Development provides a vehicle manoeuvring area that: c) accommodates the service vehicle specified in Table 9.3.5.2 – Car parking generation rates and service vehicle requirements; d) complies with Part 7 - Car Parking and Manoeuvring Standards of SC6.2 – Planning Scheme Policy 1 – Design and Construction Standard. AO10.3 Servicing areas have a height clearance to accommodate the type of service vehicle required to service the type of development identified in Table 9.3.5.2 - Car parking generation rates and service vehicle requirements.	COMPLIES All construction and operational vehicles will enter/exit the Project area in a forward motion.
PO11 Car parking areas provide appropriate room for the queuing of vehicles to maintain the safe and efficient functioning of the car park and the road network, taking into consideration:	AO11 Car parking areas accommodate a queuing vehicle storage capacity of: a) 4% of on-site spaces for car parks under 100 spaces;	COMPLIES The Project seeks to increase the gas-fired generation at the existing power station but will not result in an increase to the operational workforce.

Performance outcomes	Acceptable Outcomes	
a) the size of the car parking area and the design turnover rates; b) the type and capacity of any control facility; c) the road hierarchy; d) the design of the car parking area beyond the queuing area.	OR b) 2% of on-site spaces for car parks between 100 and 250 spaces; OR c) 1% of on-site spaces for car parks above 250 spaces.	
PO12 The development provides safe and efficient access between car park entry/exit points and parking modules.	AO12 Ramps are to be designed and constructed in accordance with Australian Standard <i>AS2890.1—Parking facilities – Off-street car parking</i> .	NOT APPLICABLE The Project does not include parking modules or ramps.
PO13 Loading facilities have sufficient area to provide for the safe and manoeuvring, standing and loading or unloading of service vehicles.	AO13 Loading areas are provided in accordance with the standards set out in Australian Standard <i>AS2890.2—Parking facilities – Off-street commercial vehicle facilities</i> .	NOT APPLICABLE The Project proposes an extension to the existing gas power station and does not propose any change to existing operations.
Road Network Infrastructure Design and Standards		
Road Hierarchy		
PO14 The road hierarchy provides a safe and efficient transport network catering for the movement of people and goods throughout the region whilst maintaining the amenity of urban and rural areas. Geometric design features of each road type must: a) convey its primary function for all relevant design vehicle types; b) have horizontal and vertical alignment that discourages excessive speeds; c) encourage traffic speeds and volumes to levels commensurate with road hierarchy function; and d) ensure unhindered access by emergency vehicles.	AO14.1 New roads are consistent with the role and function of the road hierarchy in accordance with Table 9.3.5.3 – Road hierarchy levels and objectives and Road Hierarchy Overlay Map (OM-017). AO14.2 Roads and streets are to be designed and constructed in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards.	NOT APPLICABLE The Project does not include provisions for new roads. Existing roads and hard stand will be used to support the Project.
PO15	AO15	NOT APPLICABLE The Project does not include the creation of new roads or lots.

Performance outcomes	Acceptable Outcomes	
Where a new road is created as part of Reconfiguring a Lot, the road is capable of accommodating appropriate on-street car parking.	On street car parking is provided at a rate of one (1) space per residential lot and located on road shoulders immediately adjacent to residential lots.	
PO16 A safe pedestrian/cycle network is provided to ensure the development connects into the broader network of proposed and existing pathways.	AO16 All cycle infrastructure is to be designed and constructed in accordance with the latest published version of <i>AUSTROADS Guide to Road Design – Part 3: Geometric Design</i> and <i>Part 6A: Paths for Walking and Cycling</i> , <i>AUSTROADS Guide to Traffic Management: Part 6 – Intersections, Interchanges and Crossings Management</i> and Parts 4, 4A, 4B and 4C of the <i>AUSTROADS Guide to Road Design</i> .	NOT APPLICABLE The Project is not of a scale or nature that necessitates the need for pedestrian or cycle infrastructure.
PO17 Bridges are to be constructed to a high standard to support the anticipated land uses and associated vehicle types (including construction vehicles) that the bridge provides a connection to.	AO17 Bridges are to be constructed and implemented in accordance with the latest published version of Australian Standard AS/NZS5100— <i>Bridge design</i> and <i>AUSTROADS Guide to Bridge Technology</i> .	NOT APPLICABLE The Project does not propose the construction of any bridges.
PO18 Traffic control devices (all signs, traffic signals, pavement markings, traffic islands, or other devices) are installed to regulate and guide traffic.	AO18 Traffic control devices are to be constructed and implemented in accordance with the <i>Queensland Manual of Uniform Traffic Control Devices</i> .	NOT APPLICABLE The Project does not propose the any traffic control devices.
PO19 Adequate street lighting is provided that avoids abrupt changes in lighting levels during both day and night operation.	AO19 Street lighting is to be designed in accordance with Australian Standard AS/NZS1158— <i>Lighting for roads and public spaces</i> .	NOT APPLICABLE The Project is not located within an area that necessitates the need for street lighting.

Table 3 Infrastructure services code

Performance outcomes	Acceptable outcomes
For accepted, accepted subject to requirements and assessable development (code, code (fast tracked) and impact)	
Water Supply	

Performance outcomes	Acceptable outcomes	
PO1 Premises have an adequate volume and supply of water that: a) meets the needs of users; b) is adequate for firefighting purposes; c) ensures the health, safety and convenience of the community; and d) minimises adverse impacts on the receiving environment.	Where within an Urban Zone or Rural Residential Zone (Rural Residential 4000 Precinct, Rural Residential 8000 Precinct) AO1.1 Development is connected to a reticulated water supply system in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards. Where within the Rural Zone or Rural Residential Zone (Rural Residential 20000 Precinct) AO1.2 Development is connected to a safe and efficient on-site water supply in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards.	NOT APPLICABLE The Project is not located within an Urban Zone or Rural Residential Zone.
Wastewater Disposal		
PO2 Premises provide for the treatment and disposal of effluent and other waste water that: a) meets the needs of users; b) ensures the health, safety and convenience of the community; and c) minimises adverse impacts on the receiving environment.	Where within an Urban Zone AO2.1 Development is connected to a reticulated sewerage system in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards. Where within the Rural Zone or Rural Residential Zone Where outside a sewerage service area AO2.2 Development is connected to a safe and efficient on-site waste water disposal system in accordance with <i>Queensland Plumbing and Wastewater Code</i> and Australian Standard <i>AS/NZ3500—Plumbing and drainage</i> .	NOT APPLICABLE The Project proposes an extension to the existing gas power station and does not propose any increase in operational staff or propose any new ablution facilities.
Stormwater Infrastructure		
PO3 Stormwater drainage is designed and managed to avoid adverse impacts on surrounding development or compromise the natural health and functioning of adjoining waterway systems.	AO3 Development is provided with stormwater infrastructure in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards.	COMPLIES The Project will provide stormwater infrastructure in accordance with the relevant standard. Further details regarding the Project’s stormwater management are provided in Appendix H.
Electricity Supply		

Performance outcomes	Acceptable outcomes	
PO4 Premises are provided with an adequate supply of electricity to meet the needs of the development.	AO4 Development is connected to the electricity supply network in accordance with the requirements of the service provider.	NOT APPLICABLE The Project proposes an extension to the existing gas power station and does not propose any change to existing operations.
Telecommunications Infrastructure		
PO5 Premises are provided with an adequate supply of telecommunications infrastructure.	AO5 Development is connected to the telecommunications services network in accordance with the requirements of the service provider.	NOT APPLICABLE The Project proposes an extension to the existing gas power station and does not propose any change to existing operations.

Table 4 **Biodiversity areas overlay code**

Performance outcomes	Acceptable outcomes	
For accepted, accepted subject to requirements and assessable development (code, code (fast tracked) and impact)		
MSES - Regulated Vegetation		
Where within a Rural or Rural Residential Area PO1 The biodiversity values of areas mapped as matters of environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002) are managed to ensure the negative impacts of development are minimised. Note—a supporting Ecological Site Assessment is prepared in accordance with SC6.2 – Planning Scheme Policy 2 – Ecological Site Assessment Guidelines.	Where within a Rural or Rural Residential Area AO1.1 Buildings and structures are not located within areas mapped as having matters of state environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002). AO1.2 No clearing of native vegetation is undertaken within areas mapped as having matters of state environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002).	COMPLIES The Project footprint is proposed in areas which are not mapped as having MSES and are wholly contained within existing hard stand areas.

Performance outcomes	Acceptable outcomes	
For assessable development (code, code (fast tracked) and impact)		
MSES - High Ecological Significance Wetlands, Wildlife Habitat and Protected Areas		
PO2 Vegetation clearing in areas mapped as matters of state environmental significance (MSES) is avoided unless: a) it is demonstrated that the area does not support matters of state environmental significance (MSES) as mapped, or if determined to be matters of state environmental significance (MSES), is treated in accordance with the relevant provisions of the overlay code; or b) the loss or reduction in matters of state environmental significance (MSES) is for community infrastructure, or any purpose associated with an Airport, or extractive resources in a key resource area; and c) the loss or reduction in matters of state environmental significance (MSES) is minimised and any residual impacts are offset. Note—a supporting Ecological Site Assessment is prepared in accordance with SC6.2 – Planning Scheme Policy 2 – Ecological Site Assessment Guidelines.	AO2.1 Buildings and structures are not located within areas mapped as having matters of state environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002). AO2.2 No clearing of native vegetation is undertaken within areas mapped as having matters of state environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002).	COMPLIES The Project footprint is proposed in areas which are not mapped as having MSES and are wholly contained within existing hard stand areas.
Where in an Urban Area PO3 Management arrangements facilitate the ongoing conservation and protection of nature conservation and biodiversity areas within the Urban Area identified on Settlement Pattern Strategic Plan Maps (SFM-001 to SFM-001.4). Note—a supporting Ecological Site Assessment is prepared in accordance with SC6.2 – Planning Scheme Policy 2 – Ecological Site Assessment Guidelines.	Where in an Urban Area AO3 Areas that support matters of state environmental significance (MSES) identified on Biodiversity areas overlay maps (OM-002) are: a) dedicated as public open space for purposes consistent with the ecological values and functions of the area where for Reconfiguring a Lot; or b) included within a voluntary statutory covenant for purposes consistent with the ecological values and functions of the area where for Reconfiguring a Lot or Material Change of Use.	NOT APPLICABLE The Project is not located within an Urban Area.

Performance outcomes	Acceptable outcomes	
Buffering and Edge Effects		
PO4 Development on sites adjacent to areas of matters of state environmental significance (MSES) protects the biodiversity values of matters of state environmental significance (MSES) and: a) does not interrupt, interfere, alter or otherwise impact on underlying natural ecosystem processes such as water quality, hydrology, geomorphology and biophysical processes; b) avoids noise, light, vibration or other edge affects, including weed and pest incursion on identified biodiversity values. Note—a supporting Ecological Site Assessment is prepared in accordance with SC6.2 – Planning Scheme Policy 2 – Ecological Site Assessment Guidelines.	Where for Material Change of Use AO4.1 A minimum buffer of 50 metres is provided between buildings and structures and areas mapped as having matters of state environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002). Where for Reconfiguring a Lot AO4.2 A minimum buffer of 50 metres is provided between a new boundary created by reconfiguring a lot and areas mapped as having matters of state environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002). Where for Operational Work (comprising works for infrastructure or excavating or filling or landscape works) AO4.3 A minimum buffer of 50 metres is provided between operational work and areas mapped as having matters of state environmental significance (MSES) on the Biodiversity areas overlay maps (OM-002).	COMPLIES The Project is not proposed within 50m of areas mapped as having MSES.
P05 Unimpeded movement of fauna within and through the site via state and regional corridors identified on Biodiversity areas overlay maps (OM-002) are maintained. Note—a supporting Ecological Site Assessment is prepared in accordance with SC6.2 – Planning Scheme Policy 2 – Ecological Site Assessment Guidelines.	A05 Where within a Biodiversity Corridor identified on Strategic Plan Natural Environment (SPM-002), fauna movement is maintained by: a) retaining bands of vegetation at least 200 metres wide on a site; and b) buildings and structures are not located within retained vegetation bands.	NOT APPLICABLE The Project is not located within a Biodiversity Corridor.

Table 5 Bushfire hazard overlay code

Performance outcomes	Acceptable outcomes	
For accepted, accepted subject to requirements and assessable development (code, code (fast tracked) and impact)		
PO1 Development does not increase the number of persons living or working on land subject to high bushfire hazard identified on Bushfire hazard overlay maps (OM-003) unless it is demonstrated that: a) the subject land is a medium bushfire hazard (or lesser); or b) development is for community Infrastructure and facilities are located and designed to minimise susceptibility to bushfire events; and c) a Bushfire Emergency Management Plan is prepared by suitably qualified person(s) and appropriately mitigates risks to life and property.	AO1.1 Development does not increase the number of lots in areas of high bushfire hazard as identified on Bushfire hazard overlay maps (OM-003). AO1.2 Uses within the following activity groups are located outside of a high bushfire hazard identified on Bushfire hazard overlay maps (OM-003): a) accommodation activities group; b) business activities group; c) community activities group; and d) entertainment activities group.	COMPLIES The Project does not include the creation of lots and is not a use listed in the defined activity groups.

Performance outcomes	Acceptable outcomes	
PO2 In medium bushfire hazard areas as identified on Bushfire hazard overlay maps (OM-003), vehicular access is designed to mitigate against bushfire hazard by: a) ensuring adequate access for firefighting and other emergency vehicles; b) ensuring adequate access for the evacuation of residents and emergency personnel in an emergency situation, including alternative safe access routes (should access in one direction be blocked in the event of a fire); c) providing for the separation of developed areas and adjacent bushland. Note—where it is not practicable to provide firebreaks in accordance with AO3.1 Fire Maintenance Trails are provided in accordance with the following: a) located as close as possible to the boundaries of the lot and the adjoining hazardous vegetation; b) the minimum cleared width not less than 6 metres; c) the formed width is not less than 2.5 metres; d) the formed gradient is not greater than 15%; e) vehicular access is provided at both ends; f) passing bays and turning areas are provided for fire-fighting appliances either located on public land or in an access easement that is granted in favour of the Local Government and QFRS.	AO2.1 The road design is capable of providing access for firefighting and other emergency vehicles, in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards. AO2.2 In areas of medium bushfire hazard as identified on Bushfire hazard overlay maps (OM-003), roads are provided in accordance with the following: a) roads are designed and constructed with a maximum gradient of 12.5%; b) cul-de-sacs are not used except where: c) a perimeter road designed in accordance with AO2.3 isolates the development from hazardous vegetation; d) the cul-de-sac are provided with alternative access linking the cul-de-sac to other through roads; and e) the maximum length of the cul-de-sac is 200 metres. AO2.3 In areas of medium bushfire hazard as identified on Bushfire hazard overlay maps (OM-003) and development is for the purpose of reconfiguring a lot, the design incorporates a perimeter road firebreak that: a) is located between the boundary of the lots and stands of native vegetation; b) has a minimum cleared width of 20 metres; c) has a constructed road width of six metres; and d) is constructed to an all-weather standard.	COMPLIES A complete code response is provided in the Bushfire Impact Assessment and Management Plan (Appendix F).

Table 6 Infrastructure overlay code

Performance outcomes	Acceptable outcomes	
For accepted, accepted subject to requirements and assessable development (code, code (fast tracked) and impact)		
Oil and Gas Pipeline		
PO1 Buildings and structures are designed and sited to: a) minimise risk of harm to people and property; b) avoid compromising the viability of the pipeline; and c) avoid damaging or adversely affecting the existing or future operation of pipeline and the supply of gas or oil.	AO1.1 Buildings and structures are setback a minimum of 50 metres from a gas or oil pipeline as identified on the Infrastructure overlay maps (OM-006). AO1.2 Any development that impacts on an oil and gas pipeline easement requires the consent of the pipeline owner. Development in the vicinity of a pipeline should address the risks associated with petroleum and gas pipelines as set out in the Australian Standard <i>AS2885—Pipelines - Gas and liquid petroleum</i>.	COMPLIES The Project proposes an extension to the existing gas power station. Nevertheless, the Project footprint does not encroach within the 50m pipeline buffer.
High Voltage Electricity Transmission Lines		

Performance outcomes	Acceptable outcomes	
PO2 Major electricity infrastructure and substations: a) are protected from encroachment by incompatible land use and development; b) are appropriately separated from <i>sensitive land uses</i> in the protection of public health and safety.	AO2.1 Buildings and structures are not located within the area of a major electricity infrastructure and substations as identified on the Infrastructure overlay maps (OM-006). AO2.2 Buildings associated with sensitive land uses are setback from major electricity infrastructure and substations as identified on the Infrastructure overlay maps (OM-006) and in accordance with the following: a) 20 metres for transmission lines up to 132kV; b) 30 metres for transmission lines between 133kV and 275kV; and c) 40 metres for transmission lines exceeding 275kV. AO2.3 Buildings associated with sensitive land uses are setback from substations identified on the Infrastructure overlay maps (OM-006) and in accordance with the following: a) 50 metres from transmission substation; and b) 10 metres from all other substations.	COMPLIES The Project is not proposed within an area nominated as major electricity infrastructure or substation.

Performance outcomes	Acceptable outcomes	
Power Station (where identified within Special Industrial Area identified on Strategic Plan Map 1 – Settlement Pattern)		
PO3 Power stations (where identified within Special Industrial Area identified on Strategic Plan Map 1 – Settlement Pattern): a) are not compromised by the encroachment of sensitive land uses; b) are appropriately separated from sensitive land uses in the protection of public health and safety.	AO3.1 Sensitive land uses are setback 250 metres from a power station building or structure as identified on the Infrastructure overlay maps (OM-006). AO3.2 Development for accommodation activities does not increase the number of persons living or residing within 250 metres of a power station building or structure as identified on the Infrastructure overlay maps (OM-006). OR AO3.3 Development is for a dwelling house and includes minor building work or building work with a maximum gross floor area of 50 metres squared (includes cumulative increase over any five year period).	COMPLIES The Project proposes an extension to the existing gas power station. The closest sensitive receiver to the Project is approximately 1.2km from the Project footprint.
Wastewater Treatment Plants		
PO4 Wastewater treatment plants: a) are not compromised by the encroachment of sensitive land uses; and b) are appropriately separated from sensitive land uses in the protection of public health and safety.	AO4.1 Sensitive land uses are not established within 500 metres of a wastewater treatment plant building or structure as identified on the Infrastructure overlay maps (OM-006). AO4.2 Development for accommodation activities does not increase the number of persons living or residing within 250 metres of a wastewater treatment plant building or structure as identified on the Infrastructure overlay maps (OM-006). OR AO4.3 Development is for a dwelling house and includes minor building work or building work with a maximum additional gross floor area of 50 metres squared (includes cumulative increase over any five year period).	NOT APPLICABLE The Project does not propose a wastewater treatment plant.

Performance outcomes	Acceptable outcomes	
Waste Stations		
PO5 The operation and planned expansion of the waste station is not prejudiced, and sensitive land uses are not adversely affected by emissions from existing or planned waste stations.	AO5.1 Sensitive land uses are not established within 500 metres of the boundary of a waste station as identified on the Infrastructure overlay maps (OM-006). AO5.2 Development for accommodation activities does not increase the number of persons living or residing within 500 metres of the boundary of a waste station as identified on the Infrastructure overlay maps (OM-006). OR AO5.3 Development is for a dwelling house and includes minor building work or building work with a maximum gross floor area of 50 metres squared (includes cumulative increase over any five year period).	NOT APPLICABLE The Project does not propose a waste station.
Water Pipelines		
PO6 Development does not adversely impact on existing and planned water pipeline infrastructure.	AO6 Buildings are not located within a water pipeline easement as identified on the Infrastructure overlay maps (OM-006).	COMPLIES The Project is not proposed within a water pipeline easement.
Water Treatment Plant		

Performance outcomes	Acceptable outcomes	
PO7 Water treatment plants: a) are not compromised by the encroachment of sensitive land uses; and b) are appropriately separated from sensitive land uses in the protection of public health and safety.	A07.1 Sensitive land uses are not established within 100 metres of a water treatment plant building or structure as identified on the Infrastructure overlay maps (OM-006). A07.2 Development for Accommodation activities does not increase the number of persons living or residing within 100 metres of a water treatment plant building or structure as identified on the Infrastructure overlay maps (OM-006). OR A07.3 Development is for a dwelling house and includes minor building work or building work with a maximum additional gross floor area of 100 metres squared (includes cumulative increase over any five year period).	NOT APPLICABLE The Project does not propose a water treatment plant.
Noise Corridor		
PO8 Sensitive land uses are located and designed to ensure that noise emissions from existing or planned major road and railway corridors do not adversely affect: a) the development's primary function; and b) the wellbeing of occupants including their ability to sleep, work or otherwise undertake quiet enjoyment without unreasonable c) interference from road traffic noise.	A08 No acceptable outcome. Editor's note—Part 4.4 of the <i>Queensland Development Code</i> provides requirements for residential buildings in a designated transport corridor.	NOT APPLICABLE The Project is not a sensitive land use and is not located within a noise corridor.
PO9 Development as identified on the Noise corridor overlay maps (OM-016), maintains and, where practicable, enhances the safety, efficiency and effectiveness of the corridor.	A09 No acceptable outcome.	NOT APPLICABLE The Project footprint is not located within a noise corridor.

Performance outcomes	Acceptable outcomes	
PO10 Development retains and enhances existing vegetation between the intended location of the development and a major road or railway corridor, so as to provide dense screening to potential noise, dust, odour and visual impacts emanating from the corridor.	AO10 No acceptable outcome.	NOT APPLICABLE The Project footprint is not located within a noise corridor.
For assessable development (code, code (fast tracked) and impact)		
Reconfiguring a Lot		
PO11 The operation and planned expansion of infrastructure as identified on the Infrastructure overlay maps (OM-006) is not prejudiced by the encroachment of sensitive land uses, and sensitive land uses are not adversely affected by the amenity and health impacts arising from the operation of the infrastructure item.	AO11 No additional lots capable of supporting sensitive land uses are accommodated within the following buffer areas identified on the Infrastructure overlay maps (OM-006): a) 100 metres of a water treatment plant building or structure; b) 500 metres of the boundary of a waste station; c) 250 metres of a waste water treatment plant building or structure; d) 250 metres from a power station building or structure; and e) 200 metres from a gas or oil pipeline.	NOT APPLICABLE The Project does not propose the reconfiguration of the lot.
PO12 Reconfiguration of lots does not compromise or adversely impact upon the efficiency and integrity of major electricity infrastructure.	AO12 Urban residential lots and buildings and structures are not located within an easement for, or an area otherwise affected by, major electricity infrastructure as identified on the Infrastructure overlay maps (OM-006).	NOT APPLICABLE The Project does not propose the reconfiguration of the lot.
PO13 Reconfiguring of lots ensures that access requirements of major electricity infrastructure are maintained.	AO13 Major electricity infrastructure traversing or within private land are protected by easement in favour of the service provided for access and maintenance.	NOT APPLICABLE The Project does not propose the reconfiguration of the lot.

Appendix D

Environmental risk assessment

Table D.1 **Environmental risk assessment**

Aspect	Risk	Existing controls	Risk score	Mitigation measures	Residual risk score
Biodiversity					
Threatened flora	Significant impacts to threatened flora as a result of clearing associated with the Project.	- Desktop assessments completed for threatened flora over the Project area. - The Project does not contain an area of essential habitat mapping for a plant that is endangered or vulnerable. - The Project does not contain a high-risk area on the flora survey trigger map nor were any plants that are endangered or vulnerable observed. - No threatened flora identified within Project area.	Low E1	No specific mitigation required.	Low E1
Regional ecosystems	Significant impacts to endangered or of concern vegetation communities listed under the VM Act.	- Desktop surveys completed across the Project area. - No endangered or Of Concern regional ecosystems listed under the VM Act within the Project footprint.	Low E1	No specific mitigation required.	Low E1
Environmentally sensitive areas	The proposed clearing will result in a significant impact to Category A or B environmentally sensitive areas under the EP Act.	- Desktop surveys completed across the Project area. - No endangered or Of Concern regional ecosystems listed under the VM Act within the Project footprint.	Low E1	No specific mitigation required.	Low E1
Protected areas	Vegetation clearing associated with the Project impacting on mapped Protected Areas.	The Project is not located within or adjacent to any Protected Areas.	Low E1	No specific mitigation required.	Low E1
Wetlands	Activities resulting in a significant impact to mapped wetlands and wetland protection area.	- Vegetation mapping completed across the Project area. - The Project is not located within a Wetland Protection Area. - The Project is not located within a Wetland of High Ecological Significance. - The Project is not located within a wetland or watercourse in an area identified as high ecological value waters.	Low E1	No specific mitigation required.	Low E1

Aspect	Risk	Existing controls	Risk score	Mitigation measures	Residual risk score
Legally Secured Offset Area	Impacts of vegetation clearing on secured offset areas.	The Project currently does not include any existing offset area and no land-based offsets are proposed for the Project.	Low E1	No specific mitigation required.	Low E1
Heritage					
Aboriginal	Surface disturbance activities associated with the Project impacting on items of Aboriginal heritage.	- The Project footprint is a pre-disturbed area of hardstand. - A search of the AHIMS register indicated that there are no National Heritage Areas or Registered Cultural Heritage Study Areas within the Project Area.	Low C2	Alinta Energy will prepare a New Finds Procedure to detail actions required to be taken if during the course of activities, previously unidentified cultural heritage sites or artefacts are identified.	Low D1
Historic	Surface disturbance activities associated with the Project impacting on items of historic heritage.	- No listed historical heritage items identified within the Project area. - Project will not impact any items of local, regional or state historical heritage value.	Low E1	No specific mitigation required.	Low E1
Greenhouse Gas					
Greenhouse gas	Significant increase in greenhouse gas emissions from the Project impacting on climate change and Queensland greenhouse gas reduction targets.	unable to identify existing control	High C4	- Greenhouse gas inventory prepared for the Project to understand key sources and inform decision making. - Greenhouse gas assessment will be prepared to quantify the Scope 1, Scope 2 and Scope 3 emissions from the amended activities.	Medium C3

Aspect	Risk	Existing controls	Risk score	Mitigation measures	Residual risk score
Noise					
Construction noise	Exceedances of the relevant noise criteria at sensitive receivers as a result of construction activities associated with the Project.	- Limited sensitive receptors surrounding Project area. - Noise modelling and impact assessment prepared to assess the impacts of the Project with consideration to cumulative impacts of the Project to the noise environment at sensitive receptor locations.	Low C2	- Community consultation will be undertaken prior to commencement of construction. - All equipment will be inspected and maintained on a regular basis to ensure noise attenuation components are in good working order. - Where possible, activities will be scheduled to minimise impacts by undertaking all possible work during hours that would least adversely affect sensitive receivers and by avoiding conflicts with other scheduled events.	Low D2
Operational noise (Scenario 1)	Exceedances of the relevant noise criteria at sensitive receivers as a result of the Project operations.	- Limited sensitive receptors surrounding Project area. - Noise modelling and impact assessment prepared to assess the impacts of the Project with consideration to cumulative impacts of the Project to the noise environment at sensitive receptor locations.	Low C2	- All equipment will be inspected and maintained on a regular basis to ensure noise attenuation components are in good working order. - Community consultation will be undertaken throughout the life of the Project. - Where possible, quieter plant and equipment will be selected based on the optimal power and size to most efficiently perform the required tasks.	Low C2
Operational noise (Scenario 2)	Exceedances of the relevant noise criteria at sensitive receivers as a result of the Project operations.	- Limited sensitive receptors surrounding Project area. - Noise modelling and impact assessment prepared to assess the impacts of the Project with consideration to cumulative impacts of the Project to the noise environment at sensitive receptor locations.	High B3	- All equipment will be inspected and maintained on a regular basis to ensure noise attenuation components are in good working order. - Community consultation will be undertaken throughout the life of the Project.	Low C2

Aspect	Risk	Existing controls	Risk score	Mitigation measures	Residual risk score
Air quality					
Particulate matter	Exceedance of relevant particulate matter criteria / performance objectives at sensitive receptors as a result of the Project and cumulative impacts from the Project.	- Limited sensitive receptors surrounding Project area. - Air quality modelling and impact assessment prepared to assess the impacts of the Project with consideration to cumulative impacts of the Project to air quality at sensitive receptor locations.	Low C2	All equipment will be routinely serviced to maintain manufacturers' emission specifications.	Low D2
Dust deposition	Exceedance of dust deposition criteria / performance objectives at sensitive receptors or at or beyond the Project area as a result of the Project and cumulative impacts from the Project.	- Limited sensitive receptors surrounding Project area. - Large separation distance between sensitive receptors and the Project footprint. - Minimal clearing and earthworks require to due Project footprint being pre-disturbed.	Low C2	- All equipment will be routinely serviced to maintain manufacturers' emission specifications. - Water sprays will be used while undertaking clearing and/or civil works. - Idling of diesel equipment will be minimised, wherever feasible.	Low D2
Surface water					
Surface Water	Improper management of stormwater during both construction and operation resulting in erosion, scour, and potential off-site impacts.	- Project footprint currently comprises substantial impervious area. - Existing on-site stormwater detention sufficient for additional Project footprint.	Low C2	- Best practice erosion and sediment control during construction will ensure runoff is treated to an appropriate standard. - Construction activities will incorporate the best practice controls thereby reducing the risks of contaminants leaving the site.	Low D2

Aspect	Risk	Existing controls	Risk score	Mitigation measures	Residual risk score
Waste					
General waste	Generation of waste from construction activities inadequately managed resulting in excess waste, litter and pest management issues, and increased disposal costs.	No increase in operational workforce is anticipated as a result of the Project.	Low C2	- Designated storage bins will be placed at appropriate locations around the construction areas to assist in waste segregation and encourage recycling of recyclable materials including paper and cardboard, timber/pallets, and scrap metal. - Site personnel will be educated on waste management practices to be implemented on site through the site induction and toolbox talks. - An integrated waste management plan will be established to promote recycling initiatives on site and manage waste streams. - No waste generated from off-site will be received or disposed of on-site. No waste will be burnt or taken off-site and burnt. - Any transport of waste off-site will be carried out by a licenced waste contractor authorised to transport the various waste products (i.e. regulated wastes).	Low C2
	Generation of waste from operational activities inadequately managed resulting in excess waste and increased disposal costs.	No increase in operational workforce is anticipated as a result of the Project.	Low C2	- Site personnel will be educated on waste management practices to be implemented on site through the site induction and toolbox talks. - An integrated waste management plan will be established to promote recycling initiatives on site and manage waste streams.	Low C2

Aspect	Risk	Existing controls	Risk score	Mitigation measures	Residual risk score
Traffic and transport					
Traffic and transport	Impacts of traffic movements associated with the Project on the safety and condition of the local road network.	- No proposed increase in operational workforce numbers proposed as part of the Project. - Access to the Project is via the existing intersection with Grahams Road. - The addition of traffic generated by the construction and operational phases is not expected to have a significant adverse impact on surrounding road network operations.	Low C2	No specific mitigation required.	Low C2
Community					
Community complaints	Impacts from operations generating community complaints.	Accessible lines of communication between residents, stakeholders and landowners established.	Low C2	Record of community complaints to be established and maintained for the life of the Project.	Low C2
Communication	Inadequate communication between Alinta Energy and key stakeholders regarding the Project.	Ongoing community engagement with key stakeholders undertaken to date, including consultation on the Project as outlined within this PAR.	Low C2	Ongoing engagement in accordance with Alinta Energy's Stakeholder and Community Engagement Strategy.	Low C2

Appendix E

Ecology memorandum



Memorandum

21 August 2026

To: Liam Riordan
Planning & Environment Manager
Alinta Energy Development Pty Limited
HWT Tower, Level 16, 60 City Road
Southbank, VIC 3006

From: Sussan Lemon

Subject: Ecology Addendum

Dear Liam,

1 Introduction

EMM Consulting Pty Ltd (EMM) has been engaged by Braemar Power Project Pty Ltd (the Applicant), a company owned by Alinta Energy Pty Ltd (Alinta Energy), to complete a desktop assessment in relation to the ecological values with potential to be impacted by the expansion of gas power station on a hard stand area within the existing Braemar Power Station ('the proposed development'; see Figure 1.1). The proposed development is part of an overarching Braemar Energy Hub ('the Project'). The additional area required for the proposed development and for which this desktop assessment is being assessed will hereafter be referred to as 'the Impact Footprint'.

The key ecology constraints include Matters of National Environmental Significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Matters of State Environmental Significance (MSES) prescribed under the *Environmental Offset Regulation 2014* and Matters of Local Environmental Significance (MLES) prescribed under the Western Downs Regional Council planning scheme. The scope of work for this assessment includes the following:

- a rapid desktop assessment of available vegetation mapping, environmental database records and relevant literature (e.g. Department of Climate Change, Energy, the Environment and Water (DCCEEW) approved conservation advice)
- a memo including a summary of the ecological constraints in relation to the proposed development.

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KEY

- Proposed development
- Asset protection zone buffer
(proposed vegetation clearing)
- Impact footprint

Impact footprint

Braemar Energy Hub
Ecology Memorandum
Figure 1.1

2 Legislative context

2.1 Federal legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's central piece of environmental legislation that provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places — defined in the Act as MNES.

If a proposed development or other action ('proposed action') is likely to have a significant impact upon a protected matter, then it must be referred for assessment under the EPBC Act. Protected matters under the EPBC Act are:

- World Heritage properties
- National Heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and ecological communities
- migratory species protected under international agreements
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- the environment, where nuclear actions are involved
- a water resource, in relation to coal seam gas and large coal mining developments
- the environment, where actions proposed are on, or will affect Commonwealth land and the environment
- the environment, where Commonwealth agencies are proposing to take an action.

2.2 State legislation

2.2.1 Vegetation Management Act 1999

The purpose of Queensland's *Vegetation Management Act 1999* (VM Act) is to regulate the clearing of native vegetation in a way that conserves remnant vegetation in declared areas, ensures clearing does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes. Under the VM Act, Regional Ecosystems (REs) are assigned three statuses which are used to define MSES for the purposes of impact assessment and offsets. Those statuses are:

- Endangered
- Of Concern
- Least Concern.

These statuses are taken from the RE description database, and respective definitions are provided in the Act. Within this report, the definition of an RE follows that described by Sattler and Williams (1999) i.e. a vegetation

community in a bioregion that is consistently associated with a particular combination of geology, landform and soil.

2.2.2 Nature Conservation Act 1992

The objective of the *Nature Conservation Act 1992* (NC Act) is the conservation of nature, and the Act provides for the gazettal of protected areas including nature refuges, prescribes classes of wildlife and sets out restrictions on the taking or harm to native wildlife without a valid permit. All Critically Endangered, Endangered, Vulnerable or Near Threatened (CEEVNT) flora and fauna species protected under the NC Act with potential to occur in the Impact Footprint are assessed within this memo.

2.2.3 Environmental Offsets Act 2014

The Queensland offsets framework is governed by a range of legislation, policies and guidelines to support a determination as to when environmental offsets are required, and how they are to be delivered. A summary of the framework and guiding principles that apply is provided below.

The Queensland Offsets Framework includes:

- *Environmental Offsets Act 2014* (EO Act)
- Environmental Offsets Regulation 2014 (EO Regulation)
- Queensland Environmental Offsets Policy (QEOP) (version 1.17)
- Significant Residual Impact Guideline – for prescribed activities under NC Act, EP Act and Marine Parks Act 2004 (DEHP 2014).

Under the Queensland Environmental Offsets Framework an environmental offset is required when an Significant Residual Impact (SRI) occurs to an MSES. MSES are prescribed in Schedule 2 of the EO Regulation and include:

- critically endangered, endangered, vulnerable and near threatened (CEEVNT) flora and fauna species under NC Act and their habitats
- special least concern fauna species under NC Act and their habitats
- endangered and of concern REs under VM Act
- essential habitat (mapped by the Queensland Department of Environment, Tourism, Science and Innovation (DETSI))
- REs that intersect with wetlands and watercourses
- connectivity values
- wetlands of high ecological significance
- protected areas (including nature refuges)
- declared fish habitat areas and waterways providing for fish passage
- legally secured offset areas.

To support a determination of whether the proposed development will result in any significant residual impacts to MSES, the proposed development is to be assessed under the Significant Residual Impact Guideline – for prescribed activities under NC Act, EP Act and *Marine Parks Act 2004* (DEHP 2014).

2.2.4 Planning Act 2016 and Planning Regulation 2017

The *Planning Act 2016* and Planning Regulation 2017 establish the legislative framework that ensures projects seeking a Development Approval (DA) are planned and assessed in accordance with the protection of environmental values. The Western Downs Planning Scheme (see Section 2.3 below) was prepared in accordance with the *Planning Act 2016*.

2.3 Local legislation

2.3.1 Western Downs Regional Council Planning Scheme 2017

The strategic plan of the Western Downs Regional Council Planning Scheme is designed to set the policy direction for the planning scheme and ensures appropriate development occurs in the planning scheme area for the life of the planning scheme. Strategic outcomes of the environmental and heritage of the planning scheme include:

- The natural environment including its unique natural features, ecological processes and biodiversity values are conserved, enhanced and restored to maintain their biological capacity for the benefit of present and future generations.
- The productive soils that sustain life supporting ecosystem services and rural production are identified as a valuable resource that is to be protected against the deleterious impacts of urban and incompatible land uses.
- The hydrological network of the Western Downs contributes to the scenic amenity and biodiversity of the region and downstream catchments including the Murray Darling. The health of the waterways, wetland and the water table of the region is protected from the negative impacts of development to maintain high standards of ecological health and water quality.

These strategic outcomes are maintained by protecting environmental elements such as habitat and biodiversity, vegetation, waterways, wetlands, aquifers and state forests. Land use strategies to be integrated to development planning that are listed on the scheme to protect these elements include:

- Development is located to avoid significant adverse impacts on matters of state environmental significance (MSES) as well as consider matters of national environmental significance (MNES).
- Development protects and enhances the values of connectivity within a fragmented landscape, in particular Biodiversity Corridors.
- Urban development is not located in or adjacent to State Forests.

3 Methodology

3.1 Rapid desktop assessment

The desktop assessment consolidates information from relevant databases, mapping, aerial imagery, and published literature to produce an initial characterisation of the ecological values of the Impact Footprint and surrounding area. In part, this initial characterisation guides the assessment strategy required in the field by providing information such as previously recorded threatened species, potential habitat features and mapped vegetation communities.

The desktop assessment sourced information from the following:

- Australian Government DCCEEW Protected Matters Search Tool (PMST) Database
- DETSI WildNet
- Atlas of Living Australia (ALA) threatened species search
- DETSI Regional Ecosystem (RE) Mapping
- DETSI Protected Plants Flora Survey Trigger mapping
- DETSI Essential Habitat mapping
- DETSI MSES Report
- Regulated Vegetation mapping
- VM Act watercourse and drainage feature map

The desktop assessment focussed on the Impact Footprint plus an additional 10 km buffer to capture adjacent environmental values. Desktop searches are included as Appendix A.

4 Results

4.1 Existing environment

The Impact Footprint is located within an existing operational power station area and comprises highly disturbed land as shown in Figure 1.1. The area has been substantially modified and does not retain the characteristics of native vegetation communities or ecological habitat typically associated with MNES or MSES. The hard stand area is entirely developed and directly adjacent to Braemar Power Station and is currently used for equipment and machinery storage. The area to the east of the hard stand area is mapped as non-remnant vegetation (See Appendix A.4) although it contains a small number of trees that will be cleared as part of the asset protection zone (APZ). While these trees may provide limited habitat opportunities for some fauna species, the area occurs within a highly disturbed operational environment and any potential impacts are expected to be negligible and able to be effectively managed through implementation of the mitigation measures outlined in this memo.

4.2 Vegetation communities

4.2.1 Threatened ecological communities

Table 4.1 provides a summary of the threatened ecological communities (TECs) identified through PMST search as having potential to occur within the Impact Footprint or surrounding area (10km). Associated REs are also identified where relevant.

Table 4.1 **TECs desktop search results**

TEC	EPBC Act status
Weeping Myall Woodlands	Endangered
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered
Poplar Box Grassy Woodland on Alluvial Plains	Endangered
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered
Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant)	Endangered

The entire Impact Footprint is mapped as non-remnant which suggests there are no TECs present in the Impact Footprint.

4.2.2 Regulated vegetation and regional ecosystems

The entire Impact Footprint is mapped as Category X and non-remnant vegetation and is not consistent with any mapped regional ecosystem in the Regional Ecosystem Description Database (REDD). Pre-clear REs mapped within and adjacent to the Impact Footprint and adjacent areas are included in Table 4.2

Table 4.2 **Pre-clear regional ecosystems**

RE	Description	VM Act Class
11.7.7	<i>Eucalyptus fibrosa</i> subsp. <i>nubilis</i> +/- <i>Corymbia</i> spp. +/- <i>Eucalyptus</i> spp. woodland on Cainozoic lateritic duricrust	Least Concern
11.7.4	<i>Eucalyptus decorticans</i> and/or <i>Eucalyptus</i> spp., <i>Corymbia</i> spp., <i>Acacia</i> spp., <i>Lysicarpus angustifolius</i> woodland on Cainozoic lateritic duricrust	Least Concern
11.7.5	Shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks	Least Concern

4.3 Essential habitat

The Impact Footprint does not include any areas mapped as essential habitat. A record for *Philotheca sporadica* and mapped essential habitat occur within approximately 300m of the Impact Footprint (Appendix A.4). However, the proposed development is located within an existing hardstand area and does not directly impact mapped essential habitat.

4.4 Flora

4.4.1 Threatened flora

There were no threatened flora species with records or their habitat within the Impact Footprint. *Philothea sporadica* (Endangered under the NC Act) has over 20 records within 1km of the Impact Footprint. It is likely that this species will be present in vegetation surrounding the Impact Footprint however, its presence is highly unlikely within the Impact Footprint itself. Species listed in Table 4.3 either have potential to occur or have records within the surrounding area of the Impact Footprint (10km). The species in Table 3.3 are not considered likely or have the potential to occur within the Impact Footprint.

Table 4.3 Flora desktop search results

Scientific name	Common name	NC Act status	EPBC Act status
<i>Acacia lauta</i>	Tara Wattle	Vulnerable	Vulnerable
<i>Acacia wardellii</i>	-	Near Threatened	-
<i>Acianthus fornicatus</i>	Pixie Caps	Special Least Concern	-
<i>Cadellia pentastylis</i>	Ooline	Vulnerable	Vulnerable
<i>Caladenia fuscata</i>	-	Special Least Concern	-
<i>Cyanicula caerulea</i>	-	Special Least Concern	-
<i>Dichanthium setosum</i>	Bluegrass	-	Vulnerable
<i>Drosera hookeri</i>	-	Special Least Concern	-
<i>Drosera lunata</i>	-	Special Least Concern	-
<i>Eucalyptus curtisii</i>	Plunkett Mallee	Near Threatened	-
<i>Homopholis belsonii</i>	Belson's Panic	Endangered	Vulnerable
<i>Lepidium monoplacoides</i>	Winged Pepper-cress	-	Endangered
<i>Philothea sporadica</i>	-	Endangered	-
<i>Pterostylis bicolor</i>	-	Special Least Concern	-
<i>Rutidosia glandulosa</i>	-	Near Threatened	-
<i>Rutidosia lanata</i>	-	Near Threatened	-
<i>Solanum papaverifolium</i>	-	Endangered	-
<i>Syzygium paniculatum</i>	-	-	Vulnerable
<i>Thesium australe</i>	Toadflax	Vulnerable	Vulnerable
<i>Xerothamnella herbacea</i>	-	Endangered	Endangered

4.4.2 Protected plant trigger mapping

The Impact Footprint does not include any high-risk areas mapped on the Protected Plants Flora Survey Trigger Map. There is however a high-risk area within 300m of the Impact Footprint (Appendix A.4).

4.5 Fauna

4.5.1 Threatened or migratory fauna

There are no records of threatened or migratory fauna species or their habitat within the Impact Footprint. Desktop searches identified records of Koala (*Phascolarctos cinereus*) and Short-beaked Echidna (*Tachyglossus aculeatus*) within 1km of the Impact Footprint. Both these species are mobile and may move through non-remnant areas. Species listed in Table 4.4 either have records within, or are considered to have the potential to occur in the broader surrounding area (10km); however, given the highly modified nature of the Impact Footprint, these species are unlikely to occur within the Impact Footprint itself.

Table 4.4 Fauna desktop search results

Class	Scientific name	Common name	NC Act status	EPBC Act status
Bird	<i>Actitis hypoleucos</i>	Common Sandpiper	Special Least Concern	Migratory
Bird	<i>Aphelocephala leucopsis</i>	Southern Whiteface	Vulnerable	Vulnerable
Bird	<i>Apus pacificus</i>	Fork-tailed Swift	Special Least Concern	Migratory
Bird	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Vulnerable	Vulnerable, Migratory
Bird	<i>Calidris ferruginea</i>	Curlew Sandpiper	Critically Endangered	Critically Endangered, Migratory
Bird	<i>Calidris melanotos</i>	Pectoral Sandpiper	Special Least Concern	Migratory
Bird	<i>Calyptorhynchus lathami lathami</i>	Glossy Black-cockatoo	Vulnerable	Vulnerable
Bird	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	Vulnerable	Vulnerable
Bird	<i>Cuculus optatus</i>	Oriental Cuckoo	Special Least Concern	Migratory
Bird	<i>Erythrorhynchus radiatus</i>	Red Goshawk	Endangered	Endangered
Bird	<i>Falco hypoleucos</i>	Grey Falcon	Vulnerable	Vulnerable
Bird	<i>Gallinago hardwickii</i>	Latham's Snipe	Vulnerable	Vulnerable, Migratory
Bird	<i>Geophaps scripta scripta</i>	Squatter Pigeon	Vulnerable	Vulnerable
Bird	<i>Grantiella picta</i>	Painted Honeyeater	Vulnerable	Vulnerable
Bird	<i>Hirundapus caudacutus</i>	White-throated Needletail	Vulnerable	Vulnerable, Migratory
Bird	<i>Lathamus discolor</i>	Swift Parrot	Endangered	Critically Endangered
Bird	<i>Motacilla flava</i>	Yellow Wagtail	-	Migratory
Bird	<i>Pandion haliaetus</i>	Osprey	Special Least Concern	Migratory
Bird	<i>Rostratula australis</i>	Australian Painted-snipe	Endangered	Endangered
Bird	<i>Stagonopleura guttata</i>	Diamond Firetail	Vulnerable	Vulnerable
Bird	<i>Turnix melanogaster</i>	Black-breasted Button-quail	Vulnerable	Vulnerable
Fish	<i>Maccullochella peelii</i>	Murray Cod	-	Vulnerable
Fish	<i>Mogurnda adspersa</i>	Southern Purple Spotted Gudgeon	-	Endangered
Insect	<i>Hypochrysops piceatus</i>	Bullock Jewel Butterfly	Critically Endangered	Critically Endangered

Class	Scientific name	Common name	NC Act status	EPBC Act status
Mammal	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Endangered	Endangered
Mammal	<i>Dasyurus hallucatus</i>	Northern Quoll	-	Endangered
Mammal	<i>Nyctophilus corbeni</i>	Eastern Long-eared Bat	Vulnerable	Vulnerable
Mammal	<i>Petauroides volans volans</i>	Greater Glider	Endangered	Endangered
Mammal	<i>Petaurus australis australis</i>	Yellow-bellied Glider	Vulnerable	Vulnerable
Mammal	<i>Phascolarctos cinereus</i>	Koala	Endangered	Endangered
Mammal	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	-	Vulnerable
Mammal	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	Special Least Concern	-
Reptile	<i>Anomalopus mackayi</i>	Long-legged Worm-skink	Endangered	Vulnerable
Reptile	<i>Delma torquata</i>	Collared Delma	Vulnerable	Vulnerable
Reptile	<i>Egernia rugosa</i>	Yakka Skink	Vulnerable	Vulnerable
Reptile	<i>Furina dunmalli</i>	Dunmall's Snake	Vulnerable	Vulnerable
Reptile	<i>Hemiaspis damelii</i>	Grey Snake	Endangered	Endangered
Reptile	<i>Strophurus taenicauda</i>	Golden-tailed Gecko	Near Threatened	-
Snail	<i>Adclarkia cameroni</i>	Brigalow Woodland Snail	Endangered	Endangered
Snail	<i>Adclarkia dulacca</i>	Dulacca Woodland Snail	Endangered	Endangered

4.5.2 Koala habitat

The Impact Footprint does not include any areas of Koala habitat.

4.6 Wetlands and Watercourses

There are no wetlands (including wetlands of high ecological significance and wetland protection areas) within the Impact Footprint. The Impact Footprint also does not intersect any watercourses or areas mapped as High Ecological Value Waters

4.7 Protected areas

The Impact Footprint is not located within or adjacent to any Protected Areas.

4.8 Fish Habitat Areas and High Protected Zones of State Marine Parks

The Impact Footprint is not located in any Fish Habitat Areas or Marine Parks.

4.9 Waterway Providing for Fish Passage

The Impact Footprint is not located within an area containing a waterway identified as providing for fish passage.

4.10 Marine Plants

The Impact Footprint is not located in a Marine Area and does not support any marine plants.

4.11 Legally Secured Offset Areas

The Impact Footprint does not include any existing offset areas and no land-based offsets are proposed for the proposed development.

5 Impact

The proposed development is located within an existing operational power station and will occur predominantly within an existing hardstand area. As discussed in Section 4, no direct impacts to MNES or MSES are anticipated. Potential indirect impacts are limited to mapped ecological values within the immediate surrounding environment. Those indirect values are detailed in the following sections.

5.1 Dust

Increased dust from construction has the potential to temporarily impact flora and fauna values in the immediate vicinity of the works. Excess generation of dust and subsequent deposition on leaves can impair plant photosynthesis and productivity (also resulting in reduced habitat quality for fauna), impact on respiratory systems of fauna, alter soil properties impacting on plant species. Given the proposed development is located within an existing operational power station and predominantly hardstand environment, any impacts are expected to be localised, temporary and readily managed through standard dust suppression measures.

5.2 Noise

Construction activities may result in temporary increases in noise levels within the vicinity of the proposed works. The proposed development is located within an existing operational power station where noise sources are already present, and any additional impacts to fauna are expected to be localised and minimal.

Noise may adversely affect fauna by interfering with communication (e.g. territorial bird song), masking the sound of predators and prey, causing avoidance reactions and displacement from habitat. Construction noise will be generated throughout the proposed development by machinery, plant, and vehicles and will vary from short intermittent noise from plant and equipment to more persistent noise from generators. Operation noise of the gas generating equipment may cause ongoing disruption to fauna and potentially cause them to become displaced during dispersal to new locations.

5.3 Light

The proposed development will occur within an existing industrial environment where artificial lighting is already present. Construction lighting may temporarily increase light spill in the immediate vicinity of the works; however, impacts are expected to be localised and can be managed through implementation of standard lighting controls.

Artificial lighting can have a range of impacts which vary between species. Artificial light can disrupt patterns of both nocturnal and diurnal species by eliciting responses. Some species may avoid brightly lit areas, potentially due to the perception of increased risk of predation. Other potential adverse impacts include disruption of breeding and migratory patterns, disorientation and potential collision with structures. Conversely, some species such as nocturnal reptiles, frogs and bats may congregate at artificial light sources to feed on insects attracted to light.

Given the highly disturbed nature of the Impact Footprint and the absence of identified ecological constraints, indirect impacts to flora and fauna are expected to be minor and can be effectively managed through implementation of the mitigation measures outlined below.

6 Mitigation measures

6.1 Dust

Construction activities have the potential to generate dust. Dust suppression measures will be implemented where required to minimise impacts to surrounding vegetation and fauna habitat. The following measures will be implemented to mitigate and manage impacts from dust as much as practicable during the construction and operational phase:

- Areas which have potential to generate airborne dust will be wetted down regularly.
- Low speed limits will be implemented on roads in close proximity to vegetation.
- Machinery and vehicle tyres will be regularly cleaned to reduce wheel entrained dust emissions or consider use of vibration grids.
- Water spraying of nearby sensitive vegetation should be considered if visible dust sedimentation is observed.
- Regular monitoring will be undertaken to assess the effectiveness of dust suppression measures.

6.2 Noise

The following measures will be implemented to mitigate and manage impacts from noise during the construction and operation phase:

- All equipment will be properly maintained in accordance with manufacturer's specifications.
- Noise control techniques will be implemented in accordance with standard industry noise suppression techniques.
- Unnecessary idling of construction equipment will be minimised where practicable.

6.3 Light

The following measures will be implemented to mitigate and manage impacts from light during the construction phase:

- Night lighting will mainly be limited to that required for safety and security. Construction and operation lighting will be minimised (i.e. low luminance) as far as possible.
- Directional lighting will be away from environmentally sensitive areas.

7 Conclusion

The proposed development is expected to result in negligible impacts to ecological values within the Impact Footprint. The expansion of the gas power station will occur almost entirely within an existing hard-stand area that has already been previously cleared and developed. Consistent with the desktop assessment findings, the Impact Footprint is mapped as non-remnant vegetation and does not contain TECs, essential habitat, wetlands or other mapped ecological values. Accordingly, no direct impacts to MNES, MSES or other identified ecological values are anticipated within the Impact Footprint.

Potential indirect impacts are limited to temporary disturbance associated with construction activities, including dust, noise and lighting. Given the highly modified nature of the surrounding operational environment, these impacts are expected to be localised, minor and readily managed through implementation of the mitigation measures outlined in this memo.

There remains potential for indirect impacts to ecological values within the surrounding vegetation. These may include disturbance to fauna from increased noise and light associated with operation, as well as potential harm to flora and fauna habitat from dust generation during construction activities.

Indirect impacts to MNES and MSES can be managed through the implementation of appropriate mitigation measures as detailed within this memo. This will minimise potential harm to environmental values in the vicinity of the proposed development and surrounds.

On this basis, the proposed development is not expected to result in significant impacts to ecological values.

Yours sincerely



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8 References

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Appendix A

Desktop search results

A.1 PMST result (10km buffer)



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 09-Mar-2026

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	39
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	22
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	1200 - 1300km upstream from Ramsar site	In feature area
Narran lake nature reserve	400 - 500km upstream from Ramsar site	In feature area
Riverland	1200 - 1300km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	1400 - 1500km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area	In buffer area only
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area	In feature area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[<u>Resource Information</u>]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Erythroriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat may occur within area	In feature area
FISH			
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Mogurnda adspersa (Murray-Darling Basin population) Southern Purple Spotted Gudgeon (Murray-Darling Basin population) [94623]	Endangered	Species or species habitat may occur within area	In feature area
INSECT			
Hypochrysops piceatus Bullock Jewel Butterfly [77869]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area	In feature area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
PLANT			
Acacia lauta Tara Wattle [4165]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat may occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Homopholis belsonii Belson's Panic [2406]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium monolocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Xerothamnella herbacea [4146]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
REPTILE			
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat known to occur within area	In feature area

SNAIL			
Adclarkia cameroni Brigalow Woodland Snail [83886]	Endangered	Species or species habitat likely to occur within area	In feature area
Adclarkia dulacca Dulacca Woodland Snail [83885]	Endangered	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]		
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area	In feature area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals [Resource Information]				
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Darling Downs Battery Energy Storage System	2024/09788		Assessment	In buffer area only
Development of Existing Coal Seam Gas Fields	2008/4398		Post-Approval	In feature area
Controlled action				

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
ATP1188 Anya development for 25 CSG wells, Dalby, Qld	2015/7463	Controlled Action	Post-Approval	In buffer area only
Construction of a high pressure buried gas pipeline, Kogan to Gladstone, QLD	2009/5029	Controlled Action	Post-Approval	In buffer area only
Expansion of Coal Seam Gas Fields	2009/4974	Controlled Action	Post-Approval	In feature area
Expansion Of Coal Seam Gas Operations	2010/5344	Controlled Action	Post-Approval	In buffer area only
Ruby Spur Line	2011/6221	Controlled Action	Post-Approval	In buffer area only
Surat Gas Project off-tenure pipelines, Surat Basin, Qld	2018/8223	Controlled Action	Post-Approval	In buffer area only
Wandoan Coal Project - Coal Seam Methane Water Supply South	2008/4287	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Beelbee Solar Farm and transmission connection, Beelbee Road, Beelbee, Qld	2018/8168	Not Controlled Action	Completed	In buffer area only
Braemar 3 450MW open cycle gas-fired power station	2009/4811	Not Controlled Action	Completed	In feature area
Darling Downs Power Station	2007/3377	Not Controlled Action	Completed	In buffer area only
Darling Downs Solar Farm, west of Dalby, Qld	2016/7694	Not Controlled Action	Completed	In buffer area only
Goldsmith LNG Plant	2007/3440	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Tipton Gas Pipeline	2004/1797	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Construction and operation of gas pipeline	2005/2254	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Dalby Gas Expansion Project	2010/5343	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
Darling Downs Power Station 2	2010/5417	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Development of gas fired peaking power station	2005/2135	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
Construction of 450MW open cycle gas-fired power station	2009/4729	Referral Decision	Completed	In feature area
Wilkie Creek Coal Mine	2010/5418	Referral Decision	Completed	In buffer area only

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Maranoa-Balonne-Condamine	Northern Inland Catchments	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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A.2 WildNet result (10km buffer)



WildNet Records

Conservation Significant Species List

For the selected area of interest Custom input
Current as at 09/03/2026 wildnet

Summary Information

The following table provides an overview of the area of interest: Custom input

Table 1. Area of interest details

Size (ha)	
15.28	
Local Government(s)	
Western Downs Regional	
Catchment(s)	
Balonne-Condamine	
Bioregion(s)	Subregion(s)
Brigalow Belt	Inglewood Sandstones

Protected Area(s)

No estates or reserves are located within the area of interest.

World Heritage Area(s)

No World Heritage Areas are located within the area of interest.

Ramsar Area(s)

No Ramsar Areas are located within the area of interest.

Introduction

This WildNet report is derived from a spatial layer that is generated from the [WildNet database](#), managed by the Department of the Environment, Tourism, Science and Innovation. The layer, which is generated weekly, contains a subset of WildNet wildlife records that are not classed as erroneous or duplicate, that have a location precision equal to or less than 10000 metres and do not have a count of zero. It does not include aspatial data such as some baseline species lists created for some protected areas.

The WildNet dataset is constantly being enhanced and the taxonomic and status information revised. If a conservation significant species is not listed in this report, it does not mean it doesn't occur there and listed species may also no longer inhabit the area. It is recommended that you also access other internal and external data sources for species information in your area of interest.

