Erskine Park Waste and Resource Management Facility

Modification to approved SSD 7075 (Modification 4)

Environmental Assessment Report

Cleanaway

August 2018

Version	Date	Status	Author
1.0	01/08/2018	Draft	Brian Cullinane
2.0	07/08/2018	Final	Brian Cullinane

Contents

1. Introduction

1.1 Background

The Planning Assessment Commission (PAC), acting as delegate of the Minister for Planning, approved an application for the Erskine Park Waste and Resource Management Facility (WRMF) Staged Development Application (SSD 7075) on the 5 October 2016, comprising:

- A concept plan for a Waste and Resource Management Facility with a maximum processing capacity of 300,000 tpa. All waste received at the WRMF shall enter the Waste Transfer Station (Stage 1), up to 150,000 tpa of this waste may be recycled at the Resource Recovery Facility (Stage 2)
- Construction and operation of the Stage 1 Waste Transfer Station with a maximum processing capacity of 300,000 tpa.

The WRMF will be developed in two stages, the first being a Waste Transfer Station (WTS) and the second being a Resource Recovery Facility (RRF). An Environmental Impact Statement (EIS) was prepared to support the application for the WRMF Concept Proposal and the Stage 1 WTS. A separate EIS for the Stage 2 RRF will be developed at a later date.

The WTS will receive commercial and household waste from the Western Sydney region which would subsequently be transported to a licensed waste management facility off site. A proportion of the waste received at the WTS would be diverted through a basic resource recovery process within the Stage 1 WTS and a more advanced resource recovery process in the RRF for recycling and recovery of saleable products. The design capacity of the completed WRMF is 300,000 tonnes per annum, inclusive of both stages.

1.2 Site location and context

The site location and context are shown in Figures 1 – 3. The site is located approximately 11 kilometres south-east of Penrith, in western Sydney, NSW. The site is located at 85 – 87 Quarry Road, Erskine Park and identified as Lot 1 in Deposited Plan (DP) 1140063 in the Penrith Local Government Area (LGA). The title comprises approximately 3.5 hectares.

1.3 Site description

The existing weighbridges and weighbridge office on site is currently used by Cleanaway to support the ongoing Erskine Park Landfill operations that is located adjacent to the site (Lot 4, DP 1094504).

Construction works have commenced on site under the approved SSD 7075 and includes earthworks and demolition of buildings, car parks, sheds, laydown areas, weighbridge and sealed roads and clearing of minor vegetation.

The topography of the site is relatively flat, sloping gently to the west, with an elevation of approximately 60 metres Australian Height Datum (AHD). South Creek, which is part of the Hawkesbury-Nepean catchment, is located approximately 1.5km to the west of the site.

The site gains vehicular access from the adjoining Quarry Road. The area surrounding the site is primarily industrial land uses, including Stramit Building Products and Hasbro to the north, Dutt Transport, Viscount Plastics, Dincel Construction Systems, Devondale Dairy and Stockland to the south, Cleanaway Depot to the west, and the Cleanaway Erskine Park Landfill to the east.

The nearest residential dwellings are located within the suburb of St. Clair, approximately 0.7 km to the north of the site, and rural-residential properties located in Orchard Hills, approximately 0.7 km to the west of the site.

1.4 Previous modifications

An application to modify SSD 7075 was approved by the Department of Planning on 25th August 2017. Modification 1 made changes to the staging of the development, layout of car and truck parking and load out-bays, capacity of the stormwater management system, reduction in overall site levels and changes to the ramps accessing the landfill.

An application to modify SSD 7075 was approved by the Department of Planning on 26th February 2018. Modification 2 made minor changes to the site levels, the interface with landfill access ramps and car parking.

An application to modify SSD 7075 was lodged on 16th May 2018 and is currently being assessed by the Department. Modification 3 seeks approval to modify the approved SSD 7075 to provide for the inclusion of a manual sort line in the Waste Transfer Station building as part of approved basic resource recovery in Stage 1.

1.5 SSD 7075 Proposed Modification 4

The proposed Modification 4 seeks approval to amend the construction hours by modifying Table 3 of Condition B28 Construction and Operation Hours.

1.6 Applicant

The Erskine Park development site is owned by Cleanaway Waste Management Ltd (Cleanaway). Cleanaway is the applicant for the Modification. The relevant postal address is:

