

Environmental Assessment

APPENDIX E
TRAFFIC AND TRANSPORT
ASSESSMENT

Spring Farm Advanced Resource Recovery Technology (ARRT) Facility

Traffic Impact Statement

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Prepared for
SITA Australia Pty Ltd

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1 Introduction

The Spring Farm Advanced Resource Recovery Treatment Facility, also known as the Spring Farm ARRT Facility, is located at the Spring Farm Advanced Resource Recovery Park (formerly Macarthur Resource Recovery Park and originally Jacks Gully Waste and Recycle Centre; also previously known as the Ecolibrium Mixed Waste Facility). It should be noted that approval for current site operations have been given based on the Environmental Assessment of the Proposed Alternative Waste Technology Facility at Jacks Gully Waste and Recycling Centre undertaken by GHD in 2006.

Cardno (NSW/ACT) Pty Ltd has been commissioned by SITA Australia Pty Ltd (SITA) to prepare an application to modify the current conditions of the ARRT Facility in order to permit receiving 520m³ of liquid waste per day, in addition to the approved waste quantities.

1.1 Site Location

The locality of the site can be seen in **Figure 1.1** and development traffic to the ARRT is via Macarthur Road, Springs Road and Richardson Road.

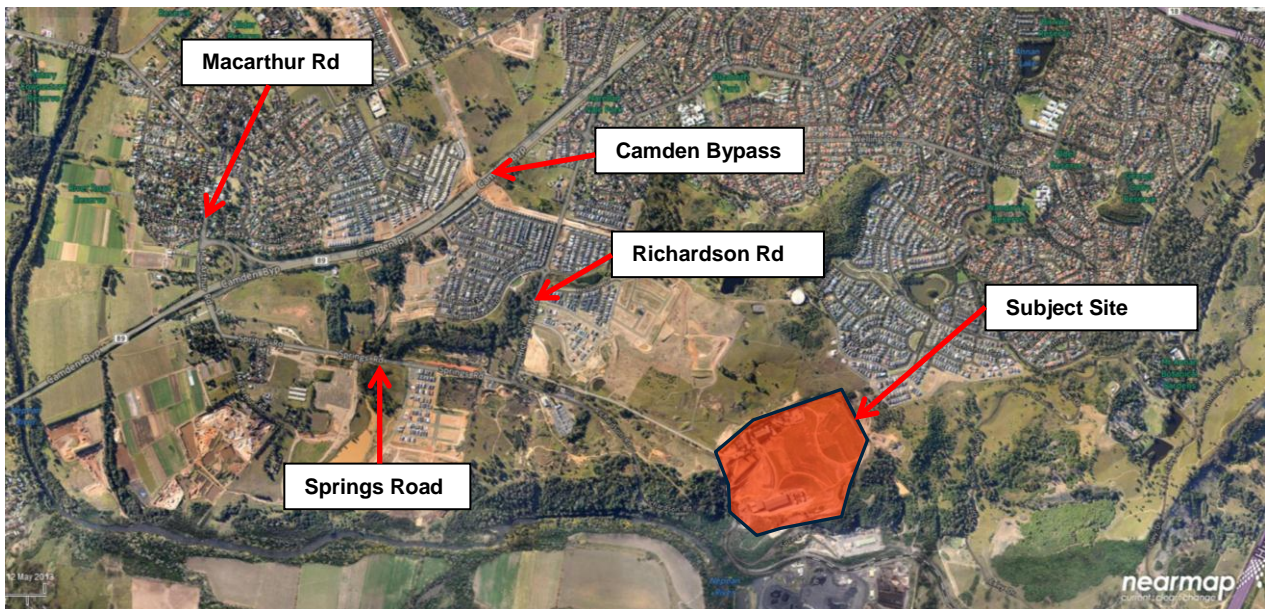


Figure 1.1 Site Locality

1.2 Scope of Works

The following scope of works has been undertaken as a part of this study:

- > Review of background data, previous studies and documents to extract relevant information in regards to development traffic generation rates, as well as traffic volumes from other studies undertaken in the study area;
- > Assess likely traffic generated trips as a result of the modification proposals; and
- > Qualitatively assess the impact of the net increase in vehicles on Richardson Road and Liz Kernohan Drive and confirm what impacts the DA modification proposal has to the findings and outcomes from the already approved assessment undertaken by GHD in 2006.

