NOISE & VIBRATION MANAGEMENT PLAN

Queenborough Business Park, Queensborough, Isle of Sheppey ME11 5DY

Shaw Haulage Ltd

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Oaktree Environmental Ltd

Waste, Planning & Environmental Consultants

Oaktree Environmental Ltd, Lime House, 2 Road Two, Winsford Industrial Estate, Winsford, Cheshire, CW7 3QZ
Tel: 01606 558833 | E-Mail: sales@oaktree-environmental.co.uk | Web: www.oaktree-environmental.co.uk
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1 Introduction

1.1 Site history / background

1.1.1 Oaktree Environmental Ltd have been instructed by Shaw Haulage Ltd to prepare a Noise & Vibration Management Plan (NVMP) which will outline the methods by which Shaw Haulage Ltd will assess and minimise the potential impacts of noise generated through the operation of the site situated at Queenborough Business Park, Queensborough, Isle of Sheppey ME11 5DY.

1.1.2 The plan addresses the impact of noise and the specific control measures required to mitigate the risk. These mitigation measures will be put in place by the management of Shaw Haulage Ltd. As the site is also proposing to carry out treatment activities, the plan addresses the impacts of noise and includes the specific control measures required to mitigate the associated noise impacts with the operation of the site.

1.1.3 The mitigation measures outlined in this will NVMP will be put in place by the management of Shaw Haulage Ltd to ensure noise and vibration is controlled using best practicable means (BPM) to ensure the receptors listed in Section 3.2 below are not affected by the above proposals.

1.1.4 Considering the existing noise climate (HGV movements, processes and other noise associated with plant/machinery in the vicinity of the site) which is further discussed within Section 3, it is considered that a noise assessment would not be required in this instance given the low likelihood of potential impacts relating to noise.

1.1.5 Contact details for Oaktree Environmental are as follows:

Oaktree Environmental Ltd	Contact:	Chris Parry
Lime House	Position:	Senior Consultant
2, Road Two	Tel:	01606 558833
Winsford Industrial Estate	E-mail:	chris@oaktree-environmental.co.uk
Winsford CW7 3QZ		

1.2 Site location

1.2.1 The site is located on Queenborough Business Park, Queensborough, Isle of Sheppey ME11 5DY as shown on Drawing Nos. QBP/3061/01 & 02. The national grid reference for the site is TQ 91245 71888.

1.2.2 The site is predominantly located in a mixed industrial/residential area; immediately north, south and west of the site are industrial premises; east is a railway line with residential properties beyond.

1.3 Permit area/waste management operations

1.3.1 The permit boundary is outlined in green on Drawing No. QBP/3061/02. All references to 'the site' in this EMS shall mean this area and the associated infrastructure, plant and equipment.

1.3.2 The EP is required for the storage prior to removal and treatment of waste. Waste treatment processes on site may include the following:

- Compacting (by loading shovel / 360° excavator and equipment)
- Sorting (with loading shovel / 360° excavator or by hand)
- Screening (by using appropriate mechanical screening plant)
- Separation (by using appropriate mechanical screening plant and equipment)
- Blending (by using appropriate mechanical trommel/screening plant)
- Crushing (by using appropriate mechanical crushing plant)
- Washing (by using appropriate mechanical washing/separation plant and equipment)

1.3.3 Specified waste management operations include waste disposal and waste recovery operations listed Annex IIA and IIB of The Waste Framework Directive 2008/98/EC and are listed in summary below:

R3: Recycling or reclamation of organic substances.

R5: Recycling or reclamation of other inorganic materials.

R13: Storage of waste pending recovery.

1.4 Hours of operation

1.4.1 The site will be open during the following hours for the delivery and receipt of waste on site; including depositing, sorting, moving, storing and removing waste:

Haulage Drivers / Office workers

Monday to Friday	07:00 – 18:00
Saturday	07:00 – 14:00
Sundays, Bank/Public holidays	No operations

Screening and Crushing Operations

Monday to Friday	07:00 - 18:00
Saturday	07:30 - 13:00
Bank/Public holidays	No operations

1.4.2 During times where the site is closed or not in operation, the site will be locked and secured to prevent unauthorised vehicular and/or pedestrian access.

2 Sensitive Receptors

2.1 Receptor Plan

2.1.1 A sensitive receptors plan (SRP) has been produced to accompany this NVMP and is shown in Appendix I referenced as on Drawing No. QBP/3061/04. The receptors highlighted are those which are considered to be at risk by noise generated by the site.

2.2 List of receptors

2.2.1 The receptors listed from the SRP are also shown in the table below with approximate distances to these residential properties.

Table 2.1 – Distances to Selected, Representative Sensitive Locations

Boundary	Receptor	Approximate distance from site boundary (m)
North / North-East / East	Residential Properties on Gordon Avenue, Harold Street, Stanley Avenue, Borough Road, Main Road, Eastern Avenue, Park Avenue and onwards.	45 – 1000
North / North-west	Residential Properties on Railway Terrace, High Street, Well Road, North Road and onwards.	160 - 1000
South / South-west	Residential Properties on Rushenden Road, Flanagan Avenue, Hardy Close, First Avenue and onwards.	360 - 1000
East	Railway Track & Railway Station	Adjacent
East / South / West	Queenborough Creek	Adjacent
West	The Swale	380
East	Queenborough School & Nursery	400

2.3 Commercial/industrial businesses which may also be affected by noise are:

- Al-le Logistics
- Olympic Glass Products
- The Trafalgar
- Pilkington Agr (UK)
- Dolphin Trucking
- Shearspeed Customs
- Sheppey Motor Salvage & Spares

- M&G Autos
- Co-op Food
- Klondyke Industrial Estate

2.4 Other noise sources

2.4.1 Other industrial / commercial land uses which will contribute to the background noise level are tabulated below in the Table below.

Table 2.2 – Other Noise Emitting Operators

Company	Address	Type of Business	Approximate distance from site boundary (m)
Users of industrial estate	Queenborough Business Park	Numerous Industrial / Commercial facilities	Adjacent / North
South Eastern Railway	Queenborough Station and Railway Line	Railway Line	Adjacent / East
Apparent waste management facility	Sheppey Plant Estate, Queenborough ME11 5HS	Waste recycling facility	20 / South
Users of industrial estate	Sheppey Plant Estate, Queenborough ME11 5HS	Numerous Industrial / Commercial facilities	20 / South
Users of Klondyke Industrial Estate	Rushenden Rd Queenborough ME11 5HN	Industrial Estate	100 / West
Users of Industrial / commercial area	Cullet Drive, Queenborough	Numerous Industrial / Commercial facilities	290 / South
Asecia Queenborough Litd	North Rd, Queenborough ME11 5EL	Commercial	630 / North-west

3 Site Operations

3.1 Waste deliveries

3.1.1 Waste is delivered to the site via existing access from Rushenden Road. Upon arrival, an operative will direct the driver to the relevant area on site.

3.1.2 Waste will arrive at the site primarily consisting of Shaw Haulage Ltd's own vehicles/contracts which consists of:

- HGV skip vehicles
- Fixed body bulk loaders with a number of smaller deliveries of scrap from,
- 8-wheeled tipper vehicles which can carry loads of up to 18-20 tonnes
- Articulated lorries.

3.2 Site infrastructure

3.2.1 The site infrastructure is clearly detailed on Drawing No. QBP/3061/03 which is shown in Appendix I of this NVMP. The drawing illustrates the location of plant, machinery and stored wastes across the site.

3.3 Waste processing procedure

3.3.1 On site processing using mobile plant is required to produce material to the desired specification for re-sale on the commercial market.

