

# Kingswood Battery Energy Storage System

## Traffic Impact Assessment (Update)

11 April 2025

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# 1 Introduction

## 1.1 Project overview

Iberdrola Australia Development Pty Limited (Iberdrola) (the Proponent) is seeking development consent for the construction, operation and maintenance of a large-scale Battery Energy Storage System (BESS) in Kingswood, NSW at 744 Burgmanns Lane, Kingswood 2340 (Lot 43 DP1064582) (the Project Site). The BESS will have a capacity of up to 270 Megawatts (MW) and up to 1080 Megawatt-hours (MWh) of battery storage capacity (the Project).

The Project is considered to meet the definition of State Significant Development under Clause 2.6 of the *State Environmental Planning Policy (Planning Systems) 2021*. The Project would be for electricity generating works on land that is permitted with development consent under Clause 2.35 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021*.

The Proponent is seeking State Significant Development (SSD) approval for the Project under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project Site is within the Tamworth Regional Local Government Area (LGA), around six kilometres southeast of Tamworth and two kilometres south-east of Calala town centre and borders the suburb of Calala.

The Project will involve construction and operation of the following:

- BESS including battery enclosures, inverters, transformers, switch gear and control building
- Onsite 33/330 kV substation to convert electricity between the high voltage transmission network and medium voltage BESS
- High voltage transmission connection (above ground and/or below ground) between the BESS and the Tamworth substation
- Ancillary infrastructure and mitigative features including:
  - Site access to the BESS from Ascot-Calala Road
  - Internal site access road and parking
  - Permanent office and staff amenities
  - Operations and maintenance building
  - Stormwater management infrastructure
  - Services and utilities
  - Lighting, fencing and security devices
  - Noise acoustic barriers
  - Asset protection zone
  - Landscaping and screening vegetation.

The BESS would operate 24 hours a day, seven days a week and be monitored remotely, with infrastructure maintenance undertaken onsite.

## 1.2 Assessment framework and purpose

The purpose of this Transport Impact Assessment (TIA) is to estimate, evaluate and mitigate the expected impact resulting from the construction and operational phase of the Project on the surrounding road network.

The assessment was prepared in accordance with the requirements of the NSW Department of Planning and Environment (DPE) (now Department of Planning, Housing and Infrastructure (DPHI)), which are set out in the

Secretary's Environmental Assessment Requirements (SEARs) (SSD 59325460) for the Project, issued on 30 October 2023. The SEARs identify matters which must be addressed in the Project Environmental Impact Statement (EIS). This TIA responds to SEARs relating to transport issues.

Table 1-1 lists requirements for the Project relevant to this assessment and references where they are addressed in this report.

*Table 1-1: SEARs for the assessment of transport*

| Requirement                                                                                                                                                                                                                                                                                                                                                        | Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transport</b>                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| An assessment of the peak and average traffic generation, including over-dimensional vehicles and construction worker transportation                                                                                                                                                                                                                               | Section 3.5 and Chapter 4 outline the anticipated traffic volumes generated including over-dimensional vehicles and construction worker transport.                                                                                                                                                                                                                                                                                                                                           |
| An assessment of the likely transport impacts to the site access route(s), site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance.                                                                                                                                    | Section 4.3 outlines the route assessment.<br>Section 4.4 outlines the site access assessment.<br>Section 4.7 summarises the key impact findings.                                                                                                                                                                                                                                                                                                                                            |
| A cumulative impact assessment of traffic from nearby developments.                                                                                                                                                                                                                                                                                                | Section 4.1.2 outlines the cumulative impact assumptions and findings.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road authority. | Chapter 5 outlines measures to mitigate and / or manage potential impacts.<br><b>Appendix D</b> outlines the route analysis including the key locations and proposed mitigations to resolve route viability. No road upgrades are proposed to support the development. Potential minor works associated with accommodating vehicles are discussed in Section 4.3 and will be developed further in consultation with relevant stakeholders during preparation of the Traffic Management Plan. |

In addition to the above SEARs, Tamworth Regional Council (TRC), in a letter dated 26 October 2023, raised additional comments. TRC comments and responses are provided in Table 1-2.

*Table 1-2: TRC comments as part of the SEARs submission*

| Requirement                                                                                                                                                                                   | Reference                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transport</b>                                                                                                                                                                              |                                                                                                                                                                                                                   |
| Access and traffic during construction are key issues and Council supports the assessment requirements listed in the SEARs.                                                                   | This Traffic Impact Assessment.                                                                                                                                                                                   |
| Council does not support heavy vehicle traffic through the urban portion of Calala. Council would be pleased to continue consultation with the Applicant on the other potential access routes | Section 3.5 and Section 4.3 outlines the proposed route for heavy vehicle traffic (including OSOM) to be via Whitehouse Lane and Ascot-Calala Road, which will avoid passing through the urban portion of Calala. |

| Requirement                                                                                                                                                                                                                                                          | Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The site itself is not mapped as flood prone land. However, access to the site is affected by flooding with different potential access routes affected by road closures to different degrees. The assessment of the site access route(s) needs to consider flooding. | Section 3.5 and Section 4.3 outlines the proposed route for heavy vehicle traffic (including OSOM). The access route via Whitehouse Lane and Ascot-Calala Road has been selected to avoid known flooding issues associated with Burgmanns Lane. Section 2.7.2 identifies that non-project related upgrades are proposed on Burgmanns Lane to improve road safety and mitigate against future floods. The Traffic Management Plan and Emergency Management Plan prepared for the Project will identify emergency routes to be used in consultation with stakeholders prior to construction. |

Transport for NSW (TfNSW), in a letter dated 24 October 2023, also raised additional comments as part of the pre-SEARs advice. TfNSW comments and responses are provided in **Appendix A**.

## 1.3 Response to agency submissions

Following the exhibition of this Project and agency review of the EIS and Traffic Impact Assessment Report prepared by Arcadis dated June 2024, TfNSW and Tamworth Regional Council requested additional information to complete the assessment (letters dated 20 August 2024 and 16 August 2024, respectively, are attached in **Appendix B**). Table 1-3 lists the comments from TfNSW and references where they are addressed in this revised report. Tamworth Regional Council's comments are listed and addressed in Table 1-4.

Table 1-3: Response to TfNSW's comments

| TfNSW's comments                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Reference / Response                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Access assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                               |
| The revised TIA is to assess the traffic and transport impacts of the project in accordance with Austroads and TfNSW requirements for intersections with New England Highway at Burgmanns Lane and Whitehouse Lane, specifically:                                                                                                                                                                                                                                      |                                                                                                                                                                               |
| a) Assess the accumulative traffic volumes of the EIS and approved major projects with a coinciding timeframe (including Tamworth BESS) and apply to background traffic volumes to ensure existing treatments are suitable. Turn warrant assessments are to be provided in accordance with <i>Austroads Guide to Traffic Management</i> Part 6 and <i>Austroads Guide to Road Design</i> Part 4A considering worst case scenario and need for higher order treatments. | Section 4.1.2.2 summarises the outcomes of turn warrant assessment conducted at Burgmanns Lane / New England Highway and Whitehouse Lane / New England Highway intersections. |
| b) Clarify staff numbers using shuttle buses vs private vehicles required for the development and recommended measures to ensure usage of the buses.                                                                                                                                                                                                                                                                                                                   | Section 4.5 details the staff parking arrangement during the construction and operation phases.                                                                               |
| c) Complete SISD assessment in line with <i>Austroads Guide to Road Design</i> Part 4A.                                                                                                                                                                                                                                                                                                                                                                                | Section 4.4.2 and 4.4.3 outlines the SISD assessment results for Burgmanns Lane / New England Highway and Whitehouse Lane / New England Highway intersections.                |

| TfNSW's comments                                                                                                                                                                                                                                                                                                                                                                                                | Reference / Response                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| d) Provide swept path analysis for the largest design vehicle at Burgmanns Lane / New England Highway intersection, for all movements, and identify necessary road upgrades.                                                                                                                                                                                                                                    | As mentioned in Section 3.2, light vehicles (passenger vehicles) can access the Project Site via Burgmanns Lane, no truck movements are expected to travel via the Burgmanns Lane / New England Highway intersection. Furthermore, Burgmanns lane is not a designated heavy vehicle route, hence no swept path analysis at this intersection has been conducted.                 |
| <b>Bridge assessment</b>                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                  |
| The application proposes heavy mass vehicles and vehicles with very large axle group loadings. The OSOM route will require bridge assessments to be undertaken to ensure suitability for these loads. For TfNSW assets these can be obtained from TfNSW by contacting spu@transport.nsw.gov.au. For non TfNSW assets the asset owner will need to be contacted to understand their requirements.                | A summary of the route analysis including impacted bridge locations are presented in <b>Appendix D</b> .<br><br>A review of height clearance to bridges and bridge loads will be prepared by transport contractor as part of the Construction Traffic Management Plan.                                                                                                           |
| <b>Burgmanns Lane access</b>                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                  |
| TfNSW has received an application for Tamworth BESS identifying Burgmanns Lane is difficult to use in wet weather. The Kingswood BESS notes light vehicle traffic would be utilising Burgmanns Lane. The revised TIA is to investigate wet weather usability of Burgmanns Lane and discuss wet weather contingency and management scenarios.                                                                    | As mentioned in Section 2.7.2, Council is planning to replace causeways on Burgmanns Lane to mitigate against future floods in 2024/2025, therefore it is expected this alternate access route via Burgmanns Lane is appropriate for light vehicles.                                                                                                                             |
| <b>Rail Comments in relation to the development</b>                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                  |
| UGLRL has reviewed the application and noted the haulage routes are well separated from CRN corridors; however, haulage routes will cross the rail corridors managed by Agencies other than TfNSW. It is recommended that the DPIE refer this application to other relevant agencies (e.g. ARTC and Sydney Trains).                                                                                             | No updates in report required.                                                                                                                                                                                                                                                                                                                                                   |
| <b>OSOM route assessment requirements</b>                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                  |
| The route assessment is to be reviewed and updated to address:<br>a) Schedule of movements from Port to site and timing within construction schedule.                                                                                                                                                                                                                                                           | Section 4.3.3 details the estimated travel distance and time from Port to site for the anticipated largest OSOM vehicle which will transport the HV transformers.                                                                                                                                                                                                                |
| b) Vehicle configuration, dimensions and weights of the project's high risk OSOM vehicles.                                                                                                                                                                                                                                                                                                                      | Section 3.5.1 and <b>Appendix C</b> present the OSOM vehicle configuration, dimensions and weights.                                                                                                                                                                                                                                                                              |
| c) Include an assessment of pull-over locations and rest areas including:<br><ul style="list-style-type: none"> <li>Locations (including GPS coordinates) and dimensions.</li> <li>Swept path analysis for the largest high-risk OSOM vehicles demonstrating vehicles can enter, exit and park without impacting travel lanes and parking areas, confirming access will be provided to other vehicle</li> </ul> | Section 4.3.3 summarises the assessment of rest areas and pull-over locations along the potential OSOM route including the locations of recommended rest stops.<br><br><b>Appendix E</b> presents the swept path analysis of the largest anticipated OSOM vehicle (14-axle OSOM) entering, exiting and parking at the locations without impacting travel lanes and parking areas |

| TfNSW's comments                                                                                                                                                                                                                                                                                                                                                                                                                                     | Reference / Response                                                                                                                                                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>types permitted to access identified rest area or pullover locations.</p> <ul style="list-style-type: none"> <li>Information explaining why the six identified pull over bays are sufficient to mitigate the traffic impacts, incident and emergency management for the high risk OSOM movements from Port to site.</li> </ul>                                                                                                                    |                                                                                                                                                                                                                                                                                                  |
| d) The 14 axle OSOM combination used for the swept path analysis is not a conventional combination used in NSW. The swept path diagrams need to be updated for this configuration.                                                                                                                                                                                                                                                                   | <p>As advised by TfNSW in the meeting on 30 August 2024, the OSOM combination should provide &gt;6m spacing between first and fourth axles.</p> <p>The 14-axle OSOM vehicle configuration has been updated accordingly in the swept path analysis (<b>Appendix C</b> and <b>Appendix E</b>).</p> |
| e) The swept path extends over the island in the centre of the roundabout at Market Street which contains signage and a garden. Consideration of solutions to mitigate this impact is required.                                                                                                                                                                                                                                                      | Recommendations for temporary relocation of the existing signage and garden at the roundabout are included in Table 4-15 and <b>Appendix D</b> .                                                                                                                                                 |
| f) Swept path plans in Appendix B are to be updated to include street names, a north point and names of towns being traversed.                                                                                                                                                                                                                                                                                                                       | Swept path plans in <b>Appendix C</b> (previously named as <b>Appendix B</b> ) are updated to include street names, a north point and names of towns being traversed.                                                                                                                            |
| <b>Tamworth Bypass project timing</b>                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                  |
| The applicant is to consider the Blueprint 100 and Tamworth Bypass projects as part of their revised TIA including timing in relation to the project. This includes evidence of consultation with Tamworth Regional Council in regard to the project.                                                                                                                                                                                                | Discussion regarding the Tamworth Bypass project is included in Section 2.7.3.                                                                                                                                                                                                                   |
| <b>TMP requirements</b>                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                  |
| The TIA will need to be updated to include further information about how traffic management will occur. For example, special events, roadworks and long-term project sites, farming equipment during harvest season, wet weather contingency plans, emergency response processes, identifying whether movements will be during the day or the night, contingency plan for breakdowns (identifying Heavy Tow/Mechanic service in specific locations). | Section 5 has been updated to include the further information requested about traffic management.                                                                                                                                                                                                |

Table 1-4 Response to TRC comments

| Tamworth Regional Council's comments                                                                                                                                                                                                                                                                                                                                           | Response                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Assessments of clashes with street furniture and the like have been provided – demonstrating that the proposed Over Size Over Mass (OSOM) movements can be accommodated. These trips will be low in number, and will be carried out under escort. As such, it can be reasonably foreshadowed that there will not be any outbound vehicles impinging on the swept paths for the | Site access from Ascot-Calala Lane via Whitehouse Lane is assessed in Section 4.4.1 |

| Tamworth Regional Council's comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Response                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>OSOM trips (because the intersections will be temporarily under the management of the escorts). However, general heavy vehicle traffic access to the site is proposed to be taken from Ascot-Calala Lane, via Whitehouse Lane.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                    |
| <p>The Traffic Impact Assessment (TIA) should assess the required geometry at the intersections of Whitehouse Lane with New England Highway, and Ascot-Calala Lane with Whitehouse Lane to ensure that they are upgraded to accommodate free movement of inbound B-doubles in the event that outbound vehicles are stopped and propped waiting to turn out of these roadways.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Section 4.3.2 and <b>Appendix C</b> presented the outcomes of swept path analysis conducted for both Whitehouse Lane / New England Highway and Ascot-Calala Lane/ Whitehouse Lane intersections which they can accommodate the movement of 35 metres 14 axle OSOM vehicles.</p> |
| <p>It is noted that Burgmanns Lane causeway upgrade works will be carried out by TRC prior to the end of 2024 which will have a higher flood immunity than the current arrangement, and will be less of an impediment for heavy vehicles by virtue of a more generous vertical profile. As such, Burgmanns Lane would be available for general project traffic from that date onwards. The applicants may wish to assign the project traffic to Burgmanns Lane as opposed to Whitehouse Lane, thereby utilising a longer reach of the State network. The bend between Burgmanns Lane and Ascot-Calala Lane would need to be assessed for geometric adequacy.</p> <p>Burgmanns Lane is identified in TRC's Blueprint 100 document and the recently exhibited Draft Integrated Transport Plan as a potential southern bypass alignment. The possible future status of Burgmanns Lane is flagged, and TRC has been appealing to proponents of projects fronting Burgmanns Lane to "future proof" their developments by ensuring that the possible acquisition of a road widening up to 20m in width would not be hindered by otherwise unnecessary infrastructure. The footprint of the proposed development does not appear to raise any issues in this regard. The matter is nevertheless flagged.</p> | <p>Burgmanns Lane upgrade and Tamworth Bypass project are discussed in Section 2.7.2 and 2.7.3.</p>                                                                                                                                                                                |

## 1.4 Relevant guidelines and information provided

In preparing this report, reference has been made on the following guidelines and information:

- Tamworth Regional Council Development Control Plan (DCP) 2010
- Guide to Traffic Management Part 3: Transport Studies and Analysis Methods (Austroads, 2020)
- Traffic summary reports for the following location from TRC:
  - Ascot Calala Lane – north of Whitehouse Lane (2017)
  - Burgmanns Lane – East of Goonoo Goonoo Road (2018)
  - New England Highway – North of Spains Lane (2023)
  - Whitehouse Lane – East of New England Highway (2023)

- Plans for the proposed development prepared by Iberdrola as referenced in the report
- Accent Environment's Tamworth BESS Scoping Report (2021)
- Stantec's Calala BESS Transport Impact Assessment Report (2023)
- Other documents and data as referenced in this report.

## 1.5 Report structure

This report has been structured as follows:

- **Chapter 1: Introduction** provides an overview of the Project, purpose and context of this report
- **Chapter 2: Existing conditions** describes the existing conditions in relation to the site, including the surround road network, available transport modes, current traffic volumes, crash analysis and planned road upgrades
- **Chapter 3: Development proposal** provides an overview of the development, including the proposed site access arrangement and construction timeframe
- **Chapter 4: Traffic assessment** assess the traffic related impacts of additional traffic vehicles generated by the Project in the construction and operation phases, including assessment of the traffic route, site access, parking, public and active transport
- **Chapter 5: Management of impacts** provides a list of mitigation and management measures developed to minimise the impacts identified with consideration of all road users
- **Chapter 6: Road Authority Consultation** outlines the consultation details with the TRC Development team
- **Chapter 7: Conclusion** summarises the findings from the TIA.



## 2 Existing conditions

### 2.1 Site Location

The regional setting is presented in Figure 2-1. The Project is located at 744 Burgmanns Lane, Kingswood 2340 (Lot 43 DP1064582). The Project Site is within the Tamworth Regional LGA in the suburb of Kingswood, around six kilometres southeast of Tamworth and two kilometres south-east of Calala town centre and borders the suburb of Calala.

Tamworth is a rural region dominated by agricultural land uses, particularly cattle and sheep grazing for slaughter, and hay and cereal cropping (ABS, 2021). Consistent with the regional setting and its immediate surrounds, the Project Site is zoned RU4 Primary Production Small Lots and has been extensively cleared and is used for cattle grazing.

Tamworth is also a major retail centre in the New England and North West Slopes regions of New South Wales. The city is well known for its annual Tamworth Country Music Festival, which attracts lots of local and international visitors. These major events have a significant impact on mobility in the wider Tamworth area, including congested access roads, public transport stops, cycle paths and footpaths, as well as filled up parking places and accommodation.

The Project Site is bounded by Ascot-Calala Road to the east and Burgmanns Lane to the north, 3.2 kilometres from the Goonoo Goonoo Road / New England Highway. The Project Site is located within the Namoi River Catchment and has a low gradient sloping northeast towards Calala Creek 800 metres to the east, which feeds into the Peel River. The nearest residential zoned land is located in Calala around 470 metres north. Isolated receptors are present in adjacent properties on Burgmanns Lane and Ascot-Calala Road.