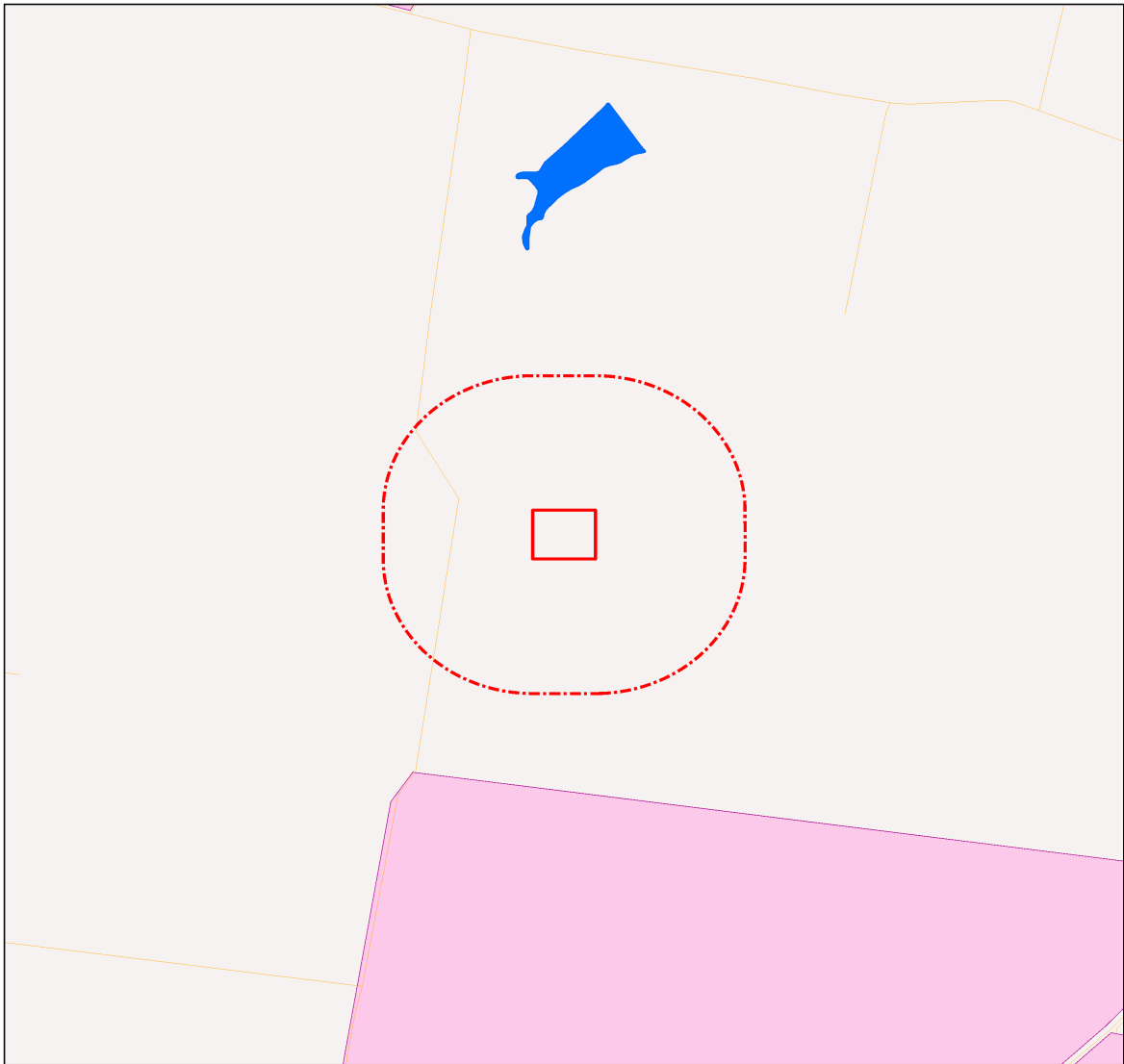
The [WildNet Application](#) may provide additional information on species occurrence within your area of interest.

Conservation significant species are species listed:

- as threatened or near threatened under the *Nature Conservation Act 1992*;
- as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* or
- migratory species protected under the following international agreements:
 - Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
 - China-Australia Migratory Bird Agreement
 - Japan-Australia Migratory Bird Agreement
 - Republic of Korea-Australia Migratory Bird Agreement

Table 2 lists the species recorded within the area of interest and its one kilometre buffer.

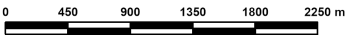
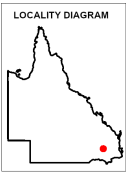
Map 1. Locality Map



Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Lakes and reservoirs
- National Park
- National Park (Scientific)
- National Park (CYPAL)
- National Park (Aboriginal Land)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Custom area
- 1 kilometre buffer



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Table 2. Conservation significant species recorded within the area of interest and its one kilometre buffer

Taxon Id	Kingdom	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
860	Animalia	Mammalia	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala	E	E	0	1	30/09/1998
838	Animalia	Mammalia	Tachyglossidae	<i>Tachyglossus aculeatus</i>	short-beaked echidna	SL		0	2	30/09/1998
21801	Plantae	Equisetopsida	Rutaceae	<i>Philothea sporadica</i>		E		3	68	20/01/2022

Taxon Id: Unique identifier of the taxon from the WildNet database.

NCA: Queensland conservation status of the taxon under the *Nature Conservation Act 1992* (Least Concern (C), Critically Endangered (CR), Endangered (E), Extinct (EX), Near Threatened (NT), Extinct in the Wild (PE), Special Least Concern (SL), and Vulnerable (V)).

EPBC: Australian conservation status of the taxon under the *Environment Protection and Biodiversity Conservation Act 1999* (Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Vulnerable (V), and Extinct in the Wild (XW)).

Specimens: The number of specimen-backed records of the taxon.

Records: The total number of records of the taxon.

Last record: Date of most recent record of the taxon.

Links and Support

Other sites that deliver species information from the [WildNet database](#) include:

- [WildNet Application](#) - public interface to find species information and species lists generated from the WildNet database.
- [Biomaps](#) - view biodiversity information, including WildNet records approved for publication, and generate reports
- [Queensland Globe](#) - view spatial information, including WildNet records approved for publication
- [Qld WildNet Data API](#) - access WildNet species information approved for publication such as notes, images and records etc.
- [Wetland Maps](#) - view species records, survey locations etc. approved for publication
- [Wetland Summary](#) - view wildlife statistics, species lists for a range of area types, and access WildNet species profiles
- [WildNet wildlife records - published - Queensland](#) - spatial layer of WildNet records approved for publication generated weekly
- [Generalised distribution and densities of Queensland wildlife](#) - Queensland species distributions and densities generalised to a 10 km grid resolution
- [Conservation status of Queensland wildlife](#) - access current lists of priority species for Queensland including nomenclature and status information
- [Queensland Confidential Species](#) - the list of species flagged as confidential in the WildNet database.

Please direct queries about this report to the WildNet Team WildNet@detsi.qld.gov.au.

Other useful sites for accessing Queensland biodiversity data include:

- [Useful wildlife resources](#)
- [Queensland Government Data](#)
- [Atlas of Living Australia \(ALA\)](#)
- [Online Zoological Collections of Australian Museums \(OZCAM\)](#)
- [Australasian Virtual Herbarium \(AVH\)](#)
- [Protected Matters Search Tool](#)

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government, to the maximum extent permitted by law, makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

A.3 Atlas of Living Australia result (10km buffer)

ala10km_updated

names_and_isid	Species Name	Scientific Name Authorship	Taxon Rank	Kingdom	Phylum	Class	Order	Family	Genus
Acacia wardelliihttps://id.biodiversity.org.au/node/apni/2898363 Plantae Fabaceae	Acacia wardellii	Tindale	species	Plantae	Charophyta	Equisetopsida	Fabales	Fabaceae	Acacia
Adclarkia cameronihttps://biodiversity.org.au/afd/taxa/d1433e40-4176-4632-8d11-30e06e1963bc Brigalow Woodland Snail Animalia Camaenidae	Adclarkia cameroni	Stanisic, 2010	species	Animalia	Mollusca	Gastropoda	Stylommatophora	Camaenidae	Adclarkia
Caladenia fuscatahttps://id.biodiversity.org.au/taxon/apni/51399038 Dusky Fingers Plantae Orchidaceae	Caladenia fuscata	(Richb.f.) M.A.Clem. & D.L.Jones	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Caladenia
Calyptrorhynchus (Calyptrorhynchus) lathamiihttps://biodiversity.org.au/afd/taxa/a7578d10-e7ae-48c2-9deb-bab619125a6c South-eastern Glossy Black-cockatoo Animalia Cacatuidae	Calyptrorhynchus (Calyptrorhynchus) lathamii lathamii	(Temminck, 1807)	subspecies	Animalia	Chordata	Aves	Psittaciformes	Cacatuidae	Calyptrorhynchus
Cyanicula caeruleahttps://id.biodiversity.org.au/taxon/apni/51401266 Blue Fairy Plantae Orchidaceae	Cyanicula caerulea	(R.Br.) Hopper & A.P.Br.	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Cyanicula
Eucalyptus curtisiihttps://id.biodiversity.org.au/node/apni/2810275 Plunkett Mallee Myrtaceae	Eucalyptus curtisii	Blakely & C.T.White	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Eucalyptus
Gallinago (Gallinago) hardwickiihttps://biodiversity.org.au/afd/taxa/5c1957dc-0780-47cb-9c89-0498340c1e62 Latham's Snipe Animalia Scolopacidae	Gallinago (Gallinago) hardwickii	(J.E. Gray, 1831)	species	Animalia	Chordata	Aves	Charadriiformes	Scolopacidae	Gallinago
Hirundapus caudacutushttps://biodiversity.org.au/afd/taxa/6485cd0c-1104-4950-8cdf-be4d09fc6bbc White-throated Needletail Animalia Apodidae	Hirundapus caudacutus	(Latham, 1801)	species	Animalia	Chordata	Aves	Apodiformes	Apodidae	Hirundapus
Petauroides volanshttps://biodiversity.org.au/afd/taxa/5e2dc7c9-4c1f-465b-9f71-5ed99c0c6d3e Southern Greater Glider Animalia Pseudocheiridae	Petauroides volans	(Kerr, 1792)	species	Animalia	Chordata	Mammalia	Diprotodontia	Pseudocheiridae	Petauroides
Phascolarctos cinereushttps://biodiversity.org.au/afd/taxa/e9d8fbd-1505-4073-990a-dc86c930da66 Koala Animalia Phascolarctidae	Phascolarctos cinereus	(Goldfuss, 1817)	species	Animalia	Chordata	Mammalia	Diprotodontia	Phascolarctidae	Phascolarctos
Philotheca sporadicahttps://id.biodiversity.org.au/node/apni/2896544 Plantae Rutaceae	Philotheca sporadica	(Bayly) Paul G.Wilson	species	Plantae	Charophyta	Equisetopsida	Sapindales	Rutaceae	Philotheca
Pterostylis bicolorhttps://id.biodiversity.org.au/taxon/apni/51412040 Black-tip Greenhood Plantae Orchidaceae	Pterostylis bicolor	M.A.Clem. & D.L.Jones	species	Plantae	Charophyta	Equisetopsida	Asparagales	Orchidaceae	Pterostylis
Rutidosia glandulosahttps://id.biodiversity.org.au/taxon/apni/51746344 Plantae Asteraceae	Rutidosia glandulosa	A.E.Holland	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Rutidosia
Rutidosia lanatahttps://id.biodiversity.org.au/taxon/apni/51746347 Plantae Asteraceae	Rutidosia lanata	A.E.Holland	species	Plantae	Charophyta	Equisetopsida	Asterales	Asteraceae	Rutidosia
Solanum papaverifoliumhttps://id.biodiversity.org.au/node/apni/2893502 Plantae Solanaceae	Solanum papaverifolium	Symon	species	Plantae	Charophyta	Equisetopsida	Solanales	Solanaceae	Solanum
Strophurus taenicaudahttps://biodiversity.org.au/afd/taxa/9011a636-3c71-46bc-ad01-81e06a70b059 Golden-tailed Gecko Animalia Diplodactylidae	Strophurus taenicauda	(De Vis, 1886)	species	Animalia	Chordata	Reptilia	Squamata	Diplodactylidae	Strophurus
Syzygium paniculatumhttps://id.biodiversity.org.au/taxon/apni/51440400 Magenta Lilly Pilly Plantae Myrtaceae	Syzygium paniculatum	Gaertn.	species	Plantae	Charophyta	Equisetopsida	Myrtales	Myrtaceae	Syzygium

Vernacular Name	Number of records	Queensland : Conservation Status	EPBC Act Threatened Species
	1	Near threatened	
Brigalow Woodland Snail	1	Endangered	Endangered
Dusky Fingers	1	Near threatened	
South-eastern Glossy Black-cockatoo	2	Vulnerable	
Blue Fairy	2	Near threatened	
Plunkett Mallee	1	Near threatened	
Latham's Snipe	2	Vulnerable	Vulnerable
White-throated Needletail	2	Vulnerable	Vulnerable
Southern Greater Glider	2	Endangered	Endangered
Koala	13	Endangered	
	1441	Endangered	
Black-tip Greenhood	2	Near threatened	
	3	Near threatened	
	2	Near threatened	
	1	Endangered	
Golden-tailed Gecko	10	Near threatened	
Magenta Lilly Pilly	1		Vulnerable

A.4 Vegetation management report (128 SP214053)



Vegetation management report

For Lot: 128 Plan: SP214053

09/03/2026

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Recent changes

Updated mapping

Updated vegetation mapping was released on 22 November 2023 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, essential habitat, wetland and high-value regrowth mapping.

The Department of the Environment, Tourism, Science and Innovation have also updated their koala protection mapping to align with the Queensland Herbarium scientific updates.

The latest version (v10) of the Protected Plants Flora Survey Trigger Map (trigger map) was released on 6 September 2023.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:

Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:

- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

Table of Contents

1. Property details	6
1.1 Tenure and title area	6
1.2 Property location	6
2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development).....	7
2.1 Exempt clearing work	7
2.2 Accepted development vegetation clearing codes	7
2.3 Area management plans	8
2.4 Development approvals	8
2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.....	8
3. Vegetation management framework for Lot: 128 Plan: SP214053	9
3.1 Vegetation categories	9
3.2 Regional ecosystems	10
3.3 Watercourses	10
3.4 Wetlands	10
3.5 Essential habitat	10
3.6 Area Management Plan(s)	11
3.7 Coastal or non-coastal	11
3.8 Agricultural Land Class A or B	11
4. Vegetation management framework maps	12
4.1 Regulated vegetation management map	13
4.2 Vegetation management supporting map	14
4.3 Coastal/non-coastal map	15
4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture	16
5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))......	17
5.1 Clearing in high risk areas on the flora survey trigger map	17
5.2 Clearing outside high risk areas on the flora survey trigger map	17
5.3 Exemptions	17
5.4 Contact information for DETSI	17
5.5 Protected plants flora survey trigger map	18
6. Koala protection framework (administered by DETSI)	20
6.1 Koala mapping	20
6.2 Koala habitat planning controls	21
6.3 Koala Conservation Plan clearing requirements	22
6.4 Contact information for DETSI	22
7. Koala protection framework details for Lot: 128 Plan: SP214053	23
7.1 Koala districts	23
7.2 Koala priority area, koala habitat area and identified koala broad-hectare map	23
7.3 Koala habitat regional ecosystems for core koala habitat areas	24
8. Other relevant legislation contacts list	25

1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 128 Plan: SP214053 are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
A	DY1029	Easement	83,220
B	SP109060	Easement	86,050
128	SP214053	Freehold	397,100
D	SP121102	Easement	0
C	SP121102	Easement	0
127	SP109155	Profit à Prendre	6,128,000

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does the property Lot: 128 Plan: SP214053 have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 128 Plan: SP214053, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Western Downs Regional	Balonne-Condamine	Brigalow Belt	Inglewood Sandstones

2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2023, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem identified in the Vegetation Management Regional Ecosystem Description Database (VM REDD) as having a grassland structure; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions/>.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes/>

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at

<https://vegetation-apps.dnrm.qld.gov.au>

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development and then follow the conditions and requirements listed in the AMP.

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans>

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development>

2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@nrmmrrd.qld.gov.au

Visit <https://www.nrmmrrd.qld.gov.au/?contact=vegetation> to submit an online enquiry.

3. Vegetation management framework for Lot: 128 Plan: SP214053

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property

Vegetation category	Area (ha)
Category B	10.53
Category X	29.16

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

There is no Property Map of Assessable Vegetation (PMAV) present on this property.

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/>

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
11.7.4	Least concern	B	4.21	Eucalyptus decorticans and/or Eucalyptus spp., Corymbia spp., Acacia spp., Lysicarpus angustifolius woodland on Cainozoic lateritic duricrust	Sparse
11.7.5	Least concern	B	1.05	Shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks	Sparse
11.7.7	Least concern	B	5.26	Eucalyptus fibrosa subsp. nubilis +/- Corymbia spp. +/- Eucalyptus spp. woodland on Cainozoic lateritic duricrust	Sparse
non-rem	None	X	29.16	None	None

Please note:

1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

- 1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
- 2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
21801	Philotheca sporadica		NT	woodland of Eucalyptus fibrosa subsp. nubila, E. crebra, E. exserta, Allocasuarina luehmannii, Callitris glaucophylla, Acacia conferta, Dodonaea triangularis, Corymbia trachyphloia; open forest of Acacia burrowii, Eucalyptus exserta, Callitris endlicheri, E. trachyphloia; low woodland of Eucalyptus exserta, Acacia burrowii, A. crassa with a dense shrub layer; Acacia woodland	300 to 450 m	mostly shallow gravelly loam to sandy or sandy clay, usually hard setting	low rocky lateritic ridge or rise
Label	Regional Ecosystem (mandatory unless otherwise specified)						
21801	11.7.4, 11.7.7						

3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Non Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

No Class A

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 128 Plan: SP214053.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:

<https://www.qld.gov.au/environment/land/management/vegetation/maps/map-request>

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new [property maps of assessable vegetation \(PMAV\)](#).

Vegetation management supporting map

The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

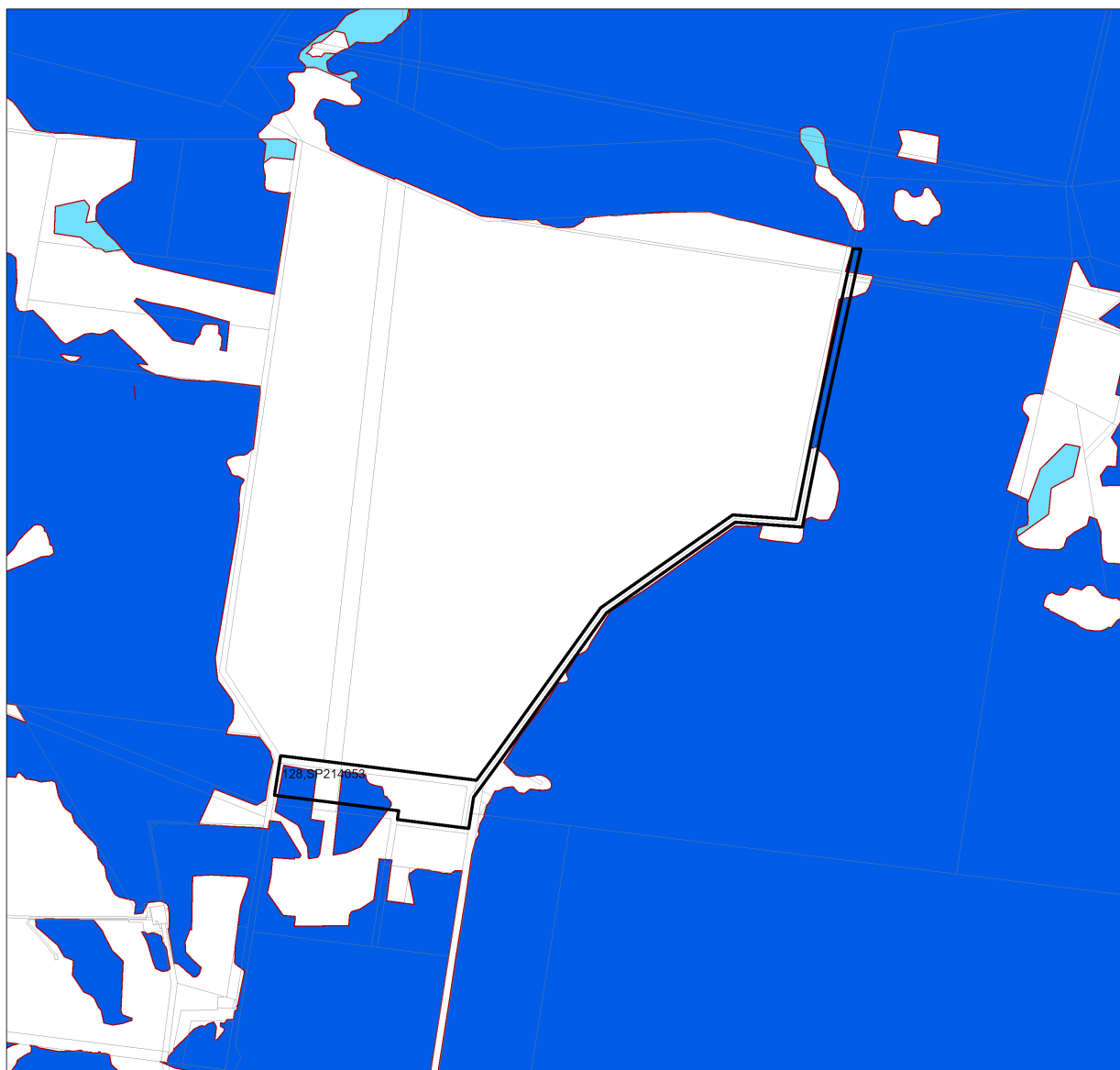
Coastal/non-coastal map

The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

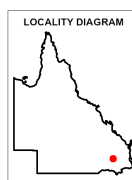
Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture

The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

4.1 Regulated vegetation management map



Regulated Vegetation Management Map



- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
- Water
- Other land parcel boundaries
- Selected Lot and Plan



0 340 680 1,020 1,360 1,700 m

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Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.nrm.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at <http://www.spatial.information.qld.gov.au/>

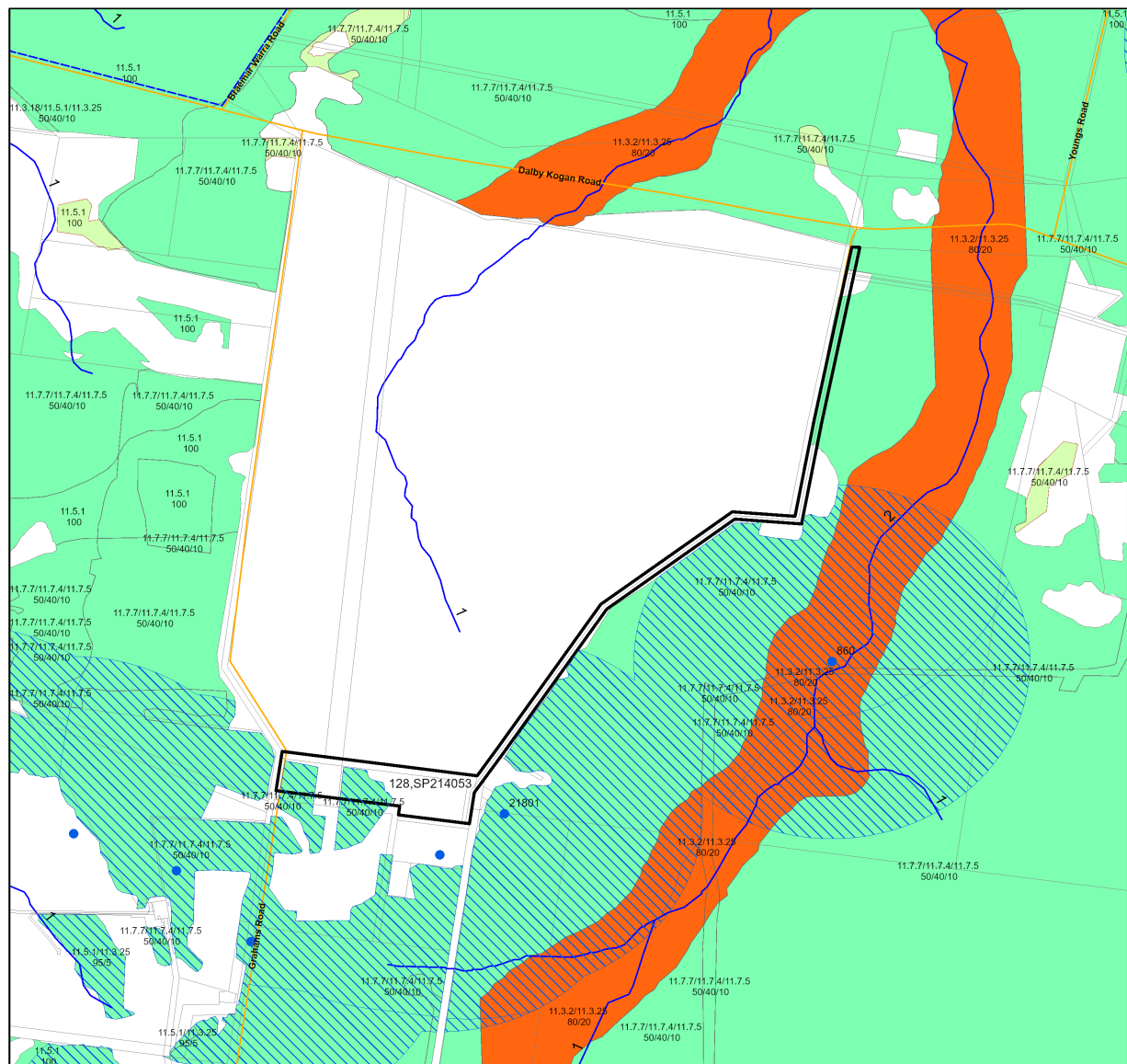
Land parcel boundaries are provided as locational aid only.

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.



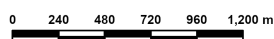
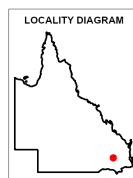
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4.2 Vegetation management supporting map



Vegetation Management Supporting Map

-  Category A or B area containing endangered regional ecosystems
-  Category A or B area containing of concern regional ecosystems
-  Category A or B area that is a least concern regional ecosystem
-  Category C or R area containing endangered regional ecosystems
-  Category C or R area containing of concern regional ecosystems
-  Category C or R area that is a least concern regional ecosystem
-  Category X area
-  Water
-  Wetland on the vegetation management wetlands map
-  Essential habitat on the essential habitat map
-  Essential habitat species record
-  Watercourses and drainage features on the vegetation management watercourse and drainage features map
(Stream order shown as black number against stream where available)
-  Highway
-  Connector
-  Street/Local Road
-  National Parks, State Forest and other reserves
-  Other land parcel boundaries
-  Selected Lot and Plan



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Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

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Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrm.mrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at <http://www.spatial.information.qld.gov.au/>

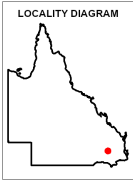
Land parcel boundaries are provided as locational aid only.

4.3 Coastal/non-coastal map



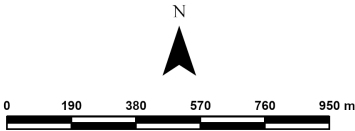
Coastal/Non Coastal Map

- Coastal
- Non Coastal
- Other land parcel boundaries
- Selected Lot and Plan



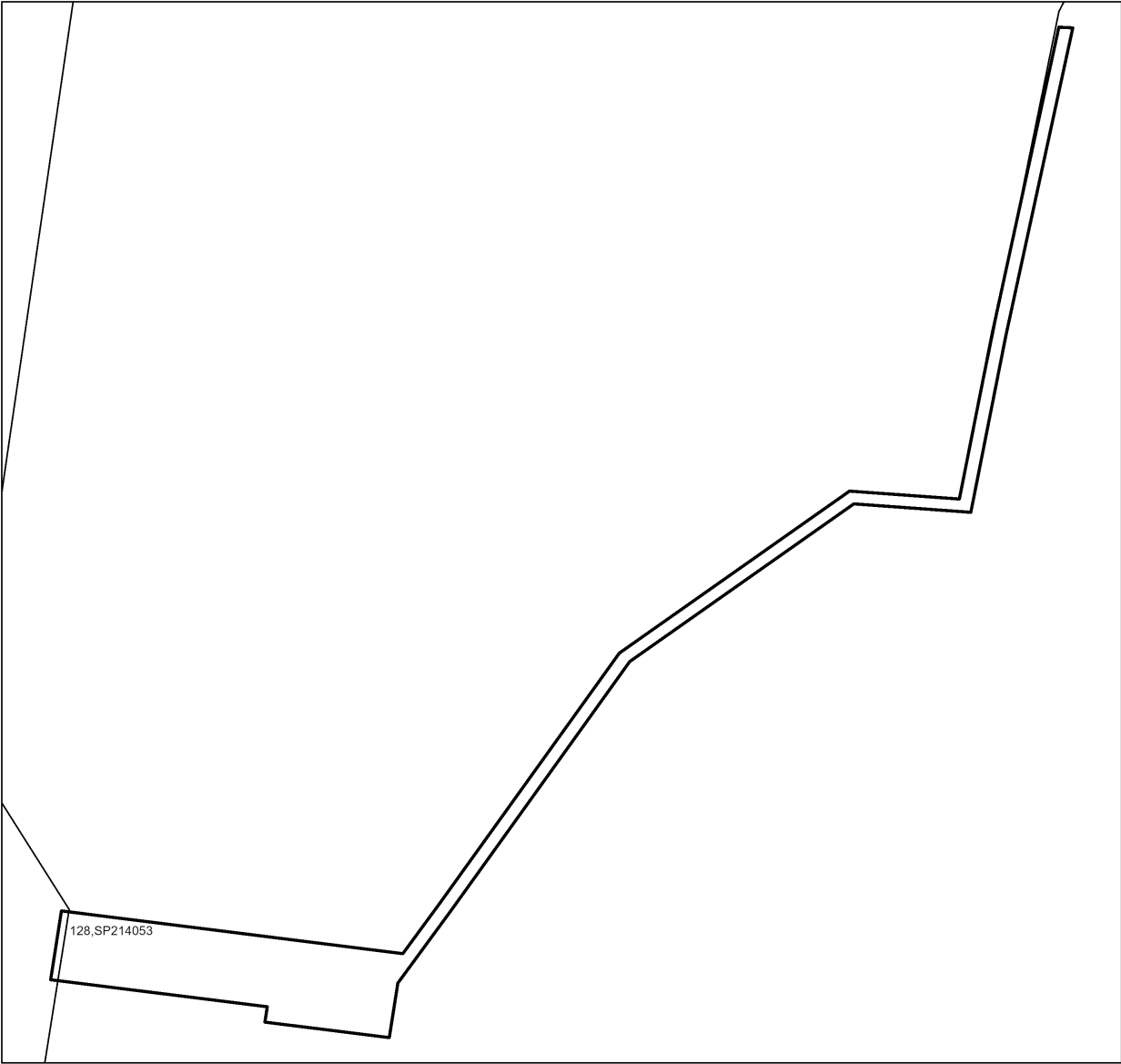
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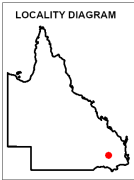
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4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture

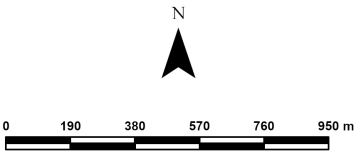


Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture

- Towns
- Rivers and creeks
- Freeways / motorways; Highways
- Secondary roads; Streets
- Agricultural land class A or B
 - A
 - B
 - Not class A or B
- Selected Lot and Plan



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5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

In Queensland, all plants that are native to Australia are protected plants under the [Nature Conservation Act 1992](#) (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see [Operational policy: When a protected plant in Queensland is considered to be 'in the wild'](#)) that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the [Flora survey guidelines](#). The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of Endangered, Vulnerable, Near-Threatened (EVNT) plants can be avoided, the clearing activity is exempt from a permit. An [exempt clearing notification form](#) must be submitted to the Department of the Environment, Tourism, Science and Innovation, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the [clearing permit application form](#).

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plants are present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DETSI

For further information on the protected plants framework:

Phone 1300 130 372 (and select option four)

Email palm@detsi.qld.gov.au

Visit <https://www.qld.gov.au/environment/plants-animals/plants/protected-plants>

5.5 Protected plants flora survey trigger map

This map included may also be requested individually at: <https://apps.des.qld.gov.au/map-request/flora-survey-trigger/>.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

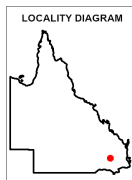
Species information

Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the [Queensland Spatial Catalogue](#), the Department of the Environment, Tourism, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of the Environment, Tourism, Science and Innovation webpage on the [clearing of protected plants](#) for more information.



Protected Plants Flora Survey Trigger Map

- High risk area
- Other land parcel boundaries
- Freeways / motorways / highways
- Secondary roads / streets
- Selected Lot and Plan



0 130 260 390 520 650 m

This product is displayed in:
GDA2020

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of the Environment, Tourism, Science and Innovation at palm@detsi.qld.gov.au

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6. Koala protection framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the *Nature Conservation (Animals) Regulation 2020*, the *Nature Conservation (Koala) Conservation Plan 2017*, the *Planning Act 2016* and the *Planning Regulation 2017*.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the *Planning Regulation 2017* for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document [Spatial modelling in South East Queensland](#).

Section 7.2 shows any koala habitat area that exists on your property.

Under the *Nature Conservation (Koala) Conservation Plan 2017*, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document [Guideline - Requests to make, amend or revoke a koala habitat area determination](#).

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at:

<https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps>. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the *Planning Regulation 2017* (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:

<https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy>.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1. Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2. Does not include destroying standing vegetation stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the [Planning Regulation 2017](#). More information on exempted development can be found here:

<https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy>.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:

- the local government planning scheme makes the development assessable;
- the premises includes an area that is both a koala priority area and a koala habitat area; and
- the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The [Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks](#) outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the [Nature Conservation \(Koala\) Conservation Plan 2017](#) prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DETSI

For further information on the koala protection framework:

Phone 13 QGOV (13 74 68)

Email koala.assessment@detsi.qld.gov.au

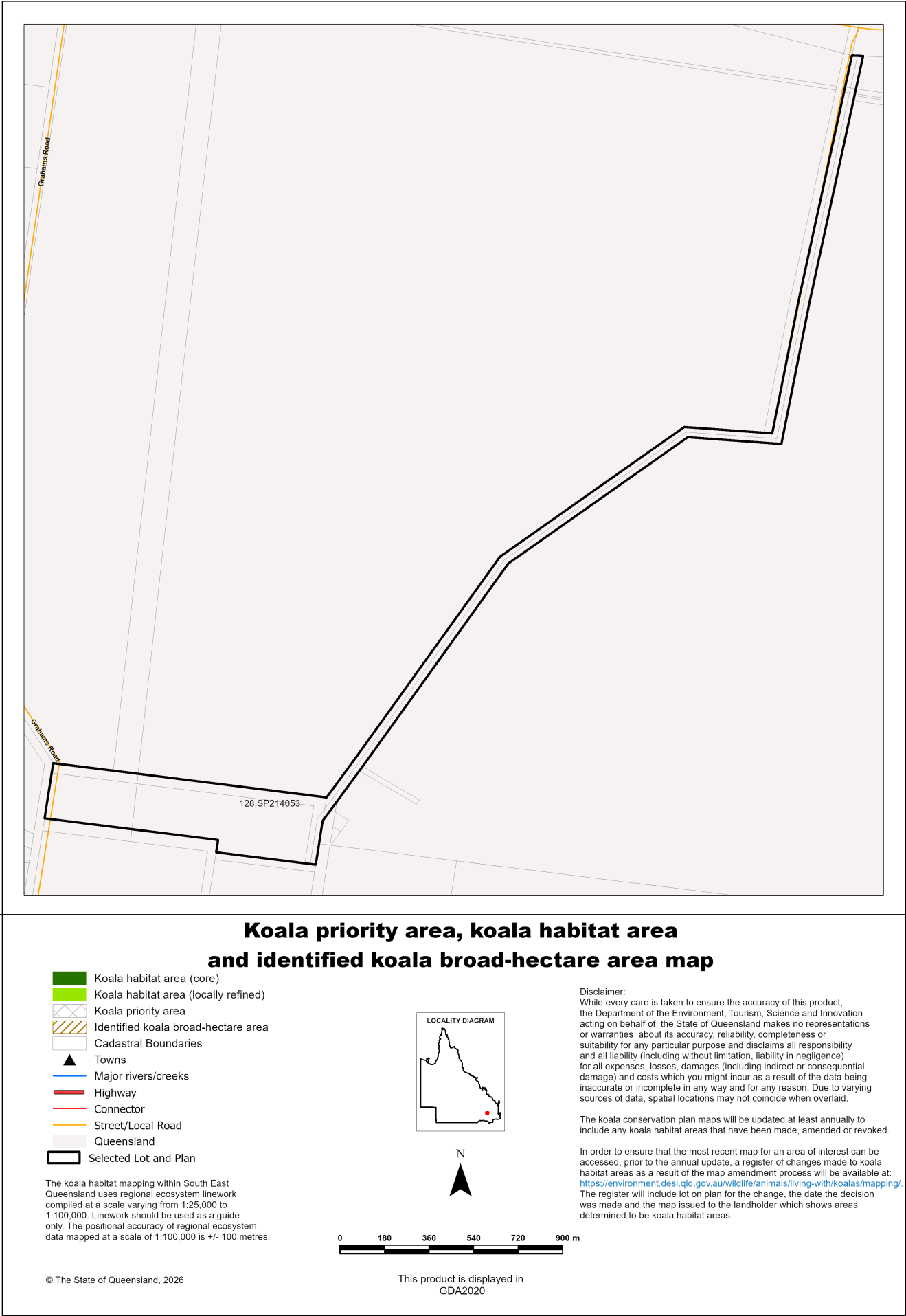
Visit <https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping>

7. Koala protection framework details for Lot: 128 Plan: SP214053

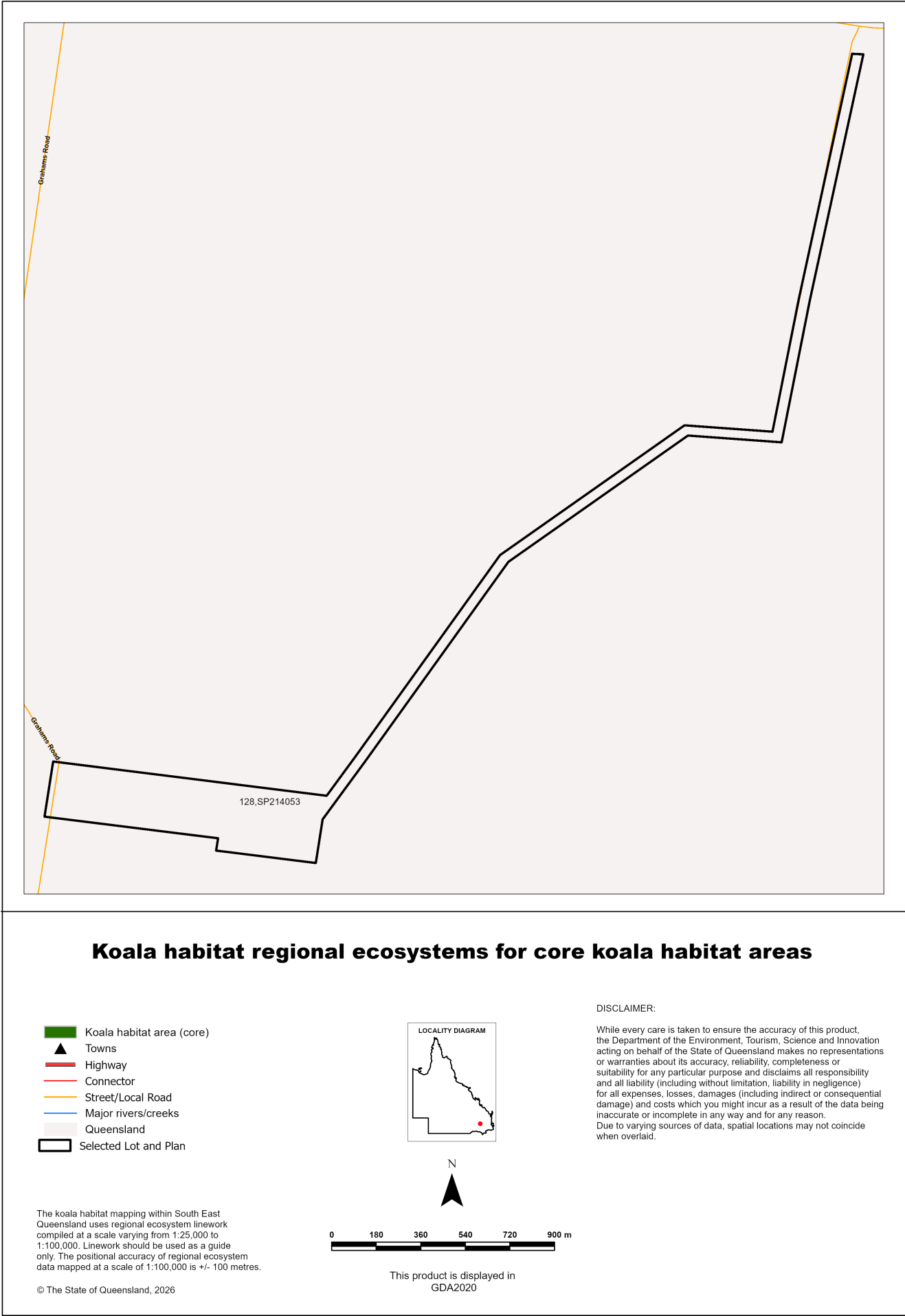
7.1 Koala districts

Koala District C

7.2 Koala priority area, koala habitat area and identified koala broad-hectare map



7.3 Koala habitat regional ecosystems for core koala habitat areas



8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow	<i>Water Act 2000</i>	Department of Local Government, Water and Volunteers	Ph: 13 QGOV (13 74 68) www.dlgwv.qld.gov.au
Earthworks, significant disturbance	<i>Soil Conservation Act 1986</i>	Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development	Ph: 13 QGOV (13 74 68) www.nrmmrd.qld.gov.au
Fire Permits	<i>Fire and Emergency Services Act 1990</i>	Queensland Fire Department	Ph: 13 QGOV (13 74 68) www.fire.qld.gov.au
Indigenous Cultural Heritage	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	Queensland Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism	Ph: 13 QGOV (13 74 68) www.tatsipca.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues	<i>Environmental Protection Act 1994</i> <i>Coastal Protection and Management Act 1995</i> <i>Queensland Heritage Act 1992</i>	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) www.detsi.qld.gov.au
Protected plants and protected areas	<i>Nature Conservation Act 1992</i> <i>Planning Act 2016</i>	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 1300 130 372 (option 4) palm@detsi.qld.gov.au www.detsi.qld.gov.au
Koala mapping and regulations	<i>Nature Conservation Act 1992</i>	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) Koala.assessment@detsi.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities	<i>Fisheries Act 1994</i> <i>Forestry Act 1959</i>	Queensland Department of Primary Industries	Ph: 13 QGOV (13 74 68) www.dpi.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Department of Climate Change, Energy, the Environment and Water (Australian Government)	Ph: 1800 920 528 www.dcceew.gov.au
Development and planning processes	<i>Planning Act 2016</i> <i>State Development and Public Works Organisation Act 1971</i>	Queensland Department of State Development, Infrastructure and Planning	Ph: 13 QGOV (13 74 68) www.planning.qld.gov.au
Coordinated projects	<i>Planning Act 2016</i> <i>State Development and Public Works Organisation Act 1971</i>	Office of the Coordinator-General	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au/coordinator-general
Wet Tropics World Heritage Area	<i>Wet Tropics World Heritage Protection and Management Act 1993</i>	Queensland Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au
Requirements on State controlled road	<i>Transport Infrastructure Act 1994</i>	Queensland Department of Transport and Main Roads	Ph: 13 QGOV (13 74 68) https://www.tmr.qld.gov.au
Local government requirements	<i>Local Government Act 2009</i> <i>Planning Act 2016</i>	Your relevant local government office	Local Government Contact Directory

Appendix F

Bushfire impact assessment and management plan



Bushfire Hazard Assessment and Management Plan

Braemar Energy Hub, Queensland

Prepared for Alinta Energy Development Pty Ltd

Prepared by:

Green Tape
SOLUTIONS



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In this note, a reference to loss and damage includes past and prospective economic loss, loss of profits, damage to property, injury to any person (including death) costs and expenses incurred in taking measures to prevent, mitigate or rectify any harm, loss of opportunity, legal costs, compensation, interest and any other direct, indirect, consequential or financial or other loss.

Document Records – Quality

TITLE	Bushfire Hazard Assessment and Management Plan for Braemar Energy Hub
FILED AS	PR24090_1_BHAMP_Braemar Energy Hub

Revision	Date	Revision Details	Prepared by (initials)	Reviewed by (initials)	Approved by (name/title)
Version A	15/07/2024	Draft issued to Client	RM	RH	Client
Version B	26/07/2024	Minor update based on client comments	LH	RM	Client
Version C	03/07/2025	Add new overhead transmission line and minor updates based on client comments	RM/JA	JA	Client
Version D	08/10/2025	Minor updates based on client comments	MI	JA	Client
Version E	02/04/2026	Update to include expansion to gas power station and address State Code 27	DF	JA	Client



Table of Contents

1	Introduction	5
1.1	Background	5
1.2	Project Area Description	5
1.3	Scope of Work.....	6
1.4	Qualifications and Experience	7
2	Bushfire Regulatory Framework.....	9
2.1	National Construction Code (NCC).....	9
2.2	State Planning Policy (SPP)	9
2.3	Western Downs Planning Scheme 2017 (Version 4).....	11
2.4	AS3959:2018 Construction of Buildings in Bushfire Prone Areas	12
3	Bushfire Hazard Assessment	13
3.1	Hazard Assessment	13
3.1.1	Step 1 – Fire Weather Severity.....	14
3.1.2	Step 2 – Vegetation Hazard Classes and Potential Fuel Loads.....	14
3.1.2.1	Vegetation Hazard Classes	14
3.1.2.2	Potential Fuel Loads.....	21
3.1.3	Step 3 – Project area and Effective Slope	21
3.1.4	Step 4 – Remodelling of Bushfire Hazard	22
3.2	Radiant Heat Exposure and Bushfire Attack Levels	26
4	Bushfire Management Plan	30
4.1	Agencies / Persons Responsible	30
4.2	Owner / Occupier Responsibilities	30
4.3	Reporting and Auditing	31
4.4	Siting of Buildings.....	31
4.5	Asset Protection Zones	31
4.6	Access Roads	34
4.7	Electricity Supply.....	34
4.8	Water Supply.....	34
4.9	Climate Change and Fire Weather – Projections for 2050	34
5	Emergency Preparedness and Response	35
5.1	Response	35
5.2	Emergency Response Procedures	35
5.3	Emergency Resources and Information Providers	36
5.3.1	Local Radio Stations:	36
5.3.2	Western Downs Regional Council – Disaster Dashboard	37
5.3.3	State Government, QFD – Current Warnings.....	37
5.3.4	Australian Fire Danger Rating System (AFDRS) and Fire Bans	37
6	Assessment Against the Bushfire Hazard Overlay Code and Rural Zone Code	39
7	Assessment Against the SPP Benchmarks for Natural Hazards, Risk and Resilience	44
8	Assessment Against State Code 27: Battery Storage Facility Development	51
9	Conclusion.....	55
10	References	56

Appendix 1	Proposed Development Layout	57
Appendix 2	Flamesol Method 2 Minimum Distance Calculations	58

TABLES

Table 1:	Property Information	6
Table 2:	Potential Fuel Loads for Classified Vegetation within the Assessment Area	21
Table 3:	Slope Measurements for Assessable Fire Runs to the Project Footprint	22
Table 4:	Potential Fireline Intensity Ranges and Bushfire Hazard Classes	23
Table 5:	Potential Fireline Intensity for Classified Vegetation Hazard Classes within the Assessment	



Area	25
Table 6: Bushfire Attack Levels	26
Table 7: Determination of Bushfire Attack Level Minimum Separation Distances for Bushfire-prone Vegetation	27
Table 8: Queensland Fire Department Local Resources	36
Table 9: Fire Behaviour Index Values for Australian Fire Danger Rating System	38
Table 10: Assessment Against the Western Downs Planning Scheme 2017 (Version 4) Bushfire Hazard Overlay Code	40
Table 11: Assessment Against the Western Downs Planning Scheme 2017 (Version 4) Rural Zone Code Overall Outcomes	43
Table 12: Assessment Against the State Planning Policy Natural hazards, Risk and Resilience Benchmarks	45
Table 13: Assessment Against State Code 27: Battery Storage Facility Development	52

FIGURES

Figure 1: Project Area Location (Source: Queensland Globe)	6
Figure 2: Excerpt from DSDMIP SPP IMS – Bushfire Prone Area (Source: DSDMIP SPP IMS)	11
Figure 3: Excerpt from Western Downs Planning Scheme – Bushfire Hazard Overlay (Source: Western Downs Property Report)	12
Figure 4: State-mapped Vegetation Hazard Classes	16
Figure 5: Ground-truthed Vegetation Hazard Classes	20
Figure 6: Assessable Fire Runs and Patch and Corridor Filtering	24
Figure 7: Bushfire Attack Levels Map	29
Figure 8: Asset Protection Zones	33
Figure 9: Australian Fire Danger Rating System	37

PLATES

Plate 1: Eucalyptus woodland and road edge to the west of the proposed BESS	18
Plate 2: Eucalyptus woodland within the proposed BESS location	18
Plate 3: Eucalyptus woodland and road edge to the south of the proposed BESS	18
Plate 4: Eucalyptus woodland and road edge to the south of the proposed BESS	18
Plate 5: Unmanaged grassland to the north of the BESS	19
Plate 6: Unmanaged grassland to the north of the BESS	19



Acronyms and Glossary

Terms	Definitions
°C	Degrees Celsius
AEP	Annual exceedance probability
AFDRS	Australian Fire Danger Rating System
AO	Acceptable outcomes
APZ	Asset Protection Zone
AS3959:2018	Australian Standard AS3959:2018 Construction of Buildings in Bushfire-Prone Areas
Assessment area	The assessment area includes the Project footprint and all land within 150 m of the Project footprint.
BAL	Bushfire Attack Level
BHA	Project area-specific bushfire hazard assessment
BHAMP	Bushfire Hazard Assessment and Management Plan
BMP	Bushfire Management Plan
BoM	Bureau of Meteorology
BPA	Bushfire Prone Areas
BRC Technical Guide	Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire' October 2019
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Cwth)
DETSI	Department of the Environment, Tourism, Science and Innovation (Qld)
DILGP	Department of Infrastructure, Local Government, and Planning (Qld)
DNRMMRRD	Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (Qld)



Terms	Definitions
DSDIP	Department of State Development, Infrastructure and Planning (Qld)
ERP	Emergency Response Plan
FBI	Fire behaviour index
FFDI	Forest fire danger index
FPAA	Fire Protection Association Australia
FZ	Flame zone (Bushfire Attack Level)
GIS	Geographic information system
GTRE	Ground-truthed regional ecosystem
ha	Hectare
HSE	Health Safety and Environment
IMS	Interactive mapping system
IPA	Inner Protection Area
K	Kelvin
kW/m	Kilowatts per metre
kW/m²	Kilowatts per metre squared
LGA	Local government area
m	Metres
m²	Metres squared
MCU	Material change of use
mm	Millimetres
NCC	National Construction Code 2022
OPA	Outer protection area
PFI	Potential fireline intensity
PFL	Potential fuel load



Terms	Definitions
PO	Performance outcome
Project / Proposed development	The overall action being undertaken including development activities, services, access tracks, and associated infrastructure. It covers the entire range of work and activities necessary to achieve the Project's goals.
Project area	The geographical boundary within which the Project is located. This includes the specific properties, lots, and plans where the Project is being carried out.
Project footprint	The actual physical area impacted by the Project. This encompasses all land affected by construction activities, buildings, and infrastructure.
QDC	Queensland Development Code
QFD	Queensland Fire Department (formerly Queensland Fire and Emergency Services (QFES))
QFES	Queensland Fire and Emergency Services (now the Queensland Fire Department (QFD))
Qld	Queensland
QSpatial	Queensland spatial catalogue
RE	Regional ecosystem
RFSQ	Rural Fire Service Queensland
RoL	Reconfiguration of the lot
RVM	Regulated Vegetation Management
SARA	State assessment and referral agency
SDAP	State development assessment provisions
SPP	State Planning Policy
SPP guidance	SPP State interest guidance material – Natural Hazards, Risk and Resilience – Bushfire
SQP	Suitably Qualified Person



Terms	Definitions
Standards Australia 2018	Australian Standard <i>AS3959:2018 Construction of Buildings in Bushfire-Prone Areas</i>
t/ha	Tonnes per hectare
VM Act	<i>Vegetation Management Act 1999</i> (Qld)
WDRC	Western Downs Regional Council



1 Introduction

1.1 Background

Green Tape Solutions was engaged by EMM Consulting Pty Ltd on behalf of Alinta Energy Pty Ltd to prepare a bushfire hazard assessment and management plan (BHAMP) for a Project area located at 363 Grahams Road, Kogan, Queensland (described as Lot 128 on SP214053 and Lot 1 on SP107388) (the 'Project area'). This report has been prepared in support of a development approval to construct a Battery Energy Storage System (BESS) and an expansion to the gas power station as a part of the Alinta Energy Power Station (the 'Project').

The Project area presently includes unnamed access roads, two (2) separate vegetation blocks divided by an overhead high-voltage transmission line operated by Powerlink, a dam, and the Braemar Power Station managed by Alinta Energy, together with its associated infrastructure. A linear easement is also located to the northeast of the area.

The Project will utilise the two (2) currently undeveloped areas, which will require clearing of all existing vegetation. The Project will establish a connection to the Powerlink Braemar Substation, located south of the proposed BESS, via an underground transmission line. The Battery Energy Storage System (BESS) is planned for lot 128 SP214053. The new underground transmission line is designed to traverse lot 1 SP107388 to the south, linking the BESS Project area with the Powerlink Braemar Substation. An expansion to the gas power station is to be constructed on the eastern side of the existing power station. This area is currently used as an ancillary parking and laydown area associated with the existing power station and is cleared of vegetation.

The Project layout is provided in **Appendix 1**.

1.2 Project Area Description

Table 1 provides property details and development related information that applies to the Project area. The Project area is located on a two (2) lots comprising a total area of approximately 832,500 m² (83.25 ha) within the Western Downs Regional Council (WDRC) local government area (LGA) (**Figure 1**).

The lots are located within the Western Downs Regional Council (WDRC) local government area (**Figure 1**). The BESS Project area is bordered to the north by an access road and predominantly cleared agricultural land, to the south-east by the Braemar Power Station (2), to the south by vegetation and an electricity substation, and to the west by Grahams Road and native vegetation. The proposed Project area for the expansion to the gas power station on the eastern cleared area, directly connects to small patch of vegetation to the east. There is a small access track separating the smaller patch of vegetation to a much larger patch on lot 129SP121102. For a more detailed description of the vegetation communities in and around the Project area, refer to **Section 3.1.2**.

Table 1: Property Information

Address	363 Grahams Road, Kogan, Queensland
Lot / Plan	Lot 128 on SP214053 Lot 1 on SP107388
Area (m²)	Lot 128: 397,000 m ² (39.7 ha) Lot 1: 435,000 m ² (43.5 hectares) Total area: 832,500 m ² (83.25 hectares)
LGA	Western Downs Regional Council
Zone	Rural Zone
Precinct	N/A
Neighbourhood Plan	N/A

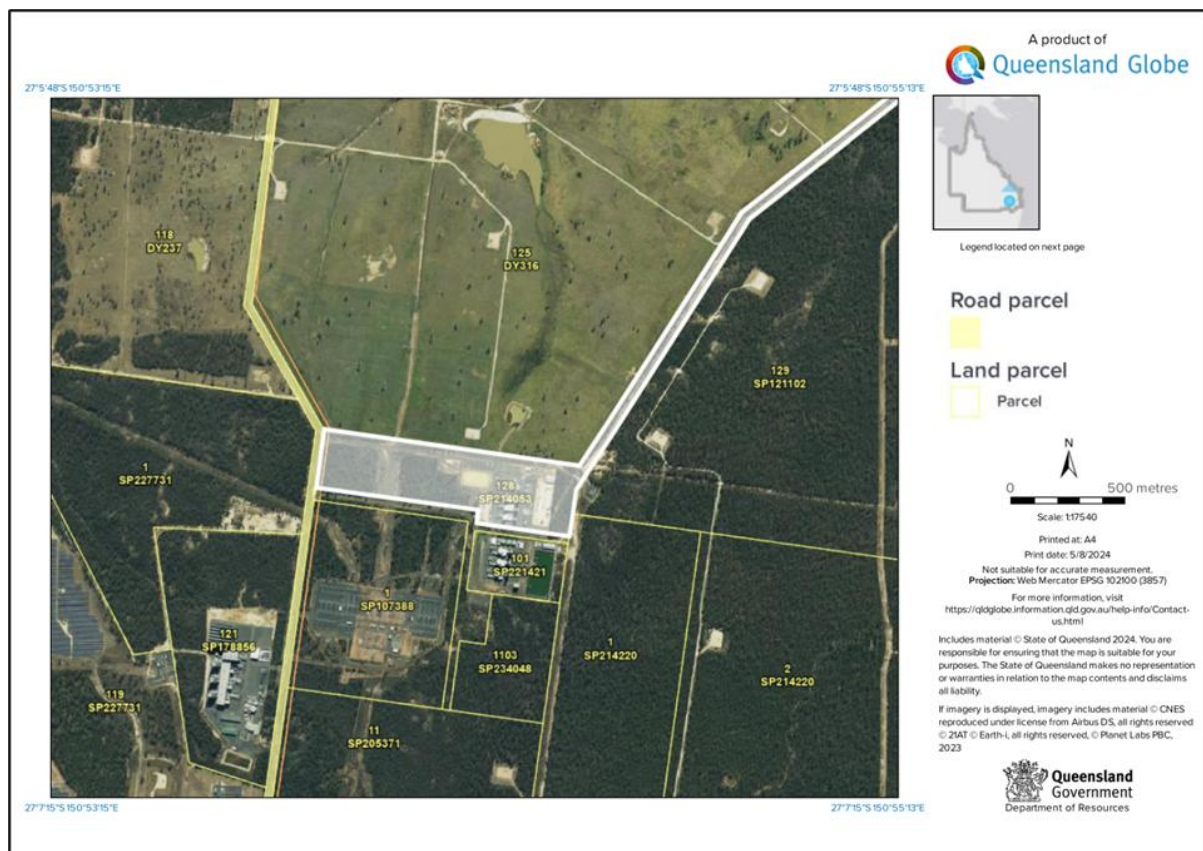


Figure 1: Project Area Location (Source: Queensland Globe)

1.3 Scope of Work

The purpose of this BHAMP is to provide a Project area-specific assessment of bushfire hazard and to assess compliance of the proposed development with the assessment benchmark and outcomes sought



by the SPP and the Western Downs Planning Scheme 2017 (Version 4); in particular, the assessment benchmarks outlined in the Bushfire Hazard Overlay Code.

The Bushfire hazard assessment and management plan (BHAMP) also provides a plan for bushfire hazard and risk management, including building construction requirements, asset protection zones, fuel management, access requirements, and emergency response measures. Recommendations are consistent with legislative requirements to reduce the risk to life and property.

1.4 Qualifications and Experience

The Queensland Fire and Emergency Services (QFES) *Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire' October 2019* ('BRC Technical Guide') (QFES, 2019) provides important guidance on people suitably qualified (Suitably Qualified Person, SQP) to undertake assessments identified in the BRC Technical Guide.

Following recent legislative updates and extensive reviews aimed at strengthening disaster management and emergency response capabilities, QFES has transitioned to the newly established Queensland Fire Department (QFD). These changes aim to enhance the State's resilience and responsiveness in managing bushfire hazards and emergencies.

The BRC Technical Guide continues to serve as a key resource, now reflecting the QFD's technical guidance and policy positions for State agencies, local governments, and practitioners. It supports land-use planning and development activities in areas prone to bushfire hazards.

This guidance includes the following recommendations:

- Fine-scale assessment of vegetation communities in accordance with the 'Vegetation Hazard Class' assessment methodology be undertaken by a SQP with experience in botanical survey methods; and
- Applicant-initiated assessments and reports be prepared or peer-reviewed by SQP/s with degree (AQF Level 8) qualifications in environmental science, environmental management (or an equivalent discipline), demonstrated experience in botanical surveys and spatial analysis methods, including use of geographic information systems (GIS) software; demonstrated experience in the assessment of bushfire hazards and risks or technical qualifications in environmental science, environmental management (or an equivalent discipline), and demonstrated relevant industry experience in the assessment of bushfire hazards and risks for a minimum of five (5) years.

This report has been prepared and/or reviewed by Joseph Adair Principal Ecologist from Green Tape Solutions (the SQP) who meets Council and QFD's criteria as follows:

- The SQP possesses knowledge and experience in applying relevant legislation, plans, policies, standards and guidelines relating to bushfire hazard and fire ecology relating to Queensland requirements and local conditions;
- The SQP has extensive experience in botanical survey methods and GIS analysis and at least five (5) years' experience in undertaking bushfire hazard assessment and preparing bushfire management plans, including experience in undertaking fine-scale assessment of vegetation



communities and application of the QFD Bushfire Hazard Assessment methodology outlined in the BRC Technical Guide; and

- The SQP has qualifications and experience in the field of ecology, environmental management or similar to assess and protect Project area-based and strategic biodiversity values relating to the Darling Downs region.

