SLOUGH MULTIFUEL EXTENSION PROJECT

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The Slough Multifuel Extension Order

Land at 342 Edinburgh Avenue, Slough Trading Estate, Slough

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The Planning Act 2008

Applicant: SSE Slough Multifuel Limited

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Slough Multifuel CHP

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Pre-Assembly & Construction Laydown Area - Environmental Management Plan

Land at Stirling Road, Slough Trading Estate, SL1 4TU

Applicant: SSE Generation Limited

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Author	HZI
Approved By	SSE Generation Ltd
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1.0 INTRODUCTION

1.1 Overview

This Environmental Management Plan ('EMP') is for the proposed pre-assembly / laydown area on 690-695 Stirling Road, Slough, SL1 4TU ('the Pre-Assembly and Laydown Area'), which will be in use during the construction of the new Multifuel Generating Station ('Slough Multifuel'). The Pre-Assembly and Laydown Area boundaries (red marked area) are shown at Appendix 1.

1.2 Purpose and scope

This EMP has been developed to detail proposed environmental management and monitoring requirements at the Pre-Assembly and Laydown Area to minimise the impacts and environmental nuisance on nearby sensitive receptors, and to demonstrate compliance with legal and other requirements.

Health, Safety and Environmental (HSE) management of the area will follow the requirements of the Construction Phase Plan (CPP) for Slough Multifuel.

This EMP shall be updated prior to the Principal Contractor being appointed, and at least at the start of each new phase of the Project.

2.0 DESCRIPTION

2.1 Background

The Pre-Assembly and Laydown Area is located on Stirling Road, approximately 200m from the construction area and main welfare facilities.

This area was in the past used for light industrial / light manufacturing purposes before being demolished in 2017. Currently it serves as a storage area with some lorry traffic.

The area is predominantly concreted and hard standing.

2.2 Proposed Activities

The activities planned at the Pre-Assembly and Laydown Area are can be summarised as follows:

- use as a temporary storage area for components for the construction of Slough Multifuel (primarily steel components); and
- pre-assembly and preparation works for the steel structure, plateworks, boiler and Water Steam Cycle piping equipment. This will include grinding, welding, hammering of platework/steel etc.

The components will be delivered by lorry to the Pre-Assembly and Laydown Area for pre-assembly. Once assembled, the parts will be transferred by lorry to the Slough Multifuel construction site.

The Pre-Assembly and Laydown Area will be required to be in use during the overall construction duration required for the Slough Multifuel (currently expected as approximately 42 months). During the first 8 months, beside laydown purposes, the area will be used for construction worker parking if necessary (max 50 parking space). The majority of the pre-assembly work (and the related preparation work) will take place approximately between month 9 and month 36^{t} following mobilisation to site. After that it is expected that the pre-assembly works will be reduced and the area will be mainly used as laydown area and temporary parking area again.

2.3 Temporary Infrastructure

Due to the close proximity of the Pre-Assembly and Laydown Area to the Main Construction Area, it will make use of the same construction welfare area, offices and worker facilities e.g. showers, changing rooms, kitchen/canteen (these are located within the Main Construction Area).

However, the following small and temporary facilities will be set up in the Pre-Assembly and Laydown Area:

- a security hut to control access to and from the site and to control deliveries. The hut shall also have potable water for drinking.
- a toilet block (connected to municipal sewage discharge); and
- a smoking area.

Alternatively, existing sanitary infrastructure may be used in the Stirling Road Building 689, which is located directly opposite the Pre-Assembly and Laydown Area.

2.4 Working Hours

Proposed working hours, with particular reference to the site noise control requirements are as follows.

The proposed working hours for noisier activities are Monday to Friday 07:00 – 18:00 and Saturday 08:30 – 14:30. No activities which could cause a nuisance sensitive receptors in the area will be undertaken outside of the above hours unless otherwise agreed with SBC.

