

# Technical Memorandum

28 October 2022

To	Fortune Agribusiness Funds Management	Contact No.	N/A
From	GHD	Project No.	12580936
Project Name	Fortune Agribusiness Referral and technical studies		
Subject	Singleton Station Horticulture Project Traffic Management Plan- Technical Memo		

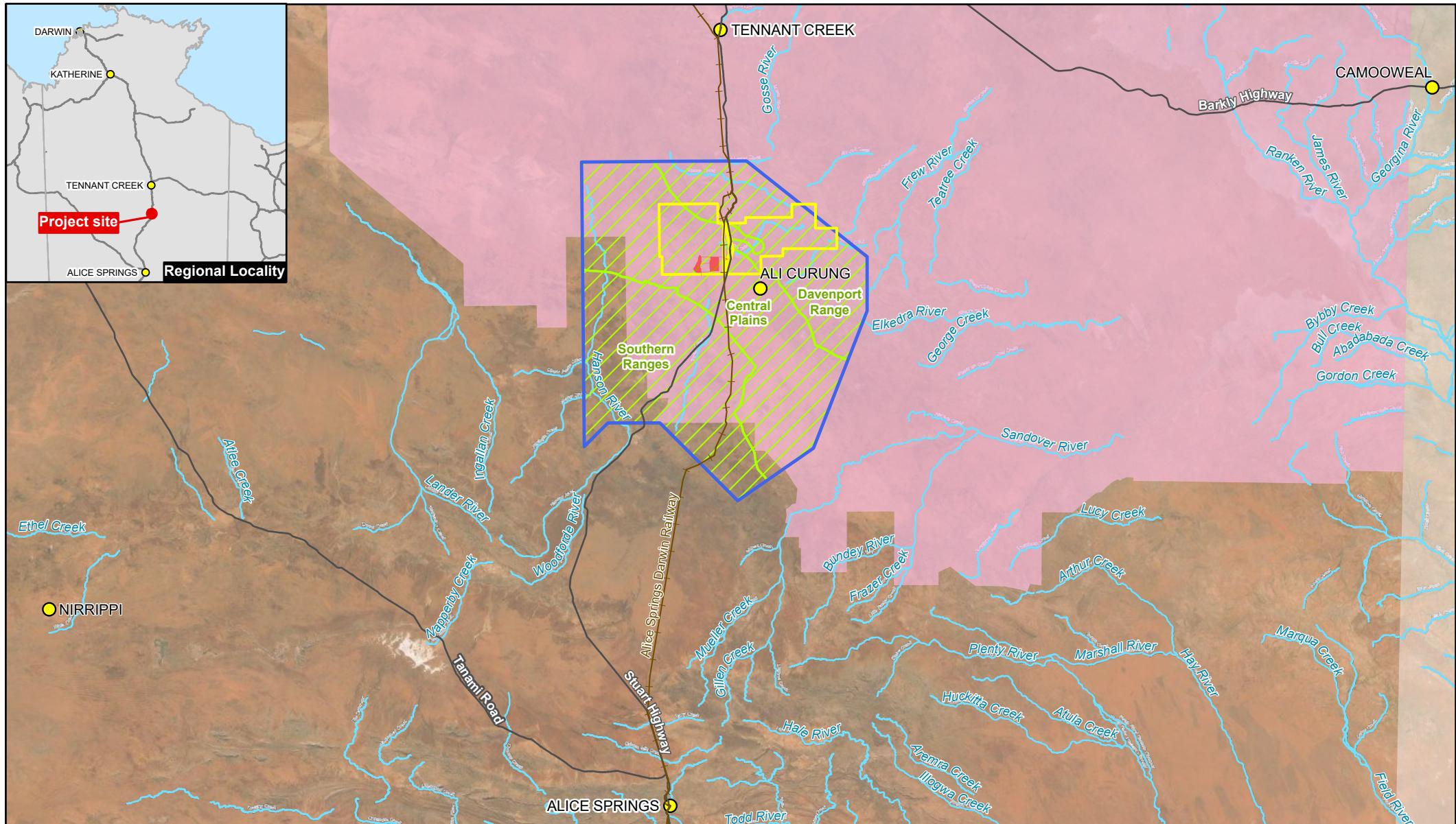
## 1. Introduction

A Traffic Management Plan (TMP) was undertaken for the Singleton Horticulture Project to assess the potential traffic impacts during the construction and operational phase of the proposal.

