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Morgan Sindall Construction & Infrastructure Ltd

# Walsall HWRC & WTS, Middlemore Lane

221209

## Noise Assessment Addendum to Wardell Armstrong Noise Impact Assessment

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# Sustainability at our core.

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# Contents


| Section | Description | Page No |
|---|---|---|
| **1.0** | **Introduction** | **4** |
| **2.0** | **Assessment** | **4** |
| 2.1 | Proposed Extract System | 4 |
| 2.2 | Combined Noise Emission | 6 |
| **3.0** | **Discussion of Results** | **7** |

# 1.0 Introduction

CPW Acoustics has been commissioned by Morgan Sindall Construction & Infrastructure Limited to provide an addendum noise assessment for the Odour Control Systems associated with the HWRC & WTS, Middlemore Lane, Walsall.

The original noise impact assessment report was produced by Wardell Armstrong in December 2021 to assess the potential impact of noise from the WTS on the residential receptors closest to the site.

This report presents the noise impact assessment from the Odour Control Systems in conjunction with the predicted noise from the WTS, as taken from the Wardell Armstrong Report.

The assessment contained in this report is based on the background noise data, noise emission criteria and predicted noise emission levels from the WTS, as documented within the Wardell Armstrong Report.

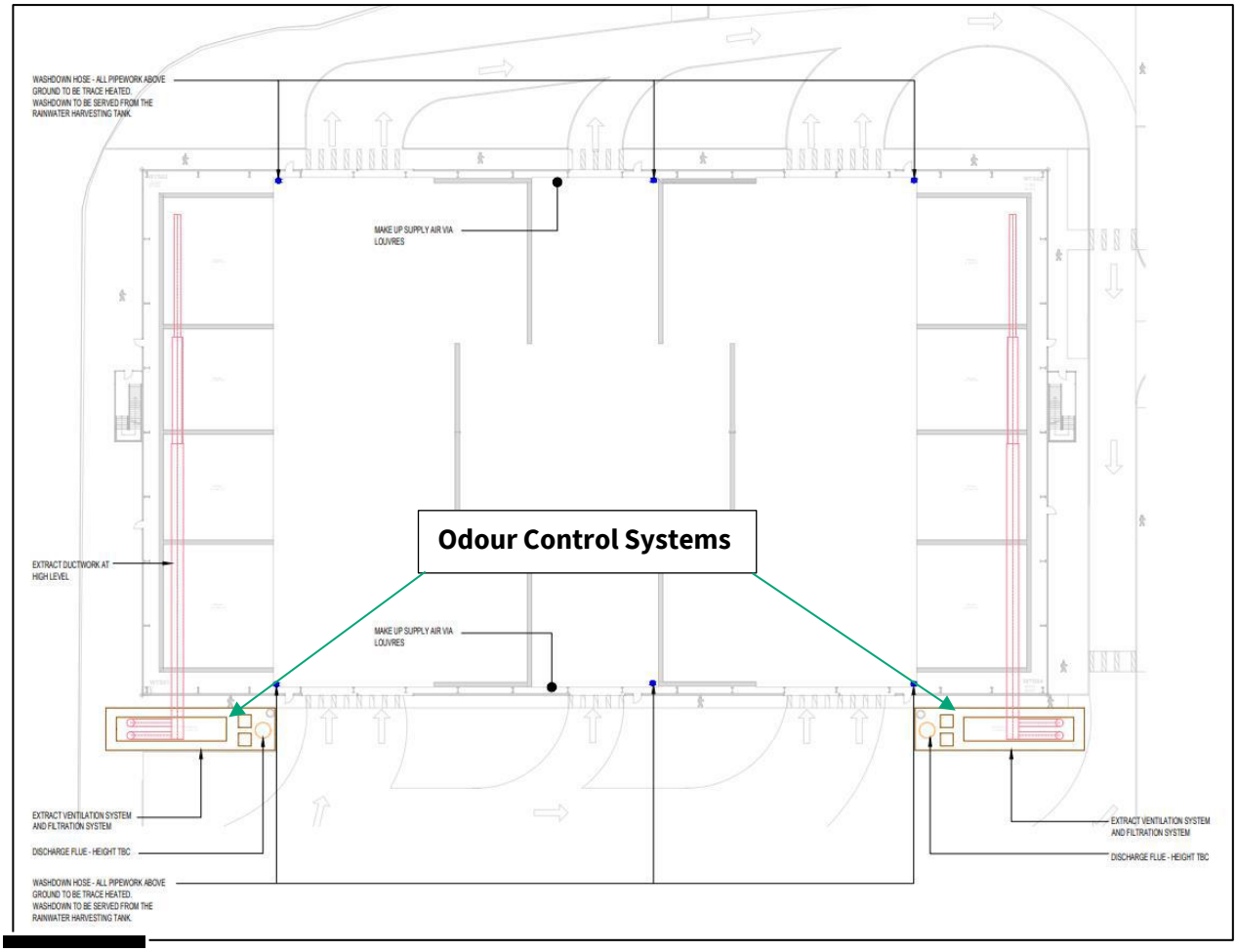
This report is not a stand-alone document and should be read in conjunction with the Wardell Armstrong Noise Impact Assessment Report.