Attn: Paul Antony, NSW Engineering Manager

Cleanaway

85-87 Quarry Road, Erskine Park, NSW, 2759

PO Box 804, St Marys, NSW, 1790

1.7 Document Purpose

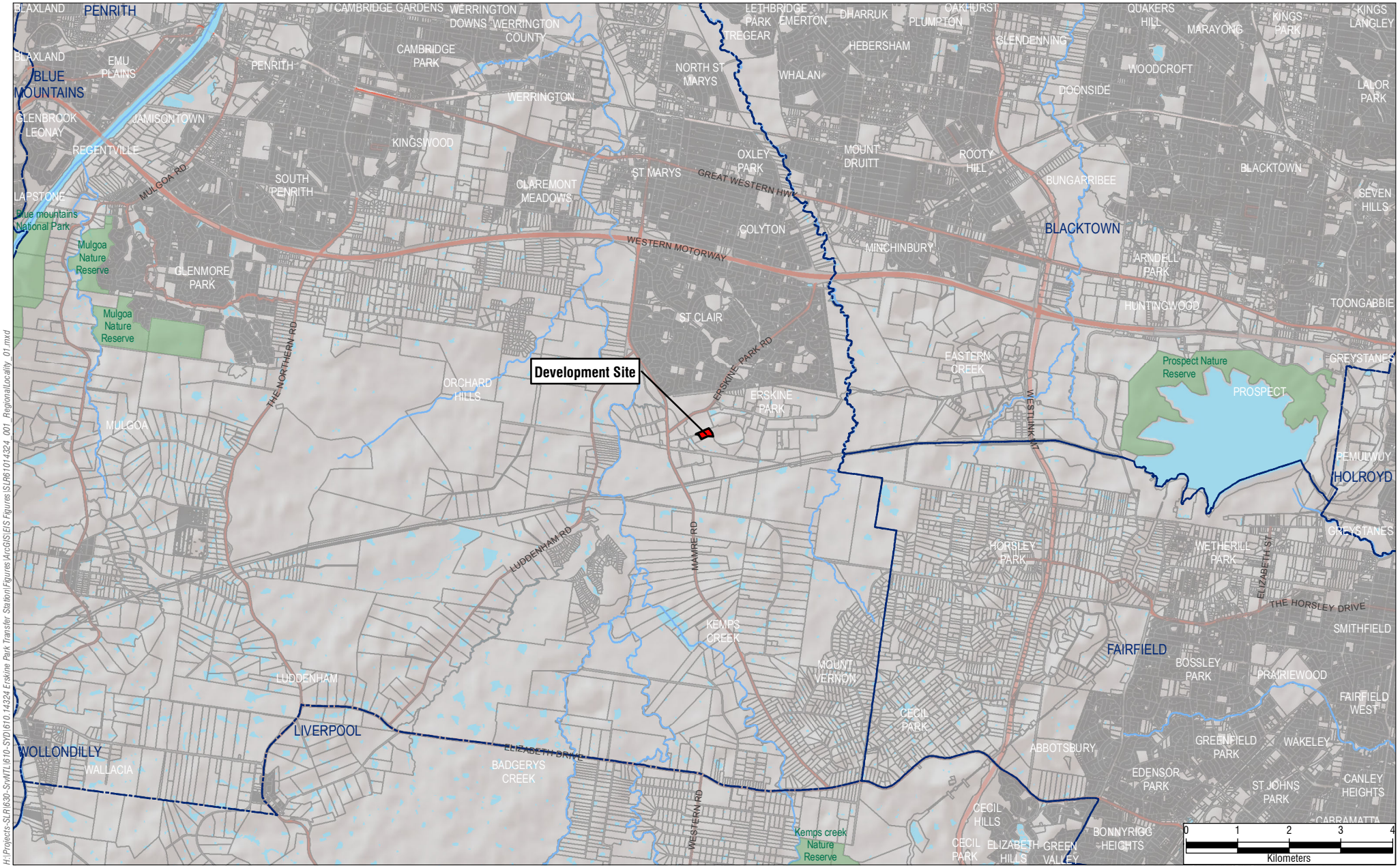
This Environmental Assessment (EA) has been prepared on behalf of the applicant Cleanaway Waste Management Limited (Cleanaway) by EME Advisory. The EA supports an application under Section 4.55 (1A)[1] of the Environmental Planning and Assessment Act, 1979 (EP&A Act) to modify development consent for SSD 7075. The application is being made to the consent authority, the Minister for Planning. The application has been prepared in accordance with the provisions of the EP&A Act and the Environmental Planning and Assessment Regulation 2000 (EP&A Reg.).

This EA provides:

- The name and address of the applicant
- A description of the project as approved
- A brief description of the site and locality, including the address and particulars of title
- A description of the approvals process
- Details regarding consultation undertaken for this DA Modification
- A description of the proposed modifications to the development consent
- A description of the expected impacts of the modification
- A comparison of the proposed modification with the approved development including any changes to environmental impacts
- A statement of who the application is being made to

[1] Recent changes to the Environmental Planning & Assessment Act 1979 have led to renumbering of sections of the Act. Section 4.55 was previously referred to as Section 96.

- An assessment of relevant environmental planning considerations under Sections 4.55 and 4.15 of the EP&A Act, including compliance with relevant planning instruments and controls, environmental impacts, site suitability and the public interest
- Summary and conclusions.



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Date:	11/08/2015
Drawn by:	KC
Scale:	1:100,000
Sheet Size:	A4
Projection:	GDA 1994 MGA Zone 56

Notes:
1. All features are approximate only and subject to detailed survey.
2. Aerial Imagery courtesy Nearmap.
3. DCDB courtesy NSW LPI.

Transpacific Industries Group LTD

Erskine Park Waste Transfer Facility

Site Location in Regional Context

FIGURE 1

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Date:	07/09/2015
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Sheet Size:	A4
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Notes:
1. All features are approximate only and subject to detailed survey.
2. Aerial Imagery courtesy Nearmap.
3. DCDB courtesy NSW LPI.