The scope of the TMP was to:

- Review the existing road and transport conditions, traffic volumes and crash data.
- Assess the current traffic performance using SIDRA 8 Intersection modelling software.
- Review the construction works and the performance of key intersections during construction using the SIDRA 8 Intersection modelling software.
- Assess traffic generation, distribution and impacts of the Proposal.
- Provide suitable mitigation measures to minimise the impacts.

The regional context of the proposal site and key regional roads are shown in Figure 1.1.



**Legend**

- Place
- Roads
- Railway
- Watercourse

- Western Davenport Water Control District
- Water management zone

- Barkly Local Government Area
- Proposal - Area of assessment
- Singleton station

Paper Size ISO A4  
0 25 50 Kilometres  
Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 53



Fortune Agribusiness Funds  
Management Pty Ltd  
Singleton Horticulture Project  
EPA Referral

Project No. 12580936  
Revision No. 0  
Date 10/21/2022

## Regional context

**FIGURE 1-1**

## 2. Existing Environment

Stuart Highway is the sole connection to the external road network. The Stuart Highway is a Department of Infrastructure, Planning and Logistics (DIPL) controlled arterial highway connecting Darwin in the Northern Territory to Port Augusta in South Australia (GHD, 2022). The Stuart Highway is already a major roadway, used for freight and tourism and is part of the National Land Transport Network.

As with other rural highways, the Stuart Highway is a typical one lane highway for each direction of travel, with additional turning lanes at key intersections and a posted speed limit of 130 km/h in open areas. Speed is reduced as appropriate around townships. A Greyhound bus stop is located approximately 700 metres to the north of Ali Curung Road.

DIPL undertake traffic monitoring throughout the Northern Territory. Two monitoring stations exist north-east and south-east of the proposed development (Figure 2.1). These are stations RTVDC021 and RTVDC022.