# 2.0 Assessment

## 2.1 Proposed Extract System

The Odour Extract System is proposed as part of the new WTS. The following figure shows the location of the proposed Odour Control Systems.

***Figure 2.1: Location of Odour Control Systems***



Full details of the extract system are not currently developed. Therefore, an outline assessment of noise emission was undertaken for the proposed extract system, based on levels of noise emission likely to be achieved by the extract system with typical, high performance noise attenuation systems.

Full details of the attenuation system will need to be developed in due course, based on comprehensive details of the fan sound powers and system velocities, however, for the purposes of demonstrating the feasibility of the system, the following information was assumed:

- The system will include silencers and have acoustic lagging applied to it, such that it will not exceed a sound power level of 97 dB $L_{wA}$.
- This is likely to require the use of significant attenuation systems that will require specialist noise control supplier input. Allowance should be made for a nominal 4800*2500*2500 (L/W/H) silencer on each extract system. As is standard practice, the design of the attenuation system will need to be refined once wider details of the system are available.
- Application of 1no layer of 10 kg/$m^2$ mass lagging layer with 50 mm thick glass fibre spacer (minimum 25 kg/$m^3$ density) protected in a layer of PIB waterproofing membrane around the serving ductwork and fan casing of each exhaust system.

Based on the above, a noise emission prediction was undertaken to accurately predict plant noise levels at the closest NSRs.

A three-dimensional noise model of the proposed development was prepared using the acoustic software package Cadna-A, which predicts noise in accordance with BS EN ISO 9613-2:1996 '*Acoustics - Attenuation of sound during propagation outdoors. Part 2: General method of calculation*'[1].

The model takes into account various factors including; geometrical spreading, local topography, ground absorption, screening and meteorological effects in undertaking the calculations. The calculations were based on the following assumptions:

- The ground between the site and the nearest NSRs is considered to be 'soft', with a ground absorption of 0.6 assumed. Intervening roads and existing business areas are considered to be 'hard' surfaces, where a ground absorption of 0.1 has been assumed.
- The topography of the study area is considered flat for the purposes of the noise modelling.
- The sound reduction provided by the boundary fences around the curtilage of NSRs is not considered in the modelling as it is not possible to establish the exact performance, if any, afforded by boundary constructions.

The following figure shows an image taken from the model. It shows the noise propagation from the Odour Control Systems and the resulting noise levels at each of the receptors.

[1] International Standardization Organization (ISO) (1996); ISO 9613- 2 'Acoustics - Attenuation of sound during propagation outdoors. Part 2: General method of calculation', ISO.

***Figure 2.2: Noise Emission Prediction***


## 2.2 Combined Noise Emission

The predicted noise emission from the Odour Control Systems has been combined with Wardell Armstrong's predicted noise emission from the WTS. The resulting combined Rating Sound Level has then been compared to Background Sound Level and the relationship between the two values has been determined.

The following table presents the predictions of noise emission and a comparison with the background noise level at each receptor location. All data apart from those relating to the Odour Control System were taken from the Wardell Armstrong Report.

The acoustic feature correction has remained zero. This is because noise from the odour control system is not expected to be either tonal, impulsive, or intermittent in accordance with the definitions of BS 4142.

