



Transport Assessment
Expansion of Supagas Bomaderry Facility
for
Supagas

Document Control

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Appendix A: SIDRA Movement Summary Reports

1 Introduction

1.1 Overview

arc traffic + transport has been commissioned by Supagas to prepare a Transport Assessment (**TA**) examining the access, traffic and parking characteristics of a proposed expansion of capacity at the existing Supagas Facility (the **Facility**) at 220 Bolong Road, Bomaderry (the **Site**).

In 2018, the Independent Planning Commission (**IPC**) granted an approval to Modification 15 (**MOD 15**) to Project Approval MP06_ 0228 (the **Project Approval**) to allow Supagas to construct and operate a Carbon Dioxide (**CO₂**) plant adjacent to the former Dairy Farmers factory site (the **DF Site**) now owned by Manildra, and forming part of their broader Shoalhaven Starches operations provided for by the Project Approval.

Modification 20 (**MOD 20**) to the Project Approval was subsequently approved by the Minister for Planning in 2021, and provided for the installation of additional CO₂ storage vessels and other equipment at the Facility.

The existing Facility currently operates and processes 90 tonnes per day (**TPD**) of CO₂. This plant was approved in two stages, i.e. initially 50 TPD and this has been increased to 90 TPD. Supagas now propose to undertake alterations and additions to the Facility which are proposed to increase the processing capacity of the Facility by a further 75 TPD of CO₂, bringing the total processing capacity at the Facility to 165 TPD.

The **Modification** will be submitted to the Department of Planning, Housing and Infrastructure (**DPHI**) for assessment and approval.

1.2 Transport Assessment Scope

In determining the scope of the TA, arc traffic + transport has specifically referenced Secretary's Environmental Assessment Requirements (**SEARS**) provided in regard to past Modifications at the Site, as well as our discussions with representatives of Shoalhaven City Council (**Council**) and Transport for NSW (**TfNSW**), most recently in regard to Modification 28 for the provision of temporary grain storage bunkers at the Environmental Farm (the **Farm**) north of Bolong Road (**MOD 28**).

We have also referenced our significant experience of the broader Shoalhaven Starches operations over some 20 years, which included the traffic assessment of MOD 15 in 2017.

From the outset though, it is important to note that the trip generation of the Facility further to the Modification will be extremely minor. At this time, the MOD 15 and MOD 20 approvals provide for the Facility to generate an average of 8 truck trips per day, being the arrival and departure movements of 2 B-Doubles (30t capacity), and the arrival and departure movements of 2 articulated vehicles (20t capacity).

The Modification will proportionally increase daily truck trips in line with the processing capacity increase, such that the Facility would generate a total of approximately 14 truck trips per day further to the Modification, anticipated to include the arrival and departure movements of 3 – 4 B-Doubles and 3 – 4 articulated vehicles.

In any single hour, the truck trip generation of the Facility is unlikely to exceed that previously identified in the MOD 15 approval, i.e. an estimated maximum of 2 truck trips per hour, noting that the available on-site transfer facilities, and the time taken to fill a tanker – essentially rules out more than 1 truck being on-site at any one time.

As such, while more details of access to and through the Facility; traffic generation and distribution; and staff parking requirements are provided in the TA, it is apparent from the outset that the Modification will have no impact on the operation of the local road network.

The TA also includes a Construction Traffic Management Plan (**CTMP**), which details the transport related construction tasks, and the means by which the potential access, traffic and parking requirements of the construction period can be mitigated, and moreover maximise the safety and efficiency both construction staff and the general public during the construction period.

The CTMP has specifically been prepared with reference to the CTMP recently approved for MOD 28, and numerous other CTMPs prepared for construction works at the DF Site over the past 10 years. It is noted that revisions to the CTMP may be required further to consideration of any Conditions of Consent in a future Modification approval.

1.3 Reference Documents

1.3.1 Project Approval Reports

As discussed, **arc traffic + transport** has prepared numerous reports relating to the Shoalhaven Starches operations over some 20 years; key report referenced in the TA include:

- Proposed CO₂ Plant Bolong Road, Bomaderry Traffic Impact Assessment 2017 (**MOD 15 TIA**); and
- Shoalhaven Starches Modification 28 Transport Assessment 2024 (**MOD 28 TA**).

1.3.2 Transport Guidelines & Controls

The TA also referenced key guidelines and controls relevant to the assessment of the access, traffic and parking characteristics of the Modification; these include:

- Transport for NSW Guide to Transport Impact Assessment 2024 (**TfNSW Guide**);
- Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis Methods (**GTM Part 3**);
- Australian Standard 1742 Manual of Uniform Traffic Control Devices Part 3: Traffic Control for Works on Roads (**AS 1742.3**);
- Roads & Maritime Services Traffic Control at Worksites Manual 2020 (**TCW Manual**);

- Australian Standard 2890.1: Parking Facilities – Off Street Car Parking (**AS 2890.1**); and
- Australian Standard 2890.2: Parking Facilities – Off Street Commercial Vehicle Facilities (**AS 2890.1**).

1.4 Consultation

A **Scoping Submission** in regard to the Modification was prepared by Cowman Stoddart in September 2024 and submitted to DPHI for review. It is our understanding that DPHI has approved the assessment tasks detailed in the Scoping Submission, and in turn has not specifically prepared Secretary's Environmental Assessment Requirements (**SEARs**) for the Modification.

With specific reference to *Traffic and Transportation*, the Scoping Submission states the following:

The current modification proposal will result in an increase in processing rates from the site over that which has been previously approved for this operation, The Modification Proposal will involve an increase in traffic movements over that which was envisaged by the original Mod 15 and 20 approvals. Under these circumstances it is proposed that the traffic issues will require further consideration as part of the Modification Application. It is proposed that the Modification Application be supported by a Traffic Impact Assessment.

This TA meets the commitment in the Scoping Report to examine traffic and transport issues. Further, and with specific reference to SEARs issued for previous Modifications and our detailed discussions with Council and TfNSW over many years, **Table 1** provides a summary of key issues that have previously been raised in regard to the Facility (and broader Shoalhaven Starches) operations. A summary response to each of those issues is also provided, and a reference to the section of the TA where each is addressed in more detail.

