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Air Quality Technical Note

Longley Lane, Sharston Industrial Estate, Sharston

PP O'Connor Limited

MAN.0178.001.AQ.R.001

'Experience and expertise working in union'

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Longley Lane, Sharston Industrial Estate, Sharston - Air Quality Assessment

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1.0 Introduction

1.1 Background

1.1.1 Enzygo Limited (Ltd) was commissioned by PP O'Connor Limited to produce an Air Quality Technical Note to support a revision to an existing Waste Transfer Station (WTS) off Longley Lane, Sharston Industrial Estate, Sharston, Manchester, M22 4SS.

1.1.2 Enzygo understands a detailed Air Quality Assessment (AQA) was submitted to Manchester City Council (MCC) in 2018 to support the construction of a waste processing facility and ancillary equipment.

1.1.3 A revised application is now to be submitted to seek retrospective change of use to improve the access from Sharston Road to the permitted waste transfer station and licenced waste site with automated weighbridge, car parking and storage and confirmation of use to the east of the site for open storage of processed materials, booking out/welfare facilities, weighbridge and egress from the site to Longley Lane to create a comprehensive waste storage treatment and recycling centre. The application also seeks the installation of a purpose built controlled waste storage and sorting building and picking station with associated works on the permitted area

1.1.4 The AQA was produced by Resource and Environmental Consultants (REC) Ltd in August 2018[1] to support the initial planning application (ref: 120297/FO/2018[2]). Reference should be made Appendix A for the AQA which assessed the following proposal:

> *"Erection of a waste processing facility and ancillary equipment; erection of a waste storage building and site cabin; creation of a new access point off Sharston Road; installation of weighbridge and waste storage bins"*

1.1.5 The application was submitted to MCC and is currently awaiting a decision based on the recent amendment to the site as described in Section 1.1.3.

1.1.6 Following a review of the 2018 AQA, Enzygo Ltd considers the input data, results, and conclusions acceptable and the overall methodology accords with industry standard guidance available at the time. However, since the production of 2018 AQA, data and toolkits have been revised and updated. Updates to predicted background pollutant concentrations and vehicle emission factors produced by DEFRA, as well as monitored pollutant concentrations could affect the outcome of the previous assessment.

1.1.7 As such, the impacts and conclusions have been re-examined throughout this technical note which provides a summary of potential changes and the effect these may have on the validity and conclusions of 2018 AQA.

1.2 Site Location and Context

1.2.1 The application site is located at the approximate National Grid Reference (NGR): 383250, 389140 and set within a well-established industrial and commercial area, located on the southern boundary of the Sharston Industrial Estate.

1.2.2 The site is bound to the south by a mainline railway, to the north by existing commercial premises within Sharston Industrial Estate, and to the east and west by the B5168 (Sharston Road) and B5166 (Longley Lane), respectively. The M56 motorway lies approximately 300 m south of the Proposed Development.

[1] Air Quality Assessment, Sharston Recycling Centre, Sharston Road, REC Ltd, AQ105976r1, August 2018

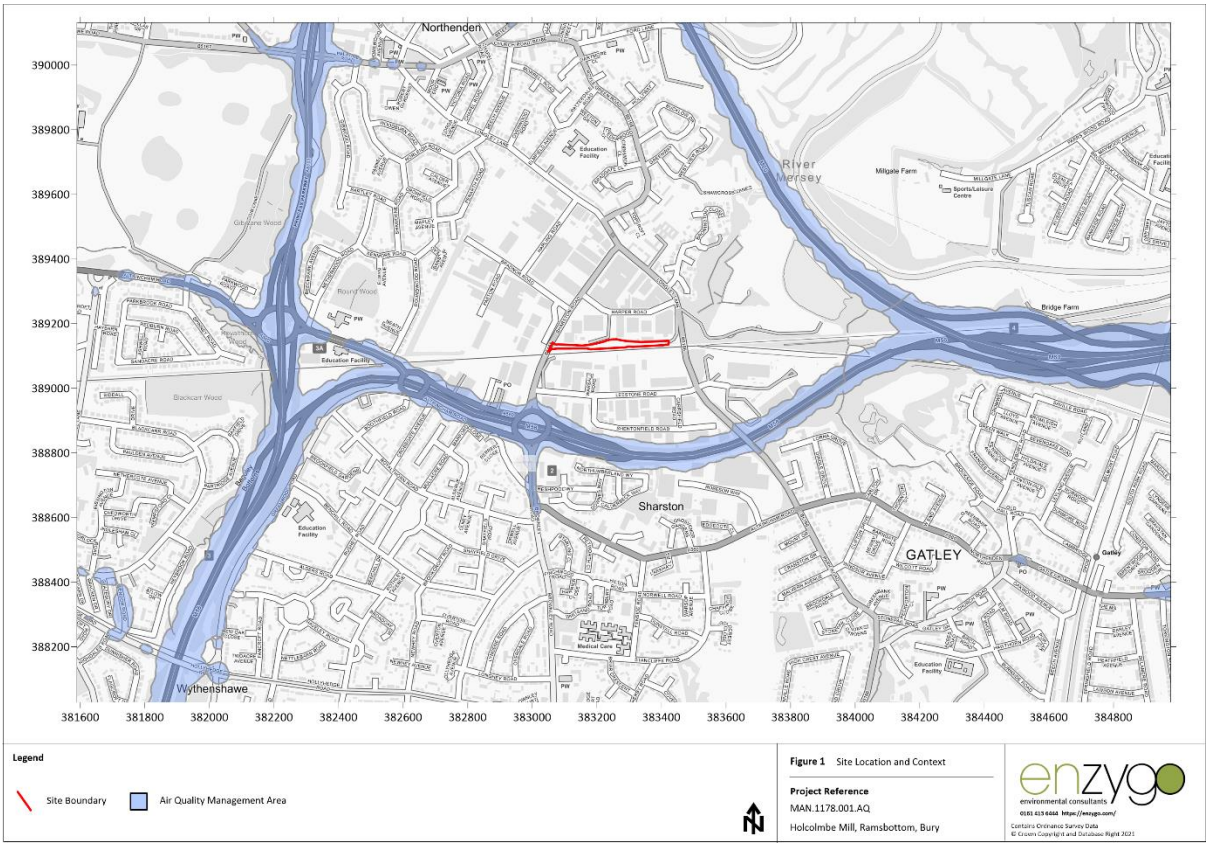
[2] https://pa.manchester.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=PA5Z6CBCMQJ00