Transpacific Industries Group LTD

Erskine Park Waste Transfer Facility

Development Site

FIGURE 2

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Projection:	GDA 1994 MGA Zone 56

Notes:
1. All features are approximate only and subject to detailed survey.
2. Aerial Imagery courtesy Nearmap.
3. DCDB courtesy NSW LPI.

Transpacific Industries Group LTD

Erskine Park Waste Transfer Facility

Site Location and Surrounding Environment

FIGURE 3

2. Consultation

The Department of Planning was notified on 25th July of Cleanaway's intention to lodge Modification application 4 and to confirm the approval pathway.

3. Description of the Proposed Modification

3.1 Proposed modification

This modification application is made under Section 4.55 (1A) of the EP&A Act and seeks approval from the Minister for Planning for changes to approved construction hours in Table 3 of Condition B28. The approved construction hours and proposed changes are shown in the following table:

Table 1: Approved and proposed changes to construction hours.

	Approved (Condition B28)		Proposed changes
Activity	Day	Hours	Hours
Construction	Monday – Friday	7am to 6pm	5am to 6pm
	Saturday	8am to 1pm	5am to 5pm
	Sundays and public holidays	Nil	No change
Operation	24 hours a day, seven days a week		No change

Extension of construction during the early morning period would allow avoidance of peak hour traffic and associated issues with materials not arriving on time, especially for consecutive concrete pours which are very time and temperature dependant to meet construction specifications. It would also provide Cleanaway flexibility to manage construction traffic movements within the site which is adjacent to an operational landfill with associated truck movements.

The project for which consent was originally granted consent is the construction and operation of a Waste Transfer Station and associated infrastructure. The project as modified would be substantially the same development as the development originally granted consent. The impacts are assessed in Section 4 as minor and within relevant assessment criteria. Therefore, the proposed modification can be assessed under Section 4.55 (1A) of the Act.

3.2 Modification of conditions

The proposed modification would require a modification to the construction hours in Condition B28 Construction and Operation Hours, as described above.

4. Environmental Assessment of Proposed Modification

4.1 Introduction

The key environmental issue raised a result of the proposed modification is construction noise. A detailed technical assessment for construction noise is provided in Appendix A.

4.2 Noise

4.2.1 Assessment

The site is located in an industrial park approximately 700 metres from the nearest residential receptors.

In order to assess the potential noise impacts during proposed out of hours construction works, a number of scenarios comprising typical plant and equipment frequently used on similar sites have been developed and are detailed in Appendix A. These scenarios are considered to be representative of the noisiest construction activities that will happen on site during out of hours periods.

The sound power levels used in the original noise assessment were applied to the plant and equipment identified in the construction scenarios.

Predicted noise levels for all construction scenarios listed were assessed using a noise model and compared to the relevant LAeq (15minute) construction noise management levels (NMLs) for each noise assessment location. The assessment results are shown in the table below:

Noise Assessment Location	Predicted $L_{Aeq(15minute)}$ Noise Level				Recommended Out of Hours NML	
	Sc 2	Sc 3	Sc 4	Sc 5	5am - 7am	Sat 1pm - 5pm
RR1	36	34	27	31	45	49
RR2	33	32	25	28	42	40
RR3	28	28	21	24	48	51
RR4	36	35	28	31	43	48
CC1	37	34	27	31	65	65
IR1	62	58	51	55	75	75
R2	58	48	41	48	75	75
IR3	53	54	47	47	75	75

The construction noise assessment confirmed that noise emissions from the out of hours construction are predicted to be below the NMLs at all receiver locations.

In relation to the potential for sleep disturbance, the EPA suggest that the LA1(1minute) (or LAmax) noise level from any specific noise (ideally) should not exceed the LA90 background noise level by more than 15 dBA. Experience indicates the construction activities proposed for the LAmax noise levels would be no more than 6 dB above the LAeq(15minute) noise levels, and this has been confirmed by reviewing noise levels of the equipment proposed. Compliance with the LAeq(15minute) criterion will therefore also ensure LAmax noise levels are below the sleep disturbance screening noise level.

In conclusion, the construction activities proposed for the out of hours 5am to 7am early morning shoulder period, and the 1pm to 5pm Saturday afternoon period, comply with the NMLs determined in accordance with the EPA's Interim Construction Noise Guideline.

4.2.2 Mitigation

The sound power levels given for each item of mobile equipment do not include noise emissions from reversing alarms. It is proposed that all equipment operating in the 5am to 7am period should be fitted with broadband squawker reversing alarms. The alarm noise level would be checked against the appropriate regulatory and health and safety requirements and the necessary mitigating action taken to achieve an acceptable noise reduction without compromising safety standards.

4.3 Other issues

The proposed modification will not lead to a change in overall construction traffic numbers but will lead to a minor redistribution of construction traffic to the out of hours period. This will have a negligible to beneficial impact on the surrounding road network by reducing construction traffic at peak hours.

The proposed modification will not impact on any other assessment matter.

5. Assessment under Section 4.55 (1A)

For the purposes of this assessment it is understood the nature of changes would be considered by the consent authority under Section 4.55 (1A) of the EP&A Act.

