

# Department of State Growth

Salamanca Building Parliament Square  
4 Salamanca Place, Hobart TAS  
GPO Box 536, Hobart TAS 7001 Australia  
Email [permits@stategrowth.tas.gov.au](mailto:permits@stategrowth.tas.gov.au) Web [www.stategrowth.tas.gov.au](http://www.stategrowth.tas.gov.au)  
Ref: SRA-20-92



Justin Bartlett  
East Arm Resources Pty Ltd  
By email: [jb@vsagroup.com.au](mailto:jb@vsagroup.com.au)

Dear Justin

## **Crown Landowner Consent Granted - East Arm Road (East Tamar Highway), Hillwood**

I refer to your recent request for Crown landowner consent relating to the development application at East Arm Road (East Tamar Highway), Hillwood for Quarry and upgrade roadworks.

I, Fiona McLeod, Manager Asset Management State Roads, the Department of State Growth, having been duly delegated by the Minister under Section 52 (1F) of the *Land Use Planning and Approvals Act 1993* (the Act), and in accordance with the provisions of Section 52 (1B) (b) of the Act, hereby give my consent to the making of the application, insofar as it affects the State road network and any Crown land under the jurisdiction of this Department.

The consent given by this letter is for the **making of the application only** insofar as that it impacts Department of State Growth administered Crown land and is with reference to your application dated 22 August 2020, and the documents approved, as follows:

<b>Approved Document Name</b>	<b>Author</b>	<b>Date Received</b>
Crown Landowner Consent Application – East Arm Road, Hillwood (CT 150703/3 & 152416/1) – Dated 22/08/2020	(applicant)	22/08/2020
Council Planning Permit Application Form - East Arm Road, Hillwood (CT 150703/3 & 152416/1) – Dated 16/06/2020	(applicant)	22/08/2020
Development Application Planning Supporting Report – Rev02 Dated 16/08/2020	Van Diemen Consulting	22/08/2020
Attachment 1: Certificate of title reference documents (CT 150703/3, 175735/1, 175735/2 & 152416/1) - Folio text – Folio Plan	-	22/08/2020
Attachment 2: Traffic Impact Assessment – Dated March 2020	Milan Prodanovic Traffic Engineering and Road Safety	22/08/2020
Attachment 3: Amenities Building Layout and Parking Plan – n.d.	Not Stated	22/08/2020
Attachment 4 Truck Access Drawing – East Arm Road – Drawing no. TSD-R05-v2 Dated 28/04/2020	IPWEA	22/08/2020
Plan – Channelised Short – Dated 01/09/2020	Van Diemen Consulting	01/09/2020
Delay and Queue length (Batman Highway westbound link to East Tamar Highway northbound on ramp) – Dated 01/09/2020	DSG	01/09/2020
Delay and Queue length (Batman Highway westbound link to East Tamar Highway northbound offramp intersection) – Dated 01/09/2020	DSG	01/09/2020

In giving consent to lodge the subject development application, the Department notes that the works in the State road network will require the following additional consent:

The consent of the Minister under Section 16 of the *Roads and Jetties Act 1935* to undertake works within the State road reservation.

For further information please visit <http://www.transport.tas.gov.au/road/permits> or contact [permits@stategrowth.tas.gov.au](mailto:permits@stategrowth.tas.gov.au).

The Department reserves the right to make a representation to the relevant Council in relation to any aspect of the proposed development relating to its road network and/or property.

Yours sincerely



Fiona McLeod  
**MANAGER ASSET MANAGEMENT**

Delegate of  
**Minister for Infrastructure and Transport**  
Michael Ferguson MP

29 September 2020

cc: General Manager, George Town Council



# GEORGE TOWN COUNCIL

Council Office: 16-18 Anne Street  
George Town, Tasmania 7253  
Email: [council@georgetown.tas.gov.au](mailto:council@georgetown.tas.gov.au)

Postal Address: P.O. Box 161, George Town, Tasmania 7253  
Telephone: (03) 6382 8800 Facsimile: (03) 6382 8899

## DEVELOPMENT APPLICATION FORM

Section 57 & 58

### OFFICE USE ONLY

Application Number: DA /	Date:	
PID:	Zone:	Permitted or Discretionary

### APPLICANT DETAILS

Applicant Name:	East Arm Resources Pty Ltd				
Postal Address:	Unit 2, 3-5 Gibbon Road, Winston Hills, NSW, 2153				
Email Address:	jb@vsagroup.com.au				
Contact Phone:	B/H	03 9369 9931	Mobile	0400 054 904	Fax

*Note:* Full name(s) of person(s) or company making the application and postal address for correspondence.

Please mark the box if you prefer to receive all correspondence via email  X

### OWNER DETAILS

(✓) As Above

Owner/Authority Name:	GERALD ROBERT ARCHER
Postal Address:	LANDFALL PRIVATE BAG 22 LAUNCESTON TAS 7250

Owner/Authority Name:	GEORGE TOWN COUNCIL
Postal Address:	16-18 Anne St, George Town, Tasmania 7253 (PO Box 161, George Town, Tasmania 7253)

### DEVELOPMENT APPLICATION DETAILS

Location/Address:	2 GREENHYTHE RD HILLWOOD TAS 7252
Title Reference:	<ul style="list-style-type: none"><li>• 175735/1 and 175732/1</li><li>• Crown Land (road) administered by the George Town Council</li></ul>

Development Type:	New dwelling <input type="checkbox"/>	Outbuilding <input type="checkbox"/>	Addition/extension <input type="checkbox"/>
	Fencing <input type="checkbox"/>	Demolition <input type="checkbox"/>	Signage <input type="checkbox"/>
	Subdivision <input type="checkbox"/>	Change of use <input type="checkbox"/>	Other <input checked="" type="checkbox"/>

Description/Use:	Extractive Industry – up to 4,000,000 tonnes per annum (approx. 2,666,667 m <sup>3</sup> ) Includes vegetation removal, stockpiling of overburden, crushing/screening of rock material, drilling/blasting and loading/transporting of material.
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Driveway/Vehicle Crossover:	Existing <input checked="" type="checkbox"/> Proposed <input type="checkbox"/> Alteration Required <input checked="" type="checkbox"/>
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	<b>Contact Council's engineering department for details on crossover construction</b>
	If yes please give details:

**SUPPORTING INFORMATION**

<b>Existing Development/Use:</b> (describe the way the land is used now)	Extractive Industry (quarry), hardwood plantation and native forest	
<b>Estimated construction cost of the proposed development:</b>	\$2,500,000	<i>Includes total cost of building works inclusive of GST</i>
<b>New floor area:</b>	117.4 m <sup>2</sup>	
<b>Total floor area:</b>	117.4 m <sup>2</sup>	
<b>New building height:</b>	6 m	

<b>Water Supply:</b>	TasWater <input type="checkbox"/>	Tank <input checked="" type="checkbox"/>
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<b>Waste Water Treatment:</b>	TasWater <input type="checkbox"/>	On-Site Waste Water System <input checked="" type="checkbox"/>
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**APPLICANT DECLARATION**

I hereby declare that;

- I have read and understood the questions in this application and the answers given are true and correct.
- I am liable for the payment of Council's application fees, even in the event of the application not proceeding.
- I acknowledge that section 57 of the *Land Use Planning Approvals Act 1993* may require that the information submitted in this application be made accessible to the public and may be reproduced for representors, referral authorities and any other persons/bodies interested in this proposal.
- I consent to the entry of the land by an authorised officer including councillors in accordance with section 65J (1) (a) for any purpose connected with the administration and enforcement of the *Land Use Planning and Approvals Act 1993* and assessment of this application.
- Where the applicant is not the owner, I (the applicant) have either;
  - a) Notified the owner about the application (for private land)
  - b) Attached owners consent (Crown and Council land)



Delegate of  
**Minister for Infrastructure**  
Michael Ferguson MP

**PLEASE NOTE: OWNERS CONSENT**

Written consent of the owner is required before the application can be lodged as follows:

- for Crown land seek consent from the relevant minister
- for Council land seek consent from the General Manager or their delegates

<b>Owner/Agent:</b> <small>(Delete one not applicable)</small>	<i>Name</i>	<i>Signed</i>	<i>Date</i>
	JUSTIN BARTIETT		16-6-2020

Planning Application Fee	\$	Total Fees	\$
Advertising Fee	\$	Receipt No.	
		Date	/ /
		Initials	

Personal information is managed in accordance with the *Personal Information Protection Act 2004* and may be accessed by the individual to whom it relates, on request to George Town Council.