1.2.3 A desktop study was undertaken to identify the closest receptor locations to the Proposed Development. This indicated the closest residential properties along Longley Lane north east of the site. Otherwise there are few highly sensitive receptors within 250 m of the Proposed Development.

1.2.4 The application site is located close to the Greater Manchester Combined Authority (GMCA) Air Quality Management Area (AQMA) which concerns the local A-road and motorway network. Additionally, no ecological designations are located within industry standard distances and impacts on ecological designations have not been considered further in this assessment.

1.2.5 Figure 1 shows the site location and surrounding context.

Figure 1: Site Location



2.0 Assessment Review

2.1 Construction Phase Dust Risk Assessment

2.1.1 The construction phase dust risk assessment produced as part of the 2018 AQA was undertaken in accordance with Institute of Air Quality Management (IAQM) guidance on the Assessment of Dust from Demolition and Construction[3], which is the industry standard approach. The guidance was updated in 2024 however no major amendments to the assessment methodology have taken place which would affect the results of the 2018 AQA.

2.1.2 Section 5.1 of the 2018 AQA provides the construction phase impact assessment and as such the revised development is unlikely to affect the assessed impact risk and resulting dust control measures outlined with Table 21 of the 2018 AQA.

2.1.3 Subsequently, the construction phase dust risk assessment provided for the 2018 AQA remains valid and does not require updating. The proposed control measures also remain appropriate for the proposed construction works and will be retained for the Proposed Development.

2.2 Traffic Flow Data

2.2.1 The 2018 AQA considered road traffic emissions impacts based on the operational phase of the Proposed Development, based on the information contained within the 2018 AQA it is understood the Proposed Development was expected to generate a maximum 24-hour AADT flow of 100, of which all flows were Heavy Duty Vehicle (HGV) movements.

2.2.2 The revised application does not seek to increase overall operational capacity or waste throughput and as such the application is anticipated to generate a comparable 24-hour AADT flow as assessed under the 2018 AQA. In reality the imports and exports at the site are expected to be lower than initially forecasted due to increased efficiencies gained by on site improvements associated with the handling of materials.

2.2.3 As such the revised proposal's traffic generation would not cause an increase in impacts over that in the 2018 AQA.

2.3 Change to Emission Factors

2.3.1 Road traffic vehicle emissions are predicted to improve in the future, due to the current shift towards a greater uptake of low to zero emission vehicles, supported by national government policy and targets[4]. These improvements are reflected in the industry standard Emission Factors produced by DEFRA[5] which show a predicted decrease in road vehicle emissions to 2030.

2.3.2 The 2018 AQA utilised an emissions scenario, obtained from the mission Factor Toolkit (EFTv7.0.1), which provided an assessment of 2017 emission factors in combination future traffic flow data for 2019. This approach provides a robust approach, which does not account for any future improvement to national fleet emissions. As the 2018 AQA evidently provides a highly conservative assessment and consequently associated impacts are likely to be an overestimation.