2 Bushfire Regulatory Framework

Given that bushfire hazards can cause harm to people and social well-being, damage to property and impact the economy and environment, the management of bushfire hazards in Queensland is considered an integral component of land use planning and development decisions.

The following mechanisms/instruments that apply to, or regulate development, to avoid and mitigate potential impacts associated with bushfire hazards are applicable to the Project:

- National Construction Code 2022 (NCC);
- State Planning Policy (SPP) and associated guidelines (Department of Infrastructure, Local Government and Planning (DILGP), July 2017);
- Western Downs Planning Scheme 2017 (Version 4); and
- Australian Standard AS3959:2018 – Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).
- State Code 27 - Battery Storage Facility Development

2.1 National Construction Code (NCC)

The NCC sets out requirements for the design and construction of a building in Australia, including minimum required levels for the safety of certain buildings. The NCC contains additional requirements for the construction of buildings in designated bushfire-prone areas to address additional risks posed by bushfire attacks. The NCC is given legal effect through the *Building Act 1975* (Qld) and is varied through amendments to the Building Regulation 2021 that adopts the Queensland Development Code (QDC). WDRC's Bushfire Hazard Overlay Map designates bushfire-prone areas for the NCC, the Building Regulation 2021 and the QDC.

2.2 State Planning Policy (SPP)

The SPP identifies the Queensland Government's policies about matters of state interest in land use planning and development (DILGP, July 2017). The SPP is a broad statutory planning instrument. It sits above regional plans, standard planning scheme provisions and local government planning schemes within the hierarchy of planning instruments outlined in the *Planning Act 2016*.

The following guidance material supports the SPP:

- The SPP State interest guidance material – Natural Hazards, Risk and Resilience – Bushfire ('SPP guidance') (DSDMIP, 2019), which provides further context to the SPP and explains how the SPP policies can be applied, in particular for local government when making or amending local planning instruments. The SPP guidance is also intended to assist assessment managers and practitioners in applying the SPP assessment benchmarks when State interests have not been integrated into the local planning scheme (where applicable).
- The 'BRC – Technical Reference Guide for the State Planning Policy State Interest – Natural Hazards, Risk and Resilience – Bushfire ('BRC Technical Guide') (QFES, 2019), which provides technical guidance and policy positions of the QFD (formerly the QFES). It includes procedures



for undertaking a bushfire hazard assessment (BHA), calculating asset protection zones (APZs) and preparing a Bushfire Management Plan (BMP).

The SPP assessment benchmarks outlined in Part E of the SPP and Section 4.0 of the SPP guidance apply to development to the extent that the development is assessable against a planning scheme and only to the extent that the planning scheme is inconsistent with the SPP.

The SPP is also supported by a state-wide map of bushfire-prone areas (BPA) (also referred to as 'bushfire hazard area') that was developed based on the Commonwealth Scientific and Industrial Research Organisation (CSIRO) modelling of potential fireline intensity (PFI) using the methodology described by Leonard *et al.* (2014). The SPP defines a BPA as land that is potentially affected by significant bushfires, including vegetation likely to support a significant bushfire and adjacent land that could be subject to impacts from a significant bushfire (i.e. potential impact buffer) and is:

- (a) Identified by a local government in a local planning instrument as a bushfire prone area based on a localised bushfire study, prepared by a suitably qualified person; or
- (b) If the local government has not identified bushfire prone areas in a local planning instrument in accordance with (a) above, shown on the SPP Interactive Mapping System (SPP IMS) as a bushfire prone area.

The BPA mapping identifies areas of Very High (>40,000 kilowatts per metre (kW/m)), High (20,000 – 40,000 kW/m) and Medium (4,000 – 20,000 kW/m) Potential Bushfire Intensity. The Potential Impact Buffer includes all land within 100 metres (m) of any area with a PFI greater than 4,000 kW/m (i.e., within 100 m of Medium, High or Very High bushfire hazard/potential bushfire intensity). This mapping triggers assessment against the SPP Assessment Benchmarks.

An excerpt from the SPP Assessment Benchmark – BPA mapping published on the SPP Interactive Mapping System (IMS) is provided in **Figure 2**. The Project area is mapped to contain areas of Medium Potential Bushfire Intensity and Potential Impact Buffer. In addition, land to the south, east and west of the Project area is mapped as containing areas of Medium Potential Bushfire Intensity and Potential Impact Buffer.

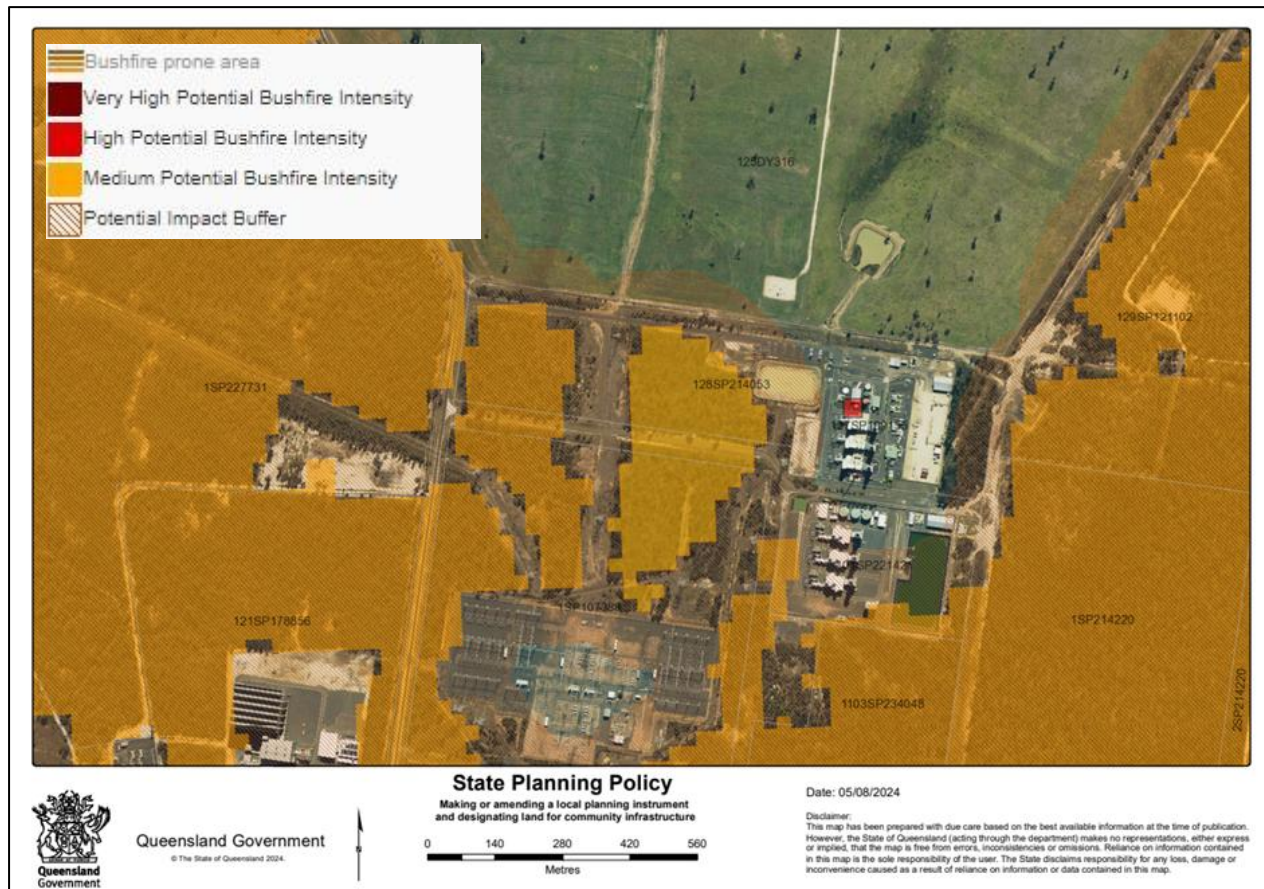


Figure 2: Excerpt from DSDMIP SPP IMS – Bushfire Prone Area (Source: DSDMIP SPP IMS)

2.3 Western Downs Planning Scheme 2017 (Version 4)

The Project area is located within the WDRC LGA and is subject to the provisions of the Western Downs Planning Scheme 2017 (Version 4). The planning scheme's Bushfire Hazard Overlay maps the Project area as containing areas of Medium Potential Bushfire Intensity. An excerpt from the overlay map identifying the mapped bushfire hazard areas in relation to the Project area is shown in **Figure 3**.

The Bushfire Overlay Code requires that development addresses the bushfire hazard determined by a Project area-specific bushfire hazard assessment based on vegetation existing within, adjacent and nearby to the Project footprint including any areas subject to, or likely to be subject to, ecological restoration (e.g., Council waterway corridors), revegetation or regrowth, which are to be assessed as if these areas have reached their mature state.

The Western Downs Planning Scheme notes that a Project area-based assessment carried out by a suitably qualified person must be provided and be carried out in accordance with the State Planning Policy i.e., the Bushfire Resilient Communities (BRC) document (QFES, 2019). The Project area-specific bushfire assessment provided in this plan has been undertaken in accordance with the BRC Technical Guide (QFES, 2019).

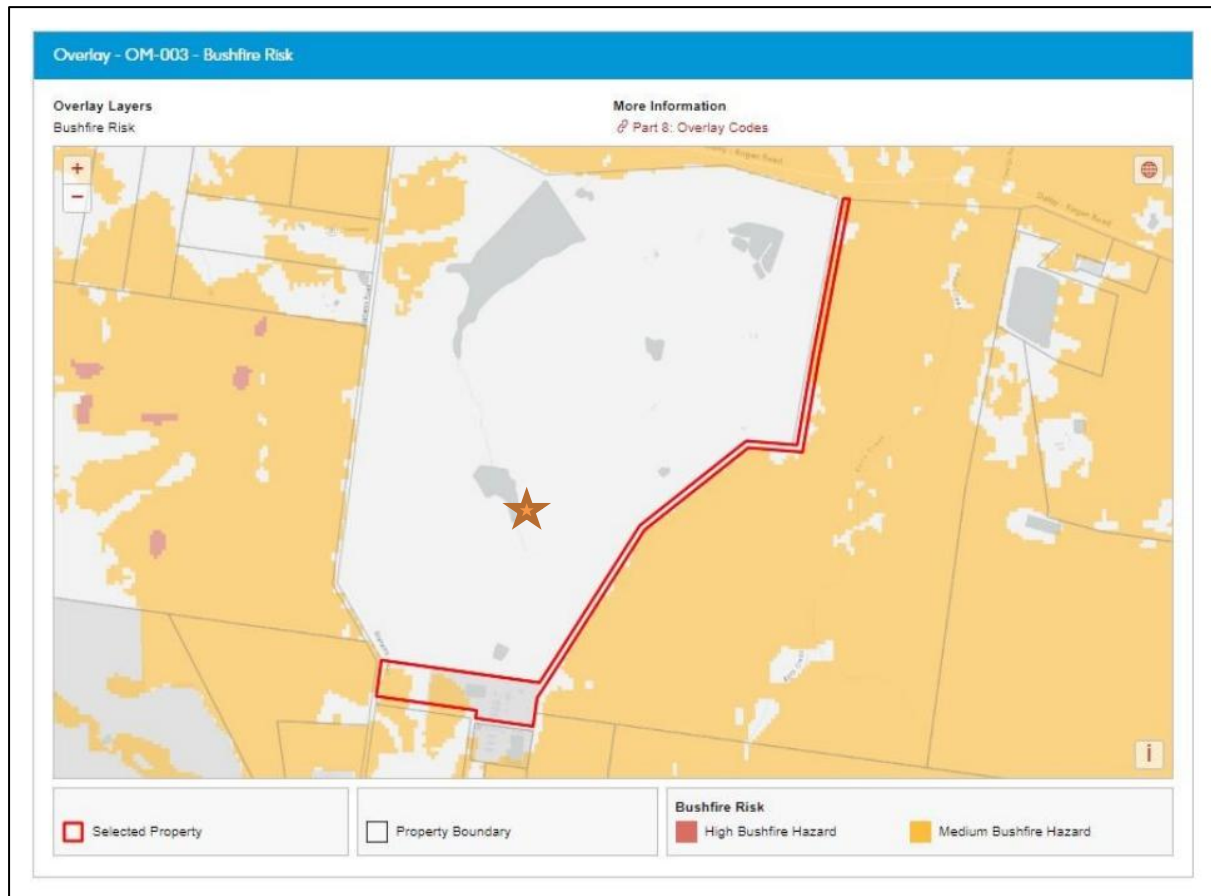


Figure 3: Excerpt from Western Downs Planning Scheme – Bushfire Hazard Overlay (Source: Western Downs Property Report)

2.4 AS3959:2018 Construction of Buildings in Bushfire Prone Areas

The Australian Standard *AS3959:2018 Construction of Buildings in Bushfire-Prone Areas* (Standards Australia, 2019) specifies the requirements for the construction of buildings in bushfire-prone areas to improve their resistance to bushfire attack. AS3959:2018 applies to those areas where a regulated map (i.e., a planning scheme overlay map) identifies an area as a BPA (or similar), requiring calculation of Bushfire Attack Level (BAL) in accordance with a methodology outlined in the standard.

AS3959:2018 thus prescribes the construction details for buildings depending on the calculated BAL. The detailed requirements relating to construction methods and materials are typically dealt with as part of building design and enabled via private certification in accordance with the NCC.

3 Bushfire Hazard Assessment

The Project area-specific BHA provided in this plan has been undertaken in accordance with the current State-endorsed methodology outlined in the BRC Technical Guide. This methodology utilises the method for calculating PFI outlined in Leonard *et al.* (2014), based on the McArthur (1967) forest fire behaviour model and Byram's fireline intensity (1959). Where required, radiant heat flux modelling has been undertaken utilising Method 2 of the Australian Standard AS3959:2018 – Construction of Buildings in Bushfire Prone Areas.

The methodology underpinning this BHA process consists of three stages:

1. A desktop assessment to verify the reliability of existing BPA/Bushfire Hazard Overlay mapping over the Project area and land surrounding the Project area.
2. A hazard assessment involving field investigations to ground-truth the accuracy of the BPA/Bushfire Hazard Overlay mapping for the Project area, where required. The hazard assessment area must include the Project footprint and all land within 150 m of the Project footprint (the 'assessment area').
3. Using the results of the Project area-specific assessment, the APZ width needed to achieve the required Project area radiant heat flux levels is calculated using the SPP Bushfire APZ width calculator or Method 2 of AS3959:2018.

Where the precision and/or accuracy of BPA mapping or map input datasets are insufficient (e.g., where there has been changes in land use and vegetation cover within the assessment area or where Project area-verified Vegetation Hazard Classes (VHCs) have been confirmed to be inconsistent with the mapped VHCs), the process enables applicants to create a local-scale BPA map based on the results of the Project area investigation and to apply modified input variables that reflect changes that have occurred over time.

The BHA process adapts the method used to generate the state-wide BPA mapping, described in Leonard *et al.* (2014) with further refinement to allow for the downgrade and/or filtering of small patches and narrow corridors where needed in accordance with contemporary mapping rules outlined in the BRC technical guide and Leonard and Opie (2017).

Where effective fuel loads have been reduced based on patch size and isolation in accordance with the patch and corridor filtering rules outlined in 4.2.6 of the BRC Technical Guide, reduced effective fuel loads can be used as inputs into a Method 2 BAL assessment.

The assessment has been based on vegetation existing within, adjacent to, and nearby the Project area including any areas subject to revegetation or regrowth, which have been assessed as if these areas have reached their mature state.

3.1 Hazard Assessment

The following steps have been undertaken to assess spatial factors that contribute to potential bushfire intensity for the Project area and surrounding land:

- **Step 1: Identification of Fire weather severity**



Identification of all Forest Fire Danger Index (FFDI) values estimated at a 1:20 year (5%) Annual Exceedance Probability (AEP) using the Bushfire Hazard Area – Bushfire Prone Area – Inputs dataset from the Queensland Spatial catalogue (QSpatial).

- **Step 2: Identification of Vegetation Hazard Classes**

Assessment of vegetation communities to identify the relevant VHCs using a combination of remnant and pre-clearing regional ecosystem (RE) maps, high-resolution aerial imagery, and a ground-truthed assessment of vegetation present within the Project area and within the required assessment area.

- **Step 3: Slope assessment**

Identification of Project area slope and effective slope, and determination of whether proposed buildings are upslope or downslope of hazardous vegetation using Bushfire Hazard Area – Bushfire Prone Area – Inputs dataset from QSpatial and 10 m LiDAR-derived contour data.

- **Step 4: Remodelling of bushfire hazard and calculation of potential fireline intensity**

Where a change to the distribution, extent and/or classification of VHCs within the assessment area is proposed, remodelling of bushfire hazard is undertaken to determine how the changes to VHCs and associated fuel loads affect PFI. PFI is to be calculated in accordance with the method outlined in Leonard *et al.* (2014).

VHCs and associated potential fuel loads (PFL) are in accordance with Leonard *et al.* (2017), as provided in the BRC Technical Guide and SPP Bushfire APZ width calculator published by the QFD.

Relevant spatial datasets published by the QFD were accessed via QSpatial and the Queensland Government Redi Map portal (QFD, 2026).

3.1.1 Step 1 – Fire Weather Severity

The FFDI provides an annual accumulated index of fire weather severity (i.e., the potential danger of a bushfire) based on a combination of vegetation dryness, air temperature, wind speed and humidity. The relevant FFDI for the Project area was derived from the Fire Weather Severity (FFDI h20) dataset published via the Redi Map portal administered by the QFD.

The FFDI for the Project area and surrounding land is **69**.

3.1.2 Step 2 – Vegetation Hazard Classes and Potential Fuel Loads

3.1.2.1 Vegetation Hazard Classes

Different types of vegetation communities determine the rate at which dry fuel accumulates. Some vegetation communities protect fuel from drying out in all but extreme bushfire seasons and can then be susceptible to very destructive bushfires. Alternatively, vegetation communities may expose fuels to drying and therefore be frequently available for burning. Frequent bushfires can result in the development of bushfire-tolerant grassy woodlands or grasslands and less destructive bushfire behaviour.



VHCs provided within the Bushfire Prone Area – Vegetation Hazard Class – Darling Downs/Western Downs Queensland spatial dataset were reviewed for the Project area and surrounding land (**Figure 4**). The following VHCs are mapped within the required assessment area:

- 12.2: Dry eucalypt woodlands on sandstone and shallow soils;
- 40.4: Low grass or tree cover in rural areas; and
- 42.6 Nil to very low vegetation cover.

The reliability of State-mapped VHCs was assessed through:

- a review of Regulated Vegetation Management remnant and pre-clearing RE mapping published by the Queensland Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD); and
- an assessment of existing vegetation undertaken by Green Tape Solutions on 24th June 2024 as part of Project area investigations to support preparation of a BHAMP.

DNRMMRRD's remnant RE mapping shows that small patches of remnant vegetation are mapped within the assessment area. These patches are identified as containing the following REs:

- Mixed community of RE 11.7.7/11.7.4/11.7.5 (50 / 40 / 10 %). These REs are:
 - 11.7.7: Blue-leaved Ironbark (*Eucalyptus fibrosa subsp. nubilis*) +/- *Corymbia* spp. +/- *Eucalyptus* spp. woodland on Cainozoic lateritic duricrust (50%);
 - 11.7.4: Gum-top Ironbark (*Eucalyptus decorticans*) and/or *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp., Budgeroo (*Lysicarpus angustifolius*) woodland on Cainozoic lateritic duricrust (40%); and
 - 11.7.5: Shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks (10%).
- Non-remnant vegetation.

Pre-clearing RE mapping infers that the entire Project area previously supported the mixed RE 11.7.7/11.7.4/11.7.5 community.

**Figure 4: State-mapped
Vegetation Hazard Classes
(VHCs)**

Project: PR24090 Braemar Energy Hub

-  150 m assessment area
-  Site boundary
-  Cadastral boundaries (DCDB)
-  BESS footprint
-  Addition to gas power station footprint
-  gas power station connection alignment
-  Existing gas power station connection
-  Transmission line (June 2025)

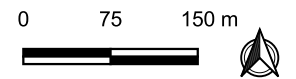
Vegetation Hazard Class

-  12.2 Dry eucalypt woodlands on sandstone and shallow soils
-  40.4 Continuous low grass or tree cover
-  42.6 Nil to very low vegetation cover
-  43.6 Water bodies or very low vegetation cover

Notes:

- Survey Data by Green Tape Solutions
- Site Infrastructure and Impact Areas from Client
- VHC Layer © QFD and CSIRO
- DCDB and Basemap © DNRMMRD and its data suppliers

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The Project area assessment determined that vegetation within the assessment area consists of a mosaic of native vegetation, unmanaged paddocks and grasslands. The Project footprint supports retained vegetation; however, the Project area has been subject to active clearing to maintain the powerline easement and historic clearing for pastoral and infrastructure purposes.

The Project area assessment verified the presence of the following VHCs within the assessment area:

- 12.2: Dry eucalypt woodlands on sandstone and shallow soils;
- 40.4: Low grass or tree cover in rural areas; and
- 42.6 Nil to very low vegetation cover.

Vegetation adjacent to and within proximity of the development consists of two (2) Project area-verified communities.

Figure 5 depicts the location of the ground-truthed VHCs within the assessment area.

Vegetation Community 1 – Eucalyptus woodland

This community consists of native vegetation east of the expansion to the gas power station footprint, on the adjacent properties to the south, east and west of the Project area, and in three (3) narrow strips of roadside vegetation along the unnamed access road to the north of the Project area. The field assessment determined that this vegetation is consistent with a mixed community of RE 11.7.7 and 11.7.4. Contrary to the state mapping RE 11.7.5 was not recorded within the 150 m assessment area. See above section for a description of these communities.

The dominant canopy species within the RE 11.7.7/11.7.4 community were blue-leaved ironbark (*Eucalyptus fibrosa* subsp. *nubilis*), narrow-leaved ironbark (*E. crebra*) and rusty gum (*Angophora leiocarpa*). Common mid-storey and shrub species were black cypress pine (*Callitris endlicheri*), buloke (*Allocasuarina luehmannii*), red ash (*Alphitonia excelsa*), hakea wattle (*Acacia hakeoides*) and black wattle (*Acacia leiocalyx* subsp. *Leiocalyx*). This community varies in condition and appears to be in different stages of regrowth. Specifically, vegetation to the west of the Project area had a canopy crown cover average of 30-40 % and a canopy height of ~10-16 m, indicating remnant status.

Conversely, vegetation within and south of the Project area have canopy crown cover averages of 10-18.4 % and canopy heights of ~8-20 m, indicating this vegetation does not meet remnant status. Weeds were uncommon within this community. However, this vegetation will achieve remnant status in the future if retained and has been considered as such for the purposes of the bushfire hazard assessment.

Eucalyptus woodland within the 150 m assessment area has been classified as **VHC 12.2** - Dry eucalypt woodlands on sandstone and shallow soils (**Plate 1** to **Plate 4**).



Plate 1: Eucalyptus woodland and road edge to the west of the proposed BESS



Plate 2: Eucalyptus woodland within the proposed BESS location



Plate 3: Eucalyptus woodland and road edge to the south of the proposed BESS



Plate 4: Eucalyptus woodland and road edge to the south of the proposed BESS

Vegetation Community 2 – Unmanaged paddocks and grasslands

Land to the immediate north of the Project area and within the central transmission line easement that divides the two (2) proposed development areas for the BESS has been cleared and is currently in an unmanaged grassland paddock state which is dominated by a mix of native and non-native grass species.

Vegetation community two has been classified as VHC **40.4** – Continuous low grass or tree cover (**Plate 5** and **Plate 6**).



Plate 5: Unmanaged grassland to the north of the BESS



Plate 6: Unmanaged grassland to the north of the BESS

Other Areas

Non-vegetated areas (roads, footpaths, the constructed waterbody and buildings) and low-threat vegetation (including grassland maintained in a minimal fuel condition and the constructed dam) within the assessment area have been classified as **VHC 42.6** – Nil to very low vegetation cover.

Figure 5: Ground-truthed Vegetation Hazard Classes (VHCs)

Project: PR24090 Braemar Energy Hub

-  150 m assessment area
-  Site boundary
-  Cadastral boundaries (DCDB)
-  BESS footprint
-  Addition to gas power station footprint
-  gas power station connection alignment
-  Existing gas power station connection
-  Transmission line (June 2025)

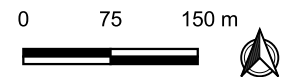
Vegetation Hazard Class

-  12.2 Dry eucalypt woodlands on sandstone and shallow soils
-  40.4 Continuous low grass or tree cover
-  42.6 Nil to very low vegetation cover

Notes:

- Survey Data by Green Tape Solutions
- Site Infrastructure and Impact Areas from Client
- DCDB and Basemap © DNRMMRD and its data suppliers

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3.1.2.2 Potential Fuel Loads

Fuel loads have been allocated for each VHC to represent the long-unburnt condition that would be typically exhibited ten (10) years after fire. In accordance with the values provided in Figure 14 of the BRC Technical Guide, the PFL values (in tonnes per hectare (t/ha)) for ground-truthed VHCs within the assessment area are provided in **Table 2**.

Table 2: Potential Fuel Loads for Classified Vegetation within the Assessment Area

VHC		Total Potential Surface Fuel Load (t/ha)	Total Overall Potential Fuel Load (t/ha)	Prone Type ¹		Fuel Continuity ²	
12.2	Dry eucalypt woodlands on sandstone and shallow soils	14.6	17.4	1	Bushfire-prone – Forest or Shrub Fires	1	Continuous
40.4	Continuous low grass or tree cover	4.5	5.0	2	Grassfire Prone – Grassland Fires (Not Bushfire Prone)	1	Continuous
42.6	Nil to very low vegetation cover	2.0	2.0	3	Low Hazard – Not Bushfire Prone	2	Discontinuous

In accordance with Section 7.6 of the BRC Technical Guide, fireline intensity, radiant heat flux and BAL is not required to be calculated for non-bushfire prone (i.e., grassland VHCs with a prone type of 2) or low hazard VHCs (i.e., VHCs with a prone-type of 3), therefore VHCs 40.4, and 42.6 have been excluded from further assessment. The following sections relate to hazardous vegetation only i.e., VHC 12.2.

3.1.3 Step 3 – Project area and Effective Slope

Two (2) slope input parameters are required for estimating fire behaviour and determining separation distances: Project area slope and effective slope. Project area slope refers to the slope of the ground between the edge of the proposed development and the edge of hazardous vegetation, while effective slope refers to the slope beneath the hazardous vegetation. Effective slope is the more significant parameter, as it directly influences the potential rate of fire spread, fuel consumption, and the PFI.

For each bushfire-prone VHC, the effective slope is determined by:

1. Measuring the slope beneath classified vegetation (in degrees) that most influences bushfire behaviour, in accordance with Section 5.4.2 (3) of AS3959:2018.
2. Identifying the slope type – the relative position of land supporting hazardous vegetation in

¹ Prone type taken from the VHC Data sheet of the SPP Bushfire APZ Calculator.

² Fuel continuity type taken from Figure 14 of the BRC Technical Guide.



relation to the development (i.e., whether the Project area is upslope or downslope of hazardous vegetation), in accordance with Section 5.4.2 (3) or Clause 2.2.5 of AS3959:2018.

Where there is more than one slope beneath classified vegetation, each slope should be assessed individually, and the worst-case scenario should be adopted. Slope measurements have been calculated using LiDAR-derived 10 m contour data published by the DNRMMRRD and verified by site measurement.

The topography of the assessment area is predominately flat. The Project area slope and effective slope for all hazardous vegetation within the assessment area have been calculated and are provided in **Table 3**.

Table 3: Slope Measurements for Assessable Fire Runs to the Project Footprint

Slope Location in Relation to the Project Footprint	VHC	Maximum Effective Slope (Degrees)	Maximum Project area Slope (Degrees)	Fire Run in Relation to the Project Footprint	Fire Run Scale
South	12.2	0.5	0.5	Downslope	Fully Developed Fire
East	12.2	0.5	0.5	Downslope	Short fire run
South-east	12.2	0.5	0.5	Downslope	Fully Developed Fire
South-west/West	12.2	0.5	0.5	Downslope	Fully Developed Fire

3.1.4 Step 4 – Remodelling of Bushfire Hazard

Given that Project area-specific assessment determined that mapped VHCs provided within the BPA – VHC – Darling Downs spatial dataset does not entirely reflect the ground-truthed VHCs, remodelling of bushfire hazard has been undertaken to determine how the changes to VHCs and associated fuel loads affect the PFI. The PFI has been calculated in accordance with the method outlined in Leonard *et. al.* (2014).

PFI is a standard measure of the rate at which an advancing fire would consume fuel energy per unit time per unit length of the fire front. This metric combines the PFL, maximum landscape slope (slope) and fire weather severity (FFDI) to provide a PFI metric.

The PFI is represented as the following equation:

$$PFI = 0.62 PFL^2 \times FFDI \exp (0.069 \times \text{slope})$$

Where: PFI = Potential fire line intensity (kW/m), PFL = Potential fuel load (tonnes / ha), FFDI = Potential severe fire weather (FFDI) and Slope = Maximum landscape slope

Table 4 shows the PFI ranges (in kilowatts per metre (kW/m)) and the corresponding potential bushfire hazard classes.

Table 4: Potential Fireline Intensity Ranges and Bushfire Hazard Classes

Potential Fireline Intensity (kW/m)	Potential Bushfire Hazard Class
40,000+ kW/m	Very high
20,000 – 40,000 kW/m	High
4,000–20,000 kW/m	Medium
0 – 4,000 kW/m	Low/Not Bushfire Prone

Section 4.2.6 of the BRC Technical Guide provides a series of mapping rules ('patch and corridor filtering rules') for modifying the PFI of BPAs to reflect the likelihood of lower PFI in smaller vegetation patches and narrow vegetated corridors. These rules are applied as follows:

1. Remove patches of continuous fuel < 1 ha in area that are surrounded by either no fuel or non-continuous fuel and are further than 100 m from any other continuous fuel greater than 2 ha;
2. Downgrade the effective fuel load of small patches of continuous fuel measuring a. 1 – 2 ha – downgrade by 66% and b. 2 – 3 ha – downgrade by 50 % if the patch is surrounded by either non-continuous fuel or a low-hazard vegetation or land-use type and if the patch is further than 100m from any other continuous-fuel vegetation patch greater than 2 ha;
3. Remove narrow corridors and areas of continuous fuel that are less than 50 m in width; and
4. Remove small fragments of hazardous vegetation of less than 0.5 ha in area. These are downgraded to low hazard.

Figure 6 depicts three (3) narrow corridors of continuous fuel that are less than 50 m in width (classified as VHC 12.2) within the road corridor along the northern access road to the Project area. These narrow corridors are not sufficiently wide to support a fully developed flame front. This is likely to result in fireline intensity of less than 4,0000 kW/m. Hence, these narrow corridors are low hazard for the purpose of land use planning and development assessment and have been removed using Rule 3. There are two (2) small patches of hazardous vegetation in the southern portion of the Project area, but these are less than 0.5 ha in area and have been filtered out using Rule 4.

The PFI was calculated for bushfire-prone vegetation within the assessment area using the inputs from Steps 1 – 4. The remodelled PFI for bushfire-prone vegetation within the assessment area are provided in **Table 5**.

Figure 6: Assessable Fire Runs and Patch and Corridor Filtering

Project: PR24090 Braemar Energy Hub

-  150 m assessment area
-  Site boundary
-  Cadastral boundaries (DCDB)
-  BESS footprint
-  Addition to gas power station footprint
-  gas power station connection alignment
-  Existing gas power station connection
-  Transmission line (June 2025)
-  Bushfire Attack Direction

Patch and Corridor Filtering

-  Narrow corridor (< 50 m) removed under Rule 3
-  Small fragment (< 0.5 ha) removed under Rule 4

Bushfire-prone Vegetation Hazard Classes

-  12.2 Dry eucalypt woodlands on sandstone and shallow soils

Notes:

- Survey Data by Green Tape Solutions
- Site Infrastructure and Impact Areas from Client
- DCDB and Basemap © DNRMMRD and its data suppliers

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Version: C

0 75 150 m



CRS: EPSG:7856 GDA2020 / MGA zone 56





Table 5: Potential Fireline Intensity for Classified Vegetation Hazard Classes within the Assessment Area

Location of Classified Vegetation Relative to the Project Footprint	VHC	Vegetation Status	Maximum Landscape Slope (Degrees)	Fire Weather Severity (FFDI)	Mapped Potential Bushfire Hazard Class	Potential Fireline Intensity (PFI)	Remodelled Bushfire Hazard Class
South	12.2	Remnant	0.5	69	Medium	13, 718 kW/m	Medium
East	12.2	Remnant	0.5	69	Potential Impact Buffer	13, 718 kW/m	Medium
West	12.2	Remnant	0.5	69	Medium	13, 718 kW/m	Medium

The results of the potential fireline intensity calculation for bushfire-prone vegetation associated with VHC 12.2 within the assessment area identify that this vegetation has a potential bushfire hazard class of 'medium'. All other vegetation within 150 m of the Project area is not classified as bushfire-prone and therefore, calculation of radiant heat flux/ BAL is not applicable.

Given that the Project area-specific bushfire hazard assessment has confirmed the Project area is potentially subject to 'Medium' bushfire hazard, a bushfire management plan is required to be developed to mitigate adverse impacts of bushfire. **Section 4** outlines the requirements for management and mitigation of bushfire hazard for the bushfire-prone vegetation within the Project area.



3.2 Radiant Heat Exposure and Bushfire Attack Levels

BALs are used to quantify the levels of attack (radiant heat exposures/flux) that built structures may experience during a fire event. The BAL is defined as *‘a means of measuring the severity of a building’s potential exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kilowatts per metre squared, and the basis for establishing the requirements for construction to improve protection of building elements from attack by bushfire’* (Standards Australia, 2018).

AS3959:2018 adopts six BAL categories, which are based on the level of radiant heat flux to which buildings may be exposed to during a bushfire event (**Table 6**). This level of heat flux generally relates to the type of vegetation, effective slope, and how far a building is from hazardous vegetation. BALs apply to buildings and any attached or adjacent structure within 6 m of the building.

Table 6: Bushfire Attack Levels

Bushfire Attack Level	Heat Flux Thresholds (kW/m ²)	Predicted Bushfire Attack and Levels of Exposure	Construction Section – AS3959:2018
BAL – LOW	See Clause 2.2.3.2 of AS3959:2018 – Low threat vegetation and non-vegetated areas	There is insufficient risk to warrant specific construction requirements.	4
BAL-12.5	≤12.5 kW/m ²	Significant ember attack, burning debris ignited by windborne embers and radiant heat up to a level of 12.5 kW/m ² .	3 and 5
BAL-19	>12.5 – ≤19 kW/m ²	Greater levels of ember attack, burning debris and radiant heat up to a level of 19 kW/ m ² .	3 and 6
BAL-29	>19 - ≤29 kW/m ²	Greater levels of ember attack, burning debris ignited by windborne embers and radiant heat up to a level of 29 kW/m ² .	3 and 7
BAL-40	>29 - ≤40 kW/m ²	Greater levels of ember attack, burning debris ignited by windborne embers and radiant heat up to a level of 40 kW/ m ² . Flames from the bushfire front may intermittently contact the house.	3 and 8

Bushfire Attack Level	Heat Flux Thresholds (kW/m ²)	Predicted Bushfire Attack and Levels of Exposure	Construction Section – AS3959:2018
Flame Zone – BAL-FZ	≥ 40 kW/m ²	The highest level of bushfire attack as a consequence of direct exposure to flames from the fire front, in addition to heat flux and ember attack. Greater levels of ember attack, burning debris and radiant heat in excess of 40 kW/m ² . Flames from the bushfire front are likely to engulf part or all of the building.	3 and 9

The BRC Technical Guide requires that radiant heat exposure/ BALs are calculated using either the SPP Bushfire APZ calculator (QFES, 2019b), which is the preferred method, or Method 2 of AS3959:2018. Where Method 2 is used, the following inputs are to be used:

- site-specific values for FFDI (Step 1)
- ground-truthed VHCs (Step 2) and their associated fuel loads (provided in Figure 14 of the BRC Technical Guide); and
- site and effective slopes (Step 3).

In accordance with Section 7.6 of the BRC Technical Guide, the flame temperature value in the Method 2 model has been adjusted from the default 1090 Kelvin (K) to 1200 K. Likewise, the Ambient Temperature value has been adjusted from 34.85 degrees Celsius (°C) to 35 °C.

The Flamesol Method 2 Minimum Distance calculator has been used to calculate the minimum separation distance required between the development and bushfire-prone vegetation for each BAL. These results are provided in **Appendix 2** and **Figure 7** and summarised in **Table 7**.

Table 7: Determination of Bushfire Attack Level Minimum Separation Distances for Bushfire-prone Vegetation

Location of bushfire-prone vegetation	VHC	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
South-east and south-west	0 - <12.3 m	12.3 - <16.5 m	16.5 - <24.1 m	24.1 - <33.9 m	33.9m - <40.1 m	40.1 - <100 m
East	0 - <12.3 m	12.3 - <16.5 m	16.5 - <24.1 m	24.1 - <33.9 m	33.9m - <40.1 m	40.1 - <100 m
West	0 - <12.3 m	12.3 - <16.5 m	16.5 - <24.1 m	24.1 - <33.9 m	33.9m - <40.1 m	40.1 - <100 m

This assessment determined that a minimum separation distance will be required between the proposed



BESS infrastructure and the edge of unmanaged, bushfire-prone vegetation to the west and south, and between the proposed expansion to the gas power station and bushfire-prone vegetation to the east.

The proposed BESS facility qualifies under the QLD State Development Assessment Provisions (SDAP) Version 3.3 as Essential Community Infrastructure forming part of the electricity transmission grid or supply network. Therefore, critical components of the facility must not be subject to a radiant heat flux of greater than 10 kW/m^2 (QFES BRC 2019). The required APZ setback to achieve a maximum radiant heat flux of 10 kW/m^2 (BAL-10) is 40.1 metres. The APZ locations are shown in **Figure 8**.

The underground powerlines connecting the BESS and expansion to the gas power station to the Powerlink substation are not required to have an Asset Protection Zone (APZ). Additionally, since all vegetation within the BESS sites will be completely cleared for development, hazardous vegetation in VHC 12.2 has not been assessed.

Figure 7: Bushfire Attack Levels

Project: PR24090 Braemar Energy Hub

-  150 m assessment area
-  Site boundary
-  Cadastral boundaries (DCDB)
-  BESS footprint
-  Addition to gas power station footprint
-  Hazardous vegetation
-  gas power station connection alignment
-  Existing gas power station connection
-  Transmission line (June 2025)

Patch and Corridor Filtering

-  Narrow corridor (< 50 m) removed under Rule 3
-  Small fragment (< 0.5 ha) removed under Rule 4

Bushfire Attack Level (kW/m²)

-  Flame Zone
-  BAL 40
-  BAL 29
-  BAL 19
-  BAL 12.5
-  BAL-10

Notes:

- Survey Data by Green Tape Solutions
- Site Infrastructure and Impact Areas from Client
- DCDB and Basemap © DNRMMRD and its data suppliers

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Date: 27/08/2026
Version: G

0 75 150 m



CRS: EPSG:7856 GDA2020 / MGA zone 56



4 Bushfire Management Plan

Where avoidance of a Bushfire Prone Area is not feasible, the SPP requires that essential community infrastructure—such as the proposed Battery Energy Storage System (BESS) and the expansion to the gas power station located to the east—incorporate measures that reduce bushfire risk to people, property, and critical energy assets to an acceptable or tolerable level. For these installations, risk mitigation is achieved through appropriate siting and separation, establishment of Asset Protection Zones, and the integration of design and operational features that enhance resilience to bushfire attack. Treatments may include vegetation clearing and ongoing fuel management to maintain low-fuel conditions around Project area, provision of compliant access and egress for emergency services, construction and enclosure standards that limit ignition and radiant heat exposure, and operational procedures for bushfire response, suppression, and controlled shutdown. Collectively, these measures ensure continuity of essential energy services while reducing potential fire intensity impacts on both the BESS and the expansion to the gas power station.

4.1 Agencies / Persons Responsible

The responsible fire authority is the Rural Fire Service Queensland (RFSQ). The Project area is located within the Kogan and District Rural Brigade Area (South Western Region, Dalby Command). It is recommended that consultation be undertaken with QFD, the local RFSQ brigade and any other relevant land manager (e.g., the department within WDRC responsible for bushland reserve management).

It is the responsibility of the proponent to ensure that the relevant measures required by this plan are in place prior to inspection by the building certifier, and to ensure that measures are in place prior to enacting the approval, and for the duration of the specified use of the premises. Furthermore, it is the responsibility of the proponent to ensure that a copy of this report is always on hand at the Project area.

4.2 Owner / Occupier Responsibilities

It is the responsibility of the relevant manager to maintain the Project area in accordance with the conditions outlined in this report. The owner / occupier responsibilities include:

- An APZ is to be established and maintained between permanent built structures and bushfire-prone vegetation. The APZ is to be managed in accordance with the measures outlined in **Section 4.5**;
- All access routes are to remain clear of obstacles to enable effective emergency vehicle access and egress;
- No burning is to be undertaken within the Project area without a Permit to Burn as issued by the local Fire Warden (and approval if required, in writing, from Council); and
- The storage or handling of hazardous chemicals on the premises must not result in an unacceptable risk to people, property and the environment. Hazardous chemicals should not present a risk to or impose upon emergency services when responding to an emergency or evacuation.



4.3 Reporting and Auditing

This report is a controlled working document that is to be updated and revised to reflect adaptive management and constructive feedback. Some sections of the plan may be modified, new procedures may be implemented, and responsibilities altered, depending on feedback and application.

This report will only ever be modified in consultation with and upon the agreement of all relevant stakeholders. This agreement allows for changes to the plan scope, as determined through consultation and the acceptance of the proponent. That is, where further actions are deemed necessary or where actions can be reduced in scope.

4.4 Siting of Buildings

In accordance with the SPP 2017 (and associated SPP guidance material) and the Western Downs Planning Scheme 2017 (Version 4), the proposed design has considered the following key principles when siting development:

- Utilising land that is predominantly cleared to minimise ecological impacts to native vegetation;
- Maximising where practicable building frontage setbacks from any hazardous vegetation; and
- Siting of buildings/structures so that elements of the development that are least susceptible to fire are situated closest to the bushfire hazard (e.g., driveways, parking areas, and protective landscape treatments).

4.5 Asset Protection Zones

The use of an APZ is the most effective defence against flame and radiant heat and to a lesser extent, ember attack. The APZ incorporates defensible space and allows for managing heat intensities at the building surface. Appropriate vegetation management measures shall be required to manage fine fuels, which have the greatest influence on the spread of a conventional flame front-driven bushfire (Queensland Government and CSIRO, 2020).

An APZ has been established to the south and west of the BESS infrastructure and east of the expansion to the gas power station to achieve BAL-10 (**Figure 8**). Please note that the recommended APZ includes areas outside the Project area, such as neighbouring road verges and the block adjacent to the proposed overhead powerline. Vegetation management required to achieve the APZ as specified by this BHAMP on land outside the Project will need to be agreed to by respective landholders and continued for the life of the Project to ensure BAL-10 is achieved and maintained. However, agreement from these neighbouring landholders cannot be guaranteed, and consequently, achievement and maintenance of BAL-10 cannot be assured on land outside the Project area that is not owned by Alinta Energy.

The APZ will be managed with the following requirements:

- The APZ of at least 40.1 metres wide is to be maintained as an area that is largely free of flammable material to provide defensible space and for managing heat intensities at the building surface.



- Exclusion of all buildings and structures except fencing constructed of non-combustible materials and or metal/concrete water tanks.
- Landscaping treatments within the APZ shall comprise only low threat vegetation, including lawn areas managed in a minimal fuel condition (i.e., ≤ 100 mm nominal height as specified in AS3959:2018) and species that are of low combustibility (i.e., species with high leaf moisture content, low volatile oil content, absence of shedding bark, low production of leaf litter etc.).
- Plants should also be arranged to minimise vertical and horizontal connectivity of plant material.
- Shrubs must not be located under the canopy of trees or within 3 metres of a building or structure.
- Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres.
- Trees and shrubs must not overhang or touch any elements of buildings/structures.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.
- Mulches within any landscaped areas are to be non-combustible.
- Regular maintenance should be undertaken to remove fine fuels and debris, particularly prior to and during the fire season (i.e., late Winter to early Summer). This shall include regular vegetation management and maintenance where necessary and practicable (e.g., brush-cutting, weed removal etc.) and removal of debris and rubbish.

Figure 8: Asset Protection Zones

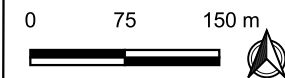
Project: PR24090 Braemar Energy Hub

-  150 m assessment area
-  Site boundary
-  Cadastral boundaries (DCDB)
-  BESS footprint
-  Hazardous vegetation
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-  gas power station connection alignment
-  Existing gas power station connection
-  Transmission line (June 2025)

Notes:

- Survey Data by Green Tape Solutions
- Site Infrastructure and Impact Areas from Client
- DCDB and Basemap © DNRMMRD and its data suppliers

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Date: 27/08/2026
Version: C



CRS: EPSG:7856 GDA2020 / MGA zone 56





4.6 Access Roads

Access to the Project area will be provided via Grahams Road to the north-west of the Project area. This road shall provide safe and effective access and egress for emergency vehicles and occupants away from the likely direction of an approaching bushfire, which would be from the south, east or west.

4.7 Electricity Supply

The Project area will have access to mains electricity supply. Where practicable, electrical transmission lines will be installed underground.

4.8 Water Supply

The BESS and Gas power station will be connected to the site reticulated water supply network supplied by the existing Project area bore under an approved water license.

Fire hydrants will be provided and located on-site so that every part of the BESS and expansion to the gas power station is within reach of fire hoses connected to a fire hydrant outlet where the maximum hose length is determined in consultation with QFD.

No hazardous materials will be manufactured or stored on Project area, other than the BESS batteries and gas for the Gas power station. These batteries are known hazards if they catch fire. The BESS will be constructed with this factor in mind and will contain appropriate internal firefighting facilities.

4.9 Climate Change and Fire Weather – Projections for 2050

Climate change can act in two (2) ways to affect fire behaviour. First, it is likely to exacerbate the fire-weather risk on any given day, leading to increased frequency or intensity of extreme and very extreme fire-weather days particularly within the fire season. Secondly, an increase in the accumulated fire risk over a year might represent a longer fire season and a reduction in the number of days suitable for prescribed burning.

It is recommended to review this document and associated bushfire procedures for the Project area over the coming decades in response to any potential increases of bushfire risk from climate change.



5 Emergency Preparedness and Response

5.1 Response

If a fire starts on-Project area, Project area personnel trained to extinguish fires can attempt to do so with a fire extinguisher or fire blanket if they assess that it is safe to do so at the time. If the fire cannot be safely extinguished with a fire extinguisher, the following RFSQ procedure will be followed.

1. Assess the fire situation.
2. If there is any doubt regarding whether there is a fire situation, the RFSQ should be called.
3. Ensure the safe evacuation of all Project area personnel from the whole of the Project area.
4. Account for all Project area personnel at the assembly area.
5. Ensure Project area personnel do not attempt to re-enter the whole of the Project area until it is safe to do so.
6. Meet the RFSQ and advise them of any information relevant to the situation.

If a fire occurs adjacent to the Project area, site management will assess the fire situation in consultation with adjacent landholders and contact the RFSQ and other relevant authorities to report the fire. Personnel shall continue to assess and monitor the fire situation. If the fire has the potential to move into the Project area and impact upon infrastructure or human and environmental values, emergency response procedures should be implemented and liaison with the relevant adjacent landholder/s, RFSQ, and other relevant authorities should occur where necessary.

If site personnel are required to evacuate, specific emergency egress routes according to the proposed access roads and easements to be used have been outlined in **Section 4.6**.

5.2 Emergency Response Procedures

An on-site bushfire management and evacuation strategy should be developed and available to implement in the event of an emergency. In the event of a pending bushfire emergency, assistance is to be obtained by contacting emergency services by dialling **000** and evacuating all residents or occupants to a safe evacuation zone within the property.

Access to the Project area will be provided via Grahams Road. This road shall provide safe and effective access and egress for emergency vehicles and occupants away from the likely direction of an approaching bushfire, which would be from the south, east or west.

Table 8 shows the local QFD fire response resources.



Table 8: Queensland Fire Department Local Resources

Queensland Fire Department	
Region: South Western Region	
South Western Region Headquarters	17 Steger Road Charlton 4350 Ph: 07 4592 5201
Zone: Dalby Command	
Dalby Fire Station (Auxiliary Station)	21 New Street Dalby 4405 Ph: 07 4662 2333
Chinchilla Fire Station (Auxiliary Station)	20 Villiers Street Chinchilla 4413 Phone: 07 4596 9400
Tara Fire Station (Auxiliary Station)	21 Fry Street Tara 4421 Phone: 07 4665 3789
Cecil Plains Fire Station (Auxiliary Station)	69 Taylor Street Cecil Plains 4407 Ph: 07 4668 0960
Rural Fire Service Brigades	
Kogan and District Rural Fire Brigade	Henry Street Kogan 4406 Ph: 0429 659 646 / 0418 670 046 Email: koganrfb@gmail.com

5.3 Emergency Resources and Information Providers

5.3.1 Local Radio Stations:

- ABC Radio Southern Queensland – 747 AM / 98.1 FM – <https://www.abc.net.au/southqld/>
- Radio 4DDD – 89.9 FM – <https://www.radio4ddd.com.au/>

- Triple M Darling Downs – 864 AM – <https://triplem.listnr.com/darlingdowns/>
- Dalby FM – 87.6 FM – <https://dalbyfm.com/>
- Breeze FM – 95.5 FM – <https://breeze.radio/chinchilla/>
- Hit Darling Downs – 100.7 FM – <https://hit.listnr.com/darling-downs/>

5.3.2 Western Downs Regional Council – Disaster Dashboard

The WDRC operates a Disaster Dashboard, an online platform that provides information regarding emergency news, road conditions, weather warnings and power outages.

The Disaster Dashboard is accessible on the website (<https://disaster.wdrc.qld.gov.au/>)

It is also recommended that Project area personnel and other frequent visitors are signed up to “Subscribe for Alerts” to receive SMS messages from WDRC regarding information on arising local disasters, severe weather and emergency events within the Western Downs region.

5.3.3 State Government, QFD – Current Warnings

The QFD publishes the current warnings and incidents across Queensland. This is available on the website (<https://www.fire.qld.gov.au/Current-Incidents>).

In the event of a bushfire emergency, do not rely on a single source of information, check multiple places to stay up to date.

5.3.4 Australian Fire Danger Rating System (AFDRS) and Fire Bans

Following recommendations from the 2020 Royal Commission into National Natural Disaster Arrangements, the Australian Fire Danger Rating System (AFDRS) was introduced nationwide as a transformative tool to improve risk communication and support evidence-based fire management across Australia.

The AFDRS incorporates advanced fire behaviour models and updated data to produce four (4) distinct fire danger ratings, covering a broad range of Australian landscapes (**Figure 9**). AFDRS signs are now posted in key locations across Queensland and Australia to help communities understand fire risks more effectively.

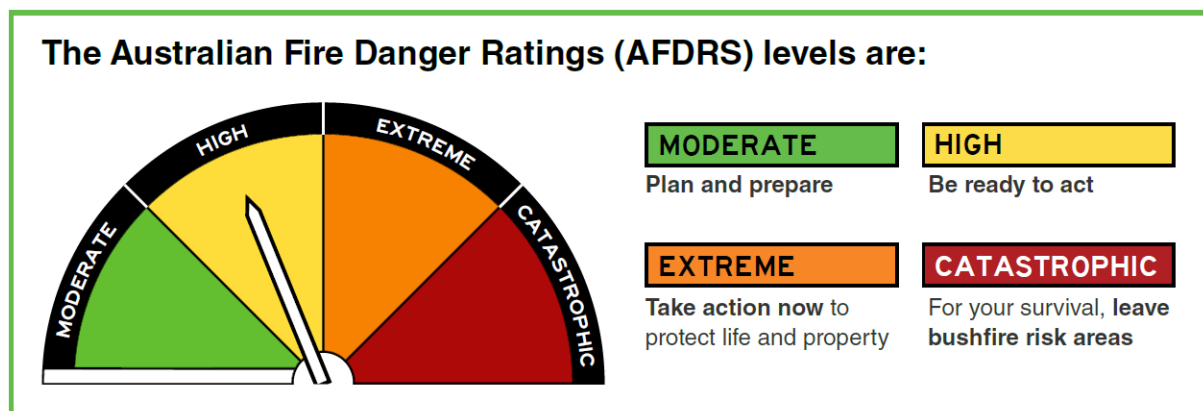


Figure 9: Australian Fire Danger Rating System



The AFDRS uses data from the Australian Bureau of Meteorology (BoM) to establish fire danger ratings for different regions across Australia. The Fire Behaviour Index (FBI), based on McArthur's (1967) research, is a scale of potential fire behaviour ranging from 0 to over 100. The FBI informs QFD operational decisions, such as the enforcement of total fire bans within the region.

Table 9 presents the conversion of FBI values to AFDRS ratings. Current fire danger ratings are accessible at <https://www.fire.qld.gov.au/prepare/bushfire/fire-danger-ratings>.

Table 9: Fire Behaviour Index Values for Australian Fire Danger Rating System

Fire Behaviour Index	Australian Fire Danger Rating System
0 to 11	No rating
12 to 23	Moderate
24 to 49	High
50 to 99	Extreme
100 +	Catastrophic

This plan requires that activities like mowing, slashing, grinding, or any other mechanical operations that could generate significant heat or sparks within bushfire-prone or densely vegetated areas of the Project area be prohibited on any day with an Extreme fire danger rating (FBI of 50 or above).

Fire Ban Areas may be declared locally, regionally, or state-wide based on predicted weather conditions informed by the FBI. These bans are imposed under the *Fire and Emergency Services Act 1990* when conditions indicate that fires could become difficult to control and pose a high risk to communities and life. On total fire ban days, any activities that could increase the risk of ignition should be minimised as a precautionary measure.



6 Assessment Against the Bushfire Hazard Overlay Code and Rural Zone Code

The Project area is mapped with the Western Downs Planning Scheme 2017 (Version 4) Bushfire Hazard Overlay and within the Rural Zone, which triggers a response to the Bushfire Hazard Overlay Code and the relevant overall outcomes of the Rural Zone Code. An assessment against these benchmarks are provided in **Table 10** and **Table 11**.

All BESS applications greater than 50 MW are impact assessable; therefore, an assessment against the SPP Assessment Benchmarks for Natural Hazards, Risk and Resilience is triggered.



Table 10: Assessment Against the Western Downs Planning Scheme 2017 (Version 4) Bushfire Hazard Overlay Code

Performance Outcomes		Acceptable Outcomes		Compliance Assessment
For accepted, accepted subject to requirements and assessable development (code, code (fast tracked) and impact)				
PO1	Development does not increase the number of persons living or working on land subject to High Bushfire Hazard identified on Bushfire hazard overlay maps (OM-003) unless it is demonstrated that: (a) the subject land is a Medium Bushfire Hazard (or lesser); or (b) development is for community Infrastructure and facilities are located and designed to minimise susceptibility to bushfire events; and (c) a Bushfire Emergency Management Plan is prepared by suitably qualified person(s) and appropriately mitigates risks to life and property.	AO1.1	Development does not increase the number of lots in areas of High Bushfire Hazard as identified on Bushfire hazard overlay maps (OM-003).	Complies with AO1.2 The proposed BESS, expansion to the gas power station and surrounds are mapped as subject to medium bushfire hazard by the SPP Bushfire Prone Area Mapping and the Western Downs Bushfire Hazard Overlay. This mapping was confirmed by Project area-specific Bushfire Hazard Assessments and subsequent Bushfire Modelling. The BESS is categorised as Major Electrical Infrastructure and the gas power station is categorised as "Special Industry (gas fired generation)" within the Community Activities group under the Western Downs Planning Scheme. The proposed infrastructure areas are located outside of any High Bushfire Hazard areas identified on the Bushfire hazard overlay maps.
		AO1.2	Uses within the following Activity groups are located outside of a High Bushfire Hazard identified on Bushfire hazard overlay maps (OM-003): (a) Accommodation activities group; (b) Business activities group; (c) Community activities group; and (d) Entertainment activities group.	



Performance Outcomes		Acceptable Outcomes		Compliance Assessment
P02	In Medium Bushfire Hazard Areas as identified on Bushfire hazard overlay maps (OM-003), vehicular access is designed to mitigate against bushfire hazard by:	AO2.1	The road design is capable of providing access for firefighting and other emergency vehicles, in accordance with SC6.2 – Planning Scheme Policy 1 – Design and Construction Standards.	Complies with AO2.2 Access to the proposed BESS is from the existing sealed Grahams Road. As a sealed, flat road, Grahams Road, and the unnamed access road to the Project area, can support emergency vehicles. Specifically, the road grade to Project area is under 12.5% and Graham's Road is not a dead-end road. Roads within the BESS Project area will also be designed with grades less than 12.5%. Additionally, the areas of hazardous vegetation to the west and south of the proposed BESS are separated from the BESS by existing sealed roads. Hazardous vegetation on the proposed BESS area is to be cleared. Additionally, the BESS area is separated by a cleared powerline easement. The existing roads on Project area have a minimum cleared width of twenty (20) metres; have a constructed road width of six (6) metres; and are sealed so are constructed to an all-weather standard.
	(a) ensuring adequate access for firefighting and other emergency vehicles; (b) ensuring adequate access for the evacuation of residents and emergency personnel in an emergency situation, including alternative safe access routes (should access in one direction be blocked in the event of a fire); (c) providing for the separation of developed areas and adjacent bushland. <i>Note - Where it is not practicable to provide firebreaks in accordance with A03.1 Fire Maintenance Trails are provided in accordance with the following:</i>	AO2.2	In areas of Medium Bushfire Hazard as identified on Bushfire hazard overlay maps (OM-003), roads are provided in accordance with the following: (a) Roads are designed and constructed with a maximum gradient of 12.5%; (b) Cul-de-sacs are not used except where: - a perimeter road designed in accordance with AO3.3 isolates the development from hazardous vegetation; and ii. the cul-de-sac are provided with alternative access linking the culde- sac to other through roads; and iii. the maximum length of the cul- de- sac is 200 metres.	



Performance Outcomes		Acceptable Outcomes		Compliance Assessment
	i. <i>located as close as possible to the boundaries of the lot and the adjoining hazardous vegetation;</i> ii. <i>the minimum cleared width not less than 6 metres;</i> iii. <i>the formed width is not less than 2.5metres;</i> iv. <i>the formed gradient is not greater than 15%;</i> v. <i>vehicular access is provided at both ends;</i> vi. <i>passing bays and turning areas are provided for fire-fighting appliances either located on public land or in an access easement that is granted in favour of the Local Government and QFRS.</i>	AO2.3	In areas of Medium Bushfire Hazard as identified on Bushfire hazard overlay maps (OM-003) and development is for the purpose of Reconfiguring a Lot, the design incorporates a perimeter road firebreak that: (a) is located between the boundary of the lots and stands of native vegetation; (b) has a minimum cleared width of 20 metres; (c) has a constructed road width of six metres; and (d) is constructed to an all-weather standard.	AO2.3 – Not Applicable The development is not for reconfiguration of a lot.



Table 11: Assessment Against the Western Downs Planning Scheme 2017 (Version 4) Rural Zone Code Overall Outcomes

Overall Outcome		Compliance Assessment
14	Development responds to land constraints such as topography, bushfire and does not impact on the flood capacity or impede the flood conveyance function of land. Development is not located where it will increase the number of people or structures at risk of natural hazards.	Complies with overall outcome 14. Development has responded to potential bushfire constraints through a 40.1 metre cleared Asset Protection Zone (APZ) between the proposed BESS and Gas power station and hazardous vegetation to the east, west and south. This APZ, combined with suitable access roads on and off-Project area for evacuation and emergency services access, and fire hydrants connected to the on-Project area reticulated water supply network will ensure the proposed development does not increase the number of people or structures at risk of natural hazards.