3.3.2 Below shows the procedure of the treatment operations carried out on site:

SCREENER

a) Waste will be loaded into the feed hopper of the screening plant will be loaded using a 360^{o} tracked excavator or a 4-wheel loading shovel equipped with a bucket. This process will then separate the soil from the stone/hardcore.

b) The screening plant utilises a vibrating grid with evenly spaced vertical bars to separate out the different fractions within the material. Such screens have interchangeable mesh screens to permit the production of a wide range of product sizes (<3 mm to 20 mm).

c) Soil will be discharged into two different stockpiles depending on its size via conveyors.

d) The stone/hardcore material off the front conveyor of the screener should consists of stone/hardcore which will consist of a saleable aggregate. Larger items may then be transferred to the crusher.

CRUSHER

e) The bulky inert/stone waste will be loaded into the feed hopper of the crusher; this then passes into the crushing chamber which uses hydraulically operated jaws to reduce the size of the material.

f) Small feed/fines pass through the grid bars/mesh at the base of the crushing chamber and out of the plant via a small side conveyor with a discharge height of approximately 1.5 - 3.0 metres. The larger crushed material falls onto the delivery conveyor which will discharge the material in one of two ways: either onto a conveyor feeding the grid of the mobile screen or onto the ground to form a stockpile.

g) Before the crushed material exits the delivery conveyor (discharge height of up to 3.0 metres) any extraneous metal is extracted using a permanent overband magnet. If the material requires further grading after crushing the mobile screening plant used will have up to 3 discharge conveyors, forming 3 stockpiles of different product.

h) Small feed/fines pass through the grid bars/mesh at the base of the crushing chamber and out of the plant via a small side conveyor with a discharge height of approximately 1.5 - 3.0 metres. The larger crushed material falls onto the delivery conveyor which will discharge the material in one of two ways: either onto a conveyor feeding the grid of the mobile screen or onto the ground to form a stockpile.

i) Before the crushed material exits the delivery conveyor (discharge height of up to 4.0 metres) any extraneous metal is extracted using a permanent overband magnet. If the material requires further grading after crushing the mobile screening plant used will have up to 3 discharge conveyors, forming 3 stockpiles of different product.

j) The stockpiled material which is discharged from the crushing plant will be transferred to the appropriate storage areas by loading shovel.

3.4 Mobile plant and equipment

3.4.1 Mobile plant and equipment along with their preventative maintenance are clearly detailed in the site's EMS and not considered necessary to duplicate as part of this NVMP.

4 Noise Management and Controls

4.1 Noise Sensitive Receptors

4.1.1 As discussed previously, the site lies within an industrial setting with the nearest noise sensitive residential receptors located 45m east of the site.

4.1.2 The proposed operation and layout of the site has been planned in order to contain all the required operations and activities within the site, thus limiting the impacts from noise on the above receptors.

4.1.3 In terms of potential noise impact, whilst the development proposed will be operated using the Best Practicable Means at all times, this site-specific NVMP has been prepared in order to ensure the noise levels at the site can be managed appropriately and reduce any impact on the surrounding receptors.

4.2 Noise Sources

4.2.1 The main sources of noise which could arise from the site operations are as follows::

- Skip lorries/HGVs travelling to and from the site for delivery / collection of waste and aggregates
- Vehicles tipping waste deliveries into waste reception areas
- Loading of waste and into mechanical treatment plants i.e. screener, crusher
- Loading of material into containers or HGV`s for removal off site
- Operation the of the mechanical treatment plant (screener, crusher)
- Loading waste into vehicles for removal off site
- Manoeuvring of plant around external areas of the site
- Small vehicles travelling to and from the site (e.g. staff and visitor's cars, courier van deliveries etc.)
- Repairs

4.3 Overview of existing noise climate

4.3.1 The site is located in a mixed industrial/commercial/residential area. Considering the location of the site noise levels are likely to be relatively high as a results of; HGV movements, waste processes and other noise associated with plant/machinery in the vicinity of the site.

4.4 Noise Management Table

4.4.1 A site-specific NVMP table overleaf details the above noise sources and how the current and proposed infrastructure on site will reduce the impact of noise to surrounding properties.

4.4.2 In addition to the existing controls in this NVMP, the complaints procedure further discussed in Section 6 will be used in the event that any noise complaints are received. If a noise complaint is received and the applicant has been made aware, immediate action will take place reviewing and identifying whether any changes to existing procedures are required or if new procedures need to be put in place. Any changes which may be required will be implemented immediately.

Source(s)	Receptor(s)	Consequences	Magnitude of noise source	Characteristic of noise source	Probability of noise disturbance	Remedial Action/ Recommendations/ Comments	Assessment Outcome following actions / recommendations
Skip lorries/HGVs travelling to and from the site for delivery/collection of products	As detailed on Sensitive Receptors Plan	Noise pollution	Medium	Intermittent (low pitch)	Low	Traffic movements from vehicles will adhere to the hours specified in Section 1.4, however site management will aim to ensure that vehicle movements are spread out evenly throughout the day. All drivers are required to enter and exit the site with due consideration for neighbours. The existing access road to the site will be maintained in good state of repair to prevent unnecessary noise being generated. Implementation of a 5mph speed limit onsite. All skip lorries operated by Shaw Haulage Ltd be fitted with chain socks in order to reduce the noise produced by the loose chains banging on the side of the skip. All skip lorries associated with the site be fitted with white noise reversing alarms Engines to be switched off when not in use.	Low
Vehicles tipping waste deliveries waste reception areas	As detailed on Sensitive Receptors Plan	Noise pollution	Medium	Intermittent (low pitch)	Med	The main plant treatment area is located at the furthest point from the closest residential receptors. Drivers must lower the tipper body before driving away from the tipping area. Drop heights will be a maximum 1m from the ground to allow for clearance of the relevant vehicle. Management will ensure that all vehicles involved in the tipping of waste operated by Shaw Haulage Ltd are functioning suitable i.e. vehicles must be well maintained and operated with silencers and moving parts to be regularly lubricated. All vehicles will benefit from white noise reverse alarms and be fitted with chain socks in order to reduce the noise produced by the loose chains banging on the side of the skip/containers.	Very Low / Negligible

Source(s)	Receptor(s)	Consequences	Magnitude of noise source	Characteristic of noise source	Probability of noise disturbance	Remedial Action/ Recommendations/ Comments	Assessment Outcome following actions / recommendations
Loading of waste into mechanical treatment plant using (i.e. telehandler/ 360º excavator)	As detailed on Sensitive Receptors Plan	Noise pollution	Medium	Continuous (Low Pitch)	Med	Drop heights will be kept to a minimum in order to reduce the produced levels of noise / vibration Management will ensure that all loading plant operated by Shaw Haulage Ltd is functioning suitably i.e. moving parts to be regularly lubricated. Operatives will be informed to turn off engines when the plant is not in use and no revving of engines will be permitted at the site. Any malfunctions in plant i.e. missing screws/bolts which result in excessive noise will be de-commissioned until an alternative loading plant sourced.	Low
Operation the of the mechanical treatment plan	As detailed on Sensitive Receptors Plan	Noise pollution	High	Continuous (Low Pitch)	Med	Any malfunctions in plant i.e. missing screws/bolts which result in excessive noise will be de-commissioned until an alternative part of the plant is sourced or repaired. Drop heights into the loading conveyor will be reduced to a minimum. The main sections of the treatment plant are bounded by insulated cladding in order to reduce noise emissions from the plant. The plant shall adhere to the hours specified in Section 1.4.	Low
Loading waste into HGVs/skip wagons	As detailed on Sensitive Receptors Plan	Noise pollution	Medium	Continuous (Low Pitch)	Med	Drop heights will be kept to a minimum in order to reduce the produced levels of noise / vibration Management will ensure that all loading plant operated by Shaw Haulage Ltd is functioning suitably i.e. moving parts to be regularly lubricated. Operatives will be informed to turn off engines when the plant is not in use and no revving of engines will be permitted at the site. Any malfunctions in plant i.e. missing screws/bolts which result in excessive noise will be de-commissioned until an alternative loading plant sourced.	Low