During the evening hours (Monday to Friday 18:00-23:00) as well as Saturdays from 14:30 to 16:00, less noisy activities complying with the limits stated in Table 2 will be planned as proposed

under Section 4.0 (e.g. bolting and welding activities or activities without the use of impact wrenches).

During night time, i.e. (after 23:00 until the day shift start at 07:00), only Radiographic NDT testing inspections of the welded parts and administrative work will be allowed.

The deliveries to Pre-Assembly and Laydown Area will be performed during normal working hours. The deliveries of pre-assembled parts from the Pre-Assembly and Laydown Area to the Main Construction Site will be mainly performed during the evening hours in order to avoid a negative impact on the traffic along Edinburgh Avenue.

Sunday works may occur in exceptional cases, subject to the prior approval of SBC. Similarly, prior approval of SBC will be required, if the noisier works would be required to be performed outside the above defined working hours frame.

2.5 Sensitive Receptors

The Site is located on the edge of the built-up industrial area of the Slough Trading Estate. Sensitive receptors near the laydown area can be categorised as follows (See Appendix 2):

- Houses on Bodmin Avenue along part of the northern boundary of the area.
- Houses on Rowan Way to the east of the area.
- Offices/warehouses to the west, south and east of the area.
- Electrical substation along part of the northern boundary of the area.

3.0 NOISE AND DUST MONITORING

Two types of monitoring for noise and dust are proposed:

- Continuous Monitoring: consisting of a number of fully automatic continuous environmental monitoring points around the site boundary which will inform the Site Manager and Site HSE Manager of Slough Multifuel in real time to their mobile phones of any breaches of limits.
- Periodic Monitoring: base line readings shall be taken prior to work commencing, then regular planned readings when the area is in use, or after any complaint has been received.

3.1 Monitoring Points

The preliminary monitoring locations (shown in Appendix 3) are considered on northwest and northeast corners of the area. Final positions will be confirmed after the start of the activities on the area (as well depends on the mitigation measures to be applied).

Upon agreement with SBC and consultation with stakeholders, dust and noise monitoring equipment will be set up at on the Site boundary. The placement will consider the adjacent sensitive receptors as well as other factors such as prevailing winds and existing buildings that may act as acoustic barriers.

The location and number of the continuous monitoring points shall be reviewed as the works progress. Any changes shall be agreed with SBC.

3.2 Continuous Monitoring Equipment

Continuous 'real time' monitoring units will use mobile phone chips to automatically upload data to a cloud-based server. Email alerts will be sent to designated persons (typically Site Manager and Site HSE Manager) to warn of any breaches of agreed levels. Warnings are issued on a traffic light system as laid out in Section 3.3.

The objectives of this continuous and automatic monitoring for noise and dust are to:

- Enable and assist the site team to evaluate the efficiency of mitigation measures to control and improve environmental performance on site.
- Enable an understanding on how the measured levels are compared with agreed criteria values.
- Document and continually report on monitoring requirements, both for demonstrating compliance on a regular basis, and in response to recorded exceedance or complaint.

The type of units proposed shall be in accordance with British Standards and with the functionality described below.

Email alerts will be set up for the site management team members whenever noise or dust trigger/action limits are reached or exceeded.

3.2.1. Noise

Class 1 sound level meters shall be provided to take continuous-automatic monitoring of noise subject to agreement under S61 of CoPA 1974 with the Environmental Health Office (EHO) of SBC. All results will be recorded (LAeq in dB units) by data logging equipment within each unit, which are fed directly to web interface in real time.

This will allow assigned users to view real time and historical data from each of the monitoring units.

3.2.2. Dust (Air Quality)

Dust level monitoring units to measure PM10 will be in accordance with the guidelines given in regulatory guidance.

3.3 Monitoring Action Levels

Monitoring units will be installed prior to any work being carried out in the Preassembly and Laydown area and will be used to take “actual” baseline measurements.

Once confirmed the units will be set to the agreed action levels. These will comprise a trigger level (amber) and an action level (red) as described in Table 1.