1.3 Background Review

1.3.1 Jacks Gully Alternative Waste Technology Facility, Traffic and Access Assessment, GHD, March 2006

In 2006, GHD undertook an Environmental Assessment (EA) of the Proposed Alternative Waste Technology Facility at Jacks Gully Waste and Recycling Centre to receive and treat approximately 90,000 tonnes per annum (tpa) of municipal solid waste and convert 30,000 tpa of green waste and biosolids into compost. As part of the EA, a traffic and transport assessment was undertaken to evaluate the potential traffic generation from the proposed operation and the associated impacts on the surrounding road network. The following is a summary of the findings:

- > It is estimated that 70% of all daily employee light vehicle movements will occur during the AM and PM peak periods;
- > A 100% in, 0% out split was accepted for all employee trips in the AM peak period, with the reverse to occur during the PM peak period;
- > The average daily number of heavy vehicles accessing the site is 288 with 10% of the total movements occurring during both the AM and PM peak period;
- > A total of 97 vehicle trips per peak hour during the AM peak period, comprising of 41 employee trips (41 in and 0 out), 26 customer trips (13 in and 13 out) and 30 heavy vehicle movements (15 in and 15 out);
- > A total of 75 vehicle trips per hour during the PM peak period comprising of 19 employee trips (0 in and 19 out), 26 customer trips (13 in and 13 out) and 30 heavy vehicles movements (15 in and 15 out);
- > The existing road conditions along Springs Road, Macarthur Road and Richardson Road are generally considered satisfactory to accommodate the additional number and type of vehicles from the construction and operation of the proposed development;
- > Future traffic levels along the surrounding road network during daily peak periods are within acceptable range with regards to environmental capacity; and
- > The impact on the road network surrounding the site is likely to be reduced in the long term, through the construction of the proposed arterial road linking Spring Farm to the Camden Bypass, which will reduce the amount of heavy vehicles using Springs Road, Richardson Road and Macarthur Road.

1.3.2 Spring Farm Eastern Village Precincts 400 & 500 Traffic Assessment, Cardno, September 2012

Cardno was commissioned by Landcom to prepare a traffic assessment for the proposed subdivisions at Spring Farm Eastern Village Precincts 400 and 500. The purpose of the assessment is to investigate the transportation impacts on the surrounding road network of the proposed subdivision precincts 400 and 500 within the Spring Farm Eastern village. The study included the identification of the traffic generating potential of the proposed development and its consistency with the overall modelling and impact assessment undertaken for the Spring Farm Master Plan area by Masson Wilson Twiney (MWT) in October 2002.

The report indicates that the Eastern Village of the Spring Farm release area generates approximately 11,460 vehicles per day and **Figure 1.2** shows the anticipated daily traffic generated by each precinct as well as the expected daily traffic volumes along each collector road when the development is complete. The report concludes that the intersection analysis undertaken by MWT remains valid and indicated satisfactory

operation of the surrounding intersections and road network subject to intersection treatments at Macarthur Road and Camden Valley Way intersection.