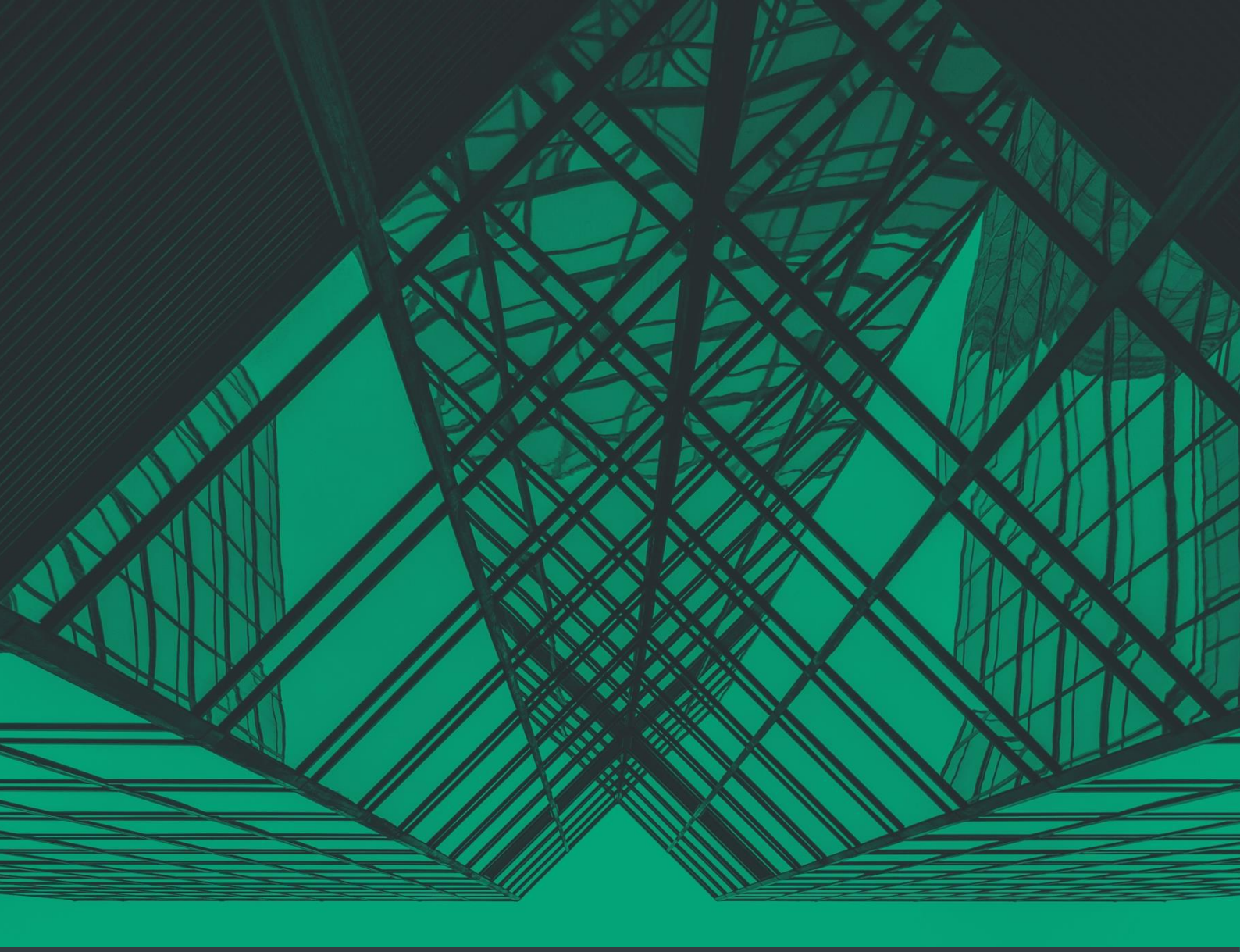
***Table 2.1: Predicted Noise Emission***

| Description | Receptor Location (Wardell Armstrong Report Reference) | | |
|---|---|---|---|
| | A (ESR 2) | B (ESR 1) | C (ESR 3) |
| Predicted Specific Sound Level from the Waste Treatment Operation dB $L_{Aeq,Tr}$ | 35 | 33 | 34 |
| Predicted Specific Sound Level from the Odour Control Systems dB $L_{Aeq,Tr}$ | 13 | 23 | 24 |
| Combined Specific Sound Level, dB $L_{Aeq,Tr}$ | 35 | 33 | 34 |
| Acoustic Feature Correction, dB | 0 | 0 | 0 |
| Rating Sound Level $L_{Ar,Tr}$ | 35 | 33 | 34 |
| Background Sound Level, dB $L_{A90,T}$ | 48 | 42 | 49 |
| Excess of Rating Sound Level over Background Sound Level | -13 | -9 | -15 |

## 3.0 Discussion of Results

The predicted noise levels resulting from the Odour Control System are at least 10 dB less than the predicted noise emission from the WTS. Therefore, the Odour Control System is not expected to increase the noise level already predicted to be produced by the WTS. The predicted noise level is therefore acceptable.

The design of the Odour Control Systems will need to be developed as the design progresses such that the limiting levels prescribed herein are achieved.



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