Table 1: Monitoring Action Levels

Status	Description	Action
Green	All monitoring data is within acceptable levels	• No action required. • Continuation of construction activity • Continuation of monitoring
Amber – Trigger Level	Measured Noise levels alert – indicating exceedance of this threshold	• Email / text alert showing amber level exceedance • Site Manager to undertaken visual inspection of site activities and ensure mitigations are in place • Site team will implement additional measures as identified by Site Manager • Site Manager continues to monitor situation until return to ‘green’
Red – Action Level		• Text message alert showing red level exceedance sent to Site Manager and Site HSE Manager notifying them of the exceedance. • SBC EHO notified. • Contractor to stop works and review measures in place and implement additional mitigation measures where practicable; including shortening the daily duration of the noisy activities. • HSE Advisor to analyse the data and look at possible trends, relationships and correlate the Alert with work activities on site. • Project Manager to check best practice measures are in place for the work activities • Notify EHO of proposed remediation techniques • Site HSE Manager to log the incident and provide instruction to re-start works only on implementation of practicable mitigation methods identified

3.4 Noise Levels

The baseline noise levels will be measured prior to commencing works. Preliminary baseline noise modelling against baseline in the Environmental Impact Assessment, shows that a Section 61 will be need to applied for along similar lines for the demolition phase of Slough Multifuel Project.

Alerts shall be sent when the 60-minute average trigger or action levels are reached. These trigger levels shall be determined once baseline monitoring has completed and construction noise level predictions (based on BS 5228-1: 2009+A1:2014) are agreed with SBC through Section 61 agreement.

3.4.1. Preliminary Noise Modelling of Preassembly and Laydown Area

Because of the proximity of the sensitive receptors to the Pre-Assembly and Laydown Area a site assessment has been carried out by the Principal Contractor to assess the expected sound pressure level during the works. Although there are no national standards that provide noise limits for construction noise, the following limits in Table 2

are taken into consideration for the receptor positions, as defined in the Environmental Statement for the Slough Multifuel.

Following the Principal Contractor's site assessment, expected sound pressure levels have been calculated, and the results, together with the limits, are given in Table 2. The calculated sound pressure level presented in this Table 2 does not consider any noise limiting mitigation.

Table 2: Construction Noise Limits and Calculated Sound Pressure Levels at Receptors

	Construction Noise proposed limits $LA_{eq, 1h}$ db(A)			
Location	**Daytime (07:00-19:00)**	**Evening (19:00-23:00)**	**Night time (23:00-07:00)**	**Calculated sound pressure level (Average for Activities shown in Table 3)**
1-Rowan Way	65 dB(A)	55 dB(A)	45 dB(A)	60.3 dB(A)
2-Bodmin Avenue East	65 dB(A)	55 dB(A)	50 dB(A)	73 dB(A)
3-Greenside	65 dB(A)	55 dB(A)	45 dB(A)	64.4 dB(A)
4-Bodmin Avenue West	65 dB(A)	55 dB(A)	55 dB(A)	62.5 dB(A)
5-Scaffell Road	65 dB(A)	55 dB(A)	50 dB(A)	47.5 dB(A)
6-Sandown Road	65 dB(A)	55 dB(A)	45 dB(A)	40.9 dB(A)
7-Montrose Avenue	65 dB(A)	55 dB(A)	45 dB(A)	46.7 dB(A)
8-Westgate Crescent	65 dB(A)	55 dB(A)	50 dB(A)	31.5 dB(A)
9-Northborough Road	65 dB(A)	55 dB(A)	45 dB(A)	49.9 dB(A)

The calculation of sound pressure level is based on the international standards ISO 9613-1 and ISO9613-2: Acoustics - Attenuation of sound during propagation outdoors. This is an approximation of a typical situation. The actual sound pressure levels at the receptor locations will differ from the calculation. Based on the assessment results, the daytime limit is expected to mostly be met.

