

HERRING STORER ACOUSTICS

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Our ref: 19061-2-14269

28 April 2015

IW Projects
PO Box 419
MORLEY WA 6943

Attention : Ian Watkins
Email : iwatkins@iwprojects.com.au

Dear Ian,

PROPOSED LANDFILL SITE – CHITTY ROAD, TOODYAY RESPONSE TO QUERIES AND ADDITIONAL INFORMATION

As requested, we herewith provide the following response to the DER queries regarding the acoustic assessment for the proposed landfill site located at Lot 12 Chitty Road, Toodyay. We also provide additional information, which we believe would help clarify the situation regarding the noise that would be received at the neighbouring residence.

DER QUERIES

From the Email received on 1 April 2015, the queries relating to the acoustic assessment were as outlined below :

Noise

- 35.** The proposed landfill is located in a rural area and will be operating alongside an existing extractive industry, which singularly or together may be a dominant noise source in an area. To complete the noise assessment DER requires the following information:

35.a. Requested Information:

As part of the LMP, outline how Opal Vale will manage possible noise complaints should they occur.

35.b. Requested Information:

The sound power levels quoted in Table 5.2, Page 3 of the Herring Storer Acoustic Report, were "based on file data of similar operations" and not on manufacturer's specifications or on the existing equipment currently used on site. Verify the sound power level of the proposed dozer and existing clay dozer in operation.

35.c. Requested Information:

Due to the risk of being the dominant noise source in the area, obtain background noise levels for a representative period of time at the nearest residential receptor.



35.d. Requested Information:

Given that the slope of the terrain increases towards the visible residents with no apparent barriers, the predicted levels seem lower than expected, particularly as worst case meteorological conditions are assumed. Obtain noise levels relating to the existing quarrying operations at the nearest residential receiver, and relate to concurrent clay extraction operations. Then reassess the noise model and output, including validation with the measured levels.

35.e. Requested Information:

Noise levels received at a distance are very dependent on meteorological conditions. Therefore, detailed meteorological data needs to be obtained for the verification/background measurement periods.

35.f. Requested Information:

Based on item 1, the nearest residential receptor is likely to be further than the farmhouse, located 400m away.

RESPONSES

35.a. Management of Noise Complaints

We understand that the proponent will provide a response to this request.

35.b. Sound Power Levels

The sound power levels used in the assessment are based on actual noise levels recorded by Herring Storer Acoustics of the models of equipment that we understand would be used on site. These sound power levels have been used for many assessments reviewed and accepted by the DER.

We note that it is not possible to measure the noise associated with the dozer and waste compactor associated with the Landfill, as these items have not been purchased and we understand will not be until approval has been received. However, it is understood that these machines will be a new or near new item (ie new model type). Hence, we believe that the sound power level used in the noise modelling would, if anything, be conservative.

With regards to the Clay extraction operations, we note that this operation occurs infrequently and we understand that clay extraction is not planned until at least Spring 2015. However, clay extraction is occurring at another pit nearby, using the same equipment that would be used at this pit. Therefore, noise level measurements of this equipment with the results listed below in Table 1. Table 1 also lists the sound power levels used in the acoustical assessment. We note that the dozer used for clay extraction is a Cat D8, not a D11 as per our report.

TABLE 5.2 – CLAY OPERATIONS – CONFIRMATION OF SOUND POWER LEVELS dB(A)

Item	Sound Power Level dB(A)	
	As Per Assessment	Confirmation Measurements
Dozer	113 (D11)	111 (D8)
Clay Truck	102	93 (Truck with trailer)
Front End Loader	108	104 (CAT 792)

For the Landfill operation, we note that from the manufactures data (copy of relevant page is attached), the sound power level of the compactor is 111 dB(A). We believe that the Sound Power Level of 111 dB(A) for a D8 dozer supports our Sound Power Level of 109 dB(A) for the smaller D7 dozer.

Based simply on the difference in the actual noise levels compared to that stated in the report, the noise level received at the neighbouring residences would be as listed in Table 2.