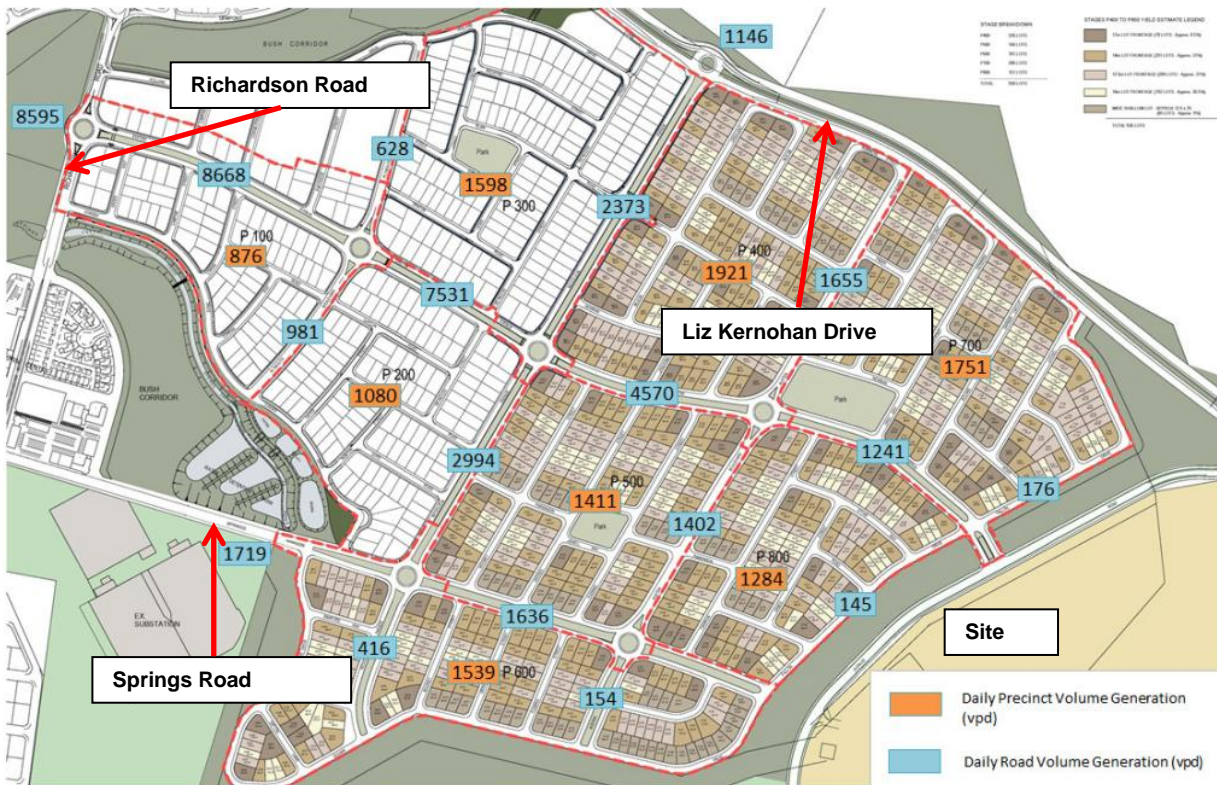


Figure 1.2 Daily Traffic Generation – Spring Farm Eastern Village

Source: Cardno, September 2012

2 Existing Traffic Conditions

The current consent conditions permits the following operations at the Spring Farm ARRT as per **Table 2.1**:

Table 2.1 Existing Operations

Received at Site	130,000 tpa of Mixed Solid Waste (MSW) 25,000 tpa of Garden Waste 5,000 tpa of Biosolids or Garden Waste
Processed at Site	90,000 tpa of Mixed Municipal Waste 25,000 of Garden Waste 5,000 tpa of Biosolids or Garden Waste

2.1 Heavy Vehicle Volumes

Information was obtained from SITA in regards to the heavy vehicle (HV) movements in and out of the site between 1st January 2013 and 31st March 2013 (90 days) based on raw weighbridge data recorded on site. The data received includes the number of the heavy vehicles for each of the business lines; "Landfill", Material Recycling Facility ("MRF"), Advanced Resource Recovery Treatment ("ARRT") and "Garden Organics".

Based on the weighbridge data, **Table 2.2** presents the average daily number of HVs for each business line and indicates that there is a daily average of 80 HVs transporting waste into the site and 17 HVs transferring waste out of the site.

Table 2.2 No. of HVs for Each Business Line (External Movements Only) – Weighbridge Data

Business Line	No. of HVs over 90 days			Average Daily HVs (divided by 90)			Average Daily HV Movements (Ins and Outs)
	IN	OUT	Total	IN	OUT	Total	
MRF	1720	318	2038	20	4	24	48
ARRT	2692	768	3460	30	9	39	78
Garden Organics	472	15	487	6	1	7	14
Landfill	2137	218	2355	24	3	27	54
Total	7021	1319	8340	80	17	97	194

As per **Figure 2.1**, GHD's report in 2006 forecast a total 288 trips (144 In / 144 Out) for the site. In comparison to the actual weighbridge data which indicates an average of 194 daily HV movements, the site is currently operating at below capacity of the current approval as indicated in **Table 2.3**.

Table 6-4 Total Traffic Generation Post Development

Component	Existing AM and PM Peak (vtph)	Additional traffic AM and PM peak (vtph)	Future AM and PM Peak (vtph)	Future Daily Trips (vtpd)
Employee Traffic	13	28	41	116
Customer Traffic	26	0	26	256
Heavy Vehicle Traffic	32	-2	30	288
Total	71	26	97	660

Figure 2.1 Traffic Generation Forecast – GHD Report (2006)

Source: Jacks Gully AWT Facility Traffic and Access Assessment March 2006 Page 26 Table 6-4

Table 2.3 Difference between Actual and Forecast HV

	Actual Weighbridge Data	GHD Report 2006
Average Daily HV Trips	194	288
Difference in Number of Trips (In and Out)	94	
Difference in Number of HVs	47	

It is also important to note that the Site receives and transfers an average of 697.21 tonnes daily or 254,481.65 tonnes per annum (average daily load x 365) as shown in **Table 2.4**. In comparison to the 2006 GHD Report, the actual load is significantly less than the forecast operation which indicates a total of 348,900 tonnes per annum as shown in **Figure 2.2**.