The calculation is based on the assumption of the noise sources shown in Table 3. The sound power level values at source presented in this Table 3 are referenced from BS 5228. The overall sound power level, rather than any variations of any type of equipment, is significant. However, the variables of such an area are many and all contribute to the overall uncertainty of the assessment. Therefore, the actual sound pressure level emitted by the construction activities may at any time be higher or lower than the predicted value, due to cumulative effects or the exact locations of the noise sources within the Preassembly and Laydown area. The results do not take into account any mitigations detailed in section 4 but do take into account topography of the area.

Table 3: Noise Sources from Preassembly Area and associated Power Levels

Equipment	Sound power level per source in dB(A)	Number of sources	Daily use in %	Total sound power level in dB(A)
Hand Tools	100	15	80	111
Hand Held Circular Saw	112	10	60	120
Crane	109	2	80	111
Pneumatic Tools	110	15	80	121
Compressor	112	4	80	117
Lorry/Dump trucks	112	10	60	120
SUM				126

The calculated sound pressure levels presented in Table 2 show that the most impacted area during normal (Daytime) working hours is Bodmin Avenue East (Location 2). This is the closest receptor; which is approximately 35m from the edge of the Pre assembly and Laydown Area. It is also likely that there will be tonal components and impulses audible at this distance.

As per BS4142:2014 Paragraph 1.3 Letter c, tonal noise and impulsive noise are not required to be considered in the noise measurement for construction noise. However the presence of impulses or tones, can make it less acceptable to the public than might be concluded from the level expressed in terms of LAeq,T. This is because impulses or tones are likely to make the noise more intrusive and disturbing than a noise with the same LAeq,T that does not have impulses or tones.

3.5 Dust

The potential for dust is limited, as the area is predominantly concreted, and no aggregates, soils or other such loose materials will be stored in this area. However, there will be some grinding and this has the potential to cause limited dust.

Baseline dust data shall be collected prior to construction to confirm actual base line measurements. Once confirmed the units will be set to the agreed trigger levels, typically 11 µg/m^3 above baseline levels.

Alerts shall be sent when the 15-minute average trigger or action levels are reached.

3.6 Equipment Calibration

The relevant British Standards require that the Sound Level Meter (SLM) should be calibrated at agreed intervals. In addition to field calibration, an accredited laboratory will calibrate SLMs and calibrators periodically. BS 7580:1997 Specification for the verification of SLMs requires that they should be verified every two years. Re-calibration should be considered if an SLM or calibrator has been subject to accidental damage.

PM10 monitors will be calibrated as agreed with the supplier.

4.0 MITIGATION MEASURES

The following good practice mitigation measures shall be put in place to manage and minimise any impacts from noise and dust, as well as potential visual and light impacts.

The sensitivities of the area shall be conveyed to workers during the Site HSE Induction and detailed communicated to workers through Toolbox Talks and pre-work Risk Assessment briefings.

4.1 Noise

As it is shown in the Section 3.4.1 – Table 2, the calculated sound pressure levels at the receptor locations 1 to 4 are above 60dB(A). Therefore, in order to perform the activities within the working hours as proposed in Section 2.4, three mitigation measures have been investigated:

Mitigation 1: Double stacked containers along the north and east boundaries (approximate height = 5.5 m)

Mitigation 2: Triple stacked containers along the north and east boundaries (approximate height = 8 m)

Mitigation 3: Pre-fabricated noise abatement matting (HPZ) (approximate height = 7.2 m)

All three mitigations can be illustrated as shown below in orange.

The improved sound pressure levels by applying such different mitigations are presented in Table 4.

Table 4: Construction Noise Limits and Calculated Sound Pressure Levels at Receptors (including mitigation measures)

	Calculated sound pressure level (dB(A))			
Location	**No screening**	**Mitigation 1**	**Mitigation 2**	**Mitigation 3**
1-Rowan Way	60.3	53.7	51.2	51.8
2-Bodmin Avenue East	73.0	57	53.8	54.6
3-Greenside	64.4	54.2	50.6	51.7
4-Bodmin Avenue West	62.5	56.1	54.6	54.9
5-Scaffell Road	47.5	46.8	46.8	46.7
6-Sandown Road	40.9	40.7	40.7	40.7
7-Montrose Avenue	46.7	46.7	46.7	46.7
8-Westgate Crescent	31.5	33.3	33.3	33.3
9-Northborough Road	49.9	48.7	46.7	47.4

Based on this evaluation (Table 4), double stacked container solution (Mitigation 1) is still not sufficient to fulfil the proposed noise limitations (Table 2) during the evening working hours. Only, triple stacked container solution or HPZ solution would allow the proposed working hours.

