



Peel NRE Limited

Port Salford Units 2, 3 & 4 - Deposit for Recovery

Noise Management Plan

Document Ref: 193237/NMP

March 2022



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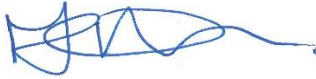
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193237/NMP

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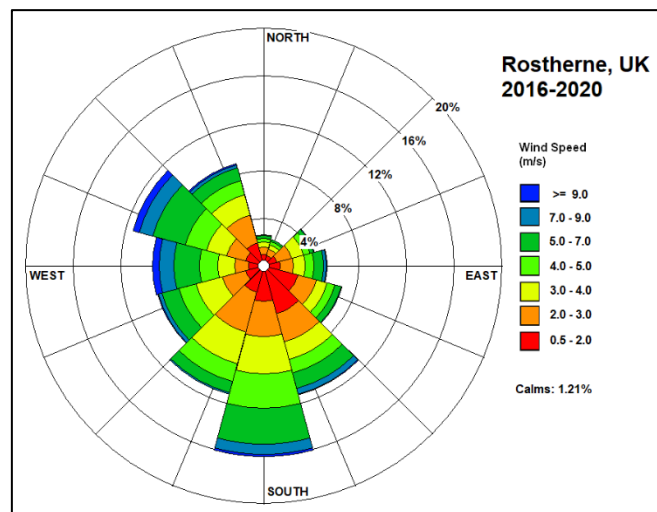
1.0 INTRODUCTION

Overview

- 1.1 This Noise Management Plan (NMP) has been produced to accompany the bespoke Deposit for Recovery Permit application by Peel NRE Limited (the Operator).
- 1.2 The site is located in Eccles, immediately south of Liverpool Road (A57) on the outskirts of Manchester, approximately 9.6 km west of the city centre. The site location is shown in drawing 193237/D/001.
- 1.3 The proposal involves the importation of waste material for the required earthworks to build a raised platform and achieve the remedial objectives and address flood risk. The activity is a recovery operation. The recovery operation is a short-term, temporary activity which will take circa 2-3 years.
- 1.4 As part of the application for an Environmental Permit, the Operator has provided a noise management plan to outline management and control measures for the permit activities on site. It is the Operator's responsibility to reduce the audibility of the site operations, through suitable application and maintenance of noise control measures and equipment regardless of circumstance. To assess changing circumstances on site operations, the effectiveness of the NMP will be regularly reviewed in response to the results of the daily noise inspections. A full review will be undertaken on an annual basis.
- 1.5 Management and control measures will be in accordance with the Environment Agency 'Noise and vibration management: environmental permits' guidance. The control measures and the requirement for a specific noise management plan have been instructed based on the assumption that an assessment would conclude a management plan and certain control measures would be required.
- 1.6 A noise assessment was carried out by (BWB) in February 2022 supporting the permit application for the recovery operation and is presented in Appendix A.
- 1.7 This report establishes the sensitive receptors surrounding the site, identifies any potential risks associated with the proposed activities and outlines required controls.

2.0 SENSITIVE RECEPTORS

- 2.1 The site is located within an area of predominantly commercial and industrial neighbouring and surrounding land uses, including the Manchester City Airport north of the site, Culina /Great Bear Warehouse to the west, a football stadium and outdoor sports pitches to the east, Barley Farm Dining and Carvery to the north east and Davyhulme Wastewater Treatment Works 280 m south east of the site. The A57 main road runs parallel to the northern site boundary, and the Manchester Ship Canal runs parallel to the southern boundary circa 120 m south. The surrounding area is of lower sensitivity as the neighbouring receptors are predominantly commercial and industrial, and the ambient noise levels are expected to be relatively high during the day from traffic of the A57 and the Manchester City Airport. The nearest residential receptors are < 50 m north west and 185 m north east of the site.
- 2.2 The northern boundary, adjacent to the A57, is well vegetated and consists of a bund that sits above the ground level of the site. During construction, the most sensitive receptors to the north of the site will benefit from the acoustic shielding of the bund. To the south of the site, the ground level slopes down to the Saltey Brook, allowing sound to propagate across the Manchester Ship Canal.
- 2.3 The site and surrounding sensitive receptors are shown on drawing 193237/D/002. The nearest sensitive receptors susceptible to noise emissions will be the the residential properties circa 50 m north west and 185 m north east of the site.
- 2.4 Meteorological wind data for 2016-2020, has been acquired from ADM Limited. The wind data has been taken from the Met Office Station in Rostherne, which is approximately 11 km south of the site and is considered to be representative of conditions at the site. The prevailing wind direction is from the south quadrant. The nearest and most sensitive receptors to noise downwind of the site will be footpath users, residential properties 50 m north west and 185 m north east of the site and the airport.



- 2.5 From the noise assessment undertaken in 2022, the LAeq ranged from 52 to 69 dB, with the LA90 ranging from 48 to 58 dB during the normal operating hours. The selected background sound levels (LA90,1hr) were 53 and 52 dB for the northern and southern receptors respectively. The highest predicted specific noise levels modelled, (assuming all operations take place on the closest site boundary to the receptor) was 50 dB(A) for both the northern and the southern receptors. Consequently, the BS4142 assessment of 3 dB and 2 dB below background was attained for the northern and southern receptors respectively. The conclusion of the assessment was that a low impact is indicated for both northern and southern receptors and mitigation is not warranted given the low noise risk of the site.
- 2.6 The site and surrounding sensitive receptors are shown on drawing 193237/D/002. Table 1 below sets out the nearby sensitive receptors.

Table 1. Sensitive receptors within 1 km from the Land at Port Salford

Receptor ID	Receptor Name	Approximate Distance from site boundary (m)	Direction
1	Industrial buildings along A57	< 50	North
2	Residential properties along Liverpool Road	< 50	North west
3	Saltey Brook – disturbed fauna	On site	-
4	Boyle Brook	250	North west
5	Flying schools and airport garage	< 50	North
6	Industrial estate off A57	200	North west
7	Residential properties along Barton Moss Road	255	North west
8	Manchester City Airport	< 50	North
9	Barley Farm Dining and Carvery	160	North east
10	Residential properties along Trident Road	185	North east
11	AJ Bell Stadium	185	East
12	Manchester Ship Canal	120	South
13	Golf Course	317	West
14	Residential properties along Ripley Crescent	400	South
15	Residential properties along New Hall Avenue	490	North east
16	Sports Ground	530	North east
17	Residential properties along Robinia close	650	North east
18	Peel Green Cemetery and War Memorial	480	North east
19	Tunnel Farm	700	North west
20	Residential properties along Liverpool Road	543	West
21	Clubhouse Restaurant	580	South west
22	Residential properties along Daresbury Avenue	560	South west
23	Barton Moss Primary School	801	North east
24	A57 public highway	< 50	North
25	Sewage Works	320	South
26	Local Nature Reserve	200	South
27	M60 public highway	750	East
28	Sewage Works	840	East
29	M62 public highway	960	North west
30	Davyhulme Park Golf Club	735	South

2.7 Table 2 below sets out potential noise emitters in the surrounding area.

Table 2. Nearest potential noise emitters

Name	Comments	Approximate distance from site boundary to centre of receptor
Road traffic (Liverpool Road – A5 & M60 & M62)	Activities are likely to contribute to the background noise, particularly during peak traffic hours.	10 m north 750 m east 960 north west
Great Bear/ Culina Distribution Warehouses	Activities are likely to contribute to the background noise, particularly during daytime hours.	10 m west
Manchester Ship Canal	Activities are likely to contribute to the background noise, particularly during daytime hours.	120 m south
Manchester City Airport (Airfield)	Activities are likely to contribute to the background noise, particularly during daytime hours.	230 m north

3.0 MANAGEMENT AND MITIGATION

- 3.1 The noise levels generated by the site operations are not expected to have the potential to cause a notable impact to surrounding residential and recreational land uses. The platform construction is a temporary short-term activity, which forms part of the wider Port Salford development.
- 3.2 The works will involve movement and tipping of Heavy Goods Vehicles (HGVs) and the permanent deposit and placement of suitable engineering fill by mechanical operations. The anticipated plant includes up to 2 bulldozers, dumper, and potentially 1 excavator.
- 3.3 Waste will be imported and placed over the existing land and will be imported from off site sources in line with the Waste Recovery Plan and Importation Protocol. The site layout is presented in 193237/D/004.
- 3.4 The site is accessed via Liverpool Road to the north. Access to the working areas within the site will be via an internal haul route. The location of the access road and internal haul route is shown site infrastructure plan on drawing 193237/D/004.
- 3.5 The site will operate between the hours set out below in Table 3:

Table 3. Operational hours

Days	Hours
Monday to Friday	07:00 – 18:00 hrs
Saturday	07:00 – 14:00 hrs
Sunday and Public Holidays	No vehicle movements or operation

- 3.6 There is the potential for noise during tipping and placement works adjacent to the site boundary, when weather and seasonal conditions allow for noise propagation to the closest receptors. If a noise incident (defined as either identified by Site Team during inspections or from an off site complaint or enquiry) occurs, as determined by site operative, during inspection and/or substantiated noise complaint, it is the responsibility of the site manager to implement preventative procedures and to instruct the trained operative to engage in further noise monitoring.
- 3.7 Table 4 below sets out the risk assessment from normal and abnormal circumstances of operation:

Table 4. Operational noise risk assessment

Description	Processes (area)	Potential for noise emissions	Worst case scenario for generation of noise emissions
Haulage	Import and export of materials (whole site)	Possible noise emissions from haulage along haul route	Haul route in disrepair, (e.g. potholes etc) causing loud banging due to wheel impact
		Revvng of engines and reversing alarms	Congestion along haul route and limited space for manoeuvres
Placement and levelling of materials	Tipping of material in current phase	Dropping of material from height	Tipping of material onto ground surface at a lower level Tipping of material adjacent to the site boundary
	Pre reworking storage in current phase	Physical segregation of material into stockpiles	The need for double handing caused by inefficient tipping procedures/ locations
	Grading of material in current phase	Bulldozing of material	Levelling of material and idling of bulldozer close to site boundary between loads
Operation of plant and equipment	Site wide plant operation	Improper application of noise attenuation/ silencing equipment	Failure of noise attenuation/ silencing equipment with no spares available
Weather conditions	Site wide	Wind speed and direction Increased humidity Temperature inversion	North-westerly low winds High humidity Temperature inversion towards end of day
Seasonal influences	Site boundary vegetation	Reduction in vegetative growth along boundary	Winter months when trees are bare allowing greater propagation to receptors

3.8 Site design and management controls include:

1. Adherence to the working hours;
2. Ensuring regular and effective maintenance of plant and equipment, e.g. tightening of loose covers and cleaning/ lubrication of balancing fans;
3. Direction and signage clearly displaying tipping location and adjustment of tipping location depending on progress of work in relation to receptors;
4. The Operator will attend local community group meetings, where possible, to notify the local community of upcoming works and avenues for contacting the site will be provided for the event that a noise concern arises;
5. Receptors assessed as impacted by noise will be notified prior to the commencement of a new working phase and options for contacting the site will be provided for the event that a noise concern arises;
6. Residents will be notified of key phases of work and any planned/ unavoidable noisy activities;
7. Induction briefing to all employees regarding the need to keep noise to a minimum and the health hazards associated with exposure to excessive noise. This will include training on the proper use and maintenance of plan and equipment, positioning of machinery to reduce noise emissions to surrounding receptors and site personnel, avoidance of unnecessary noise and the protection of persons against noise.
8. Site access/egress located in the north west part of the site away from receptors and facing north, with open fields downwind of the prevailing wind direction;
9. Design of internal haul routes, where possible, to have gentle gradients and curves;
10. Haul routes will be maintained to be pothole free;
11. 3 m high topsoil and/or subsoil noise bunds along the north eastern edge and access road of the site boundary to attenuate noise emissions to receptors to the north of the site. This will be in place throughout the entirety of the works until the end of restoration works when the topsoil is placed back over the final restoration. The bund is shown on drawing 193237/D/004; and
12. Only plant conforming with relevant national or international standards, directives or recommendations on noise emissions will be used.

3.9 Site operational controls include:

- Reducing drop heights to waste storage area and/or working plant;
- No bulldozer operations until 8:00 am during working hours;
- Noisy maintenance works undertaken during weekdays and during daytime operating hours;
- During the filling activity, when the activity is near the most sensitive receptors (the north western portion of the site), the mobile bulldozer will adopt a 'quiet hours' working scenario. This will involve two hours on, two hours off, or working within an area away from the nearest receptors to provide additional respite to local receptors;
- Adoption of 'quiet hours' working scenario during abnormal weather conditions which would affect nearby sensitive receptors e.g. low north westerly winds, high humidity & temperature inversion (cooler air at ground level likely to occur towards end of day);
- Tipping of material to occur as far as practicable from sensitive receptors e.g. as far into the centre of the site as possible;
- Staggered start up of plant and equipment;
- Any fixed generators within welfare area will be enclosed or screened to minimise noise emissions;
- All engines and generators will wherever practical be operated with doors or cowls in the closed position;
- Anti-idling policy on the HGV's;
- Avoidance of unnecessary revving of engines and reversing where possible;
- HGV routing plan and one-by-one policy to ensure no build up of HGV's in each area;
- All vehicles will obey the internal speed limit of 10 mph; and
- All machines in intermittent use shall be shut down in the intervening period between work and throttled down to a minimum.

4.0 MONITORING AND RECORDS

- 4.1 Noise monitoring will be undertaken by inspection at boundary by a trained operative on a daily basis, at the start, during and end of each day to effectively capture the temporal variations in operations. The daily noise monitoring will be undertaken in tandem with the visual dust monitoring and are recorded in the daily Site Diary. The objectives of the monitoring are to ascertain main noise sources, pathways, effectiveness of controls and the meteorological conditions which exacerbate emissions. The noise monitoring locations are shown in drawing 193237/D/005.
- 4.2 The inspection of noise levels generated by the operation will be on a continuous basis by the site staff and it will be their responsibility to identify and control any excessive noise that occurs. If significant noise is identified internally or external complaints are raised, the complaints procedure and form will be implemented (attached in Appendix B). In the event of substantiated noise complaints, quantitative monitoring will be undertaken.
- 4.3 In the event of a substantiated noise complaint or elevation during inspection, the following procedure will apply for the monitoring exercise:
- The noise survey will be carried out during standard construction working hours for a minimum of 15 minutes to measure representative noise levels of worst-case construction operations;
 - Measurements will be undertaken in accordance with British Standard BS 7445-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*', with instrumentation meeting the standards set out in BS EN 61672-1: 2013 '*Electroacoustics – Sound level meters. Specifications*';
 - Measurements will comprise of broadband indices L_{Aeq} , L_{A10} , L_{Amax} and L_{A90} . The equipment chosen will be a Class 1 noise level meter with a suitable traceable calibration certificate. Field calibration will also be undertaken and documented prior to and after measurements; and
 - When possible, the measurement position should be chosen to best represent the noise levels at the most exposed façade of the sensitive building to the works. Alternatively, a free field location with direct line of sight to the works should be sought in order to facilitate the calculation of noise levels at the receptor assuming a reasonable distance correction factor.
 - A conservative action trigger threshold will be 55 dB L_{Aeq} (1-hour) (free-field) taken from guidance issued by the World Health Organisation proposed guidelines for community noise.

- The quantitative monitoring and reporting would be undertaken within 1 month of the complaint and issued to the local Authority and/or EA.

4.4 In the event the action trigger threshold is exceeded, remedial actions under the procedure may include:

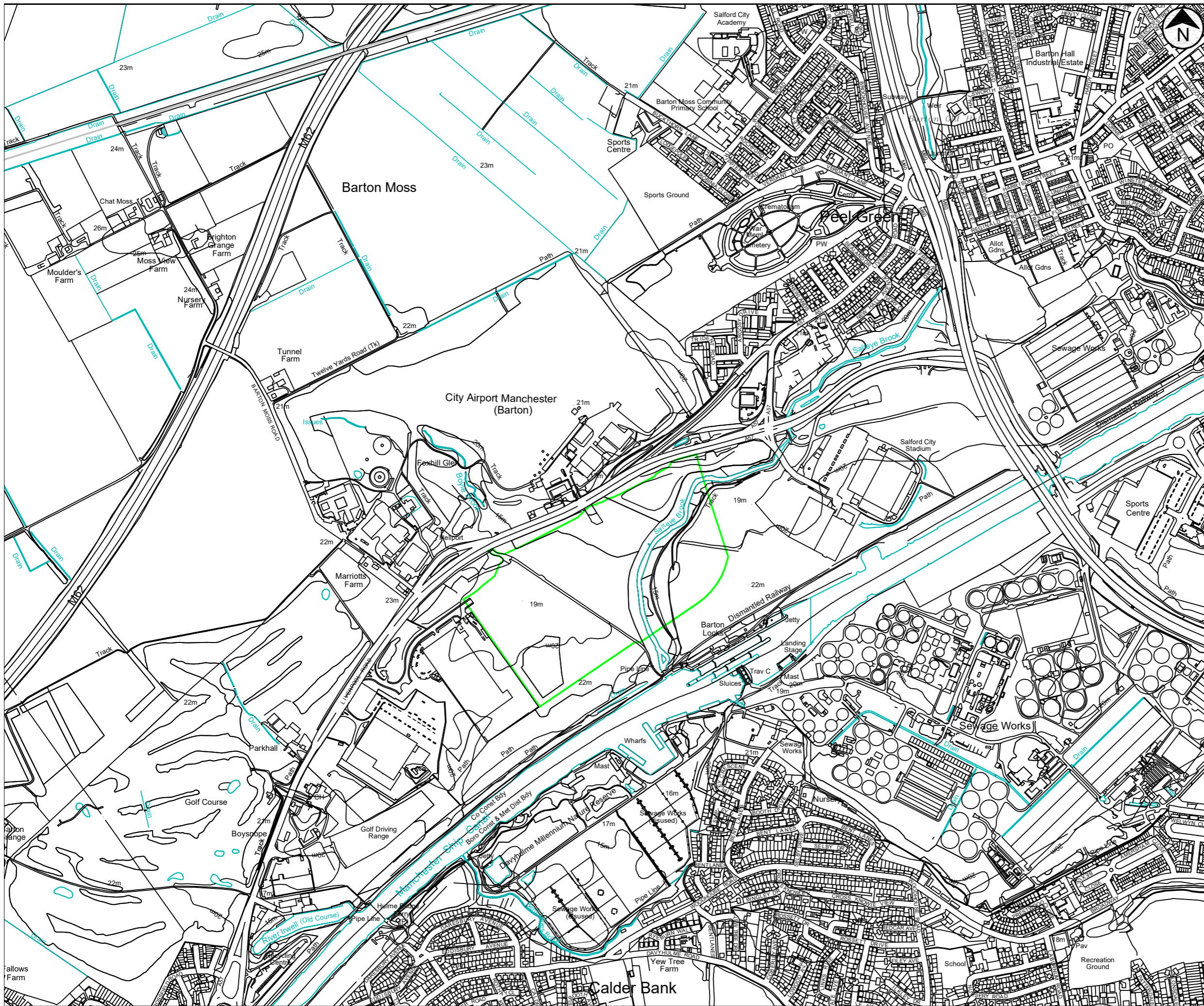
- Temporary cessation of grading operations;
- Temporary reduction of HGV movements to or from site;
- Temporary screening with acoustic barriers and/ or soil bunds; and
- To note, these remedial actions are indicative and would only be raised if the procedure identified the emission source and it could be fully justified/substantiated.