Table 1: Key Transport Assessment Tasks

Transport Assessment Task	Summary Response	TA Reference
1. Traffic Impact Study (TIS): A TIS is required to examine any potential transport related implications of the development (both vehicular and rail). In relation to vehicular considerations, Table 2.1 of the RTA's Guide to Traffic Generating Developments outlines the key issues that should be considered in preparing a TIS. In addition, regard should be had for the Austroads publications, particularly the Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments and Part 3: Traffic Studies and Analysis Methods.	The TA has been prepared in accordance with the assessment guidelines detailed in the TfNSW Guide, GTM Part 3 and GTM Part 12.	Section 1.3.2
Provide details of all traffic types (both heavy and light vehicles) including a description of heavy vehicle types that will be used (e.g. size, their associated carrying capacity, etc) and the routes that will be taken to enable vehicles to gain access to the site. Provide Details of the expected volume of heavy vehicle movements (including Over Size Over Mass movements where relevant) associated with construction and operation of the project. It is noted that the proposal for road receipt of grain in particular would involve long hauls from loading locations such as Manildra, Narrabri, Boggabri etc and that the impact of these movements on the road network is a relevant consideration. Provide details on the total traffic volumes that are likely to be generated by the proposed development (e.g. for the operational assessment this would include the maximum number of heavy vehicles per day, how these numbers correlate to the daily and annual limits for which approval is being sought, etc). It should also include details on the distribution of the traffic generated.	The TA provides details of all vehicle types and the routes that will be used between the Facility and the sub-regional road network. The Modification does not provide for the use of any Over Size/Over Mass (OSOM) vehicles, but rather only the use of General Access Vehicles (GAVs) being B-Doubles and articulated vehicles that comply with the current TfNSW and National Heavy Vehicle Regulator (NHVR) approved routes including Bolong Road, Railway Street, Meroo Street and Princes Highway. The Modification will generate a very minor number of additional truck trips per day, being an average of 6 additional truck trips per day, which would bring the total number of truck trips per day (approved and proposed) to 14 truck trips per day. As detailed in the MOD 15 TA, it remains that case that it would be unlikely that the Facility would generate any more than 2 truck trips per hour even further to an approval of the Modification. These additional trips will be generated to the same routes as approved truck trips are generated, which again are routes approved for these truck types by TfNSW and NHVR.	Section 3.2 Section 3.3.1 Section 4.4.2 Section 3.3

Table 1: Key Transport Assessment Tasks (continued)

Transport Assessment Task	Summary Response	TA Reference
<i>Provide an assessment of the impact of traffic from this development, both from what is being proposed and the cumulative impact, on the road network(s) to be used.</i>	The additional truck trips will have no impact on the operation of key roads and intersections simply as a function of the minimal additional truck trips which will be generated by the Facility. SIDRA intersection analysis of the only intersection with any potential to be impacted – that of Bolong Road & Gate 1 (the primary DF Site driveway) indicates no significant changes in operational criteria arising from the Modification.	Section 3.3
<i>Provide an assessment of the suitability of the road connections with the state classified road network for the largest vehicle type that will be used. This includes swept path diagrams, details on any works required to mitigate and/or manage potential impacts and a schedule/timeframe for their provision.</i>	All internal and external roads and intersections have been designed to accommodate the swept paths on the largest vehicles accessing the Facility (a B-Double) as part of past Modification approvals.	Section 2.1.3
<i>Provide swept path diagrams to demonstrate the largest vehicles that will be using the sites access as part of this application can undertake all required manoeuvres to enable access to and from the development site in a forward direction and without crossing the centre line of Bolong Road or encroaching on adjoining lanes.</i>	The Modification does not provide for any changes to the existing truck routes between Bolong Road and the Facility, all of which have been designed to accommodate the largest vehicle accessing the Facility (a B-Double) and previously approved by DPHI.	n/a
<i>Provide details of the construction period, including trip generation; vehicle types; the use of oversize/overmass vehicles; road network impacts; construction staff parking; and swept paths of the largest vehicles accessing any construction works areas</i>	A CTMP has been prepared examining all of the access, traffic and parking characteristics of the construction of the proposed infrastructure, which is anticipated to be completed over 6 - 12 months. It is noted that revisions to the CTMP may be required further to consideration of any Conditions of Consent to a future approval of the Modification, and made prior to any construction works commencing.	Section 4 Section 5

2 Existing Conditions

2.1 Supagas

2.1.1 Location

The Facility is located at 220 Bolong Road, and generally occupies the easternmost portion of the DF Site. The Facility's location with the DF Site is shown in **Figure 1**.

Figure 1: Supagas Facility Location



Source: Scoping Report

2.1.2 Operations and Capacity

The Facility takes CO₂ from the Shoalhaven Starches operations and then processes this gas to food grade quality for the food and beverage market. The flue gas is taken directly from the Shoalhaven Starches CO₂ flue, which presently results in a reduction of up to 90 TPD of CO₂ emissions.

The Facility's on-site infrastructure currently includes:

- A cold water scrubber;
- A CO₂ compressor;
- Sulphide removal beds;
- A CATOX system;
- CO₂ driers;
- A CO₂ liquefier;
- CO₂ NO_x removal vessels; and

- CO₂ storage tanks.

The Facility employs 2 full-time staff; contractors are occasionally also on-site for general maintenance as required.

2.1.3 Product Distribution

The food grade CO₂ is distributed to customers using customised tanker trucks, which include a 30t capacity B-Double and a 20t capacity AV. The CO₂ is distributed directly from the Facility to Supagas internal customers located in Ingleburn, NSW; Beenleigh, Queensland; Adelaide, South Australia; and Dandenong, Victoria. These internal customers in turn distribute product to the broader market.

All tanker trucks use a prescribed departure route in the local area, being from the Facility through the rear of the DF Site to Gate 1, then west along Bolong Road to either Railway Street and Merroo Road to the Princes Highway north of the Facility; or through to Princes Highway east of the Facility. Arriving (empty) tanker trucks utilise these same routes in reverse.

2.1.4 Trip Generation

As discussed in **Section 1.2**, the approved trip generation of the Facility is very minor, being a total of some 8 truck trips per day, augmented by up to 6 staff/contractor trips per day. Truck trips are generally evenly split between B-Doubles and articulated vehicles.

With reference to the MOD 15 TA, it is estimated that the Facility would generate no more than 2 truck trips in any single hour, though given the capacity of the on-site loading facilities (i.e. the time to fill a truck tankers) it is rare that 2 truck trips would actually be generated in a single hour, noting that the Facility is approved to operate (and generate truck trips) 24 hours a day, 7 days a week.

2.1.5 Parking

The Facility provides 4 parking spaces, 2 of which are reserved for staff, and 2 for contractors and other visitors.

2.2 Existing Road Network

2.2.1 Overview

As discussed in **Section 1.2**, the trip generation of the Facility further to the Modification will continue to be minimal, with peak hour truck trip generation not anticipated to increase above the estimated 2 truck trips per hour as approved in the MOD 15 TA. As such, the only intersection with any potential to be impacted by additional truck movements would be that of Bolong Road & Gate 1, which is examined in further detail below. All other roads and intersections would essentially be unaffected by the existing or proposed operation of the Facility.

