3 October 2018

Cleanaway Pty Ltd
85-87 Quarry Road
Erskine Park NSW 2759
Australia

Shaun Williams
Planning Officer
Industry Assessments
320 Pitt Street | GPO Box 39
Sydney NSW 2001

Dear Shaun,

RE: Memo to Support Proposed Modification to SSD 7075 to Add Basic Sort Line in Stage 1

Introduction

This memo supports an application for a proposed modification to the Erskine Park Stage 1 Waste Transfer Station (WTS) development consent (SSD 7075), which seeks approval for a dry waste manual sort line in the transfer station (modification 3).

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 proposal 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.

Following approval four modification applications have been submitted to the Department of Planning and Environment:

- Modification 1: minor changes to the Concept Proposal / Staged Development Application and the Stage 1 Waste Transfer Station. Modification 1 also clarified the concept of basic resource recovery described in the EIS. 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 basic resource recovery, currently being assessed by the Department.**
- Modification 4: changes to construction hours being currently assessed by the Department.

The memo provides the background to the approved approach to the air quality impact assessment and approved approach to the management of odour for the Stage 1 WTS. It discusses the potential changes to odour impacts from the proposed modification and how the existing approved approach to impact assessment and odour management can adequately address these.

Current project status

The Stage 1 Waste Transfer Station (WTS), currently under construction, is approved to receive commercial and household waste from the Western Sydney region. A proportion of the dry waste received would be sorted for recovery, consistent with the concept of basic resource recovery described in the EIS and

subsequent modifications. The remainder of the waste would be transported to a licensed waste management facility off site. In future a more advanced resource recovery process in the Stage 2 RRF (subject to future approval) would allow a greater proportion of the incoming waste to be recycled and recovered as saleable products.

Approved approach to odour management and impact assessment

Approved Odour Management Plan June 2017 for Stage 1 WTS

Condition B12 of the Development Consent requires the preparation of an Odour Management Plan (OMP) prior to construction to the satisfaction of the Secretary. The OMP was submitted in June 2017 (Cleanaway, June 2017) and approved by the EPA in July 2017 (EPA, July 2017).

The OMP notes that the extracted air from the enclosed building using rapid roller doors will either:

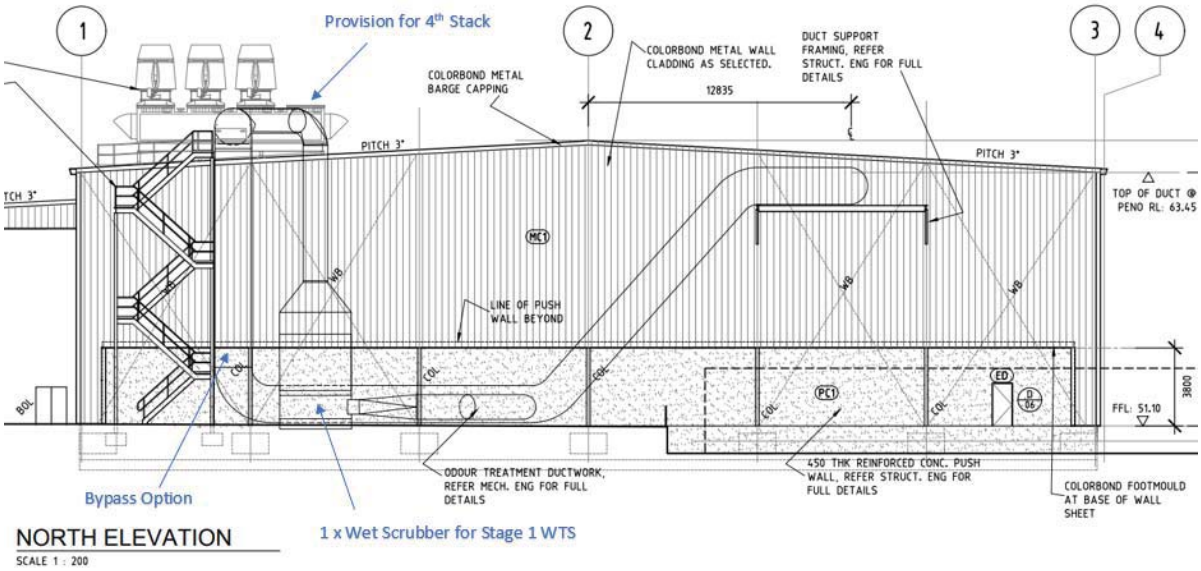
- For emission control, be exhausted to atmosphere via high plume dispersion stacks on the roof of the building (if additional odour treatment is not required); or
- For air pollution control, be directed to the odour treatment system (wet scrubber) if the air needs to be treated prior to discharge via the dilution stacks on the roof of the building.