4.5 Following implementation of noise reduction measures, the daily noise inspection will be carried out again after implementation. The noise monitoring checklist will be filled out to enable comparison and confirmation of noise reduction.


4.6 A record of daily inspections and any complaints arising regarding noise emissions and the actions taken will be kept in the Site Diary.

4.7 In the event of sustained noise issues or substantiated complaints, the Environment Agency will be notified and this NMP will be reviewed and updated. The NMP will be issued to the Environment Agency for approval and operations will cease within 100 m of the impacted receptor(s).

DRAWINGS




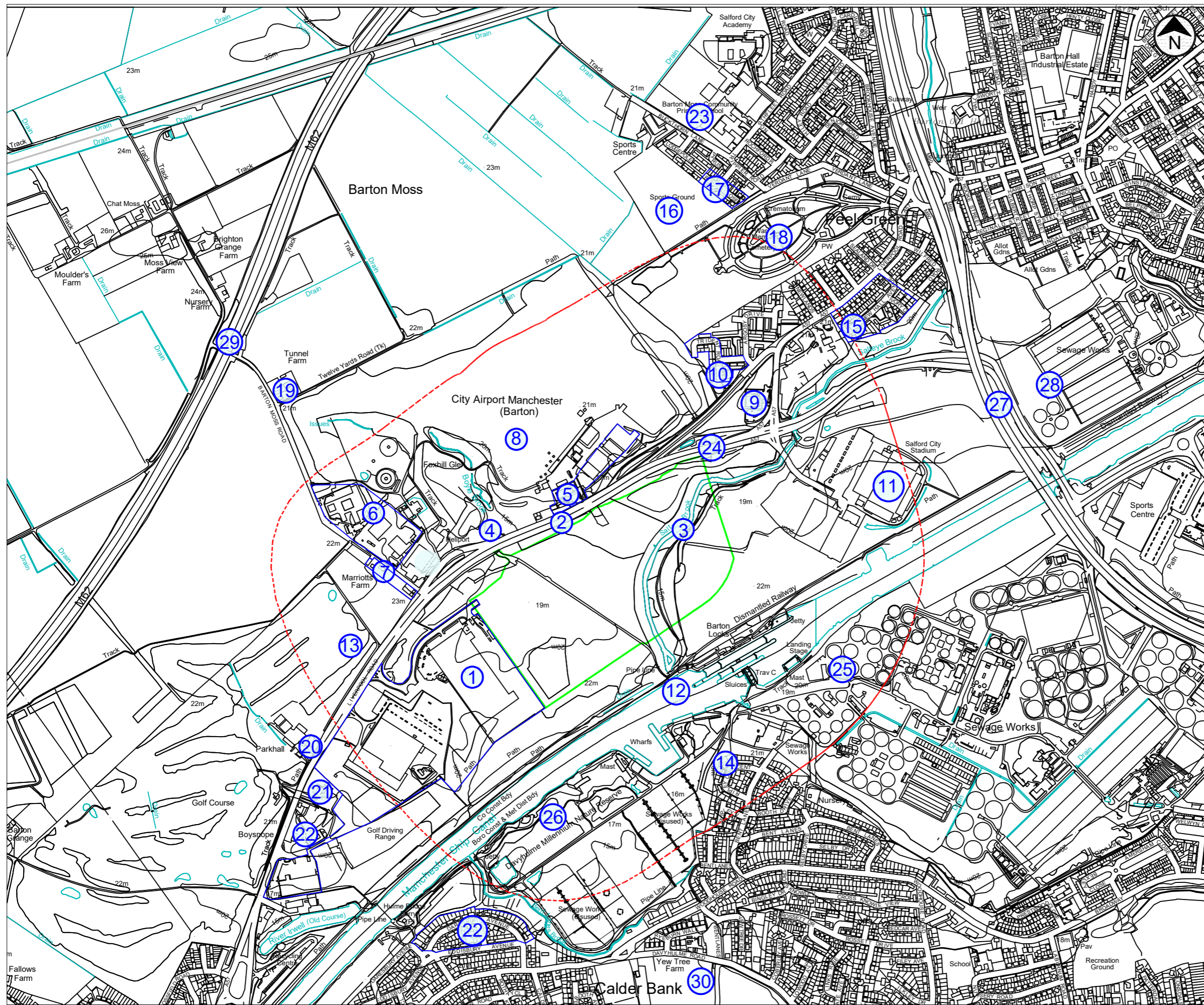
KEY

 Permit Boundary

Notes

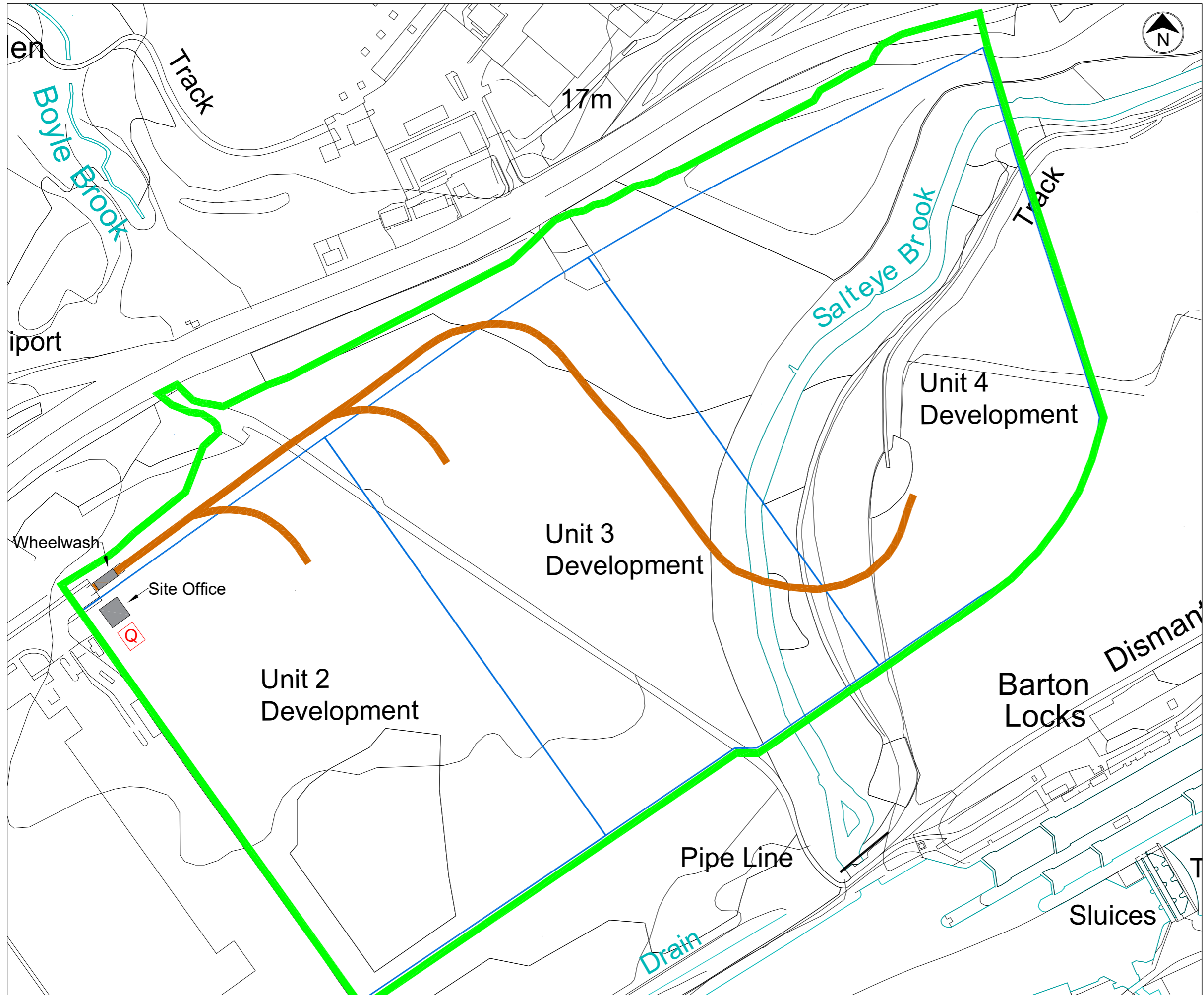
The site is centered at NGR SJ 74457 96754

Rev.	Details	Drawn Chkd.	Date
<p>Project 193237 Port Salford, Units 2-4</p>			
<p>Title Site Location Plan</p>			
			<p>AA Environmental Ltd Units 4-8 Cholswell Court Shippon Abingdon Oxon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-ltd.co.uk www.aae-ltd.co.uk</p>
Scale 1:10,000@A3	Date 17/2/21	Drawn SM	Chkd. EB
<p>Drg. No. 193237/D/001</p>		<p>Rev.</p>	



- Key:**
- Permit Boundary
 - 500 m buffer from site boundary
 - ① Great Bear / Culina Warehouses
 - ② Residential properties along Liverpool Road
 - ③ Salveye Brook
 - ④ Boyle Brook
 - ⑤ Flying Schools/ Airport Garage
 - ⑥ Industrial estate off A57
 - ⑦ Residential dwellings along Barton Moss Road
 - ⑧ Manchester City Airport (Barton)
 - ⑨ Barley Farm Dining and Carvery
 - ⑩ Residential dwellings along Trident Road
 - ⑪ AJ Bell Stadium
 - ⑫ Manchester Ship Canal
 - ⑬ Golf Course
 - ⑭ Dwellings along Ripley Crescent
 - ⑮ Dwellings along New Hall Avenue
 - ⑯ Sports Ground
 - ⑰ Dwellings along Robinia Close
 - ⑱ Peel Green Cemetery and War Memorial
 - ⑲ Tunnel Farm
 - ⑳ Residential Dwellings off of Liverpool Road
 - ㉑ The Club House Restaurant
 - ㉒ Residential dwellings along Daresbury Avenue
 - ㉓ Barton Moss Primary School
 - ㉔ A57 public highway
 - ㉕ Sewage Works
 - ㉖ Local Nature Reserve
 - ㉗ M60 public highway
 - ㉘ Sewage Works
 - ㉙ M62 public highway
 - ㉚ Davyhulme Park Golf Club

Rev.	Details	Drawn Chkd.	Date
<p>Project</p> <p>193237</p> <p>Port Salford, Units 2-4</p>			
<p>Title</p> <p>Sensitive Receptor Plan</p>			
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Drawn	Chkd.		
SM	EB		



- Key:
- Permit Boundary
 - Haul Route
 - Q Quarantine Area



Rev.	Details	Drawn	Date
		Chkd.	