ABN 68 300 116 092

Our Ref dr:ma  
9990364

Date: 16<sup>th</sup> December 2020

East Arm Resources Pty Ltd  
Unit @, 3-5 Gibbon Road,  
Winston Hills, NSW, 2153

Email: [jb@vsagroup.com.au](mailto:jb@vsagroup.com.au)

Dear Sir/Madam

*RE: ROAD AUTHORITY ADVICE: QUARRY EXPANSION - CT 175732/1 & 175735/1,  
EAST ARM RD, HILLWOOD TAS*

In accordance with section E4.5.3 (a), a TIA must be accompanied with the written advice as to the adequacy of the TIA from the relevant Road Authority.

As George Town Council are the Road Authority for East Arm Road, please accept this letter as confirmation of compliance with the above mentioned section.

Yours Faithfully

David Richardson  
MANAGER, WORKS AND INFRASTRUCTURE



# GEORGE TOWN COUNCIL

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Postal Address: P.O. Box 161, George Town, Tasmania 7253  
Telephone: (03) 6382 8800 Facsimile: (03) 6382 8899

## George Town Council Consent to lodge a development application

Section 52(1B) (b) of the *Land Use Planning and Approvals Act 1993*

**Applicant:** East Arm Resources P/L

**Address:** Unit 2, 3-5 Gibbon Road, Winston Hills, NSW 2153

**Proposal:** Extractive Industry

**Council Property Address:** 2 Greenhythe Road, Hillwood

I, Justin Bartlett..... wish to request the consent of George Town Council

to lodge a development application for the proposed Extractive Industry

at 2 Greenhythe Road, Hillwood

Name: Justin Bartlett..... Signed [Signature]..... Date 31/8/2020

### OFFICE USE ONLY General Manager Consent

George Town Council consents to accept the application to lodge with Council, a development application for the proposed Quarry Expansion..... located on Council owned land at 2 Greenhythe Road, Hillwood.....

Please note that George Town Council's consent is only given to the lodgement of the application. Any variation will require further consent from Council. This letter does not constitute an approval to undertake any works. If planning approval is given for the proposed development, the applicant will be required to obtain separate and distinct consent from Council before commencing any works on Council land.

.....  
**Shane Power**  
**GENERAL MANAGER**  
**GEORGE TOWN COUNCIL**

	Contact Council's engineering department for details on crossover construction
	If yes please give details:

**SUPPORTING INFORMATION**

<b>Existing Development/Use:</b> (describe the way the land is used now)	Extractive Industry (quarry), hardwood plantation and native forest	
<b>Estimated construction cost of the proposed development:</b>	\$2,500,000	<i>Includes total cost of building works inclusive of GST</i>
<b>New floor area:</b>	117.4 m <sup>2</sup>	
<b>Total floor area:</b>	117.4 m <sup>2</sup>	
<b>New building height:</b>	6 m	

<b>Water Supply:</b>	TasWater <input type="checkbox"/>	Tank <input checked="" type="checkbox"/>
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<b>Waste Water Treatment:</b>	TasWater <input type="checkbox"/>	On-Site Waste Water System <input checked="" type="checkbox"/>
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**APPLICANT DECLARATION**



I hereby declare that;

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  - b) Attached owners consent (Crown and Council land)

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Written consent of the owner is required before the application can be lodged as follows:

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- for Council land seek consent from the General Manager or their delegates

<b>Owner/Agent:</b> <small>(Delete one not applicable)</small>	<i>Name</i>	<i>Signed</i>	<i>Date</i>
	JUSTIN BARTUET		16-6-2020
	SHANE POWER		

Planning Application Fee	\$ 1250	Total Fees	\$ 1250
Advertising Fee	\$	Receipt No.	290241
		Date	25/8/20
		Initials	JB

Personal information is managed in accordance with the *Personal Information Protection Act 2004* and may be accessed by the individual to whom it relates, on request to George Town Council.



# **TRAFFIC IMPACT ASSESSMENT**

**PROPOSED  
QUARRY DEVELOPMENT**

**EAST ARM ROAD  
HILLWOOD**

**MARCH 2020**

# TRAFFIC IMPACT ASSESSMENT

## PROPOSED QUARRY DEVELOPMENT

### EAST ARM ROAD HILLWOOD

MARCH 2020

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## REFERENCES:

- Australian Standard AS 1742.2-2009 – Manual of uniform traffic control devices Part 2: Traffic control devices for general use
- AUSTROADS – Guide to Road Safety Part 6: Road Safety Audit (2009)
- Road Traffic Authority NSW – Guide to Traffic Generating Developments, 2002
- Road and Maritime Services (Transport) - Guide to Traffic Generating Developments; Updated traffic surveys (August 2013)
- AUSTROADS – Guide to Road Design Part 3: Geometric Design (2017)
- AUSTROADS – Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (2017)
- AUSTROADS – Guide to Traffic Management Part 12: Traffic Impacts of Developments (2019)
- Department of State Growth publication: *A Framework for Undertaking Traffic Impact Assessments (2007)*
- George Town Planning Scheme 2013

## 1. INTRODUCTION

The operators of the existing quarry on East Arm Road at Hillwood are proposing to substantially increase the quarry operation.

This Traffic Impact Assessment (TIA) report has been prepared in support of the proposed development and to assist the George Town Council (and Department of State Growth) in assessing the development application.

The report describes the current road and traffic conditions in the area of the development site including the Batman Highway and East Tamar Highway. An assessment is made of the traffic that the development will generate and the effect of this traffic on the road network.

Advice is also provided on the access road into the development site, as well as available sight distances at affected road intersections.

The report is based on the Department of State Growth Traffic Impact Assessment Guidelines but also having regard for Austroads: Guide to Traffic Management – Part 12.

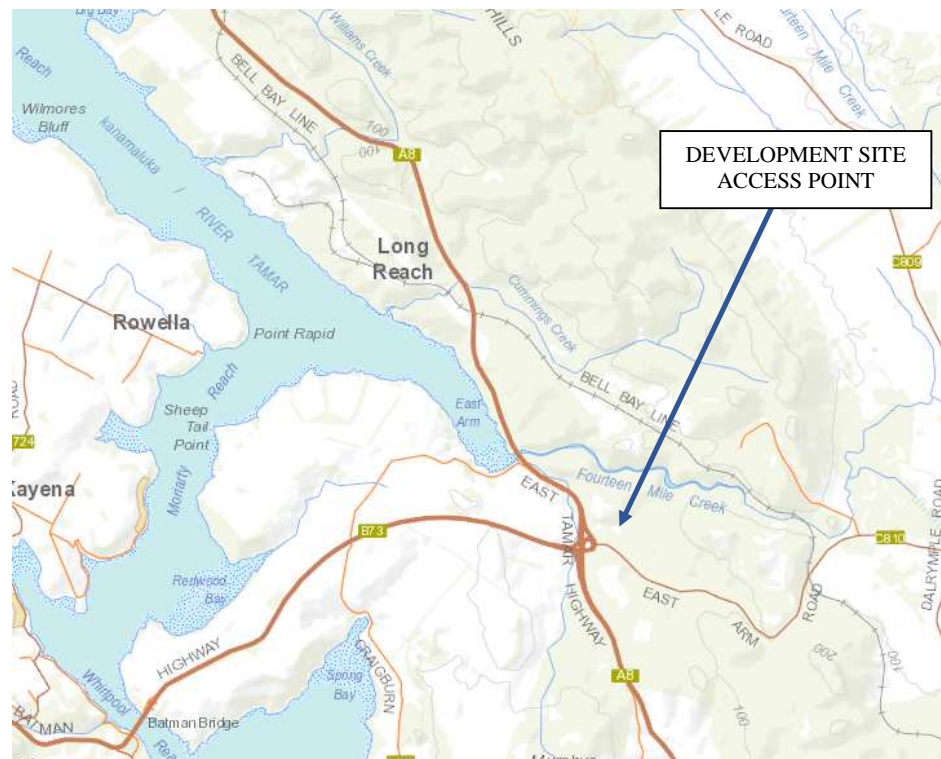
The techniques used in the investigation and assessment incorporate best practice road safety and traffic management principles.