High plume dispersion stacks are designed to offer enhanced emission control through the entrainment of additional air from the surrounding environment, so that dilution, mixing and discharge velocity are maximised. Three stacks will be installed during construction and tested prior to operation. Design provision has been made for a fourth dispersion stack to be installed in the future, if required.

The odour treatment solution adopted is a wet scrubber system located externally to the northern façade of the building which will be installed in phases, as required, depending on the operating throughput of the WTS and effectiveness of the integrated Odour Management System. One scrubber will be installed during construction of the WTS with an air flow rate capacity of 15 m^3/s. After passing through the odour treatment system, the scrubbed air will be ducted to roof height for discharge through the high plume dispersion stacks located on the roof of the building. Provision has been made in the design for up to two more units (15 m^3/s each) to be installed in the future, if required.

As indicated above, the building ventilation system is designed so that the treatment system (scrubber) can come online when required as determined by the monitoring and verification process (i.e. emissions may be discharged via a bypass of the scrubber when treatment is not required).

A schematic diagram of air pollution control for Stage 1 is provided below.



Note: diagram is indicative only and may be subject to change

An additional schematic diagram from the OMP is reproduced as Appendix A to this memo along with a summary of the approach to the assessment of air quality, including odour, through the EIS and Response to Submissions.

In addition to the OMS, a weather station will be installed on-site to record local meteorology conditions. This will assist in identification of adverse weather conditions and will be a fully integrated system whereby the weather station communicates with the OMS. This will allow additional levels of control, so that the system can be optimised to suit prevailing weather conditions.

Air quality impact assessment

An Air Quality Impact Assessment (AQIA) was prepared as part of the EIS to support the development application for SSD 7075. The AQIA indicated that the assessment of odour from 'normal operations' determined that when operating at the design capacity throughput of 300,000 tonnes per year, the plant would not exceed the NSW EPA impact assessment criterion (the 'compliance standard') at any residential locations.

However, Cleanaway set a design objective at a level in excess of that required to satisfy legislation, referred to as the 'design standard', to reflect the sensitivity of the local community to odour. The AQIA predicted a minor exceedance of the 'design standard' at residential properties located to the north when the throughput approaches the 300,000 tonne limit.

The assessment identified that when the plant was operating at full capacity the wet scrubber should be applied with an operational efficiency of at least 40 percent to meet the design standard.