Table 2.4 Load Capacity for Each Business Line – Weighbridge Data

Business Line	Total Waste Load over 90 Days (Tonnes)		Average Daily Waste Load (Tonnes)	
	IN	OUT	IN	OUT
MRF	7939.16	88.21	88.21	81.28
ARRT	21457.09	238.41	238.41	179.77
Garden Organics	3457.24	38.41	38.41	2.94
Landfill	2479.19	27.55	27.55	40.65
Total	35332.68	392.59	392.59	304.65
Combined Total	62749.23		697.21	

Figure 2.2 Heavy Vehicle Traffic Generation from GHD Report (2006)**Table 6-2 Comparison of Heavy Vehicle Traffic Generation***

Type of Waste	Amount transported (tonnes/yr)	Truck Capacity (assumed)	Trucks/yr
Existing			
Municipal solid waste received (pre 2004)	140,000	100% - 7.5 tonnes	18,700
Additional municipal solid waste transferred (mid 2004 onwards)	70,000	100% - 20 tonnes	3,500
Dry other wastes received and landfilled	40,000	100% - 5 tonnes	8,000
VENM *	150,000	100% - 20 tonnes	7,500
Recyclables received & processed at MRF & transported off-site	49,000	100% - 6 tonnes	8,200
Total	449,000		45,900
Future			
Municipal solid waste received from council and commercial collections	130,000	100% - 7.5 tonnes	17,340
Municipal solid waste transported off-site	40,000	100% - 20 tonnes	2,000
Garden organics and biosolids received	30,000	100% - 5 tonnes	6,000
Recyclables exported	19,200	100% - 20 tonnes	960
Compost exported	18,300	100% - 20 tonnes	920
Stabilised sludge exported	17,400	100% - 10 tonnes	1,740
Dry and other wastes received / processed / landfilled / transported off-site	20,000	100% - 5 tonnes	4,000
VENM *	25,000	100% - 20 tonnes	1,250
Recyclables received & processed at MRF & transported off-site	49,000	100% - 6 tonnes	8,200
Total	348,900		42,410
Difference	-100,100		-3,490

* VENM (virgin excavated natural material)

Figure 2.3 Heavy Vehicle Traffic Generation from GHD Report (2006)

Source: Jacks Gully AWT Facility Traffic and Access Assessment March 2006 Page 24 Table 6-2

2.2 Light Vehicle Volumes

Light vehicle traffic to the site consists of employee traffic and customer traffic. There are 34 employees currently on site. With an assumption of 1 trip per employee, the site generates 34 employee trips in both the AM and PM peak periods.

For customer traffic, information from the weighbridge data indicates there are a total of 6071 small vehicles entering the site over the 90 days period for landfilling with an average daily number of 68 vehicles. Based on the assumption made in the 2006 GHD report, 10% of the customer traffic occurs during the AM and PM periods.

The 2006 GHD report undertook the traffic assessment based on 58 employees on site and an assumption of 13 customer vehicles per peak hour which is considered to be a conservative assessment when compared to the actual number of vehicles accessing the site.

3 Traffic Impacts

3.1 Proposal

SITA is seeking approval to modify the current conditions in order to permit, in addition to the approved waste quantities:

- > Receiving 520m³/day of liquid waste comprising of 320m³/day of organic waste and 200m³/day of leachate.

It is also noted that the VENM (Virgin Excavated Natural Material) operation will be ceased from 2016 onwards.