The preferred solution is the Mitigation 2, i.e. triple stacked container solution, as this provides the best results with regards to the noise abatement performance and requires less space in the area. It is not required to stabilise the container solution additionally, as the own weight is sufficient. The reflection from the container surface will be reduced by using an absorbent sheet, if required.

In order to realise these mitigations and ensure site security, the branches of the trees, which are overhanging into the Pre assembly and Laydown Area, would be required to be cut (outside of nesting season) or the trees along the boundary removed (subject to the agreement with SBC and a survey by a Qualified Ecologist for bat roost potential).

Additional noise control measures to safeguard adjacent neighbouring properties from significant annoyance shall be in accordance with the mitigations in the Environmental Statement and BS:6472-1 and 5228 as detailed in the table below.

Any known periods of prolonged out of hours activity that are necessary that may give rise to noise shall be communicated to local residents in advance of the activity taking place.

Noise Mitigation Measures	
1.	Noisy activities with the potential to cause a nuisance to sensitive receptors will be restricted to daytime hours of Monday to Friday 07:00 – 18:00 and Saturday 08:30 – 14:30 unless otherwise approved by SBC. The use of e.g. impact wrenches or similar in noise (used for steel erection) is the main activity likely to be restricted to these hours.
2.	Any construction activity that may be audible at the nearest residential receptors shall be carried out as far as is reasonably practicable during daytime periods.
3.	All compressors, percussion tools and vehicles shall be fitted with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.
4.	All plant and equipment to be used for the Works to be properly maintained and operated in accordance with manufacturer's instructions. Plant / Equipment shall be silenced where appropriate, and operated to prevent excessive noise (i.e. no revving, appropriate

Noise Mitigation Measures	
	silencers, mufflers or covers where applicable are maintained) and switched off or throttle back when not in use.
5.	Electrical or LPG powered plant will be used, where practicable, rather than plant powered by a combustion engine.
6.	Plant to be certified to meet relevant current legislation as defined by BS 5228 standards.
7.	Vehicle movements on-site should be managed to avoid excessive reversing movements and associated vehicle alarms whenever possible, by optimising the site layout and working methodologies.
8.	Construction vehicles should be fitted with white spectrum/broadband type complying with ISO9533 reversing alarms wherever possible and for night-time working. Where not possible for night-time working, reversing alarms shall be switched off and a banksman used.
9.	Loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials around the site will be conducted in such a manner as to minimise noise generation and where practical to be conducted away from noise sensitive areas.
10.	Care will be taken regarding the movement of materials such as rebar and scaffolding such that noise is minimised.
11.	Stationary noise sources shall be sited as far away from noise sensitive locations as possible, and where necessary acoustic barriers or sound absorbing enclosures shall be used to shield them.
12.	For any particular job, the quietest available plant and/or machinery shall be used. Where possible, mains electric powered plant will be used rather than diesel or petrol driven plant.
13.	Construction access roads will be well maintained to reduce noise from construction traffic.

4.2 Dust

The following mitigation measures will be considered to minimise dust and other gaseous emissions from site activities and disruption or nuisance to neighbouring occupiers.

Dust Mitigation Measures	
1.	All HGV vehicles used for delivery / removal of materials from site comply with Euro V regulations as a minimum. Preference will be given to trucks complying with Euro VI.
2.	No idling of trucks shall be permitted.
3.	Site speed limit shall be 10 mph maximum.
4.	The surface of the area shall be maintained to prevent any dust from mobile plant / trucks.
5.	Mats / curtains shall be used to minimise dust from grinding.

