Grenfell Tower

Noise & Vibration Management Plan (NVMP) – Deconstruction Phase

Reference:	**EEMC-NVMP003-201 Rev03**
Project:	**Grenfell Tower**
Client:	**Deconstruct UK**

REVIEW AND AUTHORISATION		
Prepared By	**Position**	**Date** 26/03/2025
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Approved By	**Position**	**Date** 09/04/2025

AMENDMENT HISTORY			
Revision	**Status**	**Description**	**Date**
00	Superseded	First Issue for client review	10/03/2025
01	Superseded	Updated following client comment	31/03/2025
02	Superseded	Updated following client comment	09/04/2025
03	Issue	Amendments to Sections 2.3, 2.7 and 3.4	04/06/2025

ABREVIATIONS	Meaning of abbreviations / Terminology used in this document
Ambient Noise	Noise from all sources present at the time of measurement, usually comprising of sound from many sources near and far, but excluding site noise.
Background Noise	A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval, *T* measured using time waiting, F, and quoted to the nearest whole number in decibels.
BPM	Best Practicable Means
CoCP	Code of Construction Practice
CoPA	Control of Pollution Act 1974
dB (A)	A-weighted decibel, a unit of measurement of sound level weighted to reflect the frequency response of the human ear.
Dust	Solid particles that are suspended in air or have settled out onto a surface after having been suspended in air. Particles that give rise to soiling, and to human health and ecological effects.
EA	Environment Agency
EHO	Environmental Health Officer
EMP	Environmental Management Plan
EMS	Environmental Management System to EN ISO 14001: 2015
HDV	Heavy duty vehicles defined as vehicles with a weight greater than 3.5 tonnes.
LA	Local Authority (for example: City of London, Royal Borough of Kensington & Chelsea, Westminster City Council etc.)
Noise Level	The sound level of noise determined in decibels.
NRMM	Non-Road Mobile Machinery
PM	Particulate matter that is suspended in the air. PM_{10} is airborne particulate matter with an aerodynamic diameter less than 10 microns (µm).
Section 60 notice	Issued under the Control of Pollution Act 1974 to control noise pollution and nuisance. If issued the conditions must be complied with until revoked or successfully appealed against.
Sensitive Receptors / Noise Sensitive Premises (NSPs)	Receptors that are potentially sensitive to noise, vibration or dust. Examples include dwellings (including gardens), hospitals, schools, community facilities, designated areas (e.g. AONB, National Park, SAC, SPA, SSSI, SAM) and public rights of way, or any other property likely to be adversely affected.
Sustainable development	Bruntland Report: “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.
MHCLG (Client)	Ministry of Housing, Communities and Local Government
RBKC	Royal Borough of Kensington and Chelsea

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1 INTRODUCTION

1.1 Document Purpose

1.1.1 This Noise and Vibration Management Plan (NVMP) has been prepared alongside an Air Quality & Dust Management Plan (AQDMP) for the Deconstruction Phase of works at Grenfell Tower, London (hereafter referred to as the 'Site').

1.1.2 The site is located in the Royal Borough of Kensington and Chelsea (RBKC).

1.1.3 The Ministry of Housing, Communities and Local Government (MHCLG) are the permitting authority for the project.

1.1.4 The project works will be undertaken for a period of 23 months from July 2025 to May 2027. Enabling works will take place from Feb 2025 to July 2025.

1.1.5 The scope of works for the deconstruction phase include the following:

- Establishing site welfare in garages and removal of cabins.
- Enabling and piling works for Tower Crane erection.
- Temporary services installation to accommodate deconstruction.
- Hoarding lines and exclusion zones to be re-established.
- Completion of hard standing area.
- Enabling works to machine routes.
- Tower Crane tie back at level 9 and concrete base including piling.
- Investigation works to inform temporary works design.
- Scaffolding to be adapted to suit deconstruction & installation of additional fan.
- UKPN update / additional 200amp supply.
- Lift deconstruction plant on to roof of Grenfell Tower.
- Deconstruction from plantroom to ground floor slab.
- Concurrent removal of scaffold and hoist.
- Once deconstruction is down at level 11, the crane will be stripped down and tie backs removed.
- Clearance of Site.

1.1.6 Deconstruct UK, the Client, have commissioned European Environmental Monitoring and Consultancy (EEMC) to prepare a Noise and Vibration Management Plan for this phase of the project.

1.1.7 (EEMC) Limited has extensive experience in providing noise, vibration and air quality monitoring and consultancy services to major construction and infrastructure projects and has worked on some challenging developments in London and the UK.

1.2 Site Location and Working Hours

1.2.1 The Grenfell Tower project is located at Grenfell Tower, Grenfell Road, W11 1TQ, see Figure 1.1 below.

1.2.2 The entire site is located within Royal Borough of Kensington & Chelsea (RBKC). The site is bordered by residential blocks to the south, and a school and football pitches to the north and a leisure centre to the east.

1.2.3 The London Underground viaduct is 70m to the west and Latimer Road Tube station is 200m from the project.

1.2.4 Project hours on site are noted to be:

- Monday to Friday
  Site Opening Hours – 07:00 – 18:00
  Working Hours – 08:30 to 17:00
- Saturday
  Site Opening Hours – 07:00 to 13:00
  Working Hours 08:30 to 13:00

1.3 Sensitive Receptors

1.3.1 Nearby sensitive receptors include are identified in Figure 1.2 and Table 1.0. Figure 1.1 shows the sensitive receptors as labels A-D and these are identified in Table 1.0.

Table 1.0 – Sensitive Receptors

Receptor ID	Sensitive Receptor	Building Use
A	Kensington Aldridge Academy	School
B	Kensington Leisure Centre	Leisure Centre
C	Treadgold House	Residential
D	Barandon Walk	Residential
E	Testerton Walk	Residential
F	Hurstway Walk	Residential