Source(s)	Receptor(s)	Consequences	Magnitude of noise source	Characteristic of noise source	Probability of noise disturbance	Remedial Action/ Recommendations/ Comments	Assessment Outcome following actions / recommendations
Manoeuvring of plant around external areas of the site	As detailed on Sensitive Receptors Plan	Noise pollution	Medium	Continuous (Low Pitch)	Low	Management will ensure that all site vehicles operated by Shaw Haulage Ltd are functioning suitable i.e. vehicles must be well maintained and operated with silencers and moving parts to be regularly lubricated. The site will be surfaced with hardstanding and will be flat and maintained in good state of repair to prevent unnecessary banging of vehicles on uneven ground. A maximum speed limit of 5mph will be maintained. Drivers will be informed to turn off engines when the vehicle is not in use and no revving of engines will be permitted at the site. All vehicles will benefit from white noise reverse alarms.	Low
Small vehicles travelling to and from the site (e.g. staff and visitor's cars, courier van deliveries etc.)	As detailed on Sensitive Receptors Plan	Noise pollution	Low	Intermittent (low pitch)	Low	All those working on and visiting the site to be made aware of need for considerate driving and keeping vehicles well maintained. Small vehicles will arrive marginally earlier than the main site operating hours.	Very Low / Negligible
Repairs	As detailed on Sensitive Receptors Plan	Noise pollution	Medium	Intermittent (low pitch)	Low	If repairs to the site are required, the work is to be undertaken with due regard for the possible noise nuisance and during the normal working day. In the event of major repair work being undertaken which is likely to cause significant noise and disruption, neighbouring residents and the Local Planning Authority will be notified in advance.	Very Low / Negligible

5 Monitoring and recording

5.1 Assessment

5.1.1 Site management i.e. the site manager/TCM will subjectively monitor noise levels in and around the entire site perimeter throughout the day. Should it be deemed necessary by site management, monitoring using an appropriate Type 1 Sound Level Meter will be carried at intervals out while the site is operational should it be observed that unacceptable levels of noise are being emitted from the site.

5.1.2 The results of monitoring exercises and any remedial action taken will be entered into the site's diary or log book which is available for the EA to inspect upon request. The name of the inspector will be stated in the site's diary / inspection form for each day of operation.

5.1.3 Should the monitoring conclude that a certain activity is giving rise to noise which is causing unacceptable impacts, steps will be made to reduce the impact of this activity and will be agreed with the EA prior to commencement.

5.1.4 Site management will be suitably trained to carry out these duties and delegate to operational staff. Further information regarding training and technical competence is provided within the site's EMS.

5.2 Monitoring

5.2.1 Operational staff will continuously monitor noise emissions whilst plant is in operation and will control noise levels using the procedures listed above, asking site management for advice as required. Work procedures will be stopped/adjusted should it be evident significant noise is being generated which has the potential to cause annoyance.

5.2.2 Site management will also be required to make a note of any unavoidable events such as plant failure, in the site diary, rather than just actual complaints received. This will ensure that if complaints are received retrospectively from either the EA or directly, any circumstances which led to that complaint as a result of elements outside of the

operator's control would be able to be attributed (or, at least, in part) to the cause of the complaint.

5.3 Emergencies

5.3.1 In the event of any unforeseen circumstances i.e. faulty equipment, the site manager will make an assessment of whether to cease activities/all operations with the main emphasis on site will be to reduce any noise impacts.

6 Actions when complaints are received

6.1 Complaints procedure

6.1.1 If any noise complaints are received, the relevant operator will complete a 'complaints and events log' and detailed individually on the complaints form (in Appendix II), both of which will be kept for inspection on request by the LA, EA or third parties. Details of information to be completed are dates, nature of complaint, weather conditions at the time of the complaint, investigation details, action taken and a signature (as a minimum).

6.1.2 Noise complaints will be prioritised and investigated within the day of the relevant notification, if this isn't possible due to staff shortages then at worst this will be within 48 hours. The EA will be contacted in the event the complaint cannot be escalated. The appropriate action will be taken to prevent the issue from reoccurring i.e. evaluation of current site operations and re-training of staff via toolbox talks.

6.1.3 The operator would also be required to make a note of any unavoidable events plant/equipment malfunctions in the site diary, rather than just actual complaints received. This will ensure that if complaints are received retrospectively from either the Council/EA or third parties, any circumstances which led to that complaint as a result of elements outside of the operator's control would be able to be attributed to the cause of the complaint.

6.1.4 It must be noted that the site lies adjacent to several industrial uses, so in the event of a complaint, the operator will substantiate the complaint by carrying out noise monitoring to identify whether the complaint is valid. If the complaint is valid, the site will implement the complaint procedures check and if required, amend site operations and provide additional attenuation around the site.

6.1.5 If the source cannot be ascertained with 100% confidence, site management will either suspend or reduce the likely noise generating activities, i.e. pre-shredder and frag process.

6.1.6 If the source is within the site's control, site management will take appropriate action to ensure the issue has been rectified. This may take the form of the following:

a) Investigating the source to prevent a re-occurrence.
b) Suspending operations which are giving rise to excessive noise due to potential plant malfunction
c) Investigate noise mitigation measures
d) Logging findings of a – c in the site diary / complaints form and also in the reporting template within the EP.
e) Report actions to the complainant and/or EA.
f) If following the above complaints are still received, the site will cease operations until the issues have been rectified.

6.1.7 The EA will be notified as soon as practicable by email of any noise complaints received by the site; usually on the day of the occurrence.

6.2 Complaints recording

6.2.1 Any complaints received in relation to noise and vibration will be recorded on the form shown in Appendix II. This form will normally be completed, signed and dated by the site manager, compliance manager or TCM, if they are not available, the office manager.

6.2.2 The following details as a minimum will be completed on the form:

a) The name, address and telephone number of the caller will be requested.
b) Each complaint will be given a reference number.
c) The caller will be asked to give details of:

- the nature of the complaint;
- the time;
- how long it lasted;
- how often it occurs;
- is this the first time the problem has been noticed; and,

- what prompted them to complain.

d) The person completing the form will then, if possible, make a note of:

- the weather conditions at the time of the problem (rain snow fog etc.)
- strength and direction of the wind; and,
- the activity on the installation at the time the noise, dust or odour was detected, particularly anything unusual.

e) The reason for the complaint will be investigated and a note of the findings added to the report.

f) The caller will then be contacted with an explanation of the source of the complaint if identified and the action taken to prevent a recurrence of the problem in future.

g) If the caller is unhappy about the outcome or unwilling to identify themselves the caller will be referred to the appropriate department of the EA or Local Council.

h) Following any complaint, the complaints procedure will be reviewed to see if any changes are required or if new procedures need to be put in place.

7 Training

7.1 Training regime

7.1.1 All employees and sub-contractors of Shaw Haulage Ltd involved with potentially noisy operations will receive training in noise and vibration monitoring and complaint reporting.