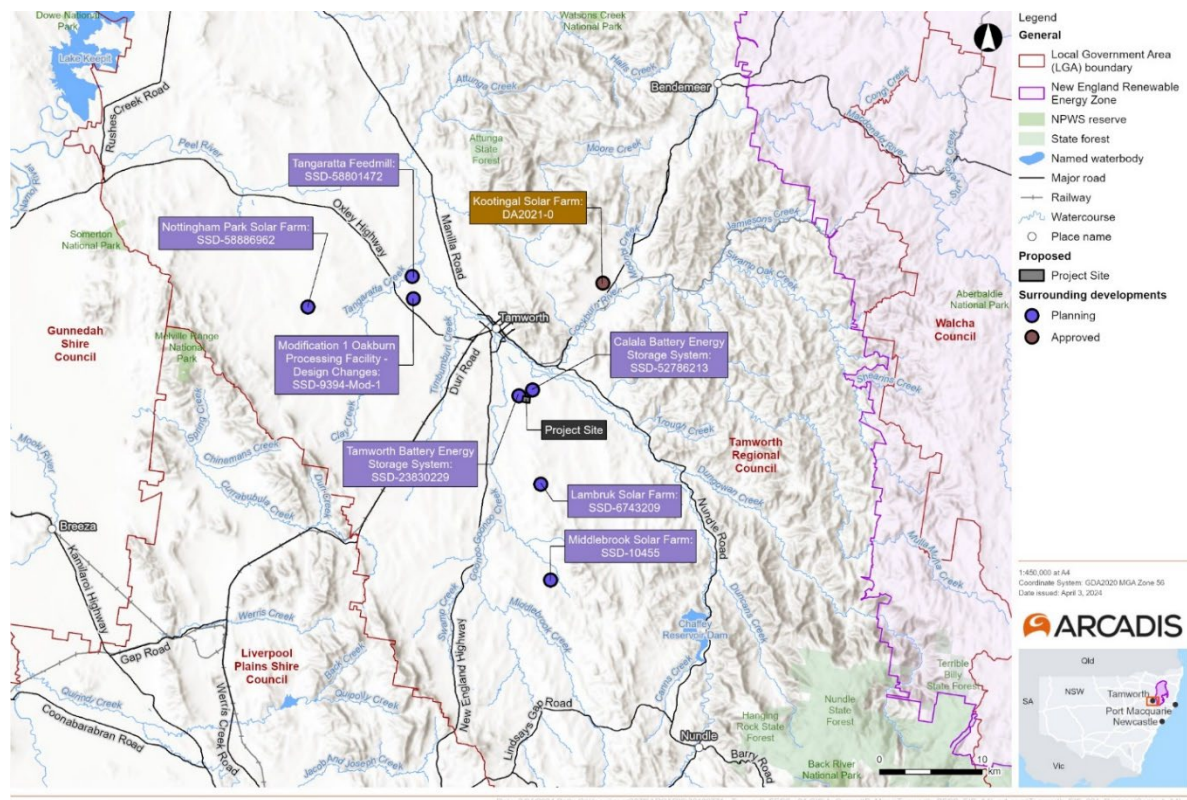


Figure 2-1: Regional context



## 2.2 External road network

Figure 2-2 shows the location of the Project Site and surrounding road network. The Project Site is approximately 3.2 kilometres east of Goonoo Goonoo Road / New England Highway - a major state-controlled highway which runs from Hexham near Newcastle at its southern end to the Queensland border at its northern end and aligned in a north-south direction west of the Project Site. It is two-way configured with one traffic lane in each direction. Informal unrestricted kerbside parking is mostly permitted on both sides of the road.

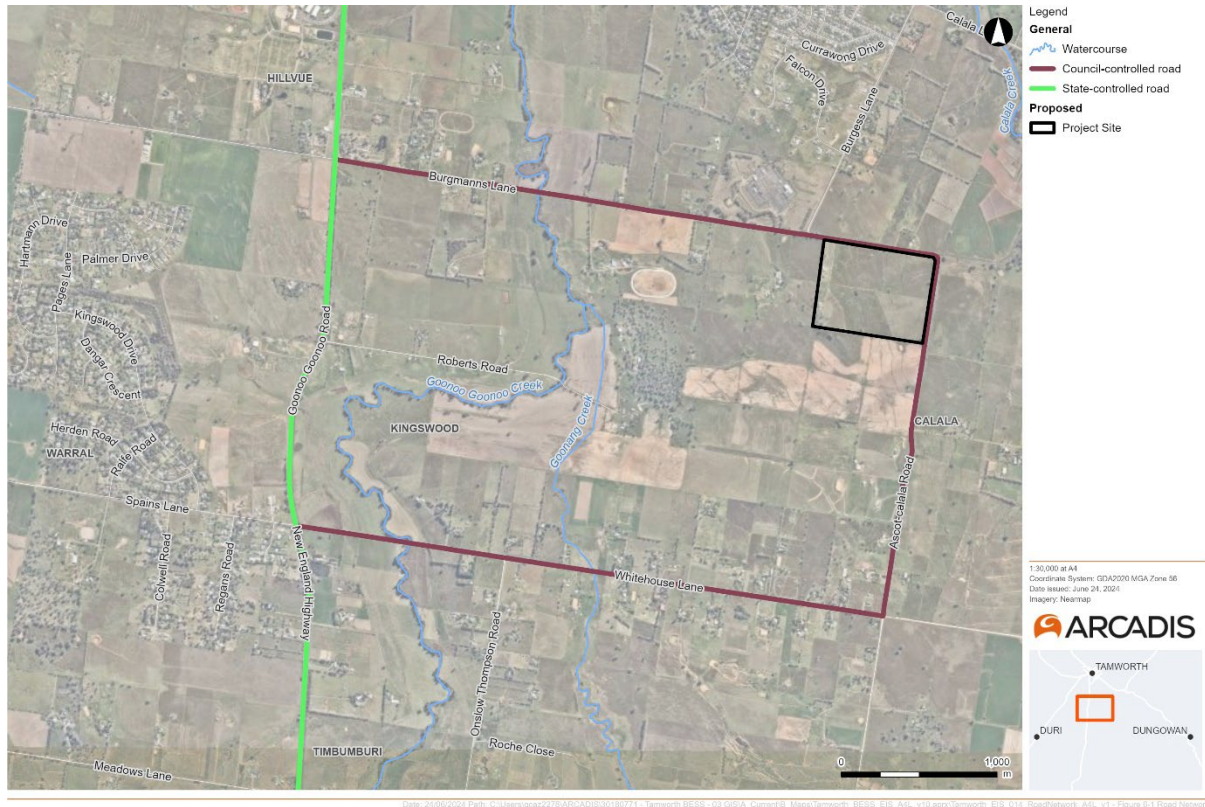


Figure 2-2: Road network



Figure 2-3: New England Highway near Project Site

Ascot-Calala Road and Burgmanns Lane fronting the Project Site are two-way unsealed local roads controlled by TRC, with a speed limit of 60 kilometres per hour. Ascot-Calala Road has north-south orientation and intersects with Burgmanns Lane to the north and Whitehouse Lane to the south. Whitehouse Lane is a two-way sealed local road with a speed limit of 100 kilometres per hour.



*Figure 2-4: Ascot-Calala Road*



*Figure 2-5: Burgmanns Lane (left) and Burgmanns Lane causeway (right)*



*Figure 2-6: Whitehouse Lane (left) and intersection of Whitehouse Lane / New England Highway (right)*



The Project Site is high accessible to the broader road network and in particular access to and from the New England Highway. Goonoo Goonoo Road / New England Highway and Whitehouse Lane surrounding the Project Site are designated heavy vehicle routes for B-double up to 26 metres long.

Figure 2-7 shows the restricted access vehicle map within Tamworth, Kingswood and the surrounding area.

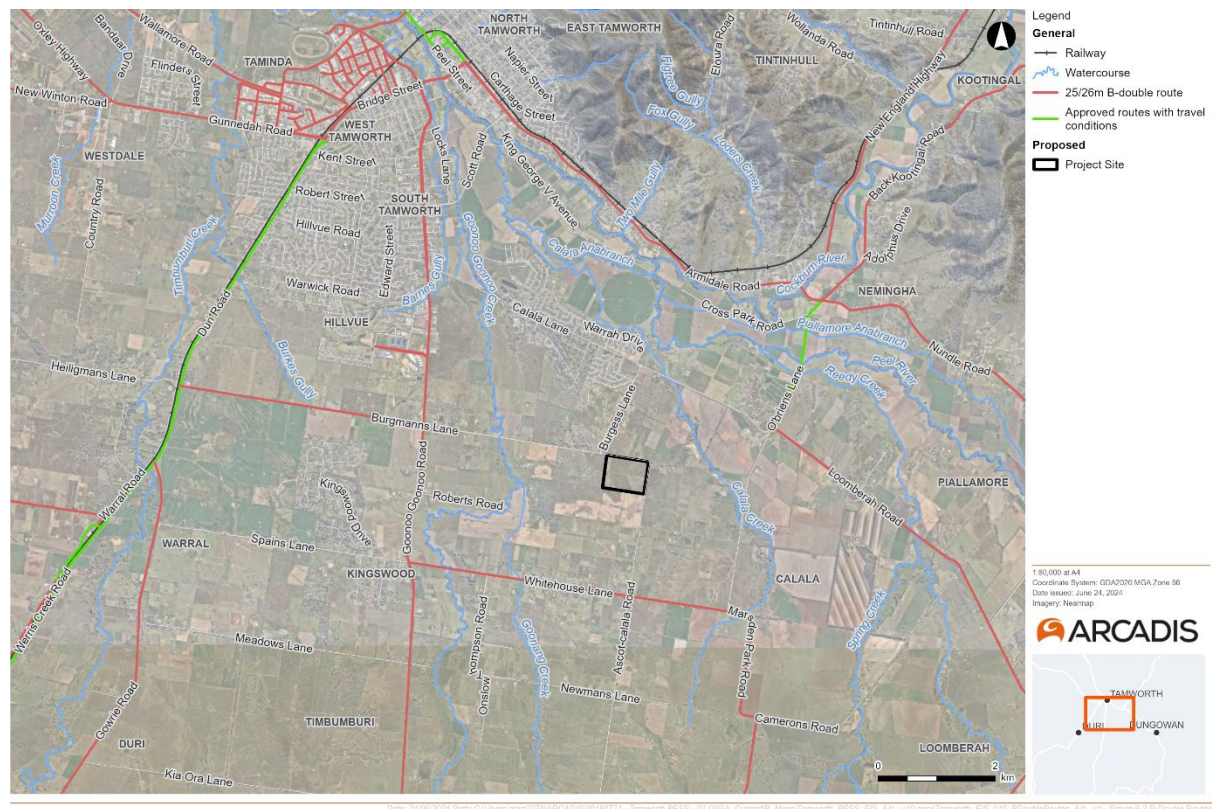


Figure 2-7: Restricted access vehicle map

Source: Transport for NSW Restricted Access Vehicles (RAV) map

## 2.3 Background traffic growth

Tamworth is not anticipated to experience significant traffic growth with the estimated background traffic growth rate to be 0.42% per annum based on the analysis of historical traffic volume data obtained from TfNSW Traffic Volume Viewer. The linear growth rate was determined using 2021 and 2023 average daily traffic (ADT) volumes recorded at a permanent traffic classifier located on Oxley Highway as shown in Figure 2-8.

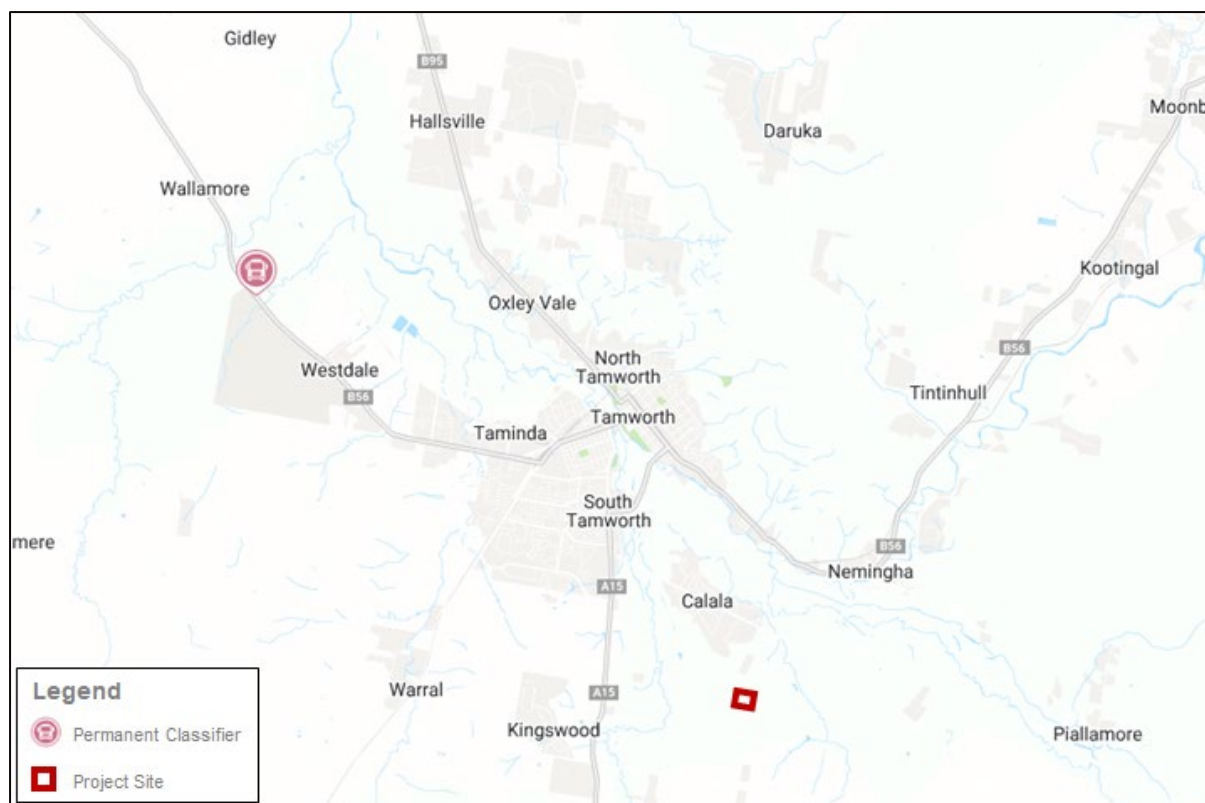


Figure 2-8: Permanent traffic classifier location in relation to the Project

## 2.4 Traffic volumes

Traffic volumes for the surrounding network from TRC's traffic summary reports are provided in Table 2-1, with a summary of the locations provided in Figure 2-9.

Table 2-1: Average daily traffic volumes

| Map ID | Location                                                    | Year | Vehicle type                     | ADT <sup>1</sup><br>(two-way) | AWDT <sup>2</sup><br>(two-way) | AWET <sup>3</sup><br>(two-way) |
|--------|-------------------------------------------------------------|------|----------------------------------|-------------------------------|--------------------------------|--------------------------------|
| 1      | <b>Ascot-Calala Road</b><br>(Whitehouse Lane to 100m north) | 2017 | Passenger (Classes 1-2)          | 63                            | 62                             | 64                             |
|        |                                                             |      | Light heavy (Classes 3-5)        | 4                             | 4                              | 3                              |
|        |                                                             |      | Articulated heavy (Classes 6-12) | 8                             | 8                              | 8                              |
|        |                                                             |      | Other traffic                    | 1                             | 2                              | 0                              |
|        |                                                             |      | <b>Total (all classes)</b>       | <b>76</b>                     | <b>76</b>                      | <b>75</b>                      |
| 2      | <b>Whitehouse Lane</b> (200m east of New England Highway)   | 2023 | Passenger (Classes 1-2)          | 481                           | 501                            | 435                            |
|        |                                                             |      | Light heavy (Classes 3-5)        | 36                            | 34                             | 42                             |
|        |                                                             |      | Articulated heavy (Classes 6-12) | 48                            | 56                             | 30                             |
|        |                                                             |      | Other traffic                    | 28                            | 30                             | 23                             |
|        |                                                             |      | <b>Total (all classes)</b>       | <b>593</b>                    | <b>621</b>                     | <b>530</b>                     |

| Map ID | Location                                                                  | Year | Vehicle type                     | ADT <sup>1</sup><br>(two-way) | AWDT <sup>2</sup><br>(two-way) | AWET <sup>3</sup><br>(two-way) |
|--------|---------------------------------------------------------------------------|------|----------------------------------|-------------------------------|--------------------------------|--------------------------------|
| 3      | <b>Goonoo Goonoo Road / New England Highway</b><br>(north of Spains Lane) | 2023 | Passenger (Classes 1-2)          | 4,473                         | 4,600                          | 4,189                          |
|        |                                                                           |      | Light heavy (Classes 3-5)        | 174                           | 166                            | 193                            |
|        |                                                                           |      | Articulated heavy (Classes 6-12) | 1,048                         | 1,133                          | 856                            |
|        |                                                                           |      | Other traffic                    | 594                           | 709                            | 332                            |
|        |                                                                           |      | <b>Total (all classes)</b>       | <b>6,289</b>                  | <b>6,608</b>                   | <b>5,570</b>                   |
| 4      | <b>Burgmanns Lane</b> (300m east of Goonoo Goonoo Road)                   | 2018 | Passenger (Classes 1-2)          | 1,034                         | 1,105                          | 874                            |
|        |                                                                           |      | Light heavy (Classes 3-5)        | 57                            | 53                             | 65                             |
|        |                                                                           |      | Articulated heavy (Classes 6-12) | 84                            | 100                            | 47                             |
|        |                                                                           |      | Other traffic                    | 145                           | 184                            | 58                             |
|        |                                                                           |      | <b>Total (all classes)</b>       | <b>1,320</b>                  | <b>1,442</b>                   | <b>1,044</b>                   |

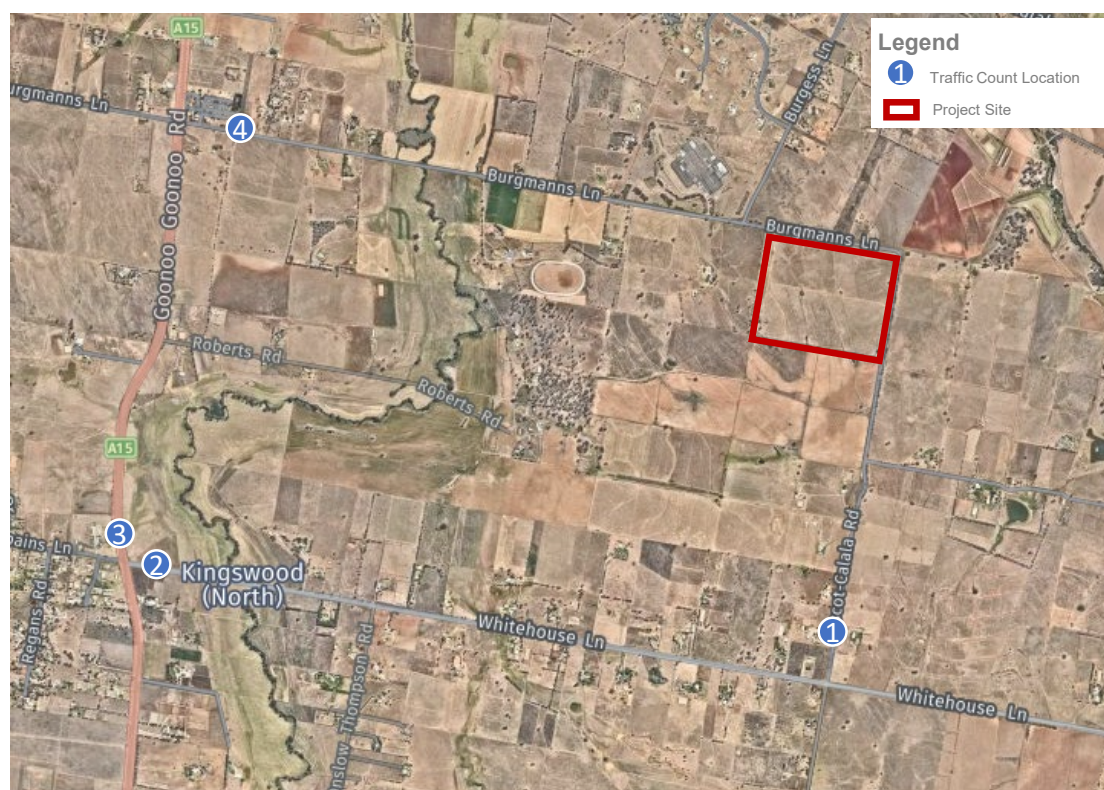
<sup>1</sup> ADT = average daily traffic<sup>2</sup> AWDT = average weekday traffic<sup>3</sup> AWET = average weekend traffic

Figure 2-9: Traffic count locations

The key findings from the above traffic analysis are:

- Ascot-Calala Road carried 76 vehicles per day (two-way) with around 10% heavy vehicles in 2017
- Whitehouse Lane currently carries 593 vehicles per day (two-way) with around 8% heavy vehicles
- Goonoo Goonoo Road / New England Highway currently carries 6,289 vehicles per day (two-way) with 17% heavy vehicles
- Burgmanns Lane carried 1,320 vehicles per day (two-way) with around 6% heavy vehicles in 2018
- Peak weekday traffic volumes occur between 8:00am to 9:00am and 3:00pm to 4:00pm.



## 2.5 Public and active transport

Figure 2-10 shows that no train stations are located within the vicinity of the Project Site. The closest train station is Tamworth Station servicing between Sydney and Armidale, which is approximately 11 kilometres north of the Project Site.

There are limited bus stop infrastructure and services available for construction workers and employees to access the Project Site. The two closest bus stops servicing bus routes 435 and 436 running between Tamworth, Tamworth Sports Dome and Calala are located approximately 2 kilometres north of the Project Site, which are shown in Figure 2-10.

The pedestrian network is limited in the vicinity of the Project Site as there are no major pedestrian attractors or generators warranting formal footpaths or bicycle rider facilities due to the rural area dominated by agricultural land uses.

The existing cycle network is shown in Figure 2-11. There are no cycling facilities near the Project Site. Some shared paths are provided on Calala Lane and Goonoo Goonoo Road connecting to Tamworth.