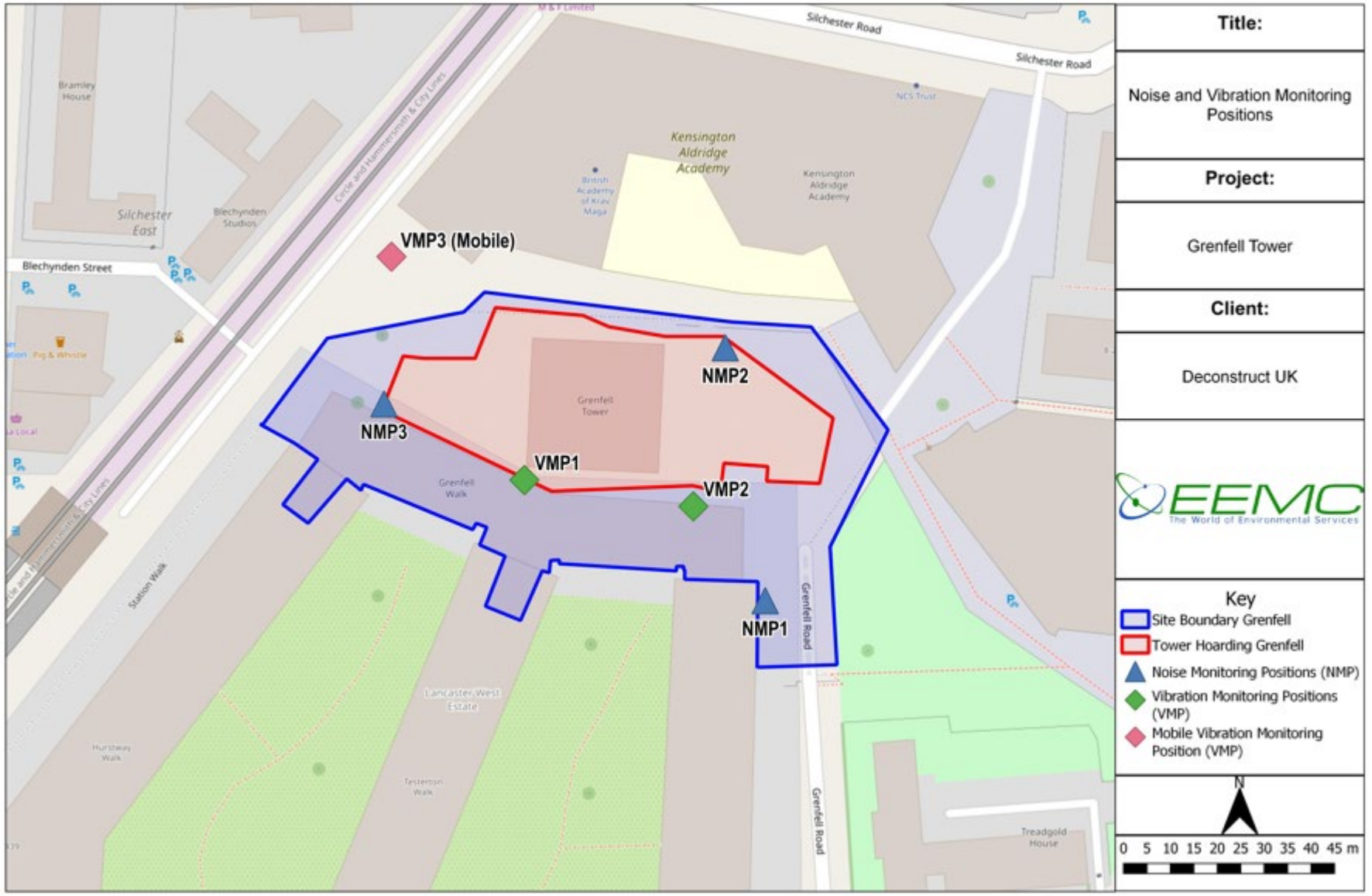

Figure 1.1: Site Layout showing Noise & Vibration Monitoring Locations

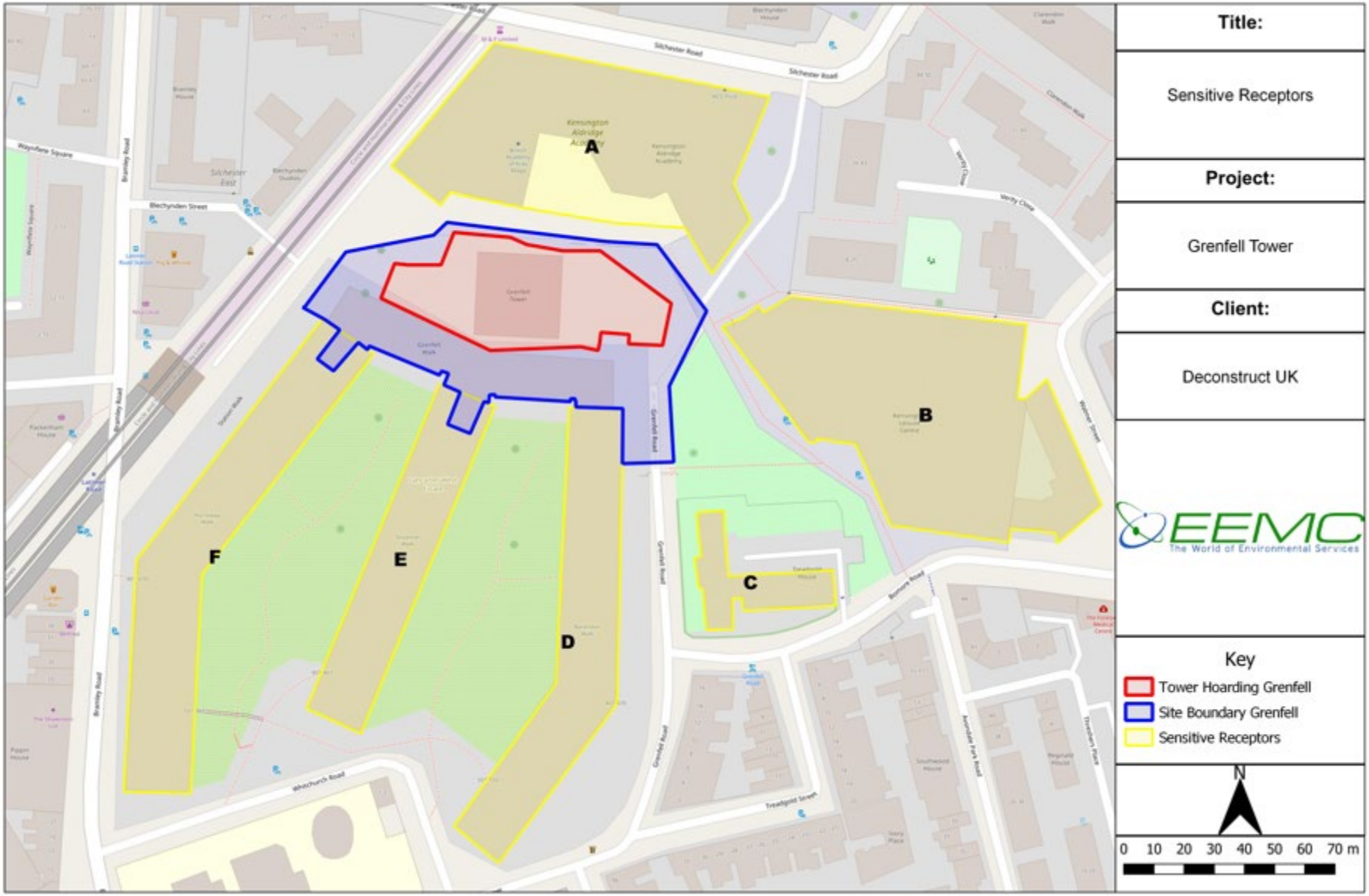

Figure 1.2 Site Layout Plan Indicating Sensitive Receptors

2 MONITORING APPROACH

2.1 Outline

2.1.1 This NVMP is intended to support and provide assurance to the Client during this phase of works.

2.1.2 This NVMP details the procedures Deconstruct, with the assistance of EEMC, and in cooperation with the Client (MHCLG) will follow to manage noise and vibration, throughout the duration of the Project.

2.1.3 This project will be undertaken in accordance with the requirements following correspondence with the contractor and in accordance with any current or future agreements between the contractor, MHCLG and RBKC.

2.1.4 This document describes the methodology for measuring, assessing, and communicating noise and vibration monitoring data to the MHCLG and RBKC and to ensure project specific environmental requirements and objectives are achieved and maintained.

2.1.5 All works will be in accordance with local RBKC requirements which identifies BS5228-1:2009 Code of Practice for noise and vibration control on construction and open sites. The latest standard should be applied which is BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

2.1.6 As outlined in the RBKC Code and Section 72 of the Control of Pollution Act 1974, the best practical means shall be employed to reduce noise to a minimum.

2.2 Baseline Monitoring

2.2.1 EEMC have undertaken noise measurements on site since August 2024. Works undertaken have been limited maintenance and propping and as such provide a suitable measurement of the baseline noise climate on the site.

2.2.2 Quarterly noise monitoring reports are provided and a summary of the most recent baseline noise data is provided as Table 2.0.

Table 2.0 – Summary of Measured Baseline Noise Levels

Monitoring Position	dB $L_{Aeq, 10hrs}$		
	NMP1	NMP2	NMP3
November 2024	58.2	60.2	57.5
December 2024	58.9	60.1	57.0
January 2025	57.6	59.9	57.0

2.2.1 Noise measurements have been undertaken at suitable locations to represent nearby sensitive receptors.

2.2.2 As assessment has been made of the noise “threshold of potential significance” as per the ABC method of Annex E of BS 5228-1:2009+A1:2014.

2.2.1 The site is a Category A site with the threshold of potential significant effect at dwellings at 65 $d_{BA, 16hr}$ free field.

2.2.2 There are no significant sources of vibration on site. The closest vibration source would be the TfL lines situated to the north-west of the site boundary.

2.2.3 It is generally good practice to undertake an ambient baseline vibration survey at the agreed monitoring positions prior to the commencement of works.

2.3 Unattended Monitoring

2.3.1 For unattended noise monitoring, continuous-automated web-based monitoring systems have been installed on site.

2.3.2 The live system allows EEMC, the Client and the Local Authority *(if required and instructed by client)* to access live monitoring data via a secure web platform.

2.3.3 The monitoring systems are configured to send email alerts to the Deconstruct site team should the trigger alert / action levels be reached or exceeded. This approach provides alerts to site personnel to enable an investigation to be undertaken if there are any exceedances. The proposed trigger and action alerts are discussed later in this document.

2.3.4 Three (3) Svantek SV-307A monitors have been installed on site, a monitoring map of these locations is shown in Figure 1.1. The specific monitor location will be updated as the site develops to ensure optimum instrument location and safe access for maintenance.

2.3.5 The noise monitors will be situated externally on the site boundary with the microphones positioned at not less than 3.0m from any acoustically reflective surfaces and at a minimum height of 1.0m above top of hoarding.

2.3.6 Three (3) vibration monitors are proposed for installation on site, at locations show on Figure 1.1 Two locations are to monitor vibration transfer into the buildings to the south of site (Receptors D-F). Another mobile unit is proposed to monitor as required, either on the TfL interface, or at Kensington Aldridge Academy to the North.

2.3.7 Vibration monitors will be positioned on a ground bearing concrete floor or a basement location with a secure connection to the structure using either a DIN standard ground mounting plate or mechanical fixings depending on monitor location. The vibration monitor will be located in an area where it is unlikely to be accidentally disturbed to prevent erroneous readings.

2.3.8 The monitoring will be undertaken conforming with any consents issued by MHCLG. The proposed monitoring regime is considered to provide appropriate and sufficient to determine impact on the identified sensitive receptors, however, the location and number of monitoring stations will be reviewed as required by MHCLG and the Local Authority.

2.4 Monitoring & Reporting

2.4.1 EEMC will provide monthly monitoring reports to Deconstruct for each monitoring position for each of the monitor types throughout the works.

2.4.2 Reports will be issued in EEMC's typical format, detailing the monitoring results and any exceedances.

2.4.3 Deconstruct will provide safe and secure access, and uninterrupted mains power to each of the monitoring locations.

2.4.4 At the completion of the project and the monitoring EEMC can remove the monitors from site.

2.4.5 Should Deconstruct notify EEMC of their need to relocate monitoring units or to install additional monitors we will need to visit site to assess the position and location of new proposed monitoring stations. We can assist with identifying suitable locations for installation.

2.4.6 If any monitors are installed into adjacent residents' properties, we assume that the Client's Project's Community Relations personnel will arrange access.

2.4.7 It is assumed that Mobile Data Signal of sufficient strength and quality is available at all unattended monitoring locations. Poor mobile data connection can affect the connectivity of the instruments and hinder the capability of the monitoring system.

2.5 Noise Monitoring Instrumentation

2.5.1 The noise monitors are Class 1 instruments in accordance with the requirements set out in IEC61672 Electroacoustics, Sound Level Meters. They are housed in secure environmental enclosures with remote weather-proof microphone systems. Each monitor is fitted with a modem to allow data-streaming to a web portal. The noise monitors measure and record continuously the full range of noise indices over continuous measurement periods and upload this data to the web portal.