2.3.3 It is also noted that since the production of the 2018 AQA there has been several updates to the industry standard Emission Factor Toolkit produced by DEFRA[5] with the most recent version, v12.0.1, indicating a reduction in emissions from v7.0.1 factors. As such a good level of confidence can be placed upon the predictions of the 2018 AQA.

[3] Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management, v2.2, 2024.
[4] Transitioning to zero emission cars and vans: 2035 delivery plan, HM Government, July 2021
[5] https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/

2.4 Changes to Baseline Conditions

2.4.1 The following section provides a summary of changes to current baseline and future baseline conditions, which may affect the conclusions of the 2018 AQA.

Predicted Background Concentrations

2.4.2 Table 1 provides a comparison of predicted DEFRA background concentrations used to in the 2018 AQA to represent the operational phase, against most recent prediction provided by DEFRA. The 2018 AQA used predictions from 2015 basemaps, whereas most recent predictions for the Proposed Development are sourced from 2018 basemaps released in August 2020.

Table 1: Comparison of Baseline Emission Factors

Pollutant	Predicted Annual Mean Background Concentration (µg/m³)	
	2017: 2018 AQA	2022: Proposed Development
NO_2	23.19	19.36
PM_{10}	13.47	12.22
$PM_{2.5}$	8.66	8.06

2.4.3 As presented in Table 1, future background concentrations provided by DEFRA are expected to improve. As such, it is considered the 2018 AQA utilised a worst case scenario with regards to predicted background concentrations. As such, a good level of confidence can be placed upon the predictions of the 2018 AQA.

Monitoring Data

2.4.4 A comparison of air quality monitoring data referenced in the 2018 AQA has been provided with the most up to date monitoring data obtained from the 2023 Air Quality Status (ASR)[6]. Table 2 details the 2019 monitoring locations and data used within the 2018 AQA compared against those provided in the MCC ASR[6].

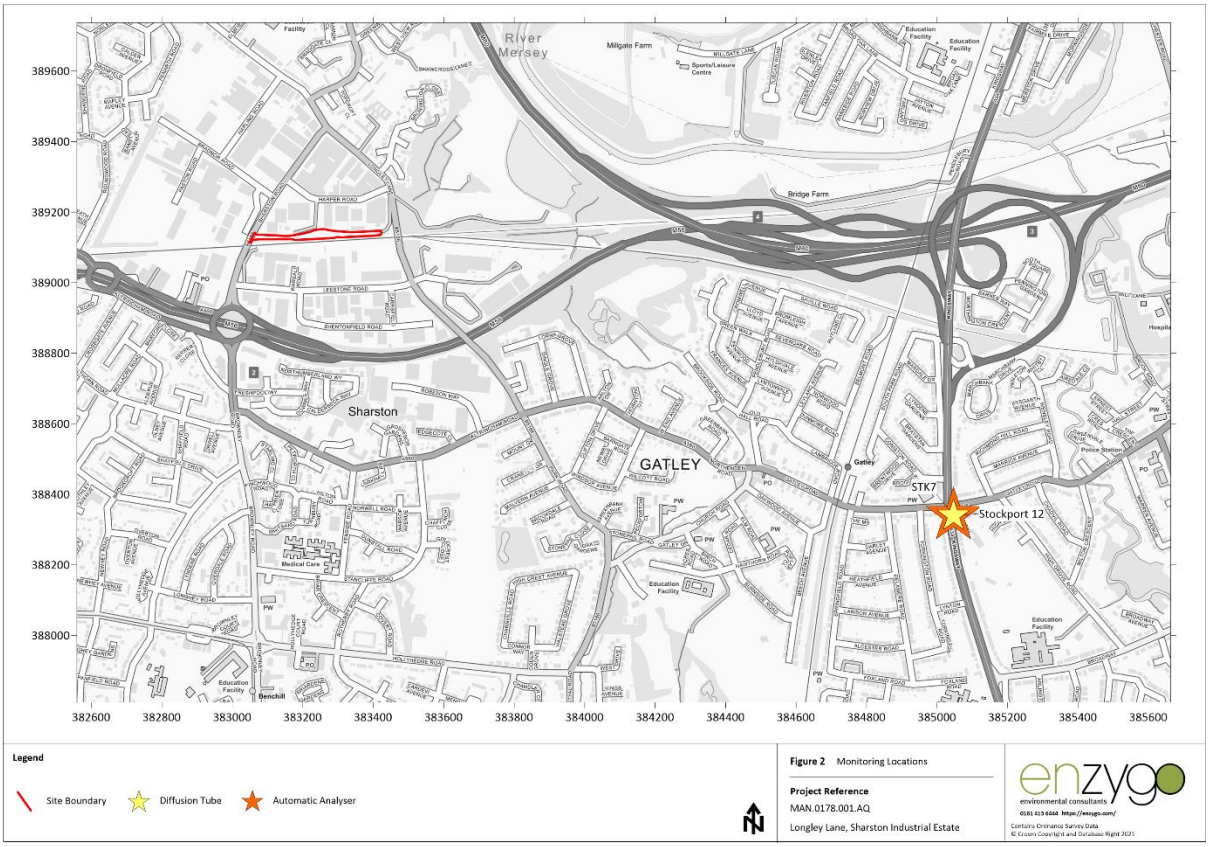
Table 2: Comparison of Monitored Annual Mean Concentrations