Section 4.55 (1A) states:

> *(1A) Modifications involving minimal environmental impact A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if:*
>
> *(a) it is satisfied that the proposed modification is of minimal environmental impact, and*
>
> *(b) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all), and*
>
> *(c) it has notified the application in accordance with:*
>
> *(i) the regulations, if the regulations so require, or*
>
> *(ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and*
>
> *(d) it has considered any submissions made concerning the proposed modification within any period prescribed by the regulations or provided by the development control plan, as the case may be.*

As discussed earlier, the proposed modifications are substantially the same development as the development for which consent was originally granted, being a Waste Transfer Station with basic resource recovery. The proposed modifications have been assessed as having negligible or minor environmental impacts which can be managed within existing management and mitigation measures.

6. Section 4.15 of the Act - Evaluation

An evaluation of the requirements of Section 4.15 of the Act has been undertaken.

6.1 Section 4.15 (1)(A)(i) – Environmental Planning Instruments

The key matters under this section are Local Environmental Plans (LEPs), Regional Environmental Plans (REPs) (now known as SEPPs) and State Environmental Policies (SEPPs).

State Environmental Planning Policies (SEPPs)

The following SEPPs were evaluated:

- SEPP No. 33 Hazardous and Offensive Development (SEPP 33);
- SEPP (Western Sydney Employment Area) 2009 (WSEA SEPP) – zoning;
- State Environmental Planning Policy (Infrastructure) 2007;
- SEPP No. 55 Remediation of Land;
- SEPP (State and Regional Development) 2011;
- SEPP No.64 Advertising and Signage Explanatory Information;

From this review it was determined the DA Modification application does not trigger any new assessable consideration under any SEPP, which was considered in the EIS and issuing of development consent SSD 7075 and subsequent modifications.

Regional Environmental Plans (REPs)

The Sydney Regional Environmental Plan No. 20 – Hawkesbury-Nepean River (No. 2 – 1997) was considered in the original application and subsequent modification. However, as the current proposed modification does not impact on the surface water assessment, the REP has not been considered further for the purposes of this modification.

Local Environmental Plans (LEPs)

Local Environment Plans (LEPs) were not considered relevant for this evaluation. The WSEA SEPP prevails over relevant Local Environment Plans (LEP) and therefore the Penrith LEP is not relevant to the Development.

6.2 Section 4.15 (1)(a)(ii) – Draft Environmental Planning Instruments

The application is not considered to trigger any new assessable consideration under any draft environmental planning instruments that were deemed acceptable in the EIS assessment.

6.3 Section 4.15 (1)(a)(iii) – Development Control Plans

Section 18 of the WSEA SEPP states that a development proposal for a specific site, whether lodged with the NSW Government or the local council, may only be lodged once a Development Control Plan (DCP) is in place for the land. Although the Penrith 2010 DCP exists for the area, Clause 11 of the SRD SEPP states that DCPs do not apply to SSD Projects. Clause 7 of the SRD SEPP also states that in the event of an inconsistency between the SRD SEPP and another environmental planning instrument, the SRD SEPP prevails to the extent of the inconsistency. Consequently, a DCP is not relevant to the modification application.

Notwithstanding, the development has been designed to take into consideration the requirements of the Penrith Council DCP (2014).

6.4 Section 4.15 (1)(a)(iiia) – Planning Agreements

There is no Voluntary Planning Agreement (VPA) or other arrangement under EP&A Act Section 93F or in relation to the project site or SSD 7075.

6.5 Section 4.15 (1)(a)(iv) – Any matter Prescribed by the Regulations

The application is not considered to trigger any new assessable consideration under the Environmental Planning and Assessment Regulation 2000 (EP&A Regs) which was considered acceptable in the EIS and issuing of SSD 7075.

6.6 Section 4.15 (1)(a)(v) – Coastal Zone

The site is not impacted by the Coastal Protection Act 1979 and this Modification application will not alter this.

6.7 Section 4.15 (1)(b) Impact on the Environment

An assessment of environmental impacts of the modified Development is provided in Sections 4 and 5, above.

6.8 Section 4.15 (1)(c) Site Suitability

The site is suitable for the proposed modifications. Only a minor modification is proposed to the development. The site would remain suitable for the development as modified.

6.9 Section 4.15 (1)(e) The Public Interest

The proposed modification is in the public interest. The proposed modification would allow the construction of important waste management infrastructure to be completed on time with negligible or minor impacts, allowing the operation of the facility to commence without delay. Once operational, the facility will play an important role in the management of waste in the western Sydney region, providing an important service to businesses and communities and ensuring waste is properly managed.

7. Summary and Conclusion

The Planning Assessment Commission (PAC), acting as delegate of the Minister for Planning, approved an application for the Erskine Park Waste and Resource Management Facility (WRMF) Staged Development Application (SSD 7075) on the 5 October 2016, comprising:

- A concept plan for a Waste and Resource Management Facility with a maximum processing capacity of 300,000 tpa. All waste received at the WRMF shall enter the Waste Transfer Station (Stage 1), up to 150,000 tpa of this waste may be recycled at the Resource Recovery Facility (Stage 2)
- Construction and operation of the Stage 1 Waste Transfer Station with a maximum processing capacity of 300,000 tpa.

The Stage 2 RRF would be subject to a separate future Development Application.