2.5.2 Refer to Appendix A for information regarding the noise monitoring equipment on site.

2.5.3 Maintenance visits are required every 3-months to undertake a manual field calibration and service the instrument.

2.5.4 The monitoring systems are set with trigger levels that send email alerts when these levels are reached or exceeded at the monitoring positions. The site management team can then review and identify the reason for the exceedance during this baseline period.

2.6 Vibration Monitoring Instrumentation

2.6.1 The vibration monitors shall be fitted with a modem to allow data-streaming to the web portal. The monitors will record peak particle velocity (PPV) in 3 orthogonal axes over 1minute intervals and will upload this data to the web portal. Further information regarding the vibration monitor can be found here.

2.6.2 Refer to Appendix B for details of the vibration monitoring equipment.

2.6.3 Proposed monitoring positions are shown in Figure 1.1. Monitoring locations are proposed to protect the neighbouring structure to the south of the site, and a mobile monitor for the TfL and Academy to the north.

2.6.4 The monitoring systems will be set with trigger levels that will send email alerts when these levels are reached or exceeded at the monitoring positions. The site management team can then review site activities and identify any available options on practicable further mitigation that could be implemented.

2.7 Noise Trigger and Action Levels

2.7.1 In order to manage noise from the activity on site, noise trigger and action levels will be set at the noise monitor positions.

2.7.2 The monitoring systems will be set with alert levels that will send emails to site management. When these alert levels are reached or exceeded at the monitoring position. Alerts are usually set with a trigger and action alert level as a $L_{Aeq1hour}$. The site management team can then review noise generated from site activities during the working day. The initial trigger alert level and the higher action alert level both require degrees of response from the site management to review the site activities in order to identify any further additional practicable mitigation measures that may be available and could be implemented.

2.7.3 Noise monitors are installed on the site boundary. Locations have been chosen to be representative of the sensitive receptors and at practical locations for access and maintenance.

2.7.4 The Grenfell Site & Programme Safety Works and Maintenance Contract – Volume 3.1, Annex 21: Environmental Management Plan, version 5, issued November 2020 states the following in Section 4.6 – Noise Management – note this covers the maintenance period of works only:

"All works will be in accordance with the RBKC requirements which identifies BS5228-1:2009 Code of Practice for noise and vibration control on construction and open sites.

As outlined in the RBKC Code and Section 72 of the Control of Pollution Act 1974, the best practical means shall be employed at all locations to reduce noise to a minimum.

A first action trigger level of 73 decibels ($L_{Aeq, 1 hr}$) must be used to ensure daily levels are within the 70 decibels ($L_{Aeq, 10 hr}$) level. The specific times during which noise levels are applied should be confirmed with relevant parties.

The requirements, measures and practices that must be implemented as a minimum are listed in the RBKC Code Section 11. This includes:

Prior to any works starting on a site that requires noise monitoring, a noise survey must be carried out to establish existing ambient noise levels during the hours of construction to determine whether ambient noise levels exceed 65 decibels ($L_{Aeq\ 10hr}$)."

2.7.5 Noise trigger and action noise levels have been determined using the predicted facade noise levels for the project ($L_{Aeq,\ 10hr}$ dB), subject to minimum levels in line with those set during the maintenance phase of works.

2.7.6 During the deconstruction phase the maximum predicted noise level at the nearest sensitive façade is 75 dB $L_{Aeq,\ 10hrs}$ in Sequence 4 at the following sensitive receptors:

- Receptors A and E: *Kensington Aldridge Academy and Testerton Walk respectively.*

2.7.7 Noise levels at during the other phases are predicted to be marginally lower, with a maximum level at the nearest sensitive façade of 73 dB $L_{Aeq,\ 10hrs}$ in Sequences 2 and 3.

2.7.8 The predicted noise levels are based on a typical 10 hour working day to ensure consistency with guidance and monitoring methodology. Due to the reduction in working hours for this project to 08:30-17:00 Mon-Fri, there will be a marginal

reduction in predicted construction noise (circa 0.7dB). This reduction is reflected in the proposed noise Action and Trigger levels.

2.7.9 This alerting process will provide the site team with the ability to proactively manage noise from the site.

2.7.10 BPM will be implemented and continuously reviewed throughout the works. A method of works has been prepared which uses, as far as it practicable, quiet deconstruction methods and machines.

2.7.11 Tables 2.1 through 2.3 show the Action and Trigger Levels for the project at the nearest sensitive facades, based on the predicted noise modelling detailed in Section 3 and continuing the approach established during the maintenance phase of works.

2.7.12 An accompanying Section 61 Application is also prepared (Ref: *Grenfell Tower - 201_S61 APP_001 - Rev03*).

Table 2.1 – NMP1 Noise Action and Trigger Levels

NMP1 Noise Trigger and Action Levels *(Façade)*				
	Sq 1	**Sq 2**	**Sq 3**	**Sq 4**
Action Alert $L_{Aeq,\ 10hour}$	70	72	70	73
Trigger Alert $L_{Aeq,1hour}$	73	75	73	76

Table 2.2 – NMP2 Noise Action and Trigger Levels

NMP2 Noise Trigger and Action Levels *(Façade)*				
	Sq 1	**Sq 2**	**Sq 3**	**Sq 4**
Action Alert $L_{Aeq,\ 10hour}$	72	71	72	74
Trigger Alert $L_{Aeq,1hour}$	75	74	75	77

Table 2.3 – NMP3 Noise Action and Trigger Levels

NMP3 Noise Trigger and Action Levels *(Façade)*				
	Sq 1	**Sq 2**	**Sq 3**	**Sq 4**
Action Alert $L_{Aeq,\ 10hour}$	70	71	72	74
Trigger Alert $L_{Aeq,1hour}$	73	74	75	77

2.7.13 The Noise Trigger and Action alert levels in Table 2.2 will be reviewed in consultation with the MHCLG as the project progresses. Noise Action and Trigger Levels may be rebased to the installed monitor locations in agreement with MHCLG.

2.7.14 The BPM measures to be implemented will be under continuous review throughout the works and measured and recorded noise levels will be routinely scrutinised, and an exceedance protocol will be adopted and agreed with MHCLG.

2.8 Vibration Trigger and Action Levels

2.8.1 Vibration Trigger and Action levels are proposed at all monitoring positions (ideally positioned at ground or basement level within or directly adjacent to receptors) for vibration generated during works on site these are shown in Table 2.3.

2.8.2 Vibration monitor locations VMP1 and VMP2 are to be located at the base of the columns of the Testerton and Barandon Walk to the south.

2.8.3 The magnitudes of vibration trigger and action levels shall be validated by a four week baseline vibration survey prior to the commencement of works and will be subject to review as the project progresses.

2.8.4 Trigger and Action Levels for residential and commercial receptors are in Table 2.2.

Table 2.4 - Vibration Trigger and Action Levels (PPV commercial receptors)

Vibration Trigger and Alert Levels		
	Action Level	**Trigger Level**
Residential	3mms^{-1} PPV	1mms^{-1} PPV
Commercial	5mms^{-1} PPV	3mms^{-1} PPV

3 Noise Modelling

3.1.1 The noise levels generated during the Deconstruction phase of works experienced by any nearby sensitive receptors, will depend upon a number of variables, the most significant of which are:

- the noise generated by the individual plant or equipment item used on-site, and the on-site activities, these are expressed as sound power levels (LW);
- the periods of operation of the plant on the site, known as its 'on-time';
- the distance between the noise source and the receptor;
- attenuation provided by ground absorption and any intervening barriers.

3.1.2 Work activity noise predictions have been undertaken using CadnaA noise modelling software, which employs the methodology outlined in BS 5228-1: 2009+A1:2014, Code of practice for noise and vibration control on construction and open sites: Part 1: Noise (BSI, 2014).

3.1.3 BS 5228-1: 2009+A1:2014 also contains a database of the noise emissions from individual items of equipment, activities, and routines to predict noise from stabilisation and construction activities at identified receptors. The prediction method gives guidance on the effects of different types of ground, barrier attenuation and how to assess the impact of fixed and mobile plant.

3.1.4 Predicted noise levels illustrate the cumulative effects of noise (LAeq,10 hour day) from all activities which take place simultaneously from different locations over the site with potential impacts on sensitive receptors. Predicted noise levels are inclusive of a 3dB façade reflection and are presented in Appendix E as period LAeq,10-hour levels.