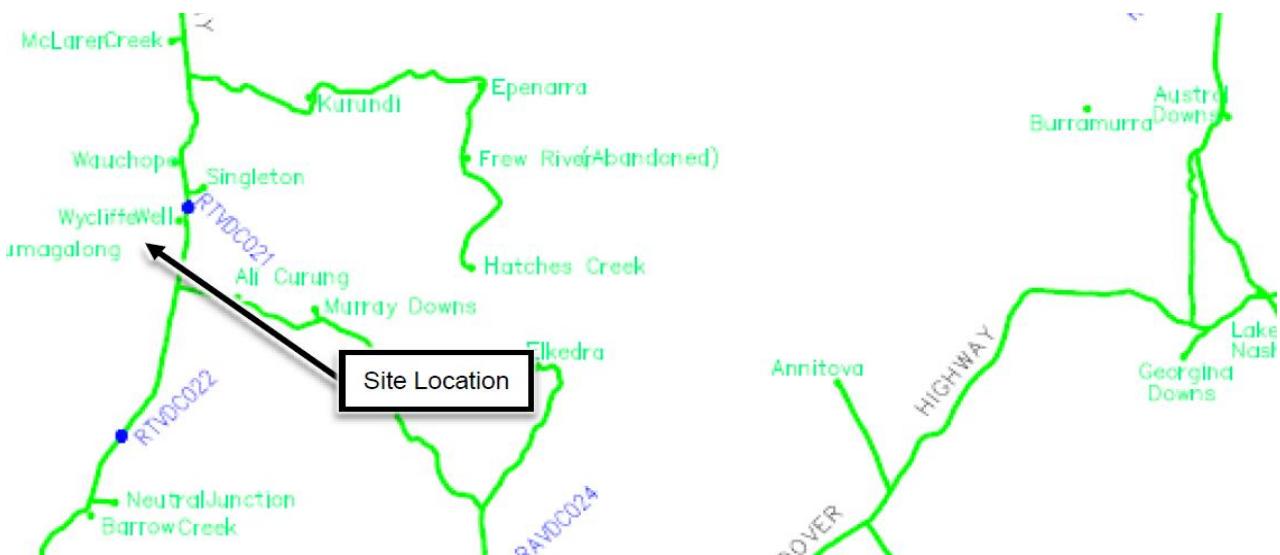


Figure 2.1 Traffic Monitoring Locations (GHD, 2022)

The Annual Average Daily Traffic (AADT) volumes at the two monitoring stations is provided in Table 2.1. No clear pattern of growth between 2016 and 2020 is evident in the data set available. For the northern counter, heavy vehicle traffic represents 21 % of the total count and 28 % for the southern counter.

Peak volumes of traffic were also recorded between 0900 and 1000 and 1300 and 1400. These are provided in Table 2.2. The crash history of the Stuart Highway within 2 km of the proposal was assessed to determine whether any safety concerns exist within the area. Between 2017 and 2021, one (1) recorded crash occurred in the vicinity of the proposal.

Light vehicle traffic is expected to access the Proposal area via Stuart Highway and the minor road of Kinjurra Road, both of which form the eastern and southern boundaries of the site boundary.

The Alice Springs – Darwin Railway line crosses the site area near the eastern boundary. A number of tracks will be created, including from the north off Scraper Station Road and the south from Ali Curung Road as well as internal access tracks within the Proposal area. A total of 1-2 northbound trains and 1-2 southbound trains are noted per day occurring throughout the day (GHD, 2022). These are the approximate timing of train movements at Wycliffe Well.

**Table 2.1**      *Stuart Highway AADT*

	2016	2017	2018	2019	2020
<b>Northern counter</b>					
Northbound	198	185	225	235	152
Southbound	186	161	213	195	154
<b>Total</b>	<b>384</b>	<b>346</b>	<b>438</b>	<b>430</b>	<b>306</b>
<b>Southern counter</b>					
Northbound	208	197	197	189	129
Southbound	191	171	184	150	133
<b>Total</b>	<b>399</b>	<b>368</b>	<b>381</b>	<b>339</b>	<b>262</b>

**Table 2.2**      *Peak Hour Volumes*

	Northern counter		Southern counter	
	AM Peak	PM Peak	AM Peak	PM Peak
Northbound	13	19	15	21
Southbound	23	20	38	24
<b>Total</b>	<b>36</b>	<b>40</b>	<b>53</b>	<b>44</b>

### **3. Potential Impacts**

#### **3.1 Construction**

##### **3.1.1 Road Traffic Network**

Construction is expected to take about 9 months for each stage, and project development and construction activities would continue over the four stages of the proposed project (over a 9 year period).

Construction would involve transport of materials and labour required for the construction of the Proposal, including:

- Construction of accommodation and services hub, with facilities for permanent staff and families.
- Construction of packing and processing centres, including cold storage, workshop and machinery sheds.
- Horticultural production facilities comprising of two production blocks (containing smaller horticultural blocks) and a borefield area for bore pads and access tracks.
- Internal access tracks for main road access to Stuart Highway.

It is expected that there will be a marginal increase in both light and heavy traffic during the construction phase of the Proposal as the construction phase is spread over 9 years with quarterly mobilisation of prefabricated buildings, plant and equipment. It is anticipated that an average of 90 semi-trailers per annum will transport construction materials and prefabricated buildings to the Proposal site. Peak periods of up to 5 semi-trailers per day would be expected during the height of construction.

There will be further traffic impacts arising from the number of staff on site during the 9-year construction program. The anticipated staffing levels during the construction phase is provided in Table 3.1. The majority of materials will be sourced from the north (Darwin), with the remainder from the south (Adelaide).