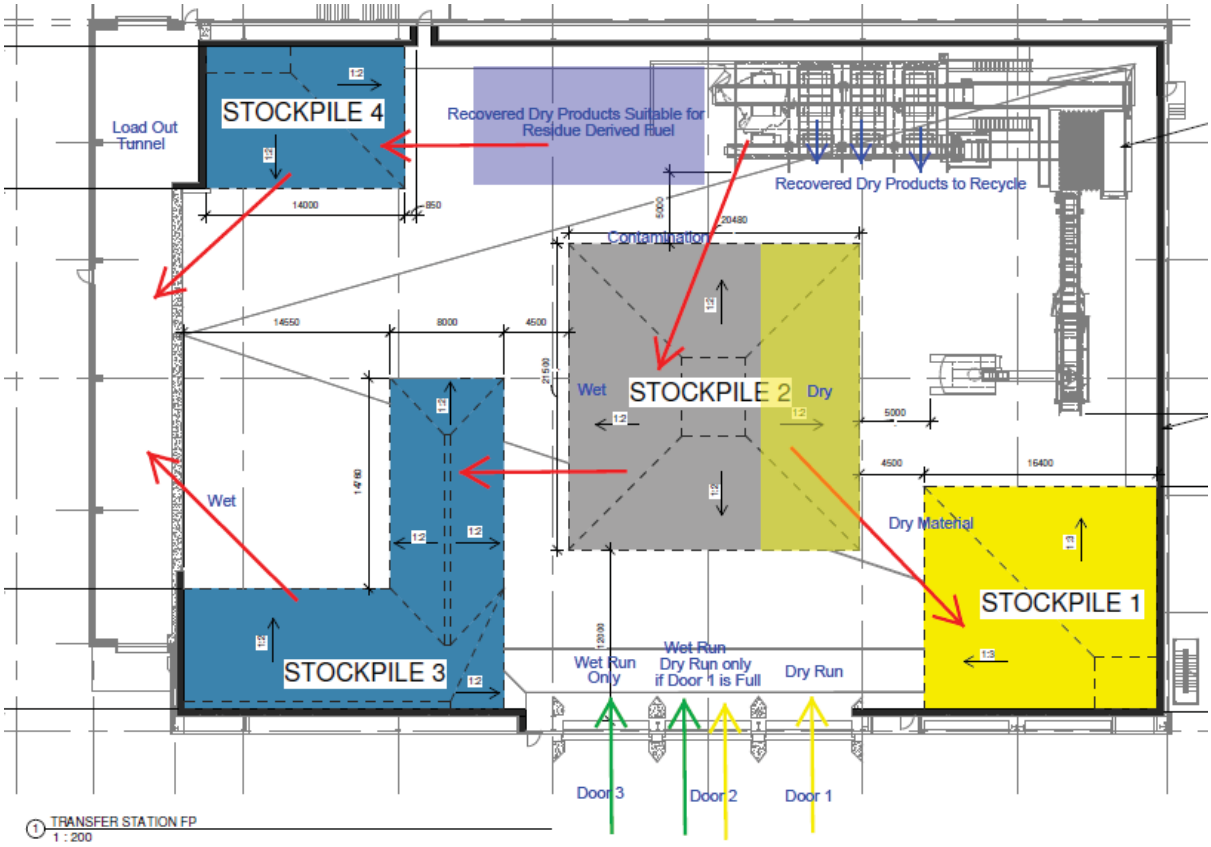
In addition to 'normal operations', the AQIA assessed an 'emergency scenario' where waste was unable to be exported from the WTS as a result of an extreme weather event or closure of the nearby road network, causing waste to build up in the WTS. The AQIA predicted that application of the wet scrubber with an abatement efficiency of 60 percent or greater would be required to meet the compliance standard for the emergency scenario (the design standard is not applicable to the emergency scenario). The risks of this event

occurring (road closures or extreme weather events that cause the plant to be incapable of waste export) are considered to be very low.

Proposal for a dry waste manual sort line (Modification 3)

The proposed modification seeks approval for the introduction of a manual sort line to enable basic manual sorting of selected dry waste delivered in the Stage 1 Waste Transfer Station, consistent with the concept of basic resource recover described in the EIS and subsequent modifications. This is distinct from the advanced resource recovery proposed for Stage 2 which would be subject to a separate development application and EIS.

The manual sort line would sort comingled dry waste only, typically cardboard, plastics, timber and ferrous materials collected via selective high fibre industrial premise routing (called dry run) and transported to the WTS. Putrescible waste (called wet run) is collected and transported by a separate collection run. The dry runs are allowed to tip via a dedicated door into the WTS shed and further segregation of dry from wet material is undertaken if required using trained loader and material handler operators. Refer below schematic for material movement within Stage 1 WTS.



Note: diagram is indicative only and may be subject to change

Basic resource recovery using the manual sort line would involve using mobile plant on the floor of the Waste Transfer Station to physically separate and stockpile material to be recovered. The material would then be passed through a manual sort line which would involve placing the material on to an infeed conveyor, passing through a pre-screen to screen out larger materials followed by manual sorting by workers stationed along the sort line and recovery of ferrous material using a magnet.

It is anticipated that approximately 30% of the incoming volume will be dry waste fraction that would be diverted to the manual sort line for recovery.

Recovered material would be transferred out of the Waste Transfer Station for distribution to market with residual material from the basic sorting process transferred out for transport to licensed waste processing facilities or landfill along with other waste material in accordance with the approved project. The introduction of the sort line would not impact on the storage duration for putrescible waste in the transfer station.

While the inclusion of a sort line into the Stage 1 WTS may have the potential to increase the odour generation, this risk is considered as negligible as there is limited additional agitation of material compared to what has already been assessed through the EIS and RtS. In addition, only dry material fractions are proposed to be sorted.

The AQIA (SLR, 2015) adopted an odour emission rate (OER) of 503.1 ou.m^3/t.s of waste on the floor, a conservative approach which deliberately over estimated the OER to reflect the sensitivity of the local community to odour. Cleanaway anticipates no change to the odour contour provided within the AQIA as a result of the introduction of the manual sort line.