2.2.2 Bolong Road

Bolong Road is a local road which generally runs east-west from Gerroa Road at Coolangatta and the Princes Highway at Bomaderry. In the vicinity of the Facility, it provides 1 traffic lane in each direction, and has a posted speed limit of 50km/h.

Bolong Road between Jennings Lane (east of the Site) and Princes Highway is an approved Restricted Access Vehicle (**RAV**) Route providing for vehicles up to and include 26m B-Doubles. Railway Street, Cambewarra Road and Meroo Road between Bolong Road and Princes Highway are approved for General Access Vehicles (**GAVs**) only; as such, it is generally the case that B-Doubles will only use Bolong Road and Princes Highway for regional access, while articulate vehicles can use both routes.

2.2.3 Bolong Road & Gate 1 Intersection

The intersection of Bolong Road & Gate 1 has been extensively upgraded over the past 10 years in accordance with past Modification approvals, and includes the following:

- A Channelised Right (**CHR**) lane from Bolong Road to Gate 1;
- A Channelised Left (**CHL**) lane from Bolong Road to Gate 1;
- A large internal apron area within the DF Site to provide for U-Turns from other Shoalhaven Starches driveway along Bolong Road given right turn restrictions at a number of these driveways;
- An acceleration lane from Gate 1 to Bolong Road west; and
- Geometry providing for the movement of the largest vehicle accessing the DF Site, again being a 26m B-Double.

It is noted that the ability for the geometry of the intersection of Bolong Road & Gate 1 to provide for 26m B-Doubles was confirmed by both Council and TfNSW prior to its construction, and again the Modification would not provide for any larger vehicles either during the construction or operation of the Facility further to an approval of the Modification.

2.2.4 Internal Access

Access between Bolong Road and the Facility is provided via wide internal roads within the DF Site, which again have been designed to accommodate the swept paths of vehicles up to and including 26m B-Doubles. A turning head providing for a B-Double to enter the Facility and turn to the Facility's loading facility is also provided, such that all movements to/from the Facility and Gate 1 are in a forward direction.

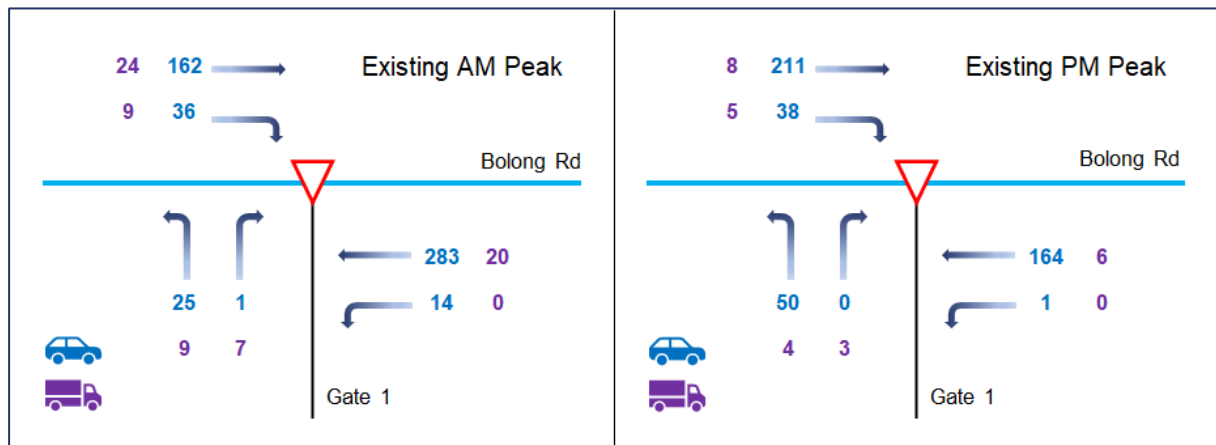
All internal access infrastructure has been previously approved by DPHI, and will be unchanged further to the Modification.

2.3 Road Network Operations

2.3.1 Traffic Surveys

In preparing the recent MOD 28 TA, arc traffic + transport commissioned peak period traffic surveys at the intersection of Bolong Road & Gate 1; a summary of these peak hour traffic volumes is provided in **Figure 2**.

Figure 2: 2023 Traffic Volumes Bolong Road & Gate 1



2.3.2 Existing Intersection Operations

The operation of the intersection of Bolong Road & Gate 1 has been assessed using the SIDRA intersection model. SIDRA provides a number of key outputs by which to measure the performance of an intersection, including:

- **Average Vehicle Delay (AVD):** AVD (or average delay per vehicle in seconds) for intersections is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection.
- **Level of Service (LOS):** LOS is a comparative measure that provides an indication of the operating performance, based on AVD.
- **Degree of Saturation (DOS):** DOS is defined as the ratio of demand (arrival) flow to capacity. Degrees of Saturation above 1.0 represent over-saturated conditions (demand flows exceed capacity) and degrees of saturation below 1.0 represent under-saturated conditions (demand flows are below capacity).

With regard to LOS, **Table 2** provides a summary of the SIDRA recommended criteria for the assessment of intersections.

Table 2: SIDRA Level of Service Criteria

Level of Service	Average Delay (seconds per vehicle)	Stop & Give Way
A	less than 14	Good operation
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory, but accident study required
D	43 to 56	Near capacity and accident study required
E	57 to 70	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires other control mode or major treatment.

Source: SIDRA Systems

Further to the SIDRA analysis, the intersection of Bolong Road & Gate 1 was determined to operate well, reporting:

- A LOS A in both the AM and PM peaks;
- A worst delay of 13.1 seconds (in the AM peak); and
- DOS of less than 0.171 in both the AM and PM peaks.

SIDRA Movement Summary reports are provided in [Appendix A](#).

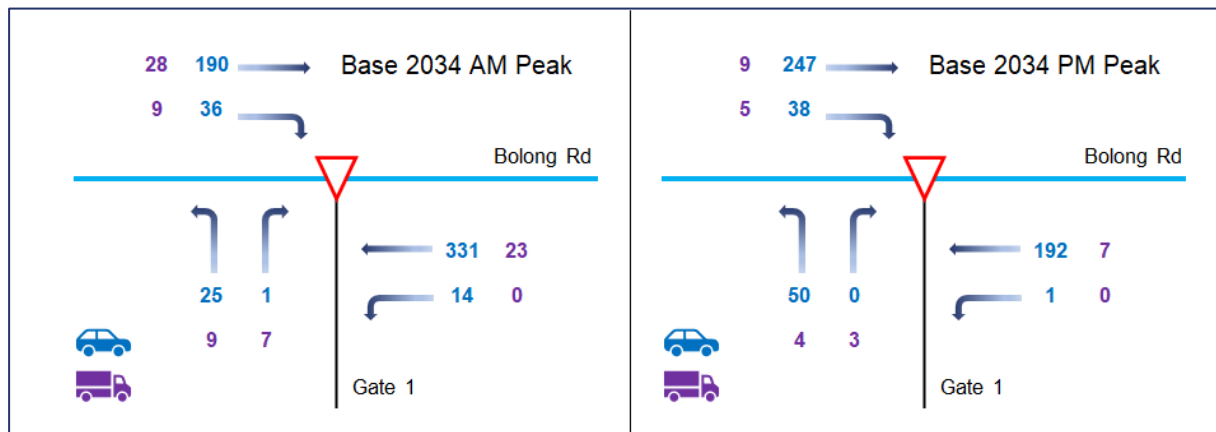
2.3.3 Base 2034 Traffic Volumes

It is standard practice to provide an assessment of future conditions based on a 10 year forecast, and as such the existing through traffic volumes in Bolong Road at the intersection of Bolong Road & Gate 1 have been factored to represent **Base 2034** traffic volumes.