An application to modify the SSD was approved in August 2017 (Modification 1) with a second modification approved in February 2018 (Modification 2) and a third modification currently being assessed by the Department.

The current proposed modification (Modification 4) is for the extension of construction hours into the out of hours period, requiring a modification to the approved construction hours in Condition B28. The noise impacts were assessed as being minor and within noise management levels and capable of being managed through existing management and mitigation measures.

The proposed modifications were assessed against the requirements of Section 4.15 of the EP&A Act. The modifications were determined not to impact on any Planning Instruments, Development Control Plans, Planning Agreement or matters prescribed in the EP&A Regulations.

The proposed modifications would be substantially the same development as the project as originally granted consent, being a Waste Transfer Station incorporating basic resource recovery through sorting, and has minor environmental impacts which can be managed through existing management and mitigation measures.

8. References

SLR Consulting Australia Pty Ltd (SLR), 2015, *Erskine Park Resource Management Facility, Staged SSD (SSD – 7075) Concept Plan and Stage 1 Waste Transfer Station, Environmental Impact Statement.*

SLR Consulting Australia Pty Ltd (SLR), 2016, *Erskine Park Resource Management Facility, Staged SSD (SSD – 7075) Concept Plan and Stage 1 Waste Transfer Station, Response to Submissions*

SLR Consulting Australia Pty Ltd (SLR), 2017, *Erskine Park Resource Management Facility, Staged SSD (SSD – 7075) Concept Plan and Stage 1 Waste Transfer Station, Modification Environmental Assessment* (Modification 1)

EME Advisory Pty Ltd (EME), 2018, *Erskine Park Resource Management Facility, Staged SSD (SSD-7075) Concept Plan and Stage 1 Waste Transfer Station, Modification Environmental Assessment* (Modification 2)

EME Advisory Pty Ltd (EME), 2018, *Erskine Park Resource Management Facility, Staged SSD (SSD-7075) Concept Plan and Stage 1 Waste Transfer Station, Modification Environmental Assessment* (Modification 3)

Appendix A: Construction Noise Assessment

Memorandum

To:	Paul Antony	**At:**	Cleanaway Pty Ltd
From:	John Sleeman	**At:**	SLR Consulting Australia Pty Ltd
Date:	2 August 2018	**Ref:**	610.14324-M02-v1.0.docx
Subject:	Erskine Park Waste Transfer Station Construction Noise Assessment Modification for 5am to 7am Construction		

1 Introduction

Cleanaway own and operate the Erskine Park Landfill which was opened in 1994 and involves the rehabilitation of a former quarry through non-putrescible waste disposal. In October 2016 Cleanaway Pty Ltd (Cleanaway) obtained approval to use a portion of the site as a putrescible Waste Transfer Station in order to serve growing market demand. The Planning Assessment Commission (PAC), acting as delegate of the Minister for Planning, approved the application for the Erskine Park Waste and Resource Management Facility (WRMF) Staged Development Application (SSD) 7075 on the 5 October 2016, comprising:

- A concept plan for a WRMF with a maximum processing capacity of 300,000 tpa. All waste received at the WRMF shall enter the Waste Transfer Station (Stage 1), up to 150,000 tpa of this waste may be recycled at the Resource Recovery Facility (RRF) (Stage 2).
- Construction and operation of the Stage 1 Waste Transfer Station (WTS) with a maximum processing capacity of 300,000 tpa.

The WRMF will be developed in two stages, the first being a Waste Transfer Station (WTS) and the second being an RRF. An Environmental Impact Statement (EIS) was prepared to support the application for the WRMF Concept Proposal and the Stage 1 WTS. A separate EIS for the Stage 2 RRF will be developed at a later date.

SLR Australia Pty Ltd (SLR) was engaged to provide a Construction and Operational Noise Assessment to accompany the EIS, and this was provided in SLR Report 610.14324-R1 '*Erskine Park Resource Management Facility Staged SSD Stage 1 Waste Transfer Station Construction and Operation Noise Assessment*' of October 2015 (SLR Report 610.14324-R1).

Following approval of the Stage 1 WTS, three modification applications have been submitted to the Department:

- Modification 1: changes to the development staging, car and truck parking, the office, the load-out bays, the stormwater management system, site levels and landfill ramps, approved August 2017.

- Modification 2: minor changes to site levels and parking arrangements, approved February 2018.
- Modification 3: inclusion of a manual sort line in the WTS as part of basis resource recovery, currently being assessed by the Department.

Cleanaway are proposing a fourth modification to extend the construction hours in Table 3 of Condition of Approval B28 as shown in **Table 1** below.

Table 1 Approved construction and operation hours and proposed modification

Activity	Day	Approved Hours	Proposed Hours
Construction	Monday – Friday	7am to 6pm	5am to 6pm
	Saturday	8am to 1pm	5am to 5pm
	Sundays and public holidays	Nil	No change
Operation	24 hours a day, seven days a week		No change

The modification would allow Cleanaway to undertake a subset of the construction activities assessed in SLR Report 610.14324-R1 during the 5am to 7am early morning period. Construction during the early morning period would allow avoidance of peak hour traffic and associated issues with materials not arriving on time, especially for consecutive concrete pours which are very time and temperature dependant to meet construction specifications. In addition, it will allow Cleanaway to provide flexibility in moving into the build.