3.2 Sequences

3.2.1 Appendix E shows the predicted noise levels from the Deconstruction Phase of works, in four distinct sequences:

- Sequence 1: Enabling Works including Piling for Tower Crane Base
- Sequence 2: Deconstruction of tower at 67m high (24th floor)
- Sequence 3: Deconstruction of tower at 35m high (12th floor)
- Sequence 4: Deconstruction of tower at 4m high (1st floor)

3.3 Plant Reference Noise Levels

3.3.1 Refence noise levels for the plant items in use during each Sequency are show in Tables 3.1 through 3.4:

Table 3.1 - Sequence 1: Enabling Works including Piling for Tower Crane Base

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
Waste/ Delivery lorries	T.4 Ref 21	1	105	77	20
Hand tools	Measured	4	97	69	30
Mobile Crane	T.3 Ref 30	1	98	70	40
Hoist	C.4 Ref 61	1	96	68	30
13T with Bucket	T.2 Ref 24	1	101	73	40
Hutte HBR 204 Piling Rig	Spec Sheet	1	106	78	40
Generator	T.4 Ref 76	1	89	61	5

Table 3.2 - Sequence 2: Deconstruction of tower at 67m high (24th floor)

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
Waste/ Delivery lorries	T.4 Ref 21	1	105	77	20
Hand tools	Measured	4	97	69	30
Brokk 330	Spec Sheet	1	90	62	40
Diamond Drilling	Measured	1	123	95	40
Tower Crane	T.4 Ref 48	1	104	76	40
Hoist	C.4 Ref 61	1	96	68	30
13T with Bucket	T.2 Ref 24	1	101	73	60
Skid Steer	Measured	2	106	78	40
Generator	T.4 Ref 76	1	89	61	5

Table 3.3 - Sequence 3: Deconstruction of tower at 35m high (12th floor)

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
Waste/ Delivery lorries	T.4 Ref 21	1	105	77	20
Hand tools	Measured	4	97	69	30
Brokk 280	Spec Sheet	1	93	65	40
Diamond Drilling	Measured	1	123	95	40
Tower Crane	T.4 Ref 48	1	104	76	40
Hoist	C.4 Ref 61	1	96	68	30
13T with Bucket	T.2 Ref 24	1	101	73	60
Skid Steer	Measured	2	106	78	40
Generator	T.4 Ref 76	1	89	61	5

Table 3.4 - Sequence 4: Deconstruction of tower at 4m high (1st floor)

Plant	BS5228 ref (or other source)	No of items	SWL	LAeq @10m	% on time
Waste/ Delivery lorries	T.4 Ref 21	1	105	77	20
Hand tools	Measured	4	97	69	30
Brokk 280	Spec Sheet	1	93	65	40
Diamond Drilling	Measured	1	123	95	40
Tower Crane	T.4 Ref 48	1	104	76	40
Hoist	C.4 Ref 61	1	96	68	30
13T with Bucket	T.2 Ref 24	1	101	73	60
Skid Steer	Measured	2	106	78	40
Generator	T.4 Ref 76	1	89	61	5

3.4 Predicted Noise Levels

3.4.1 Predicted noise levels for each Sequence in the Deconstruction Phase are show in Tables 3.5 through 3.8:

3.4.2 The predicted noise levels are based on a typical 10 hour working day. Due to the reduction in working hours for this project (08:30-17:00 Mon-Fri), there will be a likely marginal reduction in predicted construction noise (circa 0.7dB).

3.4.3

Table 3.5 - Sequence 1: Predicted Noise Levels

Receptor		Type	Predicted façade noise levels $L_{Aeq, 10h}$ dB (includes façade reflection)
ID	Location		
A	Kensington Aldridge Academy	School	73
B	Kensington Leisure Centre	Leisure Centre	69
C	Treadgold House	Residential	62
D	Barandon Walk	Residential	68
E	Testerton Walk	Residential	62
F	Hurstway Walk	Residential	54

Table 3.6 - Sequence 2: Predicted Noise Levels

Receptor		Type	Predicted façade noise levels $L_{Aeq, 10h}$ dB (includes façade reflection)
ID	Location		
A	Kensington Aldridge Academy	School	72
B	Kensington Leisure Centre	Leisure Centre	71
C	Treadgold House	Residential	70
D	Barandon Walk	Residential	73
E	Testerton Walk	Residential	72
F	Hurstway Walk	Residential	70

Table 3.7 - Sequence 3: Predicted Noise Levels

Receptor		Type	Predicted façade noise levels $L_{Aeq, 10h}$ dB (includes façade reflection)
ID	Location		
A	Kensington Aldridge Academy	School	73
B	Kensington Leisure Centre	Leisure Centre	71
C	Treadgold House	Residential	68
D	Barandon Walk	Residential	71
E	Testerton Walk	Residential	72
F	Hurstway Walk	Residential	73

Table 3.8 - Sequence 4: Predicted Noise Levels

Receptor		Type	Predicted façade noise levels $L_{Aeq, 10h}$ dB (includes façade reflection)
ID	Location		
A	Kensington Aldridge Academy	School	75
B	Kensington Leisure Centre	Leisure Centre	70
C	Treadgold House	Residential	63
D	Barandon Walk	Residential	74
E	Testerton Walk	Residential	75
F	Hurstway Walk	Residential	73

4 Noise Site Risk Assessment (LANAF Methodology)

4.1 Overview

4.1.1 The potential noise impacts from the Grenfell Tower project have been assessed using the LANAF methodology from the London Good Practice Guide: Noise & Vibration Control for Deconstruction and Construction July 2016.

4.2 Risk Assessment A – Locality and Site Information

4.2.1 Table 3.0 shows the locality and site information risk assessment.

Table 3.0 – Risk Assessment A

Assessment Criteria	Risk		
	Low	Medium	High
Full programme duration – estimated at 95 weeks (22 months)			✓
Proximity of nearest sensitive receptors - < 25m – direct neighbouring buildings to the south			✓
Day-time ambient noise level - The Baseline Noise demonstrate the noise level to be ~60 dB $L_{Aeq,\ 10hr,}$ on the site boundary			✓
Working hours – normal site workings hours only *this is true given current information regarding site*	✓		
Subtotal	**1**	**0**	**3**

4.3 Risk Assessment B – Works Information

4.3.1 Table 3.1 shows the works information risk assessment.

Table 3.1 – Risk Assessment B

Assessment Criteria	Risk		
	Low	Medium	High
Location of works – majority of works external			✓
External deconstruction –greater than 3 months			✓
Groundworks – Limited groundworks	✓		
Piling – Bored piling only <1 week for crane base only	✓		
Vibration generating activities – likely to be greater than 1 month *(worst case scenario taken)*	✓		
Street management – not required, street is part of project site	✓		
Subtotal	**4**	**0**	**2**

4.4 Total Risk Assessment

4.4.1 Table 3.2 shows the combined subtotals for Risk Assessment A and B.

4.4.2 The subtotal for Risk Assessment A is carried over as is and the subtotal for Risk Assessment B one tick is added to the column with the highest subtotal, in this case the Low Risk column.

Table 3.2 – Total Risk Assessment

Assessment Criteria	Risk		
	Low	Medium	High
Subtotal from Risk Assessment A	1	0	3
Subtotal from Risk Assessment B *(with one added to the highest risk category)*	4	0	2
Subtotal	**2**	**0**	**4**

4.4.3 The total risk assessment shows that the site is deemed high risk for noise.

4.5 Good Practice Measures

4.5.1 Table 3.3 shows the guidance on mitigation measures for all sites and other good practice measures (from the LANAF guidance).

4.5.2 The good practice methods are to be applied where appropriate for the methodology and in line with Best Practicable Means (BPM).

4.5.3 Where possible these have been tailored to reflect the specific mitigation to be applied for the project.

Table 3.3 – Recommended Good Practice Methods

Phase	Control Measure
General Consideration	Designated site-based staff shall have the authority to take the steps necessary on behalf of the contractor(s) to ensure noise and vibration is adequately controlled and managed, according to the circumstances associated with each worksite.
	At the commencement of their appointment on a project (or prior to start of works on site), all site staff are to be briefed on their responsibilities to the application of BPM to minimise construction noise and vibration and the content of any planning consents, codes of construction or other legal agreements. The performance of the training should then be regularly reviewed and repeated throughout the construction programme as appropriate.
	Site hoarding to be built and maintained to maximise the reduction in noise levels to sensitive buildings and land uses.
	Locate the site access away from noise sensitive receptors.
	Keep internal haul routes well maintained.
	Limit material and plant loading and unloading to normal working hours.
	Reduce loading / unloading heights for muck away and material movement to mitigate impact noise.
	Handle all material in a manner that minimises noise.

Phase	Control Measure
	Join the Considerate Constructors Scheme for the site
	Consult the respective Authority Code of Construction Practice / Technical Guidance.
	Submit a Section 61 consent application to the relevant authority (MHCLG)
	Adhere to 'quiet hours' as agreed and/or adopted by the local authority.
	Maximise the screening effect of buildings and temporary stockpiles through programming / phasing of works.
	Use rubber linings in chutes, dumpers and hoppers to reduce impact noise.
	Minimise opening and closing of site access gates through good coordination of deliveries and vehicle movements.
	See Vehicle Activity for additional good practice with regards to the transportation of material.
Plant	Ensure that each item of plant and equipment complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC, United Kingdom Statutory Instrument (SI) 2001/1701.
	Fit all plant and equipment with appropriate mufflers or silencers of the type recommended by the manufacturer.
	Follow manufacturer's guidance and measures to operate plant and equipment and use it in a manner which minimises noise.
	Use all plant and equipment only for tasks for which it has been designed for.
	Shut down all plant and equipment in intermittent use in the intervening periods between works or throttle it down to a minimum.
	If possible power all plant and equipment by mains electricity or other quieter technology rather than locally powered sources such as generators.
	Maximise screening from existing features / structures or employ the use of full or partial enclosures for fixed plant. The enclosures should be well maintained. Fixed plant can include generators, compressors, pumps, batching plant and ventilation plant.
	Locate and orientate fixed or semi-static plant away from noise sensitive receptors.
	Consider additional measures to control noise for any plant required to operate on a 24 hour basis; for example, dewatering pumps or generators used to power site security.
	Vibratory compaction equipment shall be used in a mode which minimises the incident vibration at nearby residential and other sensitive properties. Consideration should be given to engaging concentric weights only when running at speed to avoid run up, run down resonances, the use of smaller equipment, or turning off the mechanical vibration on vibratory rollers and undertaking more passes for areas where there is a particular risk that disruption may occur at neighbouring properties.
Vehicle Activity	Ensure all vehicle movements occur within normal hours or at agreed times, considering the primary function of sensitive receptors in the vicinity (i.e. avoiding school drop-off/pick-up periods).