2017 ID	Site Name	Annual Mean NO_2 Concentration (µg/m³)	
		2017	2022
SK12	Kingsway	42.4	29.6
STK7	A34 Stockport Cheadle	42.7	29.0
2017 ID	**Site Name**	**Annual Mean PM_{10} Concentration (µg/m³)**	
		2017	**2022**
STK7	A34 Stockport Cheadle	17.8	16.0

2.4.5 The 2017 monitoring concentrations are significantly greater than 2022 data, therefore the baseline conditions referenced in 2018 AQA are a robust case. Figure 2 shows the monitoring locations used in the 2018 AQA.

[6] 2023 Air Quality Annual Status Report (ASR), ERYC, June 2023

Figure 2: Monitoring Locations



2.5 Verification Process

2.5.1 Model validation refers to the comparison of modelled results against monitoring data to assess accords with industry standard guidance in order to minimise modelling uncertainties.

2.5.2 Local Air Quality Management (LAQM) Technical Guidance (TG22)[7] provides a number of statistical procedures to evaluate model performance, which include correlation coefficient, root mean square error and fractional bias. LAQM.TG22[7] then provides ideal values for each statistical procedures which should be evaluated against the results from the verification process. The results of the statistical procedures obtained from Appendix B of the 2018 AQA are detailed in Table 3.

Table 3: Model Performance

Statistical Procedures	Calculated Value	Ideal Value
Correlation Coefficient	0.68	1.00
Root Mean Square Error	3.24 (8.11%)	0.0 (<25%)
Fractional Bias	0.02	0.0

2.5.3 The metrics detailed In Table 3 indicates a good model performance and adheres to the guidance provided in LAQM.TG22[7]. They indicate that further model adjustment was not necessary.

2.5.4 Additionally, as demonstrated in Table AII.6 of the 2018 AQA, the difference between modelled and monitored concentrations is deemed acceptable and is within 25% at all monitoring locations and in most cases within 10%. This indicated a good level of certainty in the model predictions and it provides a good representation of pollutant concentrations in accordance

[7] Local Air Quality Management Technical Guidance 2022 LAQM.(TG22), DEFRA, August 2022

with LAQM.TG22[7] guidance.

2.5.5 As such, the verification process produced within the 2018 AQA, accords with industry standard criteria, remains valid and provides a robust assessment of the impacts from the Proposed Development.

3.0 Summary of Updates and Conclusion

3.1.1 This section considers potential changes in the proposed development, data, and guidance since the production 2018 Air Quality Assessment. The review of the 2018 AQA and the revised Proposed Development has found that:

- The construction dust risk assessment and proposed control measures in the 2018 AQA remain valid;
- The traffic data used in the 2018 AQA can be relied on as a valid basis for assessment, the Proposed Development would result in a marginal and inconsequential increase to development trips than those assessed previously;
- Vehicle emissions factors used in the 2018 AQA are an overestimation of likely future emissions for the proposed development;
- Background and monitored data used in the 2018 AQA can be relied on as valid or considered as an overestimation of future baseline air quality; and
- The performance and verification of the air quality model in the AQA remains valid.

3.1.2 As such, the data and guidance used in the previous assessment are considered reliable to robustly assess the air quality impacts associated with the Proposed Development.

3.1.3 Therefore the conclusions of the 2018 AQA are applicable to the Proposed Development and associated impacts are considered not significant.

3.1.4 Based on the assessment results, and the implementation of fugitive dust control measures, air quality impacts are not significant and are not considered a constraint to planning consent. The Proposed Development also complies with the NPPF and MCC Local Plan Polices.

4.0 Abbreviations

AADT	Annual Average Daily Traffic
AQO	Air Quality Objective
AQN	Air Quality Neutral Assessment
AQS	Air Quality Strategy
DEFRA	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EfT	Emission Factor Toolkit
EU	European Union
GLA	Greater London Authority
HDV	Heavy Duty Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
LB	London Borough
LDV	Light Duty Vehicle
NGR	National Grid Reference
NO_2	Nitrogen Dioxide
NOx	Oxides of nitrogen
NPPF	National Planning Policy Framework
PM_{10}	Particulate Matter with an aerodynamic diameter less than 10mm
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter less than 2.5mm
RMSE	Route Mean Square Error
TEB	Transport Emission Benchmark