TABLE 2 - REVISED NOISE LEVELS AT CLOSEST RESIDENCES

Scenario	Receiver/Calculated Noise Level dB(A)	
	Residence to North East	Residence to East
Landfill	34	30
Clay	33	26
TOTAL	37	31

Thus, verification as requested by the DER, have been undertaken which show that the noise levels associated with this operations is less than as stated in the December 2014 assessment report and compliance with the Regulations will be achieved.

35.c. Background Noise Levels

The Clay pit is not currently operating, thus monitoring of noise emissions from this operation is not currently possible.

We are not quite sure why the DER has asked for background monitoring; as we note that the assigned noise levels are independent of background noise levels, hence have no direct relevance to compliance. Thus, background noise levels are not required.

35.d. Predicted Noise Levels

We note that the noise modelling has been undertaken using the weather conditions outlined in the EPA's guidance and are considered to be worst case conditions.

Reviewing the data, the distance to the nearest residence and the factors considered by the SoundPlan noise model, the results are as expected.

We point out that SoundPlan is a recognised noise modelling program accepted by the EPA and the results of the noise model are actually conservative.

The modelling was undertaken with all equipment operating at once. For these operations, there will be some diversity in the operations and usage of equipment, hence the modelling is again conservative.

35.e. Meteorological Conditions

We agree that with any monitoring undertaken the meteorological conditions will also be required.

35.f. Nearest Residence

We understand that the proponent will respond to this query.

ADDITIONAL INFORMATION

From the above queries, it appears that the DER is concerned about the cumulative noise that would be received at the closest neighbouring residence.

We point out that these operations are proposed to only operate during the day period and the Assigned L_{A10} noise level during this time is 45 dB(A). The calculated noise levels for these operations would, under Regulation 7 Clause 2, be considered as NOT significantly contributing and would individually be deemed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* regardless of the noise received at the neighbouring residence from other extractive industries.

The calculated noise levels for the Landfill and Clay operations are significantly below the assigned noise level. At these predicted noise levels, we believe that it would be likely that noise received at the neighbouring residence would not be tonal. However, to be conservative, this adjustment has been allowed for in this assessment.

We note that the Clay pit operations are infrequent and there would be some diversity of operation for the Landfill operation. Hence, the predicted noise levels would be conservative.

Finally, we note that under the EPA's "Guidance for the Assessment of Environmental Factor" No 3 (Separation Distances between Industrial and Sensitive Land Uses) states that the buffer distance for a Clay Extraction operation is between 500 and 1000 metres, with the distance for a landfill facility being 500 metres. Thus the closest noise sensitive premises are outside the buffer distance for noise.

Thus, noise received at the closest neighbouring residence would comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

We trust this answers The DER's queries, however, if they require further information, we would be pleased to discuss the above.

Yours faithfully,
For **HERRING STORER ACOUSTICS**


Tim Reynolds

Att.

836K Landfill Compactor Specifications

Engine

Engine Model	C18 ACERT	
Emissions	U.S. EPA Tier 4 Final and EU Stage IV	
Rated Power (Lab)	414 kW	555 hp
Rated Power (Net ISO 14396)	412 kW	553 hp
Gross (SAE J1349)	419 kW	562 hp
Net Power – SAE J1349		
Direct Drive – Gross Power	370 kW	496 hp
Direct Drive – Torque Rise	52%	
Converter Drive – Gross Power	370 kW	496 hp
Converter Drive – Torque Rise	52%	
Maximum Gross Torque @ 1,300 rpm	3085 N·m	2,275 lbf-ft
Maximum Altitude without Derating	2286 m	7,500 ft
Bore	145 mm	5.71 in
Stroke	183 mm	7.2 in
Displacement	18.1 L	1,104.5 in ³
High Idle Speed	2,120 rpm	
Low Idle Speed	750 rpm	

Operating Specifications

Operating Weight with Full Tank Capacities and U-blade	55 927 kg	123,319 lb
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Transmission