## 2. SITE DESCRIPTION

The quarry development site will be accessed via the existing quarry road into the site, which junctions with the northern side of East Arm Road around 100m to the east of the East Arm Road junction with the on/off ramps between the East Tamar Highway and the Batman Highway.

The land is zoned rural resource with surrounding area predominantly used for farming or is underdeveloped land, although there are some residential lots along the highway as well as along the few local side roads in this area.

The location of the development site and access road is highlighted on the extract from the area map for this area, seen as Figure 2.1.



**Figure 2.1: Extract of area map showing location of development**

### 3. DEVELOPMENT PROPOSAL

The existing quarry on East Arm Road currently is licensed to extract 90,000 tonnes of material per annum.

It is proposed that the quarry production will increase to 4 million tonnes per annum over the next few years.

The material will be transported from the quarry site via East Arm Road through the Batman Highway/East Tamar Highway interchange and north along the East Tamar Highway to the Forico Mill access road, with empty trucks returning to the quarry.

A view of the current access road to the quarry is seen in Photograph 3.1.



**Photograph 3.1: View of access road to quarry site from East Arm Road**

## 4. EXISTING ROAD AND TRAFFIC ENVIRONMENT

### 4.1 Road Characteristics

#### East Arm Road

East Arm Road is owned and maintained by the George Town Council. It is a local access road linking the Batman Highway/East Tamar Highway interchange to Dalrymple Road over a distance of around 5km.

The road is sealed to a width of between 6.3m and 7.1m over a distance of around 160m from its western end at the interchange ramps to a point around 60m beyond the quarry access road. East of this point, the road is unsealed.

The change in pavement is seen in Photograph 4.1.



**Photograph 4.1: View to east along East Arm Road from near quarry access road junction**

At the quarry access road junction with East Arm Road, there is a turning area which is understood to have been constructed for the turnaround of school buses. No buses were seen to turn or pass through this area during the 3:20pm to 5:00pm period on the weekday when undertaking investigations and surveys in this area.

Trucks leaving the quarry to enter East Arm Road will need to pass through the middle of the turning area, as may be appreciated from views in Photographs 3.1, 6.1 and 6.2.

The quarry trucks will be using only the western 100m section of East Arm Road which is sealed.

### Batman Highway

The Batman Highway is owned and maintained by the State Government. It is classified a Category 2 – Regional Freight Route and links the East Tamar Highway with the West Tamar Highway over the Tamar River.

The section of this highway that will be used by trucks from the proposed quarry development will only be the Batman Highway/East Tamar Highway interchange ramps for travel between the quarry and the Forico Mill access road.

### East Tamar Highway

The East Tamar Highway is owned and maintained by the State Government. It is classified a Category 1 – Trunk Road.

The quarry trucks will use the 3.5km section of the highway between the Batman Highway/East Tamar Highway interchange ramps and the Forico Mill access road.

This length of the highway has two 2-lane sections for northbound traffic and one 1-lane section for southbound traffic.

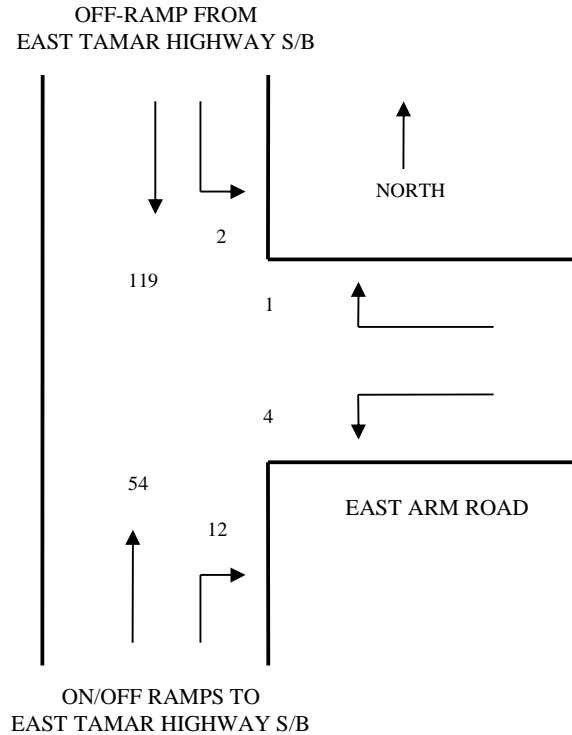
## **4.2 Traffic Activity**

### East Arm Road

In order to have knowledge of the current traffic activity along East Arm Road passing the quarry access road as well as along the highway ramps at the East Arm Road junction, a turning movement survey was undertaken at the East Arm Road/highway ramps junction during the 4:00pm to 5:00pm period on 2 March 2020.

The results from the survey are presented in Figure 4.1.

The survey data indicates the traffic volume along East Arm Road is around 200 vehicles/day.



**Figure 4.1: Turning traffic volumes at East Arm Road/  
highway ramps junction during 4:00-5:00pm**

Batman Highway

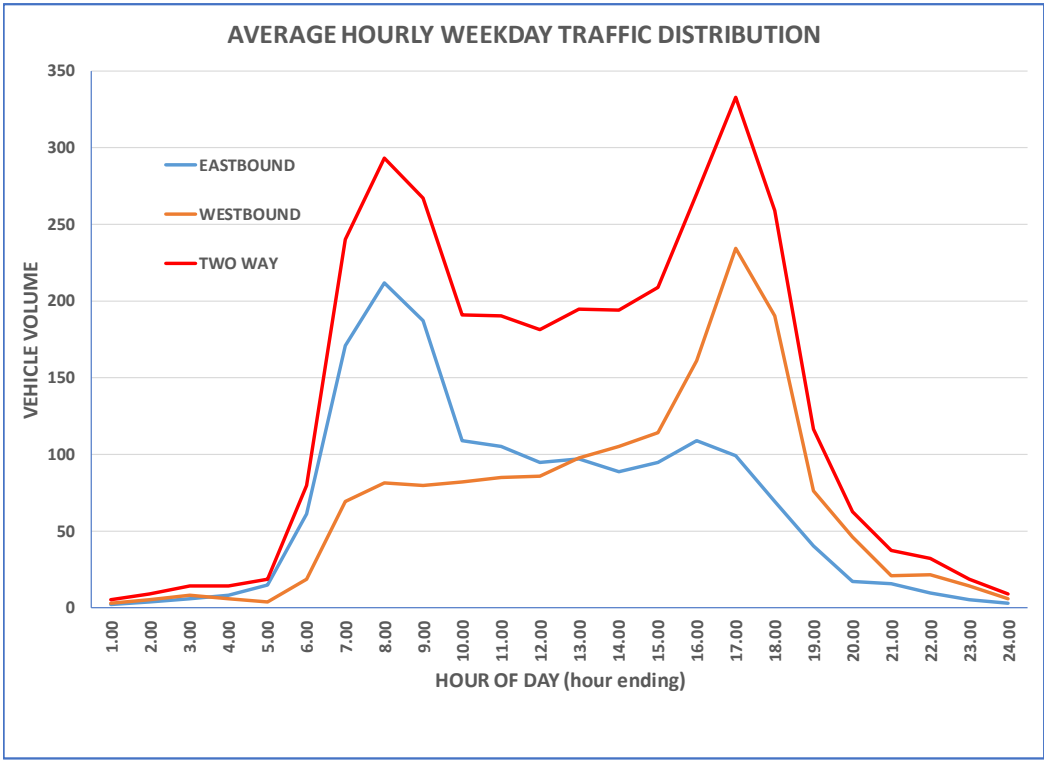
Traffic data for the eastern section of the Batman Highway, which will be used by trucks to and from the quarry site, obtained from the Department of State Growth database, is from an automatic counter on the highway at a point around 580m to the west of the East Tamar Highway.