*Table 3.1 Staged development and staff requirements (GHD, 2022)*

<b>Stage</b>	<b>Year</b>	<b>Construction workforce</b>	<b>Workforce Permanent</b>	<b>Workforce Seasonal</b>	<b>Accommodation requirements</b>
<b>1</b>	0-3	34	40	40	<ul style="list-style-type: none"><li>– Offsite – Wycliffe Well</li></ul>
<b>2</b>	4-5	50	80	250	<ul style="list-style-type: none"><li>– 16 houses (family)</li><li>– 32 shared apartments</li><li>– 73 shared accommodation and amenities</li></ul>
<b>3</b>	6-7	67	120	850	<ul style="list-style-type: none"><li>– 8 houses (family)</li><li>– 16 shared apartments</li><li>– 140 shared accommodation and amenities</li></ul>
<b>4</b>	8-9+	59	150	1350	<ul style="list-style-type: none"><li>– 6 houses (family)</li><li>– 12 Shared apartments</li><li>– 125 shared accommodation and amenities</li></ul>

#### **3.2 Operation**

##### **3.2.1 Source of road traffic generation**

###### **Community hub**

###### *Permanent and seasonal staff*

Once operational, it is anticipated that the Singleton Horticulture Project, will have 150 permanent staff and 1,350 seasonal staff. As a conservative measure, it is assumed that 10 % of permanent staff will reside in the immediate surrounding townships, including Wauchope and Ali Curung. It is assumed that this

commute will generate 11 trips per day. Of the staff that live within the project accommodation, it is anticipated that each staff member will take one trip per week between the accommodation and the Stuart Highway, culminating in a total of 99 trips per week (or 14 per day).

During peak season, a total of 1,350 seasonal staff are anticipated to be on site, engaged on a fly-in fly-out basis. Therefore, it is assumed that all 1,350 seasonal staff will reside within the accommodation at the proposal site. Based on the typical 2:1 fly-in fly-out roster, it is expected that 450 staff will turnover each week, with 40 % assumed to arrive to site by bus and the remaining 60 % by private car. One bus is anticipated to run to and from the proposal site each day of turnover.

#### *Deliveries*

. Based on the assumption of each staff member requiring 9 kg of supplies per day, during the peak season this would mean deliveries for 92 tonnes of supplies per week (1,460 staff) and 7 tonnes of supplies each week (110 staff).

Considering a typical semi-trailer can carry 30 tonnes of goods and a heavy rigid vehicle (HRV) can carry 7 tonnes, it can be expected that in peak season 3 semi-trailer deliveries plus 1 – 2 HRV deliveries will occur per week. In other times, it is anticipated that there would be less than 1 semi-trailer delivery and 1 -2 HRV deliveries per week.

### **Farm and processing plant equipment**

#### *Staff movements*

The processing plant is anticipated to be the primary area of employment within the precinct, co-located with the proposal site. This facilitates active transport for the staff, removing the imperative need for using a vehicle for the daily commute. Workers who are stationed in the farm precinct (i.e., to operate tractors, sprayers and harvest) will need to access areas using vehicles. It is estimated that this would result in 80 trips per day over the Alice Springs and Darwin railway to the farm area. In peak periods, it may be possible that a bus is used for transport between the accommodation and the farm precinct, whereby it can be estimated that 10 bus trips would take place each day.

#### *Product transport*

Projections on the number of semi-trailer trips between the farm precinct and processing plant which are expected to grow year on year for the four Project stages. Movements are anticipated to be highest in March through to May, reducing in the winter months from June through to September. Truck movements are anticipated to peak at 14 per day during the peak months. Further to this, it is assumed that for each semi-trailer of produce transported from the farm to the processing plant, one semi-trailer of produce will be transported from the processing plant to customers. To this end, semi-trailer loads will peak at 46 per day from year 4 onwards.

#### *Hay transport*

There is expected to be 3 semi-trailer loads of hay transported from the farm to the hay shed each day. Most hay is anticipated to be exported with up to 3 semi-trailer trips per day expected to be transporting hay offsite for customers.