Phase	Control Measure
	Maximise the reuse of any waste arising on site to minimise vehicle movements.
	Plan deliveries and vehicle movements so that vehicles are not waiting or queuing on the public highway. If waiting or queuing is unavoidable then engines should be turned off.
	Minimise opening and closing of site access through good coordination of deliveries and vehicle movements.
	Plan site layout to ensure that reversing is kept to a practicable minimum, and where practicable eliminated altogether.
	Where reversing is required, use broadband reverse sirens / alarms or, where it is safe to do so, disengage all sirens and alarms and use banks-men.
	Produce a robust Construction Traffic Management Plan which may also be required by the Local Planning Authority to plan, manage and minimise vehicle movements. Avoid unnecessary impact on sensitive receptors, traffic diversions via other sensitive areas or bottlenecks (see TFL guidance).
	Where site space is limited and volume of vehicles attending site is high, seek vehicle holding bay(s) to use with 'Just in time' delivery management systems.
	Space planning for stockpiling of material (over weekends and, evening and nights) within the site to allow removal during normal working hours only.
	Consider alternative means of transport, e.g. river and rail.
Deconstruction	Employ the use of acoustic screening; this can include planning the deconstruction sequence to utilise screening afforded by buildings to be demolished.
	If working out of hours on safety grounds, limit high noise/vibration deconstruction activities to normal hours wherever practicable.
	Avoid deconstruction activities outside of normal working hours through the use of temporary measures, such as safety / protection fences, to enable works to be conducted during normal working hours.
	Utilise low impact deconstruction methods such as non – percussive plant wherever practicable.
	Rather than breaking in-situ, consider the removal of larger sections by lifting them out and breaking them down either in an area away from sensitive receptors or off-site.
Groundworks and Piling	Avoid percussive piling wherever possible.
	If working outside of normal hours on safety grounds, limit major excavation works to normal working hours
	For the installation of the crane base, to adopt the following hierarchy of groundwork / piling methods, in order of preference to minimise the impact of piling, if ground conditions, design and safety allows: • Pressed-in methods, e.g. Hydraulic jacking • Auger / bored piling • Diaphragm Walling • Vibratory piling or vibro-replacement • Driven piling or dynamic consolidation

Phase	Control Measure
	Consider the location and layout of the piling plant for efficient operation and potential noise control of generators and any electric or hydraulic motors used by plant.
	Where impact piling is the only option, utilise a non-metallic dolly between the hammer and driving helmet, or enclose the hammer and helmet within an acoustic shroud
	Consider concrete pour sizes and pump locations. Plan the start of concrete pours as early as possible within normal working hours to avoid overruns.
	Where obstructions are encountered stop works and review approach; adopt work methods that minimise noise and vibration.
	When using an auger (for bored piling), rather than dislodging material from the auger by rotating the drill back and forth quickly, use alternate methods where safe to do so. For example, some piling rigs are equipped with metal brush to remove spoil as the auger is taken out of ground
	Prepare pile caps using methods / procedures which minimise the use of breakers, e.g. using hydraulic splitters to crack the top of the pile.
Monitoring	Establish pre-existing levels of ambient noise.
	Carry out regular on site observation monitoring and checks/ audits to ensure that BPM is being employed at all times. Such checks should include: • Hours of working • Presence of mitigation measures, equipment (engine doors closed, airlines not leaking, etc.) and screening (location and condition of local screening, etc.) • Number and type of plant • Construction method, and • Where applicable, any specific Section 61 consent conditions. The site reviews should be logged and any remedial actions recorded.
	Monitor noise continuously during deconstruction works at agreed locations and report to the relevant authority at agreed intervals.
	Monitor vibration continuously during deconstruction, piling, excavation and sub-structure works at agreed locations and report to the local authority at agreed intervals.
	Appraise and review working methods, procedures and logistics on a regular basis to ensure continuous development of BPM.
	Establish level trigger alerts in agreement with the local authority and guided by BS5228. Monitor noise and vibration to trigger text alerts; where levels exceed the triggers then inform the local authority, review work practices and agree additional mitigation measures with the local authority.
	Use monitoring equipment with web access capabilities to view and inspect real time measurement and/or audio data.
Community and Liaison	Develop a Community Liaison Plan. Develop a Complaint Procedure with timescales for responses and a nominated liaison person to engage with residents and to handle complaints. These should be agreed with the relevant authority.

Phase	Control Measure
	Brief all site staff regarding the complaints procedure and mitigation requirements and their responsibilities to register and escalate complaints received.
	Send regular updates at appropriate intervals to all identified affected neighbours via newsletter and posting information on the site hoarding. Where possible MHCLH to make information available via email when requested.
	Develop and maintain a website to provide information about the project and to receive feedback.
	MHCLG to arrange regular community liaison meetings at appropriate intervals including prior to commencement of project. Respond to issues raised and report back to attendees.
	Arrange meetings and communicate on a regular basis with neighbouring construction sites to ensure activities are coordinated to minimise any potential cumulative issues.
	MHCLG to advise neighbours about reasons for and duration of any permitted works outside of normal working hours.
	MHCLG to arrange meetings and communicate on a regular basis with the local authority to monitor the progress of the works and to consider any concerns or complaints raised by the local community.

5 COMPLAINT / ACTION ALERT PROCEDURE

5.1 General Management Procedures

5.1.1 Deconstruct site team will maintain a diary record log of all email alerts for any exceedance events they receive.

5.1.2 In the event of a complaint the complaints process outlined in Appendix C will be followed, and in the event of a Action Level exceedance, the form in Appendix D will be completed and kept on record for inspection by the MHCLG if requested.

5.1.3 The Client (MHCLG) will be in charge of and manage all public communications for this project.

6 APPENDIX A – NOISE MONITOR SPECIFICATION

SV 307 Technical Specifications

Sound Level Meter and Analyser

Standards	Class 1: IEC 61672-1:2013, Class 1: IEC 61260:2014
Weighting Filters	A, B, C, Z, LF
RMS Detector	Digital True RMS detector with Peak detection, resolution 0.1 dB Time constants: Slow, Fast, Impulse
Microphone	Patented[1] MEMS design microphone ST30 in 1/2" housing
Preamplifier	Integrated
Linear Operating Range	30 dBA RMS ÷ 126 dBA Peak (in accordance to IEC 61672)
Dynamic measurement range	20 dBA RMS ÷ 126 dBA Peak (typical from noise floor to the maximum level)
Internal Noise Level	less than 20 dBA RMS
Frequency Range	20 Hz ÷ 20 kHz
Meter Mode Results	Elapsed time, Lxy (SPL), Lxeq (LEQ), Lxpeak (PEAK), Lxymax (MAX), Lxymin (MIN), Lxye (SEL), 10 x LN (LEQ STATISTICS), Lden, LEPd, Ltm3, Ltm5 Simultaneous measurement in three profiles with independent set of filters (x) and detectors (y)
Statistics	L_n (L_1-L_{99}), complete histogram in meter mode and 1/1 & 1/3 octave analysis Simultaneous measurement in three profiles with independent set of filters and detectors
1/1 Octave Analysis[2]	Real-time analysis meeting class 1 requirements of IEC 61260 (31,5 Hz ÷ 16 kHz)
1/3 Octave Analysis[2]	Real-time analysis meeting class 1 requirements of IEC 61260 (20 Hz ÷ 20 kHz)
Data Logger	Logging of summary results (SR) and spectra data with interval step down to 1 second and time history (TH) of selected parameters with shorter interval step down to 100 milliseconds.
Audio Recording[2]	Time domain records to wav file format on demand with selectable bandwidth and recording period
Ingress Protection Rating	IP 65
Inputs	Power supply LEMO 4-pin, extended I/O port LEMO 5-pin
Remote system check	Inbuilt reference sound source producing level of 100 dB at 1 kHz[1]
Memory	Micro SD card 16 GB (removable)
Display & Keyboard	OLED colour display 128 x 160 px and 10 push-button keyboard
Communication interfaces	USB, 3G modem
Power Supply	Li-Ion rechargeable battery (non-removable) Operation time on battery (8.2 V / 10 Ah) Modem off: up to 6 days Modem on: up to 5 days[3] Solar Panel (not included): MPPT voltage 17.0 V ÷ 20.0 V AC power supply (included): Input 100 ÷ 240 VAC, output +15 VDC 2.5 A, IP 67 housing External DC source (not included): voltage range 10.5 V – 24 V, e.g. 12 V or 24 V accumulator
Environmental Conditions	Temperature: from -20 °C to 50 °C (-4 °F to 122 °F) Humidity: up to 95 % RH
Dimensions	680 mm length; 80 mm diameter (26.8 in; 3.15 in), excluding windscreen (windscreen diameter 130 mm)
Weight	Approx. 1,8 kg (Approx. 3.96 lbs.)

[1] patent pending
[2] optional
[3] depends on modem usage

The policy of our company is to continually innovate and develop our products.
Therefore, we reserve the right to change the specifications without prior notice.

