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Mr Chris Ritchie
Acting Executive Director – Energy, Resources and Industry Assessments
Via email: [redacted]

Information on vehicle access door opening periods and potential impacts

Dear Chris

1. Roller door opening times

During the third day of the Independent Planning Commission's Public Meeting for the Moss Vale Plastics Reprocessing Facility, a question was asked by the Commissioners in relation to the amount of time the roller doors, used by trucks to deliver and export product from the facility, would be open.

GHD stated (based on industry experience), that doors could typically open for 2-3 minutes when a truck arrives at the site to permit entry of a truck or semi-trailer, and would then open for the same period to allow for exit of the same vehicle after unloading (with doors closed). This would result in an estimated total door opening period of 4-6 mins per truck (in and out). This would equate to between 200 mins (3.3 hours) and 300 mins (5 hours) over the course of a 24 hour/day operating period (noting that the 11 hour daily truck arrival period is between 7am to 6pm weekdays only).

The potential 5 hour door open period, stated at the IPC Public Meeting, considered the total time for a truck to enter the site, manoeuvre into position and then enter the facility.

Questions were asked by the IPC in relation to the 5 hour period, particularly in relation to whether this would allow microplastics to escape into the environment. A detailed analysis has been undertaken to confirm the likely door open time and the potential for microplastics to escape during this period.

1.1 Truck entering the building

Information about the opening and closing speeds of high speed/rapid roller doors of the size required for this type of facility has been sourced from local suppliers. For a 6 m high industrial rapid roller door, by DMF (SERIES RL3000 High Speed Rapid Roll Door | DMF), the maximum speed of upward and downward movement is stated to be 1.3 m per second. Therefore the roller door would rise in just over 5 seconds, and close in just over 5 seconds.

The analysis below is based on conservative assumptions using the largest vehicle (19m long semi-trailer) accessing the facility.

For a semi-trailer entering the building:

- the vehicle reverses so that it is adjacent to the door
- the door opens in 5 seconds
- the vehicle reverses at 1 m per second, taking 20 seconds to travel through the doorway
- the door closes in 5 seconds

Total elapsed time = 5 + 20 + 5 = 30 seconds

1.2 Truck leaving the building

For a semi-trailer leaving the building:

– the door opens in 5 seconds
– the vehicle moves forward at 2 m per second, taking 10 seconds to exit
– the door closes in 5 seconds

Total elapsed time = 5 + 10 + 5 = 20 seconds

1.3 Total door open time

Based on Section 1.1 and Section 1.2, the total time for a door to be open is 50 seconds per truck. Figure 1 shows the various time components.