#### *Deliveries*

It is anticipated that deliveries of machinery and equipment necessary for the running of the farm precinct and processing plant will result in 1 – 4 semi-trailer deliveries per week.

## **3.2.2 Total operational road traffic**

Operational traffic will vary throughout the year, with expected increases in traffic during peak seasons where seasonal staff will be on site. Traffic modelling was undertaken for the which assumed that all traffic generating components (i.e., staff movements, deliveries) of the site will peak simultaneously. A summary of the anticipated operational traffic generation is provided in Table 3.2.

*Table 3.2 Summary of operational traffic generation*

To - From	Component	Vehicle type	Trip generation
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Community Hub – Stuart Highway	Permanent staff (resident of Community Hub)	Light vehicle	11 trips per day
	Permanent staff (reside off-site)	Light vehicle	14 trips per day
	FIFO staff	Bus	1 trip per day
	FIFO staff	Light vehicles	39 trips per day
	Deliveries	Semi-trailers	1-3 trips per week
		Heavy rigid vehicle (HRV)s	1-2 trips per week
	Produce transport	Semi-trailers	46 trips per day
	Hay transport	Semi-trailers	3 trips per day
<b>Sub-total</b>			<b>115 trips per day</b>
Community Hub – Farm Precinct	Permanent staff/work vehicles	Light vehicle	80 trips per day
	Seasonal staff	Bus	10 trips per day
	Produce transport	Semi-trailers	46 trips per day
	Hay transport	Semi-trailers	3 trips per day
	<b>Sub-total</b>		<b>139 trips per day</b>
Farm Precinct – Stuart Highway	Deliveries	Semi-trailers	4 trips per week

### 3.2.3 Rail transport

No impacts or changes to the existing rail line or rail services are anticipated.

### 3.2.4 Summary of impacts

The overall impact has been assessed with SIDRA modelling, with the results presented in Table 3.3. It is expected that staff will access the Proposal site via the access road directly from the Stuart Highway. As per the SIDRA results, it is expected that the net increase in traffic will be negligible and there will be minimal wait times as a result of the increased traffic. Overall, the intersection of the Singleton station access road and the Stuart Highway is expected to operate under ‘excellent’ conditions with minor queues and delays which are expected to not be material to motorists.

The TMP determined that a net increase of 15 traffic movements during peak hours, all of which will be directed to the new access from the Stuart Highway will result in negligible traffic impacts to the local community. The net impact on the traffic is negligible and likely not to be material to the community.

*Table 3.3 SIDRA Results*

Period	Degree of saturation	Average delay (s)	Level of service (LOS)	95 <sup>th</sup> percentile queue (m)
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<b>AM Peak</b>				
Stuart Highway (south)	0.016	203	-	0.0
Stuart Highway (north)	0.031	1.2	-	0.6
Farm Precinct Access Road	0.010	5.9	LOS A	0.3
<b>PM Peak</b>				
Stuart Highway (south)	0.017	1.3	-	0.0
Stuart Highway (north)	0.019	1.2	-	0.3
Farm Precinct Access Road	0.017	5.9	LOS A	0.5

### 3.2.4.1 Proposed mitigation and management measures

Table 3.4 provides mitigation and management measures for the construction and operation works of the Proposal.