Subsequent to the AQIA, Cleanaway has undertaken additional research at a similar waste transfer facility which indicates an actual OER for waste on the floor of a transfer station of 113.5 ou.m^3/t.s. While this has not been relied upon for impact prediction, it validates the conservative nature of the original AQIA and the likelihood that monitoring during operation of the WTS will demonstrate an observed OER significantly lower than the OER used in the AQIA.

The AQIA prepared for the EIS demonstrated that the approach to air pollution control, involving containment, dispersion through Tri-stack supplemented by a wet scrubber when needed, would meet the standard required in NSW legislation and the more stringent design standard set by Cleanaway. This is the case for a range of operating scenarios including normal operations, busy periods when there are unusually high amounts of waste on the transfer station floor (the 200 T scenario requested by the EPA) and the emergency scenario where unforeseen events such as road closures or extreme weather events result in no waste being able to be exported from the WTS, and the temporary storage of approximately 1,040 tonnes of waste on the floor of the WTS.

In addition, the approach to air pollution control has been designed so that additional control can be added, including additional Tri-stack capacity and additional wet scrubbers. The need for additional control would be assessed as part of the monitoring and verification process committed to by Cleanaway in the EIS and reflected in Condition B12 Odour Audit.

Summary and conclusion

- The approved approach to the air pollution control is described in the EIS, RtS and OMP
- The approach to impact prediction was deliberately conservative, using an OER significantly higher than the OER likely to be observed during operations
- The approach to air pollution control contains a number of integrated elements which can be scaled to respond to actual odour emissions during operations. Modelled predictions indicate that use of the wet scrubber is not required to achieve the compliance standard during normal operations, therefore the air pollution control has been designed to allow air to bypass the scrubber before being discharged via the Tri-stack.
- The proposed introduction of a basic manual sort line in the Stage 1 WTS is unlikely to lead to any increase in the odour impact already assessed in the EIS and RtS, given the conservative nature of the assessments to date, the multiple assessment scenarios and the dry nature of waste.
- The approved approach to air pollution control and Condition B12 Odour Audit, which requires predicted emissions to be verified against observed emissions during operations and for the approach to air pollution control to be refined accordingly, provides an appropriate mechanism to avoid impacts on nearby receivers.

Please contact me for any further clarification.

Regards

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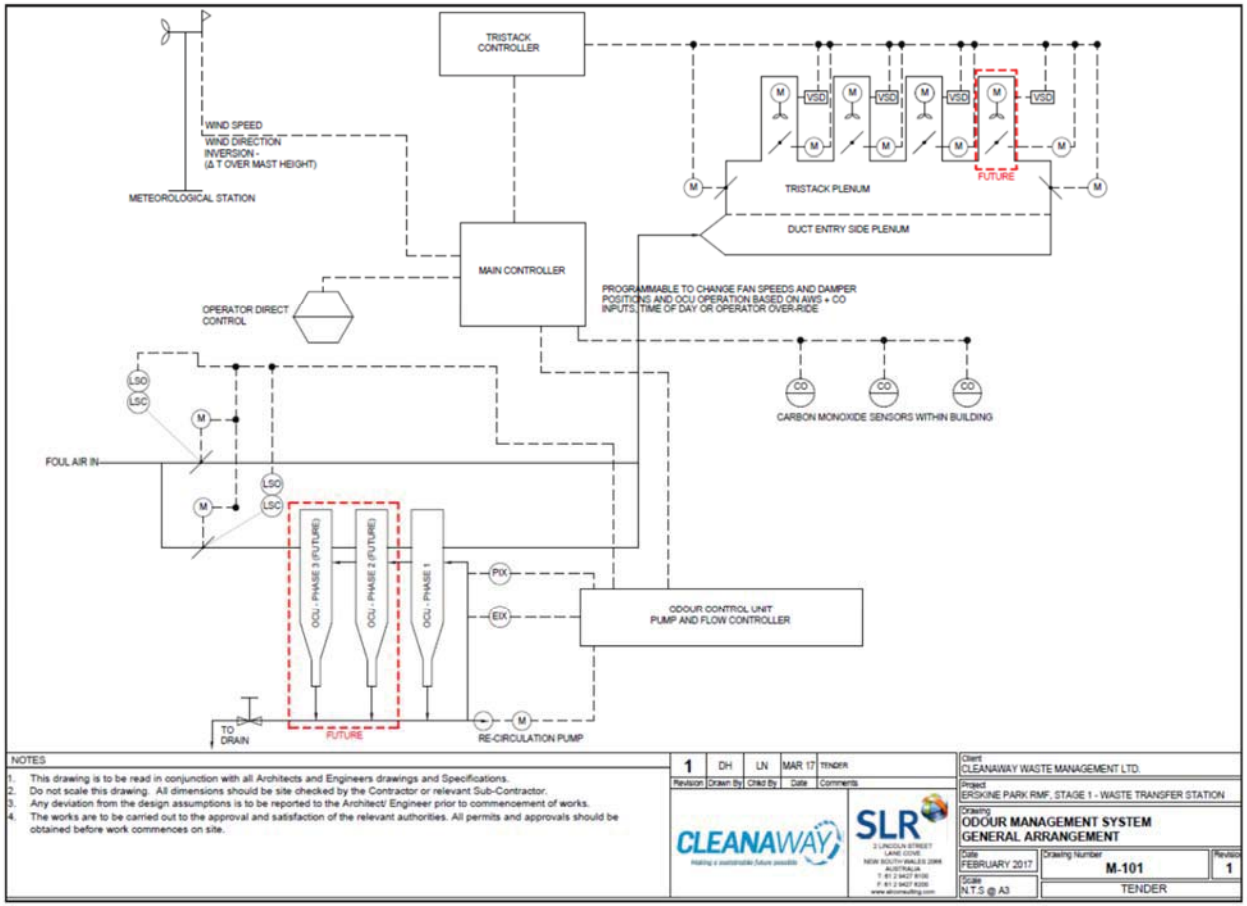
Appendix A: Air Pollution Control Schematic (from approved Odour Management Plan)