Project
 193237
 Port Salford, Units 2-4

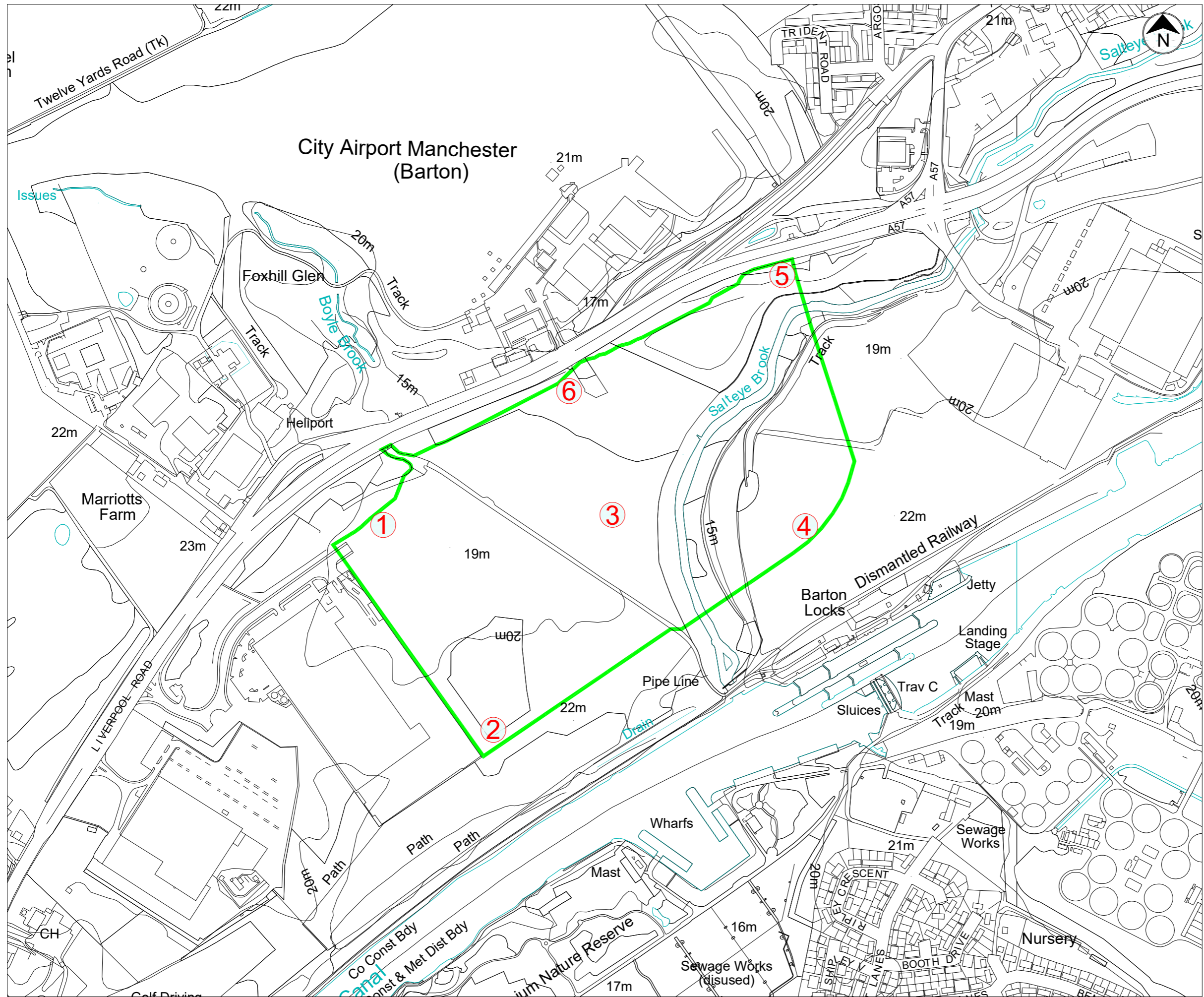
Title
 Site Layout Plan



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			193237/D/004	



Key:

- Permit Boundary
- ① Monitoring Locations

Rev.	Details	Drawn	Date
		Chkd.	

Project
 193237
 Port Salford, Units 2-4

Title
 Monitoring Plan



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APPENDIX A
Noise Assessment (BWB, 2022)

ENVIRONMENT

Peel L&P

Port Salford Permitting,
Eccles, Manchester

Noise Impact Assessment

MCH2147

ENVIRONMENT

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EXECUTIVE SUMMARY

BWB Consulting Ltd has been appointed by Peel L&P to undertake an environmental noise assessment to support an Environmental Permitting application for the processing and reuse of suitable engineering fill at Port Salford, Manchester.

The results of a detailed noise modelling exercise undertaken by BWB have been assessed against relevant guidance and the results of a baseline noise survey at the nearest noise sensitive receptors.

The results of the assessment indicate that, based on the current design, appropriate noise levels are likely to be achieved at nearest noise sensitive receptors.

It is therefore considered that the site is low risk from a noise perspective.

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Figure 4.1: Baseline Noise Measurement Locations

Figure 4.2: Resultant Specific Noise Contours Assuming Northern Operations, Daytime dB LAeq,1h

Figure 4.3: Resultant Specific Noise Contours Assuming Southern Operations, Daytime dB LAeq,1h

APPENDICES

APPENDIX A: Glossary of Terms

APPENDIX B: Full Survey Results

1. INTRODUCTION

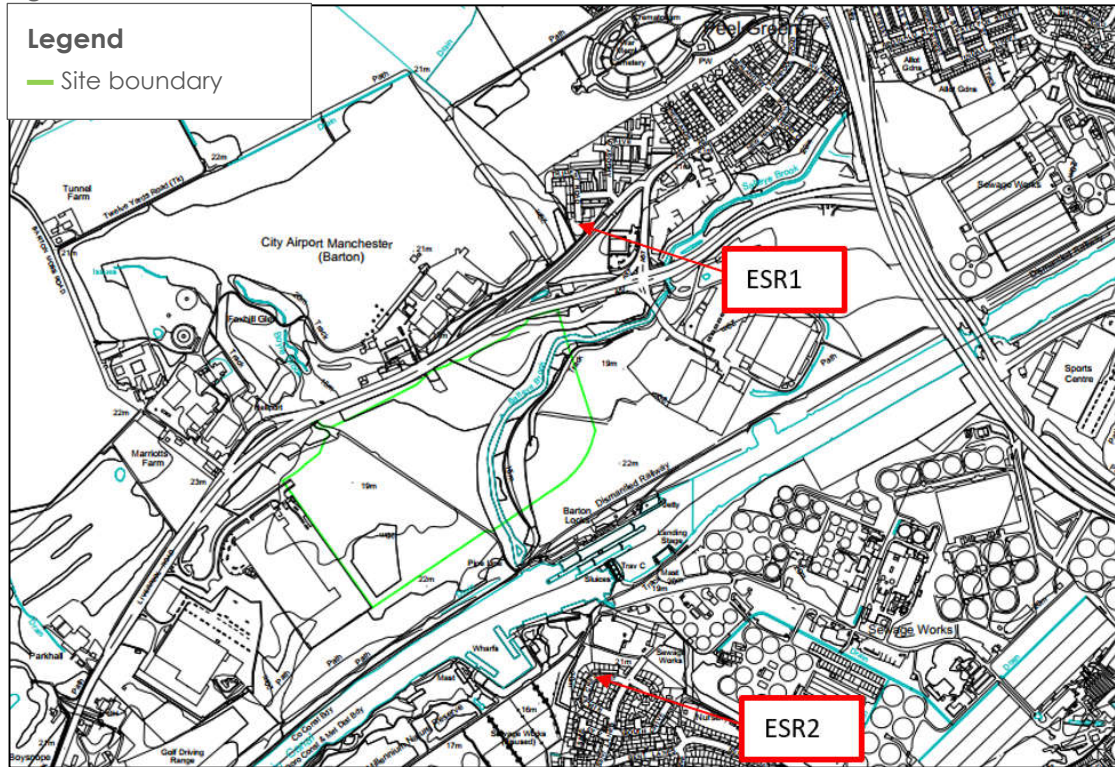
Appointment & Background

- 1.1 BWB Consulting Ltd has been appointed by Peel L&P to undertake an environmental noise assessment to support an Environmental Permitting application for the processing and reuse of suitable engineering fill at Port Salford, Manchester.
- 1.2 The results of a detailed noise modelling exercise undertaken by BWB have been assessed against relevant guidance and the results of a baseline noise survey at the nearest noise sensitive receptors.
- 1.3 This report is necessarily technical in nature, so to assist the reader, a glossary of acoustic terminology can be found in **Appendix A**.