In determining the Base 2034 traffic volumes, [arc traffic + transport](#) has referenced the average annual growth rates identified in Table 13 of the *Nowra Bridge Upgrade Transport & Traffic Assessment* (TfNSW 2018), which are 1.7% per annum (linear) in Bolong Road; this growth rate has been applied to the existing through traffic volumes in Bolong Road at the Gate 1 intersection.

In addition, the Base 2034 traffic volumes include all **approved** Project Approval Modifications which have yet to be completed, or yet to generate the level of additional trips provided for in their approvals. The resulting Base 2034 traffic volumes are shown in [Figure 3](#).

Figure 3: Base 2034 Traffic Volumes



SIDRA analysis has again been undertaken to determine the operation of the intersection of Bolong Road & Gate 1 under Base 2034 conditions; SIDRA Movement Summary reports are provided in **Appendix A**, but in summary SIDRA reports:

- A LOS B in the AM peak and LOS A in the PM peak;
- A worst delay of 18.7 seconds in the AM peak; and
- DOS of less than 0.210 in both the AM and PM peaks

In summary, the intersection will continue to operate at a more that satisfactory LOS under Base 2034 conditions further to all approved Project Approval Modifications.

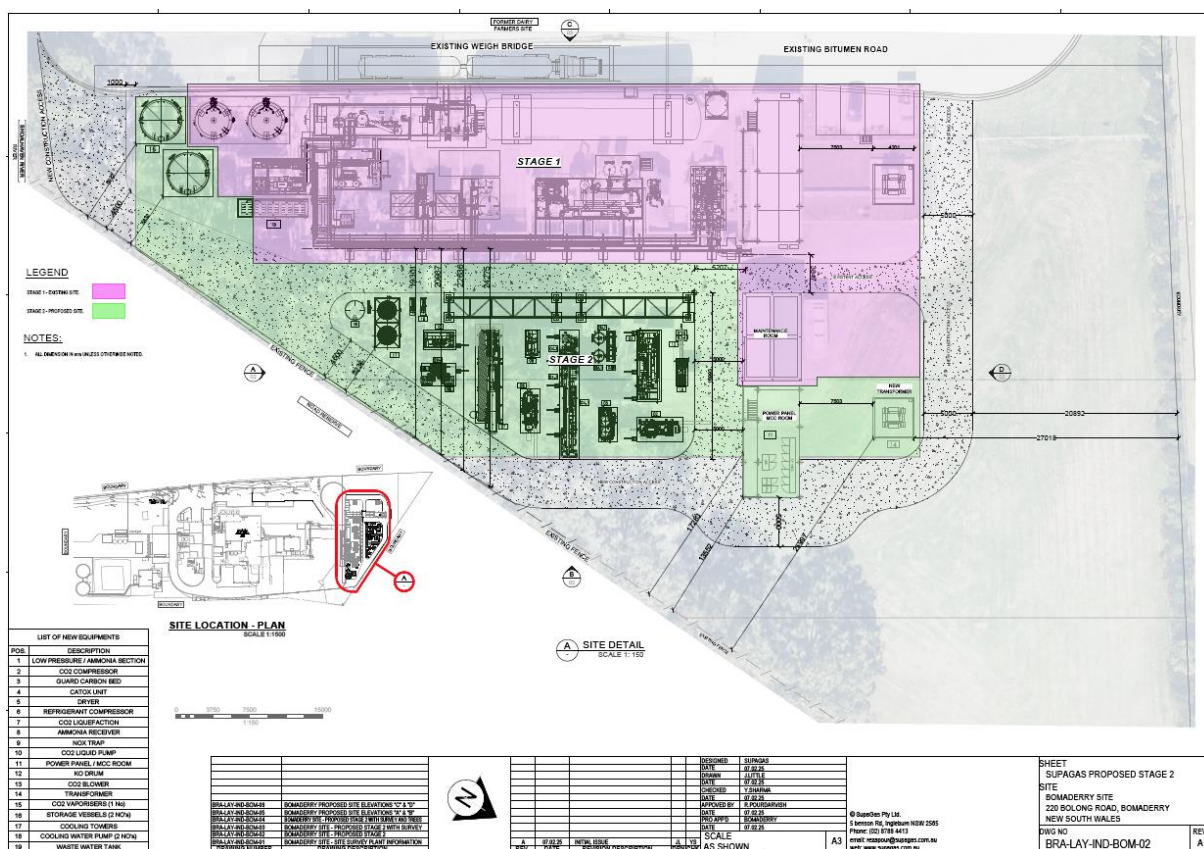
3 The Modification

3.1 The Modification

As stated in the **Introduction**, the Modification provides for additions and alterations at the Facility, which will in turn provide for an increase in capacity from the existing 90 TPD to a total capacity of 165 TPD of CO₂. This will require the installation of additional storage vessels and other equipment, the details of which are provided elsewhere in the Modification submission that this TA accompanies.

An overview of the location of the proposed works at the Facility is provided in **Figure 4**.

Figure 4: Modification Overview Plan



Source: Supagas

3.2 Access

Access to the Facility will be unchanged from its current access provisions, with all access via the intersection of Bolong Road & Gate 1, and then via internal roads within the DF Site. As discussed in **Section 2.2**, all interface (Bolong Road & Gate 1 intersection) and internal access infrastructure has been designed to accommodate the largest vehicle accessing the Facility (B-Double), and previously approved by Council and TfNSW. Again, these access routes will be unchanged further to the Modification.