7.1.2 Training will be given to all relevant persons to make sure they are competent in completing noise and vibration survey forms, noise and vibration complaint report forms and the site diary to ensure sufficient monitoring of noise and vibration can be carried out and any problems addressed correctly.

7.1.3 When selecting new plant and equipment, consideration shall be given to the need to meet all legislation and statutory guidance on noise levels and to minimise levels of noise from selected equipment.

7.2 Vehicle / plant preventative maintenance training

7.2.1 This training is provided specifically for the vehicle and plant operators in order to ensure that all plant and machinery is checked regularly to prevent any occurrences which may lead to any adverse impacts on the environment or human health.

7.2.2 Training will be based on the preventative maintenance schedule supplied by the plant/equipment manufacturer.

7.2.3 The same training will be provided to senior management enabling a dual-level maintenance programme.

7.3 Liaison with neighbours

7.3.1 In the extreme event of a significant, but temporary, increase in noise and vibration from the site, neighbours will be contacted to advise them of the occurrence and action being taken to remediate the issue on site.

7.3.2 An open-door policy will be encouraged by the operator to enable any complaints from neighbouring premises (if received) to be dealt with immediately. The complainant will then be supplied with remedial actions taken and any procedures or measures put in place by the operator to reduce or ideally eradicate the likelihood of a subsequent complaint.

8 Noise Impact Assessment & Conclusion

8.1 Noise Impact Assessment

8.1.1 The operator commissioned a suitable Environmental Noise Consultant (Clement Acoustics) in October 2019 who carried out an environmental noise survey to undertake a noise impact assessment according to BS 4142: 2014: Methods for rating and assessing industrial and commercial sound, which provided an indication as to the likelihood of proposed activities having a negative effect on the amenity of nearby noise sensitive receivers.

8.1.2 Continuous automated monitoring was undertaken for the duration of the survey between 12:55 on 23 August 2019 and 15:00 on 24 July 2019. Weather conditions at the time were generally dry with light winds, therefore suitable for the measurement of environmental noise.

8.1.3 As the plant is mobile and may operate anywhere within the site, all calculations were made from the nearest boundary to the receiver, in order to present a robust assessment. The nearest noise sensitive receiver has been identified as the front facade of a house on Gordon Avenue, approximately 110 m from the eastern boundary of the defined operating area.

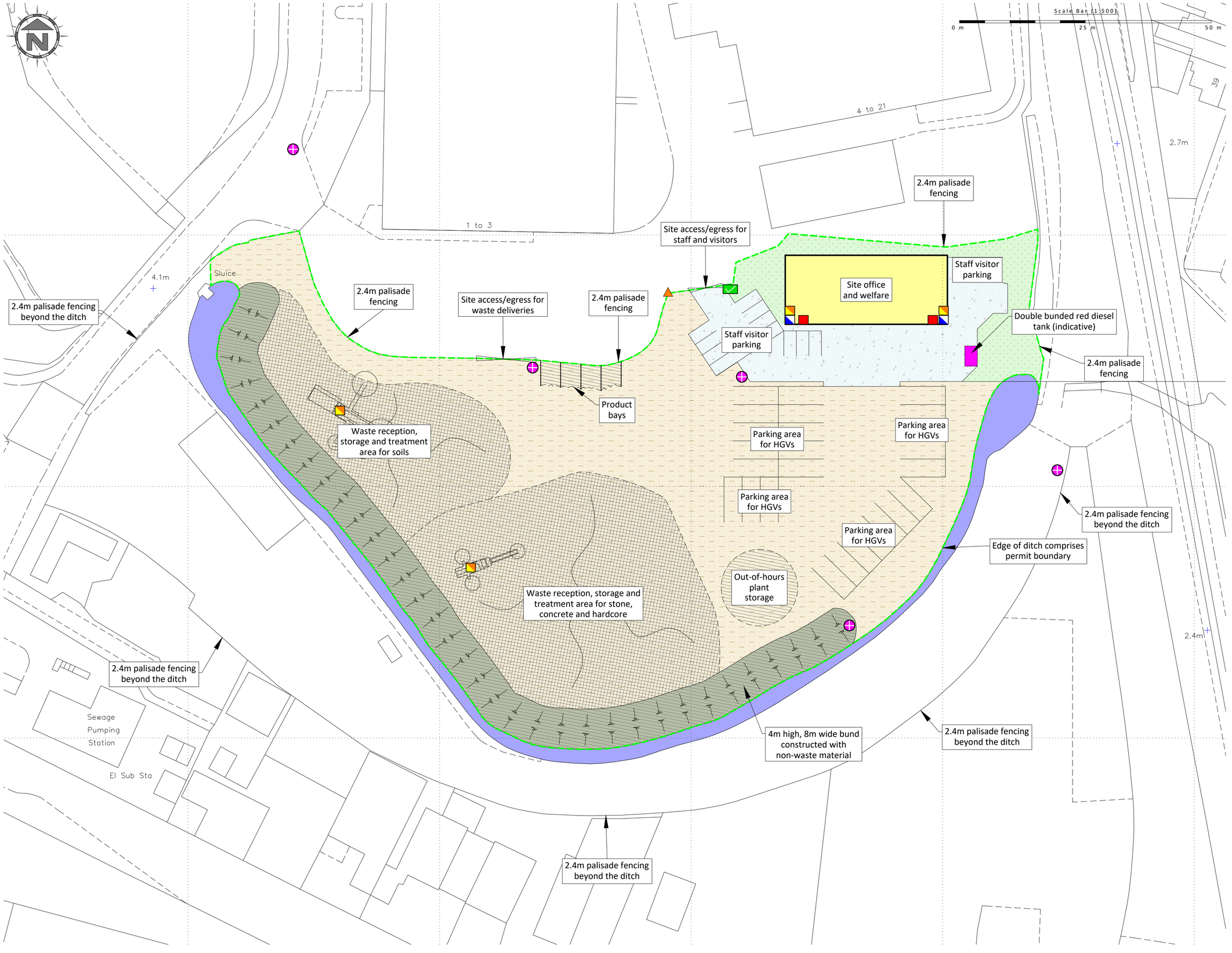
8.2 Conclusion

8.2.1 Calculations have shown that noise emissions of the operations undertaken within the respective businesses would indicate a “low impact” as defined in BS B4142: 2014. Calculations have also demonstrated that noise emissions are compliant with other relevant recognised British Standards and good practice documents and no further mitigation measures are deemed necessary in order to protect nearby noise sensitive properties from noise intrusion.

8.2.2 It is also concluded that with the additional measures provided within this NVMP, there will be no adverse impact to receptors in terms of noise pollution.