7 Assessment Against the SPP Benchmarks for Natural Hazards, Risk and Resilience

All BESS applications greater than 50 MW are impact assessable; therefore, an assessment against the SPP Assessment Benchmarks for Natural Hazards, Risk and Resilience is triggered. Please refer to **Table 12** for responses to these benchmarks.



Table 12: Assessment Against the State Planning Policy Natural hazards, Risk and Resilience Benchmarks

Performance Outcomes	Acceptable Outcomes	Compliance Assessment
Assessment benchmark 1		
Erosion prone areas within a coastal management district		
Development does not occur in an erosion prone area within a coastal management district unless the development cannot feasibly be located elsewhere and is: (a) coastal-dependent development; or (b) temporary, readily relocatable or able to be abandoned development; or (c) essential community infrastructure; or (d) minor redevelopment of an existing permanent building or structure that cannot be relocated or abandoned to bushfire hazard, unless there is an overriding community need or the development is located in the specialised centre zone.	No acceptable outcome is nominated.	Not applicable The proposed development does not occur in a coastal management district.
Assessment benchmark 2		
Erosion prone areas within a coastal management district		
Development permitted in (1) above, mitigates the risks to people and property to an acceptable or tolerable level.	No acceptable outcome is nominated.	Not applicable The proposed development does not occur in a coastal management district.



Performance Outcomes	Acceptable Outcomes	Compliance Assessment
Assessment benchmark 3		
Bushfire, flood, landslide, storm tide inundation, and erosion prone areas outside the coastal management district		
Development other than that assessed against (1) above, avoids natural hazard areas, or where it is not possible to avoid the natural hazard area, development mitigates the risks to people and property to an acceptable or tolerable level.	No acceptable outcome is nominated.	Complies with Assessment benchmark 3 This Bushfire Hazard Assessment and Management Plan (BHAMP) provides a Project area-specific hazard assessment for the proposed development which identifies vegetation of 'medium bushfire hazard to the east, west and south of the proposed BESS and Gas power station. The following mitigation measures will be implemented to manage bushfire risk: • Establishment of a 40.1-metre-wide Asset Protection Zones (APZs) to achieve BAL-10; • Maintenance and landscaping of APZs to ensure a low fuel condition (see Section 4.5 of this report for further details); • Providing safe and efficient access for emergency services and egress by occupants and ensuring access routes remain free of obstruction; • No burning without a Permit to Burn; • Storing and handling hazardous chemicals in areas where they do not result in unacceptable risks to people, property and the environment.



Performance Outcomes	Acceptable Outcomes	Compliance Assessment
		Following establishment and management of the APZ the proposed BESS and Gas power station are subject to a radiant heat flux no greater than 10kW/m ² . Hence, it is considered the development mitigates bushfire risk to an acceptable level.
Assessment benchmark 4		
All natural hazard areas		
Development supports, and does not hinder, disaster management response or recovery capacity or capabilities.	No acceptable outcome is nominated.	Complies with Assessment Benchmark 4 The proposed development has been Project aread near roads to ensure safe and easy access from the sealed state and locally controlled road networks. Consequently, safe egress and emergency services access to and from the proposed development has been provided. Additionally, the existing roads and APZ provide large, cleared areas between the development and hazardous vegetation which will support bushfire suppression activities. As the proposed development supports disaster management responses and does not inhibit recovery capacity or capability, the development complies with Assessment Benchmark 4.



Performance Outcomes	Acceptable Outcomes	Compliance Assessment
Assessment benchmark 5		
All natural hazard areas		
Development directly, indirectly and cumulatively avoids an increase in the severity of the natural hazard and the potential for damage on the Project area or to other properties.	No acceptable outcome is nominated.	Complies with Assessment Benchmark 5 The proposed development layout (Appendix 1) will not increase the severity or potential to damage to other property as the landscaping requirements of the APZs will create, and maintain, a low hazardous environment adjacent to the nearest other developments on the north-east of the development Project area.
Assessment benchmark 6		
All natural hazard areas		
Risks to public safety and the environment from the location of hazardous materials and the release of these materials as a result of a natural hazard are avoided.	No acceptable outcome is nominated.	Complies with Assessment Benchmark 6 No hazardous materials will be manufactured or stored on Project area, other than the lithium batteries. These batteries are known hazards if they catch fire. The siting of the development relative to hazardous vegetation and the 40.1 metre APZ has been developed with this requirement in mind. The isolated location of the facility will ensure minimal risk to public safety in the event of a lithium battery fire within the facility.



Performance Outcomes	Acceptable Outcomes	Compliance Assessment
Assessment benchmark 7		
All natural hazard areas		
The natural processes and the protective function of landforms and vegetation that can mitigate risks associated with the natural hazard are maintained or enhanced. Where a requirement for an asset protection zone (or similar) exists: Landscaping treatments comprise only low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks. OR Landscaping management maintains a potential available fuel load which is less than eight tonnes/hectare in aggregate, and fuel structure which is discontinuous. <i>Note – The preparation of a landscape management plan undertaken in accordance with the methodology in the QFES Bushfire resilient communities document may assist in demonstrating compliance with this assessment benchmark.</i> OR Development includes a bushfire management plan for the	No acceptable outcome is nominated.	Complies with Assessment benchmark 7 The development includes a bushfire management plan (this document) that includes instructions for the maintenance of APZs including ongoing vegetation management and landscape design. Please refer to Section 4.5 for more details.



Performance Outcomes	Acceptable Outcomes	Compliance Assessment
maintenance of any identified asset protection zone, including landscape design and ongoing vegetation management.		



8 Assessment Against State Code 27: Battery Storage Facility Development

The Project includes the development of a BESS facility which triggers an impact assessment against the benchmarks of the State Development Assessment Provisions (SDAP) State Code 27: Battery Storage Facility Development. An assessment against the relevant benchmarks are provided in **Table 13**.



Table 13: Assessment Against State Code 27: Battery Storage Facility Development

Performance Outcome		Compliance Assessment
Incident Response		
PO5	Development is designed to facilitate effective and efficient emergency service access and response in the event of a fire, bushfire (including cleared fire fighting areas at the interface of hazardous vegetation), explosion, contamination leak or any other incident requiring an emergency service response.	Complies with PO5 The Project has been designed to facilitate efficient emergency service access and response in the event of a bushfire. The Project area is accessed via Grahams Road, a sealed public road providing all-weather access to the Project for rural emergency service access. Project area access roads consist of sealed roads and graded gravel roads, which have a gradient of less than 12.5 %, which will provide suitable access for rural emergency service vehicles in the event of a bushfire event. A cleared APZ width of 40.1 m will be provided around the BESS and gas turbine infrastructure which can be access by rural emergency service appliances where needed. Please refer to Section 4.5 for details about APZs and to Section 4.6 for access details.
PO6	The development: - Provides appropriate fire detection, monitoring and notification to the Project area operator; and - Ensures the electrical safety of the facility, in the event of an incident requiring emergency response.	Complies with PO6 The electrical safety of the facility will be maintained in the event of a bushfire incident requiring emergency response through the implementation of an APZ of 40.1 m surrounding BESS and gas turbine infrastructure, suitable access for emergency services appliances, and a fire hydrant network connected to the Project area reticulated water system connected to the Project area bore.



Performance Outcome		Compliance Assessment
PO7	Development demonstrates that there is capacity to provide a reliable, sustainable and fit-for-purpose water supply	Complies with PO7 The existing infrastructure is connected to a reticulated water network supplied by a bore on-Project area under an approved water license. This network will supply a fire hydrant network around the Project footprint, which can be accessed by emergency services for fighting bushfire hazards.
Natural Hazards		
PO13	Development is located and Project aread to avoid natural hazard areas including high erosion risk areas and bushfire prone areas.	Does not comply with PO13 The Project footprint is located and Project aread to avoid bushfire-prone areas as much as possible; however, due to existing energy infrastructure constraints, siting the BESS and gas turbines outside of a bushfire-prone areas is not achievable.
PO14	Where development cannot be located and Project aread to avoid natural hazard areas (e.g., Bushfire prone areas, and high erosion risk areas), demonstrate that: • there is no suitable alternative location; • infrastructure can function effectively during and after a natural hazard event; and • mitigation measures are implemented to reduce the risk to people, property and the environment to a tolerable level.	Complies with PO14 As the BESS and gas turbines need to be near to the existing power station and energy infrastructure, there are no viable siting alternatives for the BESS and gas turbines. With the use of a 40.1 m Asset Protection Zone (APZ) and the installation of underground transmission lines, the infrastructure is expected to maintain effective operation both during and following a bushfire event. Implementation of the mitigation measures provided within Sections 4 and 5 of this Bushfire Hazard Assessment and Management Plan reduce the risk to people , property and the environment to a tolerable level.



Performance Outcome		Compliance Assessment
PO15	Bushfire hazard is identified and risk is mitigated through strategies for vegetation management, landscape management, water supply, provision of appropriate access, identification of safe assembly or evacuation routes and establishing cleared and maintained asset protection zones around infrastructure that is wholly contained on Project area.	Complies with PO15 The bushfire hazard for the Project is described in Section 3 of this report. To reduce the bushfire risk to a tolerable level, a 40.1 m APZ will be implemented and maintained to the west and south of the BESS infrastructure and east of the gas turbines. The APZ will require clearing of adjacent hazardous vegetation to reduce the available fuel loads in accordance with the provisions outlined in Section 4.5, and will require ongoing management to ensure it remains in a low fuel-load state for the life of the Project. Emergency access and egress is provided as per Section 4.6, which will provide effective access for firefighting appliances and safe evacuation of personnel in the event of a bushfire hazard. Emergency assembly and evacuation routes will be provided as part of Project area-specific emergency and evacuation plans and procedures.



9 Conclusion

This report has been prepared to provide a Project area-specific bushfire hazard assessment and management plan for a proposed BESS and gas turbine facilities, and underground powerline at 363 Grahams Road, Kogan, Queensland. The bushfire hazard assessment follows the methodology described in the QFES BRC Technical Reference Guide (QFES, 2019), and utilises QFES-published inputs (FFDI and fuel loads) for hazardous vegetation classified in accordance with the QFES vegetation hazard classification system.

The results of the assessment demonstrate that vegetation on-Project area and on nearby properties to the south and west consists of a eucalypt woodland community (VHC 12.2). This vegetation has a potential bushfire hazard rating of 'Medium'. All other vegetation within the 150 m assessment area is not classified as bushfire-prone and therefore, calculation of radiant heat flux/BAL is not applicable.

The proposed BESS facility and underground powerline qualifies under the QLD SPP provisions as essential community infrastructure forming part of the electricity transmission grid or supply network. The QFES Bushfire Resilient Communities document requires that such uses should not be subject to a radiant heat flux of greater than 10 kW/m². Therefore, an APZ of 40.1 m has been established around the BESS and gas turbine infrastructure to achieve this maximum radiant heat flux exposure. An APZ will not be required for the underground powerlines.

Direct access to the Project footprint is provided by the existing sealed Grahams Road and access around the development is provided by an existing road network established to support nearby power infrastructure. These road networks will provide access to emergency services and enable evacuation in the event of a bushfire. The facility will be connected to the on-Project area reticulated water supply network supplied but the on-Project area bore. Fire hydrants will be provided and located on-Project area so that every part of the facility is within reach of fire hoses connected to a fire hydrant outlet where the maximum hose length is determined in consultation with QFD.

Through the incorporation of the bushfire management recommendations stated within this report, the proposed development layout (**Appendix 1**) will not increase the severity or potential for bushfire damage to other properties.

The proposed development complies with State Planning Policy 2017 Assessment Benchmarks for Natural Hazards, Risk and Resilience, State Code 27: Battery Energy Facility Development and the Western Downs Regional Council Planning Scheme Bushfire Risk Areas Overlay and Rural Zone Codes.



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Appendix 1

Proposed Development Layout





Appendix 2

Flamesol Method 2 Minimum Distance Calculations



Calculated June 26, 2024, 3:22 pm (MDc v.4.9)

Braemar BESS South and West Fire Run

Minimum Distance Calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Fire Danger Index	69	Rate of spread	1.25 km/h
Vegetation classification	Woodland	Flame length	10.22 m
Understorey fuel load	14.6 t/ha	Flame angle	65.5 °, 72.5 °, 77.5 °, 80.5 °, 81.5 ° & 85.5 °
Total fuel load	17.4 t/ha	Elevation of receiver	4.54 m, 4.72 m, 4.77 m, 4.74 m, 4.7 m & 4.25 m
Vegetation height	n/a	Fire intensity	11,249 kW/m
Effective slope	0.5 °	Transmissivity	0.869, 0.853, 0.83, 0.806, 0.794 & 0.736
Site slope	0.5 °	Viewfactor	0.4092, 0.3037, 0.2046, 0.1385, 0.1125 & 0.0303
Flame width	100 m	Minimum distance to < 40 kW/m ²	12.3 m
Windspeed	n/a	Minimum distance to < 29 kW/m ²	16.5 m

Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m ²	24.1 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m ²	33.9 m
		Minimum distance to < 10 kW/m ²	40.1 m

Rate of Spread - Mcarthur, 1973 & Noble et al., 1980

Flame length - NSW Rural Fire Service, 2001 & Noble et al., 1980

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

VHC 12.2 - East

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Fire Danger Index	69	Rate of spread	1.25 km/h
Vegetation Classification	Woodland	Flame length	10.22 m
Understorey fuel load	14.6 t/ha	Flame angle	65.5 °, 72.5 °, 77.5 °, 80.5 °, 81.5 ° & 85.5 °
Total fuel load	17.4 t/ha	Elevation of receiver	4.54 m, 4.72 m, 4.77 m, 4.74 m, 4.7 m & 4.25 m
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Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m ²	24.1 m
Flame temperature	1,200 K	Minimum distance to < 12.5 kW/m ²	33.9 m
		Minimum distance to < 10 kW/m ²	40.1 m

Appendix G

Traffic impact assessment



BRAEMAR ENERGY HUB 363 GRAHAMS ROAD, KOGAN TRAFFIC IMPACT ASSESSMENT

25 AUGUST 2026

PREPARED FOR
EMMCONSULTING

DOCUMENT CONTROL RECORD

DOCUMENT						
Report Title:		363 Grahams Road, Kogan – Traffic Impact Assessment				
Client:		EMMCONSULTING				
Project Number:		26-383				
REV	PURPOSE	DATE	AUTHOR	REVIEWER	APPROVED	SIGNED
A	DRAFT	AUG-26	CJ	JPG	JPG (RPEQ 22233)	

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CONTENTS

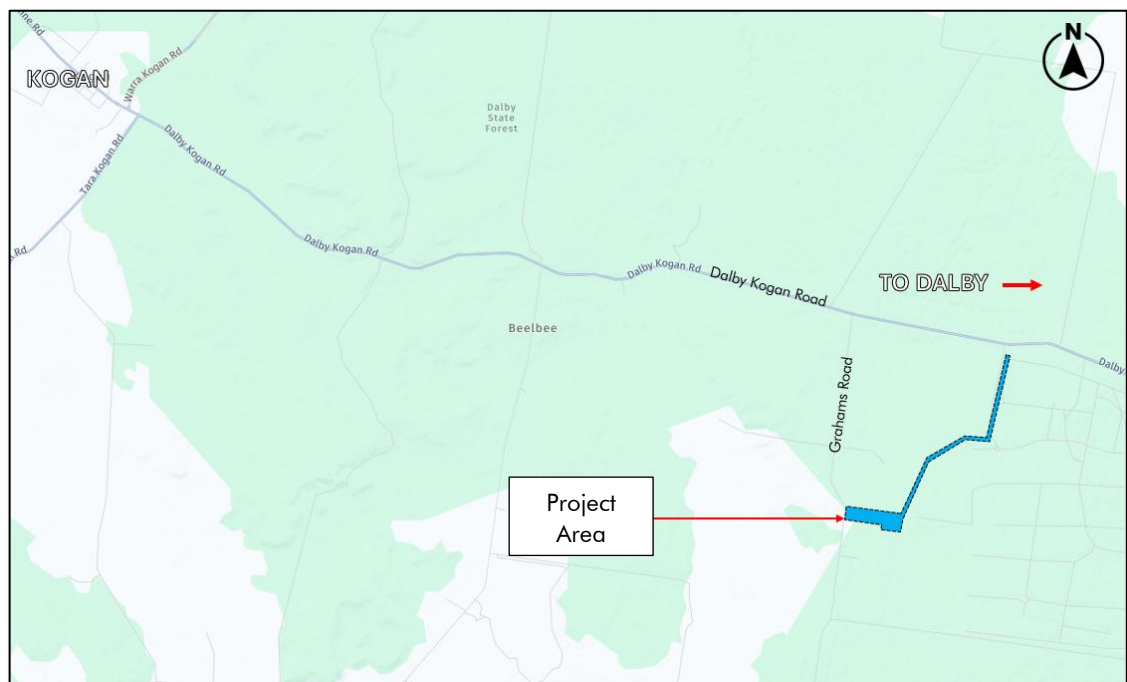
1.0 INTRODUCTION	4
1.1 Background	4
1.2 Aim	4
1.3 Scope of Report	4
2.0 EXISTING CONDITIONS	4
2.1 Subject Site	5
2.2 Access	5
2.3 Road Network	5
2.4 Traffic Volumes	6
2.5 Road Safety	7
2.6 Heavy Vehicle Access	7
3.0 PROPOSED DEVELOPMENT	8
3.1 Site Layout	8
3.2 Access	8
3.3 Haulage Routes	9
3.4 Construction Phase	9
3.5 Operational Phase	15
4.0 TRAFFIC OPERATIONS	17
4.1 Traffic Generation	18
4.2 Traffic Impact	20
5.0 CONCLUSIONS AND RECOMMENDATIONS	21
5.1 Conclusions	21
5.2 Recommendations	21

1.0 INTRODUCTION

1.1 BACKGROUND

In March 2026, Pekol Traffic and Transport (PTT) was commissioned by EMM consulting to undertake a traffic impact assessment for the proposed Braemer Energy Hub which involves a Battery Energy Storage System (BESS) and expansion to a gas power station at 363 Grahams Road, Kogan. The project area is located approximately 16km south-east of Kogan and around 36km west of Dalby, as shown in Figure 1.1.

Figure 1.1: SITE LOCALITY



1.2 AIM

The aim of this assessment is to evaluate the proposed development in terms of its likely access arrangements, construction and operational phase requirements, traffic generation and impact on the surrounding road network.

1.3 SCOPE OF REPORT

This report begins by summarising the characteristics of the existing road network and traffic operations (Chapter 2), followed by a description of the scope and scale of the construction and operational phases of the development (Chapter 3). The traffic generation of the development is outlined in Chapter 4 and its impact considered. The report concludes with a summary of key findings and recommendations (Chapter 5).

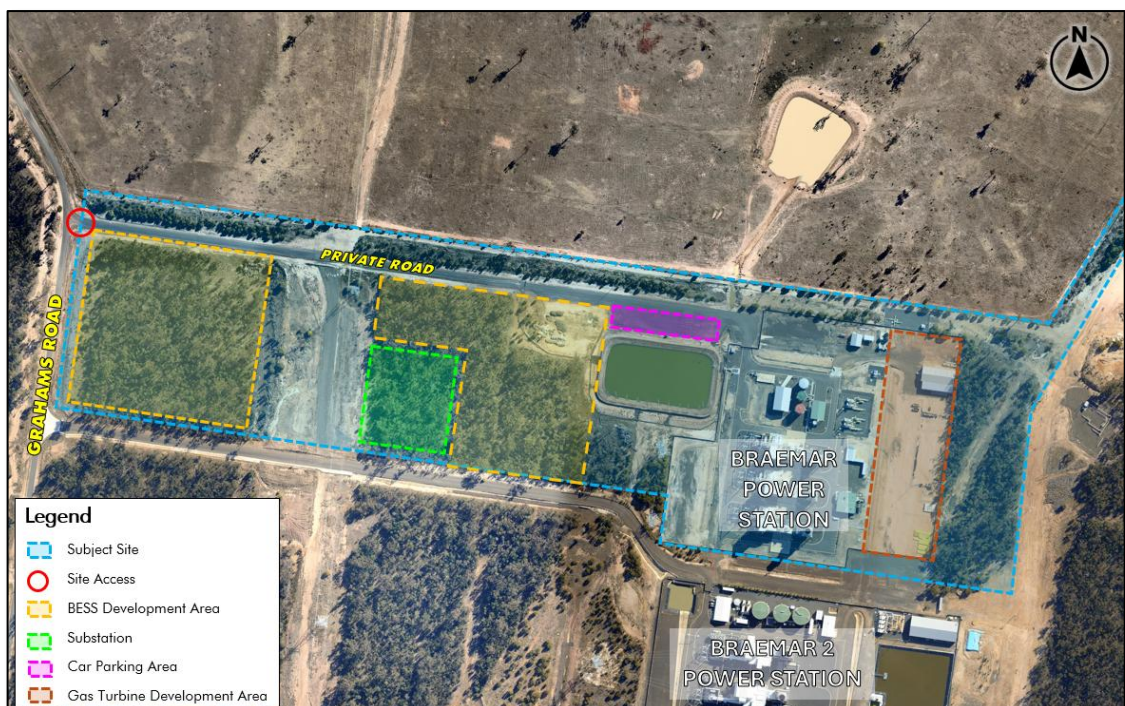
The assessment of Over-Size / Over-Mass (OSOM) vehicle manoeuvring does not form part of the scope of this report. An OSOM Construction Concept Strategy report was prepared in conjunction with this report and is attached in Appendix C.

2.0 EXISTING CONDITIONS

2.1 PROJECT AREA

The project area is located at 363 Grahams Road, Kogan and is formally described as Lot 128 on SP214053. According to the Western Downs Regional Council (Council) Planning Scheme, the project area is zoned as 'Rural' and has a site area of approximately 40 hectares. The Alinta Energy Braemar Power Station is located in the south-east corner of the project area, as shown in Figure 2.1.

Figure 2.1: PROJECT AREA



As shown in Figure 2.1, the project area is bounded by:

- rural land to the north and east
- an access roadway to the south
- Grahams Road to the west

The surrounding area is predominantly rural.

2.2 ACCESS

The project area is currently accessed via a priority-controlled intersection with Grahams Road, as indicated in Figure 2.1.

2.3 ROAD NETWORK

The key attributes of the surrounding road network in the vicinity of the project area are summarised in Table 2.1.

Table 2.1: ROAD NETWORK ATTRIBUTES

ATTRIBUTE	GRAHAM'S ROAD	DALBY KOGAN ROAD
Road Hierarchy	Feeder Road	Arterial Road
Jurisdiction	Council	Department of Transport and Main Roads (TMR)
Cross Section	Undivided, with one lane of traffic in each direction	Undivided, with one lane of traffic in each direction
Speed Limit (km/h)	80-100	100

Grahams Road intersects Dalby Kogan Road to the north of the project area to form a priority-controlled T-intersection, as indicated in Figure 1.1. The intersection is supported by a basic right turn (BAR) and an auxiliary left turn (AUL) treatment on Dalby Kogan Road, as shown in Figure 2.2.

Figure 2.2: DALBY KOGAN RD / GRAHAM'S RD INTERSECTION



2.4 TRAFFIC VOLUMES

2025 Average Annual Daily Traffic (AADT) data was obtained from TMR for Dalby Kogan Road from counter site 32010, located approximately 1.2km west of the Dalby Kogan Road / Grahams Road intersection. The data shows that the 2025 AADT volumes Dalby Kogan Road in the vicinity of the intersection were as follows:

- 360 vehicles per day (vpd) travelling in the westbound direction
- 360 vpd travelling in the eastbound direction
- 720 vpd two-way
- 45% heavy vehicles

The 2026 average hourly traffic data for the section of Dalby Kogan Road in the vicinity of the intersection with Grahams Road also indicates the following peak periods:

— weekday morning:	9:00am – 10:00am
— weekday evening:	4:00pm – 5:00pm
— Saturday:	10:00am – 11:00am

2.5 ROAD SAFETY

Historic crash data for the past five years (ie July 2020 – June 2025) was sourced from TMR for the external road network in the vicinity of the project area. The crash data was analysed to determine the Fatal or Seriously Injured (FSI) rate for the Grahams Road / site access and Dalby Kogan Road / Grahams Road intersections. It is a typically accepted rule of thumb that an FSI rate of three or more over a five-year period is considered high and potentially indicates that a safety issue is present.

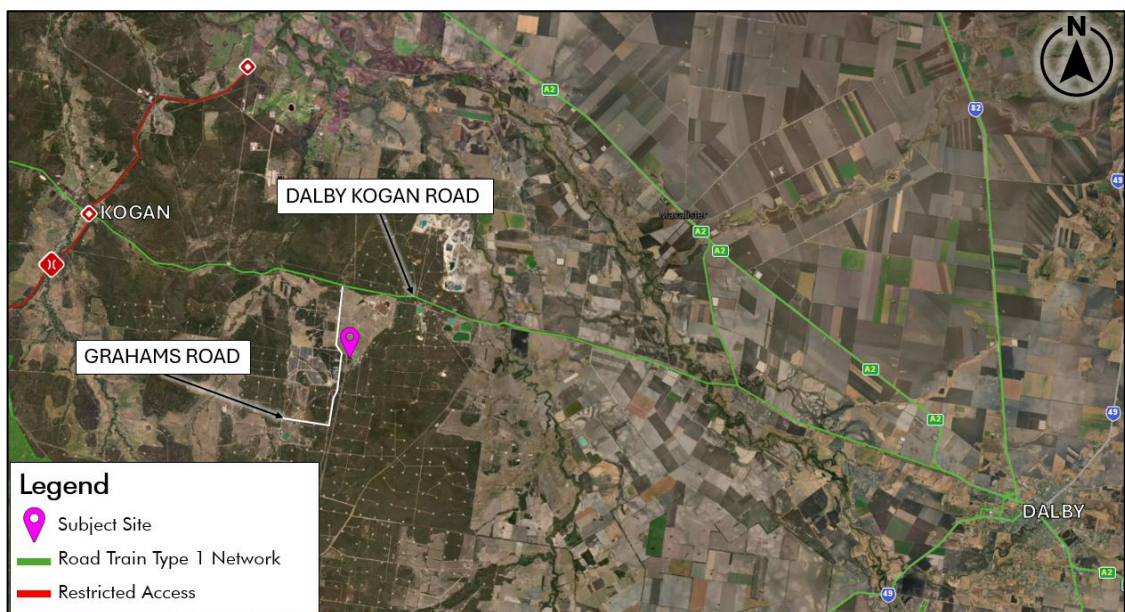
No crashes occurred within a 200m radius of the above intersections and accordingly, a KSI rate of zero is applicable for each intersection. Therefore, the historic crash data suggests that no existing safety issues are present on the external road network in proximity to the project area.

2.6 HEAVY VEHICLE ACCESS

In proximity to the project area, Dalby Kogan Road forms part of the Performance Based Standards (PBS) Level 3A network, which permits access for Type 1 Road Trains up to 36.5m in length.

As shown in Figure 2.3, Grahams Road is not an approved heavy vehicle route and as such, the largest dimensioned vehicle permitted to use this road is 19.0m in length (ie 'as-of-right' access).

Figure 2.3: HEAVY VEHICLE ROUTES AND RESTRICTIONS



3.0 PROPOSED DEVELOPMENT

3.1 SITE LAYOUT

The proposal involves the construction of a 2,000MWh BESS and the expansion to a gas power station (ie up to 250MW). The site layout is shown in Figure 3.1.

Figure 3.1: SITE LAYOUT



3.2 ACCESS

3.2.1 Project Area

Access to the project area is proposed via the existing priority-controlled access intersection with Grahams Road. No changes to the existing access arrangements are proposed, nor considered necessary to accommodate the proposed Braemer Energy Hub.

3.2.2 Works Area

Access to each Braemer Energy Hub / Substation site and the gas power station would be provided along the Private Road, as indicated in Figure 3.1. The recommended design of each access is discussed in Section 3.4.4.

3.3 HAULAGE ROUTES

Heavy vehicles are expected to travel to the project area from the Port of Brisbane. The recommended haulage route to the project area is shown in Figure 3.2 and outlined below:

Port of Brisbane Motorway > Gateway Motorway > Logan Motorway > Ipswich Motorway > Warrego Highway > Dalby Kogan Road > Grahams Road

Figure 3.2: HEAVY VEHICLE ACCESS ROUTE



It is expected that OSOM vehicles (and any other vehicles over the prescribed length limits) would require a permit to travel to / from the project area, most likely with a pilot or escort. This would be subject to a separate approval process and route assessment.

3.4 CONSTRUCTION PHASE

3.4.1 Timeline

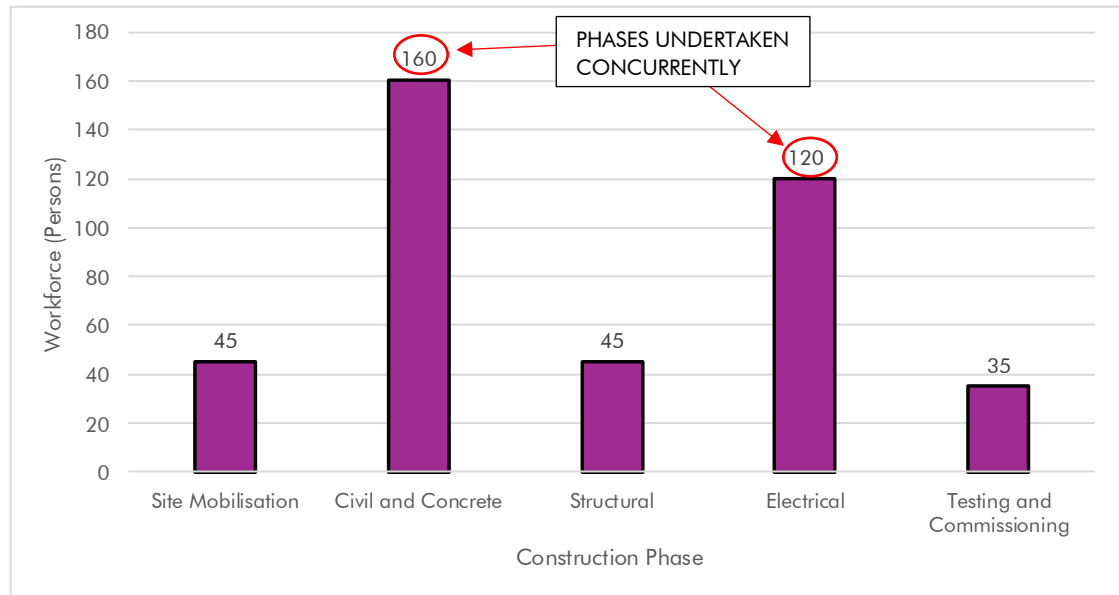
The construction phase of the Braemer Energy Hub (BESS and extension of the Gas Power Station) is expected to occur over an 18 to 24 month period and would comprise five phases, as follows:

- Phase 1: Site Mobilisation and Earthworks (240 days)
- Phase 2: Civil and Concrete (270 days)
- Phase 3: Structural (90 days)
- Phase 4: Electrical (180 days)
- Phase 5: Testing and Commissioning (180 days)

3.4.2 Workforce

Construction works would be undertaken seven days per week between 6:00am – 6:00pm. The workforce associated with each phase of construction is outlined in Figure 3.3.

Figure 3.3: CONSTRUCTION WORKFORCE - BRAEMER ENERGY HUB



The peak of construction is expected to occur over a 7-week period during Phase 2 and 4 (ie 'Civil and Concrete' and 'Electrical' works being undertaken concurrently). During this period, a maximum of 280 workers would be expected on-site. The construction of the expansion to the gas power station is to occur before the BESS component is complete and is expected generate significantly less vehicular traffic (ie up to a maximum of 100 workers) compared to the BESS component.

Staff accommodation during the construction phase would be sourced from the surrounding areas.

3.4.3 Parking

The following assumptions have been made in relation to staff travel to / from the project area:

- 80% of the workforce would travel to / from the project area each day via coach
- 20% of the workforce would travel to / from the project area each day via private vehicle
- each coach would have a seated capacity for 52 passengers
- a vehicle occupancy of 2.0 would be applicable for staff carpooling

Private Vehicles

As outlined in Section 3.4.2, 280 labourers would be expected on-site each day during the peak of construction. Based on the above assumptions, around 28 private vehicles would be expected on-site each day during the peak of construction.

An approximate 2,850m² car parking area with 49 formal car parking spaces is currently provided on-site, as indicated in Figure 2.1. Alinta Energy have advised that this parking area

would be available for use during the construction phase of the Braemer Energy Hub. It is expected that this area would be sufficient to accommodate at least 56 parked cars during the peak of construction. Therefore, the existing parking provision is expected to cater for the peak car parking demand.

Coaches

Based on the assumptions outlined above, it is estimated that approximately five coaches would travel to / from the project area each day from the surrounding area during the peak of construction. It is recommended that a dedicated on-site drop-off / pick-up zone be provided for at least one 52-seater coach. Additional capacity may be required, subject to coach scheduling.

3.4.4 Vehicle Fleet

The expected vehicle fleet associated with the construction phase is detailed in Table 3.1.

Table 3.1: CONSTRUCTION PHASE VEHICLE FLEET

PHASE	VEHICLE TYPE
Site Mobilisation and Earthworks	Crane
	Low Loader
	Semi-Trailer
	Heavy Rigid Vehicle (HRV)
	Coach
	Private Vehicle
Civil and Concrete	Low Loader
	Truck and Dog
	Concrete Truck
	Coach
	Private Vehicle
Structural	Low Loader
	Refuse Collection Vehicle
	Coach
	Private Vehicle
Electrical	Low Loader
	Truck and Dog
	Semi-Trailer
	Refuse Collection Vehicle
	Coach
	Private Vehicle
Testing and Commissioning	Private Vehicle

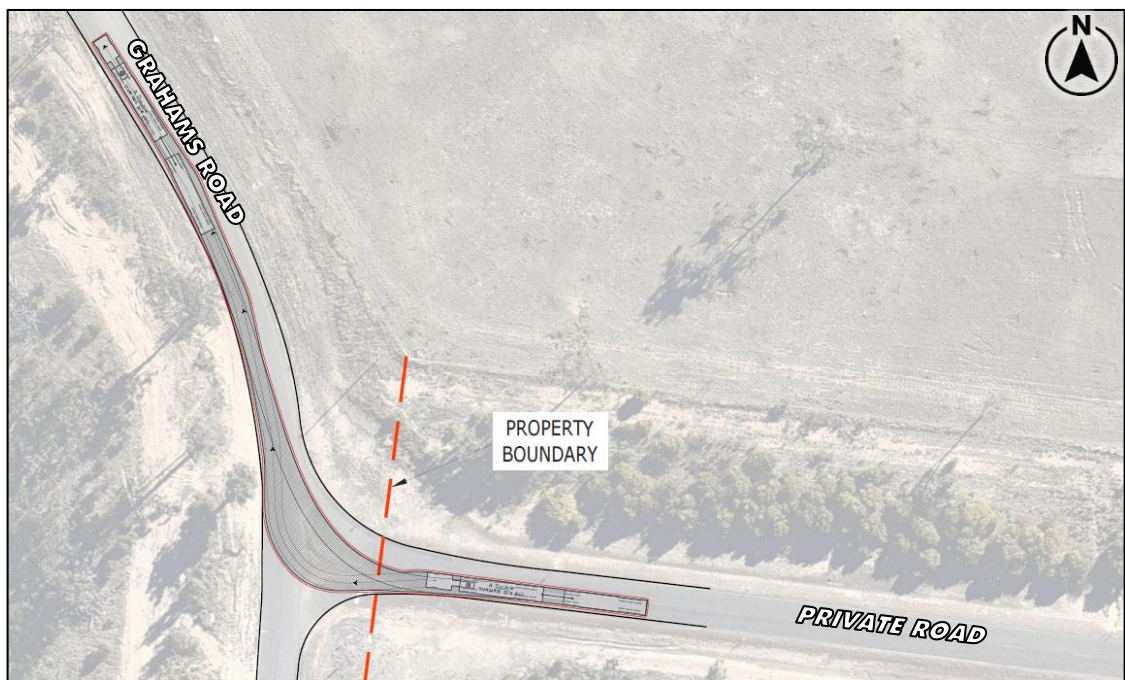
Swept path analyses of a 36.5m long Type 1 Road Train / Low Loader (ie the largest vehicle expected to visit the project area) entering and exiting the site access on Grahams Road have

been undertaken. As demonstrated in Figures 3.4 and 3.5, the existing site access arrangements are sufficient to accommodate the largest vehicle expected to visit the Braemer Energy Hub project area.

Figure 3.4: TYPE 1 ROAD TRAIN MANOEUVRING – SITE ACCESS (ENTRY)



Figure 3.5: TYPE 1 ROAD TRAIN MANOEUVRING – SITE ACCESS (EXIT)



Swept path analyses of a 36.5m long Type 1 Road Train / Low Loader entering and exiting each BESS / Substation site have also been undertaken. It is recommended that access to each site be provided as indicated in Figures 3.6 to 3.8, to accommodate a Type 1 Road Train / Low Loader.

Figure 3.6: TYPE 1 ROAD TRAIN MANOEUVRING – EASTERN-MOST BESS SITE



Figure 3.7: TYPE 1 ROAD TRAIN MANOEUVRING – WESTERN-MOST BESS SITE

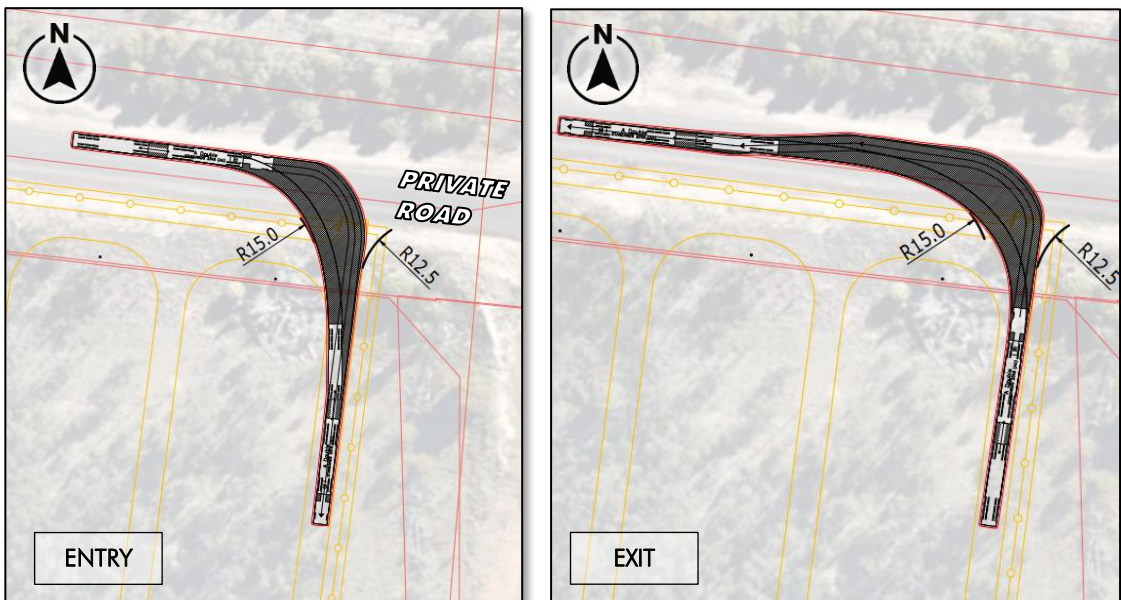
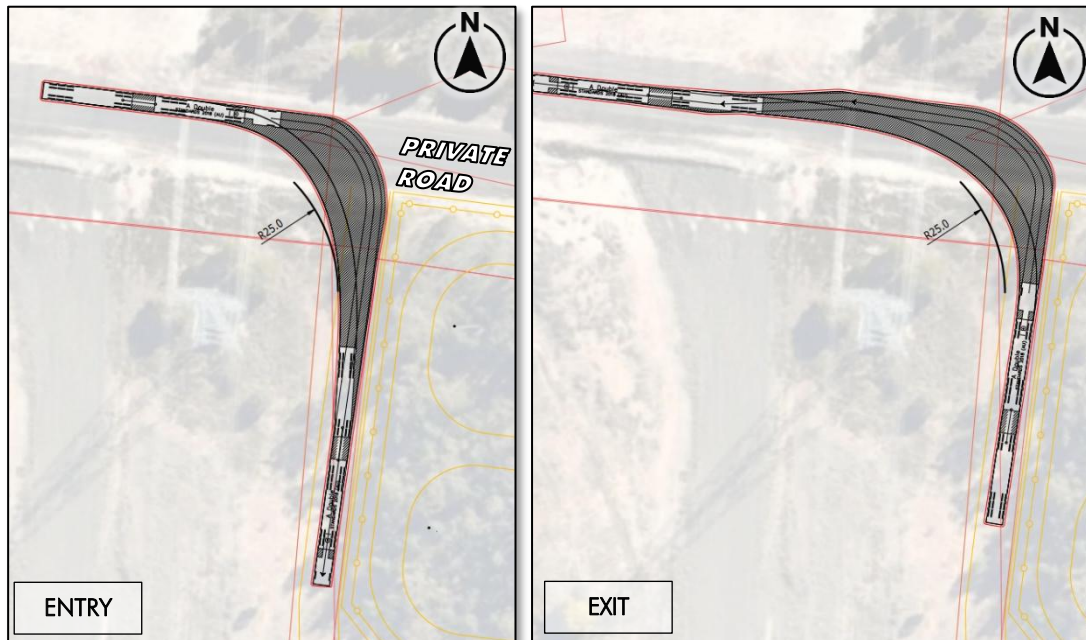


Figure 3.8: TYPE 1 ROAD TRAIN MANOEUVRING – SUBSTATION

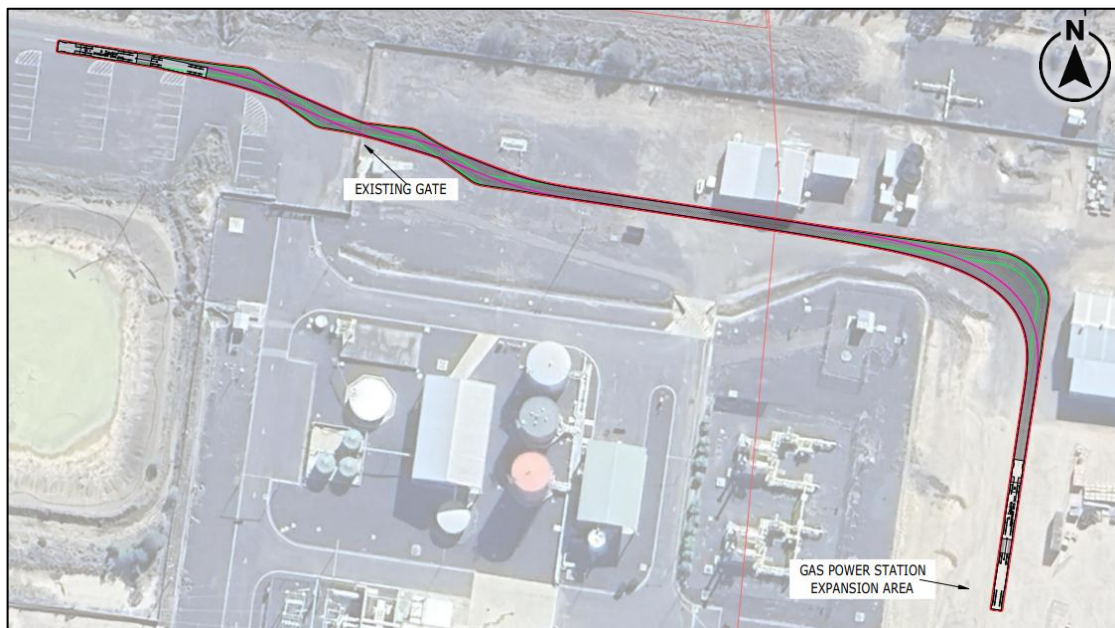


Swept path analyses of a 36.5m long Type 1 Road Train / Low Loader entering and exiting the gas power station site have also been undertaken. As shown in Figures 3.9 and 3.10, access is expected to be achievable for vehicles up to Type 1 Road Train / Low Loader via the existing gate.

Figure 3.9: TYPE 1 ROAD TRAIN ENTRY – GAS POWER STATION



Figure 3.10: TYPE 1 ROAD TRAIN EXIT – GAS POWER STATION



3.5 OPERATIONAL PHASE

3.5.1 Requirements

Once the Braemer Energy Hub is operational, two to three staff members would be required to oversee operations. It has been advised that the existing workers of the gas power station would manage the Braemer Energy Hub and no additional staff is required. During maintenance events, around six workers would be expected on-site.

3.5.2 Parking

The proposed development provides six parking spaces at each BESS site, which is expected to be adequate to cater for the operational parking demand during maintenance events. It is recommended that these on-site parking spaces be lengthened to be 5.4m long, in accordance with Australian Standard AS2890.1:2004 Parking Facilities Part 1: Off-Street Car Parking (AS2890.1).

3.5.3 Servicing

In general, heavy vehicles are unlikely to be required for the operational phase. However, one to two times per year, it is expected that a 12.5m long HRV may be required for maintenance activities.

To accommodate HRV servicing during the operational phase, it is recommended that widening be incorporated in the south-east and south-west corners of each BESS site and the north west corner of the eastern most BESS, as indicated in Figures 3.11 to 3.13.

Figure 3.11: RECOMMENDED INTERNAL ARRANGEMENTS – WESTERN-MOST BESS

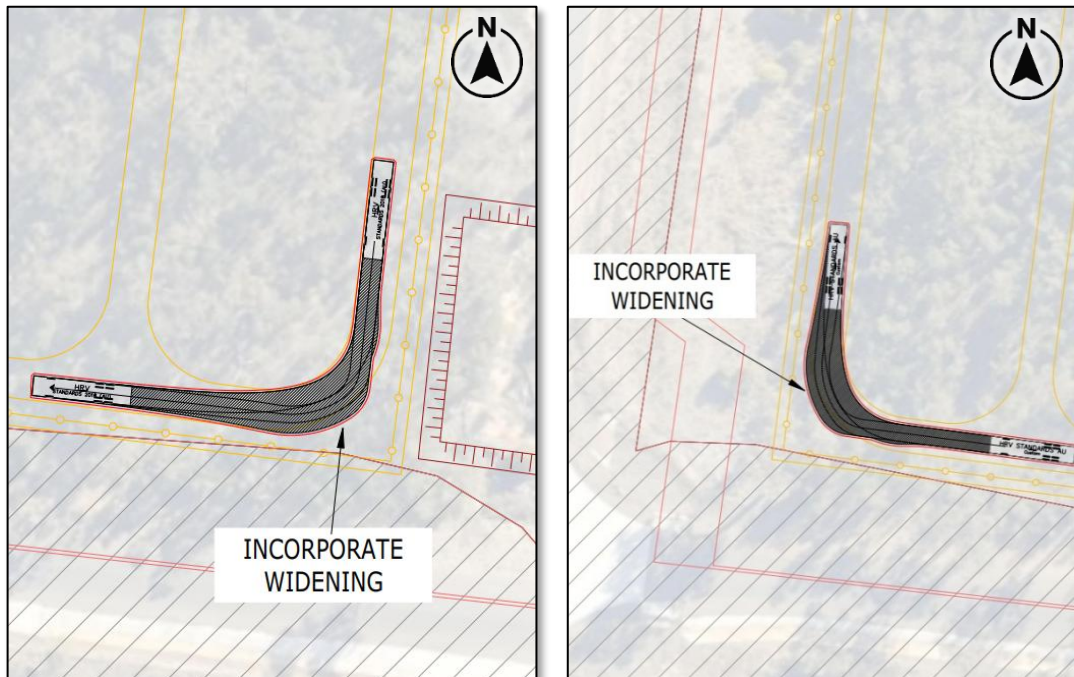


Figure 3.12: RECOMMENDED INTERNAL ARRANGEMENTS – EASTERN-MOST BESS

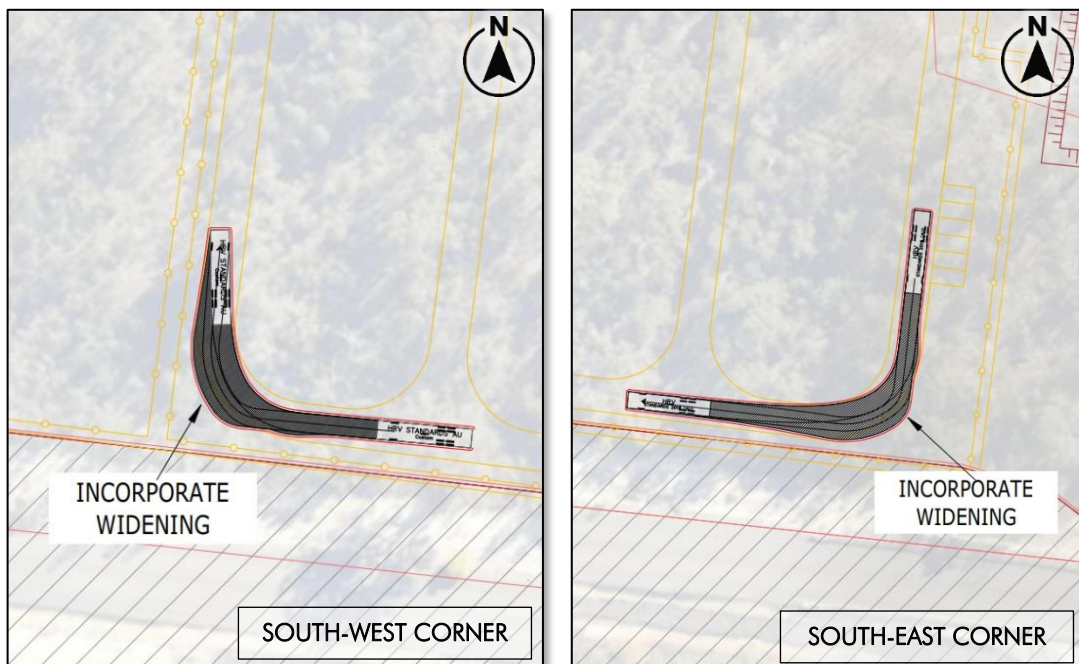
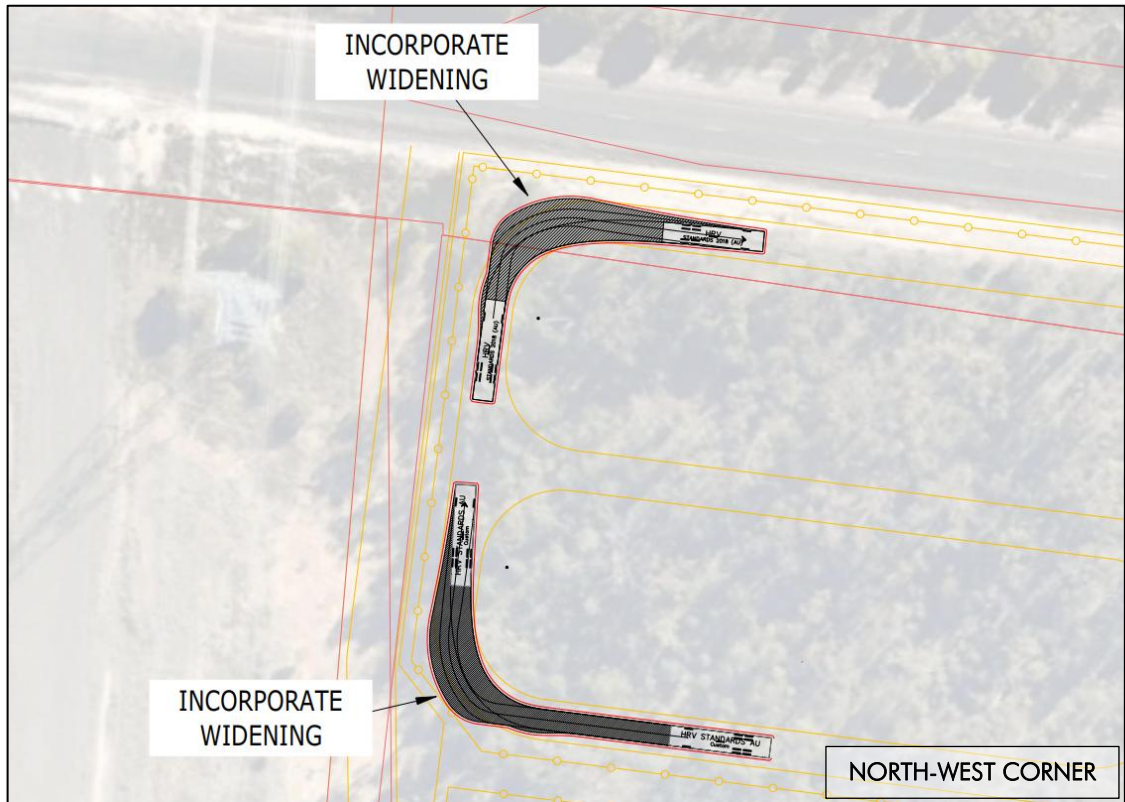


Figure 3.13: RECOMMENDED INTERNAL ARRANGEMENTS – EASTERN-MOST BESS



4.0 TRAFFIC OPERATIONS

4.1 TRAFFIC GENERATION

4.1.1 Overview

The anticipated traffic generation of the Braemer Energy Hub has been determined based on the workforce and heavy vehicle movements expected during the peak of construction (ie Phases 2 and 4). This represents the 'worse case' scenario.

The traffic generation expected during the operational phase is expected to be immaterial.

4.1.2 Daily Traffic Generation

As outlined in Section 3.4.2, a maximum of 280 workers are expected during the peak of construction. Alinta Energy have advised that coaches will be used for staff transportation, along with private vehicles. The assumptions adopted in relation to staff travel to / from the project area are outlined in Section 3.4.3.

As shown in Table 4.1, the predicted maximum daily traffic generation during the peak of construction is estimated to be approximately 92 trips per day.

Table 4.1: MAXIMUM DAILY TRAFFIC GENERATION

VEHICLE TYPE	VEHICLES	TRIPS PER DAY	IN : OUT
Coach (Staff Travel)	5	20*	10 : 10
Private Vehicle (Staff Travel)	28	56	28 : 28
Heavy Vehicles / Deliveries	8	16	8 : 8
Total	41	92	46 : 46

*Assumes coaches do not stay on-site during working hours

4.1.3 Peak Hour Traffic Generation

As outlined in Section 3.4.2, construction works are expected to commence at 6:00am and cease at 6:00pm. Accordingly, it is unlikely that the peak periods of the construction phase would coincide with the external road network peak periods, as outlined in Section 2.4. Therefore, it has been assumed that approximately 20% of the workforce would travel to / from the project area during the external road network peaks, with the remaining 80% arriving during the site peak periods.

It has been assumed that heavy vehicle movements would only occur during working hours (ie 12 hours per day) and would be uniform throughout the day.

As shown in Table 4.2, the predicted peak hour traffic generation during the external road network peaks is estimated to be 10 vehicles per hour (vph). During the site peak periods, the predicted peak hour traffic generation is estimated to be 33vph, as shown in Table 4.3.

Table 4.2: PEAK HOUR TRAFFIC GENERATION – EXTERNAL NETWORK PEAK

VEHICLE TYPE	VEHICLES	TRIPS (VPH)	IN:OUT SPLIT	IN : OUT (VPH)
Weekday Morning				
Coach (Staff Travel)	1	2	50 : 50	1 : 1
Private Vehicle (Staff Travel)	6	6	100 : 0	6 : 0
Heavy Vehicles / Deliveries	1	2	50 : 50	1 : 1
Total	8	10		8 : 2
Weekday Evening				
Coach (Staff Travel)	1	2	50 : 50	1 : 1
Private Vehicle (Staff Travel)	6	6	0 : 100	0 : 6
Heavy Vehicles / Deliveries	1	2	50 : 50	1 : 1
Total	8	10		2 : 8
Saturday				
Coach (Staff Travel)	1	2	50 : 50	1 : 1
Private Vehicle (Staff Travel)	6	6	100 : 0	6 : 0
Heavy Vehicles / Deliveries	1	2	50 : 50	1 : 1
Total	8	10		8 : 2

Table 4.3: PEAK HOUR TRAFFIC GENERATION – SITE PEAK

VEHICLE TYPE	VEHICLES	TRIPS (VPH)	IN:OUT SPLIT	IN : OUT (VPH)
Weekday Morning				
Coach (Staff Travel)	4	8	50 : 50	4 : 4
Private Vehicle (Staff Travel)	23	23	100 : 0	23 : 0
Heavy Vehicles / Deliveries	1	2	50 : 50	1 : 1
Total	28	33		28 : 5
Weekday Evening				
Coach (Staff Travel)	4	8	50 : 50	4 : 4
Private Vehicle (Staff Travel)	23	23	0 : 100	0 : 23
Heavy Vehicles / Deliveries	1	2	50 : 50	1 : 1
Total	28	33		5 : 28
Saturday				
Coach (Staff Travel)	4	8	50 : 50	4 : 4
Private Vehicle (Staff Travel)	23	23	100 : 0	23 : 0
Heavy Vehicles / Deliveries	1	2	50 : 50	1 : 1
Total	28	33		28 : 5

4.2 TRAFFIC IMPACT

The 2025 AADT data obtained from TMR for Dalby Kogan Road recorded an AADT of approximately 720vpd in both directions. The data for Dalby Kogan Road also indicates an average traffic growth rate of 1.15% per annum over the most recent ten-year period for which data is available (ie 2015 – 2025). A conservative average background traffic growth rate of 1.0% per annum has been adopted to estimate the 2027 (ie the assumed first year of construction) traffic volumes on Dalby Kogan Road.

Based on the above, the impact of the construction phase of the development has been estimated, as shown in Table 4.4.

Table 4.4: 2027 TRAFFIC IMPACT – DAILY

PARAMETER	DALBY KOGAN ROAD
2027 without construction traffic (vpd)	727
2027 with construction traffic (vpd)	819
% Increase	12.65%

As demonstrated in Table 4.4, the addition of development generated traffic during the construction phase would equate to greater than 5.0% of the estimated 2027 daily volumes on Dalby Kogan Road.

However, the impact of the proposed development is disproportionate due to the low background traffic volumes on Dalby Kogan Road in the vicinity of the project area. Furthermore, the traffic generation associated with the construction phase is expected to be temporary (ie less than two years) and would cease upon completion of the Braemer Energy Hub. Additionally, this level of traffic generation is only expected to occur during the peak of construction (ie over a period of 7-weeks).

Based on the characteristics of Dalby Kogan Road in the vicinity of the project area, Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods (2020) specifies a typical traffic carrying capacity for a two-way / two-lane road of around 1,350vph. Dalby Kogan Road currently accommodates approximately 60vph during peak periods. Therefore, there is ample capacity to accommodate up to an additional 33vph during the peak of construction.