**Table 3.4** *Traffic and transport mitigation measures*

Potential impact	Environmental mitigation measures	Timing
Construction traffic	<p>A Construction Traffic Management Plan (CTMP) would be prepared prior to commencing construction. The CTMP will aim to facilitate the safety of all workers and road users within the vicinity of the construction site.</p> <p>The primary objectives of the CTMP will be:</p> <ul style="list-style-type: none"> <li>– To minimise the impact of the construction vehicle traffic on the operation of the adjoining road network</li> <li>– To facilitate the continuous, safe and efficient movement of traffic for both the general public and construction workers</li> <li>– To facilitate the establishment of a safe pedestrian environment in the vicinity of the site</li> <li>– To provide a description of the types of vehicles and estimated vehicle volumes during each stage of construction</li> <li>– To provide information regarding the access arrangement and a description of the proposed routes for vehicles accessing and egressing the construction site.</li> </ul> <p>The CTMP will include, but not be limited to, the following:</p> <ul style="list-style-type: none"> <li>– CTMP objectives as defined above</li> <li>– Vehicle approach and departure routes to the proposal area that will minimise the impacts of heavy construction-related vehicles on the adjacent road network</li> <li>– Construction vehicle types</li> <li>– Areas of parking for construction personnel which will preferably be away from residential areas</li> <li>– Public and active transport options for workers to the proposal area that will maximise safety and maintain accessibility for pedestrians and cyclists</li> <li>– Site access constraints such as vehicle restrictions (e.g. road network load limits/height restrictions) on haulage routes</li> <li>– Areas of vulnerable road users (pedestrians and bicycle riders) and areas of potential high pedestrian activity</li> <li>– Methods of communicating traffic changes on the road network.</li> <li>– Impacts on public and active transport (including cycle / pedestrian paths) services around the Proposal site</li> <li>– Road network operational impacts within the vicinity of the Proposal site</li> <li>– Conditions and access limits to the established tracks to prevent non-authorised vehicles entering the Proposal site</li> <li>– Track maintenance requirements.</li> </ul>	Pre-construction and construction
	Key stakeholders, including DIPL, operators of adjacent land uses and emergency service providers, will be notified of any changed traffic management arrangements prior to the commencement of works.	Pre-construction and construction
	Construction works will occur within the standard hours defined by the NT EPA Regulations.	Construction
	Truck drivers will be directed to follow the predetermined haulage routes.	Construction
	Heavy vehicles will also be restricted from particular lanes especially during congestion.	Construction

Potential impact	Environmental mitigation measures	Timing
Impact on traffic and road users	Heavy vehicles will be restricted to particular lanes, especially during peak hours.	Construction
	All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will outline the requirements of the CTMP, including site access routes, environmental and occupational health and safety responsibilities, emergency procedures, potential carpooling opportunities and vehicle height restrictions, among others. Additionally, the construction site manager will discuss CTMP requirements regularly as a part of 'toolbox talks'.	Construction
	Any workers required to undertake works or traffic control shall be suitably trained and hold the required accreditation to carry out works on site and will also be site inducted.	Construction
	Protection will be provided to workers and road users through advance warning of roadworks, speed changes, safety barriers with adequate offsets and deflection allowance, where necessary.	Construction
	Roadwork speed zones must be logical, credible, and enforceable. They will only be used where they are self-enforcing or will be enforced. They will be used with other traffic control signs and devices and will not be used in place of more effective traffic controls. They will also be used only while road works are in progress or the lower speed road conditions exist.	Construction
	The lead contractor will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles, to maintain the safety of all road users.	Construction
	Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.	Construction
Overlap of construction traffic with Proposal area	The CTMP and Construction Environment Management Plan (CEMP) for both developments will be coordinated to ensure traffic safety is maintained for all areas where overlap and mixing of traffic may occur. This will include at a minimum: <ul style="list-style-type: none"> <li>– Coordination of shared-use access routes</li> <li>– Communication lines and dispute resolution</li> <li>– Access arrangements and alternatives if required.</li> </ul>	Pre-construction and construction
	Changes or delays in construction works along haulage and access routes will be communicated well, and proper protection as defined above (e.g. advance warning of roadworks, safety barriers) will be provided.	Pre-construction and construction

## 4. Scope and limitations

*This technical memorandum has been prepared by GHD for Fortune Agribusiness Funds Management. It is not prepared as, and is not represented to be, a deliverable suitable for reliance by any person for any purpose. It is not intended for circulation or incorporation into other documents. The matters discussed in this memorandum are limited to those specifically detailed in the memorandum and are subject to any limitations or assumptions specially set out.*