The most recent Department of State Growth survey was undertaken in May 2019 and the following traffic volumes were recorded:

- Average weekday traffic (May 2019) - 3,239 vehicles/day;
- Morning weekday peak hour traffic (7-8am) - 212 vehicles/hour to east;  
- 81 vehicles/hour to west;
- Afternoon weekday peak hour traffic (4-5pm) - 99 vehicles/hour to east;  
- 234 vehicles/hour to west.

The hourly distribution of the traffic volumes over the average weekday in May 2019 in each direction and two-way has been presented graphically in Figure 4.2.

The traffic variation is consistent with Seasonal Group G04. The compound traffic growth at the survey site has been a 1.9% p.a. over the last 33 years and 16.7% of the current traffic is commercial vehicles.

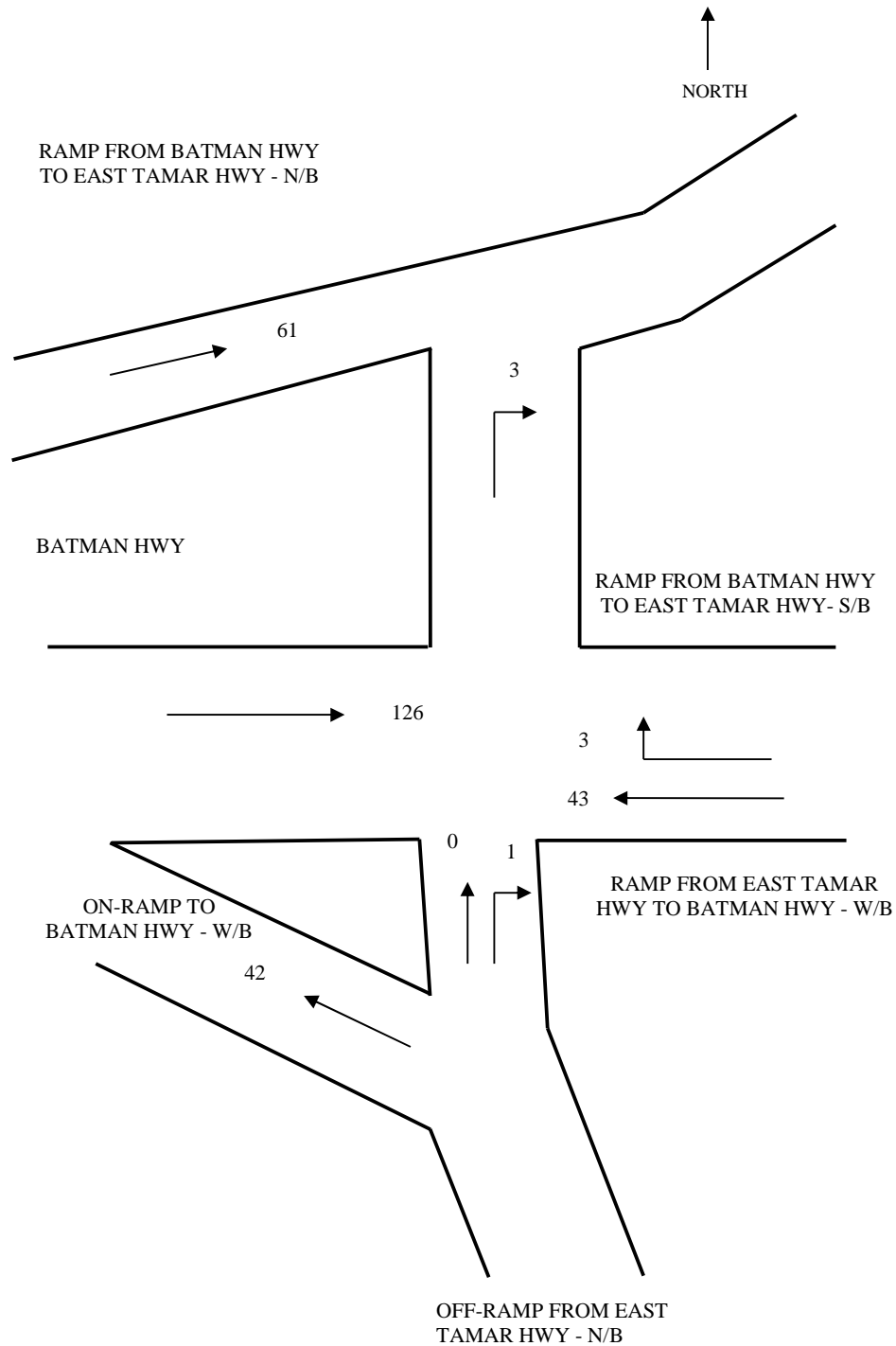


**Figure 4.2: Average hourly weekday traffic distribution on Batman Highway west of East Tamar Highway**

The quarry traffic will use the interchange ramps between the East Tamar Highway and Batman Highway, to travel from East Arm Road north along the East Tamar Highway to the Forico Mill access road junction.

Therefore, a turning movement survey was undertaken at the western Batman Highway/East Tamar Highway ramps during the 8:00am to 9:00am period on 3 March 2020.

The results from this survey are summarised in Figure 4.3. The highway two way traffic volume on the Batman Highway of 275 vehicles/hour, recorded during this survey period is consistent with the DSG data in Figure 4.2.



**Figure 4.3: Turning traffic volumes at East Tamar Highway/Batman Highway interchange during 8:00-9:00am**

### East Tamar Highway

Traffic data for the East Tamar Highway, obtained from the Department of State Growth database, is from an automatic counter on the highway at a point around 50m to the south of Bridport Main Road.

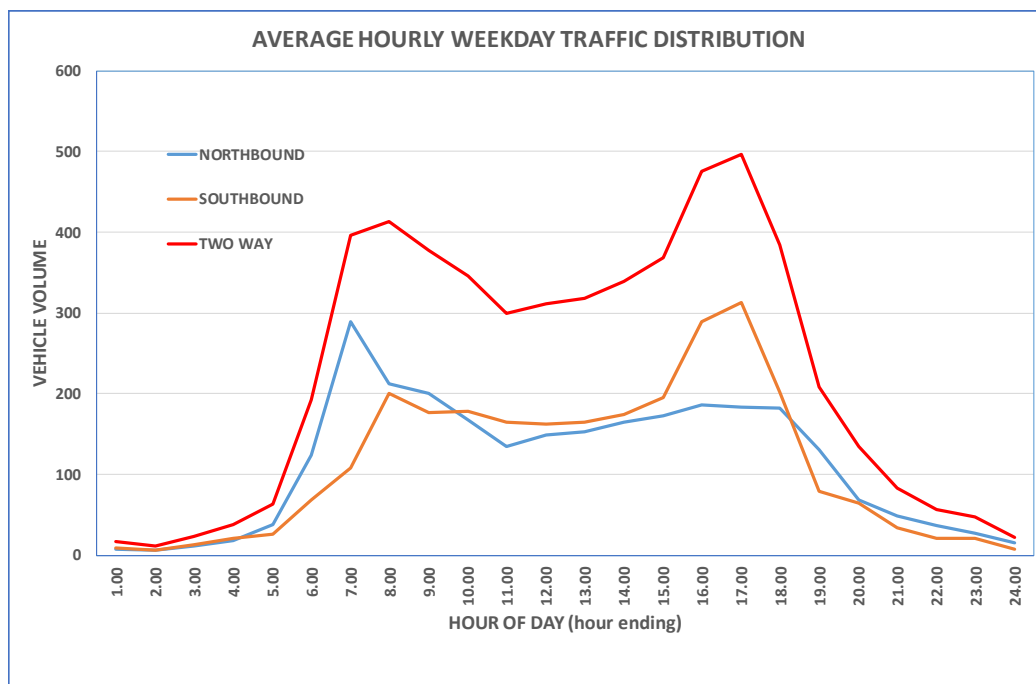
The section of the East Tamar Highway between Bridport Main Road and the Batman Highway is a uniform traffic section and the development site is at the southern end of this road section.