Appendix I

Drawings



NOTES

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REVISION HISTORY

Rev	Date	Init:	Description:
-	20.2.20	CP	Initial Drawing

Key:

- Permit boundary
- Waste storage areas
- Non-combustible waste storage areas
- Hardstanding (freely draining surfaces)
- Concreted areas
- Other buildings (offices, etc.)
- Stone surface / free draining
- Unsurfaced areas (landscaped/vegetation)
- Surface water
- Mains water point
- Spill kit
- Fire fighting equipment (extinguishers, etc.)
- Vehicle routing
- Fire alarm
- Fire assembly point
- CCTV cameras (indicative)
- Dust monitoring locations (indicative)
- Wind sock (indicative)

Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants

DRAWING TITLE
SITE LAYOUT PLAN

CLIENT
Shaw Haulage Ltd

PROJECT/SITE
Queensborough Business Park, Queenborough, Isle of Sheppy ME11 5DY

SCALE @ A2	JOB NO	CLIENT NO
1:500	001	3601

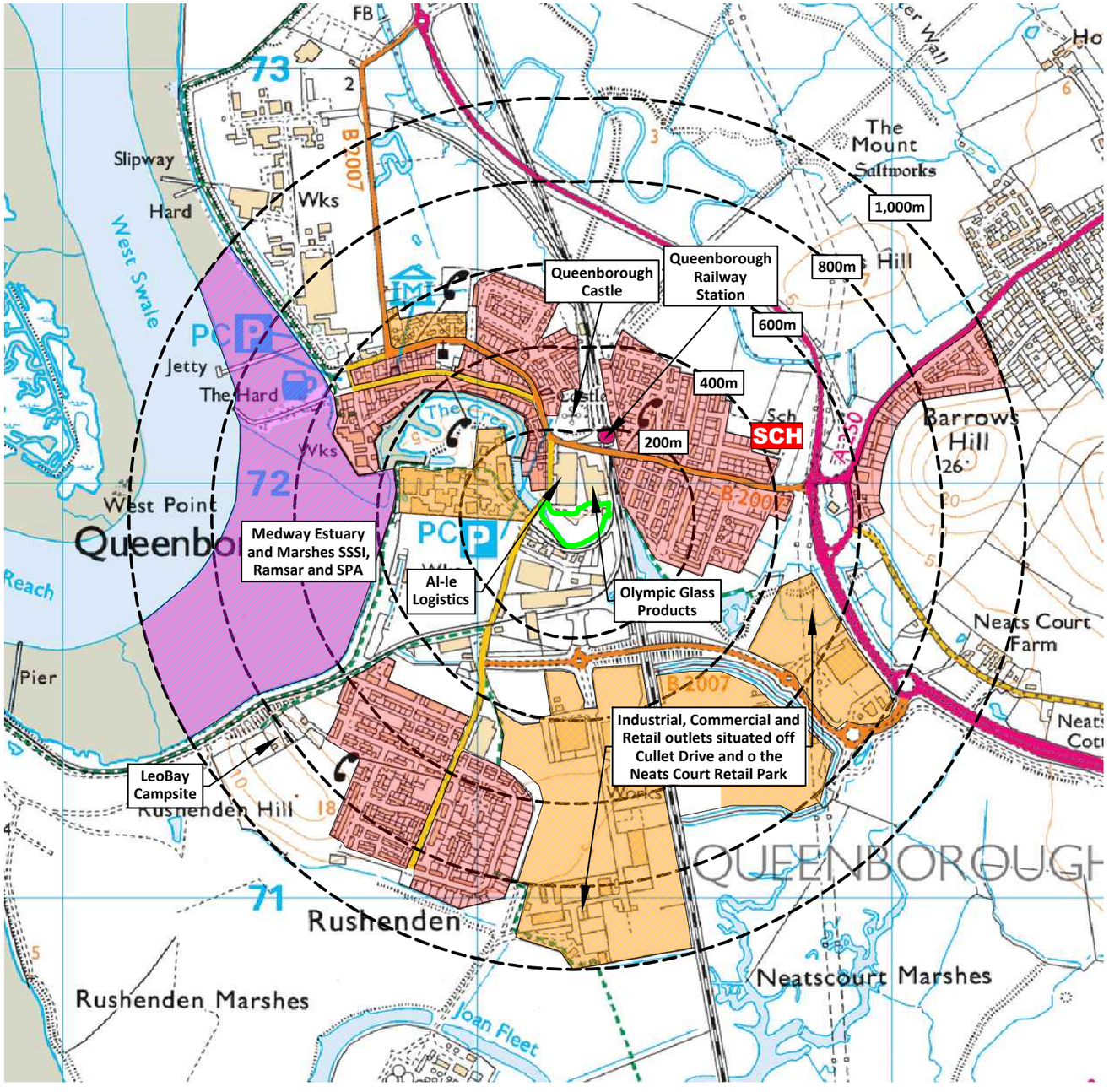
DRAWING NUMBER	REV	STATUS
QBP/3601/03	-	Issued

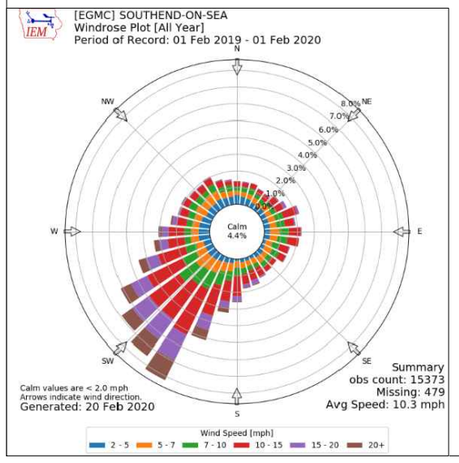
DRAWN	CHECKED	DATE
CP	--	20.02.20

Lime House, Road Two, Winsford, Cheshire, CW7 3QZ
t: 01606 558833 | e: sales@oaktree-environmental.co.uk

KEY:

- Permit boundary
- Surface water (river / stream / beck)
- Surface water (estuary / pond / pool / lake / sea)
- Workplaces (includes agriculture industry, commerce and retail)
- Areas with mix of residential, retail and commercial properties
- Residential blocks
- Class A roads
- Class B roads
- Class C roads
- Railway line
- SCH — School
- Woodland areas
- Protected sites (Ramsar, SSSI, SPA, SAC)





Scale Bar (1:12,500)

0 km — 500 m — 1 km

NOTES

1. Boundaries are shown indicatively.
2. Wind rose data shows the prevailing wind direction to be from south-west blowing north-east.

REVISION HISTORY

Rev	Date	Init:	Description:
-	20.2.20	CP	Initial Drawing

Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants

DRAWING TITLE
RECEPTOR PLAN

CLIENT
Shaw Haulage Ltd

PROJECT/SITE
Queensborough Business Park,
Queenborough, Isle of Sheppy ME11 5DY

SCALE @ A3	JOB NO	CLIENT NO
1:12,500	001	3061

DRAWING NUMBER	REV	STATUS
QBP/3601/04	-	Issued

DRAWN	CHECKED	DATE
CP	--	20.02.20

Lime House, Road Two, Winsford, Cheshire, CW7 3QZ
t: 01606 558833 | e: sales@oaktree-environmental.co.uk

Appendix II

Complaints Procedure and Recording Form

COMPLAINTS PROCEDURE

1) Any complaints received in relation to noise and vibration will be recorded on the form below. This form will normally be completed, signed and dated by the site operator, if they are not available, the Office Manager will complete the form.

2) The name, address and telephone number of the caller will be requested.

3) Each complaint will be given a reference number.

4) The caller will be asked to give details of:
   - the nature of the complaint;
   - the time;
   - how long it lasted;
   - how often it occurs;
   - is this the first time the problem has been noticed; and,
   - what prompted them to complain.

5) The person completing the form will then, if possible, make a note of:
   - the weather conditions at the time of the problem (rain snow fog etc.)
   - strength and direction of the wind; and,
   - the activity on the site at the time the noise was detected, particularly anything unusual.

6) The reason for the complaint will be investigated and a note of the findings added to the report.

7) The caller will then be contacted with an explanation of the source of the complaint if identified and the action taken to prevent a recurrence of the problem in future.

8) If the caller is unhappy about the outcome or unwilling to identify themselves the caller will be referred to the EA.

9) Following any complaint the complaints procedure will be reviewed to see if any changes are required or if new procedures need to be put in place.