The Development

- 1.4 The Site is located to the south of the A57. The site lies within a predominantly urban environment, with industrial buildings and residential properties dominating the wider surrounds. The site is bordered by open land and AJ Bell Stadium to the east, Manchester Ship Canal to the south other industrial and commercial buildings to the west, and the A57 to the north.
- 1.5 The nearest noise sensitive receptors to the site are dwellings located on Trident Road, approximately 220m from the northern site boundary, and off Bent Lanes and Ripley Crescent, approximately 410m from the southern site boundary. The site location and nearest noise sensitive receptors are shown below in **Figure 1.1**.
- 1.6 The proposal involves the import and use (R5 and R13 code) of 440,000 tonnes of suitable engineering fill in accordance with the approved Waste Recovery Plan. This is anticipated to take place at circa 220,000 tonnes per year. The use of waste involves capping and reprofiling the entire site.

Figure 1.1: Site Location



2. STANDARDS AND GUIDANCE

Noise and Vibration Management: Environmental Permits, 2021

- 2.1 In July 2021 technical guidance was published by the Environment Agency (EA) setting out how UK environment agencies assess noise, legal requirements for managing noise, noise impact assessments and noise management plans. This 2021 guidance replaces the H3 "horizontal" guidance and relies on noise impact assessments made using the recently updated BS4142 assessment method.
- 2.2 The document outlines permit conditions and regulation of noise. It also describes the principles of noise measurement and prediction, and the control of noise by design, operational and management techniques and abatement technologies.
- 2.3 The Environment Agency, Scottish Environment Protection Agency (SEPA), Natural Resources Wales and Northern Ireland Environment Agency have produced this guidance to help holders and potential holders of permits apply for, vary, and comply with their permits.
- 2.4 The document identifies that an assessment of noise will be site-specific and will depend upon many factors but that, generally speaking, more data will be needed to assess an impact than to assess the risk of an impact.
- 2.5 To determine whether a more stringent level of control is required, it will be necessary to identify the required end-point or desired noise output from the process at the sensitive receptors. To achieve this, each source may have to be addressed individually.
- 2.6 The performance required to achieve a reduction in emissions will be determined by Permit conditions, and the need to achieve Best Available Techniques (BAT) for a particular operation. For any remedial option, an assessment of the costs and benefits should be undertaken to inform the final selection. In many cases the decision will be straightforward, but in others it will not be clear-cut. Several factors may have to be balanced. Noise must also be balanced alongside other emissions and environmental impacts in determining BAT for a particular installation. Conflict between noise and other pollutants is rare however, and it is normally a balance of costs and benefits.

Guidance on noise impact assessment involving calculations or modelling, 2018

- 2.7 This web-based guidance was published on 23 October 2018 and provides direction on the information that must be submitted to the Environment Agency in a noise impact assessment that uses computer modelling or spreadsheet calculations.

BS 4142:2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

- 2.8 The BS4142:2014+A1:2019 Standard describes methods for rating and assessing the following:
 - Sound from industrial and manufacturing processes;

- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

2.9 The methods use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident. The Standard advises the purpose of the methodology includes the assessment of sound from any plant and activities associated with existing industrial and/or commercial uses at proposed residential dwellings.

2.10 If appropriate, the specific sound level of the source ($L_{Aeq,T}$) is corrected, by the application of one or more corrections for acoustic features such as tonal qualities and/or distinct impulses, to give a 'rating' level ($L_{Ar,T,r}$). The Standard effectively compares and rates the difference between the rating level of the specific sound and the typical background sound level ($L_{A90,T}$) in the absence of the specific sound.

2.11 The Standard advises that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) the source in question operates or is proposed to operate in the future.

2.12 Comparing the rating level with the background sound level, BS 4142 states:

"Typically, the greater this difference, the greater the magnitude of impact.

A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

3. NOISE MODELLING

3.1 In order to predict the noise levels from the proposed development site at nearby noise sensitive receptors, a detailed acoustic model of the site has been generated applying the following prediction methodology:

- The model was generated using the PC based CadnaA® noise modelling package;
- For industrial/commercial noise sources, the noise model was set to apply the noise prediction methodology set out in ISO 9613-2: *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*;
- Mapping of the Site and the surrounding area was calibrated into the noise model based on known Ordinance Survey grid reference points;
- Indicative ground topography was approximated using Lidar data at 1m;
- Off-site buildings which would provide screening to the Site have been incorporated as reflective façades;
- To reflect the local ground cover, ground absorption was set to $G = 0.5$ (50% acoustically absorptive ground);
- The model was set to include second order reflected noise from solid structures; and,
- A 5x5m grid spacing was used at a calculated height of 1.5m above local ground height.

Source Noise Data

3.2 From discussions with the Client, it is understood that the following will be used on the site;

Table 3.1: Details of Plant

Description	Make	Model	% on-time per hour
Bull Dozer	Caterpillar	D6	80
Sheepsfoot Roller	Bomag	BW6	50
20T Excavator	TBC	TBC	75
Smooth Drum Roller	Hamm	H20i	35
Wheeled Loading Shovel	TBC	TBC	75

3.3 It is also understood that there will be 50 HGVs per day accessing the site, which equates to 5 HGVs per hour.

3.4 In the absence of specific noise data, noise data has been gathered from other representative sources, including BWB library data and BS5228:2019+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Part 1:Noise*.

3.5 A summary of the octave band line source noise data utilised within the operational noise assessment is presented in **Table 3.2** below.

Table 3.2: Octave band data for line sources associated with known operations, at 10m

Source	Octave Band Sound Pressure Levels (L_{Amax} dB)								dB(A)
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz	
HGV Movement (BS5228 Table C6 Row 21 Road Lorry Full)	96	82	74	73	77	72	71	64	80

- 3.6 For HGV movements, the calculations detailed in BS5228:2019+A1:2014, for calculating sound power levels (SWL) from mobile plant and haulage routes have been used, which are reproduced in equations (a) and (b) below.

$$(a) \text{ SWL} = L_{Amax@10m} + 28$$

$$(b) L_{Aeq} = \text{SWL} - 33 + 10\log(Q) - 10\log(V) - 10\log(D)$$

Where Q is the flow (number of vehicles per hour), assumed to be 10 HGV movements per hour (associated with the arrival and departure of an HGV vehicle);

V is the average speed of the vehicles in km/h, assumed to be 8km/h; and
D is the distance (m) of the receiver position, assumed to be 10m.

- 3.7 Octave band levels from **Table 3.2** have been modelled and corrected to provide the equivalent overall $L_{Aeq,T}$ levels at 10m presented in **Table 3.3**.

Table 3.3: Equivalent $L_{Aeq,T}$ noise levels at 10m associated with known line sources, dB(A)

Noise Source	L_{Aeq} @10m (dB)
HGV movement	63

- 3.8 For the point sources, sound power levels have been calculated using equation (c), which is detailed below.

$$(c) \text{ SWL} = L_{Aeq@10m} + 28$$

Table 3.4: Adopted noise emission data for noise sources associated with known operations, dB(A)

Noise Source	L_{Aeq} @10m (dB)	Sound Power Level, L_w (dB)	Typical Duration	On-time Correction	Source
Bull Dozer	-	111	48 minutes	-1	Manufacturer Data Sheet
Sheepsfoot Roller	81	109	30 minutes	-3	BS5228 Table C2 (Row 36)
20T Excavator	78	106	45 minutes	-1	BS5228 Table C2 (Row 3)

Noise Source	L _{Aeq} @10m (dB)	Sound Power Level, L _w (dB)	Typical Duration	On-time Correction	Source
Smooth Drum Roller	79	107	21 minutes	-5	Manufacturer Data Sheet
Wheeled Loading Shovel	80	108	45 minutes	-1	BS5228 Table C2 (Row 27)

3.9 Octave band levels for the equipment are shown below in **Table 3.5**.

Table 3.5: Octave band sound power levels for point sources

Source	Octave Band Sound Power Levels (L _w dB)								dB(A)
	63 Hz	125 Hz	250 Hz	500 Hz	1kHz	2kHz	4kHz	8kHz	
Bull Dozer	109	115	109	108	105	103	97	93	111
Sheepsfoot Roller	111	105	105	104	104	103	96	84	109
20T Excavator	108	111	104	101	100	98	97	94	106
Smooth Drum Roller	99	102	108	105	101	97	90	82	107
Wheeled Loading Shovel	113	111	104	103	103	100	100	89	108

3.10 The assessment has been based on the following assumptions:

- During a typical 1-hour daytime period there will be 10 HGV movements, 48 minutes of bull dozer use, 30 minutes of sheepsfoot roller use, 45 minutes of excavator use, 2121 minutes of smooth drum roller use and 45 minutes of wheeled loading shovel use; and,
- Plant was included as point sources modelled at 1.5m above local ground height. HGV movements across the site have been modelled as a line source with an effective height of 1.5m above local ground and were calibrated into the model.

3.11 The site will operate during the following times;

- Between 0800 hrs and 1800 hrs Monday to Friday; and
- Between 0900 hrs and 1400 hrs on Saturdays.