In terms of the future traffic forecast for the site, the modification proposal will generate additional HVs transporting waste to/from the site based on the following assumptions:

- > Limit of 520 m³/day for liquid waste with approximately a load capacity of 25m³ per tanker;
- > The trucks transferring the untreated liquid waste on site will be back loaded with treated liquid waste to be transferred off site until a sewer connection is established; and
- > From mid 2016, the landfill operation will close with all residual loads from the ARRT to be transferred off site. Landfill products specified in **Table 3.1** received will be transferred offsite for disposal:

Table 3.1 Landfill Products to be Transferred Offsite for disposal in 2016

DRY COMMERCIAL – 0527	DRY COUNCIL CLEANUP - 0200	DRY Small Vehicles -1212	G/W COMMERCIAL -1801	G/W COUNCIL MUNICIPAL -0301
G/W PALM TREES -1812	G/W Small Vehicles -1201	G/W WOOD, CRATES,PALLETS -1802	M/W COMMERCIAL -0501	M/W COUNCIL DOMESTIC -0100
M/W COUNCIL MUNICIPAL -0300	M/W Small Vehicles -1200	Mattresses 1 or 2 -0554	T/I DRY CSM TO JG -0793	

3.2 Traffic Generation

In forecasting the amount of traffic being generated from the site, the following assumptions are made:

- > Proposed operation to commence in October 2013 with all liquid waste transferred offsite for treatment for the first 6 months until biological treatment on site is ready and sewer connection is sought (short term period);
- > From April 2014, all liquid waste will be treated on site;
- > From mid-2016, landfill operation will close with all residual loads from ARRT be transferred off site (long term period); and
- > The construction of Liz Kernohan Drive, the new haul road and Spring Farm Eastern Village to be completed by early 2015.

Based on the short term and long term assumptions for the site as described above, the additional vehicles entering the site is presented in **Table 3.2 and Table 3.3**. The change in operations at the site is anticipated to result in an increase on average of 21 additional HVs accessing the site between October 2013 and April 2014 and 28 additional HVs from mid-2016 onwards.

This represents an increase of 2 - 3 HVs in the AM and PM peak hour for both the short and long term proposed site operations. It should be noted that the modifications will result in an additional of 2 employees to the site and is considered as being negligible for the traffic impact assessment.

Table 3.2 Future Traffic Generation (Short Term)

Item	Quantity per day	Average Load per HV	Average HVs per day
Liquid waste receipt (additional) *trucks will be back loaded with treated liquid waste for off site transfer until sewer connection is established.	520 m ³	25 m ³	21
Total net increase in number of HVs in the short term period	-	-	21

Table 3.3 Future Traffic Generation (Long Term)

Item	Quantity per day	Average Load per HV	Average HVs per day
Landfill waste to be transferred offsite	180.79 tonnes (as per weighbridge data)	22 tonnes	8
VENM (Operation Cease)	0.34 tonnes (as per weighbridge data)	-	-1 (as per weighbridge data)
Liquid waste receipt (additional) *trucks will be back loaded with treated liquid waste for off site transfer until sewer connection is established.	520 m ³	25 m ³	21
Total net increase in number of HVs in 2016 in the long term period	-	-	28

3.3 Development Impacts

3.3.1 Short Term (between October 2013 – April 2014)

In the short term period, it is expected that heavy vehicles accessing the site will continue to use Richardson Road and Springs Road as per the current arrangement until the completion of haul road, Liz Kernohan Drive and the Spring Farms Eastern Village development works.

The 2006 GHD report assessed the environmental capacity performance of the road network in the vicinity of the site, and the intersection operation of Glenlee Road/Springs Road/Richardson Road. It concluded that the current traffic demands on Richardson Road and Springs Road are within an acceptable range with regards to environmental capacity and the intersection will operate satisfactorily at a LoS A in the AM and PM peak. It should be noted that the GHD has undertaken a conservative assessment in 2006 with a forecast of additional 47 HVs as compared to existing weighbridge data.

The modification proposal will generate an additional 21 heavy vehicles daily or 4 trips (2 In / 2 Out) in the peak periods. This increase is considered to be marginal and is expected to only have negligible impacts on the existing road network. As per **Table 3.4**, with the future increase, the post modification traffic demands on Richardson Road and Springs Road are still within acceptable range in regards to environmental capacity specified in the RMS Guide to Traffic Generating Developments Table 4.6.

Table 3.4 Environmental Capacity Performance Review

Road	Existing 2 way flows (based on 2006 GHD report)		Future 2 way flows		Environmental Capacity (2 way flows)
	AM Peak	PM Peak	AM Peak	PM Peak	
Richardson Road	297	320	297 + 4 = 301	320 + 4 = 324	500
Springs Road	267	315	267 + 4 = 271	315 + 4 = 319	500

3.3.2 Long Term (mid-2016 onwards)

For the assessment of the long term period, it is assumed that heavy vehicles will access the site via Liz Kernohan Drive and the new haul road located on the eastern boundary of Spring Farm Eastern Village.