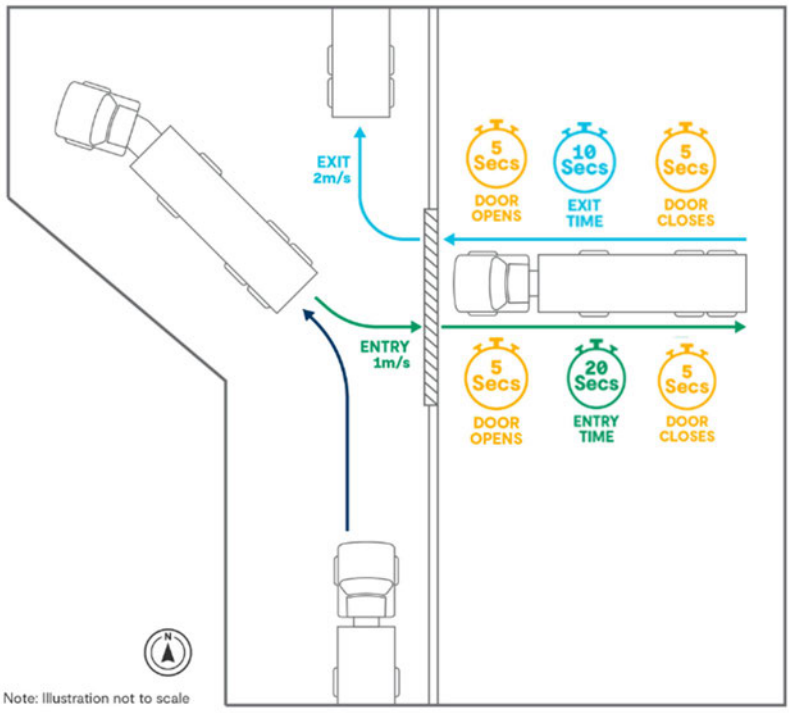

Figure 1 Time required for trucks entering and leaving Building 1

For the maximum 120,000 tonnes per annum throughput (when the facility is operating at full capacity), there would be up to 50 trucks per day. This equates to a total of 42 minutes of door open time per day (made up of 50 seconds x 50 trucks = 2,500 seconds = 42 minutes per day).

The 42 minute period is not continuous but comprises 50 segments of 30 seconds each (truck arrivals) and 50 segments of 20 seconds each (truck departures). Within each 24 hour daily operating period, doors would only be open for 3% of the time.

The amount of door opening time is directly related to the throughput of the facility and the type of truck. For example, if the total throughput for the facility starts off at 60,000 tonnes per annum (50% of maximum capacity), this would reduce the total door open time to 21 minutes per day.

Some material could be delivered by rigid body trucks, which are much shorter than semi-trailers (~12.5 m in length). Whilst the door opening and closing times would be the same (5 seconds each), the length of time for truck entry and exit would be reduced due to the shorter vehicle length and easier manoeuvrability.

2. Potential for microplastics emissions during roller door open times

A number of public submissions stated the possibility of strong westerly winds occurring whilst the roller doors are open, resulting in microplastics escaping into the environment.

Figure 2, shows that the northern roller doors would largely be shielded from westerly winds by the proposed wastewater treatment plant (WWTP) building. The WWTP is 5 m in height. The southernmost roller door would be protected from north west winds. There is potential for westerly winds to blow inwards through the doors, when open, noting that the time for which the door is open is at the most, 30 seconds, when a semi- trailer is reversing, and 20 second when a semi-trailer is leaving.

The doors would only be open when in use. Therefore, at all times when the door is open, there would be a truck moving through the opening. This would create resistance to wind in addition to the static pressure of the building. A westerly wind direction (blowing towards the building), would not cause material to be carried through the door opening in the opposite direction.