Figure 2-10: Public transport in proximity to the Project Site

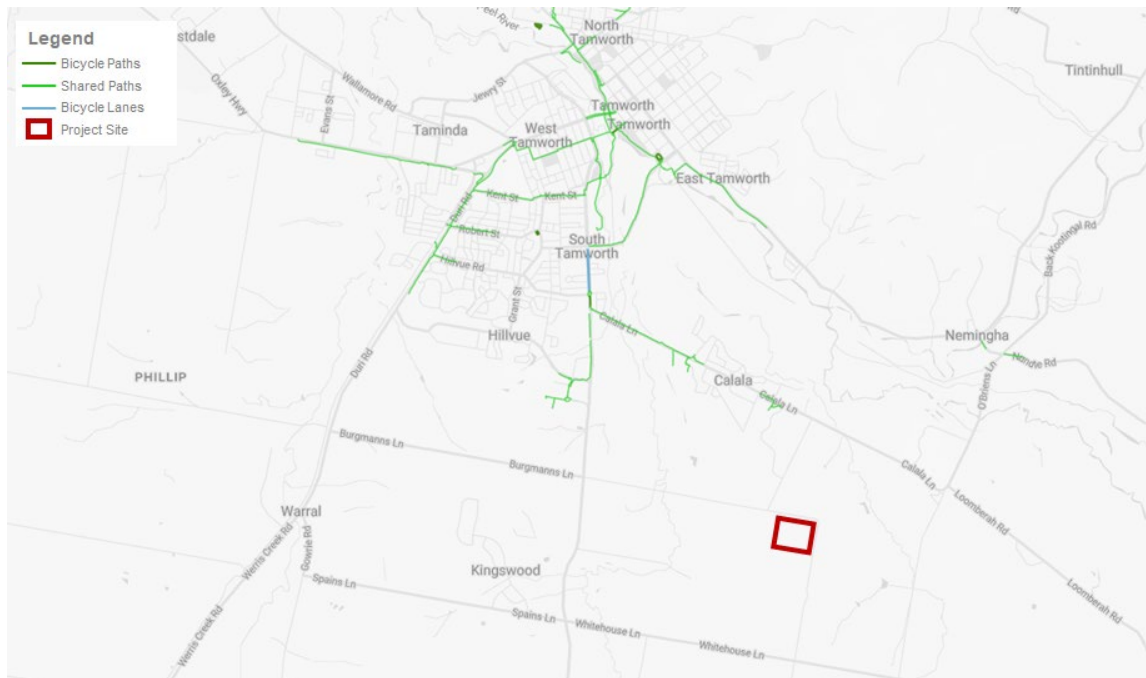


Figure 2-11: Existing cycling network  
Source: Transport for NSW Cycleway Finder

## 2.6 Crash analysis

Five-year crash data between 2018 and 2022 have been analysed to understand the severity of crashes located within the general vicinity of the Project Site. The data available from the NSW Centre for Road Safety which was provided by TfNSW was reviewed. The locations and severity of the crashes for the five-year period is shown in Figure 2-12.

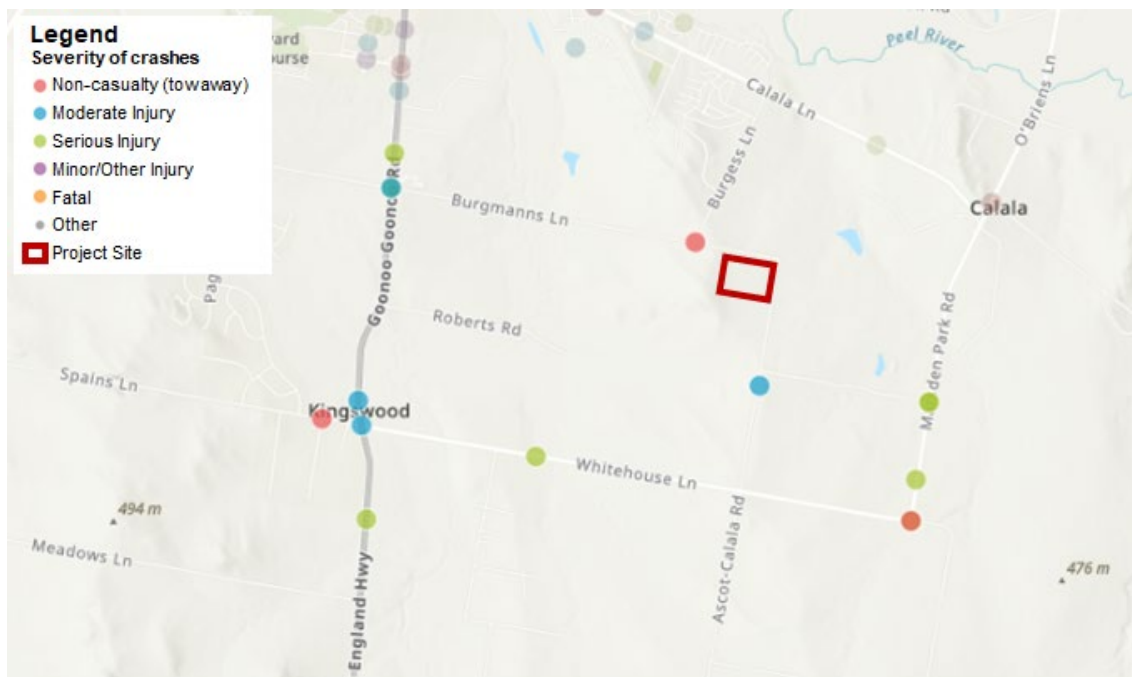


Figure 2-12: Crash data 2017-2022 surrounding the Project Site  
Source: TfNSW's NSW Centre for Road Safety

Analysis of the crash data indicates that:

- 16 crashes were reported between 2018 and 2022 in the vicinity of the Project Site
- Eight out of the 16 crashes were recorded to have resulted in serious injury, five crashes were recorded as moderate injury, and the remaining three crashes were recorded as non-casualty / towaway
- Five out of 16 crashes were involved with hitting objects or parked vehicles
- Two out of 16 crashes occurred at the intersection of New England Highway / Whitehouse Lane in 2021 and 2022. They were a cross-traffic crash and an off-carriageway crash left bending into object. The potential causes of these crashes were varied, it could be drivers failing to notice and obey the traffic rules, distracted driving, speeding or low visibility due to insufficient lighting. The crashes history does not appear to indicate a crash trend at this intersection
- No serious injuries were recorded at the Whitehouse Lane / New England Highway and Burgmanns Lane / New England Highway intersections. However, there was a serious injury on Whitehouse Lane in 2020 and was a crash that involved an out-of-control vehicle on carriageway.

The 16 crashes that occurred within the vicinity of the Project Site across the five-year period do not indicate any specific safety concerns for project traffic on the surrounding road network, they were considered to be minor in terms of crash severity.

## 2.7 Planned road upgrades and adjacent development

### 2.7.1 Goonoo Goonoo Road duplication

The Australian and NSW Governments are investing \$40 million for the duplication of Goonoo Goonoo Road (New England Highway) between Jack Smyth Drive and Calala Lane which is the last length of single lane carriageway on Goonoo Goonoo Road in Tamworth. The lane duplication will reduce travel times for road users, making road trips more reliable for people, business and freight, improving safety for all road users and providing a road network which facilitates both local access and regional connectivity.

As part of the duplication works, road widening, pavement reconstruction, installation of a central median between two lanes each way and improvement of pedestrian and cycling facilities will be included. The following intersections along Goonoo Goonoo Road will be also upgraded:

- Calala Lane intersection
  - Replace roundabout with traffic signals
  - Provide separate lanes for right and left turns from Calala Lane
  - Provide pedestrian crossings
  - Separate left and right turn lanes for traffic turning into Calala Lane
- Craigends Lane intersection
  - Install new roundabout which allow heavy vehicle movement
  - Allows for future development on eastern side of Goonoo Goonoo Road
- The Ringers Road intersection
  - Provide left turn only from The Ringers Road (except emergency vehicles)
  - Separate right turn lane into The Ringers Road
- Greg Norman Drive intersection
  - Provide a two-stage movement across Goonoo Goonoo Road
  - Separate right and left turn lanes from Greg Norman Drive.



TfNSW has started early preparation work including building approximately 48 metres shared paths on the western side of Goonoo Goonoo Road, installing new line marking for the shared paths, relocating services and minor vegetation clearing. The major work upgrades are noted to start in December 2024. However the timing of these works is not confirmed, and it was noted in consultation with Transport for NSW that these works may commence at a later date.

The upgrade is around 3.8 kilometres north west of the Project Site, it is expected that the potential route to the Project Site will not use the above intersections and will not be impacted by the above road upgrades. However, traffic management implementation should be considered as the upgrades may overlap with construction of the proposed BESS and limit traffic or the Project development progress. Cumulative traffic impact assessment considering any projects with overlapped construction programs in the worst-case scenario has been undertaken and discussed in Section 4.1.2.

### 2.7.2 Burgmanns Lane causeway replacements

Based on the on-site discussion with TRC, it has advised that Burgmanns Lane is one of TRC's current major road repair projects to improve road safety and mitigate against future floods. The two existing concrete causeways, one with a large multi-cell box culvert structure (western causeway) and the other with a concrete bridge (central causeway) with a higher flood immunity are planned to replace on Burgmanns Lane crossing over Goonoo Goonoo Creek. This project has been funded through the Australian Government's Bridges Renewal Program and will make the area safer during potential floods. TRC's *Draft Blueprint 100 Our Delivery Plan 2023-2025 and Our Annual Plan and Budget 2023/24* stated that the central causeway replacement with low level two-lane bridge is schedule for planning, design and investigations in 2023/2024, and expected to be constructed in 2024/2025.

### 2.7.3 Tamworth Bypass Project

Based on TRC's adopted and publicly available *Blueprint 100* document, Burgmanns Lane is identified as a potential southern bypass which aim to eliminate the need for regional traffic heading north on New England Highway to travel through the Tamworth town centre. This potential bypass strategy is reflected in the *Draft Tamworth Integrated Transport Plan* which is currently on exhibition. The timing of the project is not confirmed. Any future proposed upgrades to Burgmanns Lane and any development abutting Burgmanns Lane should be considered. However, impact on site access is not expected as Burgmanns Lane is the alternate access route, access to the site will be mainly via Whitehouse Lane.

### 2.7.4 Adjacent development

As discussed with TRC, it is understood that there are two other BESS projects seeking development approval within one kilometre of the Project Site, including the following:

- Calala BESS (SSD-52786213) located at 57 Burgess Lane, Calala consisting of a 300 MW/1200 MWh BESS facility and associated transmission lines. Construction is expected to commence mid to late 2024 and would take around 12 months to complete. A new site access is provided from Calala Lane via the New England Highway
- Tamworth BESS (SSD-23830229) located at 696 Burgmanns Lane, Tamworth consisting of a 200 MW / 400 MWh BESS facility and associated transmission infrastructure. The expected commence date for construction has not been specified but is expected to take 12 months to complete. Access to the site is expected to be from the existing site access driveway off Burgmanns Lane via the New England Highway, Calala Lane, Burgess Lane or Whitehouse Lane.

They are potentially overlapped with the construction and operation of the Project, which TRC suggests having tripartite agreements related to traffic arrangements to mitigate the traffic impacts to the Tamworth road network. However, this would be dependent on timing of these projects.

### 2.7.5 Regional development

Besides the above two adjacent developments, there are five other regional developments proposed within 30 kilometres of the Project Site, including the following:

- Lambruk Solar Farm (SSD-67436209) located approximately 15 kilometres south of Tamworth consisting of a 500MW solar farm with 300MW BESS facility and associated infrastructure. Construction is expected to commence in 2025 and expected to take 24 months to complete. Site access is proposed via Duri-Dungowan Road from New England Highway for heavy vehicles and light vehicles. Kia Ora Lane may be potentially used for light vehicle access, Marsden Park Road and Ascot-Calala Road are considered potential secondary access points
- Middlebrook Solar Farm (SSD-10455) located approximately 22 kilometres south of Tamworth consisting of a 320MW solar farm with 300MW/600MWh (DC coupled) BESS facility and associated infrastructure. Construction is anticipated to start in Q2-Q3 2024 and take approximately 21-30 months. The peak construction period will be 18 months. Site access is proposed via the north-western access on Middlebrook Road
- Modification of Oakburn Processing Facility (SSD-9394-Mod-1) located at 1154 Gunnedah Road, Westdale is proposing modification of the approved poultry processing facility with some changes in built form and layout. Site access is retained with the approved access point using the extension to Workshop Lane.
- Nottingham Park Solar Farm (SSD-58886962) located approximately 15 kilometres west of Tamworth in the suburb of Winton, consisting of a 250MW solar farm with 200MW / 400MWh BESS facility and associated infrastructure. Two primary access points are proposed via New Winton Road and the secondary access point for emergency use only is being considered from Old Winton Road. The expected commence date for construction has not been confirmed, but it is expected to take 12-18 months to complete
- Tangaratta Feedmill (SSD-58801472) located at 771 Wallamore Road, Wallamore is proposing to construct a new feed mill in two stages. Access to the site is expected to use the existing driveway to Wallamore Road. The expected commence date for construction has not been confirmed, but it is expected to take 12-15 months to complete Stage 1 and additional 12 months for Stage 2.

These projects may potentially overlap with the construction and operation of the Project. Further assessment will be needed once development approval for these projects is confirmed.

## 3 Development proposal

### 3.1 Development overview

The Project would involve construction and operation of the following:

- BESS including battery enclosures, inverters, transformers, switch gear and control building
- On-site 33/330 kV substation to convert electricity between the high voltage transmission network and medium voltage BESS
- High voltage transmission connection (above ground and/or below ground) between the BESS and the Tamworth substation
- Ancillary infrastructure and mitigative features including:
  - Site access to the BESS from Ascot-Calala Road
  - Internal site access road and parking
  - Permanent office and staff amenities
  - Stormwater management infrastructure
  - Lighting, fencing and security devices
  - Noise acoustic barriers
  - Asset protection zone
  - Landscaping and screening vegetation.

The BESS would operate 24 hours a day, seven days a week.

### 3.2 Site access

Vehicular access to and from the Project is proposed via Ascot-Calala Road along the eastern boundary of the site, which is a 60 kilometre per hour unsealed dual lane local road. Near the Project site, Ascot-Calala Road is bounded by Whitehouse Lane from the south and Burgmanns Lane in the north. Both Whitehouse Lane and Burgmanns Lane connect to the Goonoo Goonoo Road / New England Highway. The heavy vehicle route to the Project is proposed via Goonoo Goonoo Road / New England Highway, Whitehouse Lane and Ascot-Calala Road.

Some light vehicles may also travel via Burgmanns Lane to the Project site. It is understood that Burgmanns Lane is currently underutilised due to wet weather conditions, as mentioned in Section 2.7.2, Council is planning to replace causeways on Burgmanns Lane to mitigate against future floods in 2024/2025, therefore it is expected this alternate access route via Burgmanns Lane is appropriate for light vehicles. Figure 3-1 shows the layout overview of the Project.

## Kingswood BESS TIA (Update)

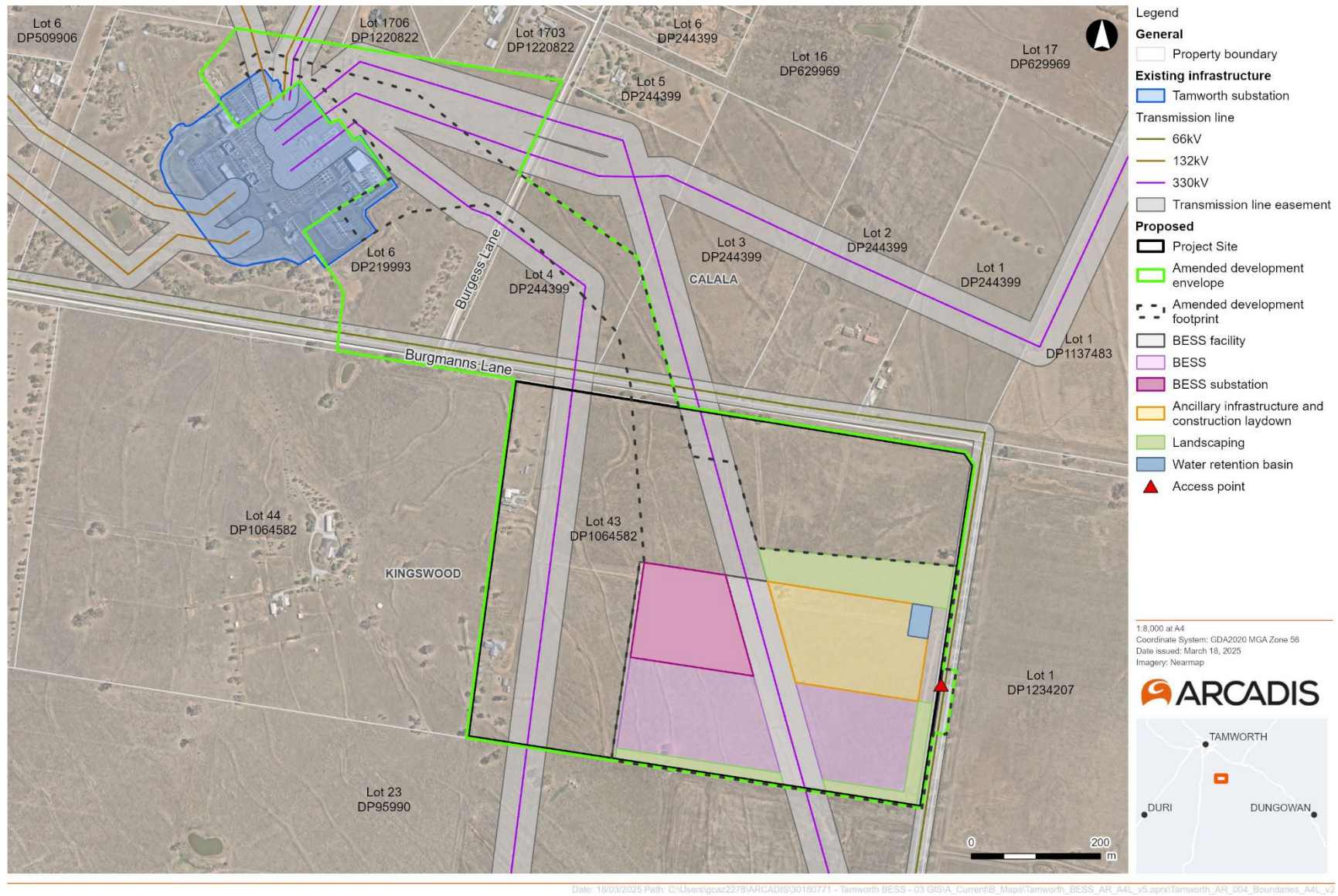


Figure 3-1: Project layout overview



### 3.3 Construction working hours

The Project is proposed to be developed in one continuous stage, with construction of 270 MW and up to 1080 MWh of storage capacity. Construction of the Project would begin after all relevant approvals are obtained. Construction of the Project is anticipated to commence in late 2025 and would take up to 15 months to complete. Construction working hours are proposed to follow the standard construction working hours which are as follows:

- Mondays to Fridays: 7:00am – 6:00pm
- Saturdays: 8:00am – 1:00pm
- Sundays or public holidays: no work.

In addition to the above, outside of hours works may also include:

- Work determined to comply with the relevant noise management levels at the nearest sensitive receptor
- The delivery of materials outside approved hours as required by the NSW Police or other authorities for safety reasons
- Emergency situations where it is required to avoid the loss of lives and properties and / or to prevent environmental harm.

### 3.4 Construction workers

It is anticipated that up to 100 construction personnels a day would be required during the peak construction periods of the Project. The construction workers would include but not be limited to the following:

- Tradespeople and construction personnel
- Sub-contractor construction personnel
- Engineers
- Functional and administrative staff.

It is assumed that the workforce required for the construction would be drawn from the surrounding population including Kingswood, Tamworth, Oxley Vale and Calala in the north, Duri, Currabubula, Wallabadah, Bundle and Willow Tree in the south. It is also worth noting that the majority of accommodation facilities are located to the north in Tamworth, so any non-local workers who are on site are significantly more likely to travel to/from the north.

Based on the population distribution shown below in Table 3-1, it is envisaged that 95 percent of the workforce will come from the north and 5 percent from the south.