Transmission Type	Planetary – Powershift – ECPC	
Travel Speeds		
Forward – Converter 1st	6.2 km/h	3.9 mph
Forward – Lockup 1st	6.5 km/h	4 mph
Forward – Converter 2nd	10.9 km/h	6.8 mph
Forward – Lockup 2nd	11.7 km/h	7.3 mph
Reverse – Converter 1st	6.5 km/h	4 mph
Reverse – Lockup 1st	6.9 km/h	4.3 mph
Reverse – Converter 2nd	10.4 km/h	6.5 mph
Reverse – Lockup 2nd	12.3 km/h	7.6 mph

Hydraulic System

Hydraulic System	Flow Sharing Implement	
Maximum Supply Pressure	32 000 kPa	4,640 psi
Main Relief Pressure	24 100 kPa	3,495 psi
Pump Flow at 2,006 rpm	250 L/min	66 gal/min
Steering System	Double Acting – End Mounted	
Bore	127 mm	5 in
Stroke	740 mm	29.1 in
Vehicle Articulation Angle	86°	
Lift System	Double Acting Cylinder	
Bore	137.9 mm	5.5 in
Stroke	1021 mm	40.2 in

Service Refill Capacities

Fuel Tank	793 L	209 gal
Cooling System	107 L	28 gal
Crankcase	60 L	16 gal
Diesel Engine Fluid Tank	32.8 L	9 gal
Transmission	120 L	32 gal
Differentials and Final Drives – Front	186 L	49 gal
Differentials and Final Drives – Rear	190 L	50 gal
Hydraulic System (tank only)	240 L	63 gal

- All non-road Tier 4 Final/Stage IV, and Japan (MLIT) Step 4 diesel engines are required to use:
 - Ultra Low Sulfur Diesel (ULSD) fuels containing 15 ppm (mg/kg) sulfur or less. Biodiesel blends up to B20 are acceptable when blended with 15 ppm (mg/kg) sulfur or less ULSD and when the biodiesel feedstock meets ASTM D7467 specifications.
 - Cat DEO-ULS™ or oils that meet the Cat ECF-3, API CJ-4, and ACEA E9 specifications are required.

Axles

Front	Planetary – Fixed
Rear	Planetary – Oscillating
Oscillation Angle	13°

Brakes

Control System	Full Hydraulic Split Circuit
Parking Brake	Spring Applied, Hydraulic Released

Cab

	Standard	Suppression
Interior Sound Level	72 dB(A)	71 dB(A)
Exterior Sound Level	111 dB(A)	109 dB(A)

Hydraulic System – Steering

Steering System – Circuit	Steering Double Acting – End Mounted	
Steering System – Pump	Piston – Variable Displacement	
Maximum Flow @ × rpm	52 L/min @ 2,006 rpm	
Steering Pressure Limited	24 100 kPa	3,495 psi
Total Steering Angle	86 degrees	