3.3 Traffic

3.3.1 Trip Generation

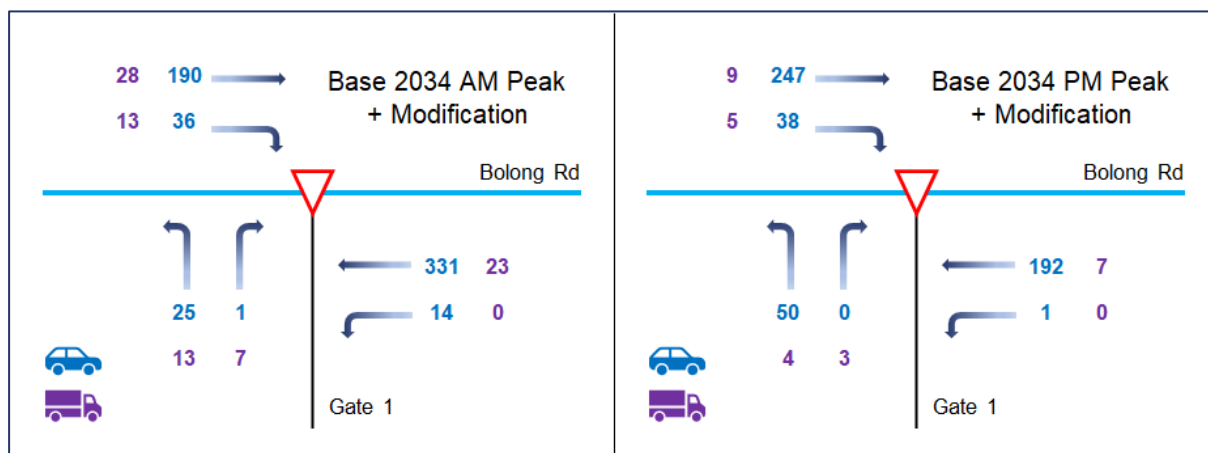
The additional trips generated by the Facility further to the Modification are anticipated to be proportional to the trips generated by the approved Facility operations based on the amount of CO₂ produced each day, and the capacity of the tanker trucks. As a worst case, if all of the additional CO₂ was transported using smaller articulated vehicles (20t capacity) then the Plant would generate an additional 4 tanker trucks (8 tanker truck trips) each day.

The majority of trucks access the Facility between 6:30am and 3:00pm (when Supagas staff are on-site), though the Plant does have approvals for the movement of trucks 24/7. Again therefore, there is little potential for the Facility to generated more than 2 truck trips (an arrival trip and departure trip) in a single hour.

Notwithstanding, as a worst case the total additional daily trips have been assigned to the Base 2034 AM and PM peak hours for the traffic analysis, resulting in an additional 4 arrival trips to Gate 1 and 4 departure trips to Bolong Road, in a single hour. All truck trips would be to/from the west of Gate 1.

The resulting total Base 2034 + Modification peak hour traffic volumes at the Bolong Road & Gate 1 intersection are shown in **Figure 5**.

Figure 5: Base 2034 + Modification Peak Hour Traffic Volumes



3.3.2 Intersection Operations

SIDRA has again been used to determine the future operation of the intersection of Bolong Road & Gate 1 under Base 2034 + Modification conditions. SIDRA Movement Summary reports are provided in **Appendix A**, but in summary SIDRA reports:

- A LOS B in the AM peak and LOS A in the PM peak;
- A worst delay of 19.0 seconds in the AM peak; and
- DOS of less than 0.210 in both the AM and PM peaks.

In summary, the intersection will continue to operate at a more that satisfactory LOS even under these worst case Base 2034 + Modification conditions, and as such [arc traffic + transport](#) can full support the Modification further to traffic considerations.

3.4 Parking

As discussed in [Section 2.1.5](#), the Modification will not increase the existing number of operation staff at the Facility, and as such the available parking will continue to appropriately provided for the Facility's parking demand.

4 Construction

4.1 Construction Overview

The construction of all the proposed infrastructure under the Modification will be undertaken in a single construction period lasting approximately 6 - 12 months, with a maximum of 12 construction staff (contractors) on-site at any one time. It is further estimated that up to 25 trucks (50 truck trips) could be generated over the 6 month construction period.

An assessment of the potential impacts of the construction period is provided in sections below, and a Construction Traffic Management Plan is provided in **Section 5**, noting that the CTMP will be revised as necessary further to consideration of any relevant Conditions of Consent to a future approval of the Modification.

4.2 Construction Hours

In accordance with past construction works, construction hours (and construction truck movement hours) are anticipated to be restricted to 7:00am – 6:00pm Monday to Friday, and 8:00am to 1:00pm on Saturdays; no construction works would be undertaken on Sundays or public holidays.

While not anticipated at this time, where it is necessary for works to occur outside of these hours, an application for an Outside of Hours Work Permit (**OHW Permit**) will necessarily be submitted to Council; any out of hours works would only commence further to an approval of the OHW Permit.

4.3 Access

Access to the Facility's construction works areas will be via the Bolong Road & Gate 1 intersection and then via the existing internal roads between Gate 1 and the Facility.

4.4 Construction Traffic

4.4.1 Construction Staff Trips

Based on the previous Facility construction works, it is anticipated that the specialist construction staff will often travel in group transport, such that the number of trips generated by staff would be no more than 5 - 6 trips per hour in the arrival and departure peaks, which themselves would generally be outside of commuter peak periods.

4.4.2 Construction Truck Trips

With regard to truck trip generation, it is estimated that a total of 25 truck trips would be generated over the construction period, with no more than 4 truck trips generated per day. The maximum size truck required during construction would be an articulated vehicle, those most trucks are anticipated to be small or medium rigid vehicles.