The most recent Department of State Growth survey was undertaken in December 2019 and the following traffic volumes were recorded:

- Average weekday traffic (December 2019) - 5,426 vehicles/day;
- Morning weekday peak hour traffic (7-8am) - 213 vehicles/hour to north;  
- 201 vehicles/hour to south;
- Afternoon weekday peak hour traffic (4-5pm) - 184 vehicles/hour to north;  
- 312 vehicles/hour to south.

The hourly distribution of the traffic volumes over the average weekday in December 2019 in each direction and two-way has been presented graphically in Figure 4.4.

The traffic variation is consistent with Seasonal Group P18. The compound traffic growth at the survey site has been a 1.55% p.a. over the last 37 years and 16.3% of the current traffic is commercial vehicles.



**Figure 4.4: Average hourly weekday traffic distribution on East Tamar Highway around Hillwood**

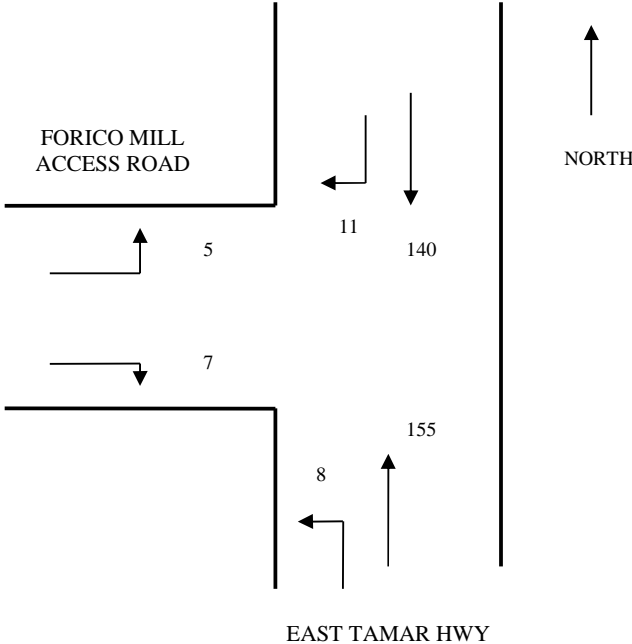
Because the quarry traffic will use the access road to the Forico Mill at Long Reach

, a turning movement survey was undertaken at the East Tamar Highway/Forico Mill access road junction during the 12:15pm to 1:15pm period on 2 March 2020.

The results from the survey are presented in Figure 4.5.

The survey found the traffic volume along the Forico Mill access road was 31 vehicles/hour at that time of day and it is considered this traffic volume is typical along this road during the operating hours of the mill over the day.

The passing highway traffic volume of 311 vehicles/hour, recorded during this survey period is consistent with the DSG data in Figure 4.4.



**Figure 4.5: Turning traffic volumes at East Tamar Highway/ Forico Mill access road junction during 12:15-1:15pm**

### 4.3 Crash Record

All crashes that result in personal injury are required to be reported to Tasmania Police. Tasmania Police record all crashes that they attend. Any crashes that result in property damage only which are reported to Tasmania Police are also recorded even though they may not visit the site.

Details of reported crashes are collated and recorded on a computerised database that is maintained by the Department of State Growth.

Information was requested from the Department of State Growth about any reported crashes along East Arm Road, along East Tamar Highway between the Batman Highway and the Forico Mill access road, as well as the East Tamar Highway/Batman Highway interchange.

Over the five years since January 2015, there have been two reported crashes along East Arm Road. The crashes occurred in 2015 and 2016 well east of the quarry access road junction and not of relevance to this assessment.

At the Batman Highway/East Tamar Highway interchange ramps, there have been two minor loss of control crashes on the highway ramps just to the south of the East Arm Road, both resulting in property damage only.

Along the East Tamar Highway between the Batman Highway and the Forico Mill access road, there have been seven crashes over the above five year period. Three have been loss of control crashes, and two crashes due to an animal on the road. Two of these crashes resulting in minor and serious injury.

There have been no reported crashes at the Forico Mill access road junction with the East Tamar Highway.

Overall, the crash record is not a concern.

## 5. TRAFFIC GENERATION BY THE DEVELOPMENT

As outlined in Section 3 of this report, the proposed quarry development will involve the extraction of rock material which will be transported from the site to the Batman Highway and north along the East Tamar Highway.

The maximum production will be 4 million tonnes of rock per annum.

Vehicles transporting the dolerite rock from the quarry will have a 32 tonne payload. Based on this, the truck numbers transporting the material will be 125,000 trucks/year.

The quarry will operate 7:00am to 7:00pm Monday to Friday, 8:00am to 4:00pm Saturday and closed Sundays and public holidays. This amounts to 3,428 work hours per year.

The quarry operation will therefore result in 37 trucks/hour from the quarry and 37 trucks/hour to the quarry, a traffic generation of 74 trucks/hour.

There will be car/car derivative vehicle movements by employees, expected to be around 20 vehicles/hour to the quarry before the start of the work day and from the quarry at the end of the work day.

Finally, there will also be an average of 4 service vehicle movements per day (2 service vehicles visiting the quarry for equipment repairs, servicing, fuel delivery etc).

## **6. TRAFFIC ASSESSMENT AND IMPACT**

The main issues to be considered with respect to the proposed development are safety and efficiency of vehicles when turning at any of the intersections along the travel route. Some consideration is given to the access road junction and road design.

### **6.1 Operational Impact of Turning Traffic Activity on Road Network from the Proposed Development**

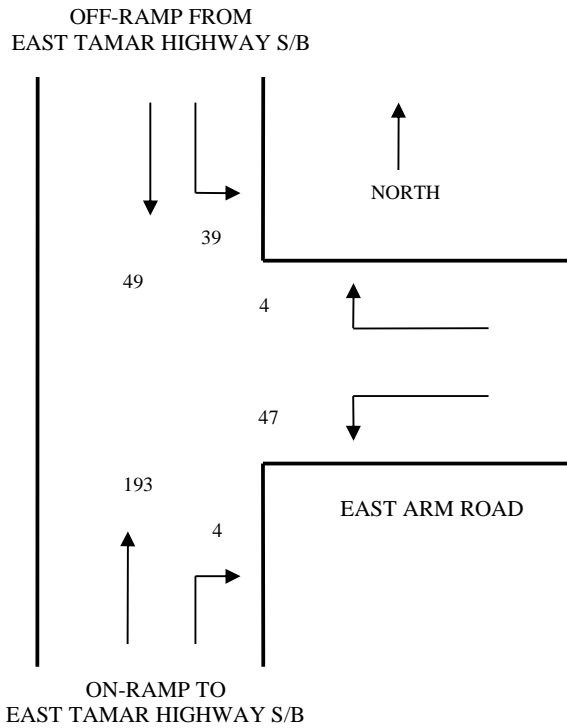
Based on the detail described in Section 5 of this report, it is expected that the quarry will generate some 74 trucks/hour throughout the working day plus a few service vehicles as well as employee traffic at the start and end of the working day.

The busiest hour of the day for the East Tamar Highway and Batman Highway occurs during the one hour to 5:00pm. The morning peak hour occurs during the one hour to 8:00am, with traffic volumes slightly lower than the afternoon peak hour.