Based on the above, the addition of traffic generated by the construction phase is not expected to have a significant adverse impact on surrounding road network operations.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

The proposed 2,000MWh BESS facility and expansion to a gas power station (ie up to 250MW) at 363 Grahams Road, Kogan has been evaluated in terms of its likely access arrangements, traffic generation and impact on the surrounding road network. The main points to note are:

- access to the project area is proposed via the existing intersection with Grahams Road
- the construction phase is expected to occur over an 18 to 24 month period
- the peak of construction is expected to occur over a 7-week period
- a maximum of 280 workers would be required on-site during the peak of construction
- during the operational phase, two to three staff members would operate remotely to oversee operations
- occasional maintenance works would require approximately six workers on-site at any one time
- the predicted maximum daily traffic generation during the peak of construction is estimated to be approximately 92vpd
- the predicted peak hour traffic generation is estimated to be 10vph and 33vph during the external road network and site peak periods, respectively
- the traffic generation during the operational phase is expected to be immaterial
- the addition of traffic generated by the construction and operational phases is not expected to have a significant adverse impact on surrounding road network operations

5.2 RECOMMENDATIONS

Based on the above, it is recommended that:

- access to each BESS / Substation site be provided as indicatively shown in Figures 3.6 to 3.8
- widening be incorporated in the south-east and south-west corners of each BESS site and the north-west corner of the eastern most BESS, as indicatively shown in Figures 3.11 and 3.13
- the on-site parking spaces be lengthened to 5.4m in accordance with AS2890.1

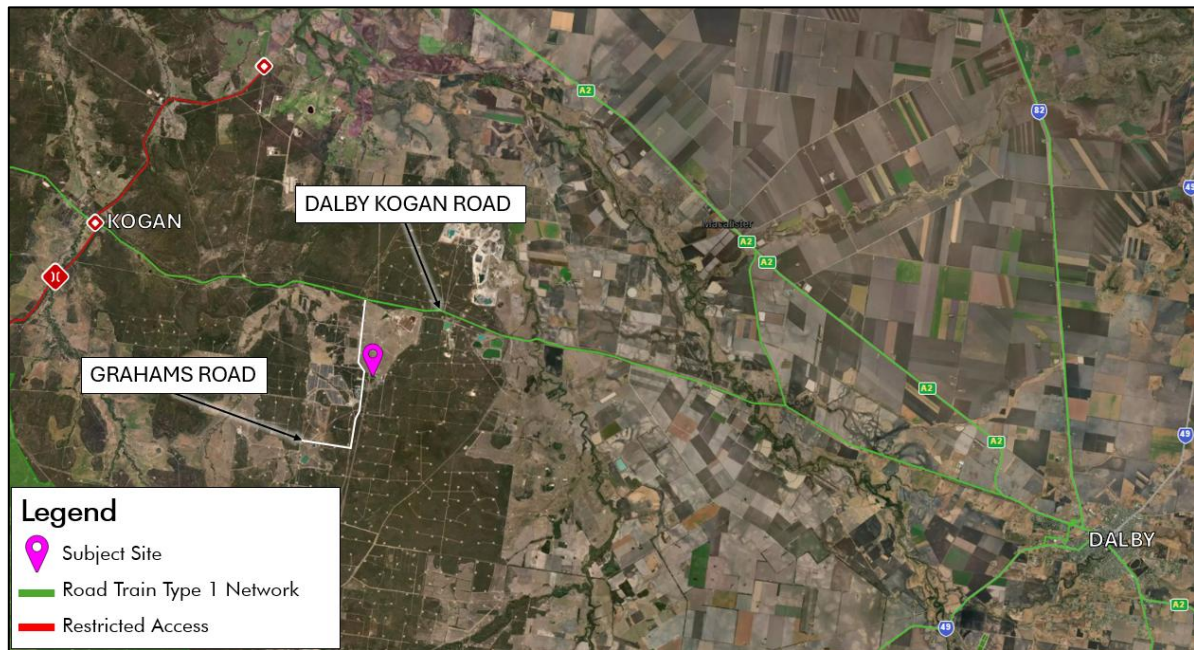
363 GRAHAMS ROAD, KOGAN BESS OSOM CONSTRUCTION CONCEPT STRATEGY

BACKGROUND

The project area is located at 363 Grahams Road, Kogan and is formally identified as Lot 128 on SP214053. An aerial view of the project area is shown in Figure 1. The project involves a material change of use for the construction of a battery energy storage (BESS) facility, substation and expansion to an existing gas power station in the Western Downs Regional Council (Council) local government area.

A traffic impact assessment (TIA) has been prepared in support of the BESS and expansion to an existing gas power station (PTT reference 26-383 and dated 25 August 2026) and this Oversize / Overmass (OSOM) Construction Concept Strategy should be read in conjunction with the submitted TIA.

Figure 1: PROJECT AREA



The project area is accessed via Graham Road which is classified as a feeder road according to Council's Planning Scheme. Graham Road meets Dalby Kogan Road at a three-way priority-controlled intersection where it forms the minor approach. Graham Road has a speed limit of 80-100km/h, is sealed and is approximately 5-6m wide with unsealed shoulders.

Dalby Kogan Road is a state-controlled road, which falls under the jurisdiction of the Department of Transport and Main Roads (TMR). It is a sealed, undivided road with one lane of traffic in each direction and has a posted speed limit of 100km/h in the vicinity of the intersection with Graham Road.

Dalby Kogan Road ultimately connects to the Warrego Highway to the east of the project area. The Warrego Highway is a state-controlled road, which falls under the jurisdiction of the TMR. It is a sealed, undivided road with one lane of traffic in each direction and has a posted speed limit of 100km/h in the vicinity of the intersection with Dalby Kogan Road.

CONSULTATION

Consultation for the BESS and expansion to an existing gas power station development is recommended with the following key stakeholder groups identified:

- Western Downs Regional Council
- Department of Transport and Main Roads
- National Heavy Vehicle Regulator
- Brisbane Ports Corporation
- Queensland Rail
- Local community

The purpose of the consultation strategy with respect to traffic impacts is to:

- inform stakeholders and the local community about the proposed Energy Hub
- identify potential concerns early in the planning process
- identify specific construction traffic impacts in terms of:
 - anticipated construction vehicle types and volumes
 - delivery of large components and potential requirements for OSOM transport
 - temporary traffic management measures during construction
- provide an opportunity for feedback to inform the detailed design of upgrade / mitigation works and assessment of the project

OSOM COMPONENTS

It has been advised that the OSOM requirements for the project are expected to be limited to the transformers, the gas turbine (compressor and turbine) and the casting components for the silencer. It has been advised that all other component will be transported to the project area via standard heavy vehicles. A summary of these components is shown in Table 1.

Table 1: CONSTRUCTION PHASE VEHICLE FLEET

COMPONENT	NUMBER OF TRIPS	LENGTH	WIDTH	HEIGHT	MASS
Transformer	18	11.3m	3.9m	4.2m	226t
Gas Turbine (compressor and turbine)	2	10.34m	4.12m	4.5m	211t
Silencer – Casting	2	11.6m	4.10m	1.5m	15t

It is expected that battery modules are dimensioned roughly 6.1m long by 2.4m wide and 2.9m high, which is roughly the same as a 20-foot shipping container. Therefore, it is expected that these modules would be transported on a typical 19m long articulated semi-trailer flatbed truck.

OSOM VEHICLE TYPES

It has been advised that the largest vehicle used to transport the above components would be a 36.9m long drop-bed platform trailer, with a total of 11 axle groups. This vehicle type has a trailer width of 4.8m and is expected to have a travel height in the order of 5.5m.

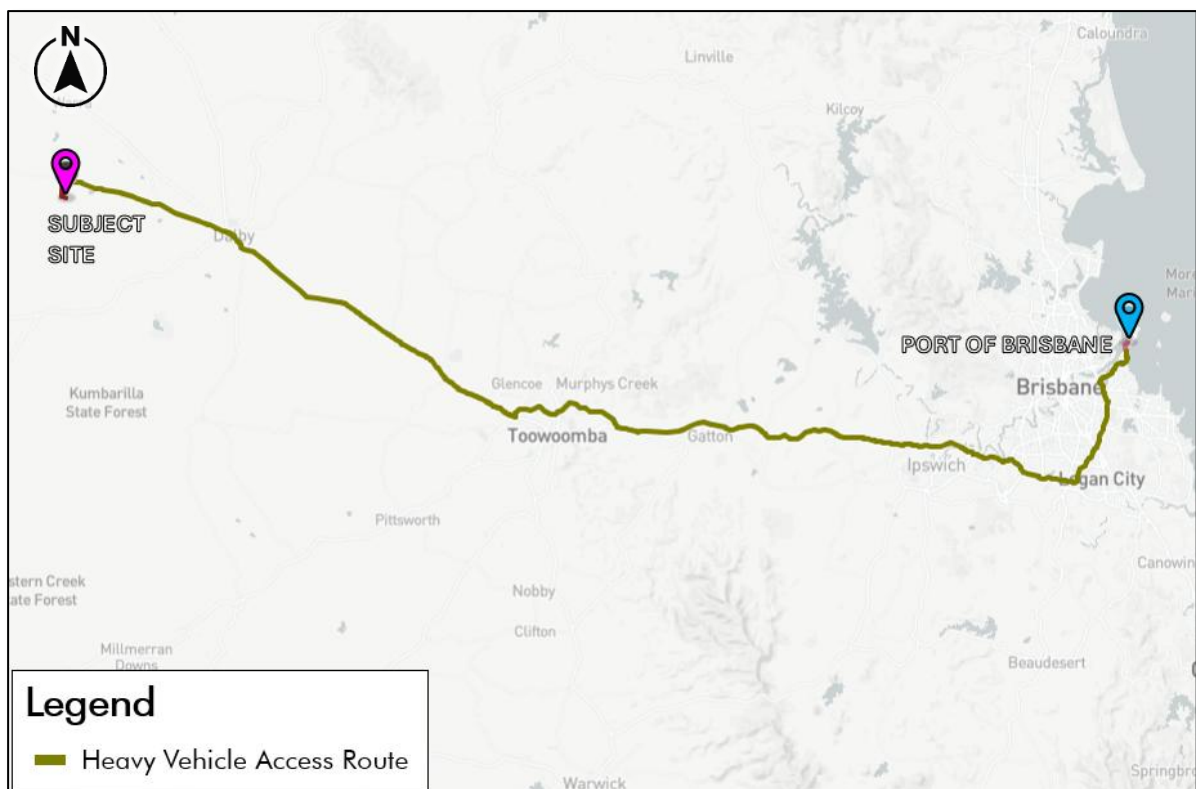
OSOM VEHICLE ROUTE

The project area is accessed via Dalby Kogan Road and Grahams Road which in turn is ultimately accessed off the Warrego Highway, which forms part of the national highway network. The project area is linked to the Port of Brisbane via the following established OSOM routes:

- Port of Brisbane Motorway
- Gateway Motorway
- Logan Motorway
- Ipswich Motorway
- Warrego Highway

These roads are highlighted in Figure 2.

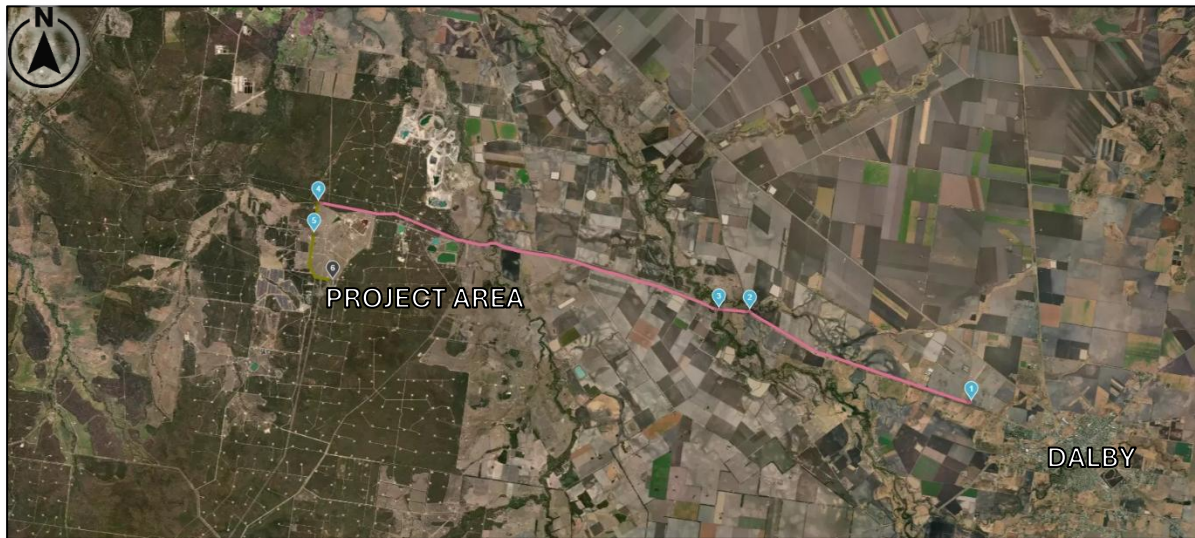
Figure 2: HEAVY VEHICLE ACCESS ROUTE



OSOM VEHICLE ROUTE ASSESSMENT

The roads discussed above are expected to be established OSOM routes and have not been considered further. Therefore, the assessment of the proposed OSOM route has focused on the section of road between the Warrego Highway and the site access on Graham Road, as shown in Figure 3.

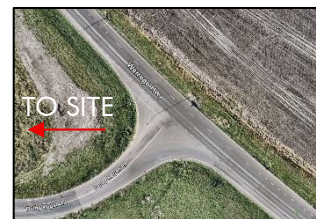
Figure 3: ASSESSMENT AREA



The following “pinch points” on the OSOM route have been identified:

1. Warrego Highway / Dalby Kogan Road Intersection (Chainage 0km)

OSOM vehicles will turn left from the Warrego Highway into Dalby Kogan Road and subsequently turn right from Dalby Kogan Road onto the Warrego Highway. Due to the size and turning characteristics of the OSOM vehicles, temporary traffic management measures are expected to be required to facilitate these movements, including short-duration traffic holds to allow the vehicles to utilise the full width of the Warrego Highway and Dalby Kogan Road during the turning manoeuvres. In addition, minor temporary works may be required at the intersection, such as localised widening and the temporary removal or relocation of street infrastructure. Detailed swept path analysis using the specific OSOM vehicle configuration will be undertaken to confirm the turning requirements and identify the precise nature of any intersection modifications required.



2. Dalby Kogan Road / Old Warrego Highway intersection (Chainage 11.4km)

There is a 90-degree bend in the horizontal alignment of Dalby Kogan Road where it meets with Old Warrego Highway. Due to the size and turning characteristics of the OSOM vehicles, temporary traffic management measures are expected to be required to facilitate these movements, including short-duration traffic holds to allow the vehicles to utilise the full width of the Dalby Kogan Road and Old Warrego Highway during the turning manoeuvres. In addition, minor temporary works may be required at the intersection, such as localised widening and the temporary removal or relocation of street infrastructure. Detailed swept path analysis using the specific OSOM vehicle configuration will be undertaken to confirm the turning requirements and identify the precise nature of any intersection modifications required.



3. Condamine River Rangers Bridge Crossing (Chainage 12.9km)

There is a bridge crossing over the Condamine River on Dalby Kogan Road. An assessment may be required to confirm the bridge has sufficient load carrying capacity for the proposed OSOM vehicle configuration and axle loads. It is recommended that liaison with the appropriate authorities (ie TMR Darling Downs District) be undertaken to verify the capacity of the bridge. However, initial conversations with TMR have not raised any in principle restrictions.



4. Dalby Kogan Road / Grahams Road intersection (Chainage 32.6km)

OSOM vehicles will turn left from Dalby Kogan Road into Graham Road and subsequently turn right from Graham Road onto the Dalby Kogan Road. Due to the size and turning characteristics of the OSOM vehicles, temporary traffic management measures are expected to be required to facilitate these movements, including short-duration traffic holds to allow the vehicles to utilise the full width of Dalby Kogan Road and Graham Road during the turning manoeuvres. In addition, minor temporary works may be required at the intersection, such as localised widening and the temporary removal or relocation of street infrastructure. Detailed swept path analysis using the specific OSOM vehicle configuration will be undertaken to confirm the turning requirements and identify the precise nature of any intersection modifications required.



5. Dalby Kogan Road / Graham Road intersection to site access (Chainage 32.6km to 36.2km)

Along the section of Graham Road between the site access and Dalby Kogan Road there are a series of low points (ie floodway). Weather forecasts should be monitored as these areas are prone to flooding.



6. Site Access (Chainage 36.2km)

OSOM vehicles will turn left from Graham Road into the project area and subsequently turn right from project area onto the Graham Road. Due to the size and turning characteristics of the OSOM vehicles, temporary traffic management measures are expected to be required to facilitate these movements, including short-duration traffic holds to allow the vehicles to utilise the full width of Graham Road during the turning manoeuvres. In addition, minor temporary works may be required at the intersection, such as localised widening and the temporary removal or relocation of street infrastructure. Detailed swept path analysis using the specific OSOM vehicle configuration will be undertaken to confirm the turning requirements and identify the precise nature of any intersection modifications required



CONCLUSION

Based on a review of the proposed OSOM route, it is considered that construction haulage can be feasibly achieved subject to some minor localised widening requirements, if deemed necessary. It is recommended that a Traffic Management Plan be conditioned, including a detailed OSOM route assessment, which will confirm the suitability of the route, identify any additional infrastructure constraints, and specify the mitigation measures and temporary works required to safely accommodate OSOM vehicle movements.

Appendix H

Stormwater management plan



STORMWATER MANAGEMENT PLAN

BRAEMAR ENERGY HUB

363 GRAHAMS ROAD, KOGAN



CLIENT: EMM CONSULTING PTY LTD

DOCUMENT NUMBER: 26-0030

VERSION: B

DATE: 27-08-2026



TABLE OF CONTENTS

1	INTRODUCTION	1
1.1.	GUIDELINES	1
2	PROJECT DESCRIPTION	1
2.1.	EXISTING SITE	1
2.2.	PROPOSED WORKS	1
2.3.	TOPOGRAPHY & LAWFUL POINT OF DISCHARGE	1
3	HYDROLOGIC MODELLING	2
3.1.	DESIGN OBJECTIVES	2
3.2.	METHODOLOGY	2
3.2.1.	HYDROLOGY	2
3.2.2.	RAINFALL DATA	2
3.2.3.	ROUTING	2
3.2.4.	ROUGHNESS COEFFICIENTS	4
3.2.5.	RAINFALL LOSSES	4
3.2.6.	CATCHMENTS & LAWFUL POINT OF DISCHARGE	4
4	HYDRAULIC MODELLING - QUANTITY	7
4.1.	DESIGN OBJECTIVES	7
4.1.1.	DETENTION SYSTEM CHARACTERISTICS	7
4.2.	EXTERNAL CATCHMENT DIVERSION DRAIN SIZING	8
5	FIRE FIGHTING WATER SUPPLY	10
5.1.	HYDRANT REQUIREMENT	10
5.2.	CAPTURE VOLUME REQUIREMENT	10
5.2.1.	FIRE FIGHTING	10
6	DISPERSIVE SOILS	10
6.1.	EMERSON CLASS	10
6.2.	SOIL CHEMISTRY	11
6.3.	SURFACE MATERIAL TREATMENT	11
6.4.	DRAINAGE PROTECTION	11
7	STATE CODE 27	12
7.1.	PURPOSE OF THIS CODE	12
7.2.	PERFORMANCE OUTCOMES	12
7.2.1.	NATURAL HAZARDS	12
7.2.2.	PROTECTING WATER QUALITY AND STORMWATER MANAGEMENT	12
8	CONCLUSION	13
	APPENDIX A – CATCHMENT & SARA MAPPING	A

TABLE OF FIGURES

FIGURE 1 – PROJECT AREA LOCALITY PLAN (QLD GLOBE).....	2
FIGURE 2 – BRAEMAR ENERGY HUB - PROJECT AREA.....	3
FIGURE 3 – PRE-DEVELOPMENT CATCHMENT PLAN.....	6
FIGURE 4 – EXTERNAL DIVERSION DRAIN & TYPICAL SECTION.....	9

TABLE OF TABLES

TABLE 1 – INTENSITY FREQUENCY DURATION DATA APPLIED TO HYDROLOGIC ASSESSMENT	4
TABLE 2 – CATCHMENT DETAILS APPLIED TO HYDROLOGIC ASSESSMENT	5
TABLE 3 – SUMMARY OF REQUIRED DETENTION VOLUMES AND OUTLET CONFIGURATION	7
TABLE 4 – PRE- VS POST-DEVELOPMENT (UNMITIGATED AND MITIGATED) AT LPD A1	7
TABLE 5 – PRE- VS POST-DEVELOPMENT (UNMITIGATED AND MITIGATED) AT LPD A2.....	7
TABLE 6 – EXTERNAL DIVERSION DRAIN PROPERTIES.....	9
TABLE 7 – NUMBER OF HYDRANTS REQUIRED TO FLOW SIMULTANEOUSLY – OPEN YARDS	10
TABLE 8 – EMERSON CLASS INTERPRETATION	10

VER.	DATE	AUTHOR	APPROVED
A	24-06-2026	S. CHAMBERLAIN	S. CHAMBERLAIN
B	27-08-2026	S. CHAMBERLAIN	S. CHAMBERLAIN





1 INTRODUCTION

Topo were engaged by EMM Consulting Pty Ltd to prepare a Stormwater Management Plan (SMP) for the proposed Braemar Energy Hub (the Project) at 363 Grahams Road, Kogan, within the Western Downs Regional Council Local Government Area.

1.1. GUIDELINES

This SMP been prepared in accordance with:

- + *Queensland Urban Drainage Manual (QUDM),*
- + *The Western Downs Regional Council (WDRC) Planning Scheme | April 2019 Standards for Design of Stormwater Drainage Works, and*
- + *State Planning Policy (Water).*

Further details are provided in relation to how the Project will comply with the requirements of State code 27: Battery storage facility development.

2 PROJECT DESCRIPTION

2.1. EXISTING SITE

The Project area covers a portion of Lot 128 on SP214053 comprising a total area of approximately 39.7 hectares (ha). The locality is characterised by large rural holdings, and extensive energy generation infrastructure which is interspersed with pockets of established vegetation. Existing land uses include the existing Braemar Power Station, Powerlink's Braemar Substation, and high voltage transmission infrastructure. Access to the site is provided via existing private driveways from Grahams Road.

The site and Project extents are presented as Figure 1.

2.2. PROPOSED WORKS

The Project is expected to provide:

- + up to 250 megawatts (MW) gas fired power station in the north-eastern portion of the site, and
- + potentially a 2,000 megawatt-hours (MWh) lithium-ion Battery Energy Storage System (BESS) in the north-western portion of the site.

The site layout plan is provided as Figure 2.

2.3. TOPOGRAPHY & LAWFUL POINT OF DISCHARGE

The BESS occupies an area of approximately 10.4 ha, including the existing Powerlink transmission corridor, while the expansion to gas power station covers an area of approximately 1.5 ha.

The external catchments together with the site area discharge through the centre of the site before exiting via the northern boundary. These external catchments exist to the west, and south of the site, conveying runoff through the Project area discharging to the north.



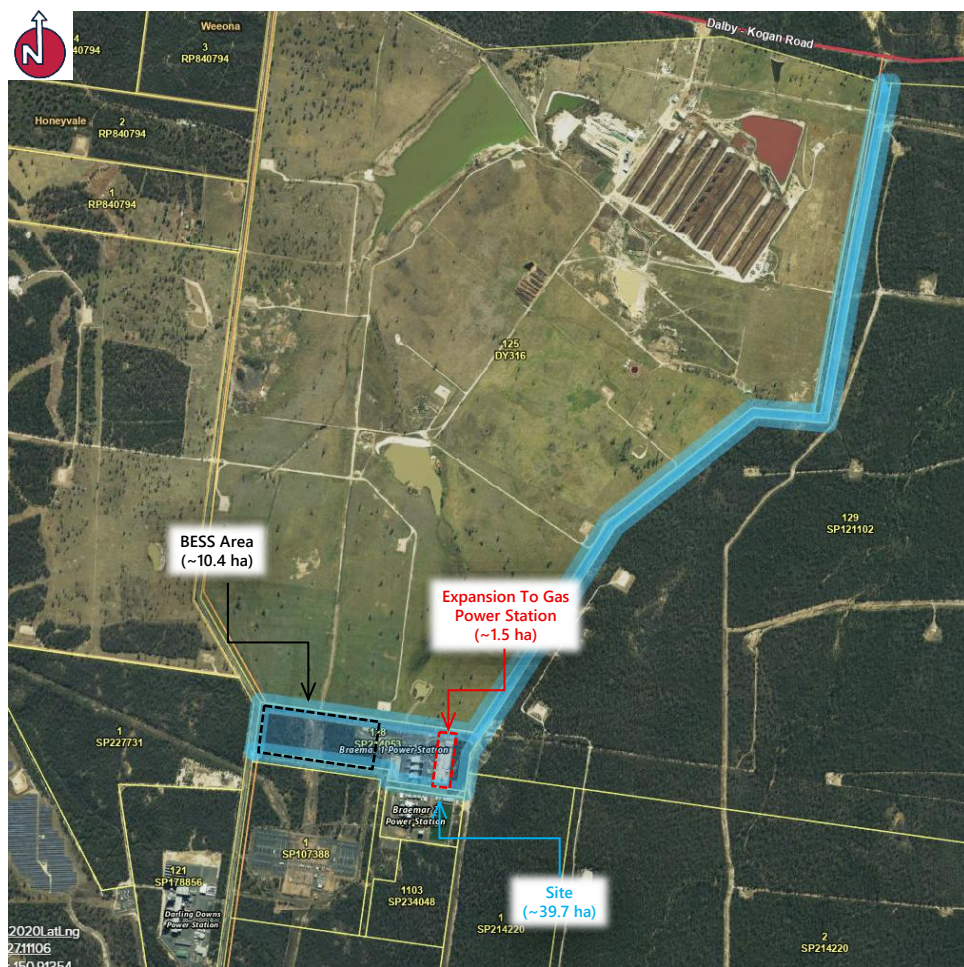


Figure 1 – Project Area Locality Plan (QLD Globe)

3 HYDROLOGIC MODELLING

3.1. DESIGN OBJECTIVES

This report has been prepared to demonstrate pre-development peak flow rates can be maintained for the full range of design storm events and that no adverse impacts in relation to drainage and flooding can be expected as a result of the development.

Details of the hydrologic and hydraulic modelling undertaken are provided in the following sections.

3.2. METHODOLOGY

An integrated hydrologic and hydraulic model was constructed using XP-SWMM. The model represents the sub-catchments as a network of nodes linked to 1D drainage elements. The design rainfall is routed through the network after appropriate losses (initial and continuing) and roughness factors are applied, resulting in a surface runoff hydrograph for each sub-catchment.

3.2.1. HYDROLOGY

The XP-SWMM runoff-routing model has been used to estimate design flood discharges within the study area, and a peak flow comparison carried out using the Rational Method. The XP-SWMM model was used to estimate the 63 % to 1 % Annual Exceedance Probability (AEP) storm event for the 15 to 360-minute standard duration events using the ARR DataHub ensemble patterns.

3.2.2. RAINFALL DATA

Intensity Frequency Duration (IFD) data for the site has been derived using the Bureau of Meteorology (BOM) 2016 Rainfall IFD Data System. The rainfall intensities applied to the hydrologic modelling are summarised in Table 1.

3.2.3. ROUTING

Hydrologic modelling has been undertaken using the Laurenson runoff routing method. The Laurenson method requires the catchment to be defined by its pervious and impervious areas. A fraction impervious of 0 % has been applied to the pervious portion and 100 % to the impervious portion.



Figure 2 – Braemar Energy Hub - Project Area



3.2.4. ROUGHNESS COEFFICIENTS

The Manning's roughness coefficients have been varied for the impervious and pervious portions of the catchment. The following values were applied:

- + Developed catchment:
 - o $n = 0.0275$ for compacted gravel,
 - o $n = 0.035$ for gravel sheeted,
 - o $n = 0.025$ for mixed gravel sheeted,
 - o $n = 0.016$ for gas power station,
 - o $n = 0.015$ for other impervious area
- + Undeveloped catchment:
 - o $n = 0.035$ to 0.06

3.2.5. RAINFALL LOSSES

Initial Loss (IL) and Continuing Losses (CL) have been applied to the modelling, and these values have been varied for the impervious and pervious portions of the catchment. The following loss rates have been applied:

- + Developed catchment (road) IL = 1 millimetre (mm), CL = 0 millimetre per hour (mm/hr)
- + Developed catchment (mixed gravel sheeted) IL = 5 mm, CL = 1 mm/hr
- + Developed catchment (compacted gravel) IL = 2 mm, CL = 1 mm/hr
- + Developed catchment (gravel sheeted) IL = 2 mm, CL = 0 mm/hr
- + Developed catchment (other) IL = 0 mm, CL = 0 mm/hr
- + Undeveloped catchment IL = 10 mm, CL = 2 mm/hr

Table 1 – Intensity Frequency Duration Data Applied to Hydrologic Assessment

DURATION	RAINFALL INTENSITY (mm/hr)						
	63% AEP	0.5 EY [#]	0.2 EY [*]	10% AEP	5% AEP	2% AEP	1% AEP
5	102.0	137.0	176.0	194.0	226.0	267.0	299.0
10	81.6	123.0	158.0	154.0	178.0	209.0	233.0
15	68.4	103.0	132.0	129.0	149.0	175.0	195.0
20	59.2	86.8	111.0	112.0	129.0	152.0	170.0
25	52.4	75.1	95.9	99.1	115.0	135.0	151.0
30	47.0	66.4	84.9	89.2	103.0	122.0	136.0
45	36.4	59.7	76.3	69.2	80.4	95.4	107.0
60	29.9	46.1	59.1	57.0	66.4	79.0	88.9
90	22.4	37.9	48.6	42.6	49.8	59.5	67.2
120	18.1	28.3	36.3	34.4	40.2	48.2	54.5
180	13.3	22.8	29.2	25.2	29.4	35.3	40.1

3.2.6. CATCHMENTS & LAWFUL POINT OF DISCHARGE

A combination of detailed LIDAR for the site (captured on the 21-10-2024), and Shuttle Radar Topography Mission (SRTM) LIDAR data (30 metre (m) gridded data) together with aerial imagery was used to define the site catchments and any external catchments contributing runoff to the study area. The site has been considered as three (3) internal catchments and three (3) external catchments in both the pre- and post-development scenarios.

Note, the site catchments A1, A2 and A3 represent only part of the overall site itself, but form the focussed area of proposed and existing development. The external catchments within this report refer to catchments that contribute flow to or near the Project area. An extract of the pre-development catchment plan is provided as Figure 3, with further details provided in Appendix A.





Note that the pre-development delineation is similar to the post-development, without the developed areas shown within catchment A1 and A2. Catchment details are also summarised in Table 2. Given the developed site will primarily be a hardstand pad, a fraction impervious of 100 % has been adopted and a weighted average calculated for areas where there is a mixture of pervious and impervious surfaces.

Two (2) Lawful Points of Discharge (LPD) LPD 1 (west) and LPD 2 (east) exist, both being located along the northern part of the site. The site will be developed to ensure both these LPDs are maintained with no adverse impacts in relation to drainage as a result of the development.

Table 2 – Catchment Details Applied to Hydrologic Assessment

CATCH ID	AREA (ha)	FRACTION IMPERVIOUS (%)	SLOPE (%)
Ext 1	5.374	98	1.0
Ext 2	19.666	32	1.0
Ext 3	12.749	14	1.0
Pre A1	5.412	2	0.5
Pre A2	5.642	2	0.5
Pre A3	8.582	69	1.2
Pre A4	0.909	27	0.5
Pre A5	1.372	34	0.5
Post A1	5.412	77	0.5
Post A2	5.642	59	0.5
Post A3	8.582	69	1.2



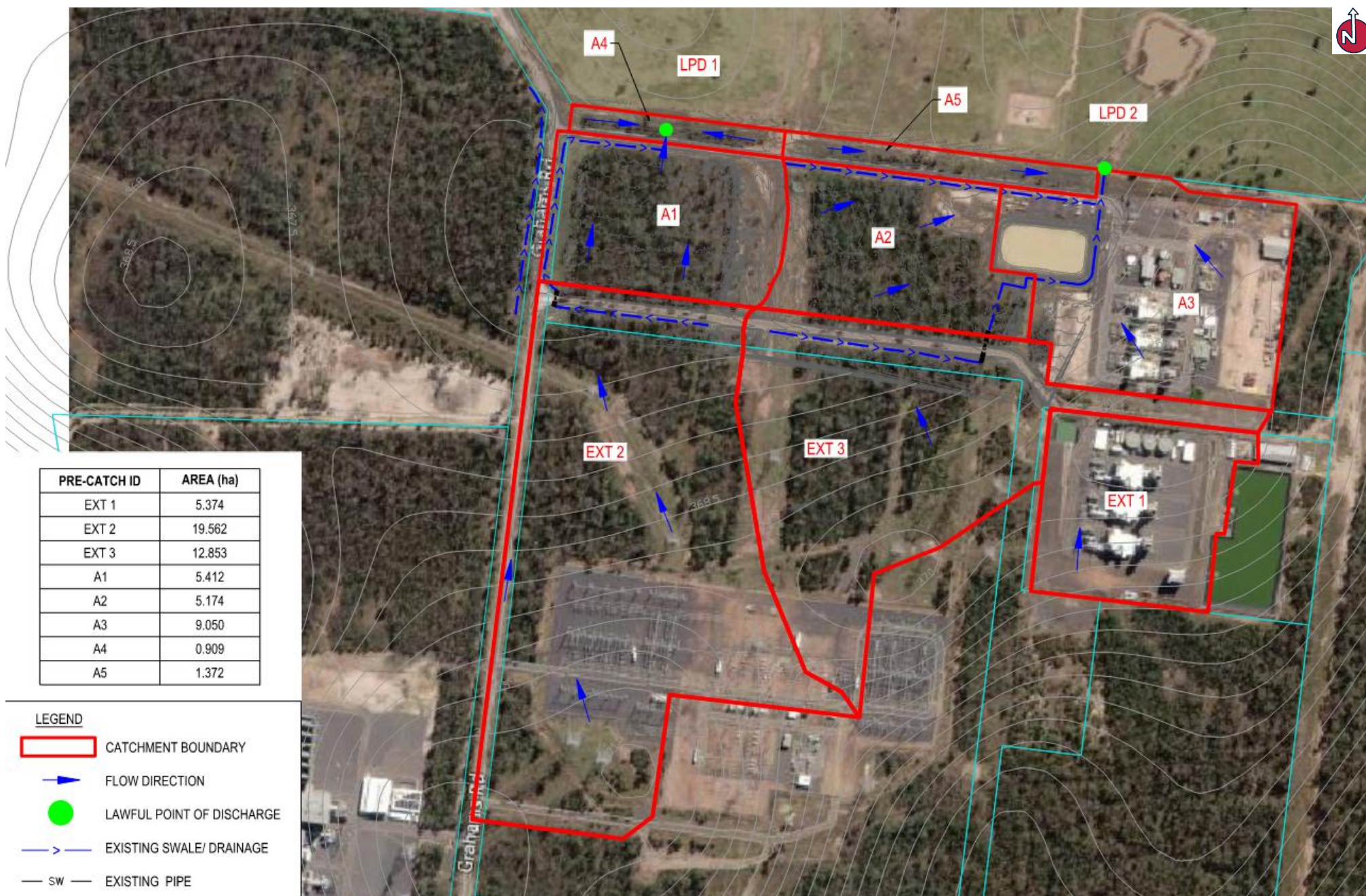


Figure 3 – Pre-Development Catchment Plan



4 HYDRAULIC MODELLING - QUANTITY

4.1. DESIGN OBJECTIVES

The design objective is to demonstrate no actionable nuisance in terms of drainage as a result of the development. Where required, mitigation measures are proposed to ensure pre-development peak discharges are maintained. In order to maintain discharge via both LPD 1 and LPD 2, a detention basin for each catchment has been proposed for the discharge from site catchment A1 and A2 (LPD 1 and LPD 2).

4.1.1. DETENTION SYSTEM CHARACTERISTICS

Detention basins have been modelled for Catchments A1 and A2 during the operational phase of the Project. A basin will be provided for both Catchment A1 and A2, and are designed to be offline from the other site and external catchments. Both detention basin will provide a staged outlet structure to ensure the pre-development peak flow rates are maintained for the full range of design storm events at LPD 1 and LPD 2. A summary of the modelling results, including details of the proposed outlet structure are summarised in Table 3, Table 4 and Table 5. Further details of the detention system will be provided during the detailed design phase of the Project.

Table 3 – Summary of Required Detention Volumes and Outlet Configuration

BASIN/ LPD	MAX. DEPTH [#] (m)	MAX. VOLUME [#] (m ³)	OUTLET CONFIGURATION	
A1/1	1.126 m	2,112 cubic meters (m ³) (at 1 % AEP peak water level)	+	0.2 x 0.2 m Orifice at base in 600 x 600 mm riser with crest at 0.70 m above base, with a 375 mm dia. outlet pipe IL at 0.8 m below base; and
			+	High flow spillway, 10 m width at 1.10 m above base.
A2/2	1.172 m	799 m ³ (at 1 % AEP peak water level)	+	0.15 x 0.3 m Orifice at base in 900 x 900 mm riser with crest at 0.90 m above base, with a 450 mm dia. outlet pipe IL at 0.8 m below base; and
			+	High flow spillway, 10 m width at 1.1 m above base.

NOTE: Reported volume is combined detention basin and swale volume at peak water level

A comparison of the pre-development, post-development (unmitigated) and post-development (mitigated) flow rates at LPD 1 and LPD 2 for the median storm event is provided as Table 4. These flow rates are reported in meters cubed per second (m³/s).

Table 4 – Pre- vs Post-Development (Unmitigated and Mitigated) at LPD A1

AEP/EY	PEAK FLOW (m ³ /s)			
	PRE	POST-UNMIT.	POST MIT	DIFFERENCE
63 %	1.484	2.243	1.454	-0.030
0.5 EY	1.878	2.874	1.854	-0.024
0.2 EY	2.589	3.857	2.53	-0.059
10 %	2.998	4.456	2.901	-0.097
5 %	3.498	5.149	3.353	-0.145
2 %	4.004	6.176	3.888	-0.116
1 %	4.437	6.827	4.296	-0.141

Table 5 – Pre- vs Post-Development (Unmitigated and Mitigated) at LPD A2

AEP/EY	PEAK FLOW (m ³ /s)			
	PRE	POST-UNMIT.	POST MIT	DIFFERENCE
63 %	3.472	4.180	3.406	-0.066
0.5 EY	4.530	5.463	4.475	-0.055
0.2 EY	5.905	7.155	5.817	-0.088
10 %	6.662	7.823	6.354	-0.308
5 %	7.777	9.190	7.517	-0.260
2 %	9.156	11.137	9.064	-0.092
1 %	10.285	12.511	10.252	-0.033

NOTE: (1) Difference values reported represent the post-development mitigated peak flow rates minus the pre-development peak flow rate. Therefore, negative values represent a reduction in peak flow rate in the post-development scenario. Results presented for the Median storm event.

As presented, all flows (1 % AEP to 63 % AEP) have been mitigated by the incorporation of the detention basin A1 and A2 at LPD 1 and LPD 2. Therefore, there will be no adverse impacts related to flooding/drainage for roadways and properties to the north of the site.





4.2. EXTERNAL CATCHMENT DIVERSION DRAIN SIZING

To convey external catchments (EXT 3) through the site in a non-erosive manner, preliminary sizing of a diversion drain has been undertaken for the 10 % AEP and 1 % AEP events.

Results from the hydrologic and hydraulic modelling provide the following peak flow rate entering the site:

- + 10 % AEP = 3.32 m³/s
- + 1 % AEP = 5.25 m³/s

Table 6 presents the preliminary drain sizing calculations for a vegetated drain, the alignment of which will be determined based on detailed survey and further modelling during the detailed design phase of the Project. Refer to Figure 4 and Appendix A for further details.

During the detailed design phase and development of the bulk earthworks plan, consideration will also need to be given to stabilising the batter in the vicinity of these culverts and the proposed ancillary infrastructure. Gabion baskets, grouted rock, or a concrete sleeper retaining wall may be required to ensure external catchment runoff can enter the site and not cause damage to the fill pad required for the Project.



Table 6 – External Diversion Drain Properties

DRAIN ID	FLOW - Q (m ³ /s)	SLOPE (%)	BASE WIDTH (m)	BATTER SLOPE (1 in x)	LINING	MANNING ROUGH COEFF	MAX PERM VEL (m/s)	DESIGN VEL (m/s)	DEPTH OF FLOW (m)	DEPTH WITH F/BOARD (m)	DRAIN TOP WIDTH (m)
DIVERSION (1%)	5.40	0.005	4	4	Turf	0.04	2	0.79	0.90	1.05	12.40
DIVERSION (10%)	3.60	0.005	4	4	Turf	0.04	2	0.71	0.73	0.88	11.06

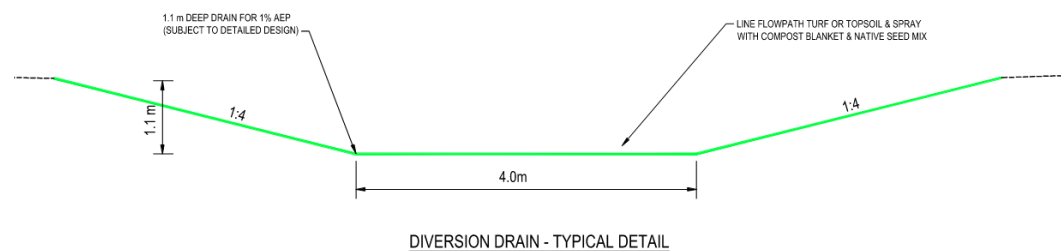


Figure 4 – External Diversion Drain & Typical Section



5 FIRE FIGHTING WATER SUPPLY

5.1. HYDRANT REQUIREMENT

Australian Standards (AS) 2419.1:2021 outlines the requirements for the number of fire hydrant outlets required to flow simultaneously based on the BESS area. Table 2.2.5(D) of AS 2419.1:2021, reproduced herein as Table 7 identifies the number of fire hydrants required to flow simultaneously.

Table 7 – Number of hydrants required to flow simultaneously – open yards

YARD AREA	NO. FIRE HYDRANT OUTLETS
< = 3,000 meters squared (m ²)	1
> 3,000 m ² <= 9,000 m ²	2
> 9,000 m ² <= 27,000 m ²	3
> 27,000 m ²	4

5.2. CAPTURE VOLUME REQUIREMENT

5.2.1. FIRE FIGHTING

The BESS area for this assessment is estimated at approximately 2.4 ha for both the western and eastern battery storage areas. Therefore, a minimum of 3 hydrants will be required for each area.

Assuming a minimum design flow rate of 10 litres per second (L/s) per hydrant results in a combined flow of 30 L/s. Based on a 4 hour supply, a minimum firefighting water supply storage of 432,000 L (432 m³) should be provided for each BESS area.

The proposed fire hydrant flow rates and on-site storage requirements will need to be discussed and agreed with the Queensland Fire Department and the State Assessment and Referral Agency (SARA).

6 DISPERSIVE SOILS

Review of photos from the site, especially around the existing culverts to the south suggest the soils are dispersive. The presence of dispersive/sodic soils has the potential to cause issues during construction and through the operational phase of the Project if left untreated. If found to be dispersive, amelioration will be required and is to be guided by a Dispersive Soils Management Plan (DSMP) that will identify amelioration requirements (typically gypsum treatment), as well as other management measures.

6.1. EMERSON CLASS

The Emerson Class number is a measure of Soil Dispersion potential. Emerson Class Numbers (ECN) of 1 or 2 are indicative of soil being potentially highly dispersive. The risk reduces for higher ECNs as shown in Table 8. However, the Emerson class number may not be a good indicator of the erosion potential of soils that are both sodic and saline. The dispersion potential and erosion of such soils must be based on soil chemistry such as the Exchangeable Sodium Percentage (ESP). The assessment for potential dispersive soils should also be based on soil chemistry, as detailed in Section 6.2.

Table 8 – Emerson Class interpretation

EMERSON CLASS	EROSION POTENTIAL
1 or 2	Very high potential for erosion
3	High potential for erosion
4	Medium potential for erosion
5	
6	
7 or 8	Low potential for erosion by dispersion process





6.2. SOIL CHEMISTRY

Testing is recommended for the following parameters to inform further erosion and sediment management measures, as well as to identify amelioration requirements during construction and inform landscaping/revegetation planning.

For topsoil this can be done in accordance with the Transport and Main Roads Technical Specification 16 (MRTS16) Form C, or as a minimum,

- + Potential of hydrogen (pH) (water and CaCl_2)
- + Electrical Conductivity
- + Cation Exchange Capacity, (including Ca, Mg, K, Na, Al)
- + Organic Carbon, Total Nitrogen
- + Plant available Phosphorus, and Potassium

For subsoil, this can be done in accordance with MRTS16 Form E, or as a minimum,

- + pH (water and CaCl_2)
- + Electrical Conductivity
- + Cation Exchange Capacity, (including Ca, Mg, K, Na, Al)
- + Exchangeable Sodium Percentage
- + Emerson's Dispersion Index (No.)
- + Nitrate and nitrogen

Soils are considered dispersive if:

- + the Exchangeable Sodium Percentage (ESP) exceeds 6 %; or
- + the combined percentage of clay ($< 0.002 \text{ mm}$) plus half the percentage of silt ($0.002\text{-}0.02 \text{ mm}$), expressed as a decimal fraction, then multiplied by the Dispersion Index (DI); is greater than 10 %.

6.3. SURFACE MATERIAL TREATMENT

Treatment of dispersive soils typically requires gypsum application rates between 5 and 20 tonnes per hectare (t/ha), however in severe cases this may be exceeded. Application rates consider a gypsum purity of 80 % to achieve a sodium percentage within soil of 5 % or less, which is considered non-sodic. Application rates are to be provided for treatment depths of 0.2 m and 0.3 m, being the minimum and recommended depths respectively. It is recommended that application rates be correlated with sample depth and work areas to provide a suite of standardised treatments across the alignment based on degree of treatment required, stage of works and ultimate use of material.

6.4. DRAINAGE PROTECTION

In the presence of dispersive soils, where practical, water should be diverted away from such materials. Drains must not be excavated into dispersive soils without either lining with an impermeable material, lining with non-erosive, non-sodic material or gypsum treated material placed and stabilised to handle maximum flow velocities for the contributing catchment up to the design event. Construction of large (permanent) diversion drains must be undertaken offline (i.e. without potential for inflow) as much as possible and scheduled for the drier winter period.

The use of rock check dams (or similar velocity control measures) should not be used in locations with potential dispersive soils exposed within the drainage path, unless the drainage paths are lined with a layer of non-dispersive soils.

The use of rock protection at inlets and outlets of culverts, chute lining or other drainage locations should account for potential dispersive soils and incorporate a layer of gypsum treatment to underlying soils.





7 STATE CODE 27

7.1. PURPOSE OF THIS CODE

The purpose of this code is to ensure that development of a battery storage facility:

1. avoids and/or appropriately integrates risk mitigation strategies and responsive design measures to address potential fire hazards, and other environmental risks, ensuring long- term safety and resilience for people, surrounding land uses and the environment.
2. minimises the loss or fragmentation of high-quality agricultural land;
3. does not result in unacceptable adverse impacts on individuals, communities, the environment, adjacent sensitive land uses and sensitive receptors, landscape values and infrastructure and services.
4. is decommissioned in a timely and efficient manner that reuses, recycles, and/or repurposes materials to the greatest extent possible and rehabilitates the environment.

7.2. PERFORMANCE OUTCOMES

The code lists a series of performance outcomes (POs) that must be satisfied. The major categories and performance outcomes relevant to flood study and stormwater management assessment, including considerations in relation to erosion and sediment control during construction are discussed in the following sections.

7.2.1. NATURAL HAZARDS

PO13 - Development is located and sited to avoid natural hazard areas including high erosion risk areas and bushfire prone areas.

As noted herein, photos around the site, especially around the existing culverts to the south suggest the soils are dispersive. It is recommended prior to construction, soil testing be undertaken to confirm the dispersive potential and amelioration be undertaken per recommendations of a DSMP.

Early identification, amelioration and design of lined drains to an appropriate design standard can reduce the erosion risks associated with the Project both during construction and operation.

PO14 - Where development cannot be located and sited to avoid natural hazard areas (e.g. Bushfire prone areas, and high erosion risk areas), demonstrate that:

- + *there is no suitable alternative location;*
- + *infrastructure can function effectively during and after a natural hazard event; and*
- + *mitigation measures are implemented to reduce the risk to people, property and the environment to a tolerable level.*

The Project area is not affected by flooding or overland flow paths. The modelling and basin sizing undertaken and detailed herein ensures best practice measures will be implemented and fire-fighting containment systems in accordance with the relevant guidelines and Australian Standards will be implemented on the site to reduce risk to people, property and the environment.

7.2.2. PROTECTING WATER QUALITY AND STORMWATER MANAGEMENT

PO16 - Development

- + *minimises the disturbance of high risk soils; and*
- + *manages the release of soil based contaminants.*

Best practice erosion and sediment control during construction will ensure runoff is treated to an appropriate standard (i.e. Total Suspended Solids (TSS) < 50 milligrams per litre (mg/L) and pH 6.5 - 8.5). Clean water diversion will be provided around the Project area to reduce the volume of 'dirty' runoff requiring treatment, and all temporary drainage measures during construction will be designed to ensure the design flow rates can be conveyed in a non-erosive manner (in accordance with Table 4.3.1 (International Erosion Control Association (IECA), 2025)).

As detailed herein, during the operational phase, on-site detention measures have been sized to ensure the pre-development peak flow rates are maintained at the discharge locations. Therefore, there will be no adverse impacts in relation to drainage or flooding for adjacent properties and roadways.

It is recommended the internal drainage system be designed to cater for the 10 % AEP critical storm event. The risk of erosion or scour from concentrated flows exiting the Project area can be reduced through the incorporation of energy dissipaters and scour protection designed in accordance with the Queensland Urban Drainage Manual (QUDM, 2016).





Mobilisation of sediment will be minimised by ensuring any batters associated with the Project area are stabilised/revegetated. The use of concrete slabs/foundations and gravel sheeting throughout the Project area, combined with lined drains to ensure runoff can be conveyed in a non-erosive manner will reduce the likelihood of sediment mobilisation.

PO17 - Development maintains the water quality of receiving waters, waterways and wetlands by:

- + *avoiding locating in waterways and wetlands;*
- + *minimising crossings of and interference with natural drainage lines, farm drainage and irrigation infrastructure;*
- + *minimising erosion and sediment run off;*
- + *managing drainage control; and*
- + *preserving the bank stability of affected waterways and drainage lines avoiding non-essential hardening or unnatural modification of the waterway.*

The proposed development is located clear of any biodiversity or water quality mapping provided by SARA. Refer to Appendix A for an extract of the SARA mapping for the Project area.

Construction activities will incorporate the best practice controls detailed herein, thereby reducing the risks of contaminants leaving the site.

The 10 % AEP has been nominated as the minimum standard during the operational phase of the development. On site detention is provided to ensure no increase in peak flow rates from hardstand areas associated with the Project.

Any upgrades to access tracks and drainage external to the Project area should also be designed to this standard, again with linings to convey the runoff in a non-erosive manner. The discharge location of all drains and culverts etc will include energy dissipation/scour protection designed in accordance with QUDM and level spreaders to replicate the pre-development flow regime.

Lined batter chutes will be provided for the BESS pad (if required), again to reduce the likelihood of sediment mobilisation resulting from scour of batters.

PO18 - Development prevents the release of contaminants to surface water or groundwater in the event of an incident, including a fire or explosion.

The proposed containment system complies with the required Australian Standards and therefore reduces the risk associated with the release of runoff that may contain contaminants.

The use of dual-wall/self-bunded battery container systems is increasing. These systems provide an inner container to house the batteries while the outer containment shell forms a bunded storage system to capture and contain contaminated firefighting water. During the detailed design phase, the containment system design will be revised once the battery technology to be adopted is known, factoring in any self containment capacity.

PO19 - Development minimises interference with overland flow paths.

Based on the site specific LIDAR data provided for this assessment, it can be seen the Project area is located on a ridgeline and does not block any overland flowpaths.





8 CONCLUSION

Based on the results of this assessment, we have demonstrated the Project will not result in any adverse impacts in relation to peak flow rates at the existing discharge locations. Two (2) detention basins will be required to ensure the pre-development flow regime are maintained for the Project. The following on-site detention volumes are required at the peak of the 1 % AEP event:

- + Catchment A1/LPD 1 2,112 m³, and
- + Catchment A2/LPD 2 799 m³.

Note, these basins need to be free-draining between storm events so the detention volume is always available. Earthworks will be required to set the BESS pad level and provide sufficient fall for runoff to enter the basins, and discharge to the north and under the existing roadway and the LPDs.

Given the eastern portion of the site is currently largely impervious, there is an insignificant increase in peak flow rates as a result of the proposed expansion to the gas power station. Therefore, no on-site basin is required for that portion of the Project.

Preliminary sizing of a diversion drain was undertaken to safely convey the external flows through the site and around the proposed detention basin. Calculations estimate a 12 m wide (top width) drain will sufficiently convey the required flows.

A geotechnical investigation including testing for Dispersive Soils is strongly recommended, based on the photos provided for the site and surrounding drainage lines.

In accordance with State Code 27, each of the BESS areas will be required to capture potential polluted fire fighting water. Each BESS area requires 432 m³ of storage to satisfy PO18. Further details will be provided and these volumes refined during the detailed design phase, in consultation with the Queensland Fire Department and SARA.

Proper management of stormwater during both construction and operation will be critical to minimising erosion, scour, and potential off-site impacts. Permanent drains should be designed to at least the 10 % AEP standard, with appropriate linings selected to withstand predicted velocities.

Overall, this study demonstrates the Braemar Energy Hub can operate with minimal flood and environmental hazards and no increase in risk to nearby properties, roadways and public safety.