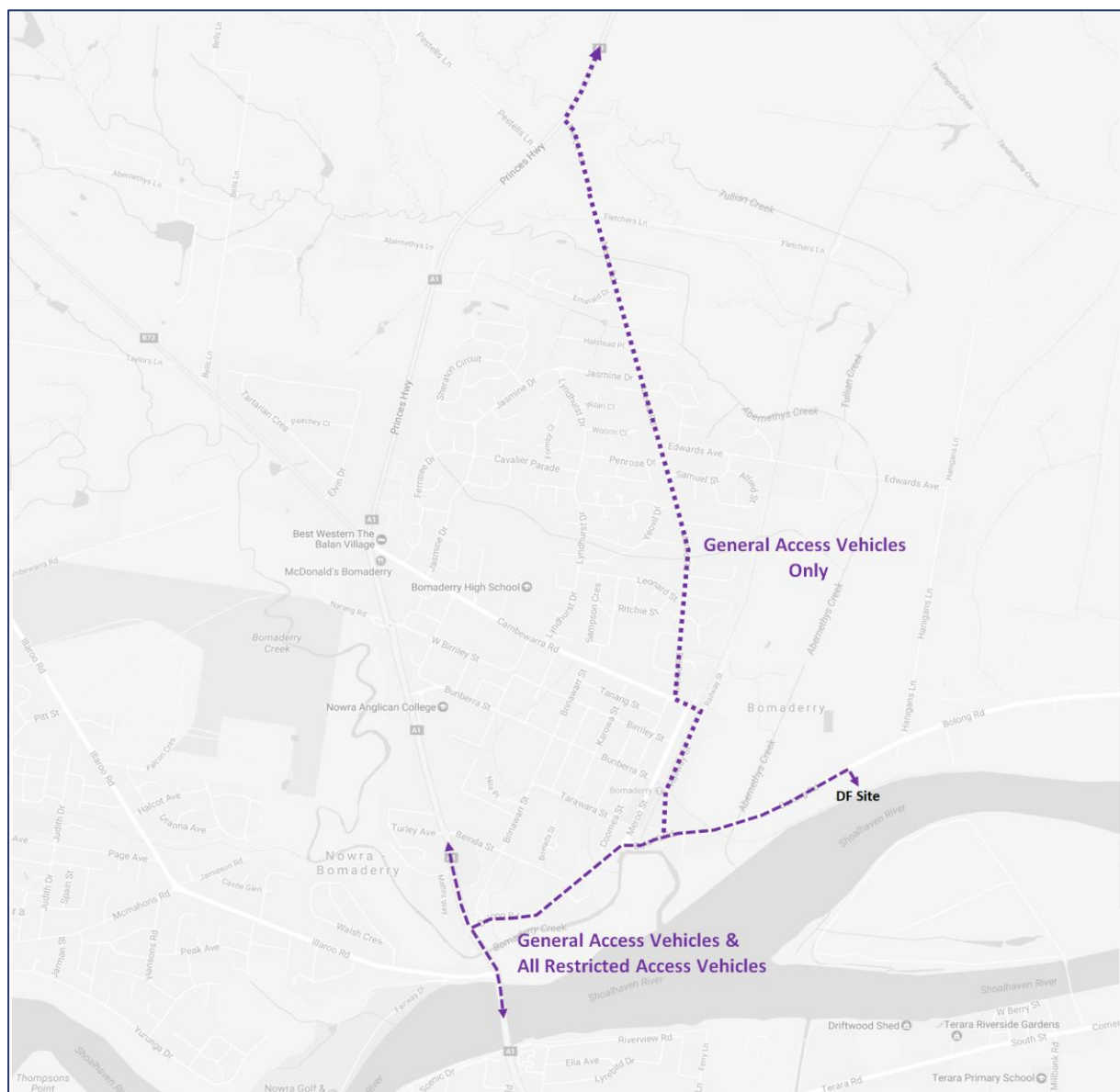
The construction would not require the use of any RAVs or Over-Size/Over-Mass (**OSOM**) vehicles.

4.4.3 Construction Vehicle Trip Distribution

The majority of staff trips are anticipated to be generated to/from the west, but a small number may also be generated to/from the east.

All truck trips will use the same routes are provided for operational truck trips, again along roads approved for truck use by TfNSW and NHVR. While the TCW Manual does not require the preparation of a Vehicle Movement Plan (VMP) as part of a CTMP where truck trips do not exceed 10 truck trips per day, **Figure 6** below nonetheless shows the designated construction truck routes.

Figure 6: Construction Vehicle Movement Plan



4.4.4 Construction Traffic Impacts

With reference to sections above, it is immediately apparent that the construction of the proposed Modification infrastructure will have no impact on the operation of the key intersections along Bolong Road, with staff trips both minimal and occurring outside of commuter peak periods; and truck trips being fewer than the Facility would generate further to an approval of the Modification.

4.5 Construction Staff Parking

Parking for construction staff will be provided within the DF Site in close proximity to the Facility, noting that there are significant areas available to accommodate what would be a very minor and temporary additional parking demand.

5 Construction Traffic Management

Sections below provide details of the CTMP which will be implemented throughout the construction works period. It is noted that revisions to the CTMP may be required further to consideration of any future Conditions of Consent associated with the Modification approval; if this is the case, these revisions would be made/implemented prior to construction works commencing.

5.1 On-Site Management

5.1.1 Staff Parking

As discussed in **Section 4.5**, all construction staff parking will be provided within the DF Site in close proximity to the Facility. No off-site (on-street) parking will be permitted, to be strongly enforced by the **Principal Contractor** for the works.

5.1.2 Deliveries & Materials Handling

All deliveries and materials handling will occur within the Facility or within the DF Site in the immediate vicinity of the Facility at all times, and all vehicles will travel through the DF Site in a forward direction at all times.

5.2 Off-Site Traffic and Pedestrian Management

5.2.1 Work Zones

While no on-street (Bolong Road) Works Zones or the like are anticipated at this time, a separate application to Council would be required in the event that any special or discreet work activities required the occupancy of Bolong Road (see also **Section 5.2.3** below).

5.2.2 Public Access Management

Appropriate fencing and security gates are already provided along the DF Site frontages to Bolong Road so as to prevent unwanted vehicle or pedestrian access.

5.2.3 Traffic Guidance Schemes

With reference to sections above, while there is no expectation of the need for off-site Work Zones or other construction impacts on Bolong Road (or the broader local road network), any such requirements would be detailed in a Traffic Guidance Scheme (**TGS**), formerly known as a Traffic Control Plan.

Any TGS would necessarily be prepared by persons accredited to *Prepare a Work Zone Traffic Management Plan* in accordance with the TCW Manual and AS1742.3. Any TGS involving signage, traffic control or other impacts to Bolong Road will require Council approval prior to the construction works to which they relate, though again there is no expectation that any works would extend into Bolong Road.

5.3 Principal Contractor Responsibilities

5.3.1 Site Induction

All construction staff will be properly inducted prior to commencing work on-site. The induction will detail Supagas' and Manildra's construction safety protocols, including:

- General Site safety;
- Site access, amenities and general procedures;
- Truck movements and on-site parking;
- Neighbour consultation and notification requirements; and
- The Principal Contractor's policies and procedures.

5.3.2 Truck Movements

The Principal Contractor will be required to take all steps necessary to ensure all trucks, and truck movements, are as safe as possible, and will not result in truck drivers operating under conditions that are unsafe. This will be achieved by undertaking the following:

- Ensuring all trucks are well maintained and that the equipment enhances driver, operator and passenger safety to as great an extent as practicable;
- Ensuring all truck drivers have a valid Verification of Competency for the class of vehicle they are driving;
- Identifying truck driver training needs and arranging appropriate training or re-training. This is anticipated to include truck driver competency assessments as part of all inductions, and regular Toolbox Talks on safety conditions, managing fatigue, approved truck routes and truck driver responsibilities; and
- Encouraging safe driving behaviour by not covering or re-imbursing staff speeding or other infringement notices; ensuring the legal use of mobile phones only while driving; and providing training on, and circulating information about, travel planning and efficient truck driving habits.