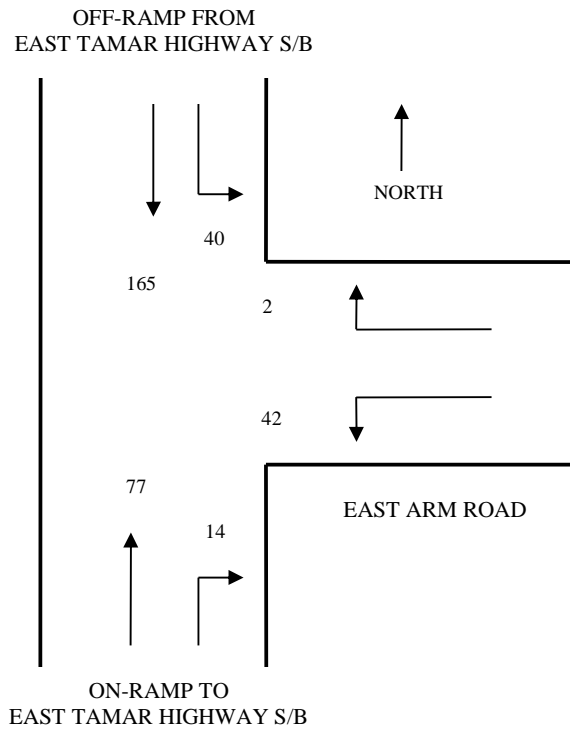
The quarry operation is not expected to reach full production for a number of years. It is normal for a TIA assessment to consider the impact of any additional traffic 10 years after commencement of operations, by which time the quarry is expected to be at full production.

Therefore, the operational impact of an additional 76 vehicles/hour on key affected intersections in Year 2030 has been assessed and this is discussed below. This assessment has allowed for the traffic volumes at the intersections on the highway or highway ramps to increase at historic levels and the busiest month of the year, while the traffic volume along East Arm Road is assumed to increase at a compound rate of 1% p.a. over the next 10 years.

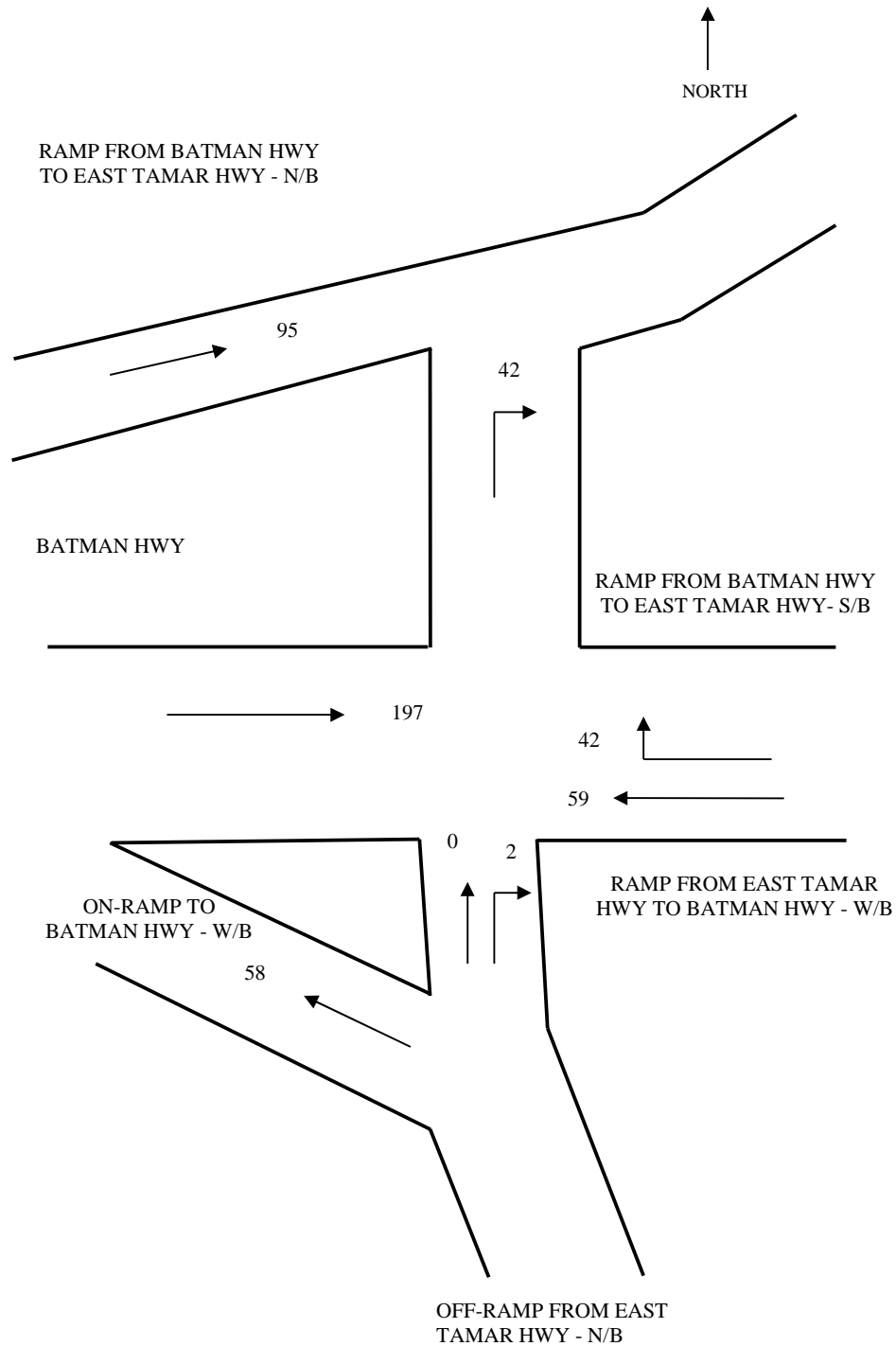
The expected peak hour traffic volumes in Year 2030 at these intersections are shown in Figures 6.1 to 6.6.



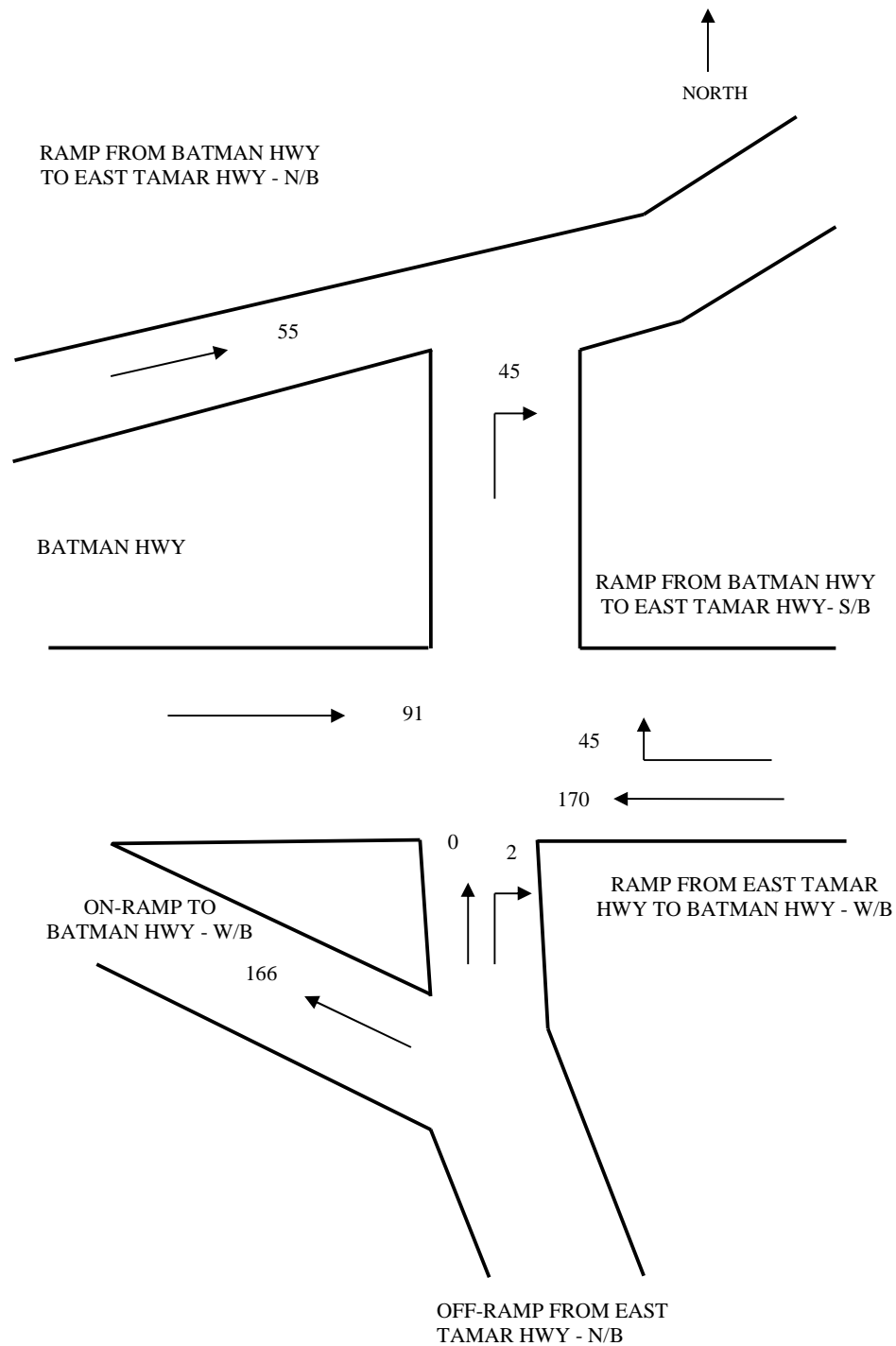
**Figure 6.1: Turning traffic volumes at East Arm Road/ highway ramps junction during 7:00-8:00am in 2030**