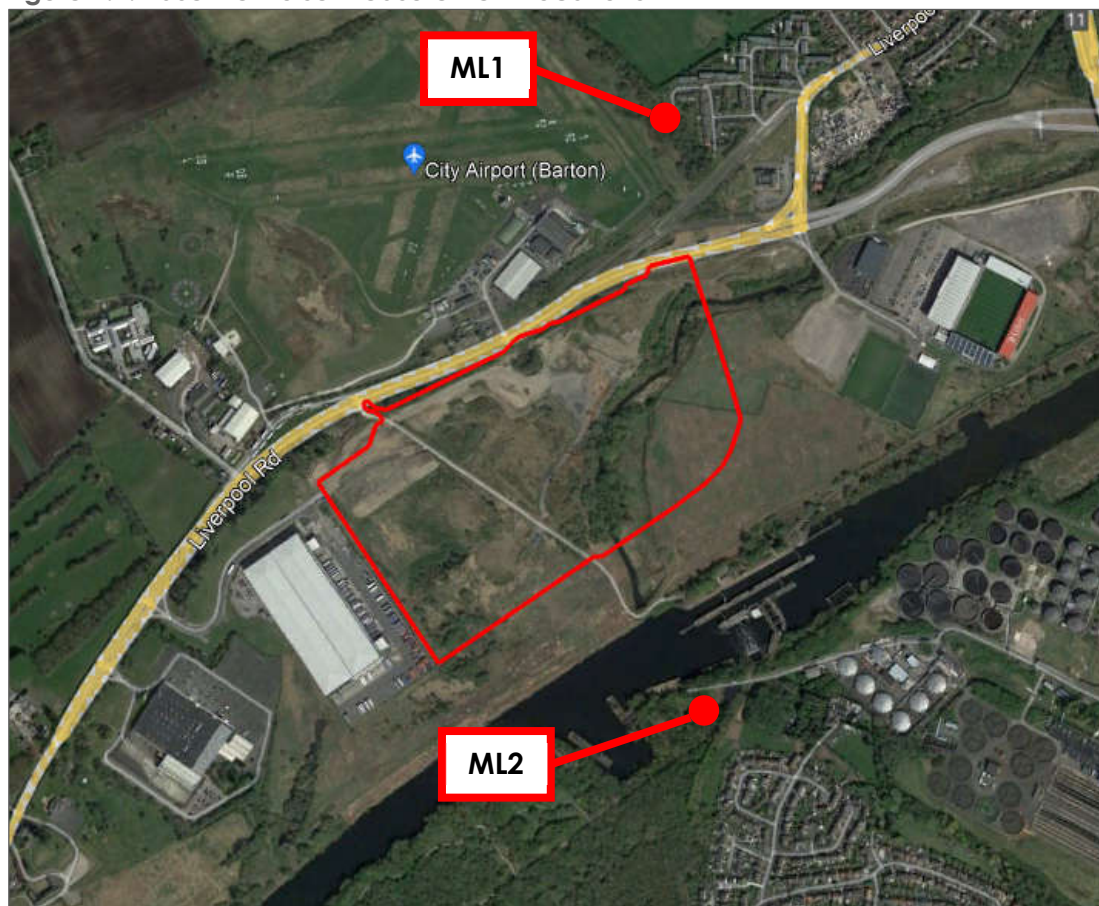
4. NOISE ASSESSMENT

- 4.1 The results of the noise modelling exercise have been used to compare the predicted noise levels against the existing background noise levels at the nearby receptors.

Baseline Noise Monitoring

- 4.2 To inform the assessment, a detailed baseline noise survey was undertaken at the Site. This survey was undertaken to determine the current prevailing noise climate at the nearest noise sensitive receptors to the installation.
- 4.3 A baseline noise survey was undertaken in January 2022 to establish the existing noise climate on and within the vicinity of the Site. Baseline noise monitoring has been undertaken at the Measurement Locations (MLs) identified in **Figure 4.1**. The adopted monitoring locations are considered to be representative of the nearest noise sensitive receptors, located off Trident Road to the north and Ripley Crescent to the south.
- 4.4 Details of monitoring undertaken at each location are provided below.

Figure 4.1: Baseline Noise Measurement Locations



Survey Methodology

ML1

- 4.5 Unattended noise monitoring was undertaken at ML1 from 15:00 on Thursday 20th January 2022 until 15:00 on Friday 21st January 2022. Measurement equipment at ML1 was established in free-field conditions at a height of 1.5 m above local ground level.
- 4.6 During periods of attendance the noise climate at ML1 was noted to be dominated by nearby aircraft taking off and landing from NPAS Barton to the west. It was also noted that road traffic noise from the A57 to the south was also audible when no aircraft was overhead.

ML2

- 4.7 Unattended noise monitoring was undertaken at ML2 from 16:00 on Thursday 20th January 2022 until 16:00 on Friday 21st January 2022. Measurement equipment at ML2 was established in free-field conditions at a height of 1.5 m above local ground level.
- 4.8 During periods of attendance the noise climate at ML2 was noted to be dominated by distant road traffic from the surrounding road network, namely the M60 and A57. Noise associated with Great Bear Port Salford was also noted to be audible during installation, inclusive of loading and unloading noise.

Measurement Equipment

- 4.9 The Class 1 measurement equipment used during the baseline noise survey is detailed in **Table 4.1**. Measurement equipment was calibrated using a portable calibrator immediately before and after the measurements with no significant drift in calibration observed. The sound level meters, pre-amplifiers and microphones were calibrated to traceable standards within the 24 months prior to the measurements. The portable calibrator was calibrated within 12 months of the date of the survey.

Table 4.1: Noise measurement equipment

ML	Equipment	Make & Model	Serial Number	Calibration due Date
ML1	Sound Level Meter	01 dB FUSION	14151	11/10/2023
	Microphone	GRAS 40CD	466798	
ML2	Sound Level Meter	01 dB FUSION	14153	12/10/2023
	Microphone	GRAS 40CD	428496	
ML1 & ML2	Calibrator	Cirrus CR: 515	96168	28/06/2022

Meteorological Conditions

- 4.10 The weather during the baseline noise survey remained conducive to environmental noise measurement, it being dry with negligible winds (<5ms⁻¹).

Measurement Results

- 4.11 A summary of the measured levels to be used within the assessment are provided below in **Table 4.2 and Table 4.3**. Full measurement results for the whole period are presented in **Appendix B**.

Table 4.2: Summary of measured sound pressure levels at ML1

Start time and date	Period	L _{Aeq}	L _{AFmax}	L _{A90} ²
15:00 20/01/2022	Daytime (07:00 – 23:00) ¹	60	-	53
23:00 20/01/2022	Night-time (23:00 – 07:00)	57	85 ³	46

¹Includes periods between 1400-2300 on 20/01/2022 and 0700-1500 on 21/01/2022
² Typical backgrounds determined from an arithmetic average of the mean, mode and median L_{A90,1 hour} and L_{A90,15mins} values during daytime and night-time periods respectively.
³ 10th highest L_{AFmax} noise levels during measurement period.

Table 4.3: Summary of measured sound pressure levels at ML2

Start time and date	Period	L _{Aeq}	L _{AFmax}	L _{A90} ²
14:00 20/01/2022	Daytime (07:00 – 23:00) ¹	57	-	52
23:00 20/01/2022	Night-time (23:00 – 07:00)	49	64 ³	45

¹Includes periods between 1400-2300 on 20/01/2022 and 0700-1500 on 21/01/2022
² Typical backgrounds determined from an arithmetic average of the mean, mode and median L_{A90,1 hour} and L_{A90,15mins} values during daytime and night-time periods respectively.
³ 10th highest L_{AFmax} noise levels during measurement period.

Determination of background sound levels

- 4.12 For existing noise sensitive receptors located near to the northern boundary of the Site, the noise measurements from Measurement Location 1 are considered to be representative of the existing noise climate in these areas.
- 4.13 BS4142 advises that the measurement time interval for background noise measurements should be 'should be sufficient to obtain a representative or typical value of the background sound level'.
- 4.14 Consideration has been given to the appropriate background sound levels, and an analysis is provided in **Table 4.4** below.

Table 4.3: Determination of background sound levels

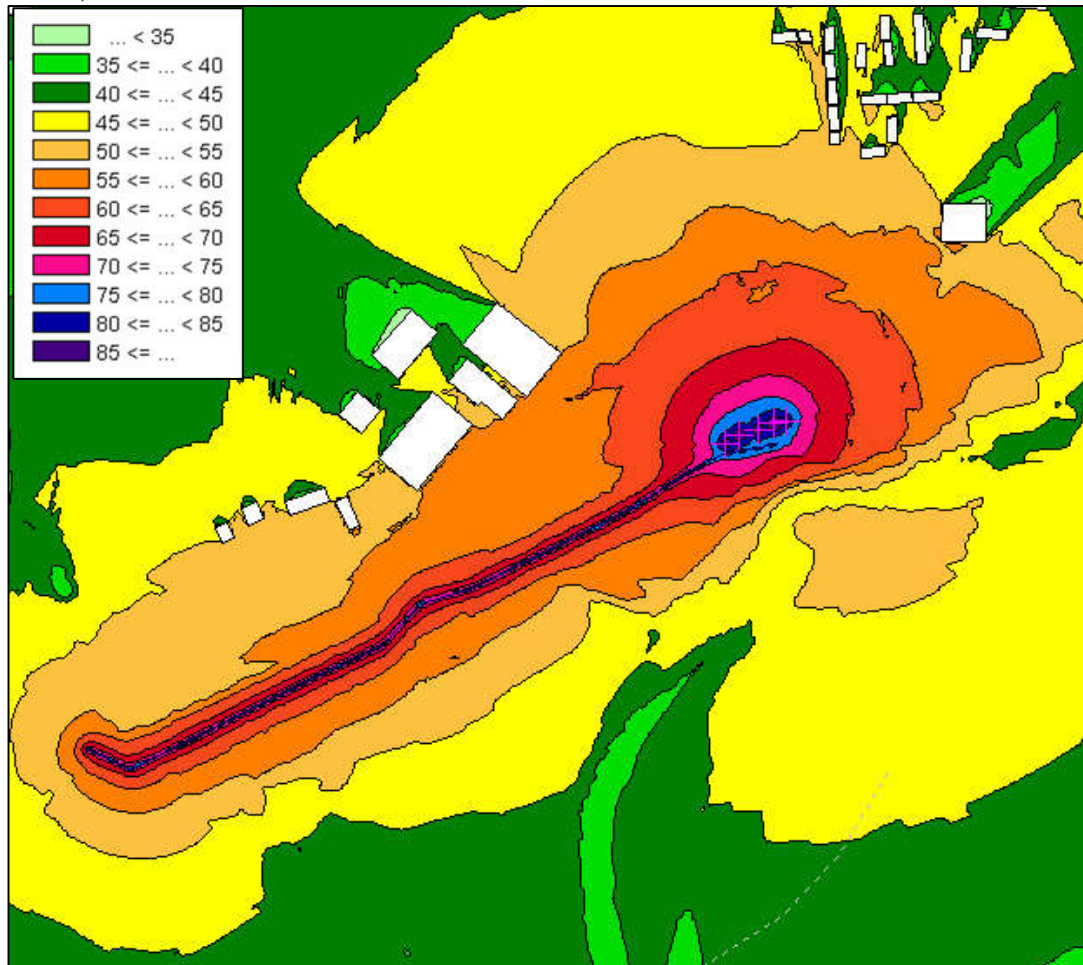
ML	Parameter	Daytime (0700-2300)
ML1	Minimum	50 L _{A90,1hr}
	Maximum	55 L _{A90,1hr}
	Arithmetic average	53 L _{A90,1hr}
	Mode	55 L _{A90,1hr}
	Median	54 L _{A90,1hr}

