Environmental Assessment

APPENDIX F
ACOUSTIC ASSESSMENT

Cardno
Shaping the Future

Spring Farm Advanced Resource Recovery Technology (ARRT) Facility

Spring Farm ARRT Facility Traffic Noise Impact Assessment

NA89913061

Prepared for
SITA Australia Pty Ltd

September 2013

Cardno
Shaping the Future

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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 Recycling 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.

Following a review of the proposed SITA proposal by relevant stakeholders and regulatory authorities, the following responses to the development were as follows:

- Camden Council submitted a letter of response dated 21/05/2013, requiring that the following additional matters be addressed in the Environmental Assessment prior to lodgement of the Modification Application in relation to traffic noise:

  'the assessment of noise from the increase in vehicles and the potential impact on the acoustic amenity on the surrounding area;'

- UrbanGrowth also provided comments and requested additional information in a letter dated 30/5/2013. The content of the letter is summarised in its conclusion, quoted below that:

  'any increase in receiving capacity should not be permitted to commence until the new network or arterial roads are completed, in order to protect existing and future residents from any increase in traffic noise and related disturbance.'

This report has been prepared to assess the potential noise impact to the adjoining residential development (currently being constructed) in response to the above outlined issues. This assessment makes reference to the Camden Council DCP and Environmental Noise Policy to determine the applicable noise criteria. This report is referenced as 'Appendix E' in the Environmental Assessment.

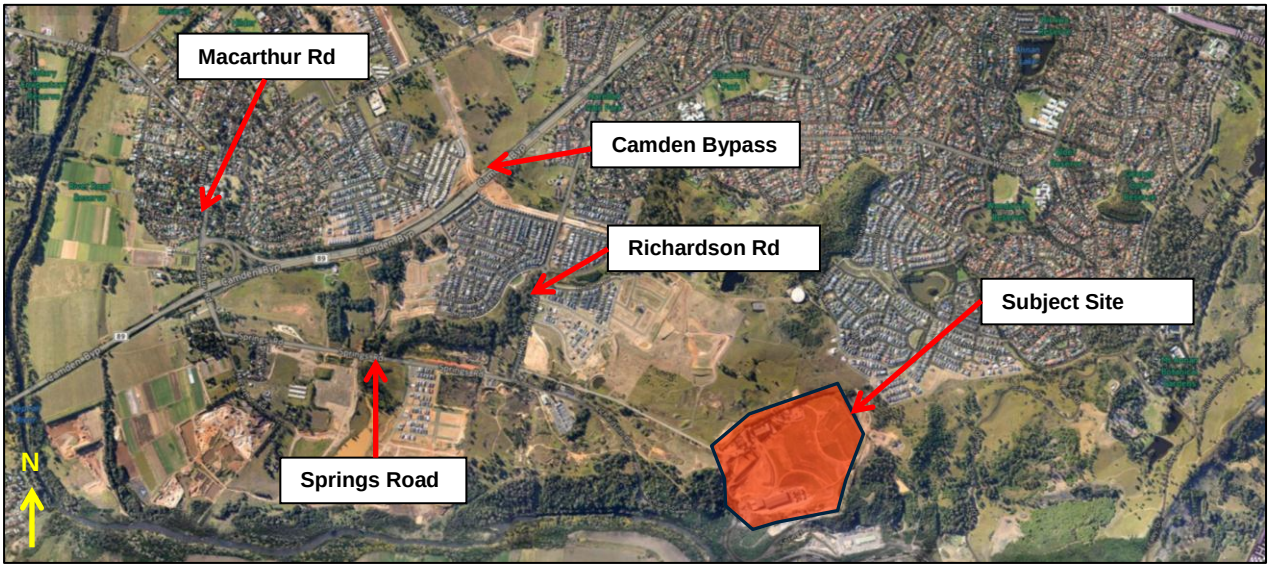
2 Project Outline

Cardno (NSW/ACT) Pty Ltd has been commissioned by SITA to prepare an application to modify the current conditions in order to permit the following, in addition to the approved waste quantities:

- Receiving 520m^3 per day of liquid waste; and
- Receiving of 130,000 tonnes per annum (tpa) of mixed solid waste and processing 130,000 tpa of mixed solid waste using existing infrastructure at the Spring Farm ARRT Facility.

2.1 Site Location

The locality of the site can be seen in Figure 1, with traffic to the ARRT via Macarthur Road, Springs Road and Richardson Road.



Source: Near map (2013)

Figure 1: Existing site locality.