4.3 Lighting

The following measures shall be

Light Mitigation Measures	
1.	Directional Lighting and use of LED lights to minimise light spill upwards or outside the Area.
2.	Lighting shall be directed so that there is no potential for glare affecting adjacent properties / roads.
3.	Height of the luminaires will be a maximum 15 m. Where possible low-level walkway light and task specific lighting will be used.
4.	Luminaires to be switched off when not required for safe access.

4.4 Visual

Visual Mitigation Measures	
1.	Hoarding to be erected along the fence with Bodmin Avenue gardens

4.5 Other

To reduce traffic congestion and nuisance to other road users, deliveries to the Pre-Assembly and Laydown Area are planned to avoid peak travel hours where possible. This means movement of assembled components from the Pre-Assembly and Laydown Area to the Main Construction Site will be planned mostly during the evening working hours (19:00-23:00). Further details on the traffic concept is provided in the Construction Traffic Management Plan (Appendix 4 of Construction Environmental Management Plan ('CEMP') for Slough Multifuel, prepared and submitted separately as part of Planning Condition 17.

5.0 COMPLAINTS

A contact number for residents and businesses to phone should they have any queries or complaints regarding noise, dust or any other issues on the Site.

Regular liaison meetings and reviews with neighbouring sites shall be held to plan works so that they do not cause unnecessary/excessive disruption.

On receiving a complaint related to noise or dust, the Site Manager will initiate an investigation on the likely cause of the event and commence reviewing available monitoring data with the Site HSE Manager. The Project Manager will correlate the time of the event and other pertinent information, including activities on or in the proximity of the site, to determine the likely cause of the alert or complaint.

Where this is deemed to have emanated from site activities, corrective measures shall be proposed, agreed and approved by the Site HSE Manager and monitoring consultants to ensure the implemented remedial actions satisfy the predictions of preventing future recurrences. The Site Manager shall be responsible for ensuring the remedial actions are implemented and are

The Site Manager shall ensure a brief notification of the incident (including the time and date), together with details about the nature and likely cause of the complaint, is forwarded to Environmental Health Officer of SBC.

A record of all complaints shall be held. A written response to the complainant shall be provided and a record of the response retained.

6.0 REPORTING

All data from monitoring activities will be recorded and saved in electronic format. Graphs shall be developed to show both the trigger and actions levels and measurement data taken during working and non-working hours. Where monitoring values have exceeded trigger and action levels, a brief description of the reason(s) for this will be provided, together with any available mitigation taken to prevent recurrence.

The results of the environmental monitoring will be reported on a monthly basis to the Project Management Team.

The results of the noise and dust monitoring shall be forwarded quarterly to SBC by SSE.

7.0 AUDITS

This plan will be audited and reviewed periodically as part as the HSE Management System audit programme to ensure that monitoring and reporting is carried out in accordance with this procedure.

Records of calibration and monitoring activities will be maintained in electronic format and are subject to document control as per project document control procedures.

Non-conformances will be corrected immediately followed by a management review meeting.