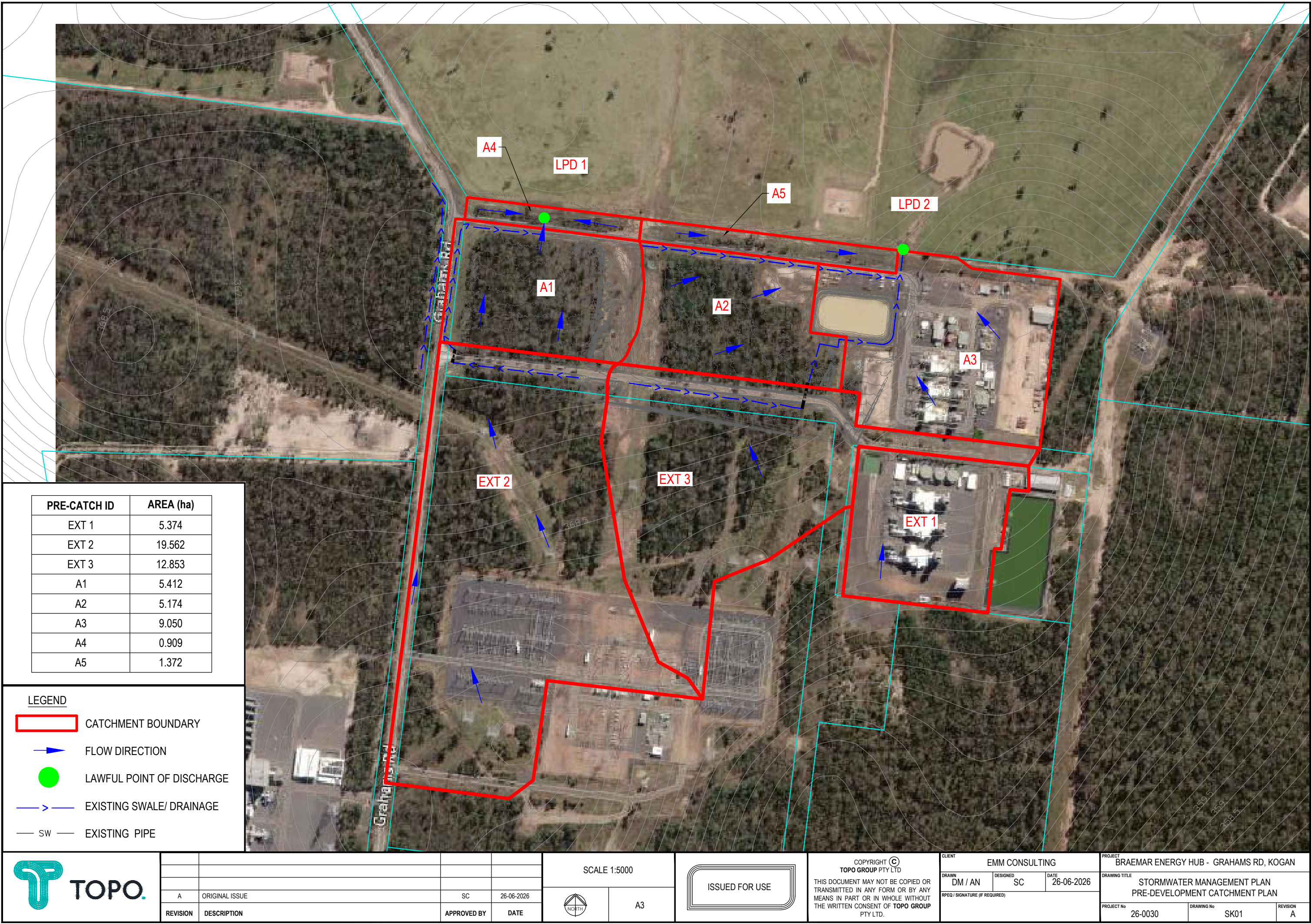




APPENDIX A

CATCHMENT PLANS & SARA MAPPING





PRE-CATCH ID	AREA (ha)
EXT 1	5.374
EXT 2	19.562
EXT 3	12.853
A1	5.412
A2	5.174
A3	9.050
A4	0.909
A5	1.372

LEGEND

- CATCHMENT BOUNDARY
- ➔ FLOW DIRECTION
- LAWFUL POINT OF DISCHARGE
- EXISTING SWALE/ DRAINAGE
- SW — EXISTING PIPE



A	ORIGINAL ISSUE	SC	26-06-2026
REVISION	DESCRIPTION	APPROVED BY	DATE

SCALE 1:5000



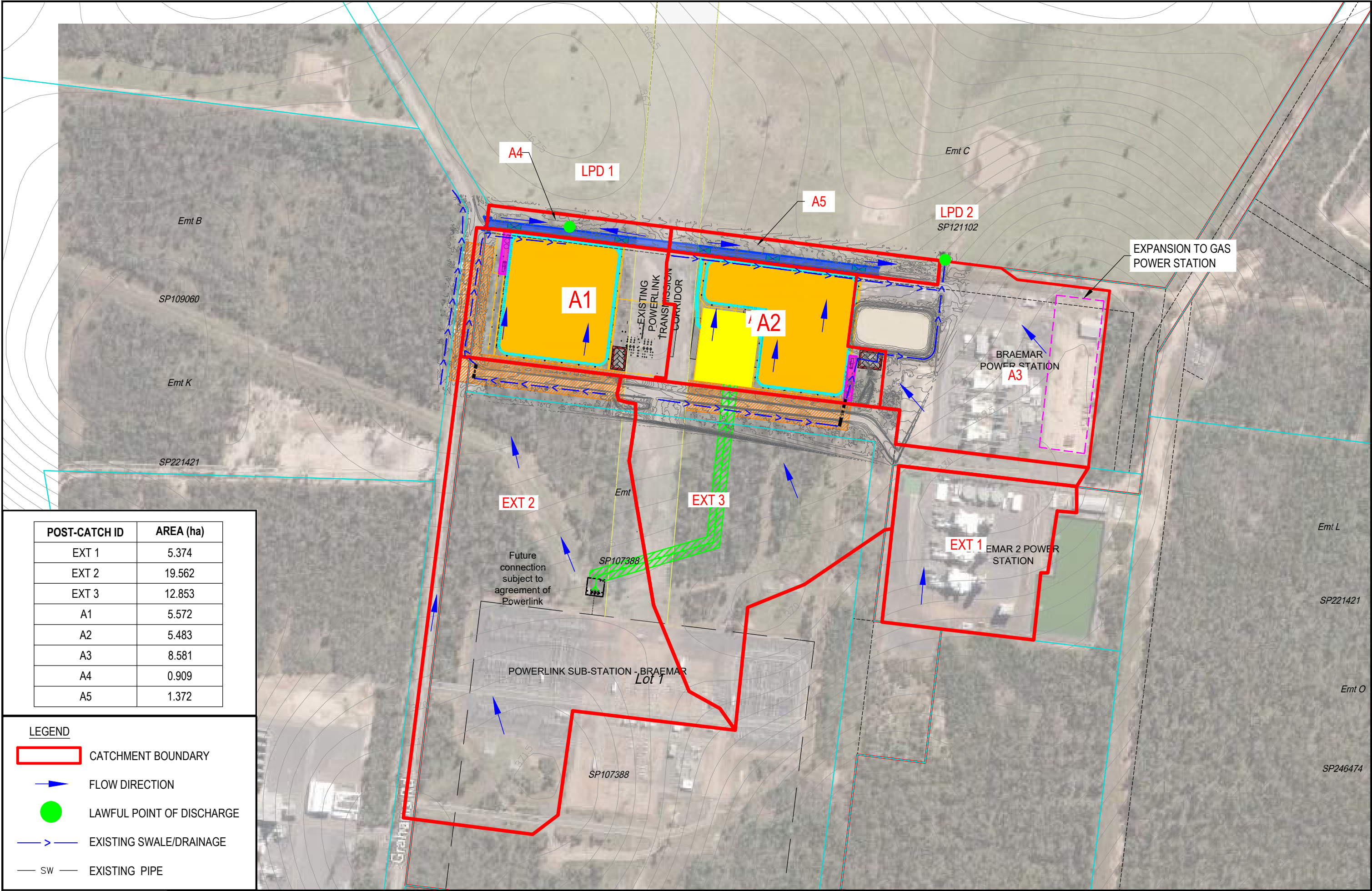
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PROJECT BRAEMAR ENERGY HUB - GRAHAMS RD, KOGAN		
DRAWING TITLE STORMWATER MANAGEMENT PLAN PRE-DEVELOPMENT CATCHMENT PLAN		
PROJECT No 26-0030	DRAWING No SK01	REVISION A



POST-CATCH ID	AREA (ha)
EXT 1	5.374
EXT 2	19.562
EXT 3	12.853
A1	5.572
A2	5.483
A3	8.581
A4	0.909
A5	1.372

LEGEND

- CATCHMENT BOUNDARY
- ➔ FLOW DIRECTION
- LAWFUL POINT OF DISCHARGE
- EXISTING SWALE/DRAINAGE
- SW — EXISTING PIPE



A	ORIGINAL ISSUE	SC	26-06-2026
REVISION	DESCRIPTION	APPROVED BY	DATE

SCALE 1:5000



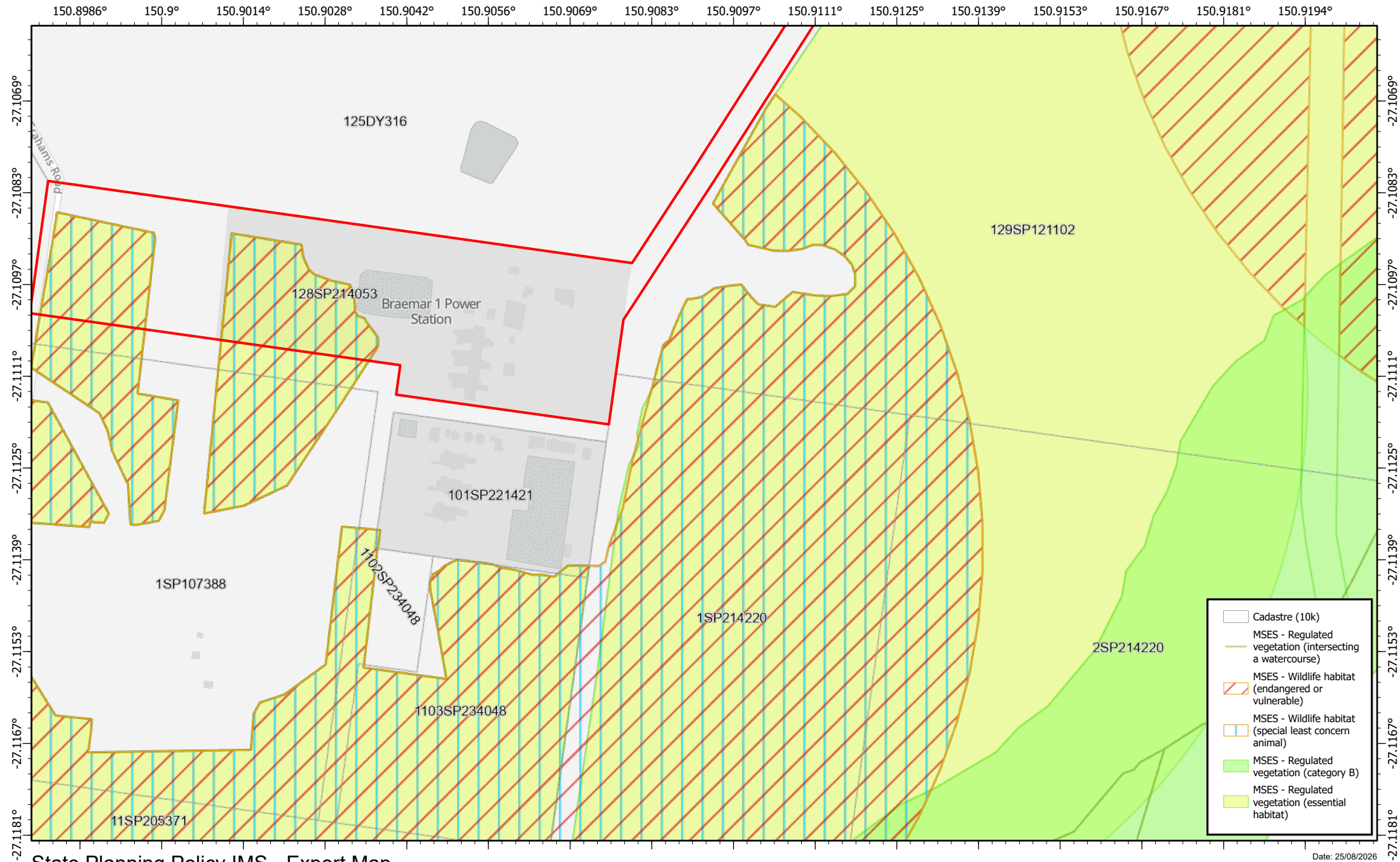
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DRAWING TITLE STORMWATER MANAGEMENT PLAN POST-DEVELOPMENT CATCHMENT PLAN		
PROJECT No 26-0030	DRAWING No SK02	REVISION A



State Planning Policy IMS - Export Map

Making or amending a local planning instrument and designing land for local infrastructure

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Queensland Government

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Appendix I

Air quality impact assessment

Braemar Energy Hub

Air quality impact assessment

Prepared for Alinta Energy Pty Ltd

August 2026

Braemar Energy Hub

Air quality impact assessment

Alinta Energy Pty Ltd

E260055 RP5

August 2026

Version	Date	Prepared by	Reviewed by	Comments
V1	11 August 2026	A Gilbert F Manansala	F Manansala S Fishwick	Draft
V2	27 August 2026	A Gilbert F Manansala	F Manansala S Fishwick	Final

Approved by



Francine Manansala
Senior Associate, Team Leader – Air Quality and Climate
27 August 2026

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TABLE OF CONTENTS

1	Introduction	1
1.1	Background	1
1.2	Project terminology	1
1.3	Purpose and scope	1
2	Project description	4
2.1	Key Project components	4
3	Site setting and assessment locations	6
3.1	Site and surrounding area	6
3.2	Assessment locations	6
4	Pollutants and air quality objectives	7
4.1	Potential air pollutants	7
4.2	Air quality objectives	7
5	Assessment methodology	9
5.1	Overview	9
5.2	Characterisation of existing environment	9
5.3	Assessment scenario	9
5.4	Emissions estimation	10
5.5	Meteorological and dispersion modelling	10
5.6	NO _x to NO ₂ conversion	10
6	Meteorology	11
6.1	Meteorological monitoring data	11
6.2	Prevailing winds and selection of a representative year	11
6.3	Meteorological modelling	12
7	Background air quality	15
7.1	Existing sources of emissions	15
7.2	Neighbouring emission sources	15
7.3	Air quality monitoring data resources	16
7.4	Summary of available air quality data	16
7.5	Assumed background concentrations	19
8	Emissions inventory	20
8.1	Operational Project emissions	20
8.2	Neighbouring emissions sources	22

8.3	In-stack concentrations	23
9	Air dispersion modelling	25
9.1	Incremental (Project-only) results	25
9.2	Comparison of scenario results	29
9.3	Cumulative (Project + neighbour + background) results	31
10	Management and mitigation	34
10.1	Air quality mitigation measures	34
10.2	Start-up and shut down procedures	34
11	Conclusion	35
	References	36
	Abbreviations	37

Appendices

Appendix A	Meteorological analysis	A.1
Appendix B	Incremental (Project-only) contour plots	B.1

Tables

Table 1.1	Project terms and definitions	1
Table 2.1	Project description summary	4
Table 3.1	Assessment locations	6
Table 4.1	Regulatory framework relevant to the AQIA	7
Table 4.2	Air quality objectives relevant to the Project	8
Table 6.1	Average wind speed and percentage calms – BoM Dalby Airport station	11
Table 7.1	Summary of available AQMSs	16
Table 7.2	NO ₂ statistics for Hopeland AQMS	17
Table 7.3	CO statistics for Hopeland AQMS	17
Table 7.4	Summary of adopted background air quality concentrations	19
Table 8.1	Project emissions parameters	20
Table 8.2	Neighbouring source parameters	22
Table 8.3	Estimated in-stack emission concentrations against NSW POEO Clean Air Regulations limits	24
Table 9.1	Predicted incremental (Project-only) concentrations – Scenario 1 and 2	27
Table 9.2	Highest predicted incremental NO ₂ concentrations (µg/m ³)	29
Table 9.3	Highest predicted incremental CO concentrations (mg/m ³)	31
Table 9.4	Highest predicted incremental VOC concentrations (µg/m ³)	31
Table 9.5	Predicted cumulative (Project + neighbouring emission sources + background) concentrations – Scenario 1 and 2	32
Table A.1	Monthly surface roughness length values by sector	A.10

Table A.2	Monthly Bowen ratio and albedo values (all sectors)	A.10
-----------	---	------

Figures

Figure 1.1	Regional context	2
Figure 1.2	Local context and assessment locations	3
Figure 6.1	AERMET-generated diurnal variation in atmospheric stability – BoM Dalby Airport – 2025	13
Figure 6.2	AERMET-generated diurnal variation in atmospheric boundary layer depth – BoM Dalby Airport – 2025	14
Figure 7.1	Timeseries 1-hour average NO ₂ and 8-hour rolling CO concentrations – Hopeland AQMS – 2018 to 2022	18
Figure 9.1	Model source locations	26
Figure 9.2	Comparison of predicted incremental NO ₂ concentrations for Scenario 1 and 2	30
Figure A.1	Annual wind speed and direction – on-site Braemar meteorological station – April 2025 to March 2026	A.2
Figure A.2	Data completeness plot – BoM Dalby Airport – 2021 to 2025	A.3
Figure A.3	Inter-annual variability in diurnal wind speed – BoM Dalby Airport – 2021 to 2025	A.4
Figure A.4	Inter-annual variability in diurnal wind direction – BoM Dalby Airport – 2021 to 2025	A.4
Figure A.5	Inter-annual variability in diurnal air temperature – BoM Dalby Airport – 2021 to 2025	A.5
Figure A.6	Inter-annual variability in diurnal relative humidity – BoM Dalby Airport – 2021 to 2025	A.5
Figure A.7	Inter-annual comparison of recorded wind speed and direction – BoM Dalby Airport – 2021 to 2025	A.6
Figure A.8	Seasonal wind speed and direction – BoM Dalby Airport – 2021 to 2025	A.7
Figure A.9	Diurnal wind speed and direction – BoM Dalby Airport – 2021 to 2025	A.7
Figure A.10	Land use map for AERSURFACE processing	A.9
Figure B.1	Predicted maximum 1-hour average NO ₂ concentrations (µg/m ³) - (Scenario 1) Project only	B.2
Figure B.2	Predicted annual average NO ₂ concentrations (µg/m ³) - (Scenario 1) Project only	B.3
Figure B.3	Predicted maximum 8-hour rolling average CO concentrations (mg/m ³) - (Scenario 1) Project only	B.4

1 Introduction

1.1 Background

Alinta Energy Pty Ltd (Alinta) is proposing to develop the Braemar Energy Hub Project (the Project) at 363 Grahams Road, Kogan, Queensland (QLD) (the site) within the Western Downs Region local government area (LGA). The Project’s regional and local context is shown in Figure 1.1 and Figure 1.2.

The Project includes the installation, operation, maintenance, and decommissioning of an expansion to the gas power station and will be co-located with the existing Braemar Power Station.

1.2 Project terminology

Table 1.1 provides a description of Project terms used throughout this report.

Table 1.1 Project terms and definitions

Terminology	Definition
The Project	The Project includes up to a 250 mega-watt (MW) expansion to the gas power station.
Project area	The Project area encompasses an area of 39.7 hectares (ha), which comprises the total extent of the lot boundaries that are defined as the real property description.
Project footprint	The Project footprint is the area directly impacted by the construction and/or operation of the development being the expansion to the gas power station and carparking area. The Project footprint encompasses an area of approximately 1.8 ha.

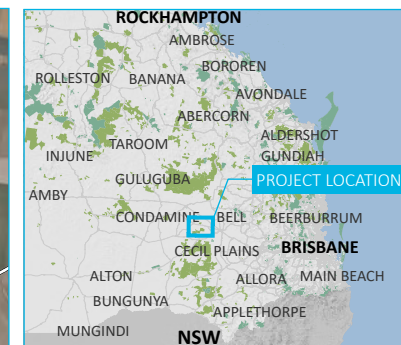
1.3 Purpose and scope

The purpose of the air quality impact assessment (AQIA) is to provide an assessment of air quality impacts from the Project to support the Planning Assessment Report (PAR).

This AQIA has been prepared in general accordance with the Department of Environment, Tourism, Science and Innovation’s (DETSI) guidance document *Application requirements for activities with impacts to air* (Queensland Government 2025).

The key objectives of this AQIA are to:

- describe the local setting and surroundings of the Project
- describe the relevant pollutants for assessment and applicable air quality objectives
- describe the existing environment, specifically:
 - meteorology and climate
 - existing air quality levels
- provide a detailed, operational air pollutant emissions inventory
- document results from atmospheric dispersion modelling conducted for the Project, including an analysis of Project-only and cumulative impacts accounting for baseline air quality
- provide an overview of mitigation measures proposed to be employed at the Project.



KEY

- Project area
- Existing environment
- Rail line
- Major road
- Named watercourse
- State forest

INSET KEY

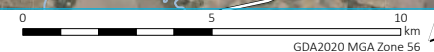
- Major road
- National park/nature reserve
- State forest

Regional context

Braemar Energy Hub
Air Quality Impact Assessment
Figure 1.1



Source: EMM (2026); DNRMMRD (2025); ESRI (2026); GA (2011); Alinta Energy (2026)





KEY

- Project area
- Assessment location
- Existing environment
 - Major road
 - Minor road
 - Named watercourse
 - State forest

Local context and
assessment locations

Braemar Energy Hub
Air Quality Impact Assessment
Figure 1.2



2 Project description

2.1 Key Project components

The Project will include the development of the following:

- gas-fired generators with a generation capacity of up to 250 megawatt (MW) – either gas turbines (GT) or reciprocating engines
- a gas pipeline connection from the existing gas pipeline to allow connection to the generators.

Alinta is currently proposing two options for the gas-fired generators (GTs or reciprocating engines) to ensure flexibility during the procurement process. Only one system will be constructed. Both options have been considered in this AQIA and are detailed in the proceeding chapters.

An overview of the Project is provided in Table 2.1.

Table 2.1 Project description summary

Project element	
Overview	
Project area	39.7 ha
Project footprint	1.8 ha
Gas-fired generation equipment	
Number of GTs/reciprocating engines	4/10
Individual unit generation capacity	4.5 MW–185 MW
Facility generation capacity	Up to 250 MW
Construction	
Construction period	Approximately 18 to 24 months
Construction workforce peak	Up to 100 workers
Temporary site access	Existing Grahams Road entry
Operations	
Project lifespan	20+ years
Operations workforce	Existing Braemar Power Station site staff (8–10)
Permanent site access	Existing Grahams Road entry
Decommissioning	
Decommissioning period	Approximately 18 to 24 months

Construction is expected to occur over an approximate 18-to-24-month period and will involve preparatory civil works, and the expansion of the gas power station. Construction activities are proposed to occur during standard construction hours.

Operational activities will be carried out by existing Braemar Power Station site staff, and will comprise regular maintenance of Project infrastructure, cleaning, equipment calibration and internal road maintenance.

The Project will have the ability to operate seven days a week, 365 days a year, but will operate as a peaking facility driven by electricity market demands.

The operational lifespan of the Project is expected to be around 25 years, with the potential to repower for a further 25 years following key equipment refurbishment or replacement.

3 Site setting and assessment locations

3.1 Site and surrounding area

The Project is co-located with the existing Braemar Power Station in the Western Downs Region of south-western QLD, approximately 35 kilometres (km) west of the town of Dalby and approximately 210 km north-west of Brisbane. Land use in the surrounding area of the Project is a mixture of state forests, agricultural landscapes, and mining and industrial operations.

The land at and surrounding the site is relatively flat, with elevations ranging from approximately 340 metres (m) Australian Height Datum (m AHD) to 400 m AHD within approximately 5 km of the Project.

3.2 Assessment locations

The nearest representative sensitive locations to the Project have been identified for the purpose of assessing potential air quality impacts. These are referred to in this report as ‘assessment locations’.

A selection of representative residential properties around the Project area have been chosen as assessment locations for this study. The assessment locations are presented in Table 3.1 and shown in Figure 1.2.

Table 3.1 Assessment locations

Assessment location ID	Classification	Coordinates (MGA 56)	
		Easting (m)	Northing (m)
R1	Residential	284881	6997723
R2	Residential	284293	6998067
R3	Residential	299265	7000416
R4	Residential	299594	7001039
R5	Residential	287767	7003549
R6	Residential	288358	7003945
R7	Residential	289039	7003598
R8	Residential	291198	7003070
R9	Residential	285700	7001811
R10	Residential	289539	6997165
R11	Residential	285371	6999663
R12	Residential	285070	6998863
R13	Residential	287894	7004693
R14	Residential	291295	7001997
R15	Residential	287631	6995750
R16	Residential	293863	7001309
R17	Residential/agricultural	293899	7001882
R18	Residential/agricultural	293503	7002645
R19	Residential/agricultural	293471	7002781

4 Pollutants and air quality objectives

4.1 Potential air pollutants

The Project has the potential to generate emissions of various pollutants to the ambient atmosphere during its operation. The main emission source is stationary combustion from the gas-fired generators.

The main air pollutants will include:

- gaseous pollutants, specifically:
 - oxides of nitrogen (NO_x)¹, including nitrogen dioxide (NO₂)
 - carbon monoxide (CO)
 - volatile organic compounds (VOCs).

The above listed pollutants are anticipated to be the key pollutants generated by the Project. Other pollutants such as particulate matter (PM), sulphur dioxide (SO₂) and metals and metalloids are expected to be minor and have not been addressed further in this assessment.

There are no significant odour emission sources associated with the Project and, therefore, no further consideration of odour emissions or impacts is presented in this report.

4.2 Air quality objectives

DETSI specifies air quality objectives for a wide range of pollutants in Schedule 1 of the Environmental Protection (Air) Policy 2019 (EPP (Air)). Details are provided in Table 4.1.

Table 4.1 Regulatory framework relevant to the AQIA

Policy	Description	Relevance to project
QLD Environmental Protection (Air) Policy 2019 (EPP (Air) 2019)	The purpose of the policy is to achieve the object of the Environmental Protection Act in relation to the air environment by: • identifying environmental values to be enhanced or protected • stating indicators and air quality objectives for enhancing or protecting the environmental values • providing a framework for making consistent, equitable and informed decisions about the air environment.	Provides air quality objectives to be applied in the AQIA.
QLD Environmental Protection (Air) Amendment Policy 2024 (EPP (Air) Amendment 2024)	The purpose of the policy is to amend relevant air quality objectives and periods in Schedule 1 of the EPP (Air) 2019 to align with the NEPM AAQ.	Provides air quality objectives to be applied in the AQIA.

The air quality objectives specified within the EPP (Air) relevant to the assessment of operational emissions from the Project are presented in Table 4.2.

¹ By convention, NO_x = nitrous oxide (NO) + NO₂.

Air quality objectives are not prescribed for total VOCs; however, one of the more commonly assessed VOCs is benzene, which also has one of the most stringent air quality objectives of all the air toxic pollutants for an annual average time period. Benzene is, therefore, adopted as a suitable proxy for the assessment of annual average VOCs, on the basis that if compliance is achieved for benzene, compliance can also be assumed for other VOCs. In addition, formaldehyde has been included in the assessment as a relevant pollutant for the Project.

Table 4.2 Air quality objectives relevant to the Project

Pollutant	Averaging period	Air quality objective	Source
NO ₂	1-hour	164 µg/m ³	EPP Amendment (Air) 2024/NEPM AAQ
	Annual	31 µg/m ³	EPP Amendment (Air) 2024/NEPM AAQ
CO	8-hour	11 mg/m ³	EPP (Air) 2019/NEPM AAQ
Benzene	Annual	5.4 µg/m ³	EPP (Air) 2019
Formaldehyde	24-hour	54 µg/m ³	EPP (Air) 2019

Notes: µg/m³: micrograms per cubic metre; mg/m³: milligrams per cubic metre

5 Assessment methodology

5.1 Overview

This AQIA addresses the impacts from the Project's operations on NO₂, CO and VOCs.

This chapter provides a summary of the methodology for the AQIA, with more detail provided in subsequent chapters.

Operational impacts were assessed based on emission estimates for key Project sources and dispersion modelling to predict ground-level pollutant concentrations at assessment locations. Concentrations were also calculated for a grid domain to produce contour plots.

5.2 Characterisation of existing environment

Data from the on-site Braemar meteorological station were available for the period between April 2025 and March 2026. Wind speed and direction data from the on-site Braemar meteorological station were analysed.

The next closest meteorological monitoring station to the Project is the Bureau of Meteorology's (BoM) Dalby Airport station, located approximately 35.7 km to the east. Meteorological data recorded by the BoM Dalby Airport station from January 2021 to December 2025 were analysed for the purposes of selecting a representative year for dispersion modelling.

There are no air quality monitoring stations (AQMS) in the vicinity of the Project. Between 2015 and 2023, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) managed a network of air quality monitors within the Western Downs region as a part of the Surat Basin Air quality study (CSIRO 2019). The closest AQMS was the Hopeland AQMS, located approximately 47 km to the north-west. Air quality monitoring data from the Hopeland AQMS were considered for the purposes of defining a background dataset to be used in the cumulative assessment.

The Project is located within the vicinity of existing gas-fired electricity generation from the Braemar Power Station, Braemar 2 Power Station and Darling Downs Power Station. These have been considered as existing sources of emissions.

Details of the meteorological and background air quality analysis are provided in Chapter 6, Chapter 7 and Appendix A.

5.3 Assessment scenario

As mentioned in Section 2.1, Alinta is proposing two options for the gas-fired generators - GTs or reciprocating engines.

To assess the potential impacts associated with the Project, two 'worst-case' emissions scenarios were configured. The two scenarios assessed are:

- Scenario 1 – electricity generation from gas combustion using four GTs
- Scenario 2 – electricity generation from gas combustion using 10 reciprocating gas engines.

As discussed in Section 2.1, construction is expected to occur over an 18-to-24-month period and will primarily involve civil works and the progressive installation of the gas-fired generators. A construction environmental management plan (CEMP) will be prepared and will include mitigation measures to minimise dust impacts during construction. It is expected that the potential for dust impacts from construction will be minimised through the use of these mitigation measures. Construction phase impacts have not been assessed further in this AQIA.

5.4 Emissions estimation

Emissions from combustion sources associated with gas consumption were quantified through a combination of manufacturer emission specifications and existing air quality impact assessments.

A description of the emission sources associated with the Project, and an inventory of emissions are presented in Chapter 8.

5.5 Meteorological and dispersion modelling

Atmospheric dispersion modelling for this assessment has been completed using the AMS²/USEPA³ regulatory model (AERMOD) (model version v24142). The meteorological inputs for AERMOD were generated using the AERMET meteorological processor (model version v24142), using local surface observations from the BoM Dalby Airport station and upper air profiles generated by the CSIRO TAPM meteorological modelling module.

Further details of the TAPM meteorological modelling and AERMET data processing completed to prepare the inputs for AERMOD are documented in Appendix A.

TAPM was used to generate required parameters that are not routinely measured, specifically mixing height and vertical wind/temperature profiles.

Each GT and reciprocating engine were represented in AERMOD as a point source.

In addition to the 19 individual assessment locations (documented in Section 3.2) pollutant concentrations were predicted over a 15 km (x-axis) by 19 km (y-axis) domain with 200 m resolution.

The BPIP PRIME model in AERMOD was used for buildings within 100 m of the 10 reciprocating gas engines (scenario 2 only). These were implemented to account for building wake effects from the engine halls associated with the reciprocating gas engines. The engine halls are specific to the operation of the reciprocating gas engines. There will be no large buildings associated with the operation of the GTs and, therefore, BPIP PRIME was not for the Scenario 1 modelling.

Simulations were undertaken assuming that either all four GTs (scenario 1) or all 10 reciprocating gas engines (scenario 2) will be operating simultaneously and assume that the plant is in operation during peak periods (between 6:00 am to 9:00 am and 4:00 pm to 9:00 pm) every day of the 12-month dispersion modelling period.

Further details of the meteorological and dispersion modelling are provided in Section 6.3 and Appendix A.

5.6 NO_x to NO₂ conversion

The dispersion model was used to predict NO_x concentrations due to the Project's operations and neighbouring source operations. For this assessment it was assumed that 100% of the NO_x were converted to NO₂. This approach is highly conservative.

² AMS – American Meteorological Society

³ USEPA – United States Environmental Protection Agency

6 Meteorology

6.1 Meteorological monitoring data

Meteorological mechanisms govern the generation, dispersion, transformation, and eventual removal of pollutants from the atmosphere. To adequately characterise the dispersion meteorology of a region, information is needed on the prevailing wind regime, ambient temperature, rainfall, relative humidity, mixing depth and atmospheric stability.

Measurements of wind speed, wind direction, and temperature were analysed from the on-site Braemar meteorological station. Data from this station were only available for the period between April 2025 and April 2026. As a result, data from the on-site Braemar meteorological station have been used for context and comparison purposes only.

Measurements of wind speed, wind direction, standard deviation of wind direction, temperature, relative humidity, and station level pressure were analysed from the BoM Dalby Airport station. The BoM Dalby Airport station is located approximately 35.7 km to the east of the Project.

6.2 Prevailing winds and selection of a representative year

An annual wind rose created from wind speed and direction data collected from the on-site Braemar meteorological station is presented in Figure A.1 of Appendix A. Annually, the winds recorded by the on-site Braemar meteorological station were predominantly from the east and south-east. The annual average wind speed was 2.4 metres per second (m/s) and the percentage of calms (wind speeds less than 0.5 m/s) was 4.3%.

Meteorological data recorded by the BoM Dalby Airport station were analysed for the five-year period between 2021 and 2025 for the purpose of characterising the existing environment and selecting a representative year for dispersion modelling. A summary plot of the five-year dataset relevant to this AQIA as recorded by the BoM Dalby Airport station is presented in Figure A.2 of Appendix A.

Table 6.1 provides a summary of the annual average wind speed and percentage of calms for each year at the BoM Dalby Airport station. The annual average wind speed is slightly higher at the BoM Dalby Airport station than at the Braemar meteorological station, and the calms are slightly lower.

Table 6.1 Average wind speed and percentage calms – BoM Dalby Airport station

Year	Average wind speed (m/s)	Calms (%)	Data recovery (%)*
2021	4.1	2.5	99.5
2022	4.1	2.4	99.2
2023	4.1	2.2	98.8
2024	4.1	2.4	99.9
2025	4.1	2.3	98.5

* Note: Base on availability of wind speed data.

Inter-annual profiles for wind speed, wind direction, air temperature and relative humidity by hour of the day were analysed for the BoM Dalby Airport station (see Figure A.3 to Figure A.6 of Appendix A). Data for years 2021 to 2025 were considered generally comparable for all parameters, with the exception of relative humidity during 2023 which were notably lower than the other years.

Annual, seasonal and diurnal wind roses created from wind speed and direction data collected from the BoM Dalby Airport station are presented in Figure A.7 to Figure A.9 of Appendix A. Annually, the winds recorded by the BoM Dalby Airport station showed a similarity across years for both wind speed and direction. Winds were predominantly from the east to south-east. The inter-annual wind patterns recorded by the BoM Dalby Airport station are generally consistent with the observed at the on-site Braemar meteorological station wind speed and direction patterns.

On a seasonal basis, winds were also generally from the east to south-easterly direction and were most prominent in autumn and summer. Diurnally, the dominant winds were primarily from the east to south-easterly direction during the both the day and night. Calm conditions were generally higher during the night-time.

As a result of the analysis provided above, it was considered that the BoM Dalby Airport station is suitably representative of the meteorological conditions at the Project area. The 2025 calendar year was adopted as the 12-month modelling period for the purpose of this AQIA.

6.3 Meteorological modelling

6.3.1 Background

Atmospheric dispersion modelling for this assessment was completed using the TAPM and AERMET meteorological models.

Hourly average meteorological data from the BoM Dalby Airport station were used in the AERMET modelling.

Further details of the TAPM and AERMET meteorological modelling are presented in Appendix A.

6.3.2 Atmospheric stability and mixing depth

Atmospheric stability refers to the degree of turbulence or mixing that occurs within the atmosphere and is a controlling factor in the rate of atmospheric dispersion of pollutants.

The Monin-Obukhov length (L) provides a measure of the stability of the surface layer (i.e. the layer above the ground in which vertical variation of heat and momentum flux is negligible, typically about 10% of the mixing height). Negative L values correspond to unstable atmospheric conditions, while positive L values correspond to stable atmospheric conditions. Very large positive or negative L values correspond to neutral atmospheric conditions.

Figure 6.1 illustrates the diurnal variation of atmospheric stability, derived from the Monin-Obukhov length calculated by AERMET based on observation data collected from the BoM Dalby Airport station in 2025.

The diurnal profile presented illustrates that atmospheric instability increases during daylight hours as convective energy increases, whereas stable atmospheric conditions prevail during the night-time. This profile indicates that the potential for atmospheric dispersion of emissions would be greatest during daytime hours and lowest during evening through to early morning hours.

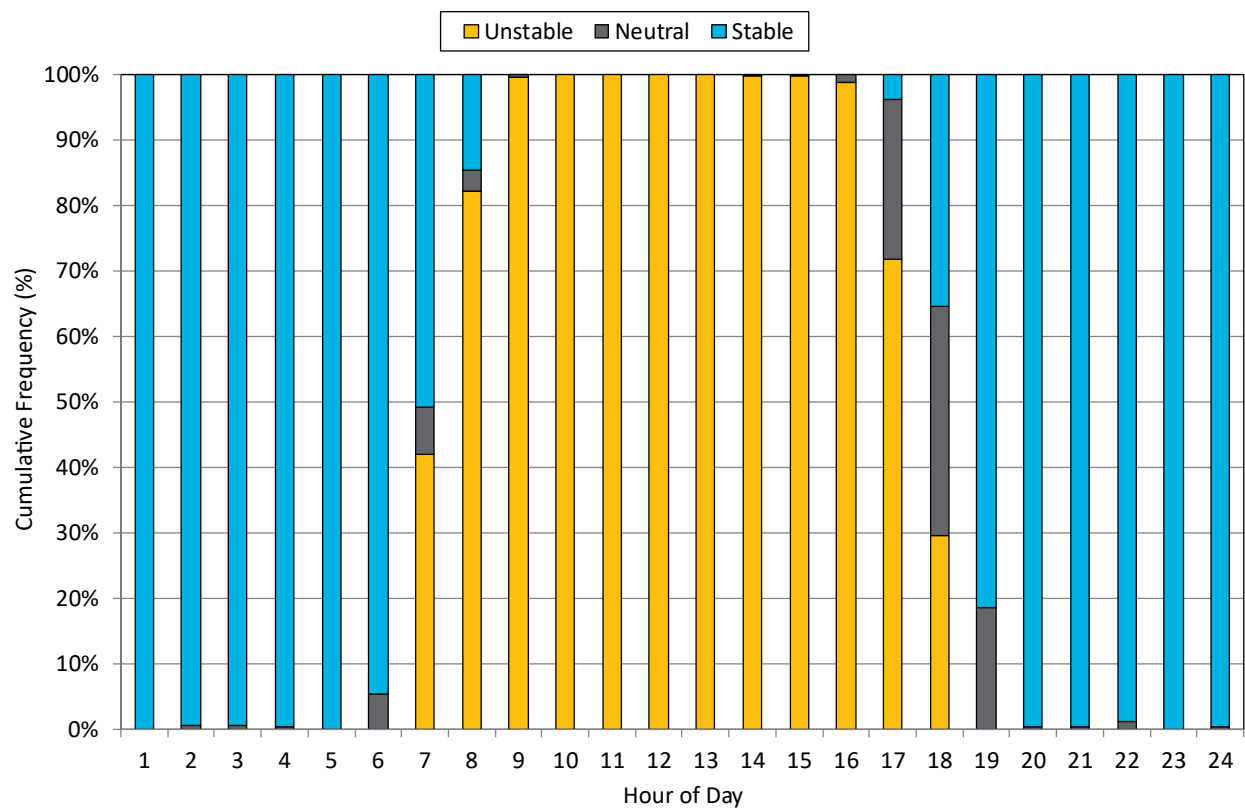
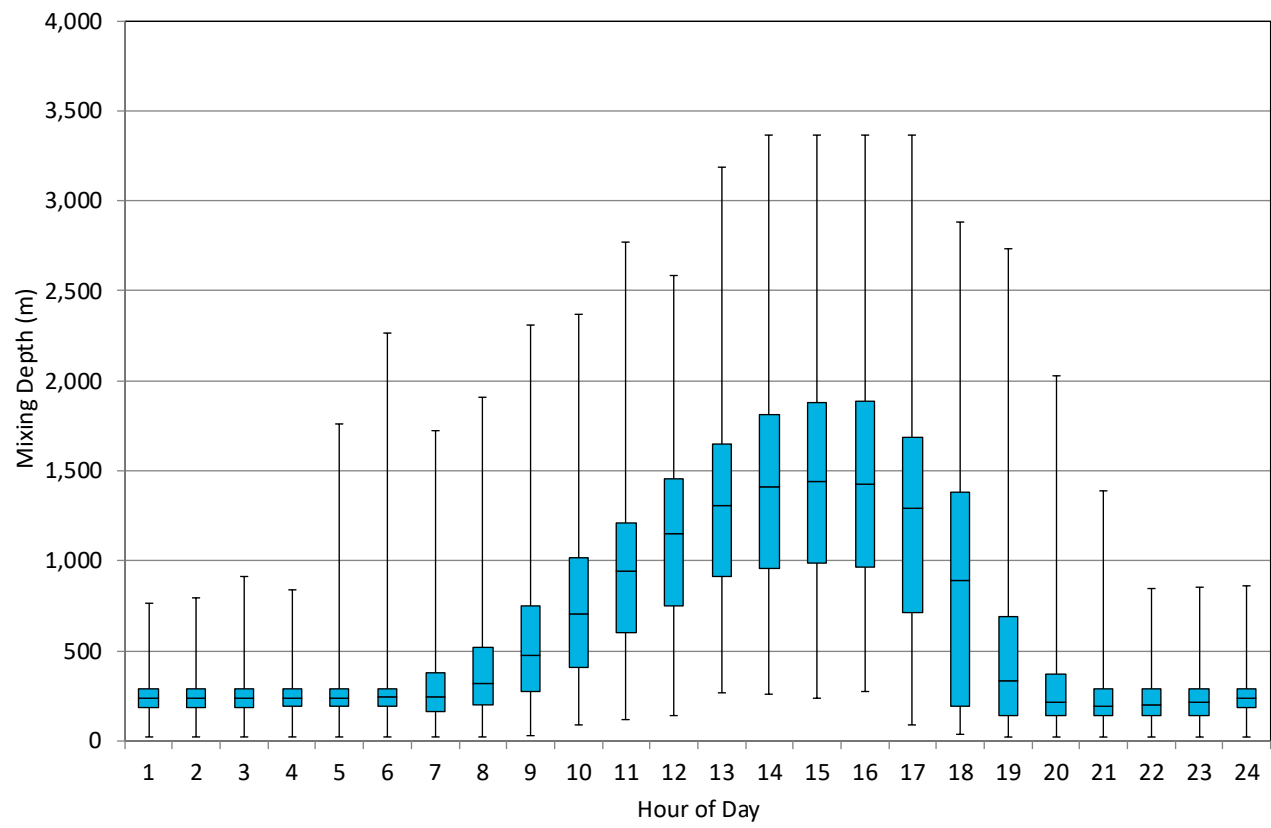


Figure 6.1 AERMET-generated diurnal variation in atmospheric stability – BoM Dalby Airport – 2025

Hourly-varying atmospheric boundary layer depths were calculated by AERMET and refers to the height of the atmosphere above ground level within which the dispersion of air pollution occurs. The variation in boundary layer depth by hour of the day is illustrated in Figure 6.2. The profile presented in Figure 6.2 shows that greater boundary layer depths are experienced during the daytime hours between mid-morning and late afternoon. Higher day-time wind velocities and the onset of incoming solar radiation increases the amount of mechanical and convective turbulence in the atmosphere. As turbulence increases so too does the depth of the boundary layer, generally contributing to higher mixing depths and greater potential for atmospheric dispersion of pollutants.



Note: blue bars indicate the interquartile range (IQR), or middle 50% of the data, while the whiskers indicate highest and lowest values.

Figure 6.2 AERMET-generated diurnal variation in atmospheric boundary layer depth – BoM Dalby Airport – 2025

7 Background air quality

7.1 Existing sources of emissions

A search of the National Pollutant Inventory (NPI) Digital Atlas of Australia website⁴ was completed to determine potential sources of air quality emissions within a 5 km radius of the Project. The sources identified were:

- Braemar Power Station– immediately adjacent to the Project
- Braemar 2 Power Station – 150 m south of the Project
- Darling Downs Power Station – 1.3 km south-west of the Project
- Daandine Operations (coal seam gas production and compression) – 3.9 km north-east of the Project
- Daandine Power Station – 4.5 km north-east of the Project.

The Braemar Power Station, Braemar 2 Power Station and the Darling Downs Power Station have been explicitly included in the cumulative assessment due to their proximity to the Project (see Section 7.2). It was considered that due to their distance from the Project, and the location of surrounding assessment locations, any potential air quality impacts from the Daandine Operations and Daandine Power Station would not significantly impact concentrations when considered cumulatively with the Project.

In addition to the sources mentioned above, air quality in the local airshed will be influenced by:

- agricultural practices
- wind-generated dust from exposed areas
- dust entrainment and exhaust emissions from vehicle movements along sealed and unsealed roads
- long-range transport of fine particles into the region.

More remote sources which contribute episodically to suspended particulates in the region include dust storms, bushfires and hazard reduction burns.

7.2 Neighbouring emission sources

The Braemar Power Station and Braemar 2 Power Station are existing open-cycle natural GT plants immediately adjacent to the Project. Between the two plants there are six GTs used to generate electricity.

The Darling Downs Power Station comprises three GTs used to generate electricity and is located approximately 1 km south-west of the Project.

Emissions from these sources are discussed further in Section 8.2.

⁴ <https://digital.atlas.gov.au/datasets/national-pollutant-inventory-viewer>

7.3 Air quality monitoring data resources

As previously mentioned, there are no air quality monitoring resources in the vicinity of the Project. Data from a range of available AQMSs were analysed in considering the background air quality conditions for the Project. The characteristics of the AQMSs are summarised in Table 7.1. It was determined that on balance, due to the availability of measured pollutant data and locality (distance and elevation profiles) that the Mutdapilly, Flinders View and Raceview AQMSs would not be as suitability representative of the Project area as the Hopeland or Miles Airport AQMSs.

A temporary network of air quality monitors was installed to assess air quality in proximity to an area of intensive coal seam gas production within the Western Downs region. The monitors were initially managed by CSIRO’s Gas Industry Social and Environmental Research Alliance (GISERA) as a part of the Surat Basin Air quality study (CSIRO 2019). Operation of the monitors were later overseen by the gas industry before eventually being decommissioned mid-2023. The closest AQMS to the Project was the Hopeland AQMS, located approximately 47 km north-west of the Project. Despite the spatial separation, it was considered that the Hopeland AQMS was most representative of the Project area on the basis that it was located to the west of the Great Dividing Range, away from the coast and sited in a region featuring extractive and industrial operations.

Hourly average NO₂ and CO concentrations from the Hopeland AQMS were collated and analysed. Concentrations of VOCs are not routinely monitored by the various AQMSs, and as a result, no background VOC concentrations are available.

Table 7.1 Summary of available AQMSs

Item	Hopeland	Miles Airport	Mutdapilly	Flinders View	Raceview
Distance from Project	47 km	77 km	186 km	194 km	195 km
Data availability	2015-2023	2015-2023	2000-current	2000-2024	2024-current
Elevation	305 m	302 m	85 m	59 m	43 m
Parameters measured (as relevant to this study)	NO _x , CO	NO _x , CO	NO _x , CO	NO _x	NO _x

7.4 Summary of available air quality data

Summary statistics for NO₂ and CO at the Hopeland AQMS from 2018 to 2022 are given in Table 7.2 and Table 7.3 respectively, and a time series plot of 1-hour NO₂ concentrations and 8-hour rolling average CO concentrations are shown in Figure 7.1.

No exceedances of the QLD air quality objective for NO₂ or CO occurred between 2018 and 2022.

Table 7.2 **NO₂ statistics for Hopeland AQMS**

Year	Data availability (%)	1-hour concentrations			Annual average concentrations
		Maximum 1-hour	70th percentile	Exceedances of 1-hour air quality objective	
NO ₂ - µg/m ³					
Objective	-	164	-	-	31
2018	90	30.8	4.1	0	4.0
2019	93	63.6	4.1	0	3.8
2020	94	45.1	4.1	0	3.7
2021	70	28.7	4.1	0	3.4
2022	88	22.6	2.1	0	2.9
Average	-	38.1	3.7	-	3.6

Table 7.3 **CO statistics for Hopeland AQMS**

Year	Data availability (%)	8-hour rolling concentrations		
		Maximum 8-hour rolling	70th percentile	Exceedances of 8-hour air quality objective
CO - mg/m³				
Objective	-	11	-	-
2018	60	0.7	0.2	0
2019	100	0.7	0.3	0
2020	91	0.5	0.2	0
2021	75	1.1	0.2	0
2022	94	0.6	0.1	0
Average	-	0.7	0.2	-

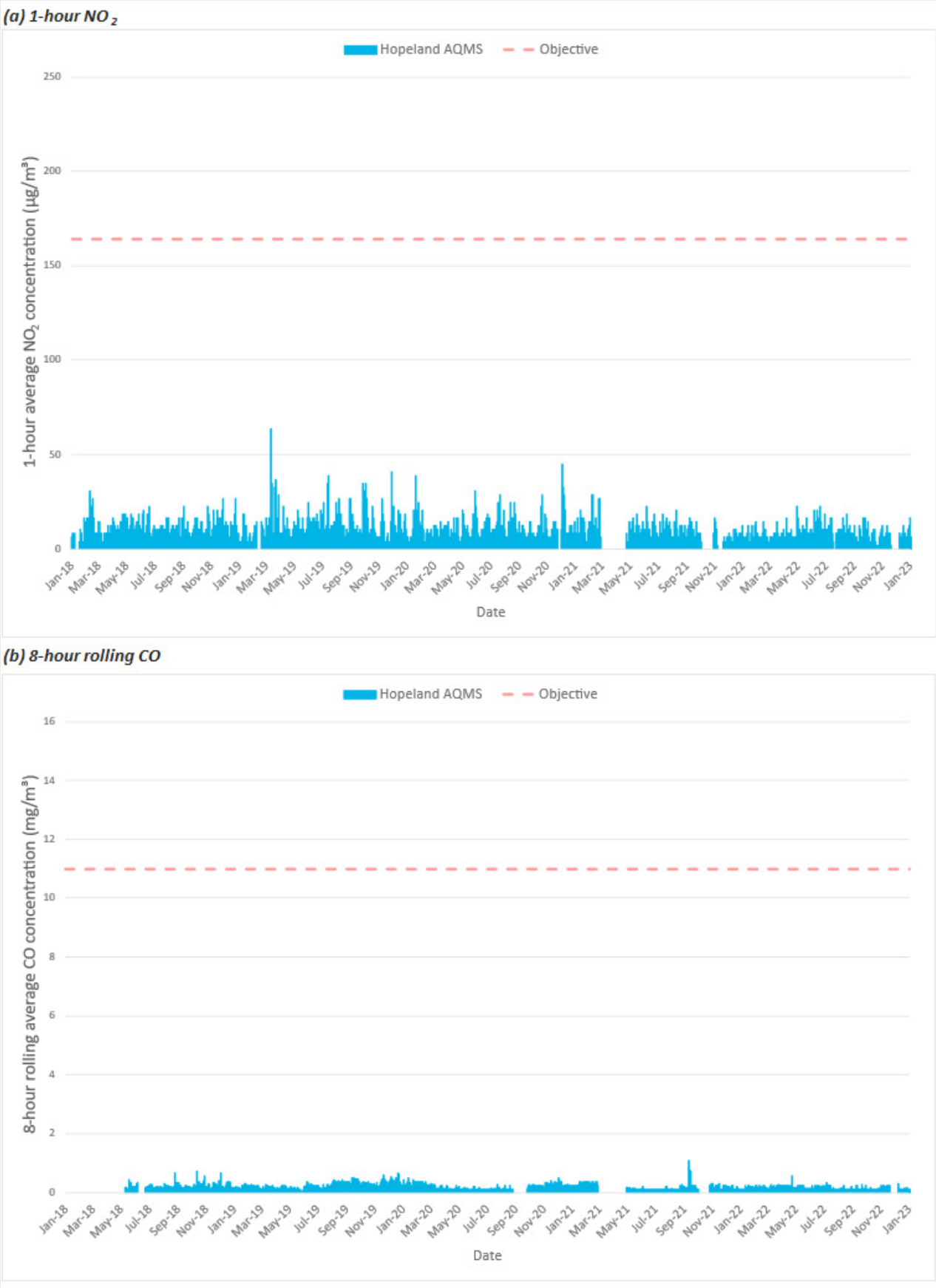


Figure 7.1 Timeseries 1-hour average NO_2 and 8-hour rolling CO concentrations – Hopeland AQMS – 2018 to 2022

7.5 Assumed background concentrations

7.5.1 NO₂

In the absence of contemporaneous air quality data near to the Project, historical data recorded at the Hopeland AQMS for the five-year period between 2018 and 2022 were taken to be representative of background air quality conditions, with the 70th percentile (for 1-hour and 24-hour concentrations) and the annual average of the historical dataset adopted as background concentrations.

The annual average and average 70th percentile 1-hour NO₂ concentration recorded at the Hopeland AQMS between the period 2018 to 2022 were 3.6 µg/m³ and 3.7 µg/m³, respectively.

7.5.2 CO

Similar to NO₂, the average 70th percentile 8-hour rolling CO concentration for the years 2018 to 2022 was taken to be representative of background conditions.

The average 70th percentile 8-hour rolling CO concentration recorded at the Hopeland AQMS was 0.2 mg/m³.

7.5.3 Adopted background summary

The background air quality concentrations adopted for the cumulative assessment, based on the analysis presented in the preceding sections, are summarised in Table 7.4.

Table 7.4 Summary of adopted background air quality concentrations

Pollutant	Averaging period	Value	Unit	Source
NO ₂	1-hour	3.7	µg/m ³	70th percentile – 2018 to 2022 Hopeland AQMS dataset average
	Annual	3.6		
CO	8-hour rolling	0.2	mg/m ³	

8 Emissions inventory

8.1 Operational Project emissions

An emission inventory was developed to quantify emissions from various pollutants resulting from the two scenarios for the Project:

- Scenario 1 – electricity generation from gas combustion using four GTs.
- Scenario 2 – electricity generation from gas combustion using 10 reciprocating gas engines.

Emissions from the GTs were estimated using manufacture operating specifications provided by Siemens Energy to Alinta for the SGT800 industrial GT. Concentrations of NO_x and CO were provided and combined with the volumetric flow rate to determine the emission rate in g/s for the model. The volumetric flow rate was calculated using the maximum exhaust flow (kg/s) across 84 tests across two sites provided in the manufacturer data. The volumetric flow rate was adjusted to account for the temperature, moisture, and oxygen data also provided for each test. The stack heights and locations were also provided by Alinta. Other parameters such as stack diameter and exit velocity were calculated or assumed based on available data.

Emissions from the reciprocating gas engines were provided by Alinta based on a similar project using this type of technology.

A summary of the emissions data and stack parameters for each scenario is provided in Table 8.1. Emission controls for the GTs and reciprocating engines, as documented in Chapter 10, are accounted for in the emission rates.

Total VOC emission rates were estimated using emission factors for natural gas from National Pollutant Inventory (NPI) 2012. Benzene was adopted as a suitable proxy for the assessment of annual average VOCs, on the basis that if compliance is achieved for benzene, compliance can also be assumed for other VOCs (USEPA 2000 and 2024).

VOC speciation was determined based on the US EPA’s AP-42 document for Stationary Gas Turbines (Chapter 3.1) for Scenario 1, and National gas-fired reciprocating engines (Chapter 3.2) for Scenario 2.

Table 8.1 Project emissions parameters

Parameter	Emission scenario		Source
	Scenario 1	Scenario 2	
Hours of operation	6:00 am to 9:00 am and 4:00 pm to 9:00 pm	6:00 am to 9:00 am and 4:00 pm to 9:00 pm	Provided by Alinta.
Number of turbines	4	-	Provided by Alinta.
Number of engines	-	10	Provided by Alinta.
Location (MGA, x, y (m))	GT1: 292488, 6999682 GT2: 292481, 6999626 GT3: 292475, 6999569 GT4: 292468, 6999513	RE1: 292514, 6999644 RE2: 292513, 6999634 RE3: 292512, 6999625 RE4: 292510, 6999613 RE5: 292509, 6999604 RE6: 292506, 6999575 RE7: 292505, 6999565 RE8: 292504, 6999557 RE9: 292503, 6999546 RE10: 292502, 6999537	Provided by Alinta.

Parameter	Emission scenario		Source
	Scenario 1	Scenario 2	
Fuel type	Gas	Gas	Provided by Alinta.
Stack height (m)	15	25	Provided by Alinta.
Stack outlet diameter (m)	4.7	1.7	Scenario 1 calculated based on information provided by Alinta. Scenario 2 provided by Alinta.
Exhaust temperature (K)	858.4	615.2	Taken as the average from the test data provided by Alinta.
Actual flow rate (Am ³ /s)	354.3	58.4	Scenario 1 calculated based on maximum exhaust flow rate and temperature from the supplier datasheet provided by Alinta. Average taken for test data. Scenario 2 provided by Alinta.
Normalised flow rate (Nm ³ /s)	144.7	25.9	Scenario 1 calculated based on maximum exhaust flow rate and temperature from the test data provided by Alinta. Scenario 2 calculated based on volumetric flow rate and temperature.
Exit velocity (m/s)	20.0	25.6	Scenario 1 calculated based on volumetric flow rate and diameter. Scenario 2 provided by Alinta.
NO _x emission rate (g/s)	7.4	1.9	Scenario 1 calculated using the concentration provided by Alinta combined with the volumetric flow rate calculated using the maximum exhaust flow from 84 tests adjusted for temperature, moisture and oxygen also provided. Scenario 2 provided by Alinta.
CO emission rate (g/s)	1.0	1.1	Scenario 1 calculated using the concentration provided by Alinta combined with the volumetric flow rate calculated using the maximum exhaust flow from 84 tests adjusted for temperature, moisture and oxygen also provided. Scenario 2 provided by Alinta.
TVOCs emission rate (g/s)	0.15	0.15	Calculated from emission factor for natural gas (Table 15 NPI 2012).
Benzene as a percentage of VOCs (%)	0.6	1.6	Scenario 1 calculated using AP-42, Chapter 3.1 Stationary Gas Turbines. Table 3.1-2a for VOC and Table 3.1-3 for benzene and formaldehyde. Scenario 2 calculated using AP42, Chapter 3.2 Natural gas-fired reciprocating engines. Table 3.1-2a for VOC and Table 3.1-3 for benzene and formaldehyde.
Formaldehyde as a percentage of VOCs (%)	33.8	46.0	Scenario 1 calculated using AP-42, Chapter 3.1 Stationary Gas Turbines. Table 3.1-2a for VOC and Table 3.1-3 for benzene and formaldehyde. Scenario 2 calculated using AP42, Chapter 3.2 Natural gas-fired reciprocating engines. Table 3.1-2a for VOC and Table 3.1-3 for benzene and formaldehyde.

Note: TVOCs = total VOCs

8.2 Neighbouring emissions sources

As mentioned in Section 7.2, there are three power stations located in the vicinity of the Project. Due to the spatial distribution of these operations, the potential for cumulative impacts at individual assessment locations may vary and the localised impacts may not be sufficiently characterised in the adopted background air quality concentrations (Chapter 7).

Emissions from neighbouring sources have been quantified based on the following resources:

- Braemar Power Station – emission rates for NO_x calculated using concentration and volumetric flow rate data from emissions monitoring provided by Alinta (Trinity 2025). Emission rates for CO were calculated based on concentration data found in publicly available documentation⁵ and the volumetric flow rate from the emissions monitoring data provided by Alinta. Emission rates for VOCs were calculated using assumptions of natural gas consumption from online sources⁶ and the emission factor for natural gas from the NPI EET Manual for Fossil Fuel Electric Power Generation (NPI 2012). The stack height was taken from a previous AQIA (Katestone 2009), and the diameter was provided by Alinta.
- Braemar 2 Power Station – emission rates and stack parameters sourced from various AQIAs - PAEHolmes 2011, Katestone 2009, and Katestone 2010b.
- Darling Downs Power Station – emission rates and stack parameters sourced from various AQIAs - Katestone 2009, Katestone 2010a and Katestone 2010b.

A summary of the emissions data and stack parameters for the neighbouring sources included in the dispersion modelling is provided in Table 8.2.

Table 8.2 Neighbouring source parameters

Parameter	Braemar Power Station	Braemar 2 Power Station	Darling Downs Power Station
Hours of operation	6:00 am to 9:00 am and 4:00 pm to 9:00 pm	6:00 am to 9:00 am and 4:00 pm to 9:00 pm	24/7
Number of turbines	3	3	3
Location (MGA, x, y (m))	GT11: 292382, 6999588 GT12: 292377, 6999552 GT21: 292373, 6999515	GT1: 292355, 6999392 GT2: 292349, 6999349 GT3: 292344, 6999305	GT1: 291232, 6998933 GT2: 291226, 6998874 GT3: 291219, 6998816
Fuel type	Gas	Gas	Gas
GT height (m)	30	30	30
GT outlet diameter (m)	6.0	6.1	5.7
Exhaust temperature (K)	GT11: 769.2 GT12: 764.2 GT21: 776.2	GT1: 809.2 GT2: 809.2 GT3: 809.2	GT1: 814.2 GT2: 814.2 GT3: 814.2
Volumetric flow rate (Am ³ /s)	GT11: 1,283.3 GT12: 1,283.3 GT21: 1,216.7	GT1: 1,095.9 GT2: 1,095.9 GT3: 1,095.9	GT1: 969.7 GT2: 969.7 GT3: 969.7

⁵ <https://asmedigitalcollection.asme.org/GT/proceedings-abstract/GT2002/36061/705/295646>

⁶ <https://www.aer.gov.au/system/files/ACIL%20Allen%20-%20RBP%202022-27%20-%20Attachment%206%20-%20RBP%20Demand%20Forecasts%20Report%20-%20July%202021.pdf>

Parameter	Braemar Power Station	Braemar 2 Power Station	Darling Downs Power Station
Exit velocity (m/s)	GT11: 45.3	GT1: 37.5	GT1: 38.0
	GT12: 45.4	GT2: 37.5	GT2: 38.0
	GT21: 43.0	GT3: 37.5	GT3: 38.0
NO _x emission rate (g/s)	GT11: 16.8	GT1: 19.2	GT1: 9.7
	GT12: 17.6	GT2: 19.2	GT2: 9.7
	GT21: 14.6	GT3: 19.2	GT3: 9.7
CO emission rate (g/s)	GT11: 2.5	GT1: 2.5	GT1: 1.4
	GT12: 2.5	GT2: 2.5	GT2: 1.4
	GT21: 2.4	GT3: 2.4	GT3: 1.4
TVOCs emission rate (g/s)	GT11: 0.5	GT1: 0.1	GT1: 0.2
	GT12: 0.5	GT2: 0.1	GT2: 0.2
	GT21: 0.5	GT3: 0.1	GT3: 0.2
Benzene as a percentage of VOCs (%)	0.6	0.6	0.6
Formaldehyde as a percentage of VOCs (%)	33.8	33.8	33.8

Note: TVOCs = total VOCs

8.3 In-stack concentrations

There are no formal standards for in-stack concentrations for industrial sources in QLD.

In New South Wales (NSW), the Protection of the Environment Operations (POEO) (Clean Air) Regulations 2022⁷, herein referred to as the NSW POEO Clean Air Regulations, sets out standards of concentrations for in-stack emission concentration limits. These are the maximum emissions permissible for an industrial source in NSW.

These emissions concentration standards may be viewed as best practice air emissions standards in QLD and, therefore, have been considered for the Project.

Table 8.3 provides a comparison of the calculated in-stack emission concentrations for the Project for each scenario, and the corresponding NSW POEO Clean Air Regulations standard of concentration. It is noted that the NSW POEO Clean Air Regulations does not prescribe a standard of concentration for CO under the electricity generation category.

The emissions concentrations for the Project for all pollutants listed in Table 8.3 are below the applicable NSW POEO Clean Air Regulations standards of concentrations.

⁷ <https://legislation.nsw.gov.au/view/pdf/asmade/sl-2022-811>

Table 8.3 Estimated in-stack emission concentrations against NSW POEO Clean Air Regulations limits

Pollutant	Emission concentration (mg/Nm ³)	NSW POEO Clean Air Regulation standard of concentration (mg/Nm ³)	NSW POEO Clean Air Regulation reference
Scenario 1			
NO _x (as NO ₂)	51.3	70	Schedule 2, electricity generation, ‘a turbine operating on gas, being a turbine used in connection with an electricity generating system with a capacity of 30 MW or more’, Group 6.
Scenario 2			
NO _x (as NO ₂)	73.3	450	Schedule 2, general standards of concentration, ‘Stationary reciprocating internal combustion engines’, Group 6.
CO	44.0	125	Schedule 2, general standards of concentration, ‘A stationary reciprocating internal combustion engine using a gaseous fuel’, Group 6.

9 Air dispersion modelling

9.1 Incremental (Project-only) results

Predicted incremental NO₂, CO and VOCs from the Project are presented in Table 9.1 at each of the assessment locations for Scenario 1 and 2. Each GT and reciprocating gas engine has been represented in the modelling as a point source and are shown in Figure 9.1.

The predicted incremental concentrations for all pollutants and averaging periods were below the EPP (Air) air quality objectives at all assessment locations. The air quality objectives listed are applicable to cumulative concentrations but are shown for reference. Analysis of cumulative concentrations is presented in Section 9.2.

Contour plots, illustrating spatial variations in incremental NO₂ and CO concentrations are provided in Appendix B. Plots of the maximum 1-hour and 8-hour rolling average concentrations presented do not represent the dispersion pattern on any day, but rather the maximum concentrations predicted to occur at each model calculation point given the range of meteorological conditions occurring over the 2025 modelling period. Due to the low concentrations predicted, contour plots for benzene and formaldehyde have not been shown.