This Technical Memorandum provides an update to SLR Report 610.14324-R1, with the proposed out of hours, or early morning and Saturday afternoon construction activities assessed against the EPA's Interim Construction Noise Guideline (ICNG or Guideline). Where required, the results of SLR Report 610.14324-R1 are referred to in this Technical Memorandum in order to minimise the presentation of data.

2 Construction Noise Impact Assessment Procedure

2.1 Construction Noise Assessment Method

The EPA Guideline recommends the quantitative method be adopted for long-term duration construction work, and as such has been adopted for this assessment. The EPA's Guideline recommends that the $L_{Aeq(15minute)}$ noise levels arising from a construction project, measured within the curtilage of an occupied noise-sensitive premises (ie at the boundary or within 30 m of the residence, whichever is the lesser) should not exceed the levels indicated in **Table 2**. These Noise Management Levels (NMLs) are generally consistent with community reaction to construction noise. The EPA's Guideline also recognises other kinds of noise sensitive receivers and provides recommended construction NMLs for them. Those specific receivers and their recommended noise levels are presented in **Table 3**.

Table 2 Recommended EPA General NMLs for Construction Works

Period of Noise Exposure	LAeq(15minute) Construction NML
Recommended Standard Hours	Noise affected [1] RBL [2] + 10 dBA
	Highly noise affected [3] 75 dBA
Outside Recommended Standard Hours	Noise affected [1] RBL [2] + 5 dBA

Note 1: The noise affected level represents the point above which there may be some community reaction to noise.

Note 2: Refer to Table 6, and that the lowest 10th percentile of the LAF90,15min dB taken over the 5am to 7am shoulder period was adopted for the criteria baseline or RBL..

Note 3 The highly noise affected level represents the point above which there may be strong community reaction to noise.

Table 3 Noise at Sensitive Land Uses (other than Residences)

Period of Noise Exposure	LAeq(15minute) Construction NML
Classrooms at schools and other educational institutions	Internal noise level 45 dBA
Hospital wards and operating theatres	Internal noise level 45 dBA
Places of worship	Internal noise level 45 dBA
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65 dBA
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60 dBA
Community centres	Depends on the intended use of the centre
Industrial premises	External noise level 75 dBA

2.2 Sleep Disturbance

The EPA's most recent policy considers sleep disturbance as the emergence of the $L_{A1(1minute)}$ level above the $L_{A90(15minute)}$ level at the time. Appropriate screening criteria for sleep disturbance are determined to be an $L_{A1(1minute)}$ level 15 dBA above the Rating Background Level (RBL) for the night-time period (10.00 pm to 7.00 am). In this instance, for the 5am to 7am early morning period, the '*lowest 10th percentile of $L_{AF90,15min}$ dB measurements for the equivalent of one weeks' worth of valid data taken over the shoulder period*' was determined, consistent with the EPA's Noise Policy for Industry (NPfI) and was subsequently adopted for the criteria baseline or RBL.

When the criterion is not met, a more detailed analysis may be required which should cover the maximum noise level or $L_{A1(1minute)}$, the extent that the maximum noise level exceeds the background level and the number of times this occurs during the night-time period. Some guidance on possible impacts is contained in the review of research results in Section 5.4 of the NSW Road Noise Policy (RNP).

Other factors that may be important in assessing the extent of impacts on sleep include:

- How often high noise events will occur;
- Time of day (normally between 10.00 pm and 7.00 am); and
- Whether there are times of the day when there is a clear change in the noise environment (such as during early morning shoulder periods).

It is noteworthy that there are no specific criteria for sleep disturbance nominated in the NPfI, in the RNP, or in the ICNG. This is consistent with the statement in the RNP that "*Despite intensive research, the triggers for and effects of sleep disturbance have not yet been conclusively determined.*"

Section 5.4 of the RNP contains a review of international sleep disturbance research, indicating that:

- Maximum internal noise levels below 50-55 dBA are unlikely to awaken people; and
- One or two noise events per night with maximum internal noise levels of 65-70 dBA, are not likely to affect health and wellbeing significantly.

3 Existing Acoustical Environment

Environmental noise monitoring was conducted for the SLR Report 610.14324-R1 '*Erskine Park Resource Management Facility Staged SSD Stage 1 Waste Transfer Station Construction and Operation Noise Assessment*'. The noise monitoring was undertaken as part of the EIS stage and the results are summarised in this Section. The noise monitoring locations and sensitive receivers is shown in **Figure 1**. **Table 4** presents the Rating Background Levels (RBLs) or background (L_{A90}) noise levels for the noise monitoring locations from the Report as well as the lowest 10th percentile of $L_{AF90,15min}$ for the 5am to 7am early morning period.