Complaints Report Form	
Date Recorded	Reference Number
Name and address of caller	
Telephone number of caller	
Time and Date of call	
Nature of complaint (noise, vibration) (date, time, duration)	
Weather at the time of complaint (rain, snow, fog, etc.)	
Wind (strength, direction)	
Any other complaints relating to this report	
Any other relevant information	
Potential reasons for complaint	
The operations being carried out on site at the time of the complaint	
Follow Up	
Actions taken	
Date of call back to complainant	
Summary of call back conversation	
Recommendations	
Change in procedures	
Changes to Written Management System	
Date changes implemented	
Form completed by	
Signed	
Date completed	

Appendix III

Noise Impact Assessment

clement acoustics
www.clementacoustics.co.uk

London office
1B(c) Yukon Road
London
SW12 9PZ
Tel: 0203 475 2280

Manchester office
105 Manchester Road
Bury
BL9 0TD
Tel: 0161 850 2280

LAND SOUTH OF QUEENSBOROUGH BUSINESS PARK, QUEENSBOROUGH

NOISE IMPACT ASSESSMENT

Report **14950-NIA-01-RevA**

Prepared on 27 May 2020

Issued For:
Sevenoaks Environmental Consultancy Ltd
145a Hastings Road
Pembury
Kent
TN2 4JU

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14950-SP1	Indicative Site Plan
14950-TH1	Environmental Noise Time History
Appendix A	Glossary of Acoustic Terminology
Appendix B	Acoustic Calculations

1.0 INTRODUCTION

Clement Acoustics has been commissioned by Sevenoaks Environmental Consultancy Ltd to undertake a noise impact assessment of proposed concrete recycling operations at the site known as Land South of Queensborough Business Park, Queensborough ME11 5DY.

An environmental noise survey has been carried out in order to undertake a noise impact assessment according to BS 4142: 2014: *Methods for rating and assessing industrial and commercial sound*, which will provide an indication as to the likelihood of proposed activities having a negative effect on the amenity of nearby noise sensitive receivers.

2.0 SITE DESCRIPTION

The site consists of an open brown field site to the south of an existing trading estate. Proposals are to re-purpose part of the site as an inert materials recycling / earth screening facility.

It is understood operations could take place on the site during the following hours:

- Monday to Friday: 07:00 to 17:00,
- Saturday: 08:00 to 13:00.

The site is bound to the north and south by commercial buildings, to the west by Rushenden Road and to the east by a railway line. Beyond the railway line to the east is a small residential housing estate on Gordon Avenue and Harold Street, the closest house of which has been identified as the nearest affected receiver. This nearest noise sensitive receiver was identified through observations on-site. If there are any receivers closer to that identified within this report then a further assessment will need to be carried out. Therefore, the closest noise sensitive receiver should be confirmed by the client before any operations are carried out.

Locations are shown in attached site plan 14950-SP1.

3.0 ENVIRONMENTAL NOISE SURVEY

3.1 Procedure

Measurements were undertaken at one position as shown on indicative site plan 14950-SP1. The choice of this position was based both on accessibility and on collecting representative noise data in relation to the nearest noise sensitive receivers.

The microphone was mounted on a 3 m high pole on the north eastern area of the site. The position was considered to be free-field according to guidance found in BS 4142: 2014, and a correction for reflections has therefore not been applied.

Continuous automated monitoring was undertaken for the duration of the survey between 12:55 on 23 August 2019 and 15:00 on 24 August 2019. Weather conditions were generally dry with light winds, therefore suitable for the measurement of environmental noise.

Background noise levels at the monitoring positions consisted mainly of traffic noise from surrounding roads and train movements from the adjacent railway line.

A small industrial estate, consisting of various manufacturing businesses, including most notably a window manufacturer is located to the north of the site. No significant noise was noted as coming from these premises during installation / collection of the equipment, and these existing uses are therefore not expected to have a had a material effect on the residual noise levels in the area.

A tracked digger was in occasional operation at the time of the installation of the noise survey equipment, which constitutes a part of the proposed development, not an inherent part of the previously existing noise profile of the area. Noise criteria used in this assessment will be based on lowest typical measured levels, which will omit any louder periods influenced by operation of the digger. In this way, a suitably robust assessment will be presented.

The measurement procedure generally complied with BS 7445: 1991. *Description and measurement of environmental noise, Part 2- Acquisition of data pertinent to land use*.

3.2 Equipment

The equipment calibration was verified before and after use and no abnormalities were observed.

The equipment used was as follows.

- 1 No. Svantek Type 957 Class 1 Sound Level Meter
- 1 No. Norsonic Type 1251 Class 1 Calibrator

4.0 RESULTS

4.1 Environmental Noise Survey

The $L_{Aeq:\ 5min}$, $L_{Amax:\ 5min}$, $L_{A10:\ 5min}$ and $L_{A90:\ 5min}$ acoustic parameters were measured and are shown as a time history in Figure 14950-TH1.

Analysis of the measured background noise levels has been undertaken in accordance with the statistical analysis method example as shown in Figure 4 of BS 4142: 2014. It should be noted that the guidance of the standard is as follows:

"*The objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods*."

The frequency distribution of background noise levels measured during the worst-case proposed hours of operation (07:00 to 17:00) are shown in Figure 4.1.

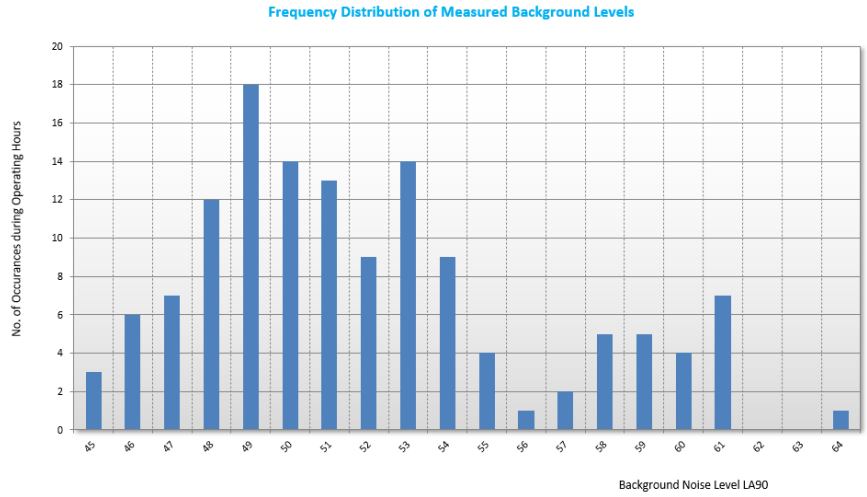


Figure 4.1: Statistical analysis of the background noise level

Based on the analysis shown in Figure 4.1, the **typical background noise level has been determined to be 49 dB(A)**. This is considered to be in accordance with the conclusions drawn from the same methodology when used in the BS 4142:2014 example.

It is noted that there are a number of extraneous background noise levels above 57 dB(A), which would not typically be expected in a graph this shape. These are expected to be due to ongoing operations on the development site itself, and have not affected the determination of the typical background noise level.

5.0 PROPOSED OPERATIONS

It is understood that the proposed activities comprise concrete crushing and screening using specialised mobile plant, facilitated by the use of a tracked excavator. Proposed mobile plant is as follows:

- 1 No. Kleemann MC 110 EVO Mobicat tracked crusher
- 1 No. Terex Powerscreen tracked screener
- 1 No. JCB JS220 excavator

It was not possible to undertake in situ measurements of the proposed plant in operation, nor were typical operational noise levels available from the manufacturer for the tracked crusher or excavator.

Where manufacturer data is not available, data has therefore been sought from suitable sources.