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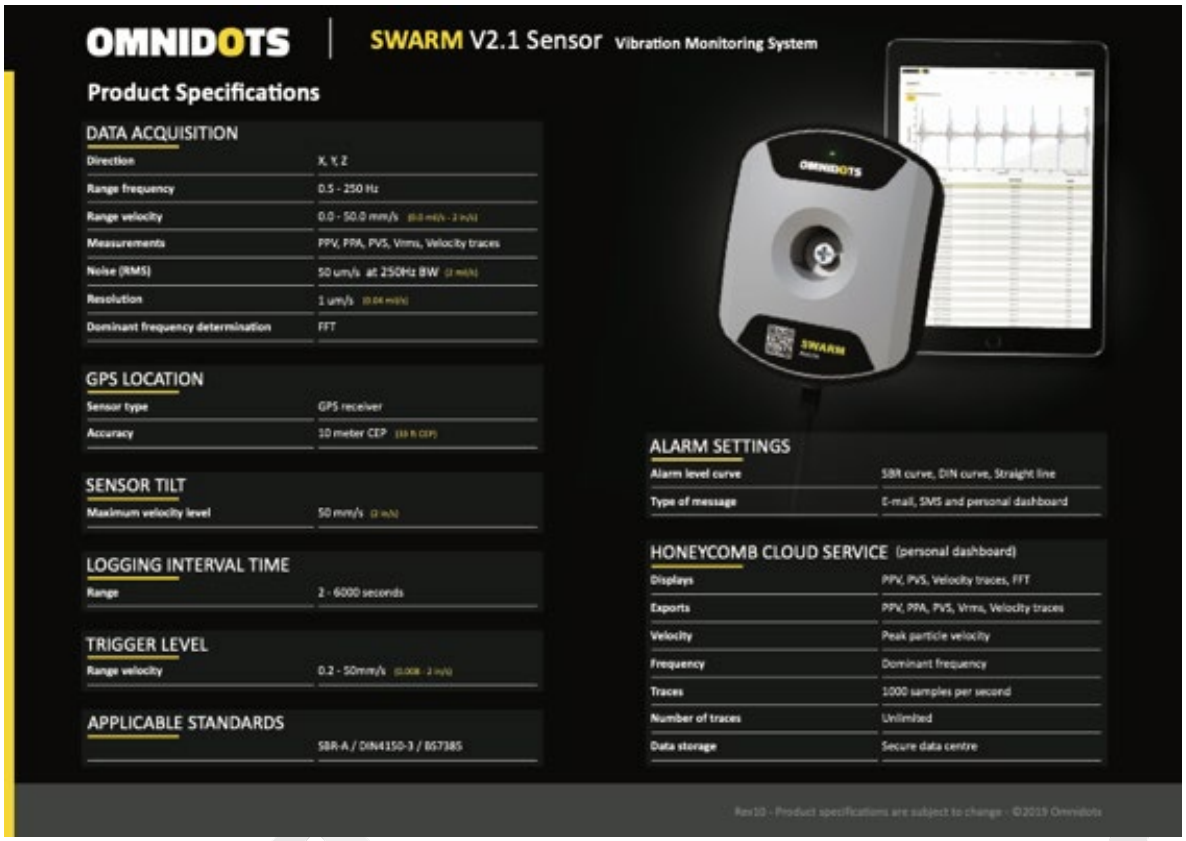
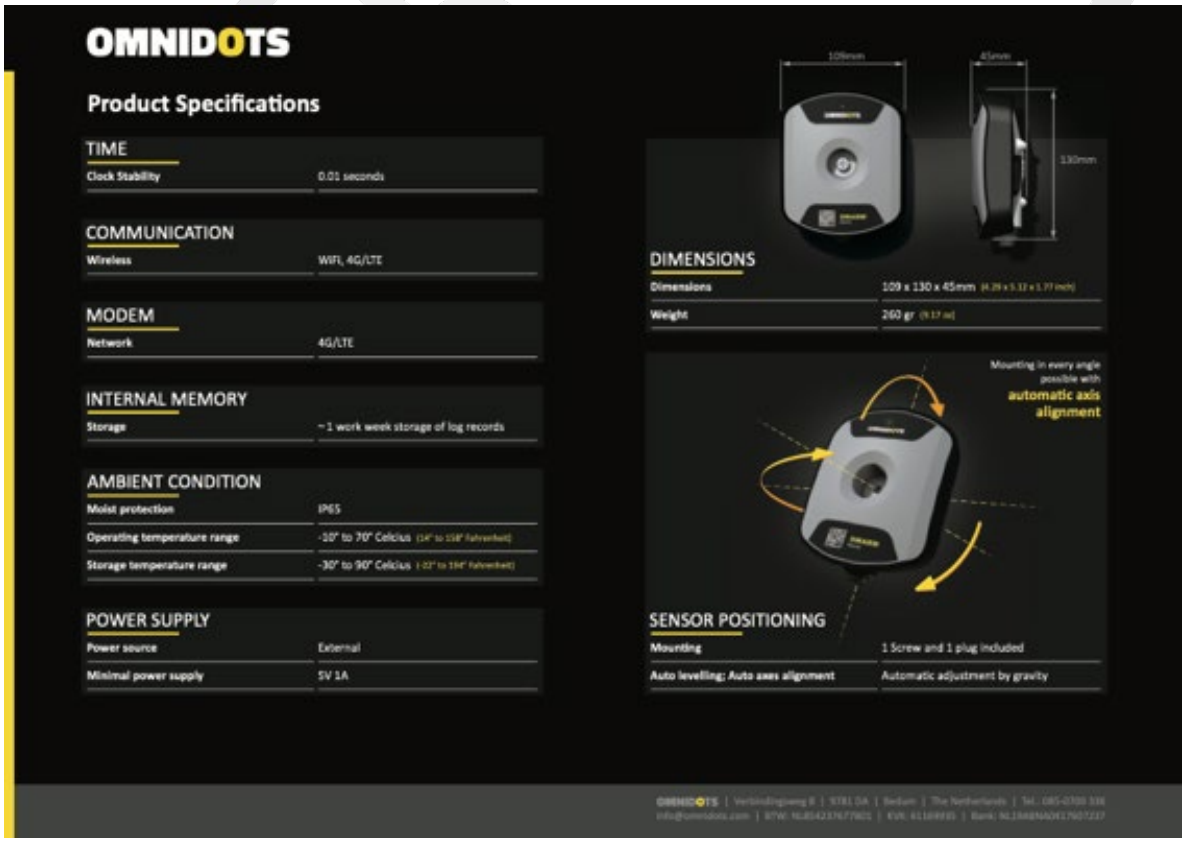
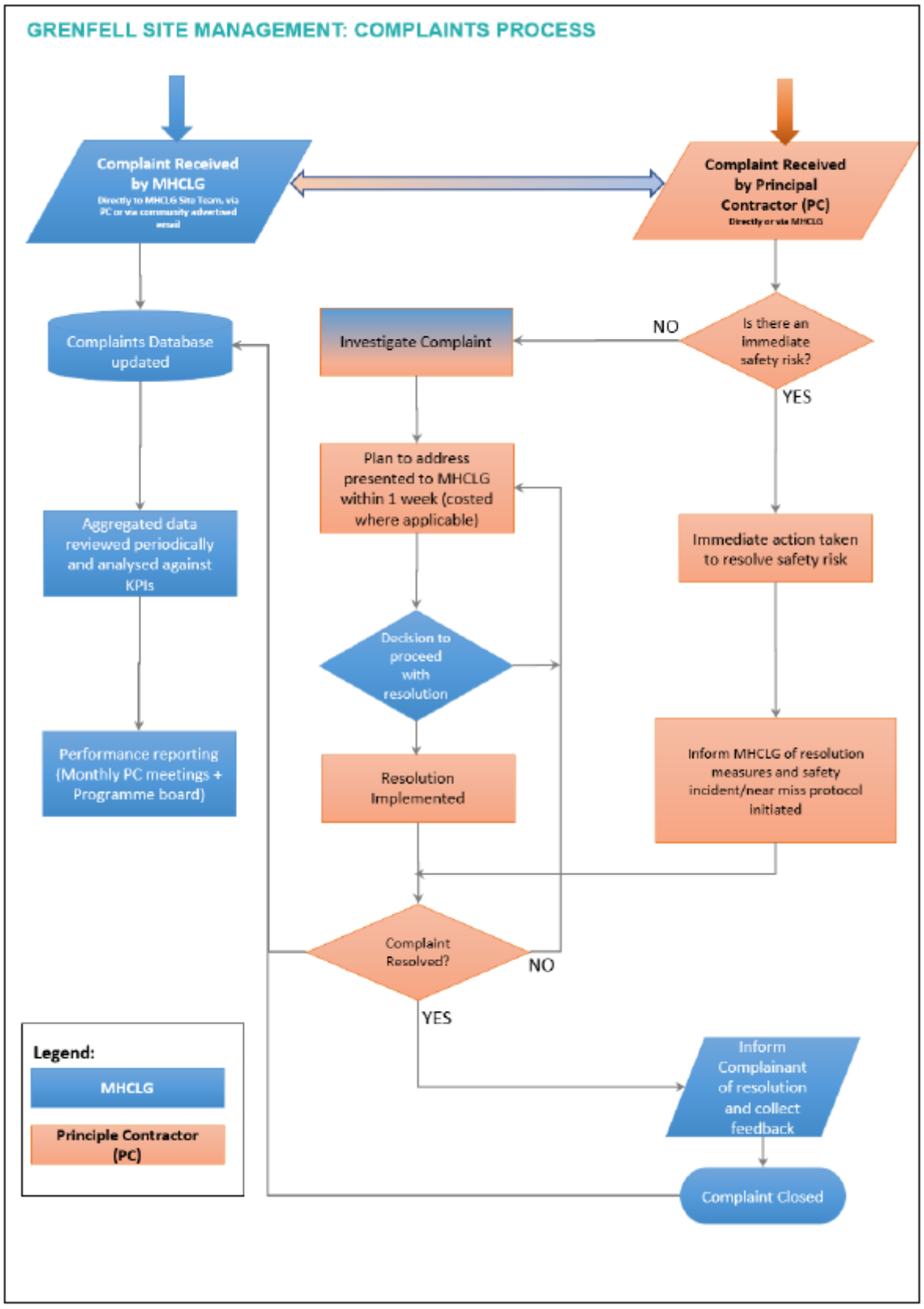
7 APPENDIX B – PROPOSED VIBRATION MONITORS