2.2 Previous Acoustic Study – proposed housing development

An acoustic study of two proposed roads within the Spring Farm East Village residential development to the west of the ARRT site has been prepared by Renzo Tonin and Associates in 2012. The purpose of this assessment was to assess the potential road traffic noise impact within Precinct 400 and 500 of this development, which assessed two roads, i.e. Link Road, on the northern end of the ARRT development and Springs Road, to the south of the ARRT development. The assessment outcomes show that noise control treatments to properties adjacent to these two roads would be required, as shown in Figure 2.

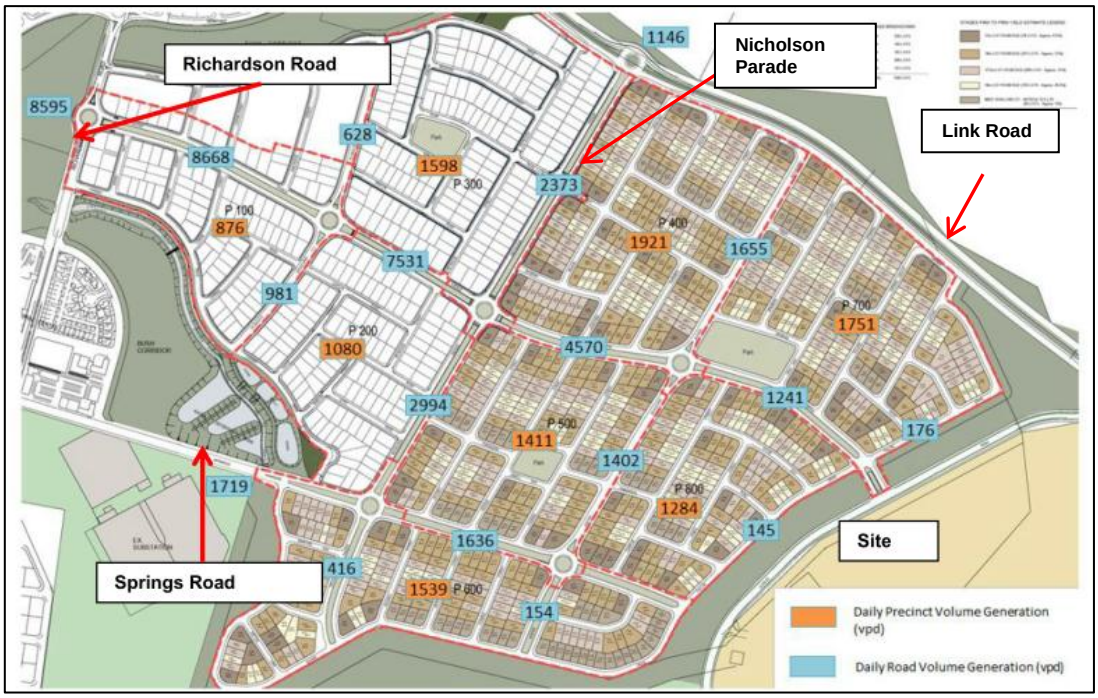


Figure 2. Daily traffic generation for Spring Farm Eastern Village.

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.

In the context of the Spring Farm ARRT project, a new road 'Link Road' will provide access to the site and therefore road traffic noise generation from the site is required to be assessed to these properties.

Access to the site will be via a dedicated haul road adjacent to the north western site boundary, connecting to a new arterial road (Link Rd) to the north of the site which will in turn connect to Richardson Road.

The new residential area will be separated from the waste facility by a dedicated 70 metre wide landscape buffer extending for the full length of the common boundary. The southern portion of Glenlee Rd currently used for temporary access to the ARRT site, will closed and will not be used in future (Figure 2).

Renzo Tonin and Associates report 'TB705-43 F02(Rev 2)', dated 12 October 2012 showed that 2.4m high noise barriers would be required to comply with the criteria relevant to that assessment and that assessment did not include affects from vehicles travelling to and from the Spring Farm ARRT site. The Spring Farm Eastern Village development is understood to be completed by 2016.

3 Acoustic Design Criteria

3.1 Camden Council DCP

Section B1.16 of the Camden Council DCP 2011 requires assessment from industrial and commercial developments to ensure that noise impacts from road traffic noise and the like which affect sensitive receivers are mitigated. The DCP refers to the Camden Council "Environmental Noise Policy" which references the now superceded NSW Environmental Criteria for Road Traffic Noise (ECRTN). The Policy outlines the requirements for noise assessment of different types of road and development classifications and the most appropriate assessment classification considered for the Spring Farm ARRT Facility project is Item 7 ('Table 5.3.1' of Camden Council's Environmental Noise Policy). This is summarised below in Table 1.

Table 1: Road traffic noise criteria (ECRTN).