Based on library data from BS 5228-1: 2009: *Code of practice for noise and vibration control on construction and open sites*, (for the crushing and screening plant) and manufacturer's stated noise emissions levels (for the JCB excavator) typical anticipated noise emission levels for the proposed mobile plant are as shown in Table 5.1.

Operation/Machinery	L_{Aeq} dB(A) at 10m
Tracked Crusher	82
Semi-Mobile Screen / Stockpiler	81
JCB 20T Tracked Excavator	75

Table 5.1: Anticipated source sound pressure levels

Spectral noise data as used in calculations is shown in Appendix B.

6.0 ASSESSMENT CRITERIA

In a BS 4142 assessment, corrections are applied to noise levels in order to calculate a noise rating level for the effects of proposed activities on nearby noise sensitive receivers. This calculated receiver noise level is compared with the typical measured background noise level.

BS 4142 recommends penalties that can be applied to noise emissions to account for tonality and intermittency. Where a sound source is neither tonal nor impulsive, but is still distinctive against the residual acoustic environment, a penalty may still be applied.

The available penalties for different characteristics are summarised in Table 6.1.

Characteristic	Comments	Maximum Penalty
Tonality	Can be converted to 2 dB for a tone which is just perceptible, 4 dB where it is clearly perceptible and 6 dB where it is highly perceptible	6 dB
Impulsivity	Can be converted to 3 dB for impulsivity which is just perceptible, 6 dB where it is clearly perceptible and 9 dB where it is highly perceptible	9 dB
Distinctiveness	Intended for sources that are neither tonal nor impulsive, but distinctive against background noise sources	3 dB
Intermittency	When the sound has identifiable on/off conditions	3 dB

Table 6.1: Available penalties according to BS4142

BS 4142 states that a noise rating 5 dB above the background noise level is likely to be an indication of an adverse impact. If the difference is 10 dB or more, then this is stated as likely to be an indication of a significant adverse impact. Where the rating level does not exceed the background noise level, this is stated as an indication of the sound source having a low impact.

Calculated noise emissions will be assessed against the background noise levels shown in Section 4.0.

It should be noted that daytime noise emissions are assessed over a one-hour reference period.

7.0 NOISE IMPACT ASSESSMENT

7.1 Assessment of Noise Transmission to Residential Windows

Noise emissions calculations have been undertaken for the loudest identified processes with noise rating levels compared against the existing background noise levels.

Concrete crushing / screening and associated excavator operations are understood to be undertaken within a defined area on the western half of the site as shown in the inset diagram in indicative site plan 14950-SP1.

In order to calculate the noise rating level at the nearest noise sensitive receiver, distance corrections are applied for a separation of 140 m between the receiver and the closest point where noisy operations would be reasonably expected to occur.

As noise data has been taken from BS5228: 2009, it is deemed appropriate to calculate the distance attenuation according to the methodology as stated in Annex F.2.3.2.1 of this standard. Due to the large distance from the source to the receiver, this has been calculated using the Formula (F.4) as defined in this Section of the standard, as follows:

$$K = 25 \log_{10} R + 1$$

Screening from an existing earth bund, which blocks line of sight between the development site and identified receivers has also been taken into account.

Calculations have been undertaken using the Maekawa methodology to predict the attenuation offered by the existing bund, based on the following parameters:

- The development site ground level is the datum (0 m),
- Noise emitting parts of machinery are 3 m above ground level,
- The height of the bund is 4 m above the datum,
- The receiver height is up to 1.5 m above the datum – considering sensitive windows during daytime hours,
- The bund is 80 m from the noise source,
- The bund is 60 m from the receiver.

The above parameters are used to calculated the path difference introduced by the barrier, which is then used in the following formula, derived from Maekawa's formula and also found in The Little Red Book of Acoustics Third Edition, January 2013 by R. Watson and O. Downey,

$$\Delta L = -10 \log_{10}\left(3 + \frac{G}{\lambda} pd\right)$$

Where G = 40 (where ground reflections are ignored, appropriate for absorptive ground),

λ = wavelength (m), and

pd = path difference (m)

A reduction has then been applied to the calculated levels, in order to ensure a buffer level for robustness.

It is understood that the operating hours for the facility are set at 07:00 – 17:00 Monday to Friday and 08:00-13:00 on Saturdays. The typical noise level measured during this operating period will be compared noise emissions from proposed activities. No significant noise was noted from the nearby commercial premises to the north of the site, therefore the survey data is considered representative of weekday and Saturday periods.

A penalty correction of 3 dB has been applied for impulsivity of the source, in accordance with the guidance of BS 4142: 2014. With all necessary acoustic corrections applied, the calculated noise rating level would be as shown in Table 7.1, with detailed calculations shown in Appendix B.

Calculated Noise Rating Level at Receiver $L_{Aeq,1hr}$	Measured TypicalBackground Noise [*Reference Period*] $L_{A90,5mins}$	Difference	Indication
48 dB(A)	49 dB(A)	-1 dB	Indication of the sound source having a low impact

Table 7.1 Noise rating level and assessment for operations

As shown in Table 7.1 and Appendix B, noise rating from the proposed inert materials recycling / earth screening operations would be an indication of "low impact" in accordance with BS 4142: 2014. It should be noted that mobile plant could operate anywhere in the designated area so could at times be up to 60 m further from the receiver than assumed in this assessment.

Furthermore, WHO Guidelines for Community Noise as well as British Standard 8233:2014 both stipulate a maximum level of 55 dB(A) L_{eq} on exterior spaces such as balconies, terraces and gardens in order to protect the majority of people being annoyed. With calculated external levels of 48 dB(A) it is apparent that the level complies with both of these recommendations.

7.2 Assessment of Noise Levels Inside Residential Windows

In addition to the above assessment, further calculations will aim to assess whether the noise emissions from the proposed operations would be expected to meet recognised British Standard recommendations for internal noise levels, in order to further ensure the amenity of nearby noise sensitive receivers.

British Standard 8233: 2014 '*Guidance on sound insulation and noise reduction for buildings*' gives recommendations for acceptable internal noise levels in residential properties. Assuming worst case conditions, of the closest window being for a bedroom, BS 8233: 2014 recommends 35 dB(A) as being acceptable internal resting/sleeping conditions during daytime hours, when the site will be operational.

With external levels of 48 dB(A), any residential window would need to provide 8 dB attenuation in order to bring the noise levels due to the proposed operations to within acceptable conditions. However, according to BS 8233: 2014, even a partially open window offers a minimum of 15 dB attenuation.

It can therefore be predicted that, in addition to being an indication of low impact as defined in BS 4142:2014, the emissions from the proposed plant would be expected to meet the recommendations of BS 8233:2014 for internal levels, with windows partially open. Predicted levels are shown in Table 7.2.

Receiver	Recommended Target – *For resting/sleeping conditions (daytime), in BS 8233: 2014*	Noise Level at Receiver (due to proposed activities)
Inside Residential Window	35 dB(A)	35 dB(A)

Table 7.2: Noise levels and criteria inside nearest residential space

8.0 CONCLUSION

An environmental noise survey and BS 4142: 2014 assessment have been carried out at Land South of Queensborough Business Park, Queensborough. Predictions using known data for similar plant units as per proposed on-site activities have allowed predictions to be made for the likelihood of identified operations and processes arising from proposed concrete recycling and screening activities having a negative effect on the amenity of nearby noise sensitive receivers.