Omnidots Swarm continuous automated vibration monitor, with web-based data interface





8 APPENDIX C – GRENFELL SITE MANAGEMENT COMPLAINTS PROCEDURE



9 APPENDIX D - EXCEEDANCE/COMPLAINT RECORDING FORM

Exceedance/ Complaints Form					
Exceedance/Complaint Reference No :		**Date:**		**Time:**	
YES/NO	**Noise :**				
	Monitor Location:				
	Trigger Level: dB(A) ($L_{eq\ 1\ Hour}$):				
	Action Level: dB(A) ($L_{eq\ 10\ Hour}$):				
	Level of Exceedance:				
YES/NO	**Vibration:**				
	Monitor Location:				
	Trigger Level: PPV mm/s				
	Action Level: PPV mm/s				
	Level of Exceedance:				
YES/NO	**Dust:**				
	Monitor Location:				
	Trigger Level: mg/m^3 15 min				
	Action Level: mg/m^3 15 min				
	Action Level mg/m^3 1 hour				
	Level of Exceedance:				

Complaint Notification		
Contract/Project Name:		Contract/Project Number:
Date:	Time:	Received by:
Complainants Name:		Telephone Number:
Complainants Address:		Weather Conditions:

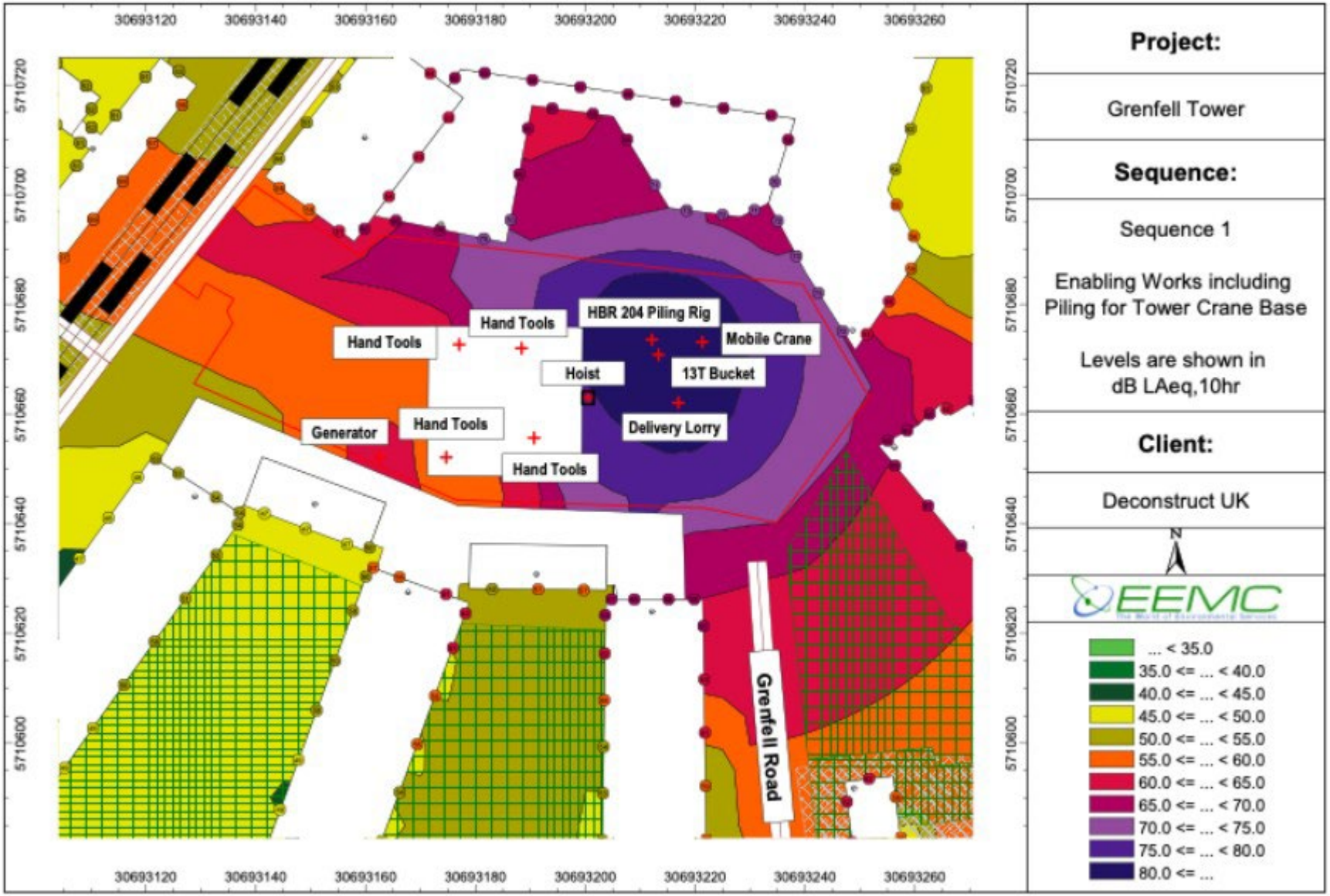
Type of Complaint (Tick Appropriate Box)							
Noise		Dust		Highways		Vibration	
Other (Specify)							

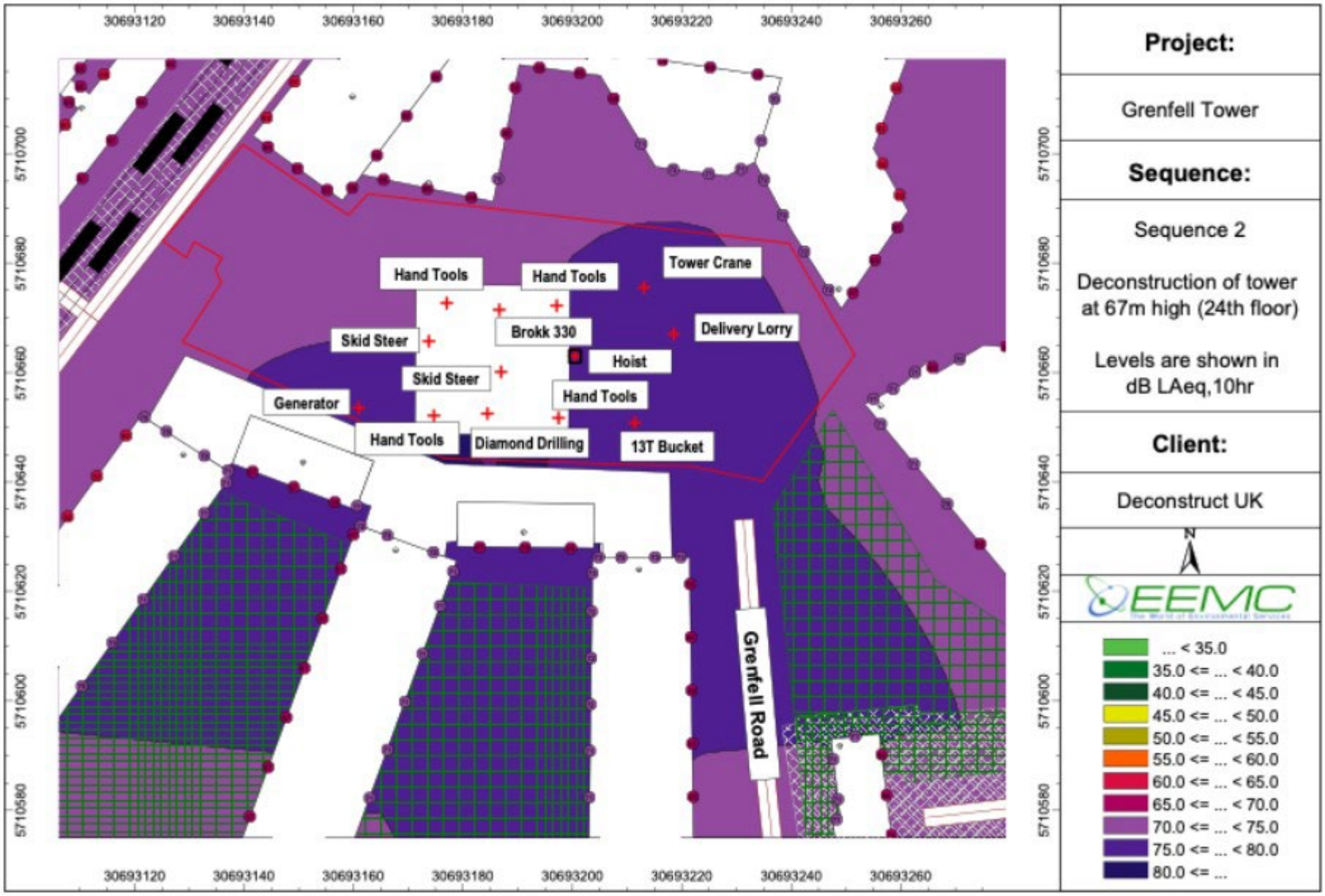
Description of Complaint:
Action Taken:

Site Assistance/Advice Requested?		(If Yes Who?)					
Is the Complaint considered:	Justified		Unsubstantiated		Unfounded		