5.3.3 Road Maintenance

All trucks will be required to be appropriately covered when carrying materials to/from the Facility during the construction period. Wash down areas will also be provided on-site to minimise to the extent possible the potential for trucks to track any dirt or debris onto Bolong Road.

In addition, a road sweeper is already used by Manildra to maintain all internal roads and sealed areas across the Shoalhaven Starches sites, as well as to maintain clean conditions in Bolong Road at the numerous Shoalhaven Starches access points to Bolong Road, and in Bolong Road itself. This road sweeper will be available to maintain clean conditions in Bolong Road adjacent to the DF Site as required to ensure Bolong Road is clear of dirt and debris at all times.

5.3.4 Communications Strategy

A Communications Strategy will be established by the Principal Contractor and included in the CTMP. The Communications Strategy will outline the most effective communication methods to ensure adequate information is provided to relevant authorities and the local community (where required), and will assist the Principal Contractor in delivering any construction traffic (or other) changes with minimal disruption to the on and off-site vehicle and pedestrian environment.

As a minimum, the Communications Strategy will include:

- The erection of signs providing advanced notice of works and/or any traffic control measures to be implemented (on or off-site);
- Written notices to surrounding residents who would potentially be impacted by the construction works (prior to commencement of those works); and
- A contact person for the Principal Contractor to answer enquiries from local residents and other stakeholders.

5.3.5 CTMP Monitoring and Review

The development of a program to monitor the effectiveness of the CTMP will also be established by the Principal Contractor.

The CTMP will be subject to ongoing review to further enhance the safety and efficiency of the construction works; any and all reviews will be documented by the Principal Contractor, with considerations for review potentially including the following:

- Tracking deliveries and general construction vehicle movements against estimated volumes (as detailed in **Section 4.4**);
- Identifying any shortfalls in the existing CTMP, and developing an updated action plan to address issues that may arise during construction (for example, parking or access issues);
- Ensuring that any TGS (where required) is updated by accredited persons to ensure they remain consistent with construction requirements and the intent of the CTMP; and/or
- Undertaking regular checks to ensure all loads are leaving the Site appropriately covered and without tracking materials onto the Bolong Road carriageway.

5.4 Driver Code of Conduct:

5.4.1 Driver Code of Conduct Objectives

Further to the above, a Driver Code of Conduct (**Driver COC**) will be prepared and provided to all construction vehicle drivers accessing the Site. The objectives of the Driver COC include:

- Minimising the impact of construction vehicle movements on the on-site work environment and local road network;

- Minimising conflict with other on and off-site road users;
- Minimising construction vehicle traffic noise; and
- Ensuring truck drivers use the designated vehicle routes (as detailed in **Section 4.3**) based on the size of vehicle they are driving.

The Driver COC will also require that, while driving any truck or other vehicle for construction related purposes, drivers must:

- Demonstrate safe driving and road safety activities;
- Abide by traffic and road legislation; and
- Follow Site signage and instructions at all times.

5.4.2 Breach of Driver Code of Conduct

The following activities by any construction vehicle driver would be considered as a breach of the Driver COC:

- Reckless or dangerous driving causing injury or death;
- Driving whilst disqualified or not correctly licensed;
- Drinking or being under the influence of drugs while driving;
- Failing to stop after an incident;
- Loss of demerit points leading to suspension of licence;
- Any actions that warrant the suspension of a licence; and/or
- Exceeding the speed limit in place on any permanent or temporary roads.

Any drivers found to be in breach of the Driver COC would be notified of the breach, as would their immediate managers, who would in turn be required to provide additional training/guidance to the driver. Any repeat offenders would be prevented from returning to Site.

5.4.3 Driver Responsibilities

All construction vehicle drivers must:

- Be responsible and accountable for their actions when operating a truck or company vehicle;
- Ensure they have a current driver licence for the class of vehicle they are driving, and this licence is to be carried with them at all times;
- Immediately notify their manager if their drivers licence has been suspended, cancelled, or has had limitations applied;
- Comply with all traffic and road legislation when driving;
- Regularly check the operating condition of trucks or company vehicles;
- Not drive along routes other than the designated truck routes in accordance with the size of vehicle they are driving.

- Never drive under the influence of alcohol or drugs;
- Wear a safety seat belt at all times when in the vehicle;
- Report any near-misses, crashes or scrapes to their manager, including those that do not result in injury;
- Report infringements to a manager at the earliest opportunity;
- Report vehicle defects to a manager prior to the next use of the vehicle; and
- Keep loads covered at all times (where relevant).

5.4.4 Crash or incident Procedure

In the event of a crash or other traffic incident, the construction vehicle driver is required to:

- Stop the vehicle as close to it as possible to the scene, making sure this not hindering traffic;
- Ensure one's own safety first, then help any injured people and seek assistance immediately if required;
- Ensure that key information is exchanged with the other driver, including the registration, names and insurance details of other vehicles/drivers;
- Ensure that the police are contacted should there be a disagreement over the cause of the crash, if there are injuries or if property is damaged; and
- As soon as reasonably practical, report all details gathered to the Principal Contractor.

6 Conclusions

Further to a detailed assessment of Modification, arc traffic + transport has determined that:

- All access to the Facility will be provided via the existing intersection of Bolong Road & Gate 1; and via existing internal roads through the DF Site between Bolong Road and the Facility. The Bolong Road & Gate 1 intersection, and these internal roads, have all been designed to accommodate the movements of the largest trucks accessing the Facility (B-Doubles) and approved by Council and TfNSW.
- All roads providing access between the DF Site and sub-regional road network are approved by TfNSW and NHVR for use by the maximum sized trucks that will be generated by the Facility.
- The additional trip generation of the Facility further to the Modification is very minimal, and the total trip generation of the Site during a peak hour of 2 truck trips would be no different than the 2 truck trips per hour as approved under MOD 15. This level of trip generation would have no impact on the operation of the Bolong Road & Gate 1 intersections, nor on any roads or intersections in the local road network.
- On-site parking is provided within the Facility that meets peak staff and contractor demand.
- A CTMP has been prepared which indicates that the construction of the proposed new infrastructure can be undertaken safely and efficiently without impacting the local road network. The CTMP may be revised further to consideration of any future Conditions of Consent in a Modification approval.

In summary, arc traffic + transport has determined that the Modification is entirely supportable further to access, traffic and parking considerations.