Type of Development	Day (7am to 10pm), dB(A)	Night (10pm to 7am), dB(A)
7. Land use developments with the potential to create traffic on existing freeways/ arterial roads	$L_{Aeq(15hr)}$60	$L_{Aeq(9hr)}$55

4 Road Traffic Noise Assessment

For the purpose of this acoustic assessment, the following documents have been reviewed:

- Spring Farm Precincts 400 and 500 report TB705-43F02 (Rev 2) traffic noise assessment, prepared by Renzo Tonin & Associates, dated 12 October 2012;
- Spring Farm ARRT Traffic Impact Statement, prepared by Cardno, dated 28 May, 2013.

Renzo Tonin and Associates report TB705-43F02 (Rev 2) has been reviewed in the context of proposed noise mitigation treatments to the proposed residential development adjacent to Link Road. It is understood that that this report did not consider modifications to the Spring Farm ARRT facility, as details were not likely to be formalised.

The road traffic impact statement prepared by Cardno has been reviewed in the context of determining peak hourly traffic flow and daily traffic flow on Link Road (forecast to 2016, when the proposed residential subdivision is due for completion) and forecast increase in site generated traffic as a result of the operational modifications at the ARRT facility.

4.1 Site operating hours

It is understood that the Spring Farm ARRT facility operates from 7am to 5pm Monday to Friday and 8am to 4pm on Saturday and Sunday and 7am to 2pm on public holidays.

4.2 Existing traffic

Table 2 summarises the existing site generated vehicular traffic per day and this information is provided in from the Cardno Traffic Report, (Appendix D).

Table 2: Summary of existing site generated daily traffic.

	Employee	Customer	Heavy vehicles	Total Vehicles
Existing operations	116	256	194	**566**

4.3 Road traffic generation

4.3.1 Employee/ light vehicle traffic

With reference to the Cardno Traffic Report (Appendix D) summarises the forecast traffic generation prepared of the then proposed Alternative Waste Technology Facility at Jacks Gully and Recycling Centre, dated 2006. From this Figure the following is noted:

- The number of Employee traffic in the AM and PM peak periods was forecast to be 68 trips per day.
- The number of Customer traffic based upon weighbridge data was forecast to be 68 trips per day.

4.3.2 Heavy vehicle traffic

Based on the operational changes described in the Cardno Traffic Report (Appendix D), it is understood that overall there will be change in the traffic stream into and out of the site both in the short term and also to the assessment year of 2016. From the Cardno Traffic Report the following additional heavy vehicle traffic generation is noted in Table 3.

It should be noted that VENM (virgin excavated natural material) operations will cease in 2016 and this will result in a reduction of both employee trips and a reduction in number of heavy vehicles to and from the site daily. The forecast employee trips per hour are considered worst case as these figures do not reflect the change in 2016 to cease VENM operations.

Without the operation of the rising sewer main for several years, it is expected that trucks transferring liquid waste to the Spring Farm ARRT will be back loaded to transfer the treated liquid waste off site.

The back loading arrangement will not result in an increase of the number of trucks accessing the site. The long term traffic impacts have been assessed for Richardson Road and the Link Road based on the full development of the Spring Farm Eastern Village. It is considered that the traffic report has examined the long term impacts of transferring the treated liquid waste off site.

Table 3: Link Rd - Future traffic generation (short term), October 2013 – April 2014.

Item	Quantity per day	Average Load per HV	Average HVs per day
Liquid waste receival (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 4: Link Rd - Future traffic generation (long term), mid 2016 onwards.

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 receival (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

From Table 3 and the Cardno Traffic Report (Appendix D), the 21 additional heavy vehicles entering/ exiting the site will be distributed throughout the day however the forecast heavy vehicle movements are predicted to generate a total of 4 trips (2 in/2 out) in the AM peak period and 4 trips (2 in/2 out) in the PM peak period.

4.3.3 Combined traffic flow

Forecast combined traffic data for the 2014 and 2016 years are shown below in Table 5. It is important to note that in the short term, vehicles entering and exiting the site will continue to use the current access road. The residential development is currently under construction with earthworks being undertaken in the vicinity of the site at the time of this report. It is expected that the additional total traffic from the site in the short term, will result in a marginal increase in road traffic noise levels along Richardson Road.

Table 5: Predicted changes in the number of daily vehicles.

Forecast Year	Employee	Customer	Heavy Vehicles	Total Existing	Increase from ARRT	Total Change
Richardson Road (Interim use)						
2013-2014	68	68	194	330	21	(330+21)=351
Link Road						
2014	68	68	194	330	21	(330+21=)351
2016	68	68	194	330	28	(330+28=)358

- Based on the forecast traffic data above, the total daily traffic generation from the site in the short term period, i.e. to 2014 is (330+21) = 351 vehicles;
- Based on the forecast traffic data above, the total daily traffic generation from the site in the long term period, i.e. from mid-2016 is (330+28) = 358 vehicles;
- From the Cardno Traffic Report (Appendix D), it is understood that daily road volume generation during the temporary access of the ARRT via Richardson Road will be (8595+351) = 8946 vehicles;
- From the Cardno Traffic Report (Appendix D), it is understood that the Spring Farm East Village residential development between Link Rd and Nicholson Pde, will generate 1146 vehicles. This figure excludes site generated road traffic and the total vehicular traffic on Link Road is predicted to be (1146+358) = 1504 vehicles.