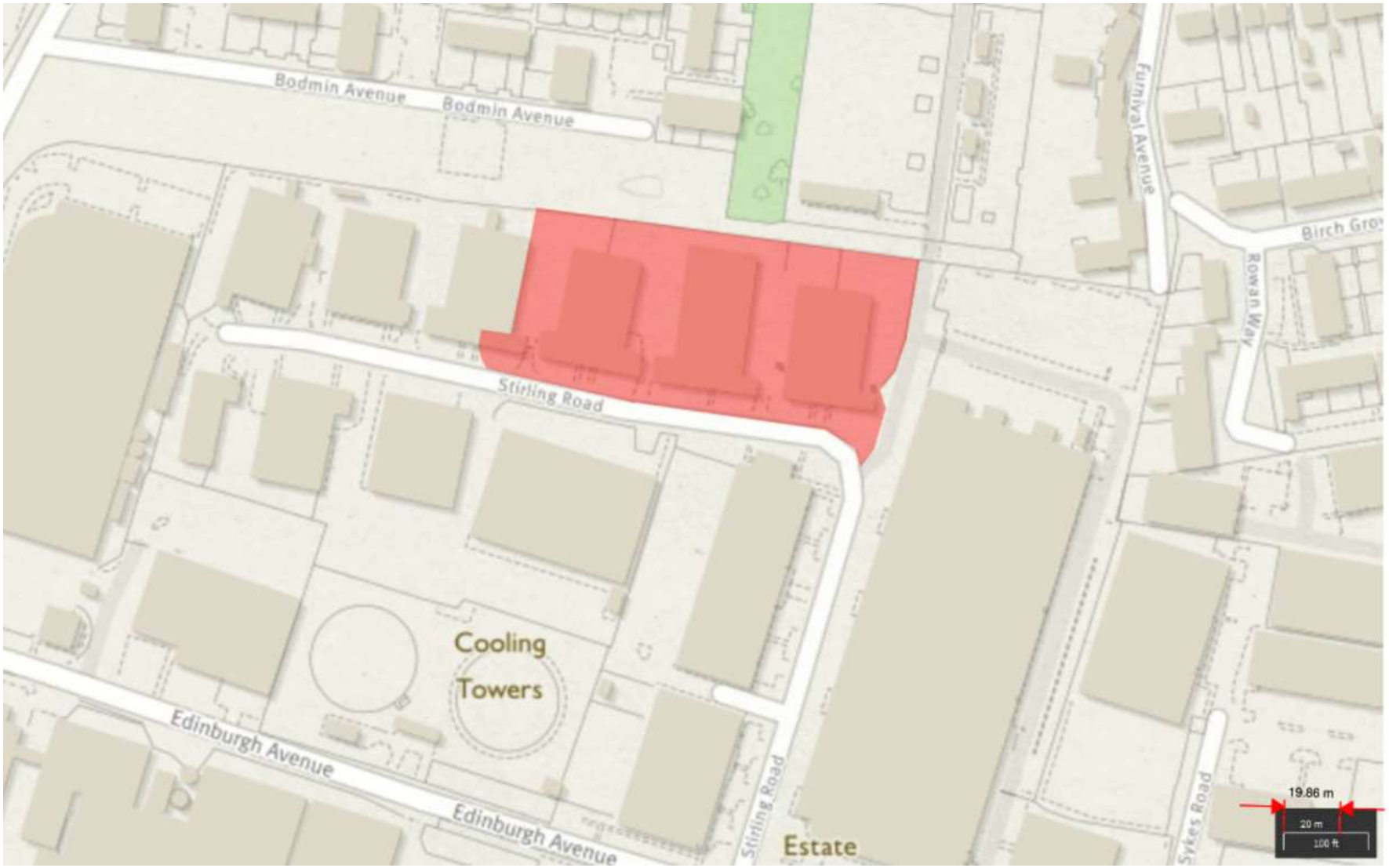
A copy of all audits carried out on the site will be filed in accordance with quality management system requirements.