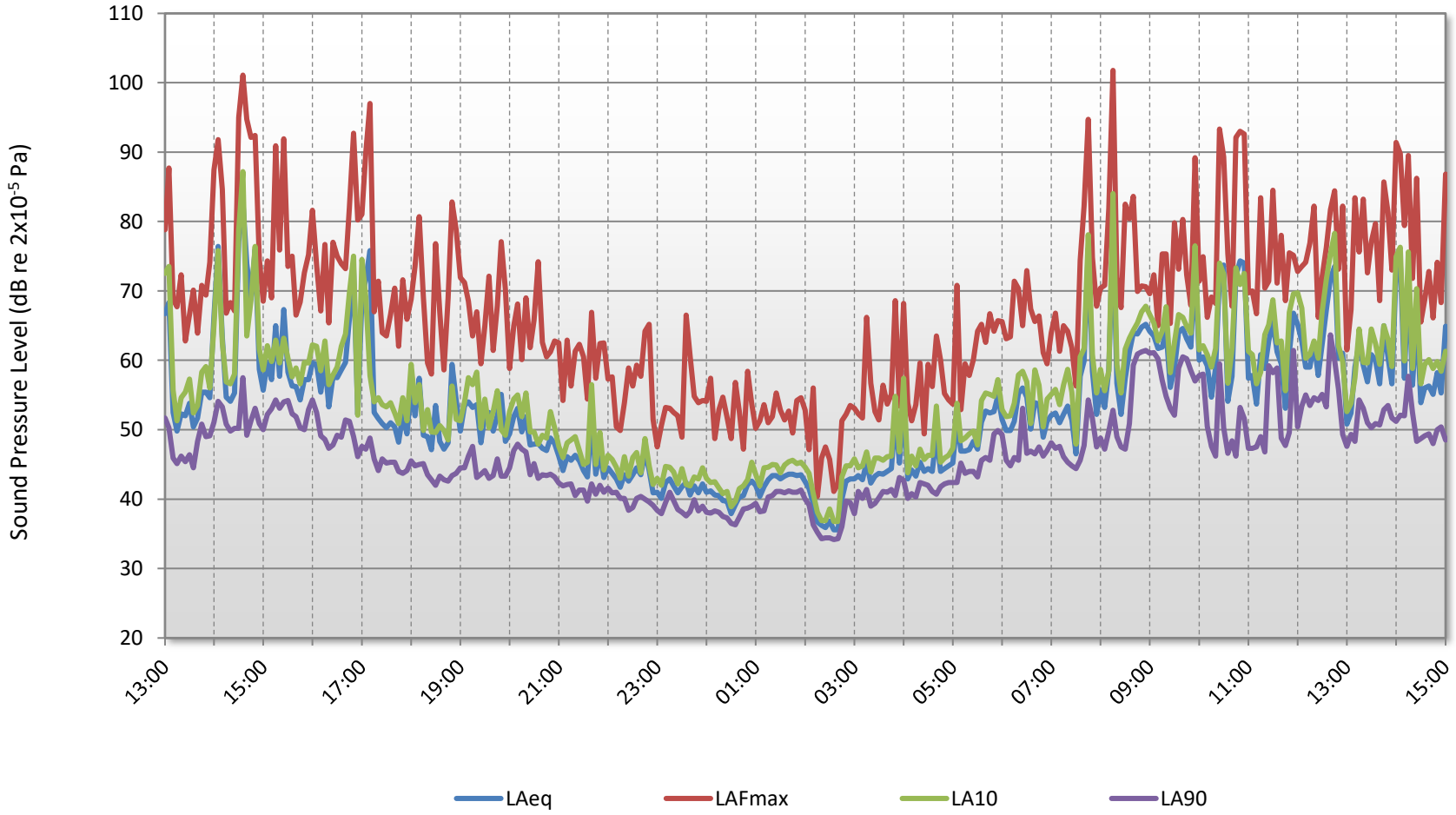
Calculations have shown that noise emissions of the operations undertaken within the respective businesses would indicate a “low impact” as defined in BS B4142: 2014. Calculations have also demonstrated that noise emissions are compliant with other relevant recognised British Standards and good practice documents and no further mitigation measure would therefore be deemed necessary in order to protect nearby noise sensitive properties from noise intrusion.

Report by	Checked by
Matt Markwick MIOA	**Duncan Martin MIOA**

14950-SP1 Indicative site plan indicating noise monitoring position and nearest noise sensitive receiver

Land South of Queensborough Business Park, Queensborough

Environmental Noise Time History
22 August 2019 to 23 August 2019



14950-TH1

APPENDIX A

GLOSSARY OF ACOUSTIC TERMINOLOGY

dB(A)

The human ear is less sensitive to low (below 125Hz) and high (above 16kHz) frequency sounds. A sound level meter duplicates the ear's variable sensitivity to sound of different frequencies. This is achieved by building a filter into the instrument with a similar frequency response to that of the ear. This is called an A-weighting filter. Measurements of sound made with this filter are called A-weighted sound level measurements and the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq}. The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for not more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise

L_{90}

This is the level exceeded for not more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 10 such octave bands whose centre frequencies are defined in accordance with international standards.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than one alone and 10 sources produce a 10dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Sound intensity is not perceived directly at the ear; rather it is transferred by the complex hearing mechanism to the brain where acoustic sensations can be interpreted as loudness. This makes hearing perception highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a reasonable guide to help explain increases or decreases in sound levels for many acoustic scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud
20	About 4 times as loud

Barriers

Outdoor barriers can be used to reduce environmental noises, such as traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and its construction.

Reverberation control

When sound falls on the surfaces of a room, part of its energy is absorbed and part is reflected back into the room. The amount of reflected sound defines the reverberation of a room, a characteristic that is critical for spaces of different uses as it can affect the quality of audio signals such as speech or music. Excess reverberation in a room can be controlled by the effective use of sound-absorbing treatment on the surfaces, such as fibrous ceiling boards, curtains and carpets.

APPENDIX B

14950

Land South of Queensborough Business Park, Queensborough

EXTERNAL PLANT NOISE EMISSIONS CALCULATION

Receiver: Nearest Residential Receiver
Source: Proposed mobile plant

	Frequency, Hz								
	63	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
Manufacturer provided sound pressure level at 10 metre									
Tracked Crusher	93	86	79	81	75	71	66	59	82
Tracked Screener	93	86	79	78	75	71	69	62	81
20T Tracked Excavator	79	77	76	74	68	67	60	59	75
Cumulative level due to all plant	96	89	83	83	78	75	71	65	85
BS 4142 penalty for impulsivity, dB	3	3	3	3	3	3	3	3	
Time correction for assumed operating periods (50% of time), dB	-3	-3	-3	-3	-3	-3	-3	-3	
Correction for screening due to embankment, dB	-3	-4	-4	-6	-8	-11	-14	-17	
Distance correction to receiver, dB (140 m)*	-30	-30	-30	-30	-30	-30	-30	-30	
Sound pressure level at receiver	**63**	**56**	**49**	**48**	**40**	**34**	**27**	**19**	**48**

***Where K= (25log$_{10}$R)+1**

Design Criterion	**49**

BS 8233 ASSESSMENT CALCULATION

Receiver: Inside Nearest Residential Window
Source: Proposed mobile plant

	Frequency, Hz								
	63	*125*	*250*	*500*	*1k*	*2k*	*4k*	*8k*	*dB(A)*
Sound pressure level outside window	63	56	49	48	40	34	27	19	48
Minimum attenuation from partially open window, dB	-15	-15	-15	-15	-15	-15	-15	-15	
Sound pressure level inside nearest noise sensitive premises	**48**	**41**	**34**	**33**	**25**	**19**	**12**	**4**	**33**

Design Criterion	**35**