Table 3-1: Population of surrounding towns

| Nearby towns north of Project Site | Population | Percentage (%) |
|------------------------------------|------------|----------------|
| Kingswood                          | 1,142      |                |
| Hillvue                            | 6,528      |                |
| South Tamworth                     | 6,621      |                |
| West Tamworth                      | 5,471      |                |
| North Tamworth                     | 6,273      |                |
| East Tamworth                      | 5,417      |                |
| Taminda                            | 57         |                |
| Nemingha                           | 705        |                |

| Nearby towns north of Project Site | Population    | Percentage (%) |
|------------------------------------|---------------|----------------|
| Oxley Vale                         | 3,935         |                |
| Calala                             | 4,577         |                |
| <b>Sub-total</b>                   | <b>40,726</b> | <b>95%</b>     |
| Nearby towns south of Project Site | Population    | Percentage (%) |
| Timbumburi                         | 122           |                |
| Goonoo Goonoo                      | 42            |                |
| Duri                               | 463           |                |
| Currabubula                        | 339           |                |
| Garoo                              | 93            |                |
| Wallabadah                         | 382           |                |
| Bundle                             | 482           |                |
| Willow Tree                        | 327           |                |
| <b>Sub-total</b>                   | <b>2,128</b>  | <b>5%</b>      |

Source: 2021 Census Data from Australian Bureau of Statistics

## 3.5 Traffic generation

### 3.5.1 Construction

#### 3.5.1.1 Light vehicles

For the majority of the construction program, the Project is expected to generate up to 40 light vehicles (one-way) per day. During the construction peak of the Project, it is expected that up to 100 full-time equivalent people would be employed. Most of the construction workforce is likely to be based in the Tamworth region. It is expected that workers would typically access the Project Site in the morning and depart the site in the afternoon. It is expected that there would be opportunities for workers to carpool and opportunities for a shuttle bus would also be explored in consultation with Tamworth Local Regional Council to reduce the need for private vehicle use.

For the purposes of this assessment, it has been assumed that there would be an average occupancy rate of 1.25 workers per vehicle (i.e., one in four cars has an occupancy of two workers). Accordingly, during construction, 80 light vehicles would be expected to access the Project Site in the morning, and 80 light vehicles would be expected to access the Project Site in the afternoon. It is unlikely that all the light vehicles would access or egress the Project Site in a single hour. Accordingly, the assumption of 80 light vehicles in a single hour provides a conservative analysis of the construction impacts of the Project.

#### 3.5.1.2 Heavy vehicles

Vehicles associated with construction works would include heavy vehicles delivering construction materials and battery components or removing waste material resulting from construction activities. Typical heavy vehicles likely to be used for construction activities include:

- 6.4m small rigid vehicles (SRV)
- 8.8m medium rigid vehicles (MRV)
- 12.5m heavy rigid vehicles (HRV)

- 19m side loader
- 20m semi-trailers
- 26m B-doubles
- Oversize or Overmass (OSOM) vehicles.

Delivery of key BESS components is expected to approach from the south, predominantly coming from Port of Newcastle using the Hunter Expressway and New England Highway. It is also expected that local procurement or trades people trips would be generated from the local region. Heavy vehicle trips would utilise the route via Whitehouse Lane which is a designated heavy vehicle route for B-double up to 26 metres long.

The Project is expected to generate around 30 heavy vehicles (one-way) per day. It is expected that during the peak construction period, construction activity will result in up to 60 heavy vehicles (one-way) per day. On average, this equates to approximately five heavy vehicle movements per hour. To be conservative, it has been assumed that 10 trucks (one-way) would access / egress the Project Site in a single hour excluding allowance for OSOMs which may be required to travel outside of the peak network periods.

#### **Heavy vehicles and Oversize or Overmass (OSOM) vehicles**

Heavy vehicular access to the Project will use Ascot-Calala Road via Whitehouse Lane (Figure 3-2).

During construction, battery modules, HV transformers, control room, switch room and transmission supporting structure will be delivered to the Project Site using OSOM vehicles. The likely OSOM vehicles for the construction phase are presented in Table 3-2. The size and number of OSOM vehicles will be confirmed during construction phase and included in the Construction Traffic Management Plan.

*Table 3-3-2: Likely OSOM vehicles*

| Plant and/or equipment | Vehicle                       | Qty of OSOM vehicles | Width | Mass       | OSOM class |
|------------------------|-------------------------------|----------------------|-------|------------|------------|
| HV 330kV transformers  | 35m long 14-Axle OSOM vehicle | 2                    | 4.3m  | 130 tonnes | Class 1    |
| Buildings              | 35m long 14-Axle OSOM vehicle | 2                    | 4.3m  | <45 tonnes | Class 1    |
| Battery modules        | Prime Mover and Low Loader    | 184                  | <3.2m | 50 tonnes  | Class 1    |

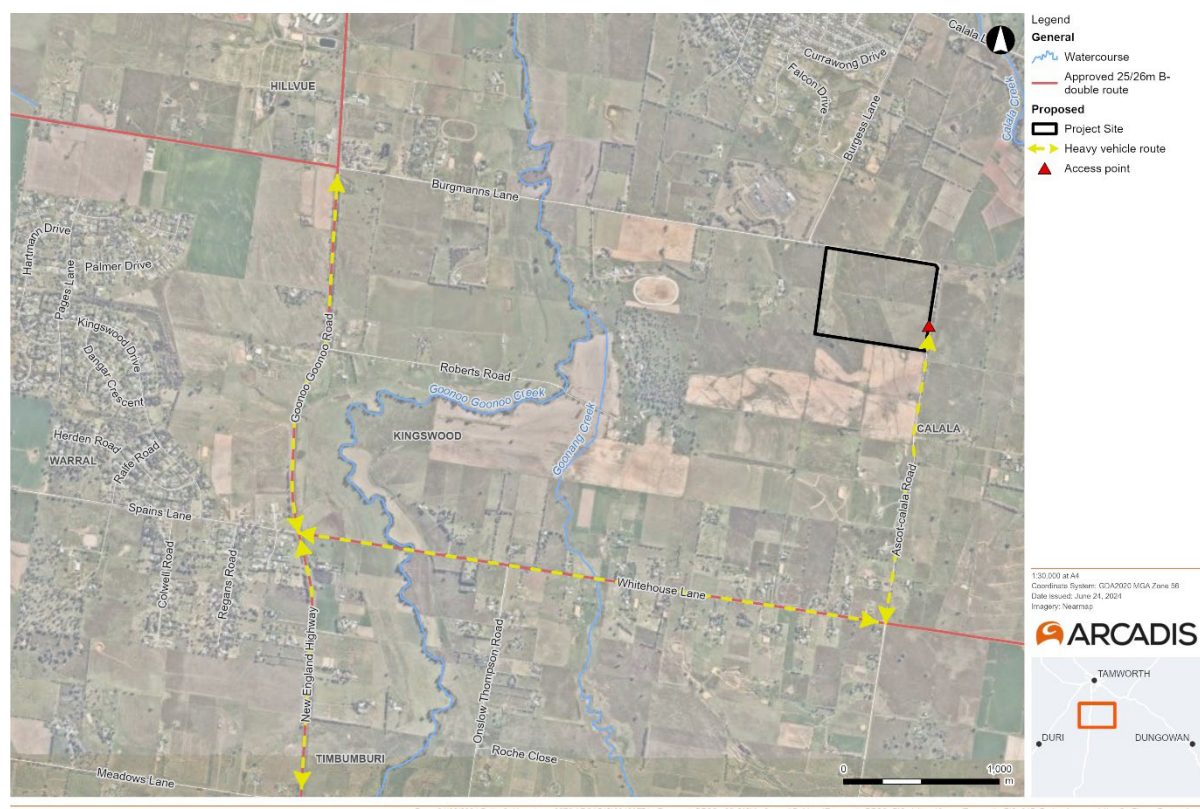


Figure 3-2: Project heavy vehicle access route via Whitehouse Lane and Ascot-Calala Road

The contractor would be required to apply for permits from TfNSW and TRC, with the submission of suitable traffic management plans and transportation routes to be agreed, subject to confirming the required size of the OSOM vehicle. Oversize vehicles may require specific traffic control (i.e., police and vehicle escort).

Oversized vehicles would use designated heavy vehicle routes or routes approved by TfNSW. Additionally, oversized traffic movements would be carried out, where possible, outside peak road network periods, thereby minimising the impacts on the road network.

Details of the indicative OSOM vehicles and proposed routes are discussed in Section 4.3.

### 3.5.1.3 Total construction traffic

The anticipated average and peak construction traffic volumes are summarised in Table 3-3.

Table 3-3-3: Construction traffic volumes

| Vehicle | Average vehicles per day (one-way) | Peak vehicles per day (one-way) |
|---------|------------------------------------|---------------------------------|
| Light   | 40                                 | 80                              |
| Heavy   | 30                                 | 60                              |
| Total   | 70                                 | 140                             |



For the purposes of this assessment, the highest traffic generation for the Project under the peak construction scenario is assumed to be 140 vehicle trips per day in total, which would consist of the following:

- AM and PM peak hours:
  - 10 inbound and 10 outbound heavy vehicle movements – AM peak
  - 10 inbound and 10 outbound heavy vehicle movements – PM peak
  - 80 inbound light vehicle trips – AM peak
  - 80 outbound light vehicle trips – PM peak.

### **3.5.2      Operation**

The Project will be operational 24 hours, seven days a week. The BESS will be operated remotely with the exception of site maintenance on an as-needs basis. Typically, there would not be a requirement for heavy vehicles to regularly access the Project when the battery is operational. Therefore, without permanent on-site staff, it would generate very low traffic volumes as part of the daily operations. The Project is anticipated to be operational in 2026 with a design life of around 20 years.

## 4 Traffic assessment

### 4.1 Construction traffic

#### 4.1.1 Construction vehicle generation

The traffic generated during the construction phase will generally be relatively minor compared to the existing average daily traffic volumes along Goonoo Goonoo Road / New England Highway, but the proportional increase in traffic as a result of the construction of Project along Ascot-Calala Lane and Whitehouse Lane are expected to be higher as a result of their lower existing traffic volumes.

A summary of the anticipated increase in daily traffic in relation to the existing traffic data outlined in Section 2.4 is included in Table 4-1. It is assumed that all development traffic using heavy vehicles will travel to and from the Project on Ascot-Calala Road via Whitehouse Lane and Goonoo Goonoo Road / New England Highway, and 20% of light vehicles will travel via Burgmanns Lane.

Table 4-1: Anticipated ADT increase on the surrounding road network

| Road                                     | Existing AADT (two-way) <sup>1</sup> | Existing peak hour volumes (two-way) <sup>2</sup> | Anticipated ADT increase (two-way) <sup>3</sup> due to the Project |
|------------------------------------------|--------------------------------------|---------------------------------------------------|--------------------------------------------------------------------|
| Ascot-Calala Lane                        | 79                                   | 8                                                 | 280 (354% increase)                                                |
| Whitehouse Lane                          | 598                                  | 60                                                | 248 (41% increase)                                                 |
| Goonoo Goonoo Road / New England Highway | 6,343                                | 634                                               | 280 (4% increase)                                                  |
| Burgmanns Lane                           | 1,360                                | 136                                               | 32 (2% increase)                                                   |

<sup>1</sup> Existing traffic volumes discussed in Section 2.4 with applied traffic growth factor for the year of 2025.

<sup>2</sup> Peak hour volumes assumed to be 10% of 2025 AADT.

<sup>3</sup> Increase in average vehicles per day in 2025.

The maximum daily traffic generated during construction is estimated to be up to 280 vehicles per day comprising of 160 light vehicles (two-way) and 120 heavy vehicles (two-way) arriving at the Project Site. However, in the peak hour the traffic generated during construction is estimated to be up to 80 light vehicles per hour (one-way) and 20 heavy vehicles per hour (two-way). Therefore, the maximum uplift in traffic volumes in the peak hour period throughout the construction is expected to be 100 vehicles per hour (two-way).

#### 4.1.2 Cumulative traffic impact impacts

As identified in Section 2.7, the planned road upgrades, two potential adjacent developments and regional developments may overlap with construction and operation of the Project and limit traffic or the Project development progress. None of these propose to use Ascot-Calala Lane for access, except for the Lambruk Solar Farm which considers Ascot-Calala Road to be potential secondary access point (approximately 8km south of the Project), however they will be accessed via New England Highway.

It would be critical for the road authorities and stakeholders to get an understanding whether there will be overlaps in the construction programme and to ensure appropriate coordination of construction activities is carried out to maintain safety for all users within the road network.

For the purposes of analysing the 'worst' case scenario for the cumulative traffic impact assessment, it has been assumed the construction of the two adjacent developments and the Goonoo Goonoo Road upgrade works will coincide with the construction of the Project. A review of the Traffic Impact Assessments for the Calala BESS and Tamworth BESS and the Review of Environmental Factors (REF) Report of Goonoo Goonoo Road duplication indicates that they could generate the following traffic movements:

- During peak construction, the Calala BESS would generate up to 220 construction vehicles per day including around 100 light vehicles and 120 heavy vehicles. It is assumed 10 per cent of these trips occur during the peak hour.
- During peak construction, the Tamworth BESS would generate up to 170 movements per day including 160 light vehicles and 10 heavy vehicles during Stage 3 of construction. It is assumed 10 per cent of these trips occur during the peak hour.
- During peak construction, the proposed Goonoo Goonoo Road upgrade works would generate up to 100 construction vehicles (one-way) per day including 60 heavy vehicles and 40 light vehicles. It is assumed 10 per cent of these trips occur during the peak hour.

#### 4.1.2.1 Road capacity

For rural roads, the RTA Guide to Traffic Generating Developments (October 2002) recommends an assessment of road capacity rather than intersection capacity, as the level of service is determined by average travel speeds and the percentage of time spent delayed. Section 4.2.4 of the RTA Guide suggests rural roads should not exceed service volumes at Level of Service C. Although the design speed on New England Highway and Whitehouse Lane is 110 kilometres per hour, a design speed of 100 kilometres per hour is applied conservatively. With greater than 15 percent heavy vehicle, this equates to 870 vehicles in the peak hour. The design speed on Burgmanns Lane is 70 kilometres per hour, a reduction factor of 75% is applied which equates to around 650 vehicles in the peak hour.

The impact of the accumulative traffic demand generated by the Project and the surrounding development on the road network is summarised in in Table 4-2.

Table 4-2: Cumulative traffic movements

| Road                                     | Peak hour volumes (two-way) |             |             |               |                            |                   |       | Mid-block capacity | Level of Service |
|------------------------------------------|-----------------------------|-------------|-------------|---------------|----------------------------|-------------------|-------|--------------------|------------------|
|                                          | Existing (2025)             | The Project | Calala BESS | Tamworth BESS | Goonoo Goonoo Road Upgrade | Cumulative volume | Total |                    |                  |
| Goonoo Goonoo Road / New England Highway | 634                         | 100         | 22          | 17            | 20                         | 159               | 793   | 870                | LOS C            |
| Whitehouse Lane                          | 60                          | 84          | 0           | 17            | 0                          | 101               | 161   | 650                | LOS A            |

| Road           | Peak hour volumes (two-way) |             |             |               |                            |                   |       | Mid-block capacity | Level of Service |
|----------------|-----------------------------|-------------|-------------|---------------|----------------------------|-------------------|-------|--------------------|------------------|
|                | Existing (2025)             | The Project | Calala BESS | Tamworth BESS | Goonoo Goonoo Road Upgrade | Cumulative volume | Total |                    |                  |
| Burgmanns Lane | 136                         | 16          | 0           | 17            | 0                          | 33                | 169   | 650                | LOS A            |

In the event all three BESS projects and Goonoo Goonoo Road Upgrade are constructed at the same time, Goonoo Goonoo Road / New England Highway will accommodate 159 additional vehicles, which a total of 793 vehicles are expected during the peak hours and will perform at Level of Service C. Whitehouse Lane and Burgmanns Lane will accommodate 30-100 additional vehicles, which a total of 160-170 vehicles are expected during the peak hours and will perform at Level of Service A.

#### 4.1.2.2 Turn warrant assessment

Based on the construction vehicle traffic generation and proposed route for the Project and the surrounding developments including Calala BESS, Tamworth BESS and Goonoo Goonoo Road Upgrade, a turn-warrant assessment has been undertaken to determine the required turn treatment for New England Highway / Burgmanns Lane and New England Highway / Whitehouse Lane intersections to the Project Site. The criteria for the intersection treatments have been applied in accordance with *Austroads Guide to Traffic Management Part 6* and *Austroads Guide to Road Design Part 4A*. Currently, channelised right (CHR) turn lanes and short auxiliary left (AUL) turn lanes are provided at the New England Highway and Burgmanns Lane and Whitehouse Lane intersections. Both intersections operate within a 90 and 100 kilometres per hour speed limit, hence a design speed of 100 and 110 kilometres per hour. The corresponding turning warrant criteria is shown in Figure 4-1.

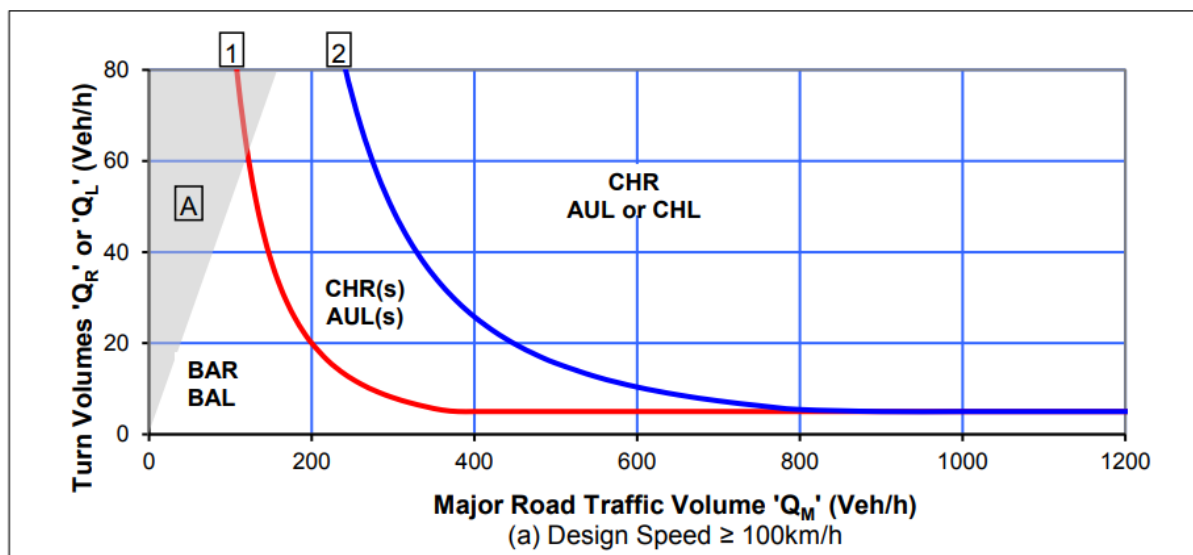


Figure 4-1: Turn warrant assessment chart, design speed  $\geq 100\text{km/h}$

A summary of the turn warrant assessment for existing condition (without development) and with development (Project and surrounding developments) scenarios are presented in Table 4-3 to

Table 4-14.