ML	Parameter	Daytime (0700-2300)
	Selected background sound level	53 LA90,1hr
ML2	Minimum	48 LA90,1hr
	Maximum	55 LA90,1hr
	Arithmetic average	52 LA90,1hr
	Mode	53 LA90,1hr
	Median	53 LA90,1hr
	Selected background sound level	52 LA90,1hr

Assessment of normal site operations

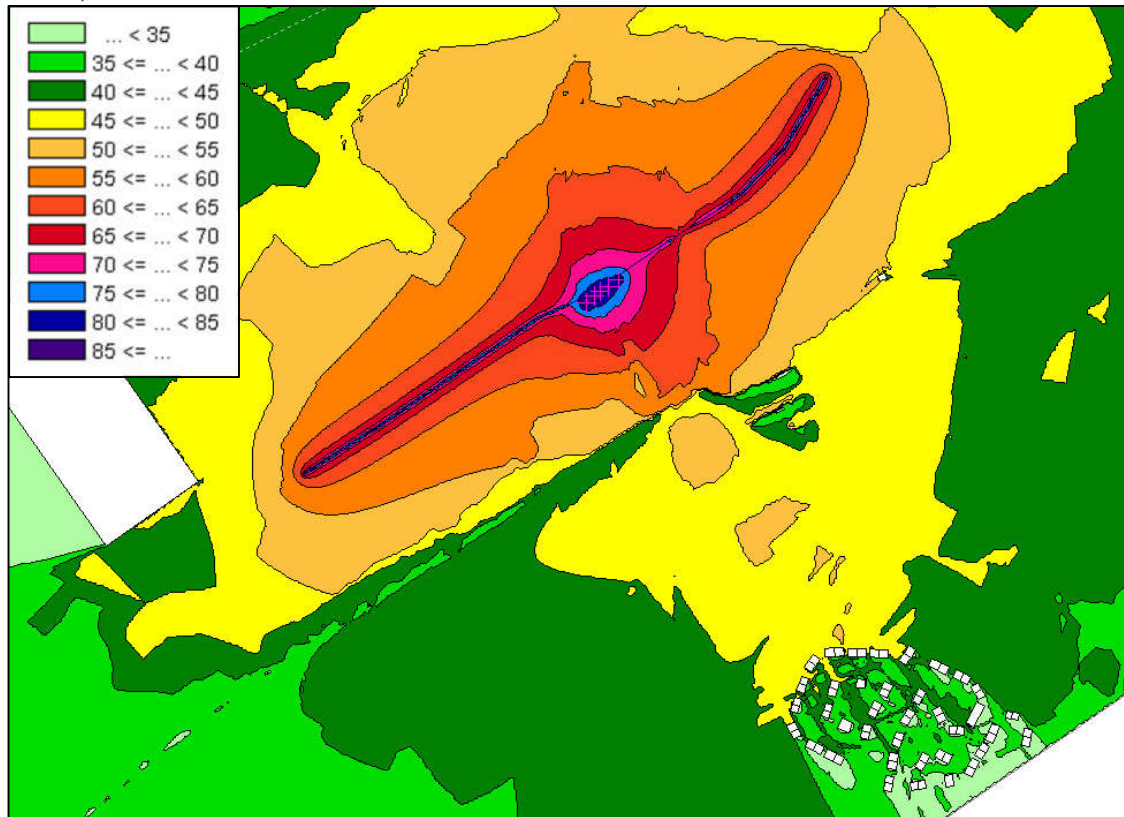
- 4.15 For the purposes of the assessment, the predicted noise levels associated with operational noise have been predicted in outdoor living areas at a height of 1.5m for the daytime period only. The assessment has been undertaken in accordance with BS 4142:2014+A1:2019. To assess the impact at ESR1, all operations have been assumed to operate on the northern boundary. To assess the impact at ESR2, all operations have been assumed to operate on the southern boundary.
- 4.16 As the specific noise levels are significantly below the ambient measured noise levels at ML1 and given the intervening distance between the nearest receptors and installation boundary, no character corrections have been applied. **Figure 4.2** shows the resultant noise contours at 1.5m above local ground height assuming all operations are undertaken close to the northern boundary.

Figure 4.2: Resultant Specific Noise Contours Assuming Northern Operations, Daytime
dB LAeq,1h



- 4.17 The highest predicted specific noise level at the receptors to the north, when all operations are undertaken on the northern boundary is 50 dB(A), equating to a rating level of 50 dB(A). The defined background noise level during the daytime is 53 dB LA90,1h for the daytime. Therefore, the daytime BS4142 assessment is **3 dB below background** which indicates a **low** impact.
- 4.18 As the specific noise levels are significantly below the ambient measured noise levels at ML2 and given the intervening distance between the nearest receptors and installation boundary, no character corrections have been applied. **Figure 4.3** shows the resultant noise contours at 1.5m above local ground height assuming all operations are undertaken close to the southern boundary

Figure 4.3: Resultant Specific Noise Contours Assuming Southern Operations, Daytime
dB LAeq,1h



- 4.19 The highest predicted specific noise level at the receptors to the south, when all operations are undertaken on the southern boundary is 50 dB(A), equating to a rating level of 50 dB(A). The defined background noise level during the daytime is 52 dB LA90,1h for the daytime. Therefore, the daytime BS4142 assessment is **2 dB below background** which indicates a **low** impact.
- 4.20 It is therefore considered that mitigation is not considered warranted at this time.

5. BEST AVAILABLE TECHNIQUES AUDIT

- 5.1 The operations on Site will employ basic good practice measures to control noise. This involves consideration to selection of modern, quieter fixed and mobile plant where appropriate. Noise from the site is anticipated to be indistinguishable against the existing ambient noise environment. The rating level of the noise as defined in BS4142:2014 will be below the pre-existing background sound levels.
- 5.2 Noise modelling has been undertaken as part of the design of the site and this model is still “live” and can be periodically updated as more information is known to assist with the ongoing management of noise.
- 5.3 These elements comprise the indicative requirements of the permitting regulations to demonstrate the achievement of BAT for the Site.

6. CONCLUSION AND RECOMMENDATIONS

- 6.1 BWB Consulting Ltd has been appointed by Peel L&P to undertake an environmental noise assessment to support an Environmental Permitting application for the processing and reuse of suitable engineering fill at Port Salford, Manchester.
- 6.2 The results of a detailed noise modelling exercise undertaken by BWB have been assessed against relevant guidance and the results of a baseline noise survey at the nearest noise sensitive receptors.
- 6.3 The results of the assessment indicate that, based on the current design, appropriate noise levels are likely to be achieved at nearest noise sensitive receptors.
- 6.4 It is therefore considered that the site is low risk from a noise perspective.

APPENDICES

APPENDIX A: Glossary of Terms

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

Acoustic Terminology

Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2×10^{-5} Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' - weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L_{Amax}	L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L_{10} and L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time, and the L_{90} is the level exceeded for 90% of the time.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Façade Level	A sound field determined at a distance of 1m in front of a large sound reflecting object such as a building façade.