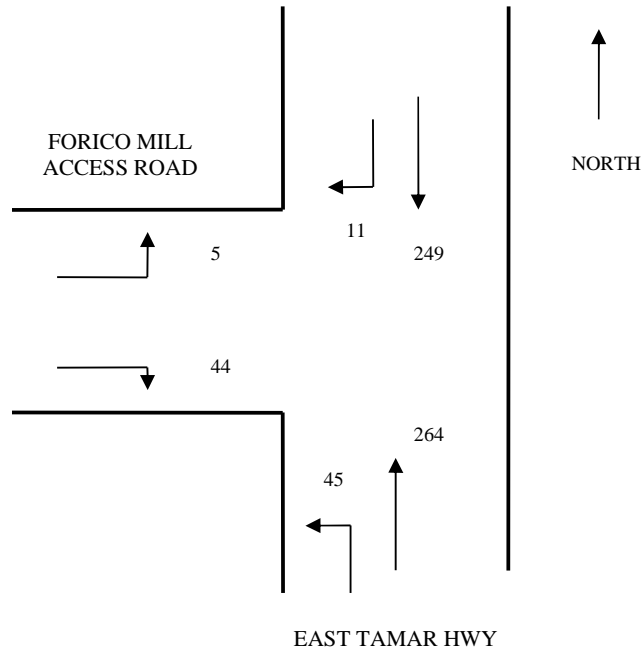
**Figure 6.2: Turning traffic volumes at East Arm Road/ highway ramps junction during 4:00-5:00pm in 2030**



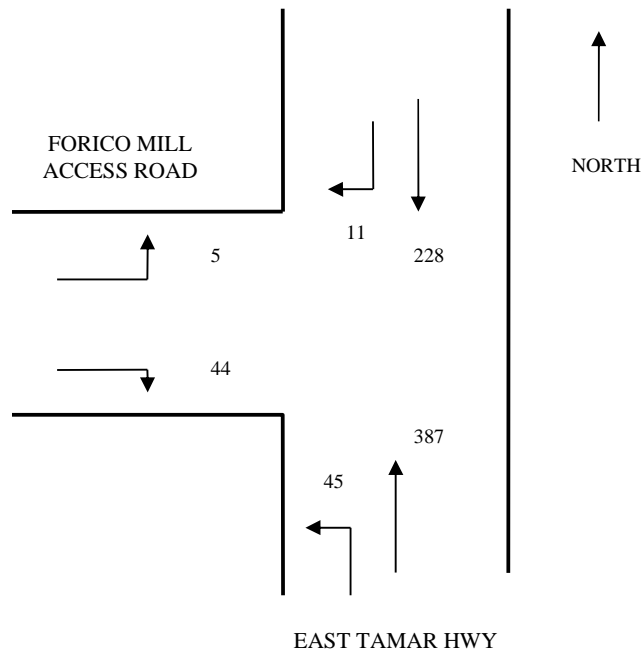
**Figure 6.3: Turning traffic volumes at East Tamar Highway/ Batman Highway interchange during 7:00-8:00am in 2030**



**Figure 6.4: Turning traffic volumes at East Tamar Highway/ Batman Highway interchange during 4:00-5:00pm in 2030**



**Figure 6.5: Turning traffic volumes at East Tamar Highway/ Forico Mill access road junction during 7:00-8:00am in 2030**



**Figure 6.6: Turning traffic volumes at East Tamar Highway/ Forico Mill access road junction during 4:00-5:00am in 2030**

The conflicting traffic volumes at each of the intersections in Year 2030 are expected to be as follows:

East Arm Road/Quarry access road junction

The conflicting traffic volume at the access road junction with East Arm Road will be less than 100 vehicles/hour (see Figure 6.1 and 6.2).

East Arm Road/Highway ramp junction

The conflicting traffic volume at the East Arm Road junction with the highway ramps will be around 300 vehicles/hour (see Figure 6.3 and 6.4).

East Tamar Highway/Batman Highway interchange ramp junction

The conflicting traffic volume at the two affected ramp intersections will be around 300 vehicles/hour at the two way intersection and 100-140 vehicles/hour at the junction of the ramp from the Batman Highway off-ramp north to the East Tamar Highway on-ramp (see Figure 6.3 and 6.4).

East Tamar Highway/Forico Mill access road junction

The conflicting traffic volume will be around 570-670 vehicles/hour at the Forico Mill access road junction with the East Tamar Highway

Overall traffic conflict

At these levels of traffic conflict, there will not be any operational traffic issues at any of the intersections which will be used by the quarry traffic.

Intersections and junctions reach capacity when the total conflicting approach traffic volumes are around 1,500 vehicles/hour.

The traffic conflict at the affected intersection will be less than half of this volume at the busiest intersection and most will be 20% or less than this volume.

There are no concerns or issues about adequate road capacity for the road lengths between any of the above intersections.

## **6.2 Batman Highway/Northbound Ramp Intersection Layout**

In Section 6.3 of this report, it was determined the additional traffic generated by the proposed quarry operation into the future will not create any operational issues at any intersection which the quarry traffic will pass through.

There is also a need to consider the required junction layout and in particular the need to provide passing or auxiliary lanes for the safety of passing and turning traffic.

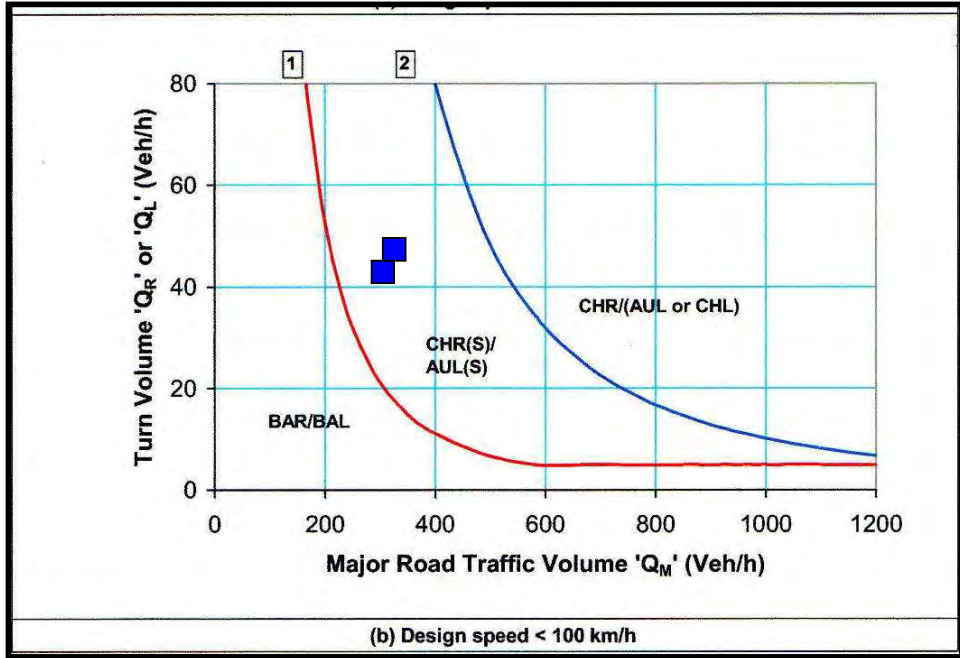
In order to determine whether there may be a need for such treatments with the expected future level of traffic activity, consideration has been given to the advice given in the Austroads Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections. Reference is made to Figure 6.7 below which is an extract from the guide that gives advice on the turn lane requirements at road intersections and junctions.