Table 4-3: Turn warrant assessment of New England Highway / Burgmanns Lane – without development – AM peak

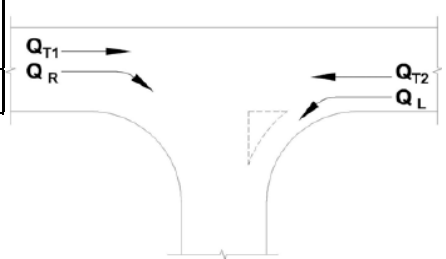
|                                                                                                                                                                                    |       |                                                                                   |           |     |                  |        |              |                       |           |       |     |    |      |     |    |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|-----------|-----|------------------|--------|--------------|-----------------------|-----------|-------|-----|----|------|-----|----|--|
| $Q_{T1}=$                                                                                                                                                                          | 306   |  | $Q_{T2}=$ | 190 | Splitter Island? | No     |              |                       |           |       |     |    |      |     |    |  |
| $Q_R=$                                                                                                                                                                             | 42    |                                                                                   | $Q_L=$    | 26  |                  |        | Speed Limit? | $\geq 100\text{km/h}$ |           |       |     |    |      |     |    |  |
| <table><tr><td></td><td><math>Q_M</math></td><td><math>Q_R/Q_L</math></td></tr><tr><td>Right</td><td>522</td><td>42</td></tr><tr><td>Left</td><td>190</td><td>26</td></tr></table> |       |                                                                                   |           |     |                  |        |              | $Q_M$                 | $Q_R/Q_L$ | Right | 522 | 42 | Left | 190 | 26 |  |
|                                                                                                                                                                                    | $Q_M$ | $Q_R/Q_L$                                                                         |           |     |                  |        |              |                       |           |       |     |    |      |     |    |  |
| Right                                                                                                                                                                              | 522   | 42                                                                                |           |     |                  |        |              |                       |           |       |     |    |      |     |    |  |
| Left                                                                                                                                                                               | 190   | 26                                                                                |           |     |                  |        |              |                       |           |       |     |    |      |     |    |  |
| Right Turn Treatment Required                                                                                                                                                      |       |                                                                                   |           |     |                  | CHR    |              |                       |           |       |     |    |      |     |    |  |
| Left Turn Treatment Required                                                                                                                                                       |       |                                                                                   |           |     |                  | AUL(s) |              |                       |           |       |     |    |      |     |    |  |

Table 4-4: Turn warrant assessment of New England Highway / Burgmanns Lane – without development – PM peak

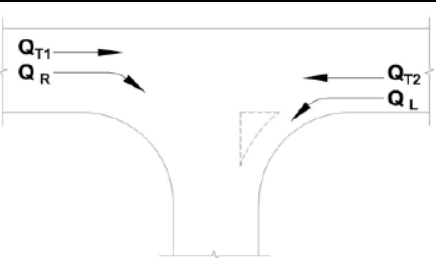
|           |     |                                                                                    |           |     |                  |    |
|-----------|-----|------------------------------------------------------------------------------------|-----------|-----|------------------|----|
| $Q_{T1}=$ | 224 |  | $Q_{T2}=$ | 280 | Splitter Island? | No |
| $Q_R=$    | 32  |                                                                                    | $Q_L=$    | 40  |                  |    |
|           |     |                                                                                    |           |     |                  |    |
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Table 4-5: Turn warrant assessment graph of New England Highway / Burgmanns Lane – without development

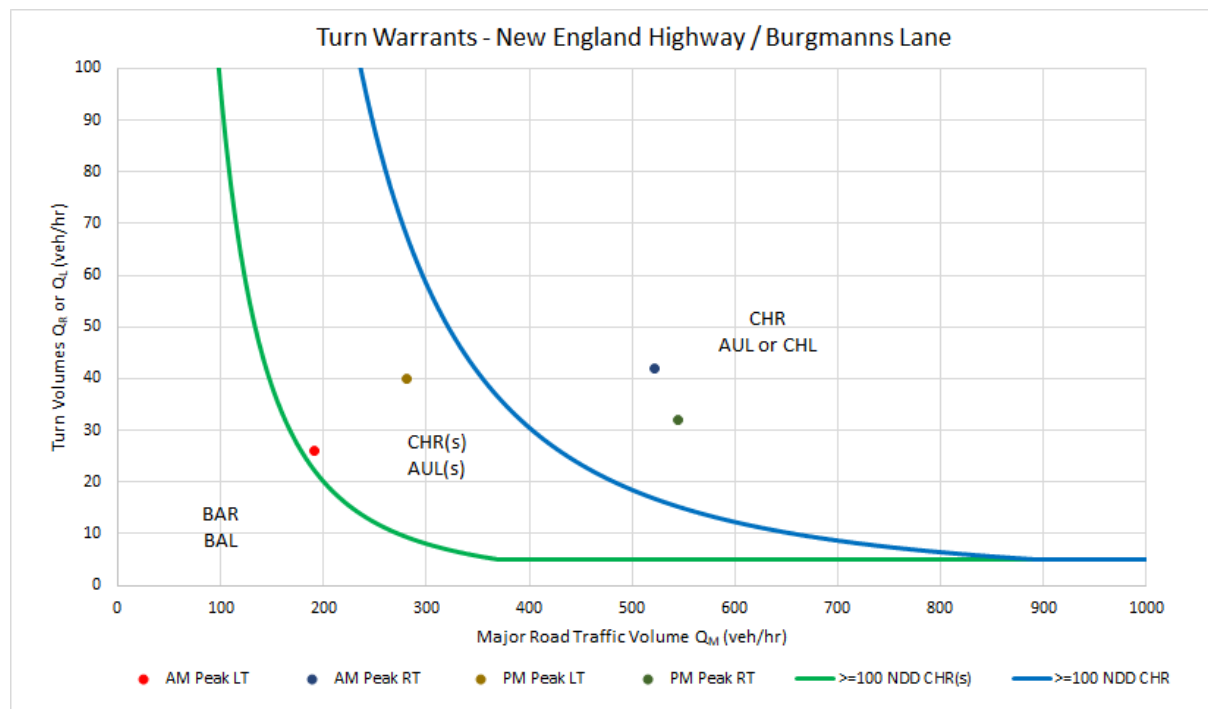


Table 4-6: Turn warrant assessment of New England Highway / Burgmanns Lane – with development – AM peak

|           |     |  |           |       |                  |           |
|-----------|-----|--|-----------|-------|------------------|-----------|
| $Q_{T1}=$ | 325 |  | $Q_{T2}=$ | 253   | Splitter Island? | No        |
| $Q_R=$    | 43  |  | $Q_L=$    | 44    |                  |           |
|           |     |  |           |       | $Q_M$            | $Q_R/Q_L$ |
|           |     |  |           | Right | 622              | 43        |
|           |     |  |           | Left  | 253              | 44        |

|                               |        |
|-------------------------------|--------|
| Right Turn Treatment Required | CHR    |
| Left Turn Treatment Required  | AUL(s) |

Table 4-7: Turn warrant assessment of New England Highway / Burgmanns Lane – with development – PM peak

|           |     |  |           |     |                  |           |
|-----------|-----|--|-----------|-----|------------------|-----------|
| $Q_{T1}=$ | 279 |  | $Q_{T2}=$ | 306 | Splitter Island? | No        |
| $Q_R=$    | 49  |  | $Q_L=$    | 40  |                  |           |
|           |     |  |           |     | $Q_M$            | $Q_R/Q_L$ |
| Right     |     |  |           | 625 | 49               |           |
| Left      |     |  |           | 306 | 40               |           |

|                               |        |
|-------------------------------|--------|
| Right Turn Treatment Required | CHR    |
| Left Turn Treatment Required  | AUL(s) |

Table 4-8: Turn warrant assessment graph of New England Highway / Burgmanns Lane – with development

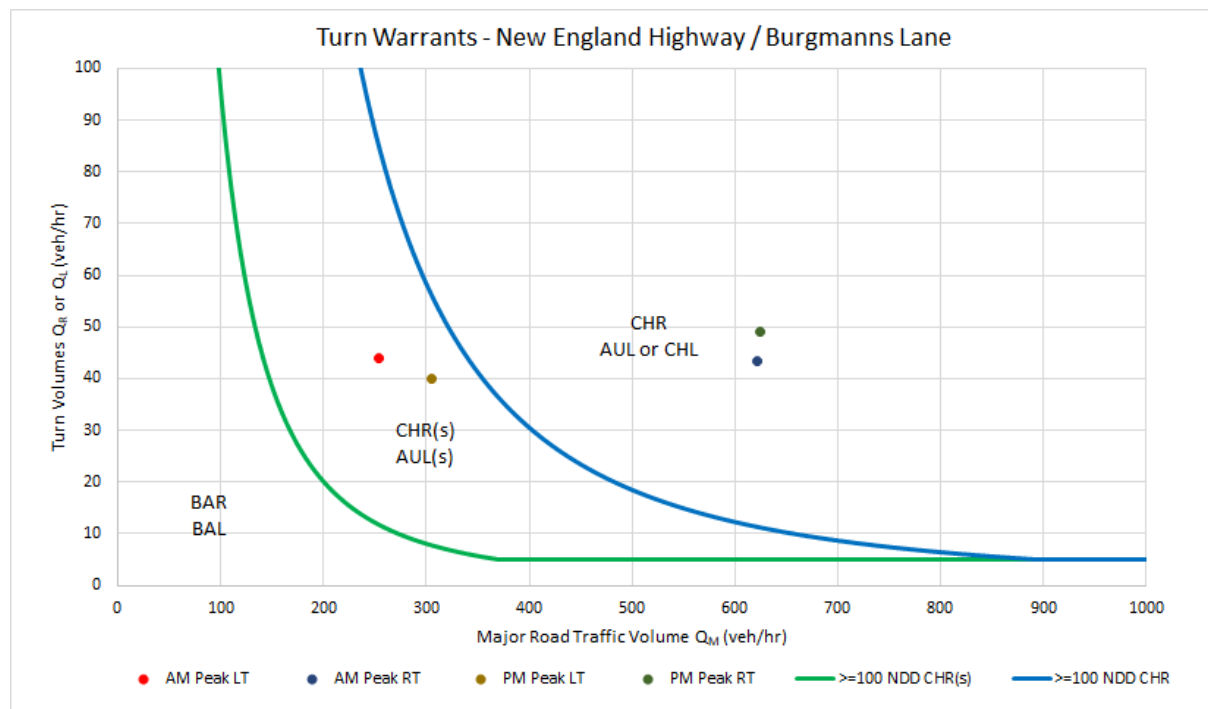


Table 4-9: Turn warrant assessment of New England Highway / Whitehouse Lane – without development – AM peak

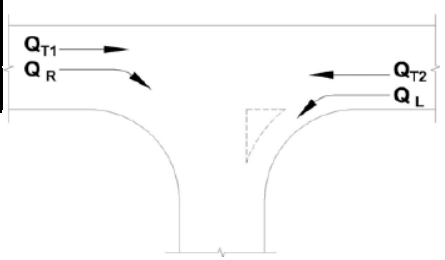
|                                                                                   |     |            |           |                  |                       |
|-----------------------------------------------------------------------------------|-----|------------|-----------|------------------|-----------------------|
| $Q_{T1} =$                                                                        | 335 | $Q_{T2} =$ | 209       | Splitter Island? | No                    |
| $Q_R =$                                                                           | 13  | $Q_L =$    | 8         | Speed Limit?     | $\geq 100\text{km/h}$ |
|  |     |            |           |                  |                       |
|                                                                                   |     | $Q_M$      | $Q_R/Q_L$ |                  |                       |
| Right                                                                             |     | 551        | 13        |                  |                       |
| Left                                                                              |     | 209        | 8         |                  |                       |
| Right Turn Treatment Required                                                     |     |            |           | CHR(s)           |                       |
| Left Turn Treatment Required                                                      |     |            |           | BAL              |                       |

Table 4-10: Turn warrant assessment of New England Highway / Whitehouse Lane – without development – PM peak

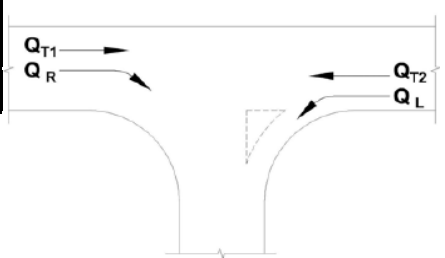
|                                                                                    |     |            |           |                  |                       |
|------------------------------------------------------------------------------------|-----|------------|-----------|------------------|-----------------------|
| $Q_{T1} =$                                                                         | 238 | $Q_{T2} =$ | 298       | Splitter Island? | No                    |
| $Q_R =$                                                                            | 18  | $Q_L =$    | 22        | Speed Limit?     | $\geq 100\text{km/h}$ |
|  |     |            |           |                  |                       |
|                                                                                    |     | $Q_M$      | $Q_R/Q_L$ |                  |                       |
| Right                                                                              |     | 559        | 18        |                  |                       |
| Left                                                                               |     | 298        | 22        |                  |                       |
| Right Turn Treatment Required                                                      |     |            |           | CHR              |                       |
| Left Turn Treatment Required                                                       |     |            |           | AUL(s)           |                       |

Table 4-11: Turn warrant assessment graph of New England Highway / Whitehouse Lane – without development

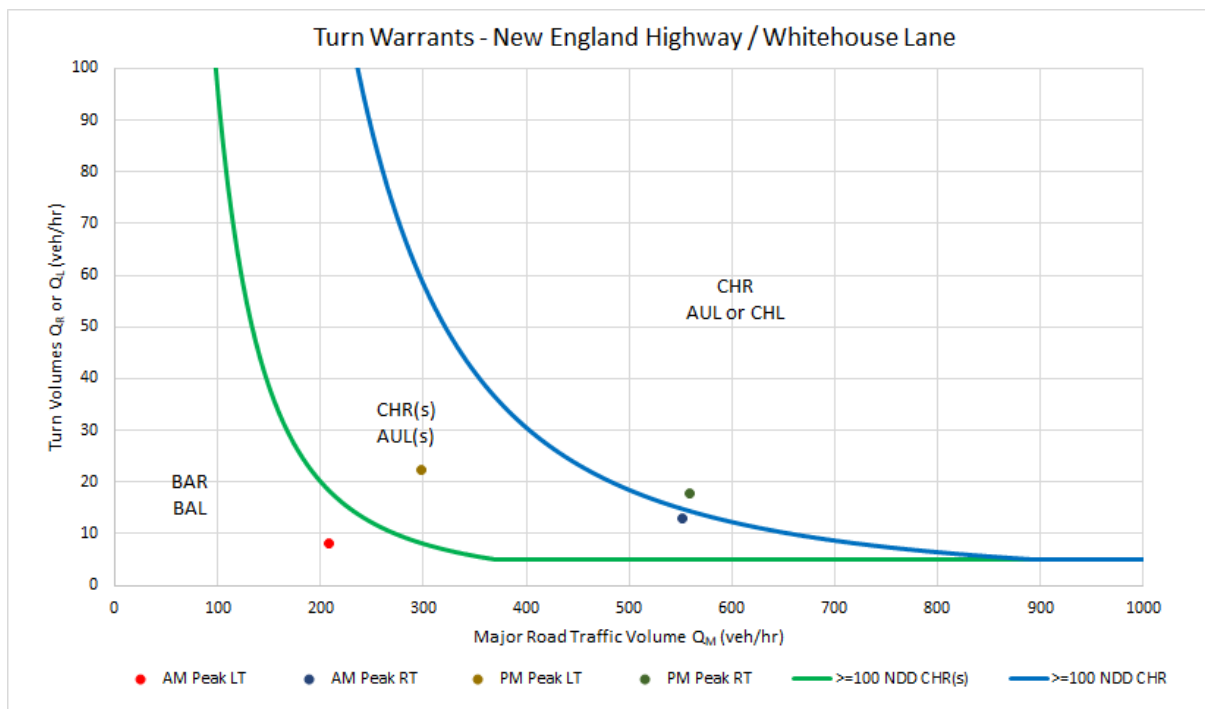


Table 4-12: Turn warrant assessment of New England Highway / Whitehouse Lane – with development – AM peak

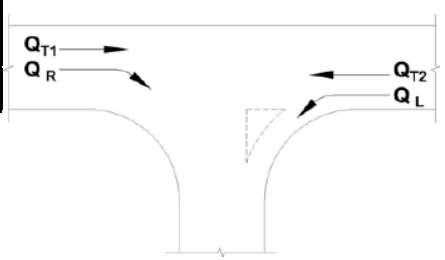
|                                                                                   |     |          |            |       |                  |                       |
|-----------------------------------------------------------------------------------|-----|----------|------------|-------|------------------|-----------------------|
| $Q_{T1} =$                                                                        | 346 | $Q_{T1}$ | $Q_{T2} =$ | 135   | Splitter Island? | No                    |
| $Q_R =$                                                                           | 24  | $Q_R$    | $Q_L =$    | 85    | Speed Limit?     | $\geq 100\text{km/h}$ |
|  |     |          |            |       |                  |                       |
|                                                                                   |     |          |            | $Q_M$ | $Q_R/Q_L$        |                       |
| Right                                                                             |     |          |            | 566   | 24               |                       |
| Left                                                                              |     |          |            | 135   | 85               |                       |
| Right Turn Treatment Required                                                     |     |          |            |       |                  | CHR                   |
| Left Turn Treatment Required                                                      |     |          |            |       |                  | AUL(s)                |

Table 4-13: Turn warrant assessment of New England Highway / Whitehouse Lane – with development – PM peak

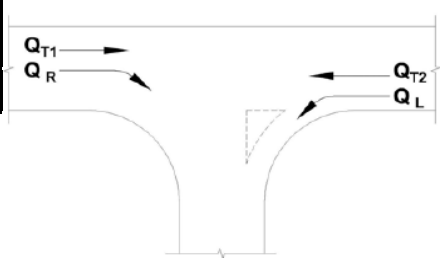
|                                                                                    |     |          |            |       |                  |                       |
|------------------------------------------------------------------------------------|-----|----------|------------|-------|------------------|-----------------------|
| $Q_{T1} =$                                                                         | 237 | $Q_{T1}$ | $Q_{T2} =$ | 316   | Splitter Island? | No                    |
| $Q_R =$                                                                            | 23  | $Q_R$    | $Q_L =$    | 27    | Speed Limit?     | $\geq 100\text{km/h}$ |
|  |     |          |            |       |                  |                       |
|                                                                                    |     |          |            | $Q_M$ | $Q_R/Q_L$        |                       |
| Right                                                                              |     |          |            | 580   | 23               |                       |
| Left                                                                               |     |          |            | 316   | 27               |                       |
| Right Turn Treatment Required                                                      |     |          |            |       |                  | CHR                   |
| Left Turn Treatment Required                                                       |     |          |            |       |                  | AUL(s)                |

Table 4-14: Turn warrant assessment graph of New England Highway / Whitehouse Lane – with development

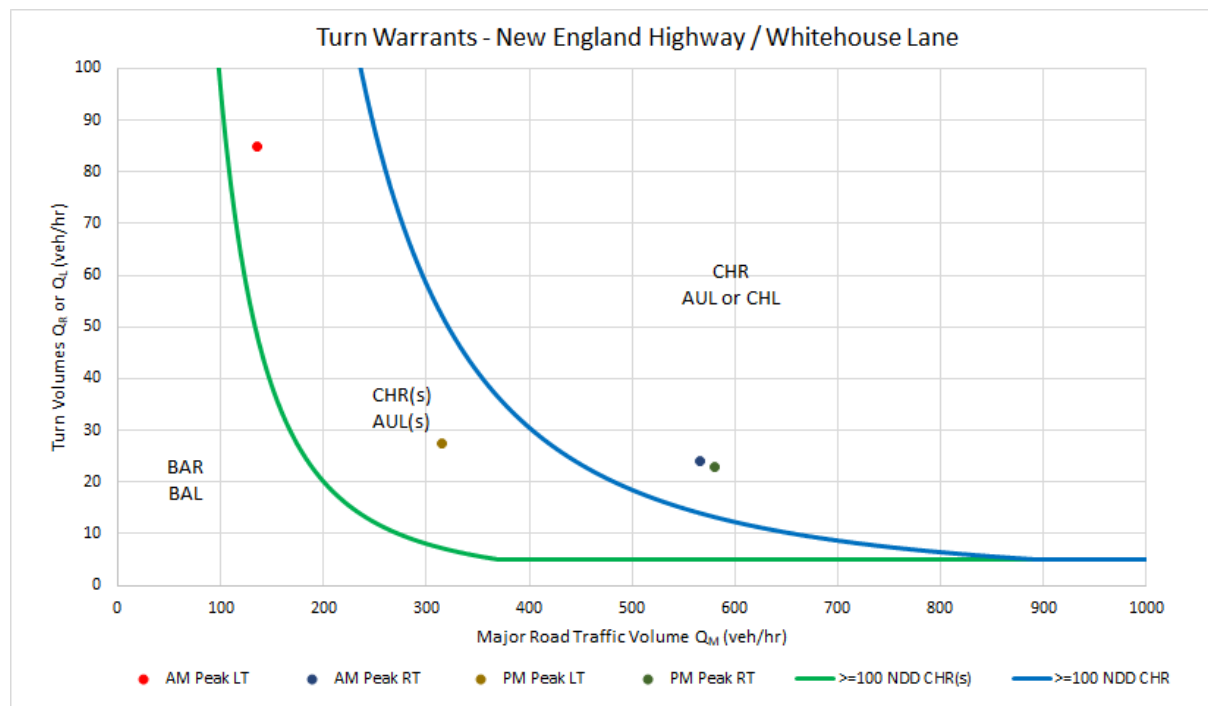


Table 4-15 summarised the turn warrant assessment results. Based on the expected accumulative peak hour traffic volumes, the turn warrants assessments show that AUL and CHR turning lane treatments would be sufficient for Burgmanns Lane and Whitehouse Lane intersections at New England Highway to accommodate the accumulative construction turning traffic volumes. As such, no road upgrades or modifications at the two intersections are required.

Table 4-15: Turn warrant assessment result summary

| Intersection                          | Existing layout | Proposed intersection treatment |             |                  |    |
|---------------------------------------|-----------------|---------------------------------|-------------|------------------|----|
|                                       |                 | Without development             |             | With development |    |
|                                       |                 | AM                              | PM          | AM               | PM |
| New England Highway / Burgmanns Lane  | CHR, AUL        | CHR, AUL(s)                     |             | CHR, AUL(s)      |    |
| New England Highway / Whitehouse Lane | CHR, AUL        | CHR(s), BAL                     | CHR, AUL(s) | CHR, AUL(s)      |    |

### 4.1.3 Water deliveries

Iberdrola has investigated multiple water supply options to deliver external water for workforce consumption and amenities, dust suppression and washdown, landscape irrigation (vegetation establishment period) and fire suppression (initial fill) locally from Tamworth. It is assumed that the water tankers will travel to and from the Project on Ascot-Calala Road via Whitehouse Lane or Burgmanns Lane (under dry-weather conditions) from Goonoo Goonoo Road / New England Highway.

Under a worst-case scenario (i.e. drought), where all water is required during construction would need to be delivered by water tankers from Tamworth to the Project, it is anticipated that 16.8 ML water will be required for the entire construction program (i.e. 15 months). 13kL water tankers are assumed to use for delivery, the maximum water tanker movements throughout the construction are estimated to be up to 1,297 water tankers for 15 months, which is expected to be less than five water tankers per day. As such, it is envisaged that this would not have a significant impact to the daily traffic generated by the construction of the Project.