Note: diagram is indicative only and may be subject to change

Approved approach to air quality impact assessment and air pollution controls

Air Quality Impact Assessment for EIS

The approach taken to the air quality impact assessment and odour management was deliberately conservative to reflect the sensitivities of the local community to odour. The conservative approach included:

- use of an odour emission rate (OER) which significantly overstates the OER that is likely to be observed in practice
- use of fugitive emissions rates which significantly overstate the fugitive emissions that are likely to be observed in practice
- assessment of odour impacts against a design standard (2 OU at 99th percentile) adopted by Cleanaway which sets a more stringent level of odour performance than the compliance standard (2 OU at 100th percentile) required by NSW legislation.

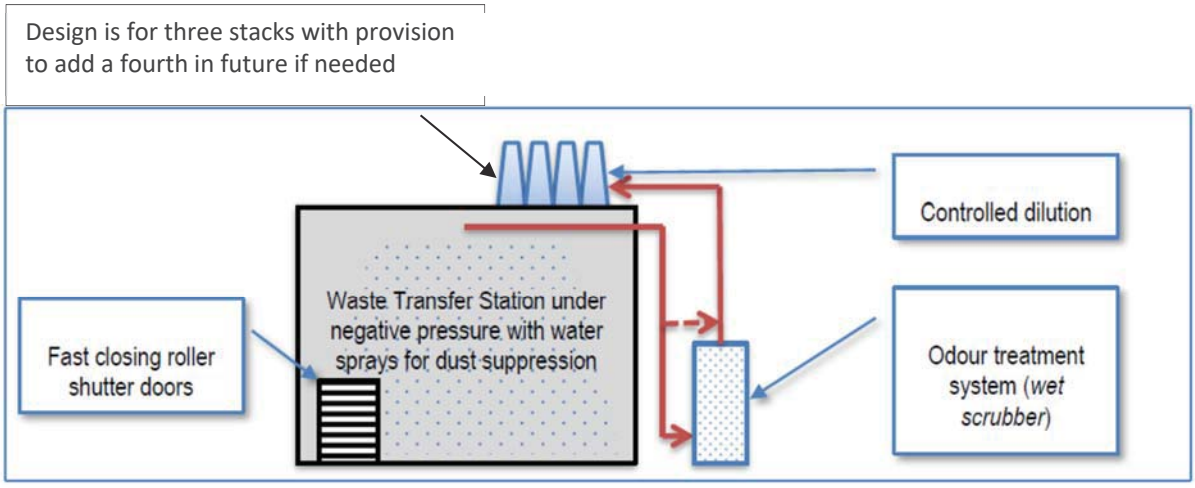
The Air Quality Impact Assessment (AQIA) (SLR October 2015) describes the approach to air pollution control (APC), including odour. The proposed integrated APC system offers multiple levels of control that facilitate an integrated solution for emission control involving:

- **Containment:** containment of dust and odour within the building fabric using fast acting doors and an air extraction system.
- **Air pollution control device:** the operation of an appropriate APC device (a wet scrubber).
- **Emission control:** the use of dilution fans (Tri-stack) to maximise the dispersion and dilution of the extracted, and scrubbed, air.

The AQIA notes how the components of APC may work together or independently:

> *'The system configuration allows for a period of bedding in, such that emissions may be discharged via a bypass of the scrubber. Additionally, the scrubber may be operated without the operation of the bypass fans whilst gaining dispersion advantage through the entrained flow dilution. During the early phases of operation (whilst the throughput is estimated to be approximately 30% of design capacity), the demand on the operation of the scrubber with the dilution fans is reduced, and this study demonstrates that all components are not simultaneously required to achieve the compliance standard and design standards adopted for the plant.'*

The AQIA provided a concept graphic to support this configuration, reproduced below.



The approach to air pollution control was further supported by a commitment made in the AQIA to undertake a rigorous monitoring and verification process within the first 12 months of operations, when waste throughput was estimated to be at 30% of the design capacity of 300,000 tonnes. This process will be used to verify odour predictions and refine the odour management measures, if required, and was subject to a planning condition (B12 Odour Audit). Given the conservative approach described earlier, it is expected that the monitoring and verification process will demonstrate that observed odour emissions are lower than modelled predictions.

As an additional commitment, Cleanaway will also undertake follow-up monitoring during the operational lifetime of the WTS, on a basis to be agreed with the relevant authorities

The assessment of odour from 'normal operations' determined that when operating at the design capacity throughput of 300,000 t/year, the plant would not exceed the NSW EPA impact assessment criterion of 2 OU as the 99th percentile of 1-second nose response time [2 OUP=99] (called the 'compliance standard') at any residential locations.

The assessment predicted a minor exceedance of the more stringent 'design standard' (2 OU at 100th percentile) at residential properties located to the north when the Waste Transfer Station was operating at maximum throughput and in the absence of the wet scrubber, with the application of the scrubber bringing emissions within the design standard.

During the emergency scenario, the assessment identified that the compliance standard would be exceeded and would require application of the scrubber to bring emissions back within the standard. The design standard was not applied to the emergency scenario because of the highly unlikely nature of this scenario.

Additional Air Quality Impact Assessment for Response to Submissions

The Response to Submissions (RtS) (SLR, Feb 2016) addressed comments by the EPA on the AQIA. The RtS reconfirmed the approach to air pollution control and emphasised that the pollution control device consists of both the Tri-Stack system and the wet scrubber, as part of an integrated system.

It added that the Tri-Stack system will be fully operational upon commencement of operations, and the assessment provided demonstrates that it's operation will not cause odour concentrations above 2 OU (as the 99th percentile) at any time up to and including operation at full capacity. Modelling showed that at a throughput of around 90% of capacity, additional air pollution controls (i.e. a wet scrubber) would be required to achieve 2 OU (as the 100th percentile).

It also noted Cleanaway's commitment to undertake a monitoring and verification process within the first 12 months.

Following discussions with EPA, an alternative operating scenario was modelled to assess the impact of higher than normal waste tonnage in the Waste Transfer Station. This scenario modelled a situation whereby a larger

inventory of waste remains within the transfer station during normal receival and load out operations. For modelling purposes, this scenario has been defined as 200 tonnes (the peak hourly tonnage based on the normal operations profile presented in the EIS) in the Waste Transfer Station during every operating hour.

As with other scenarios modelled, the assessment of the alternative scenario concludes that Criterion 1 (compliance) is met without the need for application of the wet scrubber. Criterion 2 is met with the application of air pollution controls at 70% efficiency.

Given the conservatism assumed in the modelling, it is expected that the monitoring and verification process proposed during the first 12 months will demonstrate that observed odour emissions are lower than modelled predictions. However, if this process demonstrates that odour emissions are higher than predicted, the air pollution controls can be scaled up accordingly.