The required management at each intersection presented in Figures 6.1 to 6.6 has been assessed by considering the turning and passing traffic as required by Figure 6.7.

This assessment has found that only the one intersection on the Batman Highway at the East Tamar Highway interchange required modification.

From Figure 6.7, it can be seen that there is a need for a CHR(S) right turn lane for westbound traffic on the Batman Highway at the intersection of the road link to the northbound ramp from the Batman Highway to the East Tamar Highway.

Measurements indicate there will be just sufficient road length, clear of the bridge structure, to allow the construction of this turn lane facility, based on a 50km/h approach speed from the east.



■ RIGHT TURN FROM BATMAN HWY TO NORTHBOUND EAST TAMAR HWY RAMP

**Figure 6.7: Warrant for turn treatment at sign controlled junctions**

Because the quarry extraction level will increase over a period of time, consideration was given to when the turn lane facility will need to be constructed. In this regard, it is recommended, the CHR(S) needs to be

completed just before production reaches a rate of 750,000 tonnes/year, which would generate an average 7 trucks/hour undertaking the right turn.

While it would be possible to initially construct a BAR facility (to allow left hand passing), it is considered this would not be a cost effective interim measure.

Normally a chevron marking is installed at the start of the right turn lane at the CHR(S) turn facility. In this case, it is recommended no chevron marking be installed, just a continuity line starting at the centreline.

### **6.3 East Arm Road/Quarry Access Road Junction Layout**

The access road into the quarry site will need to be widened to accommodate the two way movement of traffic – to a trafficable width of 8m.

There is not a requirement for any other physical road works in this area or at the East Arm Road junction.

It is understood the widened pavement in this area was constructed to accommodate turning vehicles, e.g. school buses. Such activity was not seen during site investigations during the mid to late afternoon.

If the turn facility is used now or will be used in the future, it is recommended that 150mm wide lines be installed between the quarry access road at the property boundary and the edge of East Arm Road along each edge of the truck travel path.

### **6.4 Sight Distance Considerations**

All the highway intersections, including the highway ramps, which the quarry traffic will pass through are existing and expected to have been designed to meet required sight distances for the speed environment.

Site investigations of the geometric road characteristics and available sight lines at these junctions have confirmed this to be the case. The crash record does not indicate there are any intersection safety issues.

Measurements have determined the available sight distances along East Arm Road to and from the quarry access road junction are around 150m to and from the east and around 100m to and from turning vehicles at the East Arm Road/highway ramps junction.

Views of the sight lines are seen in Photographs 6.1 and 6.2.

It has been estimated the approach 85<sup>th</sup> percentile speed of westbound approaching vehicles is around 60km/h. The speed of vehicles from the west when they come into view would be around 25km/h.

The required sight distances for these 85<sup>th</sup> percentile approach speeds, based on Austroads Guide to Road Design Part 4A, are 123m to the east and 40m to the west.

The available sight distances are therefore more than sufficient.



**Photograph 6.1: View to west along East Arm Road  
from the quarry access road**



**Photograph 6.2: View to east along East Arm Road  
from the quarry access road**

## 7. SUMMARY AND RECOMMENDATIONS

The operators of the quarry off East Arm Road in Hillwood are seeking approval to increase the quarry operation from 90,000 tonnes to 4 million tonnes per annum.

The excavated material will be transported by trucks via East Arm Road – Batman Highway – East Tamar Highway to the Forico Mill site at Long Reach.

East Arm Road is maintained by the George Town Council. It is sealed to a width of between 6.3m and 7.1m over a distance of around 160m from its western end at the Batman Highway/East Tamar Highway interchange ramps to a point around 60m beyond the quarry access road. The quarry trucks will use only the western 100m section of East Arm Road which is sealed.

Based on a peak hour turning movement survey, the traffic volume along the western section of East Arm Road is estimated at around 200 vehicles/day.

The Batman Highway is classified a Category 2 – Regional Freight Route and maintained by the State Government. The quarry trucks will use the eastern section of this highway and interchange ramps between the Batman Highway and East Tamar Highway.

The average weekday traffic on this eastern section of the Batman Highway in May 2019 was 3,239 vehicles/day.

The East Tamar Highway is classified a Category 1 – Trunk Road and maintained by the State Government. The quarry trucks will use the 3.5km section of the highway between the Batman Highway/East Tamar Highway interchange ramps north to the Forico Mill access road.

The average weekday traffic on this section of the East Tamar Highway in December 2019 was 5,426 vehicles/day.

Over the five years since January 2015, there have been:

- two reported crashes along East Arm Road, well east of the quarry and not of relevance to this development;
- two minor loss of control crashes on the highway ramps at the Batman Highway/East Tamar Highway interchange, both resulting in property damage only;
- seven crashes along the East Tamar Highway between the Batman Highway and the Forico Mill access road. Three have been loss of control crashes, and two crashes due an animal on the road;
- no reported crashes at the Forico Mill access road junction with the East Tamar Highway.

This crash record is not of concern

At a maximum production of 4 million tonnes of rock per annum in a few years' time, the quarry operation will result in 37 trucks/hour from the quarry and 37 trucks/hour to the quarry, a traffic generation of 74 trucks/hour.

There will also be around 20 vehicles/hour to the quarry before the start of the work day and from the quarry at the end of the work day as well as an average 4 service vehicles/day.

An assessment has been undertaken of the impact of the additional traffic during the busiest hours of the day for the East Tamar Highway and Batman Highway in Year 2030, by which time the quarry is expected to be at full production.

This assessment has determined the additional 76 vehicles/hour at affected intersections in Year 2030 will result in the conflicting traffic volumes at each of the affected intersections being between less than 100 vehicles/hour at the quarry access road junction and around 570-670 vehicles on the East Tamar Highway at the Forico Mill access road junction.

At these levels of traffic conflict, there will not be any operational traffic issues at any of the intersections affected by the quarry traffic.

When considering the required junction layout and safe operation of traffic at these intersections; it has been determined:

- there is a need for a CHR(S) right turn lane for westbound traffic on the Batman Highway at the intersection of the road link to the northbound ramp from the Batman Highway to the East Tamar Highway. Measurements indicate there will be sufficient area clear of the bridge structure to allow the construction of this turn lane facility.
- at the quarry access road junction with East Arm Road:
  - the access road into the quarry site will need to be widened to a trafficable width of 8m, to accommodate the two way movement of traffic; and
  - if the turn facility in this area will be used, it is recommended that 150mm wide lines be installed between the quarry access road at the property boundary and the edge of East Arm Road along each edge of the truck travel path to and from East Arm Road.

All the highway intersections, including the highway ramps, which the quarry traffic will pass through are existing and expected to have been designed to meet required sight distances for the speed environment.

Measurements have determined the available sight distances along East Arm Road to and from the quarry access road junction are around 150m to and from the east and around 100m to and from the west. The available sight distances are therefore more than sufficient for approaching 85<sup>th</sup> percentile speeds.