The completion of the Spring Farm Eastern Village is expected to generate approximately 8595 vehicles daily on Richardson Road and 1146 vehicles per day on the Liz Kernohan Drive as shown in **Figure 1.2**.

The addition of 28 HVs (28 In / 28 Out) daily into the new road network will result in a 0.65% and 4.9% increase in traffic volumes on Richardson Road and the Liz Kernohan Drive respectively. The marginal increase of heavy vehicle volumes of less than 5% is anticipated to have negligible impacts on the road network operation. Therefore the recommended intersection controls and associated analyses undertaken by MWT remain valid and satisfactory operation of the road network is expected in the long term scenario.

4 Summary and Conclusion

The following provides a summary of the proposed operational changes of the site and findings of the study:

- > GHD undertook an Environmental Assessment (EA) of the Proposed Alternative Waste Technology Facility at Jacks Gully Waste and Recycling Centre to receive and treat approximately 90,000 tonnes per annum (tpa) of municipal solid waste and convert 30,000 tpa of green waste and biosolids into compost. As part of the EA, a traffic and transport assessment was undertaken and approved in March 2006;
- > Information was obtained from SITA in regards to all vehicle movements in and out of the site between 1st January 2013 and 31st March 2013 based on raw weighbridge data recorded on site;
- > The weighbridge data records the average daily number of heavy vehicles (HV) for each business line and indicates that there is an average of 97 heavy vehicles accessing the site daily;
- > GHD's report in 2006 forecast a total 288 trips (144 In / 144 Out) for the ARRP. In comparison to the actual weighbridge data which indicates an average daily of 194 trips (97 In / 97 Out), the site is currently operating at below its current approval capacity;
- > It is important to note that the site receives and transfers an average of 697.21 tonnes of waste daily or 254,481.65 tonnes per annum indicating that the actual waste load is significantly less than the 348,900 tonnes as predicted in the GHD report (2006);
- > Light vehicle traffic to the site consists of employee traffic and customer traffic. There are 34 employees currently on site. With an assumption of 1 trip per employee, the site generates 34 employee trips in both the AM and PM peak periods;
- > For customer traffic, information from the weighbridge data indicates there is an average daily number of 68 light vehicles entering the site;
- > The 2006 GHD report undertook the traffic assessment based on 58 employees on site and an assumption of 13 customer vehicles per peak hour which is considered as a conservative assessment when compared to the actual number of light vehicles accessing the site;
- > SITA is seeking approval to modify the current conditions in order to permit, in addition to the approved waste quantities:
 - Receiving 520m³/day of liquid waste comprising of 320m³/day of organic waste and 200m³/day of leachate.
- > In terms of the future traffic forecast, the proposal will generate additional HVs transporting waste to/from the site based on the following assumptions:
 - Proposed operation to commence in October 2013 with all liquid waste transferred offsite for treatment for the first 6 months until biological treatment on site is ready (Short term period);
 - From April 2014, all liquid waste will be treated on site;
 - From mid-2016, the landfill operation will close with all residual loads from the ARRT being transferred off site from that date; and
 - The construction of Liz Kernohan Drive, the new haul road and Spring Farm Eastern Village to be completed by early 2015.
- > It is expected that in the short term period (between October 2013 – April 2014), heavy vehicles accessing the site will continue to use Richardson Road and Springs Road as per the current arrangement until the completion of new access roads as part of the Spring Farms Eastern Village development works. The modification proposals will generate an additional 21 heavy vehicles daily or 4 trips (2 In / 2 Out) in the peak periods. This increase is considered to be marginal and is expected to have negligible impacts on the existing road network with Richardson Road and Springs Road still within acceptable range in regards to the environmental capacity; and

- > For the assessment of the long term period (mid-2016 onwards), it is assumed that heavy vehicles will access the site via Liz Kernohan Drive to the new haul road located on the eastern boundary of Spring Farm Eastern Village. The completion of the Spring Farm Eastern Village is expected to generate approximately 8595 vehicles daily on Richardson Road and 1146 vehicles per day on Liz Kernohan Drive. The addition of 28 HVs daily into the new road network will result in a 0.65% and 4.9% increase in traffic volumes on Richardson Road and Liz Kernohan Drive respectively. The marginal increase of heavy vehicle volumes of less than 5% is anticipated to have negligible impacts on the road network.

Based on the above traffic and transport assessment findings, the proposed DA modification proposal is endorsed as having no material negative impacts on Liz Kernohan Drive, Richardson Road and Springs Road.