Figure 1 Site Location and Sensitive Receivers

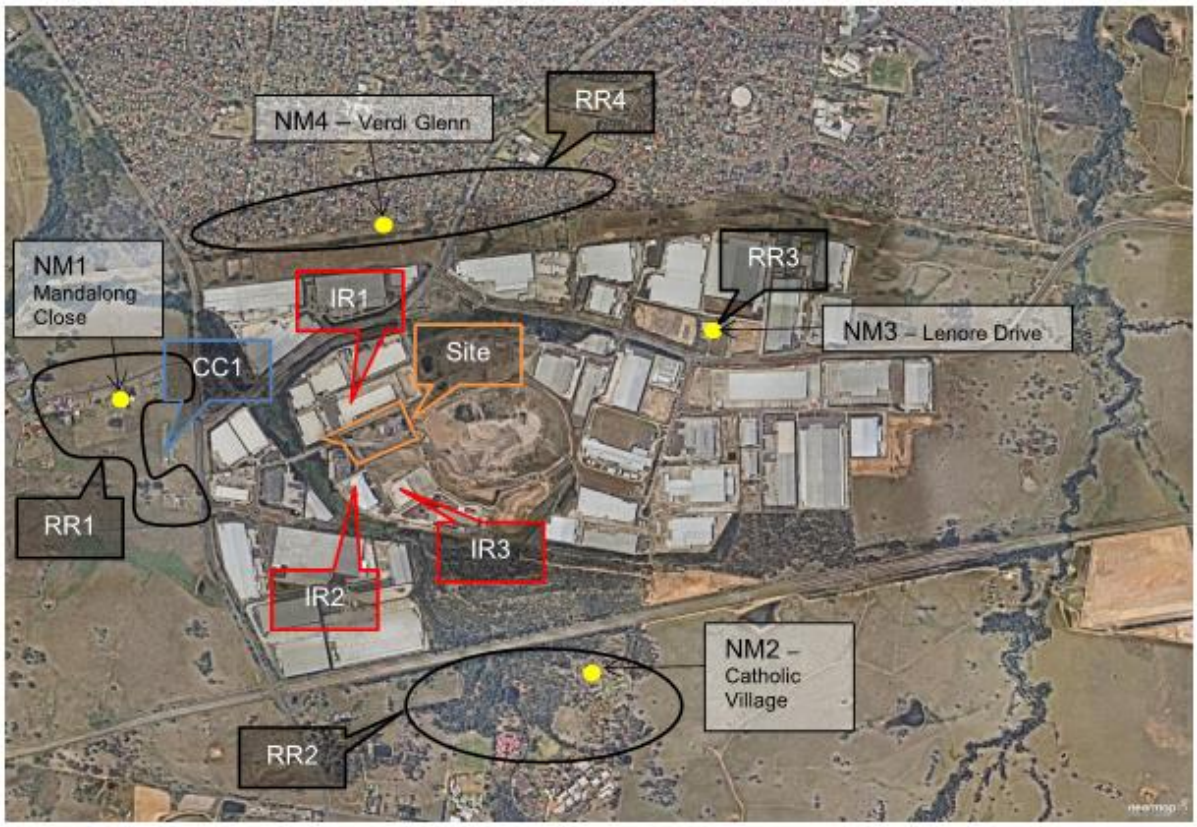

Table 4 Summary of Existing $L_{A90(15minute)}$ Rating Background Levels (RBLs) , lowest 10th percentile of $L_{AF90,15min}$ and Existing $L_{Aeq(period)}$ Ambient Noise Levels - dBA re 20 µPa

Location	$L_{A90(15minute)}$ Rating Background Level (RBL)			lower 10th percentile $L_{AF90,15min}$	$L_{Aeq(period)}$ Existing Ambient Noise Level		
	Daytime 0700-1800 Hours	Evening 1800-2200 Hours	Night-time 2200-0700 Hours	Early morning 0500-0700 Hours	Daytime 0700-1800 Hours	Evening 1800-2200 Hours	Night-time 2200-0700 Hours
NM1 - Mandalong Close	44	45	39	40	54	54	53
NM2 - Catholic Village	35	38	36	37	49	43	44
NM3 - Lenore Drive	46	48	44	43	57	54	53
NM4 - Verdi Glenn	43	41	39	38	51	53	48

4 Construction Assessment

4.1 Proposal Specific Construction NMLs

The EPA's Guideline $L_{Aeq(15minute)}$ construction NMLs and the sleep disturbance screen for the proposed out of hours of 5am to 7am and Saturday 1pm to 5pm are presented in **Table 5**.

Table 5 Recommended EPA NMLs for Construction Works

Location	Noise Management Levels ($L_{Aeq(15min)}$)		Sleep Disturbance Screening Level $L_{A1(1minute)}$
	5am to 7am	Saturday 1pm to 5pm	5am to 7am
RR1 [1]	45	49	55
RR2 [2]	42	40	52
RR3 [3]	48	51	58
RR4 [4]	43	48	53
CC1 [5]	65	65	n/a
IR1	75	75	n/a
IR2	75	75	n/a
IR3	75	75	n/a

Note 1: Based on measured background at NM1 - Mandalong Close.

Note 2: Based on measured background at NM2 - Catholic Village.

Note 3: Based on measured background at NM3 - Lenore Drive.

Note 4: Based on measured background at NM3 - Verdi Glenn.

Note 5: Based on the 45 dBA internal noise level and an external to internal noise reduction (fixed non-openable windows) of 20 dBA).

4.2 Prediction of Noise Emissions - General Discussion

In order to determine the acoustical impact of the Development during construction and operations on the surrounding community, a computer model was developed which incorporates the significant noise sources and the intervening terrain to the closest potentially affected receivers.