Signed:		Print Name		Date	
Copy to:	Project Director		EHO		Client	

10 APPENDIX E – NOISE MODELLING CONTOUR PLOTS

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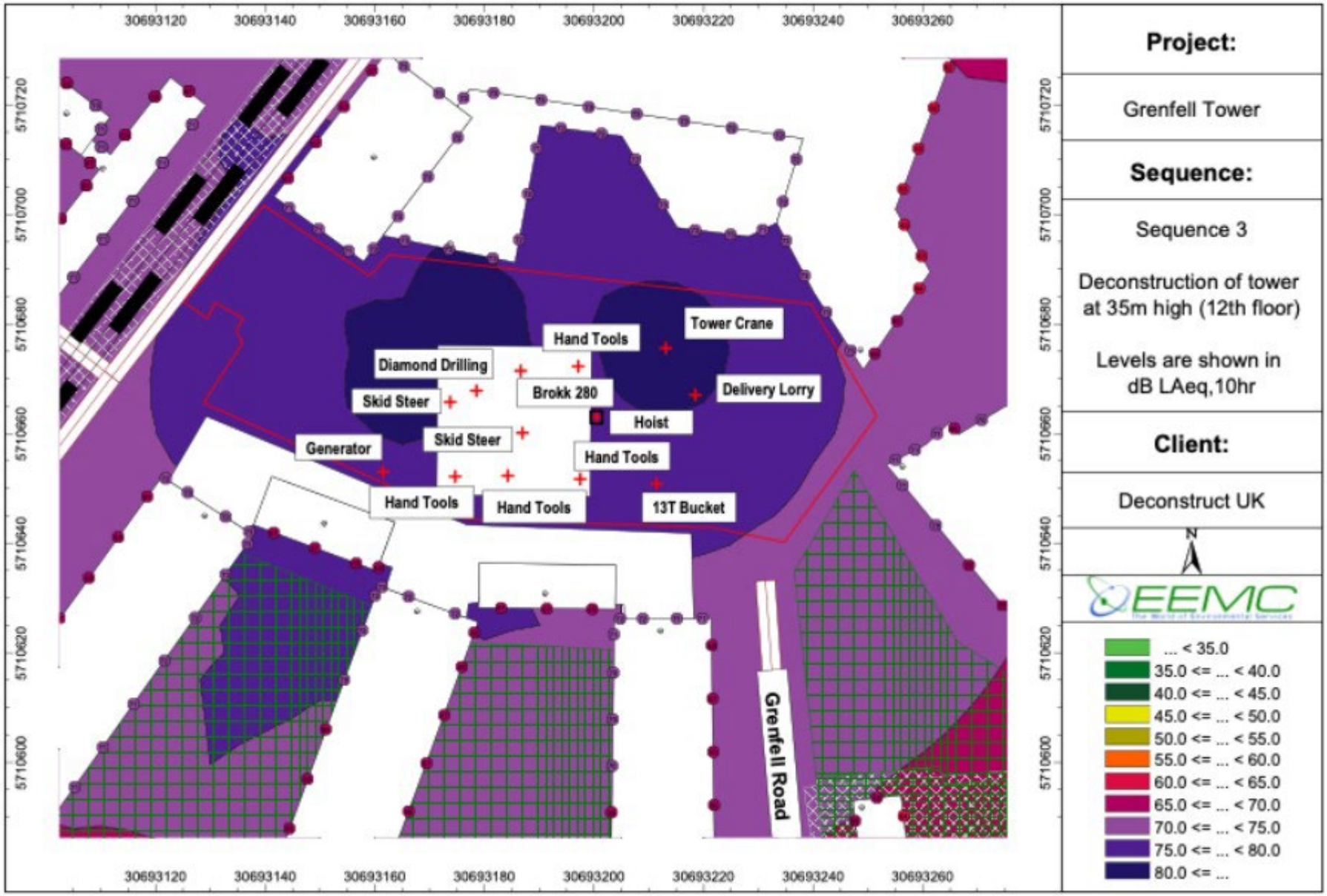
5710620
5710600
5710580
Hand Tools
Hand Tools
Tower Crane
Brokk 330
Delivery Lorry
Skid Steer
Hoist
Skid Steer
Hand Tools
Generator
Hand Tools
Diamond Drilling
13T Bucket
Grenfell Road
Project:
Grenfell Tower
Sequence:
Sequence 2
Deconstruction of tower at 67m high (24th floor)
Levels are shown in dB LAeq,10hr
Client:
Deconstruct UK
N
EEMC
... < 35.0
35.0 <= ... < 40.0
40.0 <= ... < 45.0
45.0 <= ... < 50.0
50.0 <= ... < 55.0
55.0 <= ... < 60.0
60.0 <= ... < 65.0
65.0 <= ... < 70.0
70.0 <= ... < 75.0
75.0 <= ... < 80.0
80.0 <= ...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5710660
5710640
5710620
5710600
Hand Tools
Tower Crane
Diamond Drilling
Brokk 280
Skid Steer
Delivery Lorry
Hoist
Skid Steer
Generator
Hand Tools
Hand Tools
Hand Tools
13T Bucket
Grenfell Road
Project:
Grenfell Tower
Sequence:
Sequence 3
Deconstruction of tower at 35m high (12th floor)
Levels are shown in dB LAeq,10hr
Client:
Deconstruct UK
N
... < 35.0
35.0 <= ... < 40.0
40.0 <= ... < 45.0
45.0 <= ... < 50.0
50.0 <= ... < 55.0
55.0 <= ... < 60.0
60.0 <= ... < 65.0
65.0 <= ... < 70.0
70.0 <= ... < 75.0
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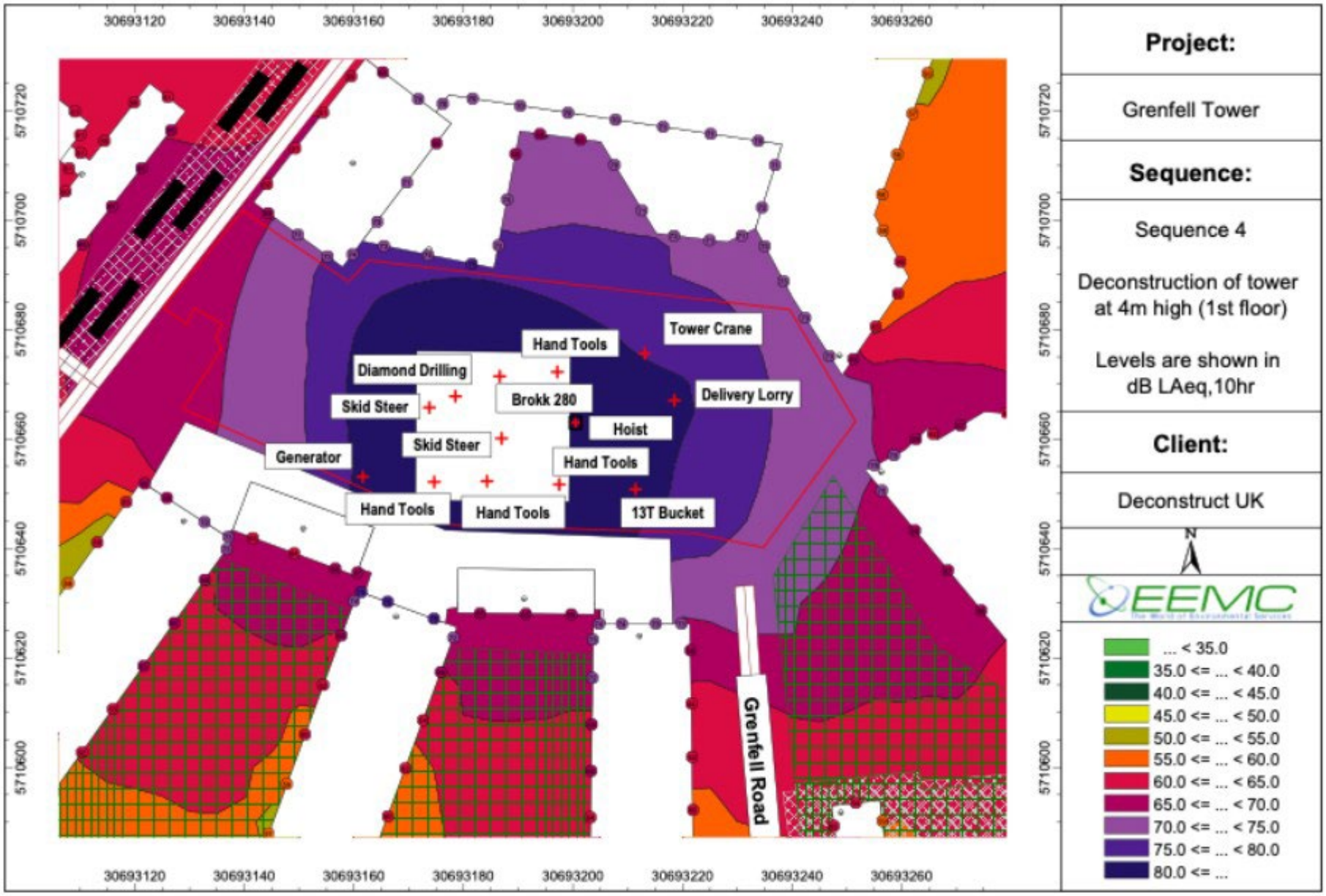
80.0 <= ...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Hand Tools
Tower Crane
Diamond Drilling
Brokk 280
Delivery Lorry
Skid Steer
Hoist
Skid Steer
Generator
Hand Tools
Hand Tools
Hand Tools
13T Bucket
Grenfell Road
Project:
Grenfell Tower
Sequence:
Sequence 4
Deconstruction of tower at 4m high (1st floor)
Levels are shown in dB LAeq,10hr
Client:
Deconstruct UK
N
... < 35.0
35.0 <= ... < 40.0
40.0 <= ... < 45.0
45.0 <= ... < 50.0
50.0 <= ... < 55.0
55.0 <= ... < 60.0
60.0 <= ... < 65.0
65.0 <= ... < 70.0
70.0 <= ... < 75.0
75.0 <= ... < 80.0
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