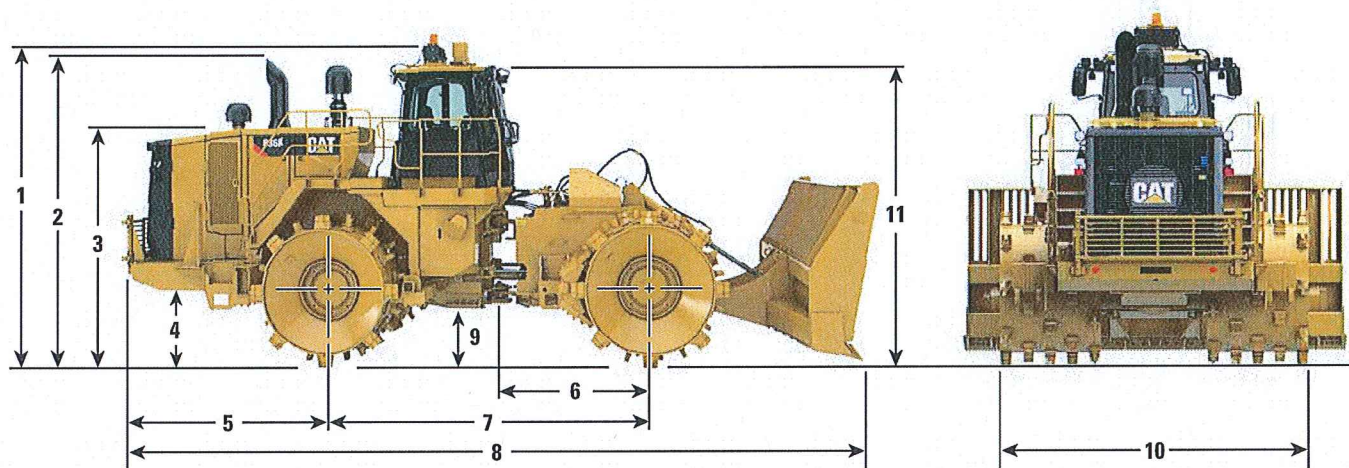
Wheels and Tips

Drum Width	1400 mm	4 ft 8 in
Drum Diameter	1770 mm	5 ft 10 in
Diameter with Tips	2125 mm	7 ft 0 in
Tips per Wheel	40	

836K Landfill Compactor Specifications

Dimensions

All dimensions are approximate.



1 Height to Top of Cab with A/C	4655 mm	15 ft 3 in
2 Height to Top of Exhaust Pipe	4608 mm	15 ft 1 in
3 Height to Top of Hood	3421 mm	11 ft 3 in
4 Ground Clearance to Bumper	1029 mm	3 ft 5 in
5 Center Line of Rear Axle to Edge of Counterweight	3187 mm	10 ft 5 in
6 Hitch to Center Line of Front Axle	2275 mm	7 ft 6 in
7 Wheelbase	4550 mm	14 ft 11 in
8 Length with Blade on Ground (straight blade)	10 182 mm	33 ft 5 in
9 Ground Clearance	632 mm	2 ft 1 in
10 Width over Wheels	4280 mm	14 ft 1 in
11 Height to ROPS/Canopy	4284 mm	14 ft 1 in
Height to Top of Cab with Strobe	4845 mm	15 ft 11 in
Turning Radius – Inside of Wheels	3635 mm	11 ft 11 in

Blade Selection

	Straight Blade		Semi U-blade		U-blade	
Width – Moldboard Length	4990 mm	16 ft 4 in	5238 mm	17 ft 2 in	5172 mm	17 ft
Width Over End Bits	5193 mm	17 ft	5311 mm	17 ft 5 in	5258 mm	17 ft 3 in
Height with Cutting Edge and Screen	2236 mm	7 ft 4 in	2215 mm	7 ft 3 in	2210 mm	7 ft 3 in
Height with Cutting Edge, No Screen	1217 mm	4 ft	1253 mm	4 ft 1 in	1255 mm	4 ft 1 in
Maximum Depth of Cut	364 mm	1 ft 2 in	362 mm	1 ft 2 in	934 mm	3 ft 1 in
Maximum Lift above Ground	1730 mm	5 ft 8 in	1735 mm	5 ft 8 in	1198 mm	3 ft 11 in
Cutting Edges, Reversible						
Length, Each End Section (3 edges)	1408.2 mm	4 ft 7 in	816.6 mm	2 ft 8 in	2 @ 779.1 mm and 1 @ 856 mm	2 @ 2 ft 7 in and 1 @ 2 ft 10 in
Length, Each End Section (2 edges)	NA		988 mm	3 ft 3 in	1094.4 mm	3 ft 7 in
Width × Thickness	254 mm × 25 mm	10 in × 1 in	254 mm × 25 mm	10 in × 1 in	254 mm × 25 mm	10 in × 1 in
End Bits (2), Self-sharpening						
Length, Each	472 mm	1 ft 7 in	472 mm	1 ft 7 in	472 mm	1 ft 7 in
Width × Thickness	254 mm × 25 mm	10 in × 1 in	254 mm × 25 mm	10 in × 1 in	254 mm × 25 mm	10 in × 1 in
Capacity, Rated	19.3 m ³	25.9 yd ³	22.4 m ³	29.3 yd ³	9.74 m ³	13 yd ³
Turning Diameter, Outside Corner of Blade at 43° ART	8737 mm	28 ft 8 in	8823 mm	28 ft 11 in	8795 mm	28 ft 10 in
Overall Machine Length	10 182 mm	33 ft 5 in	10 379 mm	34 ft 1 in	10 272 mm	33 ft 8 in