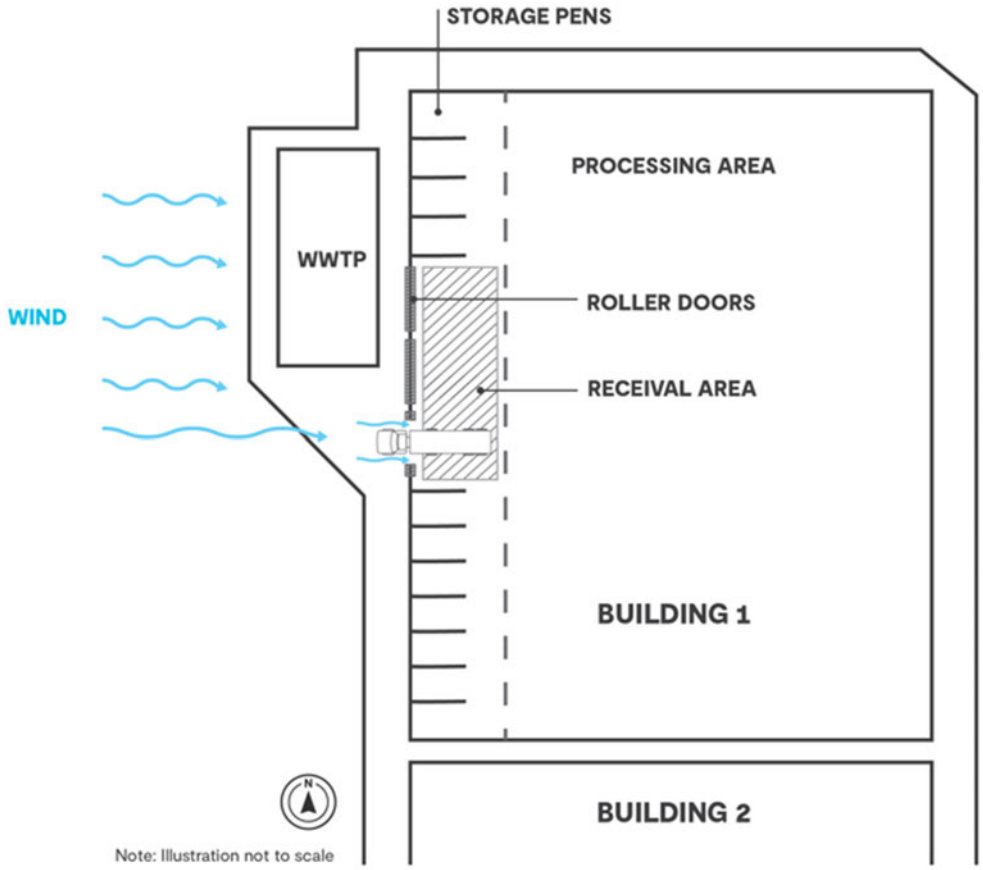

Figure 2 Potential impacts of roller door being open for short periods of time

The Architectural Plans show that plastics bales will be stored in pens against the western wall of the building. The pens would be three sided concrete structures, with the fourth open side facing east. The pens are required to meet the Fire and Rescue NSW Waste Facility Guidelines, and will have walls 4 m high. The material stored in the pens will be protected from wind or associated air currents.

It is proposed that this part of the building would have a negative air pressure system, which will draw air in through the open doors, preventing escape of any plastic particles when there is no westerly wind blowing. This would be operated at 0.5 air changes per hour (typical operations). This could be increased by 100%

to 1 air change per hour, to provide added additional protection against escape of particles. Should any plastic fragments (not microplastics) fall on the floor during unloading (whilst the door is closed), they would be cleaned up using industrial vacuum or floor washing equipment before the door is opened again for the truck to leave.

The above measures will enable the plant to operate continuously whether the doors are open or not.

3. Potential noise emissions during roller door open times

In January 2024, DPHI requested additional information relating to the noise modelling work undertaken for the Amendment Report. As part of this, GHD was asked to model a scenario where all of the western roller doors were open for an entire 15 minutes (the standard period used in noise modelling). The full request was as follows:

> *Heavy vehicles entering the facility would pass over the weighbridge before reversing into Building 1 via high-speed roller doors, however, it is unclear if these movements have been accurately modelled. Please clarify the assumptions used to calculate both sound power levels and the duration of noise emissions for each low speed movement through the site (including idling at weighbridge, acceleration and reversing movements). Furthermore, please provide a sensitivity analysis to determine the likely noise impact if all roller doors are open over a 15-minute assessment period.*

An updated operational noise model was prepared which demonstrated that project noise trigger levels can be achieved at all sensitive receivers when:

- A typical heavy vehicle movement scenario (5 trucks in and out per hour) would occur
- The western roller doors are open during a full 15-minute assessment period

The operational noise levels were predicted to comply at all sensitive receivers when the number of outgoing heavy vehicles is limited to two per 15-minute period. The memo containing this analysis is dated 30 January 2024 and is called "*Response to Department of Planning and Environment issues raised – noise*".

The analysis confirmed that noise compliance would be achieved even with all of the western roller doors open for 15 minutes.

Notwithstanding the above, as indicated in Section 1, the western doors would only be open for 30 seconds at a time, rather than a full 15 minutes, and one at a time, rather than all at once.

Regards

[redacted]

David Gamble
Senior Technical Director - Waste Infrastructure

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