4.3.4 Predicted change in road traffic noise levels

A summary of the inputs used in the prediction are provided in Table 6.

Table 6: Summary of modelling inputs, 2016 (long term).

Input parameters	Data
Baseline traffic volume (ADT) – Link Road (2016, no ARRT site traffic)	1146 - all vehicles 17% heavy vehicles
Future traffic volume – Link Road (2016), with ARRT site traffic)	(1146+358) =1504 - all vehicles 15% heavy vehicles
Richardson Road - normal operating conditions	8595 - all vehicles 17% heavy vehicles*
Richardson Road - temporary ARRT access	(8595+358) = 8951 - all vehicles 17% heavy vehicles*
Vehicle speeds, km/h	Richardson Rd - 60 km/h Link Rd - 80km/h
Source heights	Above road surface: Cars: 0.5m Truck engines: 1.5m Truck exhaust: 3.6m
Receiver height	1.5m above ground RL
Façade correction	+2.5dB(A)
Correction for Australian Conditions	-1.7dB(A)
Road surface correction	Dense Graded Asphalt, 0dB(A) correction
Barrier heights (as per Renzo Tonin report for properties adjacent to Link Road)	2.4m
* Percentage heavy vehicles for Richardson Road were assumed to be typical worst-case.	

Using the CoRTN calculation method and the road traffic data outlined above in Table 6.

The change in road traffic noise level on Link Road when compared to the Renzo Tonin assessment is +0.7 dB(A) in the long term along Link Road.

The change in road traffic noise level on Richardson Road is predicted to increase by +0.2 dB(A) during temporary use for access purposes.

These are marginal increases are not subject to additional noise mitigation measures, under the ECRTN.

5 Noise Mitigation Recommendations

Based on the predicted noise impact and assessment against the Camden Council noise emission criteria (NSW ECRTN) outlined in Section 3 of this report, the marginal increase in road traffic noise levels, as a result of the proposed on site modifications is well below the design criteria, therefore no specific noise mitigation treatments are required.

6 Conclusion

An acoustic assessment of the change in vehicular traffic noise from the Spring Farm ARRT Facility site has been undertaken in response to a request from Camden Council. The acoustic assessment has been based on review of the Cardno Traffic Report and a previous acoustic study of road traffic noise affecting the proposed Spring Farm East Village residential development, adjacent to the site.

Based on the proposed site operations, the forecast road traffic stream will change whereby there will be an increase in heavy vehicle movements to and from the site in order to transport the required quantity of material. It is understood that when the residential development is completed in 2016, the current access road into the Spring Farm ARRT Facility site will be closed and that all traffic will enter the site from the newly constructed Link Road.

The findings of the assessment show that there will be a marginal increase in road traffic noise levels along Richardson Road (Link Road compared to the previous acoustic study however are below NSW ECRTN/ Camden Council criteria for developments with the potential to create additional traffic on existing freeways/ arterial roads. From the assessment, no noise mitigation treatments are required.

7 Glossary

Ambient Sound: Of an environment: the all-encompassing sound associated with that environment, being a composite of sounds from many sources, near and far.

Background Sound Level: The average of the lower levels of the ambient sound. The background sound levels are commonly deemed to be the L90 when statistically based measurements are used. In the case of a noise complaint, the background sound level is measured in the absence of the noise alleged to be offending.

Decibel, dB: A unit of acoustic measurement. Measurements of power, pressure and intensity may be expressed in dB relative to standard reference levels.

dB(A): A unit of acoustic measurement electronically weighted to approximate the sensitivity of human hearing to sound frequency.

L_{eq}: Equivalent continuous sound pressure level. The sound pressure level of a continuous steady sound that has the same sound energy as the actual time-varying sound.

L_{AeqT}: The A-weighted value of the L_{eq}, also specifying a measurement time interval T. Where T is omitted, the time interval is undefined.

Sound Pressure Level, Lp, dB of a sound: 20 times the logarithm to the base 10 of the ratio of the r.m.s. sound pressure to the reference sound pressure of 20 microPascals. Sound pressure level is measured using a microphone and a sound level meter, varies with distance from the source and is affected by the environment. The term “noise level” generally refers to the measured sound pressure level.