KEY

Project area

Model source

- Gas turbine (scenario 1)
- Reciprocating engine (scenario 2)
- Neighbouring gas turbines

Site layout

- GT1
- GT2
- GT3
- GT4
- Gas turbine footprint

Model source locations

Braemar Energy Hub
Air Quality Impact Assessment
Figure 9.1



Source: EMM (2026); DNRMMRRD (2026); ESRI (2026); Alinta Energy (2026)

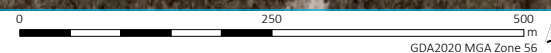


Table 9.1 Predicted incremental (Project-only) concentrations – Scenario 1 and 2

Assessment location ID	Predicted incremental concentrations (µg/m³) or (mg/m³ – CO only)									
	Scenario 1					Scenario 2				
	NO ₂		CO	Benzene	Formaldehyde	NO ₂		CO	Benzene	Formaldehyde
	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum
Objective	164	31	11	5.4	54	164	31	11	5.4	54
R1	8.1	<0.1	0.0002	<0.0001	0.0038	14.1	0.1	0.0022	0.0001	0.0438
R2	9.0	0.1	0.0003	<0.0001	0.0058	15.8	0.1	0.0021	0.0001	0.0449
R3	6.1	<0.1	0.0002	<0.0001	0.0036	12.4	0.1	0.0025	0.0001	0.0540
R4	7.6	<0.1	0.0002	<0.0001	0.0038	12.2	0.1	0.0022	0.0001	0.0531
R5	7.4	<0.1	0.0002	<0.0001	0.0039	13.0	0.1	0.0023	0.0001	0.0475
R6	9.4	<0.1	0.0003	<0.0001	0.0052	16.1	0.1	0.0032	0.0001	0.0666
R7	15.3	<0.1	0.0005	<0.0001	0.0095	15.7	0.1	0.0027	0.0001	0.0561
R8	9.9	<0.1	0.0002	<0.0001	0.0051	32.3	0.1	0.0033	0.0001	0.0702
R9	9.6	<0.1	0.0004	<0.0001	0.0086	18.9	0.1	0.0023	0.0001	0.0649
R10	21.6	0.1	0.0006	0.0001	0.0100	18.6	0.2	0.0029	0.0001	0.0880
R11	13.1	0.1	0.0003	<0.0001	0.0067	15.0	0.1	0.0022	0.0001	0.0533
R12	23.2	0.1	0.0004	<0.0001	0.0072	17.9	0.1	0.0019	0.0001	0.0563
R13	10.1	<0.1	0.0003	<0.0001	0.0059	13.6	0.1	0.0025	0.0001	0.0532
R14	29.2	<0.1	0.0005	<0.0001	0.0088	22.3	0.1	0.0038	0.0001	0.0839
R15	14.7	0.1	0.0004	<0.0001	0.0073	13.8	0.1	0.0026	0.0001	0.0603

Assessment location ID	Predicted incremental concentrations (µg/m³) or (mg/m³ – CO only)									
	Scenario 1					Scenario 2				
	NO ₂		CO	Benzene	Formaldehyde	NO ₂		CO	Benzene	Formaldehyde
	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum
R16	15.9	<0.1	0.0004	<0.0001	0.0070	31.3	0.1	0.0041	0.0001	0.0828
R17	12.9	<0.1	0.0004	<0.0001	0.0064	22.3	0.1	0.0034	0.0001	0.0696
R18	8.1	<0.1	0.0002	<0.0001	0.0036	24.3	0.1	0.0030	0.0001	0.0677
R19	7.0	<0.1	0.0002	<0.0001	0.0036	22.7	0.1	0.0027	0.0001	0.0752

9.2 Comparison of scenario results

The following sections provide a brief comparison of the predicted concentration from Scenario 1 and 2. The comparison is focused on incremental (Project-only) results.

9.2.1 NO₂ concentrations

Table 9.2 provides a comparison of the highest predicted 1-hour and annual average NO₂ concentrations for Scenarios 1 and 2 at any assessment location. The comparison shows that the highest predictions were in Scenario 2 for both 1-hour and annual average concentrations.

Figure 9.2 presents a comparison of the NO₂ concentrations graphically across all assessment locations. The 1-hour plot shows that concentrations were generally higher at assessment locations with the exception of four locations. Annual average concentrations were higher in Scenario 2 at all assessment locations. However, it is noted that the overall difference in absolute annual concentrations was small (between 0.03 µg/m³ and 0.07 µg/m³).

Table 9.2 Highest predicted incremental NO₂ concentrations (µg/m³)

Scenario	Maximum 1-hour average	Annual average
Objective	164	31
Scenario 1	29.2 (R14)	0.1 (various assessment locations)
Scenario 2	32.3 (R8)	0.2 (R10)

Note: The air quality objectives listed are applicable to cumulative concentrations but are shown for reference.

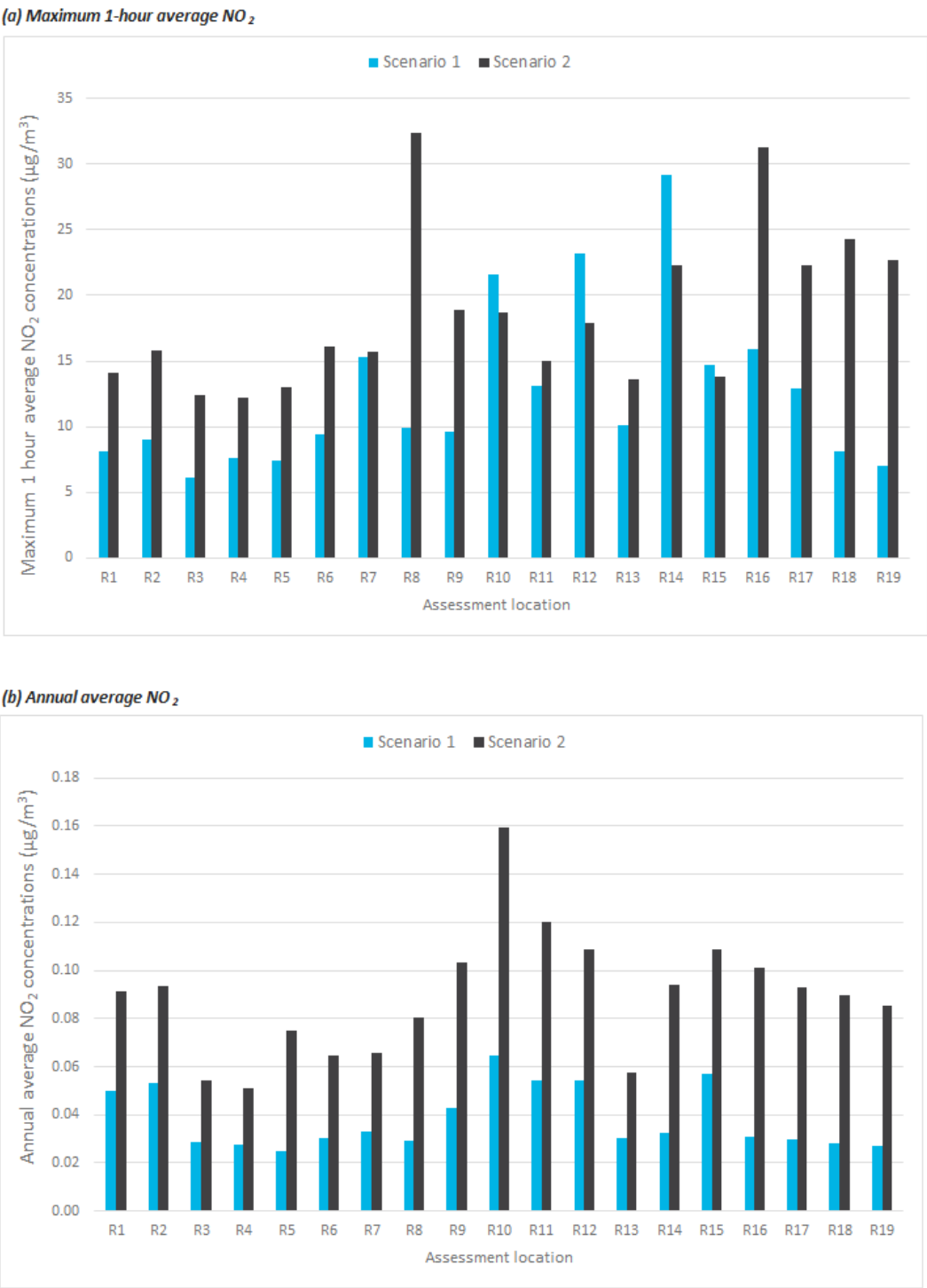


Figure 9.2 Comparison of predicted incremental NO₂ concentrations for Scenario 1 and 2

9.2.2 CO concentrations

Table 9.3 provides a comparison of the highest predicted rolling 8-hour CO concentrations for Scenarios 1 and 2 at any assessment location. The comparison shows that the highest prediction was in Scenario 2.

Table 9.3 Highest predicted incremental CO concentrations (mg/m³)

Scenario	Maximum rolling 8-hour average
Objective	11
Scenario 1	0.0006 (R10)
Scenario 2	0.0041 (R16)

Note: The air quality objectives listed are applicable to cumulative concentrations but are shown for reference.

9.2.3 VOC concentrations

Table 9.4 provides a comparison of the highest predicted 24-hour average formaldehyde concentration and the highest predicted annual average benzene concentration for Scenarios 1 and 2. The comparison shows that the highest predictions were in Scenario 2.

Table 9.4 Highest predicted incremental VOC concentrations (µg/m³)

Scenario	Maximum 24-hour formaldehyde concentrations	Annual average benzene concentrations
Objective	54	5.4
Scenario 1	0.01	0.000007
Scenario 2	1.19	0.0001

Note: The air quality objectives listed are applicable to cumulative concentrations but are shown for reference.

9.3 Cumulative (Project + neighbour + background) results

Cumulative impacts (i.e. the Project, neighbouring emissions sources plus background) at each of the assessment locations have been assessed in the following way:

- For annual average concentrations – the predicted annual average concentrations from the Project and neighbouring emission sources have been combined with the corresponding background annual average concentration (Section 7.5.3).
- For 1-hour average concentrations – each daily-varying predicted 1-hour average concentration of NO₂ from the Project and neighbouring emission sources have been combined with the 70th percentile from the adopted background concentration datasets (Section 7.5.3).
- For 8-hour rolling average concentrations – the predicted 8-hour rolling average concentrations for CO from the Project and neighbouring emission sources have been combined with the 70th percentile from the adopted background concentration dataset (Section 7.5.3).

Cumulative benzene and formaldehyde concentrations have been provided to account for neighbouring emission sources; however, background benzene and formaldehyde concentrations are not available.

Predicted cumulative NO₂, CO and VOC concentrations are presented in Table 9.5 at each of the assessment locations for Scenario 1 and 2.

Table 9.5 shows that the predicted cumulative concentrations for all pollutants and averaging periods were below the applicable EPP (Air) air quality objectives at all assessment locations in both scenarios.

Table 9.5 Predicted cumulative (Project + neighbouring emission sources + background) concentrations – Scenario 1 and 2

Assessment location ID	Predicted cumulative concentrations (µg/m³) or (mg/m³ – CO only)									
	Scenario 1					Scenario 2				
	NO ₂		CO	Benzene	Formaldehyde	NO ₂		CO	Benzene	Formaldehyde
	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum
Objective	164	31	11	5.4	54	164	31	11	5.4	54
R1	19.9	3.7	0.2	<0.0001	0.0090	22.7	3.8	0.2	0.0001	0.0447
R2	19.1	3.7	0.2	<0.0001	0.0103	23.1	3.8	0.2	0.0001	0.0484
R3	21.4	3.7	0.2	<0.0001	0.0097	21.2	3.7	0.2	0.0001	0.0560
R4	20.4	3.7	0.2	<0.0001	0.0099	18.3	3.7	0.2	0.0001	0.0542
R5	20.1	3.7	0.2	<0.0001	0.0059	19.3	3.7	0.2	0.0001	0.0476
R6	35.3	3.7	0.2	<0.0001	0.0104	33.1	3.7	0.2	0.0001	0.0666
R7	47.2	3.7	0.2	<0.0001	0.0178	43.8	3.7	0.2	0.0001	0.0561
R8	33.3	3.7	0.2	<0.0001	0.0094	36.2	3.7	0.2	0.0001	0.0769
R9	21.8	3.7	0.2	<0.0001	0.0153	23.9	3.8	0.2	0.0001	0.0695
R10	46.1	3.8	0.2	<0.0001	0.0173	42.5	3.9	0.2	0.0001	0.0942
R11	22.2	3.8	0.2	<0.0001	0.0130	26.3	3.8	0.2	0.0001	0.0567
R12	27.5	3.8	0.2	<0.0001	0.0127	22.3	3.8	0.2	0.0001	0.0648
R13	33.7	3.7	0.2	<0.0001	0.0112	31.6	3.7	0.2	0.0001	0.0532
R14	69.8	3.7	0.2	<0.0001	0.0171	61.4	3.7	0.2	0.0001	0.0908
R15	30.9	3.7	0.2	<0.0001	0.0144	28.9	3.8	0.2	0.0001	0.0651

Assessment location ID	Predicted cumulative concentrations (µg/m³) or (mg/m³ – CO only)									
	Scenario 1					Scenario 2				
	NO ₂		CO	Benzene	Formaldehyde	NO ₂		CO	Benzene	Formaldehyde
	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum	1-hour maximum	Annual average	8-hour rolling average	Annual average	24-hour maximum
R16	49.5	3.7	0.2	<0.0001	0.0120	45.6	3.8	0.2	0.0001	0.0869
R17	38.9	3.7	0.2	<0.0001	0.0091	36.0	3.7	0.2	0.0001	0.0704
R18	29.1	3.7	0.2	<0.0001	0.0095	28.2	3.7	0.2	0.0001	0.0738
R19	27.5	3.7	0.2	<0.0001	0.0096	26.6	3.7	0.2	0.0001	0.0779

10 Management and mitigation

10.1 Air quality mitigation measures

The following air quality mitigation measures will be implemented for the Project:

- Each GT will feature a Dry Low Emission (DLS) combustion system capable of achieving low NO_x and CO emissions.
- Each reciprocating engine will employ air pollution control systems, which include Selective Catalytic Reduction (SCR) and oxidation catalysts to reduce emissions.

Alinta will have a construction environmental management plan (CEMP) in place which will include mitigation measures to minimise dust impacts during the construction phase of the Project. Measures will include the use of water sprays, and minimising haul routes and idling.

10.2 Start-up and shut down procedures

Plant and equipment, including pollution control equipment, will be maintained in good condition.

Notwithstanding this, start-up and shutdown of gas-fired generator units for maintenance and/or repair will result in pollutant emissions. Specific plans and contingencies to minimise emissions during planned start-up and shut down of equipment required for maintenance and repair will be detailed in equipment and process specific procedures. The following general process will be taken:

- each process that may potentially generate air emissions will have a start-up and shutdown procedure
- during start-up and shutdown of a process, where it is identified that air emissions will be higher than when under normal operating conditions, the frequency and time taken to safely start-up or shut down a process must be minimised
- actions taken during start-up and shutdown must be documented by properly signed, contemporaneous operating logs, and other relevant records completed.

11 Conclusion

Dispersion modelling has been completed for two operational scenarios for the Project - four GTs or 10 reciprocating engines co-located with the existing Braemar Power Station at Kogan QLD.

Atmospheric dispersion modelling was completed using the AERMOD model system. Hourly meteorological observations from 2025, collected at the BoM Dalby Airport, were used as input to the dispersion modelling.

The results of the modelling show that predicted incremental concentrations of CO, NO₂, and VOCs were below the QLD EPP (Air) air quality objectives at all assessment locations and for both scenarios.

Cumulative impacts were assessed by combining modelled impacts from the Project and neighbouring emissions sources with recorded ambient background levels. The cumulative results showed that compliance with applicable EPP (Air) air quality objectives was predicted at all assessment locations for all pollutants and averaging periods and for both scenarios.

Air quality mitigation measures will be implemented during the operation of the project to reduce the potential for adverse air quality impacts from the GTs as far as possible. These include the implementation of a DLE combustion system, SCR, and oxidisation catalysts. Specific plans and contingencies to minimise emissions during planned start-up and shut down of equipment required for maintenance and repair will be detailed in equipment and process specific procedures for the Project. A range of mitigation measures will also be applied during the construction phase of the Project.

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Abbreviations

AHD	Australian Height Datum
AQIA	air quality impact assessment
AQMS	air quality monitoring station
BESS	battery energy storage system
CEMP	construction environmental management plan
CO	carbon monoxide
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DETSI	The Department of the Environment, Tourism, Science and Innovation
DLS	Dry Low Emissions
EPP	Environmental Protection Policy
GT	gas turbine
ha	hectares
km	kilometre
LGA	local government area
MW	megawatt
MWh	megawatt hour
NEPC	National Environment Protection Council
NO _x	oxides of nitrogen
NO ₂	nitrogen dioxide
NPI	National Pollutant Inventory
NSW	New South Wales
PAR	Planning Assessment Report
POEO	Protection of the Environment Operations
PM	particulate matter
QLD	Queensland
SCR	Selective Catalytic Reduction
TAPM	The Air Pollution Model
US EPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

Appendix A

Meteorological analysis

A.1 Meteorological analysis for the BoM Dalby Airport station – 2021 to 2025

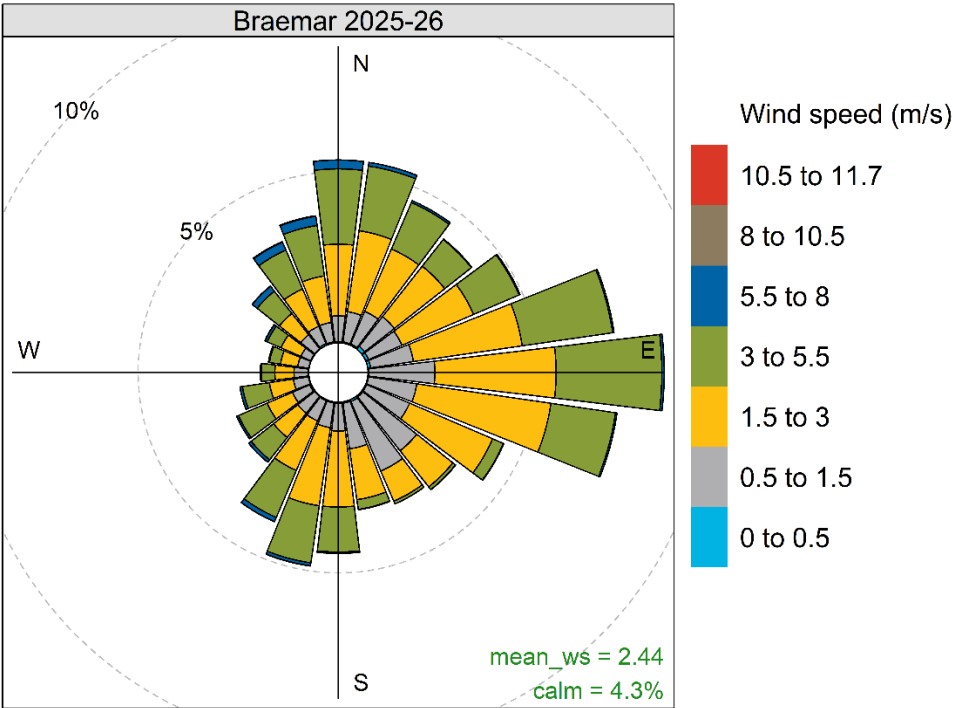


Figure A.1 Annual wind speed and direction – on-site Braemar meteorological station – April 2025 to March 2026

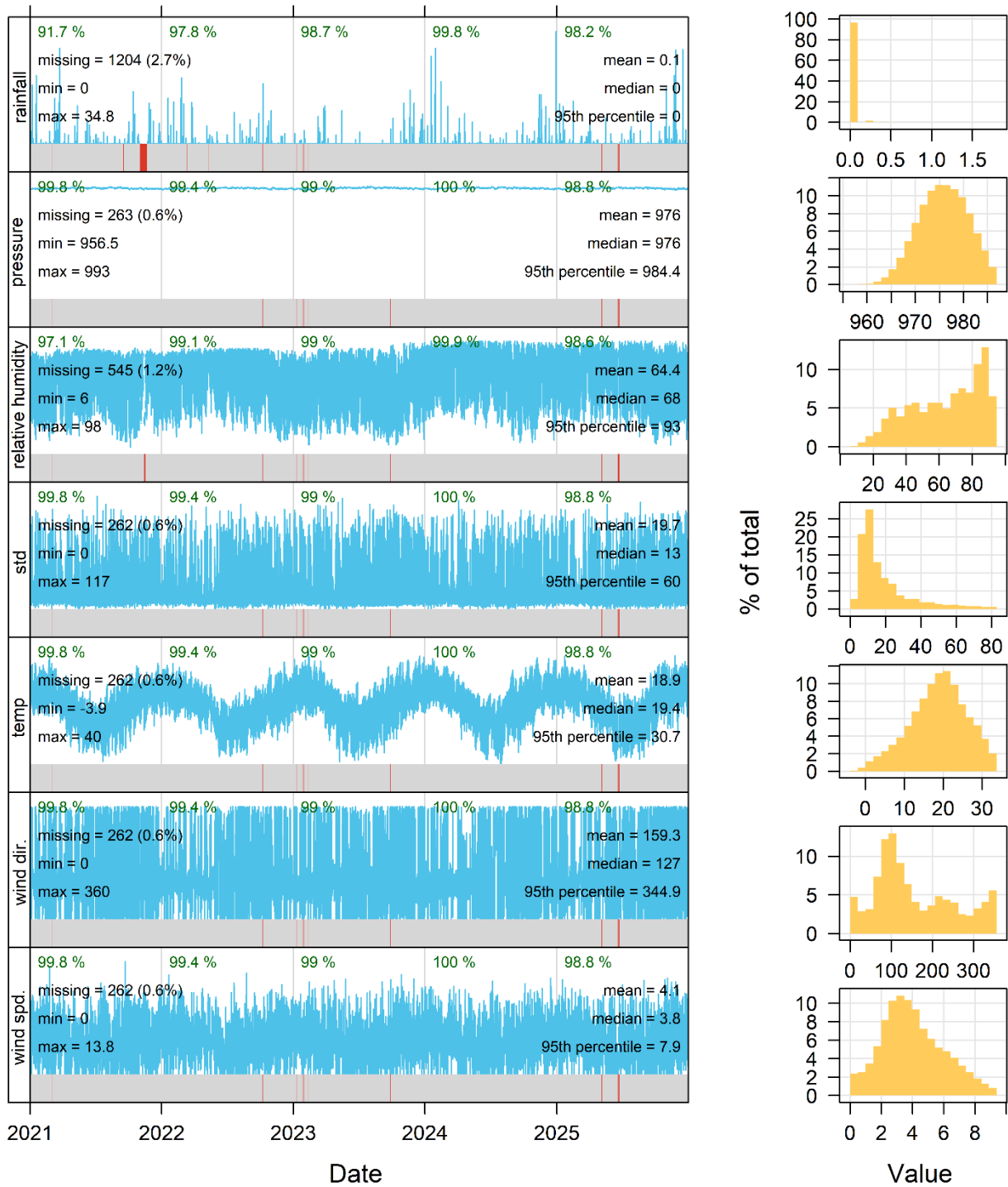


Figure A.2 Data completeness plot – BoM Dalby Airport – 2021 to 2025

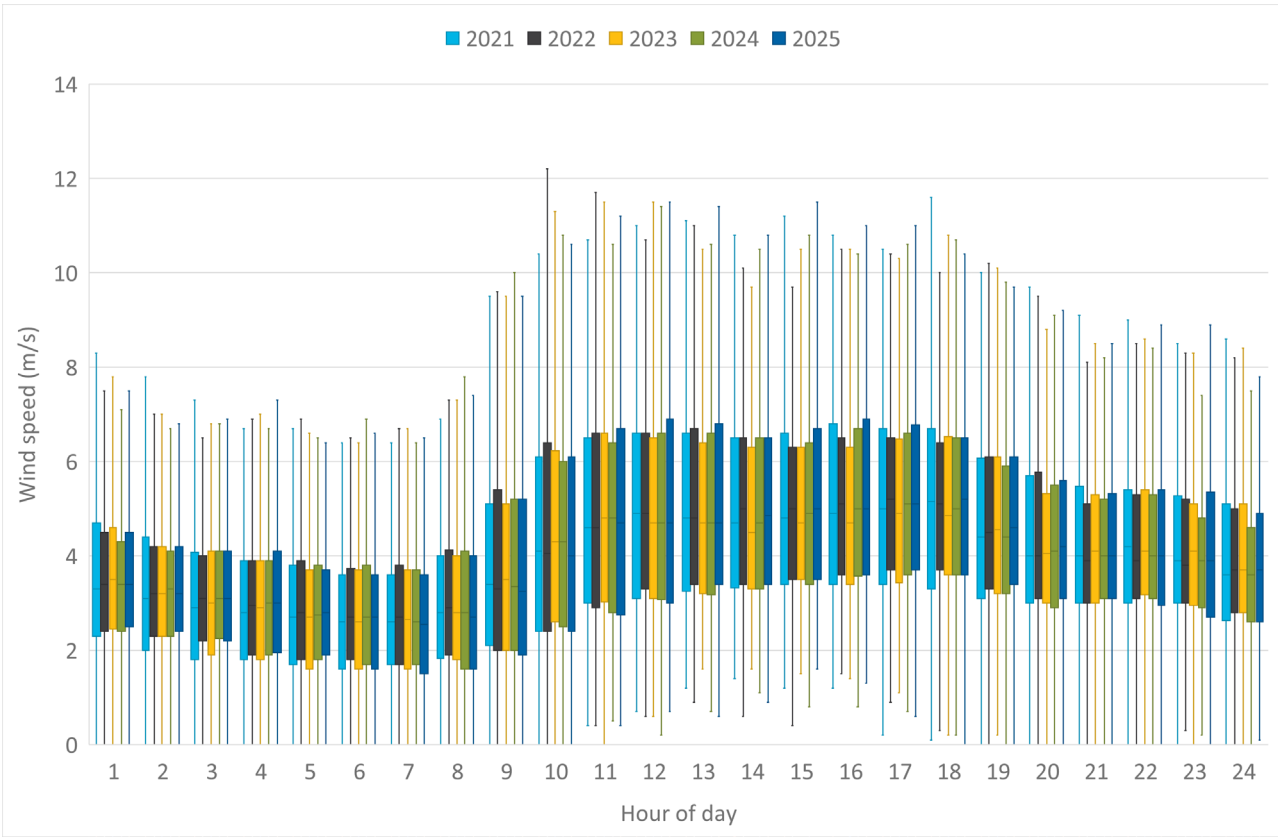


Figure A.3 Inter-annual variability in diurnal wind speed – BoM Dalby Airport – 2021 to 2025

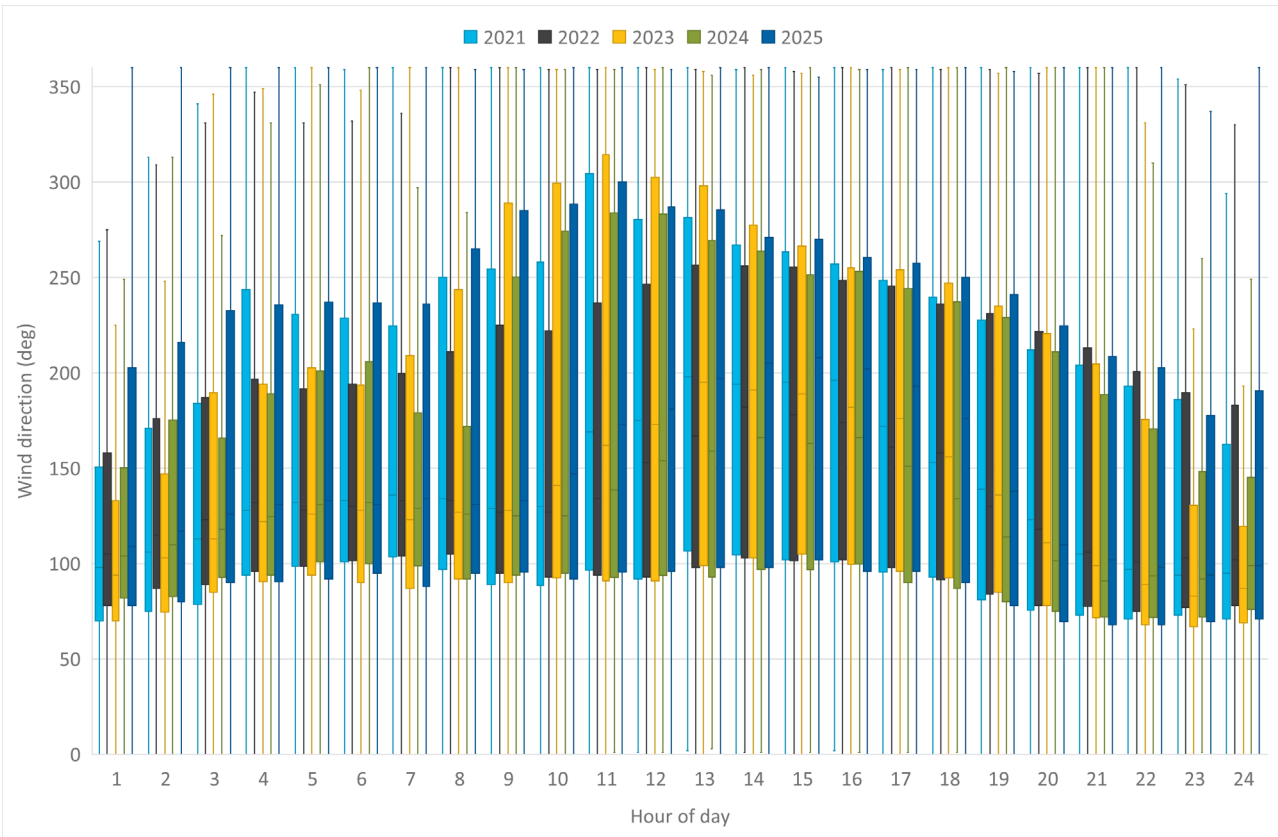


Figure A.4 Inter-annual variability in diurnal wind direction – BoM Dalby Airport – 2021 to 2025

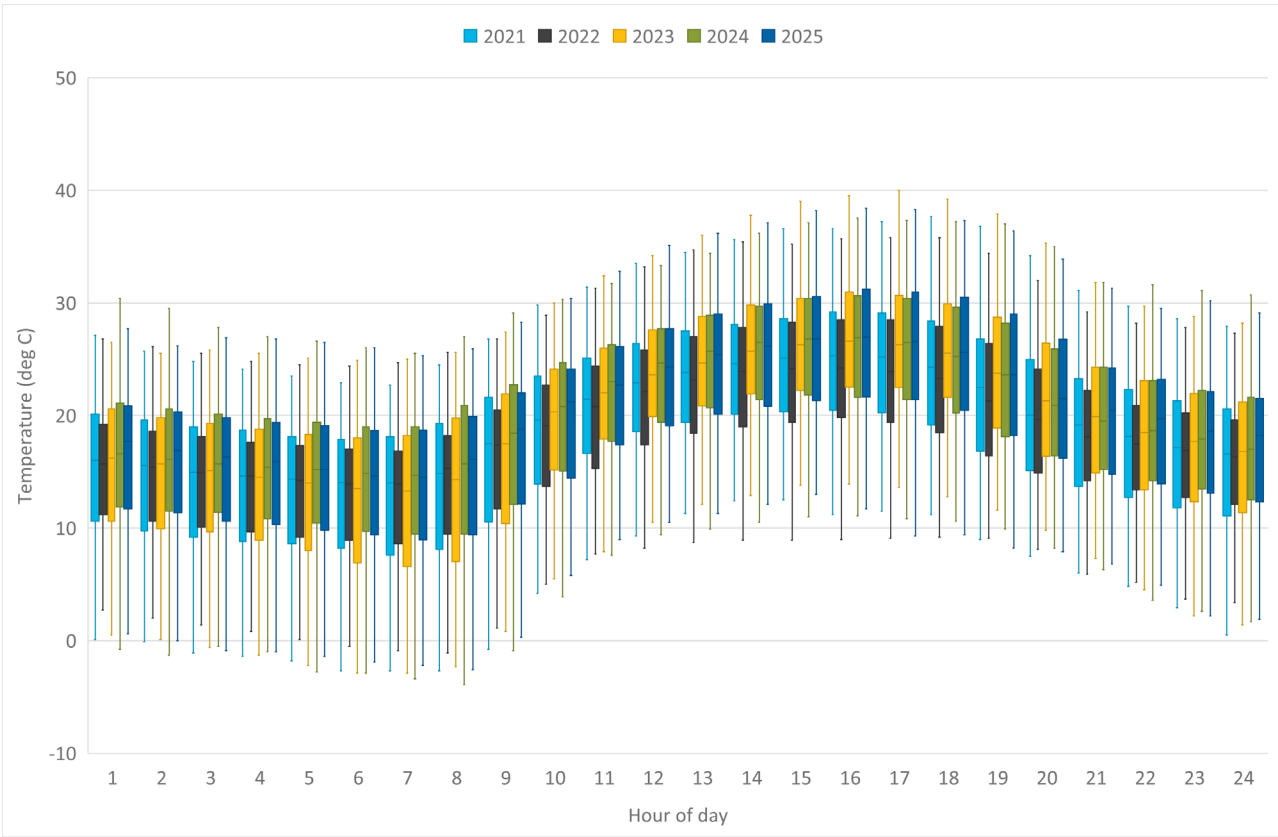


Figure A.5 Inter-annual variability in diurnal air temperature – BoM Dalby Airport – 2021 to 2025

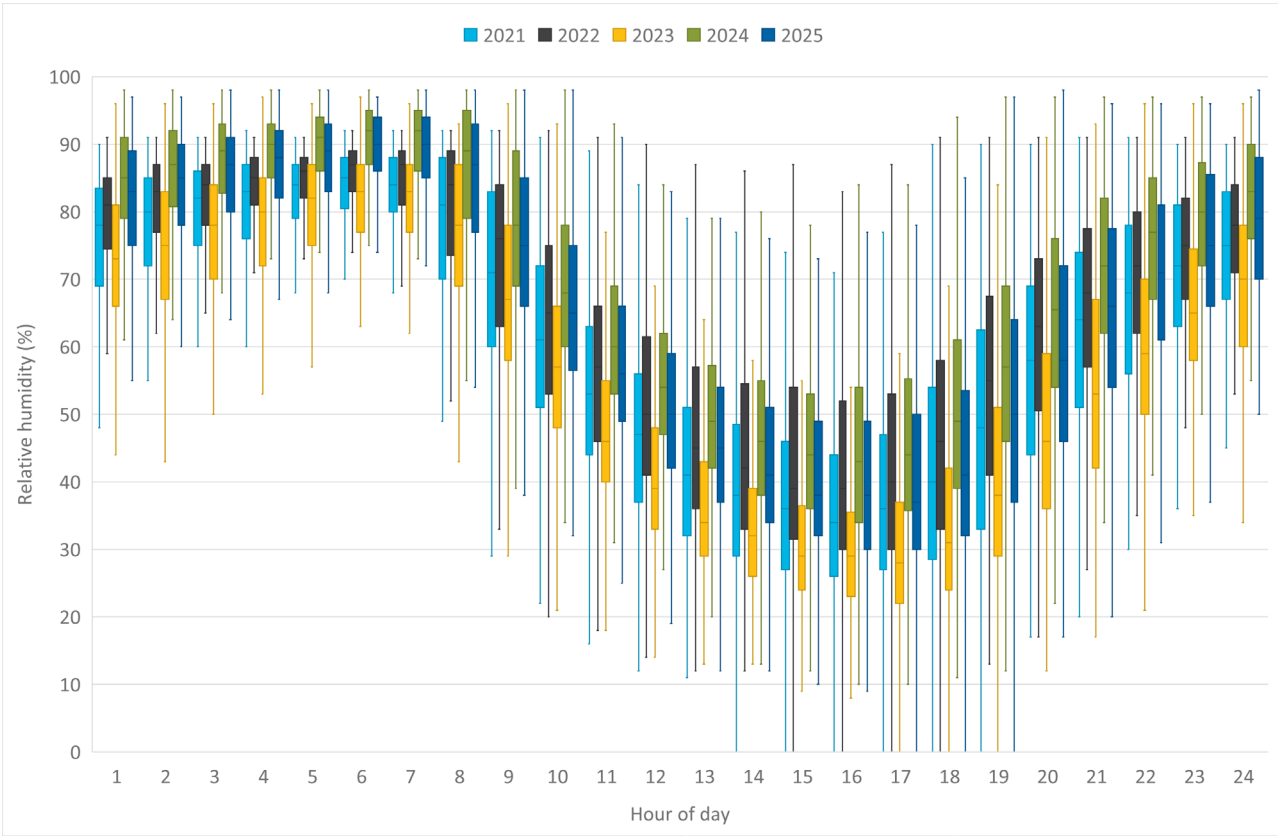


Figure A.6 Inter-annual variability in diurnal relative humidity – BoM Dalby Airport – 2021 to 2025

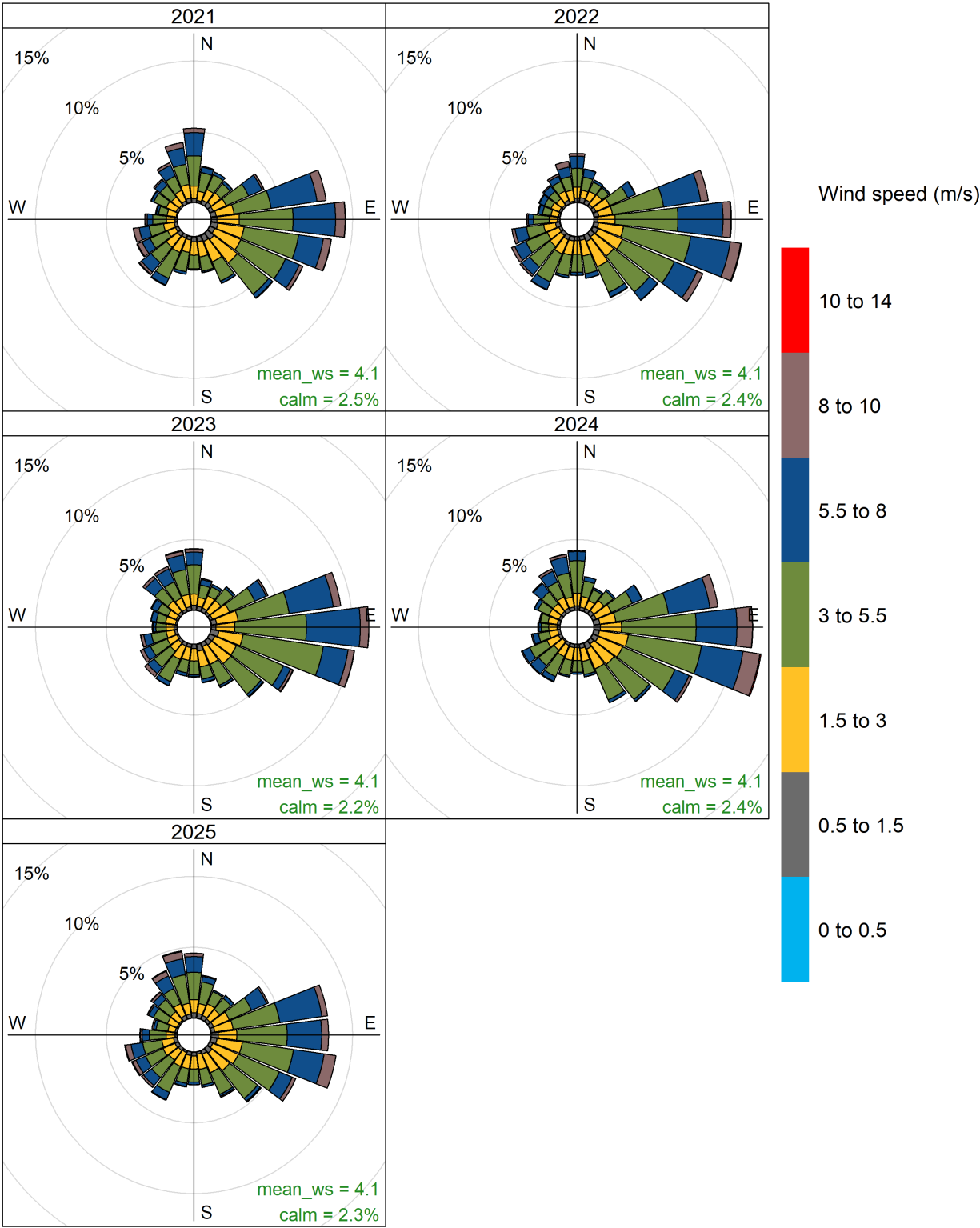


Figure A.7 Inter-annual comparison of recorded wind speed and direction – BoM Dalby Airport – 2021 to 2025

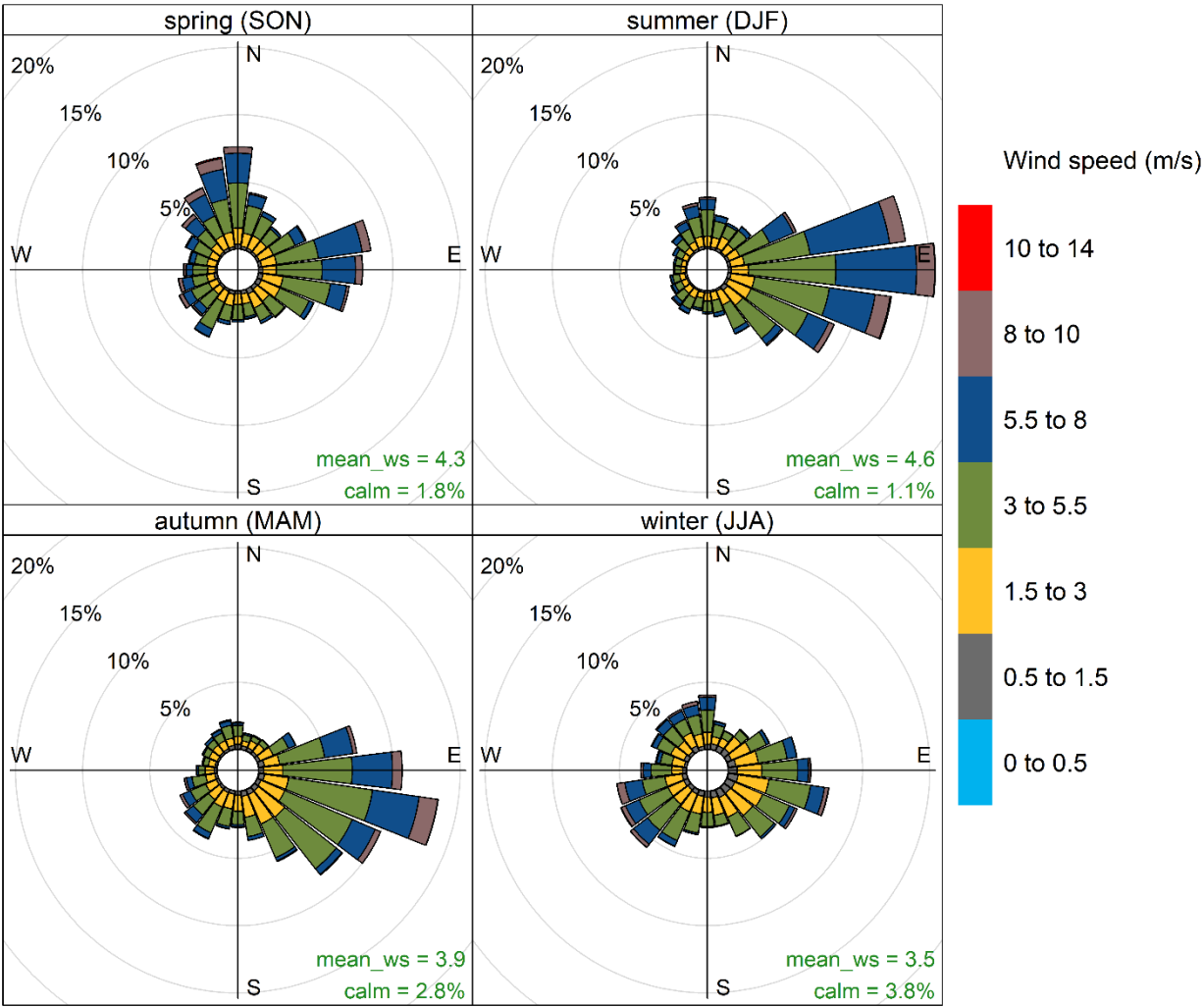


Figure A.8 Seasonal wind speed and direction – BoM Dalby Airport – 2021 to 2025

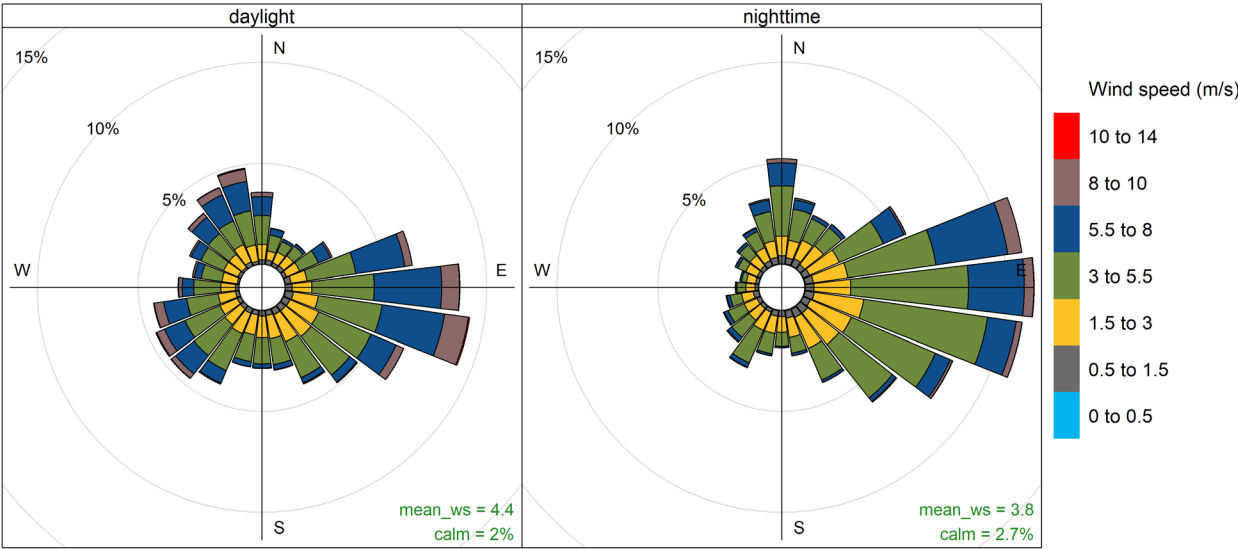


Figure A.9 Diurnal wind speed and direction – BoM Dalby Airport – 2021 to 2025

A.2 Meteorological modelling

A.2.1 TAPM modelling

The CSIRO prognostic meteorological model TAPM was used to generate the required upper air prognostic dataset required for AERMET modelling.

TAPM was configured and run as follows:

- TAPM version 4.0.4
- default 250 m resolution data
- grid domains with cell resolutions of 30 km, 10 km, 3 km, 1 km and 0.3 km. Each grid domain features 25 x 25 horizontal grid points and 25 vertical levels
- TAPM default databases for land use, synoptic analyses and sea surface temperature
- TAPM defaults for advanced meteorological inputs
- two 'spin-up' days allowed at the beginning and end of the run.

A.2.2 AERMET meteorological processing

The meteorological inputs for AERMOD were generated using the AERMET meteorological processor. The following sections provide an overview of meteorological processing completed for this assessment.

A.2.3 Surface characteristics

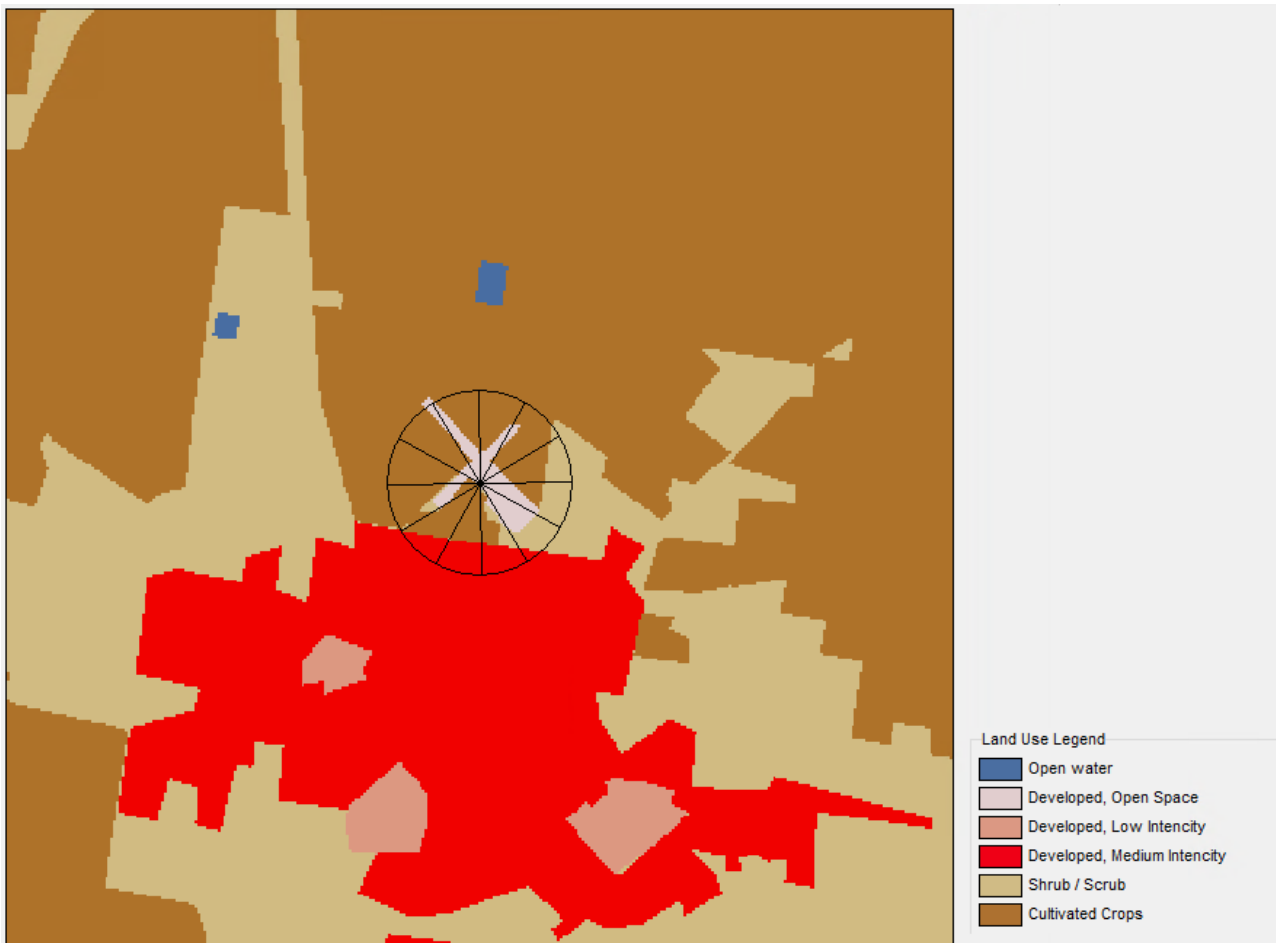
Prior to processing meteorological data, the surface characteristics of the area surrounding the adopted monitoring station require parameterisation. The following surface parameters are required by AERMET:

- surface roughness length
- albedo
- Bowen ratio.

As detailed by USEPA (2024), the surface roughness length is related to the height of obstacles to the wind flow (e.g. vegetation, built environment) and is, in principle, the height at which the mean horizontal wind speed is zero based on a logarithmic profile. The surface roughness length influences the surface shear stress and is an important factor in determining the magnitude of mechanical turbulence and the stability of the boundary layer. The albedo is the fraction of total incident solar radiation reflected by the surface back to space without absorption. The daytime Bowen ratio, an indicator of surface moisture, is the ratio of sensible heat flux to latent heat flux and is used for determining planetary boundary layer parameters for convective conditions driven by the surface sensible heat flux.

The land cover of the 10 km by 10 km area surrounding the site was mapped (see Figure A.10). Using the AERSURFACE tool and following the associated guidance of USEPA (2024), surface roughness was determined for 12 (30 degree) sectors grouped by similar land use types within a 1 km radius around the on-site meteorological station, while the Bowen ratio and albedo were determined for the total area. Monthly-varying values for surface roughness, Bowen ratio and albedo were allocated to each sector based on the values prescribed by USEPA (2024).

Surface moisture characteristics for the 2025 modelling period was determined by comparing the period rainfall total to the previous 30-year rainfall records from the long-term rainfall measurements taken from the BoM Dalby Airport station. An ‘average’ surface moisture classification was allocated.



Note: Marked in figure are the 1 km radius for surface roughness (12 sectors defined) and 10 km x 10 km for albedo/Bowen ratio (total image shown)

Figure A.10 Land use map for AERSURFACE processing

Table A.1 Monthly surface roughness length values by sector

Month	Surface roughness length (m) by sector (degrees)											
	0-30	30-60	60-90	90-120	120-150	150-180	180-210	210-240	240-270	270-300	300-330	330-0
Jan	0.088	0.129	0.13	0.107	0.081	0.193	0.234	0.214	0.148	0.145	0.13	0.096
Feb	0.088	0.129	0.13	0.107	0.081	0.193	0.234	0.214	0.148	0.145	0.13	0.096
Mar	0.076	0.119	0.118	0.093	0.068	0.185	0.234	0.213	0.14	0.137	0.121	0.084
Apr	0.076	0.119	0.118	0.093	0.068	0.185	0.234	0.213	0.14	0.137	0.121	0.084
May	0.076	0.119	0.118	0.093	0.068	0.185	0.234	0.213	0.14	0.137	0.121	0.084
Jun	0.024	0.028	0.045	0.055	0.052	0.083	0.073	0.049	0.033	0.029	0.027	0.025
Jul	0.024	0.028	0.045	0.055	0.052	0.083	0.073	0.049	0.033	0.029	0.027	0.025
Aug	0.024	0.028	0.045	0.055	0.052	0.083	0.073	0.049	0.033	0.029	0.027	0.025
Sep	0.035	0.038	0.058	0.07	0.068	0.099	0.087	0.061	0.044	0.039	0.037	0.035
Oct	0.035	0.038	0.058	0.07	0.068	0.099	0.087	0.061	0.044	0.039	0.037	0.035
Nov	0.035	0.038	0.058	0.07	0.068	0.099	0.087	0.061	0.044	0.039	0.037	0.035
Dec	0.088	0.129	0.13	0.107	0.081	0.193	0.234	0.214	0.148	0.145	0.13	0.096

Table A.2 Monthly Bowen ratio and albedo values (all sectors)

Month	Monthly value (all sectors)	
	Bowen ratio	Albedo
January	0.69	0.19
February	0.69	0.19
March	0.95	0.19
April	0.95	0.19
May	0.95	0.19
June	0.95	0.18
July	0.95	0.18
August	0.95	0.16
September	0.53	0.16
October	0.53	0.16
November	0.53	0.16
December	0.69	0.19

A.2.4 Meteorological inputs

Monitoring data from the BoM Dalby Airport station were combined with TAPM meteorological modelling outputs for input to AERMET. The following parameters were input as on-site data to AERMET:

- wind speed and directions – BoM Dalby Airport station
- temperature (heights of 10 m and 50 m) – BoM Dalby Airport station (10 m) and TAPM (50 m)
- relative humidity – BoM Dalby Airport station
- station level pressure – BoM Dalby Airport station
- cloud cover – BoM Dalby Airport station
- solar insolation – TAPM
- mixing depth – TAPM.

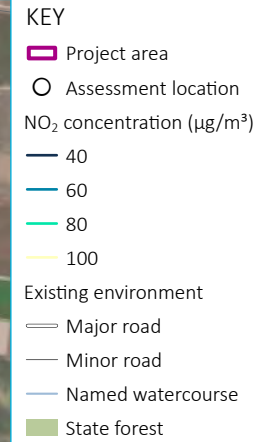
The period of meteorological data input to AERMET was 1 January 2025 to 31 December 2025.

A.2.5 Upper air profile

Due to the absence of necessary local upper air meteorological measurements, the hourly profile generated by TAPM at the BoM Dalby Airport station location was adopted. Using the temperature difference between levels, the TAPM-generated vertical temperature profile for each hour was adjusted relative to the hourly surface (10 m) temperature observations from the BoM Dalby Airport station.

Appendix B

Incremental (Project-only) contour plots



Predicted maximum 1-hour average
NO₂ concentrations (µg/m³)-
(Scenario 1) Project only

Braemar Energy Hub
Air Quality Impact Assessment
Figure B.1





KEY

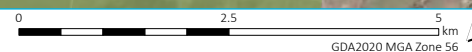
- Project area
- Assessment location
- NO₂ concentration (µg/m³)
 - 0.05
 - 0.1
- Existing environment
 - Major road
 - Minor road
 - Named watercourse
 - State forest

Predicted annual average
NO₂ concentrations (µg/m³)-
(Scenario 1) Project only

Braemar Energy Hub
Air Quality Impact Assessment
Figure B.2



Source: EMM (2026); DNRMMRRD (2026); ESRI (2026); GA (2011); Alinta Energy (2026)



\\lemm.local\ydrive\2026\6260055 - Braemar Energy Hub\GIS\02 Maps\ AQIA AQIA004 PredictedMax8HourRollingAveCOConcS1 20260809_01.aprx 8/21/2026



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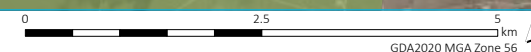
- Project area
- Assessment location
- CO concentration (mg/m^3)
 - 0.0005
 - 0.001
 - 0.002
- Existing environment
 - Major road
 - Minor road
 - Named watercourse
 - State forest

Predicted maximum 8-hour rolling average CO concentrations (mg/m^3)
- (Scenario 1) Project only

Braemar Energy Hub
Air Quality Impact Assessment
Figure B.3



Source: EMM (2026); DNRMMRRD (2026); ESRI (2026); GA (2011); Alinta Energy (2026)



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Appendix J

Noise impact assessment

Braemar Energy Hub

Noise Impact Assessment

Prepared for Alinta Energy Pty Ltd

August 2026

Braemar Energy Hub

Noise Impact Assessment

Alinta Energy Pty Ltd

E260055 RP6

August 2026

Version	Date	Prepared by	Reviewed by	Comments
1	05/08/2026	Ingrid Smith	Robert Kirwan	Draft
2	26/08/2026	Ingrid Smith	Robert Kirwan	Final
3	28/08/2026	Ingrid Smith	Robert Kirwan	Revised Final

Approved by



Robert Kirwan
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28 August 2026

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Executive summary

This Noise Impact Assessment (NIA) has been prepared to support the development of the Braemar Energy Hub Project at 363 Grahams Road, Kogan, Queensland. Noise models quantified potential impacts of the construction and operation of the Project on nearby assessment locations. The impacts were predicted under noise-enhancing conditions and represent worst-case scenarios.

A summary of the assessment findings is below:

- Construction noise levels are predicted to meet relevant acoustic quality objectives.
- Predicted operational noise levels are compliant with the acoustic quality objectives outlined in the EPP (Noise) at all assessment locations for Scenario one (gas turbine (GT)) operation. Annoying characteristics were identified for three assessment locations.
- Predicted operational noise levels are compliant with the acoustic quality objectives outlined in the EPP (Noise) at all assessment locations for Scenario two (reciprocating engine operation). Annoying characteristics were identified for three assessment locations.
- Total road traffic noise levels on Dalby Kogan Road and Grahams Road during the construction phase of the Project were determined to be within the DTMR $L_{A10,18hr}$ criteria. Road traffic during the construction phase of the Project is predicted to comply with noise objectives at all assessment locations on Dalby Kogan Road and Grahams Road.
- Consideration of cumulative noise has been assessed against a 5 dB reduction in acoustic quality objectives as per guidelines in the NPfI. Under these conditions, cumulative noise predictions exceed the adjusted acoustic quality objectives at two assessment locations for Scenario one, and two assessment locations for Scenario two. The exceedances for all scenarios were 2 dB or less and are considered minor. This cumulative test is conservative and screening-level in nature, and an exceedance of it does not of itself indicate that the acoustic quality objectives would be exceeded on a cumulative basis.