The computer model was prepared using the SoundPLAN V7 Industrial Module, a commercial software system developed by Braunstein and Berndt GmbH in Germany. The software allows the use of various internationally recognised noise prediction algorithms. The CONCAWE algorithm, suitable for the assessment of large industrial plants, has been selected for this assessment as it also enables meteorological influences to be assessed.

The noise modelling takes into account source sound level emissions and locations, screening effects, receiver locations, meteorological effects, ground topography and noise attenuation due to spherical spreading and atmospheric absorption.

Noise predictions were calculated at all sensitive receivers described in SLR Report 610.14324-R1. The distance of the site from residential property to support the original EIS submission hasn't changed.

4.3 Construction Scenarios

In order to assess the potential noise impacts during proposed out of hours construction works, a number of scenarios comprising typical plant and equipment frequently used on similar sites have been developed based on our understanding of the project. These scenarios are considered to be representative of the noisiest construction activities that will happen on site during out of hours and are summarised in **Table 6**.

Table 6 Out of Hours Construction Scenarios and Corresponding Equipment

Scenario	Description	Equipment	Number of unit
SC2	Site preparation - Earthworks	30t excavator	1
		Dump truck	1
		Dozer	2
		Water cart	1
		Vibratory Roller	1
		Grader	1
SC3	Transfer Station Building Construction	Delivery truck	1
		Crane	2
		Concrete pump	1
		Concrete truck	2
		30t excavator	2
SC4	Services, water, sewer, electricity, storm water installation	30t excavator	2
SC5	External paving	Delivery truck	1
		Concrete pump	1
		Concrete truck	2

4.3.1 Equipment Sound Power Levels

The sound power levels (SWLs) listed in **Table 7** have been adopted for this study and are based on the SWLs used in the original noise assessment for the EIS.

Table 7 Construction Plant and Associated Sound Power Levels

Plant Item	SWL (Maximum $L_{Aeq\ 15\ min}$) dBA	Duty Factor (minutes operating per 15 minute period)
Compactor	108	15
Concrete Pump	106	15
Concrete Truck	106	15
Crane	104	15
Delivery truck	105	5
Dozer D8	110	15
Dump Truck (25 t)	108	15
Excavator - 30 t	104	15
Grader	108	15
Vibratory Roller (10-12 tonne)1	109	15
Water cart	98	15

In accordance with the ICNG, activities identified as being particularly annoying attract a 5 dBA "annoyance penalty". Activities and associated plant operations which contain potential tonal, impulsive, intermittent and/or low frequency noise characteristics would typically be identified as being annoying. The SLR database of SWLs for construction equipment accounts for this "annoyance penalty".

The duty factor represents the likely amount of time that a particular item of equipment would be operating in any 15 minute period. This takes account of the fact that in a 15 minute period all the equipment will not be used simultaneously.

It should be noted that the sound power levels given for each item of mobile equipment do not include noise emissions which emanate from reversing alarms. It is recommended that all equipment operating in the 5am to 7am period should be fitted with broadband squawker reversing alarms. The alarm noise level should be checked against the appropriate regulatory and health and safety requirements and the necessary mitigating action taken to achieve an acceptable noise reduction without compromising safety standards.

4.3.2 Construction Noise Impact Assessment

Predicted noise levels for all construction scenarios listed in **Table 6** are presented in **Table 8** together with the relevant $L_{Aeq(15minute)}$ construction noise management levels (NMLs) for each noise assessment location.

Table 8 Predicted Daytime Construction Noise Levels - dBA re 20 µPa

Noise Assessment Location	Predicted $L_{Aeq(15minute)}$ Noise Level				Recommended Out of Hours NML	
	Sc 2	Sc 3	Sc 4	Sc 5	5am - 7am	Sat 1pm - 5pm
RR1	36	34	27	31	45	49
RR2	33	32	25	28	42	40
RR3	28	28	21	24	48	51
RR4	36	35	28	31	43	48
CC1	37	34	27	31	65	65
IR1	62	58	51	55	75	75
R2	58	48	41	48	75	75
IR3	53	54	47	47	75	75

Discussion and Conclusion

Review of **Table 8** indicates that the noise emissions from the out of hours construction of the proposed Erskine Park Transfer Station are predicted to be below the NMLs at all receiver locations.

In relation to the potential for sleep disturbance, the EPA, as presented in **Section 2.2**, suggest that the $L_{A1(1minute)}$ (or L_{Amax}) noise level from any specific noise (ideally) should not exceed the L_{A90} background noise level by more than 15 dBA. In SLR's experience from the construction activities proposed the L_{Amax} noise levels would no more than 6 dB above the $L_{Aeq(15minute)}$ noise levels, and this has been confirmed by reviewing noise levels of the equipment proposed as presented in **Table 7**. Compliance with the $L_{Aeq(15minute)}$ criterion will therefore also ensure L_{Amax} noise levels are below the sleep disturbance screening noise level.

In conclusion, the construction activities proposed for the out of hours 5am to 7am early morning shoulder period, and the 1pm to 5pm Saturday afternoon period, comply with the NMLs determined in accordance with the EPA's ICNG.

Checked/DG
Authorised by: JS