## 4.2 Operation

The BESS will be generally operated remotely with the exception of site maintenance on an as-needs basis.

The operation of the BESS is expected to generate minimal level of traffic. Operational traffic volumes would be significantly less than the construction traffic and would result in minimal impacts to the traffic volumes on the road network. As such, a detailed traffic impact assessment for a 10-year horizon is not required, as it is envisaged that the road network is able to accommodate the minimal traffic generated by the operation of the BESS.

Heavy vehicle movements requiring escort are not expected during routine operational or maintenance activities. These activities would typically involve light vehicles or small maintenance trucks and would be infrequent.



In a worst-case scenario where replacement of major equipment (e.g., inverter, transformer, or battery enclosure) is required, there may be isolated instances of heavy vehicle access, including oversize loads requiring escort under applicable road transport regulations.

These events are expected to be rare (e.g., once every five to 10 years), and movements would be planned well in advance in coordination with relevant authorities and in accordance with road safety and access requirements. As a conservative estimate, a worst-case scenario could involve up to two to four escorted heavy vehicle movements over a single replacement event.

The decommissioning of the Project would result in the removal of infrastructure related to the battery storage system and would not exceed traffic generation associated with construction works outlined in Section 4.1.1. As such, decommissioning traffic impacts are anticipated to be limited and have not been further considered.

## 4.3 Route assessment

As discussed, OSOM vehicle movements associated with the transport of equipment and materials including batteries would predominantly be from the south. Battery components are anticipated to be brought in from Port of Newcastle using the Hunter Expressway and New England Highway. These vehicles will require special operating permits to allow them to travel on public roads and may require one or more escort vehicles to accompany them. The appointed licensed haulage contractor will be required to complete a detailed assessment for approval by TfNSW and local councils before construction of the Project.

The anticipated largest heavy vehicle will be used to transport the HV transformers. The proposed design vehicle is expected to be 35 metres long with 14 axles with Ministerial Orders, Class 1 National Notices or permits with the National Heavy Vehicle Regulator (NVHR). The permit will undergo a separate approval process, and a suitable transport contractor will be engaged for transportation and development of a OSOM Transport Management Plan.

### 4.3.1 Potential OSOM route

The potential transport route from Port of Newcastle to the Project using the NHVR Route Planner Tool is shown in Figure 4-2, which have been identified with the aim of minimising the impact of construction traffic on the surrounding road network. The proposed route from the Port of Newcastle to the Project is as follows:

- Newcastle City Council Roads (approved OSOM route): Parker Street → Elizabeth Street →
- State-controlled Roads (approved OSOM route): Industrial Drive → Maitland Road →
- State-controlled Roads (conditional OSOM route): New England Highway (from Hexham to John Renshaw Drive) →
- State-controlled Roads (approved OSOM route): John Renshaw Drive →
- State-controlled Roads (conditional OSOM route): Hunter Expressway → New England Highway (to Singleton side of the traffic lights at Magpie Street) →
- State-controlled Roads (approved OSOM route): New England Highway → Maitland Street → Sydney Street → Bridge Street → New England Highway → Aberdeen Street → New England Highway → Macquene Street → New England Highway →
- Tamworth Regional Council Roads: Whitehouse Lane (OSOM approved route) → Ascot-Calala Road (not on OSOM route network).

Mitigation and management treatments required on the above haulage route will be confirmed and addressed appropriately once the OSOM vehicle and haulage routes are confirmed by the transport contractor.

### 4.3.2 Pinch points of potential route

A desktop review of the potential route highlights several key locations where traffic management and / or modification of existing traffic furniture would be required to accommodate OSOM vehicle manoeuvres which is summarised in Table 4-16 with detailed swept paths attached in **Appendix C** for reference.

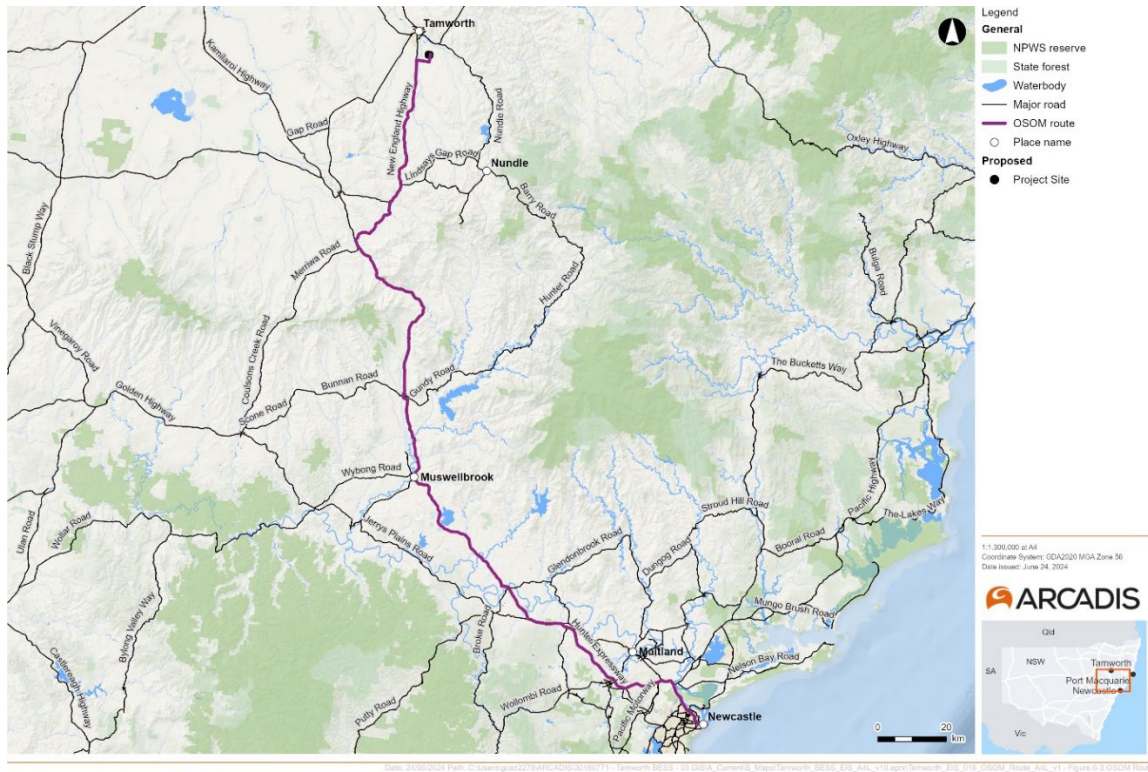


Figure 4-2: Potential OSOM route between Port of Newcastle and the Project

Source: NHVR Route Planner Tool

Table 4-16: Pinch points of the potential route

| No. | Location                                                                                              | Potential works required / comments                                          |
|-----|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 1   | Parker Street / Elizabeth Street                                                                      | Minor works to central median may be required depending on OSOM vehicle used |
| 2   | Elizabeth Street / Industrial Drive                                                                   | No modification works required                                               |
| 3   | Industrial Drive / Maitland Road                                                                      | No modification works required                                               |
| 4   | John Renshaw Drive / Hunter Expressway                                                                | No modification works required                                               |
| 5   | Maitland Street / Sydney Street (5.2 metres height restriction under railway overbridge) (Figure 4-3) | Route detour via New England Highway, Bell Street and Victoria Street        |
| 6   | New England Highway / Bell Street                                                                     | Minor works to median may be required depending on OSOM vehicle used         |

| No. | Location                              | Potential works required / comments                                                                                                              |
|-----|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 7   | Bell Street / Victoria Street         | No modification works required, opposing traffic lane utilised to facilitate manoeuvre                                                           |
| 8   | New England Highway / Market Street   | Existing mountable kerb utilised to facilitate manoeuvre which may require temporary relocation of existing signage and garden at the roundabout |
| 9   | New England Highway / Whitehouse Lane | The assessed OSOM can safely enter Whitehouse Lane with current road configuration                                                               |
| 10  | Whitehouse Lane / Ascot-Calala Road   | The assessed OSOM can safely enter Ascot-Calala Road with current road configuration                                                             |

A route modification is recommended i.e., travel along New England Highway, Bell Street and Victoria Street as shown in Figure 4-4 which is already an approved 4.6m high vehicle route in the NSW Load Carrying Network Map.



Figure 4-3: 5.2 metres height restriction under railway overbridge on Sydney Street, Muswellbrook

Source: Google maps

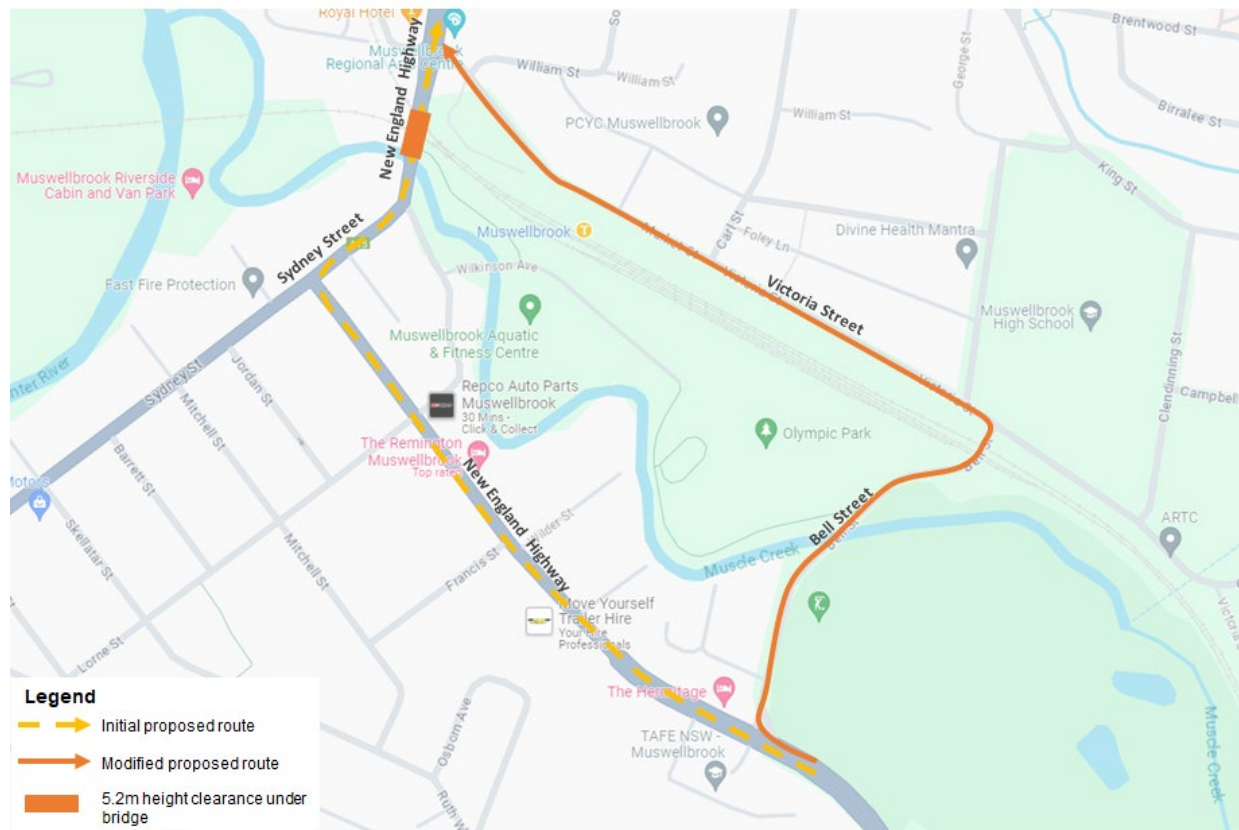


Figure 4-4: Modified proposed route through Muswellbrook

Source: Google maps

A summary of a high-level route analysis including the key locations and proposed mitigations to resolve route viability are presented in **Appendix D**. A review of height clearance to power lines and bridges will be prepared by transport contractor as part of the Construction Traffic Management Plan.

The traffic impacts due to the construction of the development have been assessed to be manageable with the implementation of the Construction Traffic Management Plan. Dilapidation survey will be undertaken prior to development to review the road condition and to monitor post construction impacts. On this basis, road upgrades, infrastructure works, or new roads would not be required for the development.

A secondary route via Burgmanns Lane is recommended as back-up site access in the event that the preferred route is flooded or restricted. This assumes the causeway replacement / upgrade on Burgmanns Lane (as discussed in Section 2.6.3) has been constructed.

### 4.3.3 Rest areas and pull-over locations

The proposed route between the Port of Newcastle and the Project Site spans about 280 kilometres. Due to the low operating speed of the OSOM vehicle and compliance with driver fatigue management protocols, multiple stopping places, rest areas and pull-over locations have been identified along the proposed OSOM route. Rest areas and stopping places provide safe locations for drivers to stop to check their loads, complete work diaries, take short and overnight breaks. The pull-over locations provide passing opportunities for other traffic queued behind the OSOM.

According to the driver fatigue management specified by the NHVR, a typical industry fatigue management schedule is:

- 15 continuous minutes of stationary rest in 5 hours of driving



- 30 minutes of stationary rest, in blocks of 15 continuous minutes, in 7.5 hours of driving
- 60 minutes of stationary rest, in blocks of 15 continuous minutes, in 10 hours of driving
- A break of at least 7 continuous hours after 12 hours of driving, but no more than 12 hours of driving in 24 hours.

The largest OSOM vehicle will be used to transport the HV transformers, with an assumed travel speeds of 10 kilometres per hour within metropolitan areas and 20 kilometres per hour in regional areas. As stated in NHVR's *New South Wales Class 1 Load Carrying Combination (Hunter Region) Mass and Dimension Exemption Notice Operation's Guide*, OSOM vehicles are only allowed to leave the Port of Newcastle after 9:30am and not allowed in the Newcastle Outer Zone between 5:30am and 9am, and between 4pm and 6pm. It is assumed that the anticipated OSOM vehicles will travel at night and will be accompanied by at least one pilot vehicle.

Based on the assumed travel speed and distances, the full travel time to the Project site is estimated to be around 15 hours. The regulations require the maximum travel undertaken by a truck driver in one day is 12 hours. As such, potential locations for overnight stops have been recommended. Table 4-17 shows the proposed three locations for rest stops.

Table 4-17: Potential rest stops along the route

| No. | Requirement                              | Type of facility | Potential Location                                                | Coordinates                   | Distance from Port of Newcastle |
|-----|------------------------------------------|------------------|-------------------------------------------------------------------|-------------------------------|---------------------------------|
| 1   | 5 hours travel<br>– 15 minutes<br>break  | Rest area        | Rixs Creek Rest Area                                              | 32°31'55.1"S<br>151°08'23.9"E | 84km                            |
| 2   | 10 hours travel<br>– 60 minutes<br>break | Rest area        | Stopping bay opposite<br>Memorial Park rest<br>area, Muswellbrook | 32°14'51.6"S<br>150°53'45.4"E | 129km                           |
| 3   | 12 hours –<br>over-night stop            | Rest area        | King George V<br>Memorial Park, Willow<br>Tree                    | 31°38'58.4"S<br>150°43'33.5"E | 210km                           |

Multiple pull-over bays have also been identified along the single carriageway sections of the route between towns to provide sufficient and safe space for vehicles behind to over-take the OSOM vehicle. A list of additional potential rest areas, stopping bays and pull-over locations along the route are identified in Table 4-18.

Table 4-18: Additional rest areas / stopping bays / pull-over locations along the route

| No. | Type of facility | Location                                                      | Coordinates                     | Distance from Port of Newcastle |
|-----|------------------|---------------------------------------------------------------|---------------------------------|---------------------------------|
| 4   | Pull-over        | Pull-over location on New<br>England Highway,<br>Muswellbrook | 32°20'12.60"S<br>150°57'14.67"E | 118km                           |
| 5   | Pull-over        | Pull-over location on New<br>England Highway, Murulla         | 31°51'55.07"S<br>150°53'7.26"E  | 173km                           |



# Kingswood BESS TIA (Update)

| No. | Type of facility | Location                                              | Coordinates                     | Distance from Port of Newcastle |
|-----|------------------|-------------------------------------------------------|---------------------------------|---------------------------------|
| 6   | Pull-over        | Pull-over location on New England Highway, Murrurundi | 31°45'56.87"S<br>150°50'37.23"E | 191km                           |
| 7   | Stopping bay     | Stopping bay opposite Liverpool Range Rest Area       | 31°44'27.41"S<br>150°47'49.12"E | 197km                           |
| 8   | Stopping bay     | Nowlands Gap stopping bay                             | 31°44'23.56"S<br>150°47'38.11"E | 197km                           |
| 9   | Rest area        | Goonoo Goonoo Rest Area                               | 31°17'48.7"S<br>150°54'07.5"E   | 259km                           |

Swept path analysis (**Appendix E**) has been undertaken for the largest design vehicles (35m long 14-axle OSOM vehicle) to demonstrate that the OSOM vehicle can enter, exit and park at the above nine locations without impacting travel lanes and parking areas.

## 4.4 Site access

To minimise the impact to the Calala community and impact from flooding, heavy vehicle traffic through the urban portion of Calala using Calala Lane and Burgmanns Lane are not proposed as they are regularly cut off from vehicular traffic for short periods of time due to flooding at Goonoo Goonoo Creek causeway. Moreover, the two proposed BESS projects in proximity to the Project are using Calala Lane and Burgmanns Lane. Hence, all vehicular access to the Project required for construction and operation will use Ascot-Calala Road via Whitehouse Lane. The site entrance off Ascot-Calala Road would be formalised during the site preparation phase to accommodate construction traffic generated by the Project. The access will be designed in accordance with the Australian Standard for Off Street Car Parking (AS2890) and the TRC's Development Control Plan 2010. Treatment and access management at intersection of Whitehouse Lane and Ascot-Calala Road are recommended to manage construction vehicle movements to and from the site access in order to ensure appropriate road safety conditions such as installing advisory truck turning signage at the intersection and mandating heavy vehicles to come from south of the site access via Whitehouse Lane.

As per the Ausroads Guide to Road Design Part 4A, property accesses should comply to the requirements of safe intersection sight distance (SISD). A desktop assessment of the sight distance available from the site access point, Burgmanns Lane and Whitehouse Lane at New England Highway has been undertaken using aerial imagery and Google Street View. On-site assessment should be undertaken to validate the following assessment outcomes prior to construction.

### 4.4.1 Site access at Ascott-Calala Road

Based on the 2D sight line assessment, the recommended SISD at an unsignalised intersection based on a driver reaction time of 2.0 seconds for Ascott-Calala Road with signposted as 60 kilometres per hour (design speed 70 kilometres per hour) is 151 metres. The site is straight, flat and clear of vegetation as demonstrated in Figure 4-5, which indicates that sight distances comfortably exceed the minimum requirement. The proposed site access arrangement is considered suitable as part of the development.



Figure 4-5: Ascot-Calala Road sightlines (looking south)

Based on the proposed layout, a vehicle swept path assessment was carried out to determine whether the largest design vehicle (35 metre long 14-axle OSOM vehicle) would be contained within the configuration, which is shown in Figure 4-6. As shown, the proposed access layout of the access would be sufficient to accommodate the OSOM vehicles to enter and exit the site without impacting any of the street furniture.



Figure 4-6: Ingress and egress of 35-metre long OSOM vehicle to and from the Project

#### 4.4.2 New England Highway / Burgmanns Lane

The recommended SISD at an unsignalised intersection based on a driver reaction time of 2.0 seconds for New England Highway with signposted as 90 kilometres per hour (design speed 100 kilometres per hour) is 248 metres. The sight distance at this intersection to the north and south are expected to comfortably exceed the minimum requirement as illustrated in Figure 4-7 and Figure 4-8.



Figure 4-7: New England Highway facing north at Burgmanns Lane





Figure 4-8: New England Highway facing south at Burgmanns Lane

#### 4.4.3 New England Highway / Whitehouse Lane

The recommended SISD at an unsignalised intersection based on a driver reaction time of 2.0 seconds for New England Highway with signposted as 100 kilometres per hour (design speed 110 kilometres per hour) is 285 metres. The sight distance at this intersection to the north and south are expected to comfortably exceed the minimum requirement as illustrated in Figure 4-9 and Figure 4-10.



Figure 4-9: New England Highway facing north at Whitehouse Lane



Figure 4-10: New England Highway facing south at Whitehouse Lane

## 4.5 Parking

### 4.5.1 Construction phase

During peak construction period, up to 100 workers are anticipated. Opportunities for transporting workers by shuttle buses would be explored in consultation with TRC to reduce the need for private vehicle use. Details of the shuttle bus arrangement would be documented in the Construction Traffic Management Plan.

In the worst-case scenario, workforce parking will be provided during the construction phase at the temporary laydown area. It is recommended that parking opportunities be recorded within a detailed Construction Traffic Management Plan which also designates parking locations to be used during the construction phase.

### 4.5.2 Operation phase

Formal parking locations to accommodate the operational phase maintenance workforce are assumed to be provided in line with relevant planning scheme standards as well as design requirements contained in Australian Standard for off-street car parking (AS2890.1 and AS2890.2).