Appendix A: SIDRA Movement Summary Reports

Bolong Road & Gate 1 AM Base 2023

MOVEMENT SUMMARY

▼ Site: [Bolong Road & Gate 1 AM Base 2023 (Site Folder: General)]

Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gate 1														
1	L2	34	9	36	26.5	0.023	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	20.0
3	R2	8	7	8	87.5	0.036	13.1	LOS A	0.1	1.5	0.70	0.69	0.70	23.1
Approach		42	16	44	38.1	0.036	2.5	LOS A	0.1	1.5	0.13	0.13	0.13	20.5
East: Bolong Road														
4	L2	14	0	15	0.0	0.008	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
5	T1	303	20	319	6.6	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		317	20	334	6.3	0.171	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
West: Bolong Road														
11	T1	186	24	196	12.9	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	39	9	41	23.1	0.047	7.7	LOS A	0.2	1.5	0.43	0.63	0.43	28.5
Approach		225	33	237	14.7	0.109	1.4	NA	0.2	1.5	0.07	0.11	0.07	50.3
All Vehicles		584	69	615	11.8	0.171	0.9	NA	0.2	1.5	0.04	0.07	0.04	49.3

Bolong Road & Gate 1 PM Base 2023

MOVEMENT SUMMARY

▼ Site: [Bolong Road & Gate 1 PM Base 2023 (Site Folder: General)]

Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h]		DEMAND FLOWS [Total veh/h]		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist]		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Gate 1														
1	L2	54	4	57	7.4	0.032	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	20.0
3	R2	3	3	3	100.0	0.011	9.4	LOS A	0.0	0.5	0.60	0.51	0.60	25.5
Approach		57	7	60	12.3	0.032	0.5	LOS A	0.0	0.5	0.03	0.03	0.03	20.2
East: Bolong Road														
4	L2	1	0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
5	T1	170	6	179	3.5	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		171	6	180	3.5	0.094	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Bolong Road														
11	T1	219	8	231	3.7	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	43	5	45	11.6	0.040	6.5	LOS A	0.2	1.2	0.29	0.56	0.29	28.6
Approach		262	13	276	5.0	0.122	1.1	NA	0.2	1.2	0.05	0.09	0.05	50.8
All Vehicles		490	26	516	5.3	0.122	0.7	NA	0.2	1.2	0.03	0.05	0.03	45.2

Bolong Road & Gate 1 AM Base 2034

MOVEMENT SUMMARY

▼ Site: [Bolong Road & Gate 1 Base 2034 AM (Site Folder: General)]

Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h HV] veh/h		DEMAND FLOWS [Total veh/h HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh. m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dairy Farmers Driveway														
1	L2	52	9	55	17.3	0.033	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	20.0
3	R2	8	7	8	87.5	0.047	18.7	LOS B	0.2	1.9	0.77	0.79	0.77	22.3
Approach		60	16	63	26.7	0.047	2.5	LOS A	0.2	1.9	0.10	0.10	0.10	20.3
East: Bolong Road														
4	L2	1	0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
5	T1	375	23	395	6.1	0.210	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		376	23	396	6.1	0.210	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Bolong Road														
11	T1	222	28	234	12.6	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	45	9	47	20.0	0.059	8.2	LOS A	0.2	1.8	0.47	0.67	0.47	28.4
Approach		267	37	281	13.9	0.131	1.4	NA	0.2	1.8	0.08	0.11	0.08	50.5
All Vehicles		703	76	740	10.8	0.210	0.8	NA	0.2	1.9	0.04	0.05	0.04	48.4

Bolong Road & Gate 1 PM Base 2034

MOVEMENT SUMMARY

▼ Site: [Bolong Road & Gate 1 Base 2034 PM (Site Folder: General)]

Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h HV] veh/h		DEMAND FLOWS [Total veh/h HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh. m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Dairy Farmers Driveway														
1	L2	94	4	99	4.3	0.055	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	20.0
3	R2	3	3	3	100.0	0.014	14.0	LOS A	0.0	0.6	0.70	0.64	0.70	24.7
Approach		97	7	102	7.2	0.055	0.5	LOS A	0.0	0.6	0.02	0.02	0.02	20.1
East: Bolong Road														
4	L2	1	0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
5	T1	202	7	213	3.5	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		203	7	214	3.4	0.111	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Bolong Road														
11	T1	265	9	279	3.4	0.147	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	83	5	87	6.0	0.078	6.6	LOS A	0.3	2.3	0.33	0.59	0.33	28.6
Approach		348	14	366	4.0	0.147	1.6	NA	0.3	2.3	0.08	0.14	0.08	47.5
All Vehicles		648	28	682	4.3	0.147	0.9	NA	0.3	2.3	0.05	0.08	0.05	41.7

Bolong Road & Gate 1 AM Base 2034 + Modification

MOVEMENT SUMMARY

▼ Site: [Bolong Road & Gate 1 Base 2034 + MOD AM (Site Folder: General)]

Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				
South: Dairy Farmers Driveway														
1	L2	56	13	59	23.2	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	20.0
3	R2	8	7	8	87.5	0.048	19.0	LOS B	0.2	1.9	0.78	0.79	0.78	22.3
Approach		64	20	67	31.3	0.048	2.4	LOS A	0.2	1.9	0.10	0.10	0.10	20.3
East: Bolong Road														
4	L2	1	0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
5	T1	375	23	395	6.1	0.210	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		376	23	396	6.1	0.210	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Bolong Road														
11	T1	222	28	234	12.6	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	49	13	52	26.5	0.067	8.4	LOS A	0.3	2.2	0.48	0.68	0.48	28.3
Approach		271	41	285	15.1	0.131	1.5	NA	0.3	2.2	0.09	0.12	0.09	49.9
All Vehicles		711	84	748	11.8	0.210	0.8	NA	0.3	2.2	0.04	0.06	0.04	47.8

Bolong Road & Gate 1 PM Base 2034 + Modification

MOVEMENT SUMMARY

▼ Site: [Bolong Road & Gate 1 Base 2034 + MOD PM (Site Folder: General)]

Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Dairy Farmers Driveway														
1	L2	98	8	103	8.2	0.059	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	20.0
3	R2	3	3	3	100.0	0.015	14.2	LOS A	0.0	0.6	0.71	0.65	0.71	24.6
Approach		101	11	106	10.9	0.059	0.4	LOS A	0.0	0.6	0.02	0.02	0.02	20.1
East: Bolong Road														
4	L2	1	0	1	0.0	0.001	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	53.6
5	T1	202	7	213	3.5	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		203	7	214	3.4	0.111	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Bolong Road														
11	T1	265	9	279	3.4	0.148	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	87	9	92	10.3	0.084	6.7	LOS A	0.3	2.6	0.33	0.59	0.33	28.6
Approach		352	18	371	5.1	0.148	1.7	NA	0.3	2.6	0.08	0.15	0.08	47.1
All Vehicles		656	36	691	5.5	0.148	1.0	NA	0.3	2.6	0.05	0.08	0.05	41.3