APPENDIX B: Full Survey Results

Figure B1: Full Measurement Results from ML1

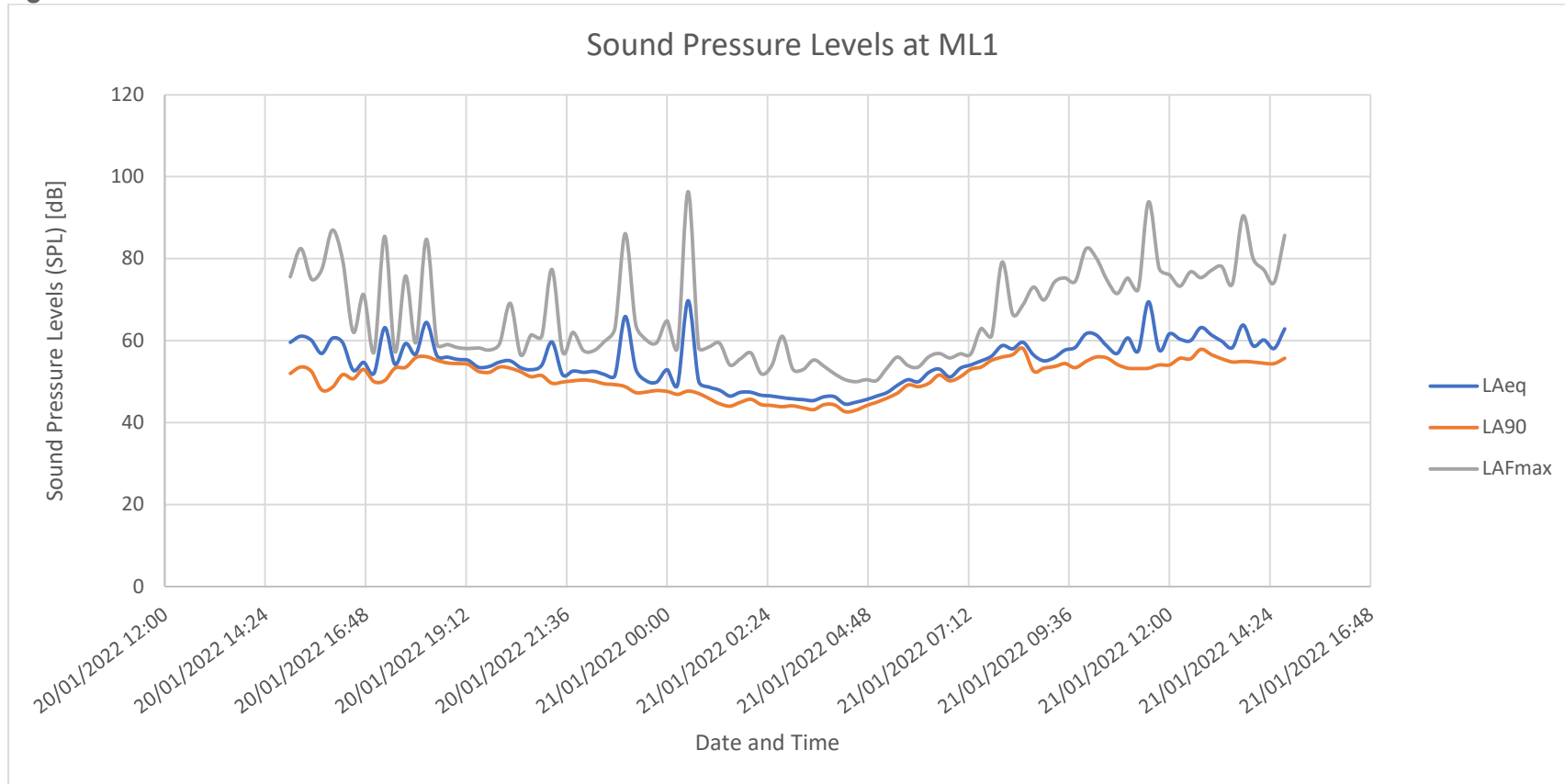
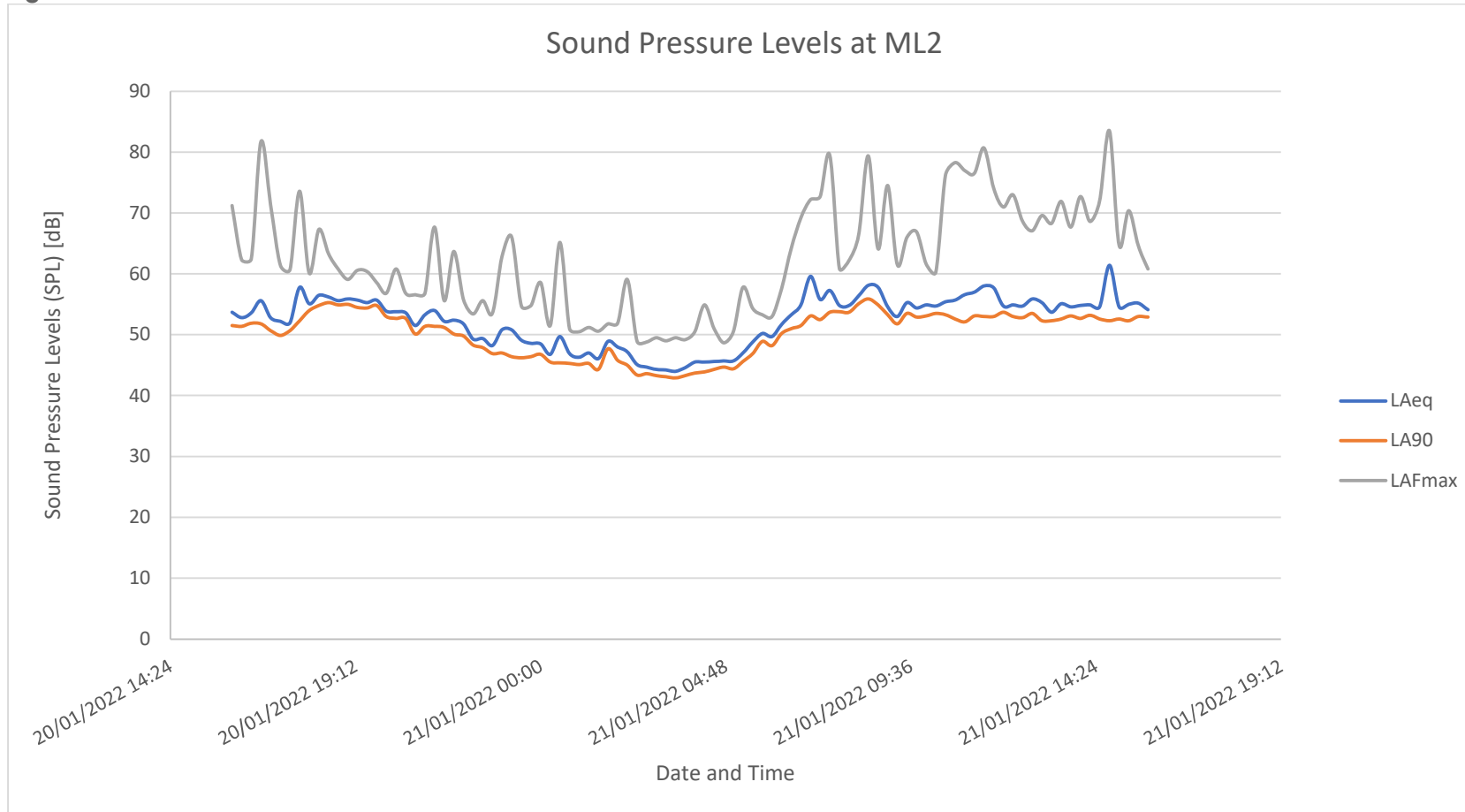


Figure B2: Full Measurement Results from ML2





APPENDIX B
Complaints Procedure / Form

Complaints Procedure

INTRODUCTION

This Complaints Procedure outlines how the Operator will respond in the event of a complaint. A complaint may arise relating to the site permitted activities involving a nuisance (dust, noise, odour, pests). This procedure contains information on how any complaint will be investigated and any actions taken as a result of the complaint.

KEY CONTACTS

The key contacts will be shown on the site notice board at the site entrance. Alternatively, any complaints can be made at the site to any site operative and/or the Site Manager. The contacts are shown below.

Contact	Role	Contact Number
John Peaker	Off site Manager	0161 629 8347
On site Site Manager	Responsible for operation at the site under the Environmental Permit and their staff at the site	TBC
Supervisor / Engineer	Responsible for implementing and inspection of controls at the site under the Environmental Permit and their staff at the site	TBC

PROCEDURE

1. Any complaints made will be immediately logged by the Site Manager and/or Site Operative. In the event a complaint is made to a Site Operative, the Site Operative will refer the complaint to the Site Manager. If able to do so, the complainant details will be taken on initial contact either by phone or in person.
2. The Site Manager (or nominated operative) will discuss any concerns with the complainant directly within 1 working day of the complaint being made; and request contact details to notify the complainant of any updates/corrective measures. The complain will be logged using the Complaint Form (attached) and given a unique reference number.
3. The Site Manager will review the site activities and ensure control measures are in accordance with the Site's Management Systems.
4. The Site Manager will investigate the location of concern raised in relation to the site i.e. at a local receptor location and/or public highway to inspect the impact on the receptor.
5. The Site Manager will notify the complainant of any updates to the control measures / site operations. Control measures may be corrective and/or preventative and include additional control measures and/or increase the frequency of an existing control measure. Alternatively, the design of the site operations may change to decrease nuisance to that receptor.
6. In the event the same issue persists, the Site Manager will further review site operations and control measures. This may require a temporary cessation of certain operations whilst additional measure is implemented. The works will not recommence until further control measures have been incorporated and a review of effectiveness has been agreed / witnessed by the Site Manager. The complainant will be kept abreast of further measures.

The target close out of any complaint is within 1 week of point 1 however this is dependent on the complaint, effectiveness of control and any third party testing required to quantify complaint and/or control.

Complaints Procedure

RECORDS

On site Records

A copy of this procedure is kept on site and briefed to all site operatives upon site induction. Any identified complaints, incidents or accidents, as well as corrective measures, are recorded in the Complaint Form. Copies of the complaint forms are kept on site.

Review

This procedure is reviewed on a yearly basis or post-incident to ensure it remains up-to-date with the site operations.

Complaint Form

Complaint Form Reference No.	
------------------------------	--

Date of Complaint	
-------------------	--

Details of Complainant			
------------------------	--	--	--

Name			
------	--	--	--

Address			
---------	--	--	--

Contact Number		Email Address	
----------------	--	---------------	--

Nature of Complaint			
---------------------	--	--	--

Reported To		Date of Incident (if different to date of complaint)	
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Corrective Measure Taken			
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Follow up Communication with Complainant			
--	--	--	--

Preventative Measure Taken (if any)			
-------------------------------------	--	--	--

Sign off		Close out Date	
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