## 4.6 Public and active transport

There are minimal impacts on the existing public or active transport facilities anticipated due to the traffic generation from the development likely to use these facilities. No changes are required for bus and train services to facilitate the workforce movement during construction and operation of the facility.

Given the rural land use and minimal pedestrian/cycle movements to/from the Project, the impacts to pedestrians or cyclists are anticipated to be limited. Traffic control measures will be used to manage the safe movement (to avoid any traffic conflicts with construction vehicles) into and out of the Project Site.

## 4.7 Summary of impacts

It is not anticipated that the construction and operation of the Project will result in significant impacts on the safety and capacity of the road network based on the following reasons:



- The largest impact of the Project is from the construction traffic. However, the additional traffic generated during the construction will be relatively minor compared to the existing daily traffic volumes in the road network. In the event all three BESS projects and Goonoo Goonoo Road Upgrade are constructed at the same time, 159 vehicles will be added on Goonoo Goonoo Road / New England Highway, 101 vehicles will be added on Whitehouse Lane and 33 vehicles will be added on Burgmanns Lane during the construction peak hour periods. With the additional traffic, a LOS C or better is still maintained on the Goonoo Goonoo Road / New England Highway, Whitehouse Lane and Burgmanns Lane, which is acceptable.
- Operational traffic volumes will be minimal and significantly less than the Project's construction traffic. The BESS will be generally operated remotely with the exception of site maintenance on an as-needs basis. The operation of the BESS is expected to generate minimal level of traffic.
- Construction and operational traffic volumes will not result in significant impacts on the surrounding network (in relation to capacity and intersection performance). The New England Highway / Burgmanns Lane and New England Highway / Whitehouse Lane intersections are currently provided with CHR and AUL treatments and is considered adequate to cater for the anticipated peak construction traffic as indicated by the turn warrant assessment.
- The high-level route assessment indicate that the preferred route is a suitable route subject to appropriate traffic management and minor road network modifications. However, a further review and finalisation of the route following engagement of the transport contractor and preparation of a Construction Traffic Management Plan are required
- The proposed site access provides adequate visibility for turning traffic and would be sufficient to accommodate the OSOM vehicles to enter and exit the Project Site
- Shuttle buses to be investigated for the workforce to travel to and from the Project site to reduce the reliance on private vehicle use.
- If required, workforce parking to be provided at the temporary laydown area.
- There are limited bus stop infrastructure and services available for construction workers and employees to access the Project Site. There are no cycling facilities near the Project Site. Due to the remote location workers will likely drive or take the shuttle bus to the Project site. The impacts to pedestrians or cycle facilities are anticipated to be limited.

## 5 Management of impacts

As assessed within this report, traffic generated by the Project is not expected to compromise the safety or function of the surrounding road network. Notwithstanding, additional measures proposed to manage the traffic impacts of the Project's construction and operation are summarised in Table 5-1.

Table 5-1: Summary of traffic mitigation measures

| Impact                               | Mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Detailed design and pre-construction |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Traffic, access and impact           | <p>A Construction Traffic Management Plan (CTMP) will be prepared to mitigate potential construction traffic impacts. The CTMP will include the following:</p> <ul style="list-style-type: none"> <li>• Consultation outcomes with the relevant road authorities and adjacent landowners during preparation of the CTMP</li> <li>• A process for ongoing consultation with relevant authorities, neighbours, relevant stakeholders and contractors of the proposed road works and other nearby developments to understand any overlap in construction programs and ensure appropriate coordination of construction activities</li> <li>• Special traffic management plans for special events such as the Tamworth Country Music Festival, weather events and roadworks developed in conjunction with the relevant stakeholders including preparation of contingency plan and emergency response processes</li> <li>• Management of hours of works and deliveries, staff transport and provision of on-site tool storage where practicable</li> <li>• The outcomes of the review of using shuttle buses during construction in consultation with TRC to reduce the need for private vehicle use</li> <li>• Identification of parking areas for the workforce to minimise impacts on sensitive land uses and businesses. To minimise the potential for parking disruptions, the following management hierarchy would be applied: <ul style="list-style-type: none"> <li>– Car parking within the proposed construction compound</li> <li>– In consultation with neighbouring landowners</li> </ul> </li> <li>• A detailed route assessment will be completed for OSOM construction vehicles. The assessment will include a review of height clearances to bridges and bridge loads</li> <li>• A process for managing OSOM deliveries (obtain either a Ministerial Orders, Class 1 National Notices or permits with the National Heavy Vehicle Regulator depending on the size and loads of the vehicles)</li> <li>• Routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and businesses e.g., avoiding school bus operating hours. Secondary alternative construction route activities should be included, in the event of the primary route is blocked off by an emergency</li> <li>• Traffic dust management measures</li> <li>• Notification requirements prior to the movement of hazardous / dangerous or oversize construction material and equipment</li> <li>• Measures to manage and facilitate the ingress/egress of the vehicles to ensure safety for all users along Ascot-Calala Road, including, as required regulatory and direction signposting, variable message signs, traffic management personnel and all other traffic control devices necessary for the implementation of the CTMP</li> <li>• Provision to induct employees and contractors to raise awareness and understanding of traffic and transport mitigation measures to be implemented</li> <li>• Fatigue management measures to be introduced and enforced for all workers</li> </ul> |

| Impact                   | Mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          | <ul style="list-style-type: none"> <li>Monitoring objectives to review the performance of traffic management.</li> </ul> <hr/> <ul style="list-style-type: none"> <li>A dilapidation survey will be undertaken on Ascot-Calala Road and Burgmanns Lane prior to development to review the road condition and to monitor post construction impacts. Where Project related road damage is identified, it will be repaired to its pre-construction condition.</li> </ul> <hr/> <ul style="list-style-type: none"> <li>Travel demand management (TDM) campaign will be developed to inform the public on works and its effect on network operations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| OSOM vehicles            | <p>The transport of any over dimensional construction material and equipment will require a permit from TfNSW and may also require a police escort. Transport of components and material will be planned in detail and in consultation with New South Wales Police Force (NSWPF), recognising and determining whether the scale of oversized vehicle movements will require a significant commitment of police resources to facilitate. The following measures are proposed to manage the overall transport operations and minimise impacts on other road users:</p> <ul style="list-style-type: none"> <li>Develop a regular schedule of road closures comprising a list of specific roads/intersections and closure times and communicate this widely to provide advance warning of closures to road users (If required).</li> <li>No over-dimension vehicle operations will occur during school bus operating hours (where feasible) which may occur along the routes from where the vehicles would be travelling from</li> <li>Transport activities will occur outside of peak hour conditions (where feasible).</li> </ul> |
| Construction / operation |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Road user delay          | <ul style="list-style-type: none"> <li>Provision of experienced and qualified traffic control personnel</li> <li>Construction works to occur outside of peak hours as much as possible in order to minimise disruptions to local road users and residents</li> <li>Notification to local road users and residents in advance to the construction works being undertaken to ensure adequate opportunities are provided to seek alternative routes</li> <li>Where traffic must be stopped or diverted at particular times, adequate notification will be provided through community engagement procedures, durations of impacts are kept to a minimum and traffic queues are minimised as far as practicable.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                          |

| Impact      | Mitigation measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Road safety | <ul style="list-style-type: none"> <li>• Relevant emergency services should be notified on advance prior to the movement of all hazardous / dangerous or oversize construction material and equipment</li> <li>• A Driver Code of Conduct will be implemented as a measure to maintain safety within and around the Project, which will be communicated to all site workers during the site induction process and be reminded of the requirements of the code of conduct regularly in toolbox meetings</li> <li>• The code of conduct will be revised prior to commencement of on-site works and when required during construction works</li> <li>• The code of conduct will include the following but not limited to: <ul style="list-style-type: none"> <li>– All vehicles associated with the Project are required to travel within the posted speed limits on public roads</li> <li>– All large vehicles associated with the Project are required to follow the designated heavy and OSOM vehicle routes and minimise impact on school bus routes</li> <li>– All operators of the vehicles associated with the Project should maintain a high level of awareness and respect for all other road users</li> <li>– Safe driving practice training should be provided prior to start-up of any traffic and access related management tasks, and provide updates if the tasks, equipment or procedures are expected to, or have changed</li> </ul> </li> <li>• Fatigue management measures should be introduced and enforced for all workers including the standard hours of operation</li> <li>• All vehicles associated with the Project will be compliant with relevant State legislation in relation to roadworthiness and modifications, and maintained regular vehicle checks and maintenance</li> <li>• Site access management will be undertaken to maintain the safety of the general public and the employees</li> <li>• Installation of advance truck turning signage to warn vehicles of heavy vehicles turning in and out of the Project Site access during the construction phase</li> </ul> |

## 6 Road authority consultation

A site visit and consultation with TRC Development team was undertaken on Wednesday 6<sup>th</sup> December 2023 to understand:

- Existing traffic conditions
- Context of the nearby development applications
- Potential traffic access routes that can minimise / mitigate the impacts to the Calala community.

TRC supported Whitehouse Lane onto Ascot-Calala Lane for site access to avoid the heavy vehicle traffic through the urban portion of Calala.

A virtual meeting (28 March 2024) was held with TfNSW to discuss the details of the pre-SEARs advice (**Appendix A**), the findings of the TIA assessment and the potential for cumulative impacts. During the meeting, TfNSW reiterated the need for a high-level concept OSOM route analysis with swept path analysis showing the proposed OSOM vehicle able to travel to / from the project Site and along the route without any significant changes to the existing infrastructure. A concept level swept path analysis (**Appendix C**) was undertaken for all critical intersections / pinch-points along the proposed OSOM route from Port of Newcastle to the project Site.



## 7 Conclusion

This report details the traffic impact assessment of the construction and operation of a BESS at 744 Burgmanns Lane, Kingswood. Key findings are summarised below:

- The site access is located on Ascot-Calala Road, which would be accessed by heavy vehicles from the New England Highway (a state road) from the north and south, and Whitehouse Lane (a local road)
- The construction works for the Project is expected to generate up to 80 light vehicle trips (one-way movement) during the morning and evening peak hour and 20 heavy vehicle trips (two-way movement) during the peak hour
- The Project will be operated remotely with the exception of site maintenance on an as-needs basis. Typically, there would not be a requirement for heavy vehicles to regularly access the Project when the battery is operational
- There are no capacity concerns regarding the operation of the key roads and intersections identified in this report for both construction and operational stages
- It was determined that sufficient road link capacity would be available on New England Highway to accommodate construction and operational traffic
- The impact of the 'worst' case scenario for the cumulative traffic demand generated by the Project and potential surrounding developments on the road network has been assessed. This worst case scenario would be limited to the construction period. Whitehouse Lane, Burgmanns Lane and New England Highway are expected to have adequate capacity to cater for the Project. Whitehouse Lane and Burgmanns Lane is expected to operate at Level of Service A and New England Highway will operate at Level of Service C
- The turn warrant assessments showed the existing AUL and CHR turning lane treatments at Burgmanns Lane and Whitehouse Lane intersections on New England Highway are sufficient to accommodate the cumulative construction turning traffic volumes
- The high-level route assessment has identified a suitable route with minor upgrades subject to further review and finalisation of the route following engagement of the transport contractor and preparation of a Construction Traffic Management Plan. The use of the OSOM vehicles will be managed through a Construction Traffic Management Plan with appropriate permits applied for with TfNSW as nominated by the transport contractor
- Rest areas and stopping places are identified to provide safe locations for OSOM drivers to stop to check their loads, complete work diaries, take short and overnight breaks. Pull-over locations that provide passing opportunities for other traffic queued behind the OSOM have also been recommended.
- The construction workforce is expected to take a shuttle bus or drive and use the temporary on-site laydown area for parking, minimal impact on the on-street parking is expected by the construction phase of Project. Opportunities for a shuttle bus will be explored in consultation with Tamworth Regional Council to reduce the need for private vehicle use
- Formal parking locations to accommodate operation phase maintenance workforce would be provided in line with relevant planning scheme standards as well as design requirements contained in Australian Standards for off-street car parking (AS2890)
- A desktop assessment has confirmed that the proposed access meets the minimum sight distance requirements and a 35m long 14-axle OSOM vehicle is able to enter and exit the Project Site without impacting any of the street furniture
- Minimal impact on the existing public and active transport facilities is anticipated by the construction and operation of the Project

- A Construction Traffic Management Plan will be completed by the nominated contractor before commencement of construction as required by the development consent conditions to ensure appropriate coordination of construction activities and to maintain safety for all road users at all times
- Overall, the Project is expected to have a manageable impact on the surrounding road network during construction and operational phase of the Project.

# Appendix A

**TfNSW comments as part of the SEARs submission**

| Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Response / section reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Transport</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| The TIA should be tailored to the scope of the proposed development and include, but not be limited to, the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Identify the timeframe for the schedule of works (commencement year and completion year) overlapping timeframe of components during construction (to capture worst case scenario) and identify the construction hours for the project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Project timeframes are identified in Section 3.3.</p> <p>Construction is anticipated to commence in late 2025 and would take up to 15 months to complete.</p> <p>Construction would be undertaken during standard working hours:</p> <ul style="list-style-type: none"> <li>Monday to Friday: 7:00am to 6:00pm</li> <li>Saturday: 8:00am to 1:00pm</li> <li>No works on Sunday and public holidays.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>Detailed plans identifying the proposed location of any:</p> <ul style="list-style-type: none"> <li>Project-related infrastructure within and outside of the project boundary</li> <li>Transmission line infrastructure, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves</li> <li>Identify the key access roads (that form part of the transportation routes for light vehicles/heavy vehicles) with the classified road network required for the project (including any access required from classified road network for components being constructed outside of the project area) and justification of additional access required to a classified road in accordance with section 2.119 of <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i></li> <li>Structures on the road network that could be sensitive to blasting (e.g. bridges, pump stations, etc.). Note, if any structures are likely to be affected, an assessment of the impact must ensure that the peak particle velocity is limited to an acceptable level to TfNSW</li> <li>The Scoping Report identifies that ancillary infrastructure and temporary facilities are to be provided on-site including (but not limited to) concrete batching facilities. The TIA should identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials</li> <li>The Scoping Report does not provide any details regarding construction materials or specify whether any temporary facilities are to be provided on-site including (but not limited to) concrete batching facilities. The EIS and TIA must identify the source for input materials and quantify the traffic generation associated with the haulage of the source materials. Where the location of source materials is not yet</li> </ul> | <p>A detailed overview of the Project, including the built form, construction, and operation of the Project is included in Chapter 3 of the EIS.</p> <ul style="list-style-type: none"> <li>An approximate 800 m 330 kV transmission line (either above ground and/or below ground) would extend from the BESS substation to the Tamworth substation. The connection would include a transmission easement in accordance with Transgrid requirements for 330 kV lines. If above ground, the transmission line would be strung on 330 kV double circuit steel lattice tension structures with 330 kV steel pole terminal structures (see Figure 3 2). As the final alignment of the transmission connection is subject to ongoing engagement with Transgrid, a broader area has been identified for the transmission connection.</li> <li>The access roads for the Project that would be utilised are discussed in Section 3.2 and Section 4.3</li> <li>Blasting is not proposed</li> <li>No concrete batching plants are proposed. Traffic generation assumptions are provided in Section 3.5.</li> </ul> |

| Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Response / section reference                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| known, worst case scenarios for traffic distribution of those materials to and from the development site are to be addressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                        |
| <p>Cumulative impacts:</p> <ul style="list-style-type: none"> <li>An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following: <ul style="list-style-type: none"> <li>The cumulative impacts from traffic generated from the construction workforces in terms of the origin and destination routes, access, AM/PM peaks where there is overlap with other projects.</li> <li>The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects.</li> <li>Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development</li> </ul> </li> </ul>                                                                             | <p>An assessment of the cumulative traffic impacts from other developments in the vicinity of the Project is included in Section 4.1.2.</p>                                                                                                                                                            |
| <p>Heavy vehicle and OSOM routes:</p> <ul style="list-style-type: none"> <li>Identify the return routes for OSOMs</li> <li>National Heavy Vehicle Regulator (NHVR) approved routes identified on the Restricted Access Maps (RAVMAP) are to be utilised for the heavy vehicle routes for the proposed development</li> <li>Further include details on the number of OSOM movements, the intended time for OSOM movements to occur, and GPS coordinates along the proposed routes for pinch points, traffic management measures and pull-over bays / rest areas along the OSOM routes.</li> <li>Identifying road and rail projects occurring along the OSOM route within the anticipated schedule for the movement of the OSOM components. Inclusive of any impacts (e.g civil works or obstructions) that could impede the movement of the OSOM components due to the concurrent road and rail projects occurring along the nominated OSOM route(s).</li> </ul> | <p>Likely OSOM vehicles are identified in Section 3.5.</p> <p>Section 4.3 and <b>Appendix D</b> outline the proposed OSOM routes that would be utilised and the process that would be followed. OSOM vehicles would be verified during construction and subject to detailed construction planning.</p> |
| <p>Project schedule</p> <ul style="list-style-type: none"> <li>Hours and days of work, number of shifts and start and end times,</li> <li>Phases and stages of the project, including construction, operation and decommissioning</li> </ul> <p>Traffic volumes including:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>The Project schedule is identified in Section 3.3</p> <p>Existing traffic volumes are identified in Section 2.4.</p>                                                                                                                                                                                |



| Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Response / section reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Existing background traffic,</li> <li>Project-related traffic for each phase or stage of the project,</li> <li>Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Project related traffic is outlined in Section 3.5.</p> <p>Operational traffic volumes would be significantly less than the construction traffic and would result in minimal impacts to the traffic volumes on the road network. As such, detailed traffic impact assessment for a 10-year horizon is not required, and the road network is able to accommodate the traffic generated by the operation of BESS.</p>                                                                                                                                                                                                                                                                                                                               |
| <p>Traffic characteristics including:</p> <ul style="list-style-type: none"> <li>Number and ratio of heavy vehicles to light vehicles</li> <li>Peak times for existing traffic</li> <li>Peak times for project-related traffic including commuter periods</li> </ul> <p>Note: If there is a reliance on shuttle buses/carpooling proposed to mitigate peak traffic volumes for the AM/PM peak of construction then the TIA is required to detail how the shuttle busing/carpooling commitment will be achieved through strategies, protocols, and the like. If carpooling and shuttle bus strategies cannot be supported by detailed methods/procedures that are achievable, enforceable, and practicable, then the shuttle bus/carpooling methods would not be viable and would require the TIA to be amended to assess the worst-case scenario during peak of construction.</p> <ul style="list-style-type: none"> <li>Proposed hours for transportation and haulage</li> <li>Specify the design vehicles for the project (identifying all relevant types of heavy / OSOM / specialist vehicles and shuttle buses)</li> <li>Provide a breakdown of the calculations and assumptions for light vehicles, heavy vehicles requiring escort, heavy vehicles and heavy vehicles requiring NHVR permit and that are exempt from the escort requirements. All these vehicle types should be factored into the traffic generation during AM/PM peaks for the project</li> <li>Interactions between existing, project-related traffic, cumulative background traffic inclusive of other major projects that have coinciding timeframes and inclusion of the growth rate for background traffic for the peak construction period</li> <li>Traffic count surveys should be undertaken for a minimum of one day (preference seven days for improved accuracy of data). The traffic count survey is required to be collected outside of public holidays, events and school holidays. The traffic counts should be undertaken at the key intersections with the state classified road network in accordance with Part 3 of Austroads Guide to Road Design. The data obtained</li> </ul> | <p>Chapter 2 details the existing traffic conditions including characteristics of the vehicle types and peak hour periods based on the TRC provided traffic data reports for Ascot Calala Lane, Burgmanns Lane, New England Highway and Whitehouse Lane in 2017, 2018 and 2023. A background traffic growth rate 0.42% per annum was applied for conservative analysis to inform the existing base case scenario.</p> <p>Section 3.3 details the proposed hours for transportation.</p> <p>Details of the shuttle bus arrangement will be documented in the Construction Traffic Management Plan. For the purposes of this Traffic Impact Assessment, modelling has been undertaken for a worst case scenario where no shuttle bus is operating.</p> |

| Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Response / section reference                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>from the traffic count survey should be provided as an appendix to the TIA for the project and used to inform the background traffic counts within the base case (existing background) scenario</p> <ul style="list-style-type: none"> <li>The AM/PM peaks are required to be measured based on a single trip from origin to destination as a one-way vehicular movement from one point to another excluding the return journey.</li> </ul>                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Capacity analysis using SIDRA or other relevant application, to identify an acceptable Level of Service (LOS) at intersections with the classified (State) road/s, and where relevant, analysis of any other intersections along the proposed transport route/s.</p>                                                                                                                                                                                                                                                                                       | <p>For rural roads, the RTA Guide to Traffic Generating Developments (October 2002) recommends an assessment of road capacity rather than intersection capacity, as the level of service is determined by average travel speeds and the percentage of time spent delayed. Therefore, capacity analysis using SIDRA is not warranted in this assessment.</p>                                                |
| <p>The origins, destinations and routes for:</p> <ul style="list-style-type: none"> <li>Commuter (employee and contractor) light vehicles and pool vehicles</li> <li>Heavy (haulage) vehicles</li> <li>OSOM vehicles.</li> </ul>                                                                                                                                                                                                                                                                                                                              | <p>Section 3.5 outlines the origin and destination for all vehicles. Commuter and heavy vehicles are anticipated to originate from the broader region.</p> <p>Heavy vehicles / OSOM attributed to the transportation of battery modules / transformers units are anticipated to originate from Port of Newcastle and would be confirmed during construction subject to detailed construction planning.</p> |
| <p>Road safety assessment of key haulage route/s.</p> <ul style="list-style-type: none"> <li>Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the Austroads Guidelines</li> </ul>                                                                                                                                                                                     | <p>No road safety concerns have been identified. As such a road safety assessment is not required.</p>                                                                                                                                                                                                                                                                                                     |
| <p>Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening and/or intersection treatments). In this regard, preliminary strategic design should be submitted with the SSD application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council.</p> | <p>No external road network infrastructure upgrades are required due to the Project.</p>                                                                                                                                                                                                                                                                                                                   |

| Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Response / section reference                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design:</p> <ul style="list-style-type: none"> <li>• Austroads Guide to Traffic Management Part 6- turn warrants assessment based on background traffic volumes, plus growth rate, plus the cumulative traffic volumes for the project and any coinciding projects</li> <li>• Part 3 and Part 4 of Austroads Guide to Road Design</li> </ul>                                              | Noted                                                                                                                                                                                                                                                                                                                                                            |
| <p>Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design including provision of Safe Intersection Sight Distance (SISD) in accordance with Part 4A, TfNSW supplements to Austroads Part 3, based on the accurate design speed (posted speed zone +10km/hr) and reaction time. Measures are required to be identified to ensure SISD is achieved in accordance with Austroads and TfNSW supplements. TfNSW requires compliance with SISD</p> | Noted                                                                                                                                                                                                                                                                                                                                                            |
| <p>Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).</p>                                                                                                                                                                                                                                                                                                                                                            | Local climate conditions are not anticipated to materially affect road safety during the life of the Project.                                                                                                                                                                                                                                                    |
| <p>The layout of the internal road network, parking facilities and infrastructure.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                           | Chapter 3 details the development envelope. Parking facilities would be located within the ancillary and construction laydown area.                                                                                                                                                                                                                              |
| <p>Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail authority for rail corridors in the vicinity of the site and likely OSOM route is ARTC/UGL.</p>                                                                                                                                                                                                                                                                                                                      | No impacts are expected on rail corridors and level crossings by the Project.                                                                                                                                                                                                                                                                                    |
| <p>Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.</p>                                                                                                                                                                                                                                                                                                                                                     | Section 4.6 identifies that there would be negligible impacts on the public transport network.                                                                                                                                                                                                                                                                   |
| <p>Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.</p>                                                                                                                                                                                                                                                                                                                 | No environmental impacts are anticipated on the function and integrity of utilised public roads.                                                                                                                                                                                                                                                                 |
| <p>Controls for transport and use of any dangerous goods in accordance with <i>State Environmental Planning Policy No. 33 –Hazardous and Offensive Development</i>, the Australian Dangerous Goods Code and AS4452 Storage and Handling of Toxic Substances.</p>                                                                                                                                                                                                                                                                 | Lithium-ion batteries are classified as a Class 9 dangerous good. Transport movement thresholds will not be exceeded. Movements are expected to occur during construction and minimally during operation for maintenance purposes (i.e. battery replacement). An assessment of dangerous goods is further detailed within the Preliminary Hazard Analysis (PHA). |

# Appendix B

**TfNSW comments as part of the exhibition of EIS**

20 August 2024

TfNSW reference: WST24/00092/003 | SF2024/056410

Your reference: SSD-63207219

Department of Planning, Housing & Infrastructure  
Locked Bag 5022  
PARRAMATTA NSW 2124

**Attention: James Bellamy**

**TfNSW Response- SSD-63207219 – Kingswood BESS – Tamworth Regional Council, 744 Burgmanns Lane – Lot 43, DP 1064582**

Dear James,

TfNSW is responding to the exhibition of the Environmental Impact Statement (EIS) for Kingswood BESS Farm referred via Major Projects Portal on 17 July 2024.

TfNSW have reviewed the EIS and Appendix D -Traffic Impact Assessment prepared by Arcadis dated June 2024 and requests additional information to complete the assessment of the project's traffic and transport impacts on the State road network. Details of the additional required information are set out in **Attachment 1**.

On request, TfNSW can participate in a meeting with DPHI and the Applicant to further discuss the information in Attachment 1.

If you have any questions, please contact Glen Hanchard, Development Services Case Officer, on 1300 019 680 or email [development.renewables@transport.nsw.gov.au](mailto:development.renewables@transport.nsw.gov.au).

Yours faithfully

A handwritten signature in blue ink, appearing to read "Andrew McIntyre".

**Andrew McIntyre**

Manager Development Services - West  
Community & Place  
Regional and Outer Metropolitan

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OFFICIAL



**TfNSW Response- SSD-63207219 – Kingswood BESS – Tamworth Regional Council, 744 Burgmanns Lane – Lot 43, DP 1064582**

This attachment relates to TfNSW's response dated 20 August 2024 reference WST24/00092/003

**Context**

TfNSW understands the subject application:

- Proposes a large scale Battery Energy Storage System (BESS) in Kingswood with a capacity of up to 270 Megawatts.
- The affected classified State Road is New England Highway (HW9).
- Access from New England Highway is proposed at Whitehouse Lane and Burgmanns Lane.
- OSOM vehicles are proposed to be delivered from Port of Newcastle.
- Construction is anticipated to commence in late 2025, taking 15 months to complete.

**Additional required information | TfNSW comments**

The TIA prepared by Arcadis, Appendix D -Traffic Impact Assessment dated June 2024 must be revised and updated (where applicable) to address the following requirements:

**Access Assessment**

1. The revised TIA is to assess the traffic and transport impacts of the project in accordance with Austroads and TfNSW requirements for intersections with New England Highway at Burgmanns Lane and Whitehouse Lane, specifically:
  - a) Assess the accumulative traffic volumes of the EIS and approved major projects with a coinciding timeframe (including Tamworth BESS) and apply to background traffic volumes to ensure existing treatments are suitable. Turn warrant assessments are to be provided in accordance with *Austroads Guide to Traffic Management Part 6* and *Austroads Guide to Road Design Part 4A* considering worst case scenario and need for higher order treatments.
  - b) Clarify staff numbers using shuttle buses vs private vehicles required for the development and recommended measures to ensure usage of the buses.
  - c) Complete SISD assessment in line with *Austroads Guide to Road Design Part 4A*.
  - d) Provide swept path analysis for the largest design vehicle at Burgmanns Lane/New England Highway intersection, for all movements, and identify necessary road upgrades.

*Note: If road upgrades are identified, please provide strategic designs with the appropriate treatments for each intersection, as identified by turn warrant assessments in Austroads Guide to Traffic Management Part 6 and Austroads Guide to Road Design Part 4A.*

*Note: The design must comply with TfNSW strategic design requirements for DAs, TfNSW technical directions, supplements, corridor strategies, Austroads, and any other applicable TfNSW policies/strategies.*

*To assist in preparing the designs, please refer to the link below:*

<https://roads-waterways.transport.nsw.gov.au/business-industry/partners-suppliers/documents/planning-principles/strategic-design-fact-sheet-02-2022.pdf>

*Note: The developer is responsible for dedicating and acquiring land, if necessary, to accommodate road infrastructure, including but not limited to footways, structures, stormwater drainage, batters, maintenance access, and utilities, to TfNSW's satisfaction.*

### **Bridge Assessments**

2. The application proposes heavy mass vehicles and vehicles with very large axle group loadings. The OSOM route will require bridge assessments to be undertaken to ensure suitability for these loads. For TfNSW assets these can be obtained from TfNSW by contacting [spu@transport.nsw.gov.au](mailto:spu@transport.nsw.gov.au). For non TfNSW assets the asset owner will need to be contacted to understand their requirements.

*Note: Results of the bridge assessments may result in a change to the route which must be provided in an updated route assessment.*

### **Burgmanns Lane Access**

3. TfNSW has received an application for Tamworth BESS identifying Burgmanns Lane is difficult to use in wet weather. The Kingswood BESS notes light vehicle traffic would be utilising Burgmanns Lane. The revised TIA is to investigate wet weather usability of Burgmanns Lane and discuss wet weather contingency and management scenarios.

### **Rail Comments in relation to the development**

4. UGLRL has reviewed the application and noted the haulage routes are well separated from CRN corridors, however, haulage routes will cross the rail corridors managed by Agencies other than TfNSW. It is recommended that the DPIE refer this application to other relevant agencies (e.g. ARTC and Sydney Trains).

### **OSOM Route Assessment Requirements**

5. The route assessment is to be reviewed and updated to address:
  - a) Schedule of movements from Port to site and timing within construction schedule.
  - b) Vehicle configuration, dimensions and weights of the project's high risk OSOM vehicles.
  - c) Include an assessment of pull-over locations and rest areas including:
    - Locations (including GPS coordinates) and dimensions.
    - Swept path analysis for the largest high-risk OSOM vehicles demonstrating vehicles can enter, exit and park without impacting travel lanes and parking areas, confirming access will be provided to other vehicle types permitted to access identified rest area or pullover locations.
    - Information explaining why the six identified pull over bays are sufficient to mitigate the traffic impacts, incident and emergency management for the high risk OSOM movements from Port to site.
  - d) The 14 axle OSOM combination used for the swept path analysis is not a conventional combination used in NSW. The swept path diagrams need to be updated for this configuration.
  - e) The swept path extends over the island in the centre of the roundabout at Market Street which contains signage and a garden. Consideration of solutions to mitigate this impact is required.
  - f) Swept path plans in Appendix B are to be updated to include street names, a north point and names of towns being traversed.

---

*Note: Upgrades to OSOM route must be constructed before the OSOM movements occur.*

*Note: NHVR permits do not cover road works, upgrades, or environmental approvals required along any proposed OSOM route. Any road or upgrade works required along the OSOM route must be included within the scope of works in the SSD.*

**Tamworth Bypass Project Timing**

6. The applicant is to consider the Blueprint 100 and Tamworth Bypass projects as part of their revised TIA including timing in relation to the project. This includes evidence of consultation with Tamworth Regional Council in regard to the project.

**TMP Requirements**

7. The TIA will need to be updated to include further information about how traffic management will occur. For example, special events, roadworks and long term project sites, farming equipment during harvest season, wet weather contingency plans, emergency response processes, identifying whether movements will be during the day or the night, contingency plan for breakdowns (identifying Heavy Tow/Mechanic service in specific locations).

# Appendix C

**Swept path analysis – potential route**



34.900m

3.000m

4.300 m

0.540 m

4.200m

6.00s

 $18.40^\circ$



TAMWORTH

ASCOT-CALALA ROAD

Legend

|                       |             |
|-----------------------|-------------|
| 0.5m Clearance offset | <div></div> |
| Vehicle body envelope | <div></div> |
| Vehicle wheel path    | <div></div> |





NEWCASTLE





NEWCASTLE





NEWCASTLE





NEWCASTLE





MUSWELLBROOK





MUSWELLBROOK





MUSWELLBROOK





CALALA



- Legend
- 0.5m Clearance offset
  - Vehicle body envelope
  - Vehicle wheel path



CALALA

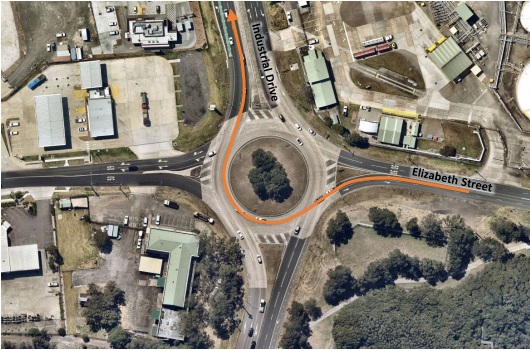




# Appendix D

**OSOM route analysis**



| Location                                            | Aerial image                                                                        | Comments                                                                                                                                                                    |
|-----------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Parker Street / Elizabeth Street intersection    |    | <p>Minor works to central median may be required depending on OSOM vehicle used</p>                                                                                         |
| 2. Elizabeth Street / Industrial Drive intersection |   | <p>No modification works required at the intersection to facilitate manoeuvre</p>                                                                                           |
| 3. Industrial Drive / Maitland Road intersection    |  | <p>Confirmation of height clearances to power lines is required prior to construction</p> <p>No modification works required at the intersection to facilitate manoeuvre</p> |



| Location                                   | Aerial image                                                                        | Comments                                                                                                                                                   |
|--------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4. John Renshaw Drive / Hunter Expressway  |    | No modification works required at the intersection to facilitate manoeuvre                                                                                 |
| 5. Hunter Expressway – Averys Lane bridge  |   | In the absence of available data at NSW vertical clearance data, confirmation of height clearances to Averys Lane bridge is required prior to construction |
| 6. Hunter Expressway – Main Road bridge    |  | In the absence of available data at NSW vertical clearance data, confirmation of height clearances to Main Road bridge                                     |
| 7. Hunter Expressway – McLeod Road bridge  |  | In the absence of available data at NSW vertical clearance data, confirmation of height clearances to McLeod Road bridge                                   |
| 8. Hunter Expressway – J L Horseman Bridge |  | In the absence of available data at NSW vertical clearance data, confirmation of height clearances to J L Horseman Bridge                                  |



| Location                                            | Aerial image                                                                        | Comments                                                                                                                                                                                           |
|-----------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9. Hunter Expressway<br>– Hart Road bridge          |    | In the absence of available data at NSW vertical clearance data, confirmation of height clearances to Hart Road bridge                                                                             |
| 10. Hunter Expressway<br>– Old Maitland Road bridge |    | In the absence of available data at NSW vertical clearance data, confirmation of height clearances to Maitland Road bridge                                                                         |
| 11. Hunter Expressway<br>– Lovedale Road bridge     |  | NSW vertical clearance data stated that the minimum vertical clearance of Lovedale Road bridge to be 6.39m, which is higher than 4.3m, the maximum height of a truck without the need for a permit |
| 12. Hunter Expressway<br>– Tuckers Lane bridge      |  | NSW vertical clearance data stated that the minimum vertical clearance of Tuckers Lane bridge to be 6.62m which is higher than 4.3m, the maximum height of a truck without the need for a permit   |



| Location                                          | Aerial image                                                                        | Comments                                                                                                                                                                                                                        |
|---------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13. Hunter Expressway – Wine Country Drive bridge |    | <p>NSW vertical clearance data stated that the minimum vertical clearance of Wine Country Drive bridge to be 6.97m-6.98m which is higher than 4.3m, the maximum height of a truck without the need for a permit</p>             |
| 14. Hunter Expressway – Bridge Street bridge      |   | <p>NSW vertical clearance data stated that the minimum vertical clearance of Bridge Street bridge to be 6.41m which is higher than 4.3m, the maximum height of a truck without the need for a permit</p>                        |
| 15. New England Highway – Golden Highway bridge   |  | <p>Due to the absence of available data at NSW vertical clearance data, height clearances to Golden Highway bridge will be confirmed in the CTMP</p>                                                                            |
| 16. New England Highway – near Maison Dieu Road   |  | <p>NSW vertical clearance data stated that the minimum vertical clearance of the train line bridge near Maison Dieu Road to be 5.67m which is higher than 4.3m, the maximum height of a truck without the need for a permit</p> |



| Location                                           | Aerial image                                                                        | Comments                                                                                                                                                                                                     |
|----------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 17. New England Highway – near Rixs Creek          |    | NSW vertical clearance data stated that the minimum vertical clearance of bridge near Rixs Creek to be 5.8m which is higher than 4.3m, the maximum height of a truck without the need for a permit           |
| 18. New England Highway – near Liddell             |    | NSW vertical clearance data stated that the minimum vertical clearance of bridge near Liddell to be 7.2m which is higher than 4.3m, the maximum height of a truck without the need for a permit              |
| 19. New England Highway – near Liddell Interchange |   | NSW vertical clearance data stated that the minimum vertical clearance of bridge near Liddell Interchange to be 4.88m which is higher than 4.3m, the maximum height of a truck without the need for a permit |
| 20. New England Highway – near Maidswater Creek    |  | NSW vertical clearance data stated that the minimum vertical clearance of bridge near Maidswater Creek to be 8.64m which is higher than 4.3m, the maximum height of a truck without the need for a permit    |
| 21. New England Highway / Bell Street intersection |  | Minor works to median may be required depending on OSOM vehicle used                                                                                                                                         |



| Location                                               | Aerial image                                                                        | Comments                                                                                                                               |
|--------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 22. Bell Street / Victoria Street intersection         |    | No modification works required, opposing traffic lane utilised to facilitate manoeuvre                                                 |
| 23. New England Highway / Market Street intersection   |   | Existing mountable kerb utilised to facilitate manoeuvre which may require relocation of existing signage and garden on the roundabout |
| 24. New England Highway / Whitehouse Lane intersection |  | The assessed OSOM can safely enter Whitehouse Lane with current road configuration                                                     |
| 25. Whitehouse Lane / Ascot-Calala Road intersection   |  | The assessed OSOM can safely enter Ascot-Calala Road with current road configuration                                                   |



# Appendix E

**Swept path analysis – rest areas, stopping bays and pull-over locations**





34.900m

3.000m

4.300 m

0.540 m

4.200m

6.00s

 $18.40^\circ$



# RIXS CREEK



RIXS CREEK LANE

NEW ENGLAND HIGHWAY

Legend

0.50m Clearance Offset

Vehicle Body Envelope

Vehicle Wheel Path





# RIXS CREEK



RIXS CREEK LANE

NEW ENGLAND HIGHWAY

Legend

0.50m Clearance Offset

Vehicle Body Envelope

Vehicle Wheel Path





# MUSWELLBROOK



NEW ENGLAND HIGHWAY

Legend

0.50m Clearance Offset

Vehicle Body Envelope

Vehicle Wheel Path



# MUSWELLBROOK

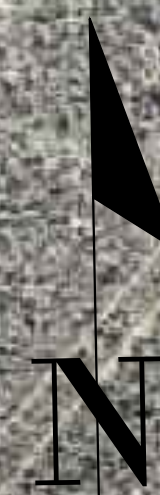


## Legend

- 0.50m Clearance Offset
- Vehicle Body Envelope
- Vehicle Wheel Path



# WINGEN



NEW ENGLAND HIGHWAY

## Legend

- 0.50m Clearance Offset
- Vehicle Body Envelope
- Vehicle Wheel Path





# MURRURUNDI



NEW ENGLAND HIGHWAY

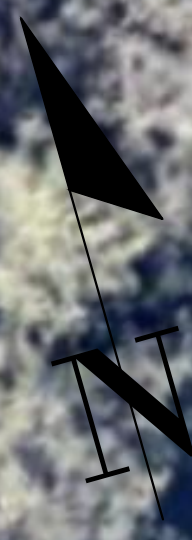
## Legend

- 0.50m Clearance Offset 
- Vehicle Body Envelope 
- Vehicle Wheel Path 



# MURRURUNDI

NEW ENGLAND HIGHWAY



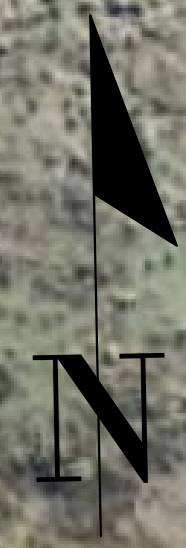
## Legend

- 0.50m Clearance Offset
- Vehicle Body Envelope
- Vehicle Wheel Path





# ARDGLEN



NEW ENGLAND HIGHWAY

Legend

0.50m Clearance Offset

Vehicle Body Envelope

Vehicle Wheel Path





# WILLOW TREE

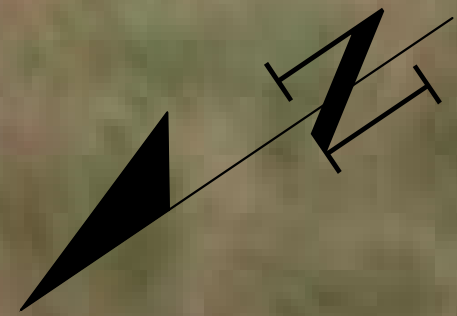


**Legend**

|                        |  |
|------------------------|--|
| 0.50m Clearance Offset |  |
| Vehicle Body Envelope  |  |
| Vehicle Wheel Path     |  |



# GOONOO GOONOO



NEW ENGLAND HIGHWAY

Legend

|                        |  |
|------------------------|--|
| 0.50m Clearance Offset |  |
| Vehicle Body Envelope  |  |
| Vehicle Wheel Path     |  |