8.0 DRAINAGE CONCEPT

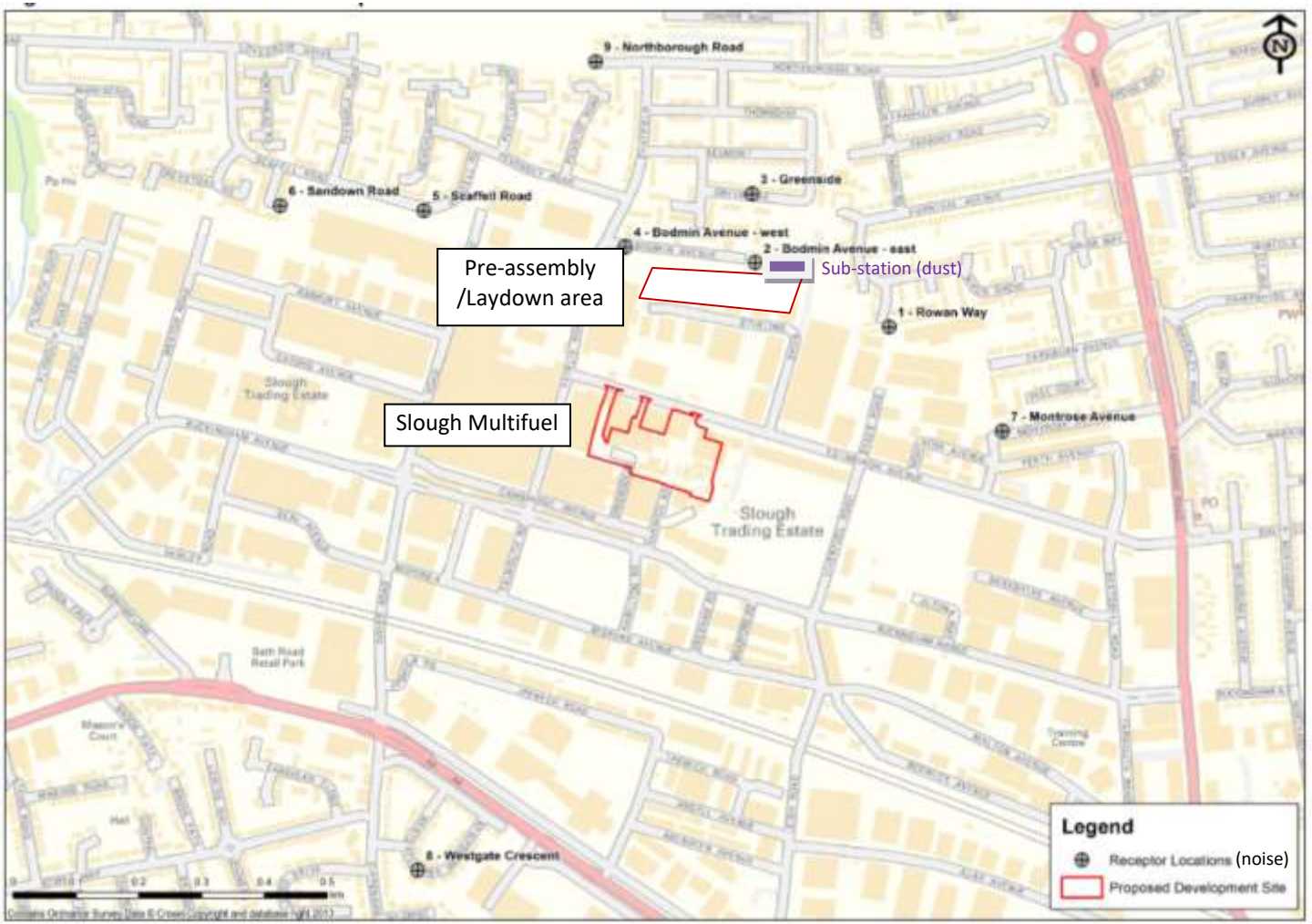
The existing drainage network shall be used where possible and shall be identified and marked prior to works commencing. Any damage to the drainage network will be immediately repaired.

For a short time at the beginning and end of the Project, the area may be used for temporary car parking area for construction workers. As the area is smaller than 800m^2 and the car park will be a temporary facility and limited to maximum 50 parking spaces, the installation of an oil separator (interceptor) or other device to remove oil from water that drains off hard surfaces is not required. However, the area will be covered under HSE inspection schedule and spill kit will be retained at the Security Hut.

APPENDIX 1: PRE-ASSEMBLY AND LAYDOWN AREA LOCATION AND BOUNDARIES



APPENDIX 2: NOISE AND DUST SENSITIVE RECEPTORS IN PROXIMITY TO PRE-ASSEMBLY AND LAYDOWN AREA



APPENDIX 3: PRELIMINARY NOISE AND DUST MONITORING LOCATIONS