The Project has not reached final design, and Alinta has advised that the design remains dependent on procurement outcomes. The noise predictions presented in this assessment for the reciprocating engine option are based on engine hall attenuation and plant sound power levels that have reduced in order to demonstrate compliance with the acoustic quality objectives at the nearest assessment locations. This reduction represents the minimum mitigation required to achieve compliance and does not prescribe a specific method by which it is to be achieved.

Consistent with the management hierarchy of the EPP (Noise), the selection and design of appropriate noise control measures, whether through engine hall attenuation, equipment selection, enclosures, silencers, attenuation, or other means, is to be finalised during detailed design. This applies to both the gas turbine and reciprocating engine options.

It is recommended that the final design incorporates appropriate mitigation measures and demonstrates that the acoustic quality objectives can be achieved at all assessment locations. Where elevated noise levels remain, further controls should be applied in accordance with the management hierarchy and operational monitoring undertaken at commissioning.

TABLE OF CONTENTS

Executive summary	ES.1
1 Introduction	1
1.1 Background	1
1.2 Project terminology	1
1.3 Purpose and scope	1
2 Project description	4
2.1 Key Project components	4
3 Project area and assessment locations	6
3.1 Project area and surrounding area	6
3.2 Assessment locations	6
4 Noise guidelines	9
4.1 Environmental Protection Regulation (2019)	9
4.2 <i>Environmental Protection Act (1994)</i>	9
4.3 Environmental Protection Policy (Noise) (2019)	9
4.4 DTMR Transport Noise Management Code of Practice Volume 1 – Road Traffic Noise (2013)	11
5 Project specific noise objectives	12
5.1 Legislative and policy context to the NIA	12
5.2 Protected area noise objectives	12
5.3 Construction noise objectives	13
5.4 Operational noise objectives	13
5.5 Road traffic noise objectives	15
5.6 Cumulative operational noise objectives	15
5.7 Vibration	16
6 Impact assessment	17
6.1 Project design	17
6.2 Noise modelling parameters	17
6.3 Construction noise	18
6.4 Operational noise	20
6.5 Sleep disturbance	23
6.6 Annoying characteristics	23
6.7 Road traffic noise	24
6.8 Cumulative noise	26

7	Noise mitigation and management	29
7.1	Construction mitigation and management	29
7.2	Operational mitigation and management	30
8	Conclusion	32
9	References	33

Appendices

Appendix A	Glossary	A.1
Appendix B	Noise contour maps	B.1

Figures

Figure 1.1	Regional context	3
Figure 3.1	Local context and assessment locations	8

1 Introduction

1.1 Background

Alinta Energy Pty Ltd (Alinta) is proposing to extend the existing 564 MW Braemar Power Station through the installation of up to an additional 250 MW of gas-fired generation capacity (the Project) at 363 Grahams Road, Kogan, Queensland (Qld) (the site), within the Western Downs Region local government area (LGA). The Project’s regional and local context is shown in Figure 1.1 and Figure 3.1.

The Project comprises an extension to the existing operational Braemar Power Station through the installation, operation, maintenance and eventual decommissioning of up to an additional 250 MW of gas-fired generation capacity. The Project will be located within the existing Braemar Power Station allotment and utilise established site access and supporting infrastructure. The gas-fired generation development forms part of the broader Braemar Energy Hub concept, which may also include a future battery energy storage system (BESS). The BESS does not form part of the Project assessed in this report.

EMM Consulting Pty Ltd (EMM) has been engaged by Alinta to undertake a noise impact assessment (NIA) to support the Planning Assessment Report (PAR).

1.2 Project terminology

Table 1.1 provides a description of Project terms used throughout this report.

Table 1.1 Project terms and definitions

Terminology	Definition
The Project	The installation, operation, maintenance and eventual decommissioning of up to an additional 250 MW of gas-fired electricity generation capacity within the existing Braemar Power Station.
Project area	The Project area encompasses an area of 39.71 hectares (ha), which comprises the total extent of the lot boundaries that are defined as the real property description.
Project footprint	The Project footprint is the area within the Project area that may be directly impacted by the construction and operation of the Project. The Project footprint encompasses an area of approximately 1.8 ha.

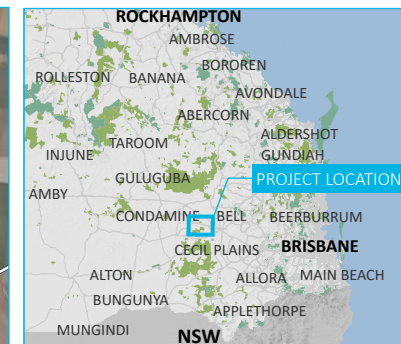
1.3 Purpose and scope

This NIA evaluates the proposed development. It documents the existing acoustic environment, applicable impact assessment criteria, and sources of noise associated with the Project. The assessment is undertaken through noise modelling of the Project’s construction, operation, and traffic activities, with predicted noise levels evaluated against the relevant criteria at assessment locations.

This NIA has been prepared in general accordance with the following:

- Department of Environment and Science (DES) 2020, ESR/2015/1838: Application requirements for activities with noise impacts.
- Department of Environment and Science (DES) 2020, *Noise Measurement Manual* (NMM).
- Department of Environment, Science and Innovation (DESI) 2024, ESR/2020/5305: *Noise and vibration—EIS information guideline* (EIS guideline).

- Department of Environment and Science (DES) 2022, ESR/2016/1935: Guideline—Noise assessment: Prescribing noise conditions for environmental authorities for petroleum activities (ESR/2016/1935 guideline).
- Department of Transport and Main Roads (DTMR) 2013, Transport Noise Management Code of Practice: Volume 1—Road Traffic Noise, Queensland Government.
- Environmental Protection (Noise) Policy 2019 (Qld) (EPP (Noise)).
- Environmental Protection Regulation 2019 (Qld) (EP Regulation).
- NSW Environment Protection Authority (NSW EPA) 2017, *Noise Policy for Industry* (NPfi).
- NSW Environment Protection Authority (NSW EPA) 2009, *Interim Construction Noise Guideline* (ICNG).
- Environmental Protection Act 1994 (Qld) (EP Act).



KEY

Project area

Existing environment

--- Rail line

— Major road

— Named watercourse

State forest

INSET KEY

— Major road

— National park/nature reserve

State forest

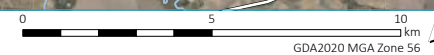
Regional context

Braemar Energy Hub
Noise Impact Assessment
Figure 1.1



V:\emh\local\ydr\ydr\2026\EMH260055 - Braemar Energy Hub\GIS\02 Maps\AQIA\AQIA001 Regional Context 20260809_01.aprx 8/11/2026

Source: EMM (2026); DNRMMRD (2025); ESRI (2026); GA (2011); Alinta Energy (2026)



2 Project description

2.1 Key Project components

The Project will include:

- gas-fired generating equipment with a generation capacity of up to 250 megawatt (MW)
- a gas pipeline connection from the existing gas pipeline to allow connection to the generators.

Alinta is currently proposing two options for the gas-fired generating equipment: gas turbines (GTs) or reciprocating engines. Only one technology option would be constructed, subject to procurement processes. Both options have been assessed in this NIA and are detailed in the proceeding chapters.

An overview of the Project is provided in Table 2.1.

Table 2.1 Project description summary

Project element	
Overview	
Project area	39.7 ha
Project footprint	1.8 ha
Gas fired generation equipment	
Number of turbine(s)/Reciprocating engines	4/10 (subject to final technology selection)
Individual unit generation capacity	4.5 MW-185 MW
Facility generation capacity	Up to 250 MW
Construction	
Construction period	Approximately 18 to 24 months
Construction workforce peak	Up to 100 workers
Temporary site access	Existing Grahams Road entry
Operations	
Project lifespan	20+ years
Operations workforce	Existing Braemar Power Station site staff (8 -10)
Permanent site access	Existing Grahams Road entry
Decommissioning	
Decommissioning period	Approximately 18 to 24 months

2.1.1 Construction

Construction of the Project is expected to occur over approximately 18 to 24 months.

Activities will generally include site preparation, establishment of hardstand pads, drainage works, and installation of equipment. Up to 100 workers may be required during peak construction, with access managed via existing private driveways from Grahams Road.

Construction is expected to occur during daytime hours only (6:30 am to 6:30 pm Monday to Saturday) as stipulated under the *Environmental Protection Act* (1994).

2.1.2 Operations

The Project will operate as an extension of the existing Braemar Power Station, having the ability to operate seven days a week, 365 days a year. The operational lifespan of the Project is expected to be 20+ years.

Operational activities will be carried out by existing Braemar Power Station site staff, and will comprise regular maintenance of Project infrastructure, cleaning, equipment calibration and internal road maintenance. The likely operational process for the Project involves the following activities:

- weekly and monthly inspections or maintenance
- testing and replacing of faulty plant components
- site safety and security, including CCTV and locked gate and fenced area.

Light vehicle access will be required throughout operations, with a maximum of 10 movements per day. Occasional heavy vehicle movements may also be required for maintenance works, with a maximum of five movements per day.

3 Project area and assessment locations

3.1 Project area and surrounding area

The Project is co-located with the existing Braemar Power Station in the Western Downs Region of south-western Qld, approximately 35 kilometres (km) west of the town of Dalby and approximately 210 km north-west of Brisbane. Land use in the surrounding area of the Project is a mixture of state forests, agricultural landscapes, and mining and industrial operations. The Project aligns within the Darling Downs Regional Plan to identify and develop land to build sustainable economic and social growth in the region.

The land at and surrounding the Project area is relatively flat, with elevations ranging from approximately 340 metres Australian Height Datum (m AHD) to 400 m AHD within approximately 5 km of the Project.

3.2 Assessment locations

There are 21 potential assessment locations within 8 km of the Project boundary. The nearest assessment location is Braemar State Forest approximately 1.8 km south of the Project, and the nearest residential assessment location is approximately 2.0 km north-east of the boundary. Assessment locations are provided in Table 3.1 and shown in Figure 3.1.

Assessment locations were provided by Alinta, with additional protected state forest locations identified using aerial photography and available land use planning/zoning information. While these may not capture every existing or future assessment location within the Project area, they are considered representative of the nearest potentially affected assessment locations.

Table 3.1 Assessment locations

Assessment location ID	Classification	Coordinates (MGA 56)		Approximate distance to site boundary (m)
		Easting	Northing	
R1	Residential	284881	6997723	6976
R2	Residential	284293	6998067	7464
R3	Residential	299265	7000416	6593
R4	Residential	299594	7001039	7004
R5	Residential	287767	7003549	5350
R6	Residential	288358	7003945	5244
R7	Residential	289039	7003598	4560
R8	Residential	291198	7003070	3255
R9	Residential	285700	7001811	6245
R10	Residential	289539	6997165	3198
R11	Residential	285371	6999663	6225
R12	Residential	285070	6998863	6569
R13	Residential	287894	7004693	6119
R14	Residential	291295	7001997	2179
R15	Residential	287631	6995750	5536

Assessment location ID	Classification	Coordinates (MGA 56)		Approximate distance to site boundary (m)
		Easting	Northing	
R16	Residential	293863	7001309	1867
R17	Commercial	293899	7001882	2358
R18	Residential	293503	7002645	2903
R19	Residential	293471	7002781	3026
Braemar State Forest	Protected area	292117	6997720	1770
Dalby State Forest	Protected area	291305	7003470	3682



KEY

- Project area
- Assessment location
- Existing environment
 - Major road
 - Minor road
 - Named watercourse
 - State forest

Local context and assessment locations

Braemar Energy Hub
Noise Impact Assessment
Figure 3.1



4 Noise guidelines

4.1 Environmental Protection Regulation (2019)

Under Schedule 8, Part 3, Division 1 of the EP Regulation, the Project must be operated in a way that protects the environmental values of the acoustic environment by achieving the performance outcomes for nearby sensitive receptors:

- sound from the activity is not audible at a sensitive receptor, or
- the release of sound to the environment from the activity is managed so that adverse effects on environmental values, including health and wellbeing and sensitive ecosystems, are prevented or minimised.

4.2 Environmental Protection Act (1994)

The *Environmental Protection Act 1994* (Qld) (EP Act) defines the unreasonable or likely interference of noise due to an environmentally relevant activity as an environmental nuisance. Section 440R of the EP Act regulates noise from the construction phase/building work, as follows:

The EP Act default noise standards thus regulate hours for construction works but does not limit the level of noise from the construction work.

440R Building work

(1) A person must not carry out building work in a way that makes an audible noise—

- (a) on a business day or Saturday, before 6.30 am or after 6.30 pm; or
- (b) on any other day, at any time.

(2) The reference in subsection (1) to a person carrying out building work—

- (a) includes a person carrying out building work under an owner-builder permit; and
- (b) otherwise does not include a person carrying out building work at premises that are the person's principal place of residence.

4.3 Environmental Protection Policy (Noise) (2019)

To meet the objectives of the EP Regulation and minimise sources of environmental nuisance for sensitive receptors, the Environmental Protection Policy (Noise) provides guidelines on protecting the acoustic environment that pertain to values of:

- the protection of health and biodiversity of ecosystems
- the protection of human health and wellbeing, ensuring a suitable environment for an individual to:
 - sleep
 - study or learn
 - be involved in recreation, including relaxation and conversation
- the protection of the amenity of the community.

Schedule 1 of the EPP (Noise) defines the acoustic quality objective for sensitive receptors type and the relevant sections are reproduced in Table 4.1.

Table 4.1 **Schedule 1 Acoustic quality objectives**

Sensitive receptor	Time of day	Acoustic quality objectives (measured at the receptor) dB(A)			Environmental value
		L_{aeq} , adj, 1hr	L_{A10} , adj, 1hr	L_{A1} , adj, 1hr	
Residence (for outdoors)	Daytime and evening	50	55	65	Health and wellbeing
Residence (for indoors)	Daytime and evening	35	40	45	Health and wellbeing
	Night-time	30	35	40	Health and wellbeing, in relation to the ability to sleep
Library and educational institution (including a school, college and university) (for indoors)	When open for business or when classes are being offered	35			Health and wellbeing
School or playground (for outdoors)	When the children usually play outside	55			Health and wellbeing, and community amenity
Commercial and retail activity (for indoors)	When the activity is open for business	45			Health and wellbeing, in relation to the ability to converse
Protected area or critical area	Anytime	The level of noise that preserves the amenity of the existing area or place			Health and biodiversity of ecosystems

Condition 9 of the EPP (Noise) also states the following in relation to background noise creep:

9 Management intent for noise

This section states the management intent for an activity involving noise that affects, or may affect, an environmental value to be enhanced or protected under this policy.

Note— See section 35 of the Environmental Protection Regulation 2019.

(2) To the extent it is reasonable to do so, noise must be dealt with in a way that ensures—

(a) the noise does not have any adverse effect, or potential adverse effect, on an environmental value under this policy; and

(b) background creep in an area or place is prevented or minimised.

(3) Despite subsection (2)(b), if the acoustic quality objectives for an area or place are not being achieved or maintained, the noise experienced in the area or place must, to the extent it is reasonable to do so, be dealt with in a way that progressively improves the acoustic environment of the area or place.

(4) In this section—background creep, for noise in an area or place, means a gradual increase in the total amount of background noise in the area or place as measured under the document called the ‘Noise measurement manual’ published on the department’s website.

4.4 DTMR Transport Noise Management Code of Practice Volume 1 – Road Traffic Noise (2013)

The EPP (Noise) acoustic quality objectives specifically do not apply to “noise from the ordinary use of a public road or State-controlled road”. The EPP (Noise) does not provide any assessment criteria relevant to the impact of public road noise from a specific use.

Construction and operational traffic require consideration for potential noise impacts. Road traffic noise has been assessed under the general guidance of the DTMR Transport Noise Management Code of Practice Volume 1 – Road Traffic Noise (2013). Table 4.2 reproduces the categories and criteria for road traffic noise at assessment locations relevant to the construction and operation of the Project.

Table 4.2 Road traffic noise criteria at assessment locations

Categories	Assessment location type	Existing Residences (façade corrected) dB
Existing Road – No Roadworks	Residential	68 L _{A10} (18hr)
Upgrading existing road	Passive recreational areas	N/A

5 Project specific noise objectives

5.1 Legislative and policy context to the NIA

Noise criteria for this assessment have been developed in accordance with the guidelines and definitions outlined in the EP Regulation, the EP Act and the EPP (Noise).

The documents used to determine the project specific noise objectives are summarised in Table 5.1 and are detailed in the following sections.

Table 5.1 Guidelines summary used to determine assessment criteria

Impact	Document
Construction airborne noise	<i>Environmental Protection Act 1994 (Qld) (EP Act)</i> <i>Environmental Protection (Noise) Policy 2019 (Qld) (EPP (Noise))</i> <i>ESR/2020/5305 – Noise and vibration—EIS information guideline</i>
Operational airborne noise	<i>Environmental Protection (Noise) Policy 2019 (Qld) (EPP (Noise))</i> <i>Environmental Protection Regulation 2019 (Qld) (EP Regulation)</i> NSW Environment Protection Authority (NSW EPA) 2017, <i>Noise Policy for Industry (NPfi)</i>
Operational road traffic	Department of Transport and Main Roads (DTMR) Transport Noise Management Code of Practice Volume 1 – Road Traffic Noise (2013) Department of Transport and Main Roads (DTMR) 2023, Transport Noise Management Code of Practice: Volume 2 – Construction Noise and Vibration, Queensland Government.
Cumulative noise impacts	Environmental Protection Policy (Noise) (2019)

5.2 Protected area noise objectives

Neither the EPP (Noise) nor supporting departmental guidance specifies a numerical acoustic quality objective for protected areas. Schedule 1 instead requires that noise be limited to the level that preserves the amenity of the existing area, for the health and biodiversity of ecosystems of environmental value.

Studies in bioacoustics have increased in recent decades and have revealed that extraneous noise can interfere with animal behaviour, inducing behavioural and physiological changes to species groups (Erbe et al. 2022). The extent to which extraneous noise encourages change is dependent on the sensitivities and frequency range of the affected taxonomic group. Shannon et al. (2016) found that terrestrial wildlife responses begin at noise levels of approximately 40 dB(A), with 20% of reviewed papers documenting impacts below 50 dB(A). A previous study by SLR Consulting Australia Pty Ltd (2015) defined an acoustic criterion for the habitat of the Caley Valley Wetland of 45 dB(A) through a literature review of relevant fauna behaviours in response to noise levels. For the purposes of this assessment and in lieu of a practical guideline to assessing the amenity of a protected area, the acoustic quality objective for Braemar State Forest and Dalby State Forest has been set to the more stringent level of 40 dB(A). However, it should be recognised that any biological response to noise in wildlife is dependent on background noise characteristics and taxonomic species that are affected. As such, the objectives established for this assessment should be considered as a screening tool to consider further investigation.

Instantaneous noise objectives have not been established by a criterion as short-term noisy events are unlikely to induce behavioural changes in fauna species.

5.3 Construction noise objectives

The EPA (1994) default noise standards thus regulate hours for construction works but does not limit the level of noise from the construction work.

Although not applicable to building work/construction noise, the EPP (Noise) acoustic quality objectives for dwellings, as outlined in Section 4.3, have been applied in this assessment for the purpose of screening potential noise amenity impacts and identifying the need for non-standard noise mitigation measures. The construction acoustic quality objectives are not mandatory and are used solely for noise mitigation purposes.

Construction noise limits are based on the acoustic quality objectives outlined in the EPP (Noise). Construction is expected to run between Monday–Saturday from 6:30 am to 6:30 pm with audible building work not permitted outside of these hours as per Section 440R of the EPA (1994 current as of 27 September 2024) *Building work under the noise standard*. Noise limits for this assessment have been adopted from the daytime and evening acoustic quality objectives outlined in the EPP (Noise), given construction work will occur within this period. The L_1 noise objectives approximate louder, instantaneous events that are unlikely to occur simultaneously with external developments or over an extended period.

The internal levels of the acoustic quality objectives have been adjusted by 7 dB to account for attenuation across building façades. Construction noise objectives are provided in Table 5.2.

Table 5.2 Construction noise objectives

Assessment location	$L_{Aeq, adj, 1hr}$ project noise objective dB(A) ¹	$L_{A1, adj, 1hr}$ project noise emission objective dB(A)
R01 to R19	42	52
Dalby State Forest and Braemar State Forest	40	-

Notes: 1. As per the Noise and Vibration EIS Information Guideline, an outdoor-to-indoor attenuation value of 7 dB, appropriate for typical Queensland buildings with open windows, has been applied to the indoor objectives to determine the outdoor noise objectives for the Project.

5.4 Operational noise objectives

5.4.1 Acoustic quality objectives

Operational project noise objectives are derived from the acoustic quality objectives set out in the EPP (Noise). The operation is not restricted to a particular time of day and may occur during the day, evening, or night period. As the night-time acoustic quality objective is the most stringent of the three, it represents the limiting case for residential assessment locations.

The internal levels of the acoustic quality objectives have been adjusted by 7 dB to account for attenuation across building façades. The adopted noise objectives are provided in Table 5.3.

Table 5.3 **Operational noise objectives**

Assessment location	L _{Aeq, adj, 1hr} project noise objective dB		L _{A1, adj, 1hr} project noise objective dB	
	Day and evening	Night	Day and evening	Night ¹
R01 to R19	42 ¹	37 ¹	52 ¹	47 ¹
Dalby State Forest and Braemar State Forest	40	40	-	-

Notes : 1. As per the Noise and Vibration EIS Information Guideline, an outdoor-to-indoor attenuation value of 7 dB, appropriate for typical Queensland buildings with open windows, has been applied to the indoor objectives to determine the outdoor noise objectives for the Project.

5.4.2 Assessment of sleep disturbance

The ESR/2016/1935 guideline includes an L_{max} noise criterion of 55 dB as a best practice noise emission limit. This criterion has been adopted for the Project for the assessment of sleep disturbance. Results are discussed in Section 6.5.

5.4.3 Assessment of background creep

The EPP (Noise) requires that, to the extent it is reasonable to do so, background creep is prevented or minimised, and that where the acoustic quality objectives are not achieved or maintained, noise is dealt with in a way that progressively improves the acoustic environment. These requirements are distinct from the assessment of predicted levels against the objectives. The policy does not state a background creep criterion. Operational noise is expected to be dominated by broadband emissions from the gas-fired generators, operating intermittently in response to demand. As the Project will not operate continuously, it will not contribute to the acoustic environment during non-generating periods, and its potential to raise the underlying background level in the locality is limited. In such instances where changes to the operational timing of the Project may occur due to increased demand, the EPP (Noise) allows for the progressive achievement and maintenance of acoustic quality objectives and should be considered.

The strategic planning objectives for the Darling Downs Regional Plan (2013) should be further considered when assessing the impacts of background creep. By virtue of the priority outcomes of the plan, it is expected for increased extractive and infrastructure industries in the region to change the acoustic characteristic of the area. In such an instance, protection of existing land use surrounding the Project must be managed through the separate levels of planning controls.

Noise controls will be identified during detailed design, and operational noise monitoring is recommended at commissioning to verify predicted levels and inform any additional management response to prevent or minimise background creep.

5.4.4 Annoying characteristics

Where a noise source contains certain characteristics, such as tonality, intermittency, irregularity or dominant low frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. Annoying characteristics of noise must be prevented in accordance with Queensland noise guidelines and regulations. It is noted that Queensland guidelines do not provide a prescriptive method for identifying annoying characteristics for low frequency.

In the absence of a prescriptive Queensland method, annoying characteristics are typically assessed in accordance with the NSW EPA Noise Policy for Industry (NPfI), which applies modifying factor corrections for tonality, low frequency content, impulsiveness and intermittency. Application of this method requires equipment 1/3 octave band sound power data, which is not yet available at the current stage of design. It is, therefore, recommended that this data be reviewed once available during detailed design, and that on-site noise testing be undertaken during commissioning, to confirm whether any annoying characteristics are present and whether additional mitigation is required.

5.5 Road traffic noise objectives

The construction and operational road traffic noise objective from the DTMR Transport Noise Management Code of Practice Volume 1 – Road Traffic Noise (2013) at assessment locations relevant to the construction and operation of the Project are provided in Table 5.4.

Table 5.4 Road traffic noise objectives

Categories	Criteria	
	Existing Residences (façade corrected)	Outdoor educational and passive recreational areas (including parks) (free field)
Existing Road – No Roadworks	68 LA10 (18h)	N/A

5.6 Cumulative operational noise objectives

EPP (Noise) does not provide noise objectives for assessing or accounting for cumulative noise impacts. In the absence of specific guidance, the NPfI has been used as a reference.

The NPfI provides guidelines that accommodate for cumulative noise impacts and have been employed here to provide some context for total site impacts. The NPfI establishes criteria for a new development for an assessment location impacted by up to four industrial noise sources as the recommended amenity noise level minus 5 dB. This adjustment to the acoustic quality objective has been applied to evaluate the effects of cumulative noise. As such, the $L_{Aeq, adj, 1hr}$ limits have been adjusted to consider the cumulative noise impacts on assessment locations from the Project.

As $L_{A1, adj, 1hr}$ events occur independently, it is unlikely that these events will occur simultaneously from multiple developments, and as such have not been adjusted for cumulative impacts.

The resultant noise objectives are provided in Table 5.5.

Table 5.5 Cumulative operational noise objectives

Assessment locations	$L_{Aeq, adj, 1hr}$ project noise objective dB(A)		$L_{A1, adj, 1hr}$ project noise objective dB(A)	
	Day and evening ¹	Night ¹	Day and evening ¹	Night ¹
R01 to R19	37	32	52	47
Dalby State Forest and Braemar State Forest	35	35	-	-

5.7 Vibration

Due to the nature of proposed operations and the distance between the Project and assessment locations, no vibration impacts are anticipated and, therefore, vibration has not been considered further in this assessment.

6 Impact assessment

6.1 Project design

Alinta has advised that, due to the preliminary stage of the Project, the final design has not been confirmed and remains dependent on procurement outcomes. The modelled operational scenarios in this assessment are, therefore, based on the most recent design information provided by Alinta. Given the potential for the design to change prior to construction, it is recommended that a risk assessment be undertaken should the final design depart significantly from that modelled through changes to equipment type, size, sound power level, orientation, or location. This risk assessment should confirm that noise from the Project does not result in adverse acoustic impacts at any assessment location.

6.2 Noise modelling parameters

Noise modelling parameters for this assessment are provided in Table 6.1.

Table 6.1 Noise modelling parameters

Modelling component	Assumption
Noise model	SoundPLAN version 9.1
Prediction algorithm	ISO 9613-2 (1996)
Terrain	1 m digital elevation model - Elvis
Modelling period	Typical worst case 1 hour period of operation where each item of equipment is running at full power
Ground absorption coefficient	G = 0.7
Atmospheric absorption	As detailed in Section 6.2.1
Assessment location heights	1.5 m above building ground level (representing ground floor)

6.2.1 Noise enhancing meteorology

The noise modelling undertaken considered meteorological conditions as per the methodology of the ISO 9613 (1996) standard, with a temperature of 10 degrees Celsius and 70% humidity, a temperature inversion and the following wind conditions as per the adverse meteorological assumptions of ISO 9613:

Downwind propagation conditions for the method specified in this part of ISO 9613 are as specified in section 5 of ISO 1996-2:1996, namely

- Wind direction within an angle of + 45° of the direction connecting the centre of the dominant sound source and the centre of the specified receiver region, with the wind blowing from source to receiver, and
- Wind speed between approximately 1m/s and 5m/s, measured at a height of 3m to 11m above the ground.

These formulae also hold, equivalently, for average propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs on clear, calm nights. As such, given the above adverse meteorological assumptions, it is considered that the noise modelling represents the resultant noise levels of the proposed development during noise propagation enhancing meteorological conditions.

6.3 Construction noise

6.3.1 Equipment and sound power levels

Construction for the Project is expected to occur over an approximate 18 to 24 month period including preparation civil works and the installation of gas-fired generators. The major construction activities will include earthworks, the establishment of hardstand pads, drainage works, and installation activities. It is expected for a peak workforce of 100 to be required during peak construction.

A worst-case scenario concerning site establishment and bulk earthworks has been modelled and assessed against the relevant acoustic quality objectives. A representative list of expected equipment has been established based on the ICNG general construction activities guide. Representative sound power levels have been adopted based off EMM's internal database and the UK Department of Environment, Food, and Rural Affairs (DEFRA) for plant and equipment items used for similar works.

The assumed list of equipment is representative of a worst-case period of activity for construction of this nature. It is possible for the plant and equipment quantities to vary from time-to-time to cater for the requirements of the Project's construction. If the actual fleet of plant and equipment required varies significantly from that assumed within Table 6.2, a risk assessment of the proposed works should be undertaken to determine the likelihood of noise impacts on surrounding assessment locations.

Construction noise is assessed assuming that each piece of construction equipment is operating concurrently and is assumed to operate at maximum sound power with 100% utilisation.

Table 6.2 Construction equipment sound power levels

Equipment	Units	Sound power dB(A)	Overall sound power for Phase dB(A)
Truck (medium rigid)	4 per hour	103	125
Road truck	4 per hour	108	
Scissor lift	1	98	
Franna crane	1	98	
Cat D10 Bulldozer	1	116	
637E Scraper	1	110	
Excavator (tracked) 13.5 t	1	110	
As above + hydraulic hammer	1	122	
Grader	1	113	
Dump truck	8 per hour	110	
Compactor	1	113	
Roller (large pad foot)	-	109	
Water cart	-	107	
Light vehicle	1 per hour	68	

6.3.2 Construction noise results

A worst-case construction scenario was assessed to determine impacts at assessment locations. Construction noise predictions are presented in Table 6.3.

Table 6.3 Construction noise predictions

Assessment location	Type	Acoustic Quality Objective, $L_{Aeq,adj,1hour}$	Prediction, $L_{Aeq,adj,1hour}$	Compliant
R1	Residential	42	<25	Yes
R2	Residential	42	<25	Yes
R3	Residential	42	<25	Yes
R4	Residential	42	<25	Yes
R5	Residential	42	<25	Yes
R6	Residential	42	<25	Yes
R7	Residential	42	<25	Yes
R8	Residential	42	28	Yes
R9	Residential	42	<25	Yes
R10	Residential	42	27	Yes
R11	Residential	42	<25	Yes
R12	Residential	42	<25	Yes
R13	Residential	42	<25	Yes
R14	Residential	42	34	Yes
R15	Residential	42	<25	Yes
R16	Residential	42	36	Yes
R17	Commercial	52	31	Yes
R18	Residential	42	30	Yes
R19	Residential	42	28	Yes
Braemar State Forest	Protected area	40	26	Yes
Dalby State Forest	Protected area	40	36	Yes

Results presented in Table 6.3 indicate:

- predicted construction noise levels are compliant with the acoustic quality objectives at all assessment locations.

Reasonable and feasible mitigation strategies to minimise construction noise impacts are presented in Section 7.1.

6.4 Operational noise

6.4.1 Scenario one – gas turbines

i Equipment specifications

Operational equipment for Scenario one is currently proposed to consist of four Siemens' SGT-800 gas turbines with four associated exhaust stacks at a height of approximately 15 m. Sound power information has been provided by Alinta.

Sound power levels for Scenario one operational equipment are provided in Table 6.4.

Table 6.4 Scenario one operational equipment sound power levels

Equipment	Height (m)	Units	Sound power level per unit, dB(A)
57 MW Siemens' SGT-800 gas turbine (inclusive of air intake)	2	4	113
Stack exhaust outlets	15	4	102

ii Operational noise results

Worst-case operational noise levels with all equipment operating were predicted to each assessment location and are presented in Table 6.5.

The operational noise contour map for Scenario one is provided in Appendix B.

Table 6.5 Scenario one operational noise predictions

Assessment location	Type	Acoustic Quality Objective, $L_{Aeq,adj,1hour}$	Prediction, $L_{Aeq,adj,1hour}$	Compliant
R1	Residential	37	<25	Yes
R2	Residential	37	<25	Yes
R3	Residential	37	<25	Yes
R4	Residential	37	<25	Yes
R5	Residential	37	<25	Yes
R6	Residential	37	<25	Yes
R7	Residential	37	<25	Yes
R8	Residential	37	26	Yes
R9	Residential	37	<25	Yes
R10	Residential	37	26	Yes
R11	Residential	37	<25	Yes
R12	Residential	37	<25	Yes
R13	Residential	37	<25	Yes
R14	Residential	37	32	Yes

Assessment location	Type	Acoustic Quality Objective, $L_{Aeq,adj,1hour}$	Prediction, $L_{Aeq,adj,1hour}$	Compliant
R15	Residential	37	<25	Yes
R16	Residential	37	34	Yes
R17	Commercial	52	29	Yes
R18	Residential	37	28	Yes
R19	Residential	37	27	Yes
Braemar State Forest	Protected area	40	36	Yes
Dalby State Forest	Protected area	40	<25	Yes

Results presented in Table 6.5 indicate:

- predicted operational noise levels for Scenario one are compliant with the acoustic quality objectives at all assessment locations.

Reasonable and feasible mitigation strategies to minimise operational noise impacts are presented in Section 7.

6.4.2 Scenario two – reciprocating engines

i Equipment specifications

Scenario two's modelled assumptions are provided in Table 6.6.

Table 6.6 Scenario two modelled assumptions

Assumption	Detailed description
Operational scenario two – reciprocating engines	
Equipment location, orientation, and height	As provided by Alinta incorporating: • 2 engine halls at a height of 18 m hosting five reciprocating engines each • 10 outdoor exhaust stacks in parallel with the engine halls and in general proximity to each engine on the western side of the engine halls at 25 m • 10 outdoor air intake openings in parallel with the engine halls and in general proximity to each engine on the western side of the engine halls at 9 m • 10 outdoor radiator coolers in parallel with the engine halls and in general proximity to each engine on the western side of the engine halls at 4.8 m.
Engine hall construction, location, and orientation	Each engine hall is presumed to be constructed with: • concrete flooring • 0.5 BMT steel walls • 0.5 BMT steel ceiling • no openings • L x W x H of 161.9 x 9.8 x 18.0 (in meters).

Sound power levels for Scenario two operational equipment are provided in Table 6.7. Additional attenuation of 13 dB has been applied to each engine hall housing the reciprocating engines, in order to achieve the acoustic quality objectives in this assessment. The specific acoustic treatment required, including construction type and achieved sound reduction, is to be confirmed during detailed design to ensure the Project is compliant.

In addition to this, the sound power levels adopted for the air intake opening and radiator coolers have been reduced by 11 dB(A) and 13 dB(A), respectively, below the levels supplied by Alinta, representing the maximum sound power level required in order to achieve the acoustic quality objectives in this assessment.

Table 6.7 Scenario two operational equipment sound power levels

Equipment	Height (m)	Units	Sound power level per unit, dB(A)
Everllence SE 18V 51/60 G HP reciprocating engine (internal noise level)	2	10	138
Air intake opening (with optional silencer) (reduced)	9	10	95
Radiator coolers (with optional silencer)	9	10	97
Exhaust stacks	25	10	97

ii Operational noise results

Worst-case operational noise levels with all equipment operating were predicted to each assessment location and are presented in Table 6.8. The scenario modelled represents the maximum allowable emissions from the engine halls, air intake openings, and radiator coolers to meet compliance at all assessment locations, with consideration of annoying characteristics detailed in Section 6.6.2.

The operational noise contour map for Scenario two is provided in Appendix B.

Table 6.8 Scenario two operational noise predictions

Assessment location	Type	Acoustic Quality Objective, $L_{Aeq,adj,1hour}$	Prediction, $L_{Aeq,adj,1hour}$	Compliant
R1	Residential	37	<25	Yes
R2	Residential	37	<25	Yes
R3	Residential	37	<25	Yes
R4	Residential	37	<25	Yes
R5	Residential	37	<25	Yes
R6	Residential	37	<25	Yes
R7	Residential	37	<25	Yes
R8	Residential	37	28	Yes
R9	Residential	37	<25	Yes
R10	Residential	37	27	Yes
R11	Residential	37	<25	Yes
R12	Residential	37	<25	Yes
R13	Residential	37	<25	Yes
R14	Residential	37	32	Yes
R15	Residential	37	<25	Yes

Assessment location	Type	Acoustic Quality Objective, $L_{Aeq,adj,1hour}$	Prediction, $L_{Aeq,adj,1hour}$	Compliant
R16	Residential	37	35	Yes
R17	Commercial	52	30	Yes
R18	Residential	37	30	Yes
R19	Residential	37	30	Yes
Braemar State Forest	Protected area	40	37	Yes
Dalby State Forest	Protected area	40	<25	Yes

Results presented in Table 6.8 indicate:

- predicted operational noise levels for Scenario two meet the acoustic quality objectives at all assessment locations.
- the acoustics quality objective at Braemar State Forest should be considered as a screening tool only.

Reasonable and feasible mitigation strategies to minimise operational noise impacts are presented in Section 7.2.

6.5 Sleep disturbance

The ESR/2016/1935 guideline includes an L_{Amax} noise criterion of 55 dB as a best practice noise emission limit. Like most generator engines under constant load, the operation of the Project is expected to be steady state. Therefore, there should be very little difference between L_{Aeq} and L_{Amax} emissions. The worst-case predicted L_{Aeq} noise level at any residential assessment location is 35 dB at R16 for Scenario two.

Given that a marginal variance of only 1–2 dB is expected between power station operation L_{Aeq} and L_{Amax} emissions, it is expected the received L_{Amax} at any assessment location would be below the L_{Amax} 55 dB limit.

6.6 Annoying characteristics

An assessment of annoying characteristics was performed in general accordance with the procedure outlined in the NPfI, in lieu of a Qld specific prescriptive method. Correction factors, also referred to as modifying factor penalties, are applied to predicted/measured noise levels at the assessment location before comparison with relevant noise trigger levels/criteria, to account for the additional annoyance caused by these noise characteristics.

To evaluate low frequency and tonal noise modifying factor applicability, each scenario was modelled using one-third octave sound power inputs to obtain one-third octave model predictions. Predicted one-third octave L_{Aeq} spectra for each modelled scenario were evaluated directly against NPfI thresholds.

It should be noted that the sound power data supplied by Alinta was provided as octave band levels, and conversion to one-third octave bands was required, assuming an even distribution of energy across each octave. The assessment should, therefore, be treated as a screening exercise only until one-third octave data are available.

6.6.1 Scenario one – gas turbine

A summary of the affected assessment locations and their prescriptive penalties for Scenario one is shown in Table 6.9.

Table 6.9 Scenario one – annoying characteristic summary

Assessment location	Criteria	Predicted level (dBA)	$L_{Ceq} - L_{Aeq}$	Penalty applied	Resultant level (dBA)	Compliance
R14	37	32	21	2	34	Yes
R16	37	34	21	2	36	Yes
Braemar State Forest	40	36	20	2	38	Yes

Three assessment locations were determined to be adversely affected by low frequency noise at the 50 Hz frequency band; however, compliance is still predicted with the acoustic quality objectives.

It should be noted the penalty should only be applied where the resultant low frequency noise cannot be mitigated. As the Project is in its preliminary design phase, mitigation measures should be considered at final design to reduce the impacts from the annoying characteristics at the affected assessment locations.

6.6.2 Scenario two – reciprocating engines

A summary of the affected assessment locations and their prescriptive penalties for Scenario two are shown in Table 6.10.

Table 6.10 Scenario two – annoying characteristic summary

Assessment location	Criteria	Predicted level (dBA)	$L_{Ceq} - L_{Aeq}$	Penalty applied	Resultant level (dBA)	Compliance
R16	37	35	30	2	37	Yes
R18	37	30	31	2	32	Yes
Braemar State Forest	40	37	29	2	39	Yes

Three assessment locations were determined to be adversely affected by low frequency noise at the 50 Hz frequency band; however, compliance is still predicted with the acoustic quality objectives.

It should be noted the penalty should only be applied where the resultant low frequency noise cannot be mitigated. As the Project is in its preliminary design phase, mitigation measures should be considered at final design to reduce the impacts from the annoying characteristics at the affected assessment locations.

6.7 Road traffic noise

Access to the Project is proposed to be from Grahams Road with no direct access from Dalby Kogan Road. It is, however, expected for traffic to travel along Dalby Kogan Road from nearby towns of Kogan and Dalby. Grahams Road largely services the existing energy infrastructure projects in the region. Access to the Project is expected to be at the existing Alinta Energy Braemar Power Station entry, 3.6 km along Grahams Road from Dalby Kogan Road. There is no current traffic estimate along Grahams Road and one identified assessment location along the segment of concern. It is not anticipated for the existing roads to be upgraded for the Project.

Alinta have advised there would be a total of 20 coaches, 56 light vehicles, and 16 heavy vehicle trips per day during the peak phase of the Project's construction. A summary of the traffic volume data used in this report is presented in Table 6.12.

Table 6.11 Traffic data adjacent to project

Scenario ¹	Road segment/name	Sign posted speed (km/h)	AADT	Heavy vehicles %	18 hours (6:00 am to 12:00 am)		
					Total	Light vehicles	Heavy vehicles
Existing (2027)	Dalby Kogan Road (32010)	100	725	35	682	443	239
	Grahams Road	80–100	-	-	-	-	-
Existing (2027) + construction	Dalby Kogan Road (32010)	100	889	35	774	499	275
	Grahams Road	80-100	-	39	92	56	36

Notes: 1. Existing movements are based on adjusted 2023 road traffic counts from the Queensland Government. Traffic has been adjusted by an annual compounding traffic growth rate of 1% as per the Braemar Battery 363 Grahams Road, Kogan, Traffic Impact Assessment, 2025.

6.7.1 Traffic noise prediction results

i Construction traffic

Construction road traffic for the Project is modelled at the worst-case position for each assessment location. Results for each assessment location are presented in Table 6.12.

Table 6.12 Predicted construction road traffic noise

Assessment location	Type	Acoustic Quality Objective, LA10,adj,18hour	Prediction, LA10,adj,18hour	Compliant
R1	Residential	68	27	Yes
R2	Residential	68	27	Yes
R3	Residential	68	42	Yes
R4	Residential	68	46	Yes
R5	Residential	68	41	Yes
R6	Residential	68	45	Yes
R7	Residential	68	43	Yes
R8	Residential	68	42	Yes
R9	Residential	68	33	Yes
R10	Residential	68	28	Yes
R11	Residential	68	30	Yes
R12	Residential	68	28	Yes
R13	Residential	68	41	Yes
R14	Residential	68	39	Yes
R15	Residential	68	25	Yes

Assessment location	Type	Acoustic Quality Objective, $L_{A10,adj,18hour}$	Prediction, $L_{A10,adj,18hour}$	Compliant
R16	Residential	68	36	Yes
R17	Commercial	68	36	Yes
R18	Residential	68	43	Yes
R19	Residential	68	45	Yes

ii Operational traffic

Alinta has advised operations of the Project are to be serviced by the existing workforce at Braemar Power Station. It is not expected for the operational phase of the Project to generate additional road traffic on Dalby Kogan Road or Grahams Road.

6.8 Cumulative noise

6.8.1 Cumulative construction impacts

Due to variations in location and timing across the construction phase of the Project, it is difficult to determine whether nearby projects will contribute cumulatively to the predicted construction noise levels in this assessment. If other projects are identified as operating concurrently and contributing to noise at assessment locations, cumulative noise impacts will be managed as required. It is important to note that the noise levels predicted in this assessment reflect a worst-case bulk earthworks scenario. For the majority of the construction phase, actual noise levels at assessment locations are expected to be significantly lower than those predicted.

6.8.2 Cumulative operational impacts

There is the potential for multiple operational industrial noise sources in the vicinity of the Project to contribute cumulatively at assessment locations included in this assessment during on-demand periods.

Other projects with the potential to generate cumulative operational noise impacts in conjunction with the Project include:

- the Braemar Power Station and Braemar 2 Power Station, which are existing open-cycle natural gas turbine plants immediately adjacent to the Project. Between the two plants there are six GTs used to generate electricity
- the Darling Downs Power Station, which comprises three GTs used to generate electricity and is located approximately 1 km south-west of the Project.

The operational noise levels predicted in this assessment reflect potential noise levels under enhancing meteorological conditions. Due to the differences in direction and proximity of the various industrial noise sources in the area relative to assessment locations, it is considered unlikely that worst-case noise conditions will be experienced from multiple sources concurrently at these locations.

However, to account for the cumulation of noise from the Project and contribution from other industrial noise sources, acoustic quality objectives were reduced by 5 dB as per the guidelines in the NPfI for assessing cumulative noise.

Table 6.13 Cumulative predicted operational noise levels

Assessment location	Cumulative Acoustic Quality Objectives $L_{Aeq, adj, 1hr}$ dB(A)		Predicted noise levels $L_{Aeq, adj, 1hr}$ dB(A)		Compliance? (Yes/No)			
					Scenario one		Scenario two	
	Day/evening	Night	Scenario one	Scenario two	Day/evening	Night	Day/evening	Night
R1	37	32	<25	<25	Yes	Yes	Yes	Yes
R2	37	32	<25	<25	Yes	Yes	Yes	Yes
R3	37	32	<25	<25	Yes	Yes	Yes	Yes
R4	37	32	<25	<25	Yes	Yes	Yes	Yes
R5	37	32	<25	<25	Yes	Yes	Yes	Yes
R6	37	32	<25	<25	Yes	Yes	Yes	Yes
R7	37	32	<25	<25	Yes	Yes	Yes	Yes
R8	37	32	26	28	Yes	Yes	Yes	Yes
R9	37	32	<25	<25	Yes	Yes	Yes	Yes
R10	37	32	26	27	Yes	Yes	Yes	Yes
R11	37	32	<25	<25	Yes	Yes	Yes	Yes
R12	37	32	<25	<25	Yes	Yes	Yes	Yes
R13	37	32	<25	<25	Yes	Yes	Yes	Yes
R14	37	32	32	32	Yes	Yes	Yes	Yes
R15	37	32	<25	<25	Yes	Yes	Yes	Yes
R16	37	32	34	35	Yes	No	Yes	No
R17	52	-	29	30	Yes	Yes	Yes	Yes
R18	37	32	28	30	Yes	Yes	Yes	Yes
R19	37	32	27	30	Yes	Yes	Yes	Yes
Braemar State Forest	35	35	36	37	No	No	No	No
Dalby State Forest	35	35	<25	<25	Yes	Yes	Yes	Yes

Notes: 1. As per the Noise and Vibration EIS Information Guideline, an outdoor-to-indoor attenuation value of 7 dB, appropriate for typical Queensland buildings with open windows, has been applied to the indoor objectives to determine the outdoor noise objectives for the Project.

2. Exceedances of the acoustic quality objectives are shown in bold type.

The cumulative results presented in Table 6.13 indicate:

- Predicted cumulative operational noise levels are not compliant with the acoustic quality objectives at assessment location R16 for both Scenario one and two during the nighttime period.
- Predicted cumulative operational noise levels are not compliant with the acoustic quality objectives at Braemar State Forest for both Scenario one and Scenario two during all periods.

This cumulative assessment is conservative and intended as a screening-level evaluation. An exceedance does not necessarily indicate that the acoustic quality objectives would be exceeded on a cumulative basis. It does, however, indicate that the Project would occupy a substantial proportion of the available acoustic amenity at the assessment locations.

7 Noise mitigation and management

7.1 Construction mitigation and management

Construction noise levels are predicted to comply with acoustic quality objectives at all assessment locations.

The potential for noise emissions can be minimised through consideration of the following general strategies (but not limited to), as detailed in Table 7.1.

It should be noted that, although not applicable to building work or construction noise, the acoustic quality objectives for dwellings outlined in the EPP (Noise) have been applied in this assessment to screen potential noise amenity impacts and identify the need for non-standard noise management measures. These construction acoustic quality objectives are not mandatory and are used solely for noise management purposes.

Table 7.1 General construction noise mitigation and management strategies

Strategy	Measure	Method
Universal Work Practices	Minimise avoidable noise	Train workers, include noise clauses in contracts, display noise-related approvals
	Reduce behavioural noise	Avoid shouting, radios, slamming doors, idling, PA overuse
	Minimise night-time disruption	Avoid impulsive/metallic noise, reduce reversing, schedule trucks away from sensitive areas
Consultation and Notification	Inform affected community	Letterbox drops, signage, multilingual notices, websites, newsletters
	Maintain communication	Appoint liaison officer, toll-free line, on-site info board, community meetings
	Manage complaints	Accessible contact point, escalation procedure, response tracking and resolution
Plant and Equipment	Use quieter work methods	Hydraulic splitters, chemical cracking, delayed load-out
	Choose quieter equipment	Compare noise-labelled tools, rent/buy low-noise models, use silencers and dampers
	Operate efficiently	Idle reduction, reduce throttle, line bins with damping material
	Maintain equipment	Check mufflers, enclosures, seals; repair or return noisy hired plant
On-site Location and Barriers	Maximise plant separation	Locate plant/vehicle entrances away from assessment locations, restrict mobile plant areas
	Avoid reversing alarms	Site layout planning, smart/multi-frequency alarms (OH&S compliant)
	Shield noise sources	Use sheds, stockpiles, enclosures, natural landforms; retain existing structures
Work Scheduling	Schedule to reduce impact	Work during high ambient noise periods or when assessment locations are absent

Strategy	Measure	Method
Transmission Path	Optimise logistics	Amalgamate loads, designate routes/times, provide off-site truck holding areas
	Block direct noise pathways	Erect solid barriers (hoardings, containers, site sheds) without gaps
	Increase shielding effectiveness	Build barriers early, address multi-storey impacts, consult on mitigation effectiveness

7.1.1 Hierarchy of management

To ensure operational activities comply with the adopted acoustic quality objectives, mitigation methods should be made in accordance with the noise management hierarchy outlined in the EPP (Noise). In the following preference, noise should be managed by:

1. avoiding the noise
2. minimising the noise in the following order
 - a) firstly – orientate an activity to minimise the noise
 - b) secondly – use best available technology to minimise the noise
3. managing the noise.

7.2 Operational mitigation and management

Predicted operational noise levels meet the acoustic quality objectives at all assessment locations for Scenario one (gas turbine operation) and Scenario two (reciprocating engine operation). Neither scenario satisfies the cumulative assessment criteria. This cumulative test is conservative and screening-level in nature, and an exceedance of it does not of itself indicate that the acoustic quality objectives would be exceeded on a cumulative basis. It does, however, indicate that the Project would occupy a substantial proportion of the available acoustic amenity at the affected assessment locations.

For Scenario two, additional attenuation of 13 dB has been applied to each engine hall housing the reciprocating engines, in order to achieve the acoustic quality objectives in this assessment. The specific acoustic treatment required, including construction type and achieved sound reduction, is to be confirmed during detailed design to ensure the project is compliant. In addition to this, the sound power levels adopted for the air intake opening and radiator coolers have been reduced by 11 dB(A) and 13 dB(A) respectively below the levels supplied by Alinta, representing the maximum sound power level required in order to achieve the acoustic quality objectives in this assessment.

Alinta has advised that, due to the preliminary stage of the Project, the final design has not been confirmed and remains dependent on procurement outcomes. The modelled scenarios are, therefore, based on the most recent design information provided by Alinta and should be regarded as preliminary. Equipment type, size, sound power level, orientation and location are yet to be confirmed, and there consequently remains scope for the design to be refined to reduce predicted noise emissions.

It is, therefore, recommended that, at the final design stage, appropriate mitigation measures should be incorporated so that the acoustic quality objectives are achieved at all assessment locations. The general mitigation measures outlined in Section 7.2.1 should be considered to reduce noise impacts from the Project as part of the final design and ongoing noise management.

7.2.1 General considerations

General strategies can include:

- sourcing low-emission equipment
- sourcing high-performing mitigation options, such as turbine exhaust stack silencers
- reorienting or relocating noise sources to direct noise away from sensitive areas
- acoustic enclosures and louvres help reduce emissions while maintaining ventilation as required
- collaboration with manufacturers allows for early-stage acoustic improvements, such as quieter components or redesigns
- community consultation undertaken prior to commencement of the Project
- regular identification of noisy activities and adoption of improvement techniques
- all equipment will be inspected and maintained on a regular basis to ensure noise attenuation components are in good working order
- avoiding night-time operation may reduce noise impacts but may not be feasible given the Project's role in responding to electricity market demand.

8 Conclusion

This NIA has been prepared to support the Project, which comprises an extension to the existing Braemar Power Station through the installation of up to an additional 250 MW of gas-fired generation capacity at 363 Grahams Road, Kogan, Queensland. Noise models quantified potential impacts of the construction and operation of the Project on nearby assessment locations. The impacts were predicted under noise-enhancing conditions and represent worst-case scenarios.

A summary of the assessment findings is below:

- Construction noise levels are predicted to meet relevant acoustic quality objectives.
- Predicted operational noise levels meet the acoustic quality objectives outlined in the EPP (Noise) at all assessment locations for Scenario one (GT operation). Annoying characteristics were identified for three assessment locations.
- Predicted operational noise levels meet the acoustic quality objectives outlined in the EPP (Noise) at all assessment locations for Scenario two (reciprocating engine operation). Annoying characteristics were identified for three assessment locations.
- Total road traffic noise levels on Dalby Kogan Road and Grahams Road during the construction phase of the Project were determined to be within the DTMR $L_{A10,18hr}$ criteria. Road traffic during the construction phase of the Project is predicted to comply with noise objectives at all assessment locations on Dalby Kogan Road and Grahams Road.
- Consideration of cumulative noise has been assessed against a 5 dB reduction in acoustic quality objectives as per guidelines in the NPfI. Under these conditions, cumulative noise predictions exceed the adjusted acoustic quality objectives at one assessment location for Scenario one, and two assessment locations for Scenario two. All exceedances for Scenario one and two were 2 dB or less and are considered minor. This cumulative test is conservative and screening-level in nature, and an exceedance of it does not of itself indicate that the acoustic quality objectives would be exceeded on a cumulative basis.

The Project remains at a preliminary design stage, and final equipment selection is dependent on procurement outcomes. The noise predictions presented in this assessment for the reciprocating engine option are based on engine hall attenuation and plant sound power levels that have reduced in order to demonstrate compliance with the acoustic quality objectives at the nearest assessment locations. This reduction represents the minimum mitigation required to achieve compliance and does not prescribe a specific method by which it is to be achieved.

Consistent with the management hierarchy of the EPP (Noise), the selection and design of appropriate noise control measures, whether through engine hall attenuation, equipment selection, enclosures, silencers, attenuation, or other means, is to be finalised during detailed design. This applies to both the gas turbine and reciprocating engine options.

It is recommended that the final design incorporates appropriate avoidance and mitigation measures and demonstrates that the acoustic quality objectives can be achieved at all assessment locations. Where elevated noise levels remain, further controls should be applied in accordance with the management hierarchy and operational monitoring undertaken at commissioning.

9 References

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Appendix A

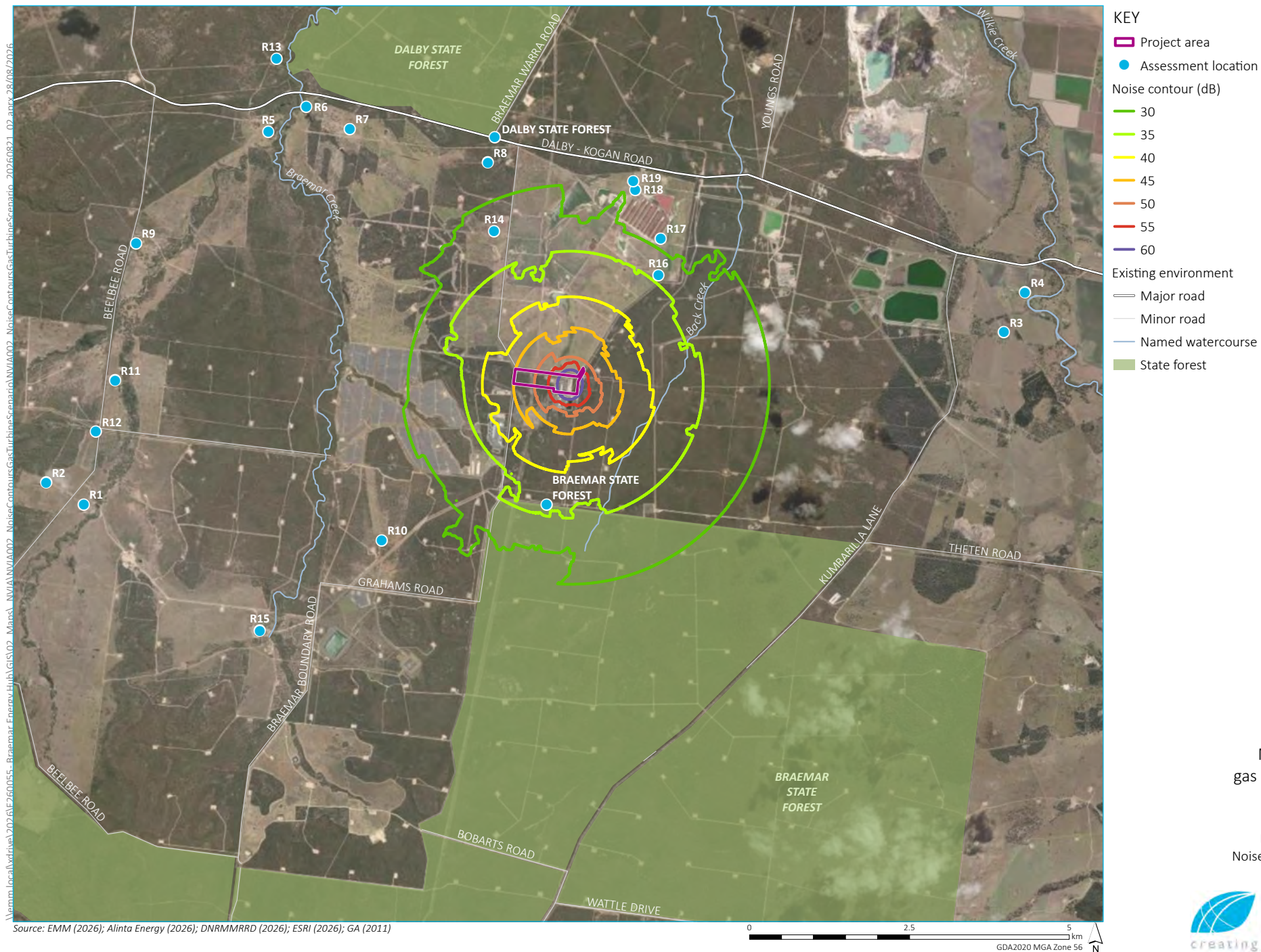
Glossary

A.1 Glossary

Acronym, term, or abbreviation	Definition
Day period	Monday to Saturday: 7:00 am to 6:00 pm. Sundays and public holidays: 8:00 am to 6:00 pm.
dB	Decibels. Relative unit of measurement on a logarithmic scale used extensively in the field of acoustics.
dB(A)	Decibels adjusted using the “A”-weighting scale to consider human response to sound.
dB(C)	Decibels adjusted using the “C”-weighting scale used to take into account low-frequency components of noise within the audibility range of humans.
Evening period	Monday-Sunday: 6:00 pm to 10:00 pm.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
km	Kilometre
L_{Aeq}	The average noise A-weighted energy during a measurement period.
$L_{Aeq,t}$	The average A-weighted sound energy during a measurement period of time (t).
L_{Amax}	The maximum A-weighted noise level over a time period.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
L_{peak}	The peak unweighted or linear noise energy during a measurement period.
L_W	Sound power level. Measured as 10 times the logarithmic ratio of power of a source relative to a reference level of one picowatt.
L_{WA}	A-weighted sound power level
m	Metre
m ²	square metres
m ³	cubic metre
Night period	Night period Monday-Saturday: 10:00 pm to 7:00 am. Sundays and public holidays: 10:00 pm to 8:00 am.
SPL	Sound pressure level. Measured as 10 times the logarithmic ratio of pressure fluctuations relative to a reference level of 20 micropascals.
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.

Appendix B

Noise contour maps



Noise contours –
gas turbine scenario

Braemar Energy Hub
Noise Impact Assessment
Figure B.1



- KEY**
- Project area
 - Assessment location
 - Noise contour (dB)
 - 30
 - 35
 - 40
 - 45
 - 50
 - 55
 - 60
 - Existing environment
 - Major road
 - Minor road
 - Named watercourse
 - State forest

Noise contours –
reciprocating engines scenario

Braemar Energy Hub
Noise Impact Assessment
Figure B.2

