WYG Planning & Environment

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London & Regional (Bewlay House) Limited

Proposed Mixed Use Development

Bewlay House, 32 Jamestown Road, Camden

Noise Assessment

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1.0 Introduction

1.1 Purpose of this Report

This report presents the findings of a noise assessment for a proposed mixed use development, comprising the redevelopment of existing office units and construction of additional residential apartments at Bewlay House, 32 Jamestown Road, Camden.

A description of the existing noise environment in and around the site is provided. Noise surveys have been undertaken and the results used to verify predictions of the short-term and long-term effects of noise. The noise levels from the proposed development have been predicted at local representative receptors using CADNA noise modelling software which incorporates ISO 9613 and CRTN methodologies and calculations.

A list of acoustic terminology and abbreviations used in this report is provided in Appendix A and a set of location plans and noise contour plots relevant to the assessment are presented in Appendix B.

1.2 Legislative Context (England)

PPG24 was replaced by the National Planning Policy Framework (NPPF) on 27 March 2012. With regard to noise and planning, the NPPF contains the following 4 short statements (section 123):

A. Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;

B. Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;

C. Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and

D. Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

2.0 Assessment Criteria

2.1 Internal Noise Assessment Criteria

The criteria in BS 8233:1999 '*Sound insulation and noise reduction for buildings – code of practice*' has been chosen as a suitable method for determining an adequate level of noise control to ensure that noise levels within existing properties, as a result of the proposed development, meet the following noise guideline values specified in the standard. As the proposed development includes provision for a gymnasium, reference is also made to Building Bulletin 93 which provides standards for acoustics within buildings which are comparable to the BS 8233 criteria:

		Good		Reasonable	
Living rooms	L_{Aeq} =	30	-	40 dB	
Bedrooms	L_{Aeq} =	30	-	35 dB,	L_{Amax}, night-time = 45 dB
Single Occupancy Office	L_{Aeq} =	35	-	40 dB	
Open Plan Office	L_{Aeq} =	45	-	50 dB	

BS 8233:1999 suggests that a typical façade, regardless of construction, will offer a maximum of 15 dB sound insulation when windows are open. For the purposes of this assessment, the maximum external noise level from the source under consideration will be 50 dB(A) during the daytime and 45 dB(A) during the night-time to ensure a maximum daytime L_{Aeq} of 35 dB and a maximum night-time L_{Aeq} of 30 dB within habitable rooms are achieved.

These levels are also comparable to the World Health Organisation Recommendations in their 'Guidelines for Community Noise' (1999) publication which states that outdoor levels of 45 dB $L_{Aeq,T}$ for open windows at night or internal levels of 30 dB $L_{Aeq,T}$ are guideline values to prevent sleep disturbance. Similarly outdoor levels of 60 dB L_{Amax} for open windows at night or internal levels of 45 dB L_{Amax} are also maximum guideline values to prevent sleep disturbance.

2.2 Building Services Plant Noise Assessment

The effect of noise from proposed external plant has been assessed in accordance with BS 4142:1997, '*Rating Industrial Noise Affecting Mixed Residential and Industrial Areas*'.

This standard sets down the following guidelines for assessing the likelihood of complaints based upon the difference between the measured background noise level and the rating level of the source under consideration, as shown in the table below.

Table 2.1 BS 4142 Assessment Criteria

Difference between Rating Noise Level and Background Noise Levels	Likelihood of Complaints
Greater than +10 dB	Likely
+5 dB	Marginal significance
More than 10 dB below	Unlikely

In addition to noise levels the likelihood of complaints depends on the individuals affected and to the acoustic features present. Section 8 of BS 4142 recommends that a correction factor of +5dB be applied to the specific noise level if the noise contains certain acoustic features that can increase the likelihood of complaints. Such features of new or modified noise sources include:

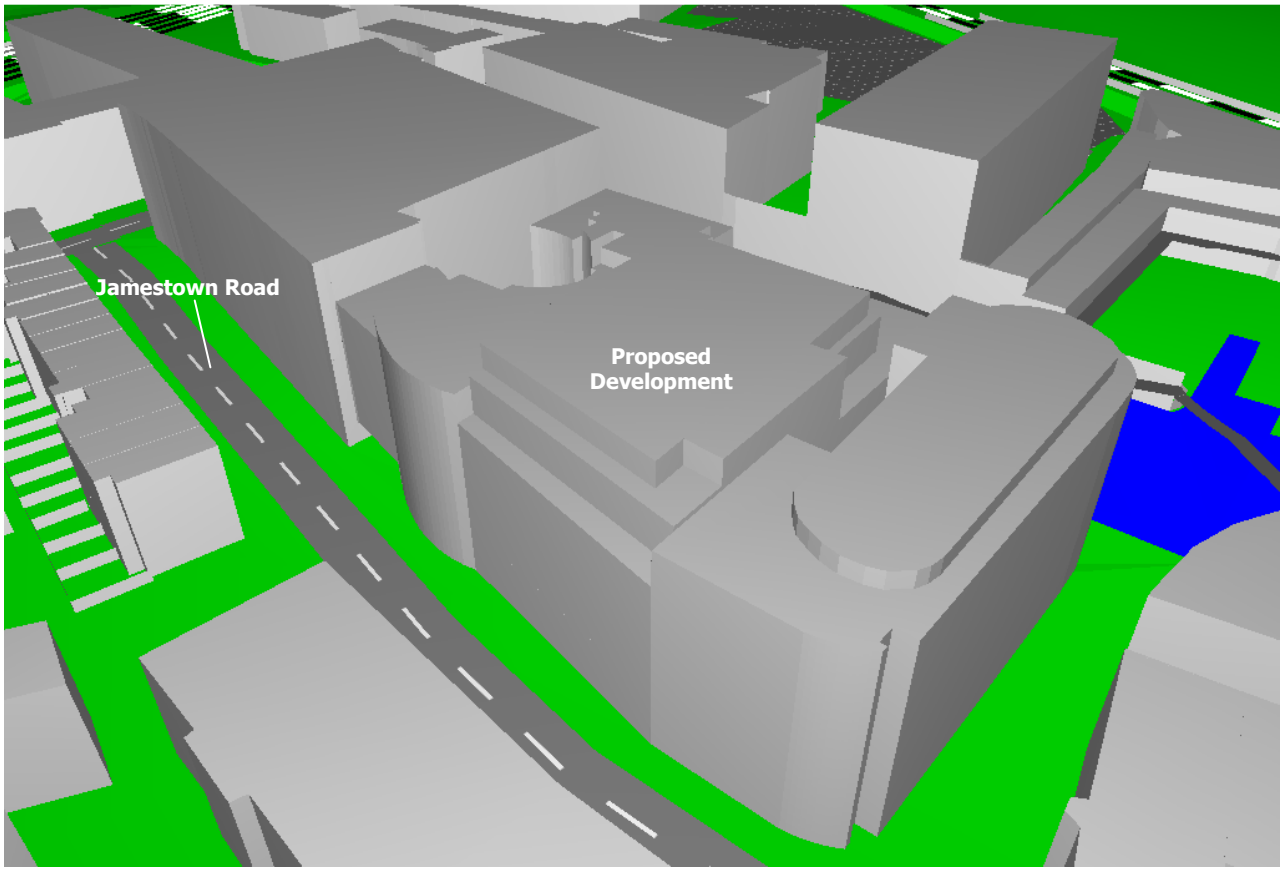
- A distinguishable, discrete, continuous note (whine, hiss, screech, hum etc.)
- Distinct impulses (bangs, clicks, clatters or thumps)
- Irregular enough to attract attention

3.0 Assessment Methodology

3.1 Noise Modelling Methodology

Three dimensional noise modelling has been undertaken based on the monitoring data to predict L_{Aeq} and L_{Amax} noise levels at a large number of locations both horizontally and vertically. CADNA noise modelling software has been used (as shown in Figure 3.1). This model is based on the Department of Transport Calculation of Road Traffic Noise (CRTN) and ISO 9613 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken for large numbers of receptor points and different noise emission scenarios both horizontally and vertically.

Figure 3.1 CADNA Noise Model



The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data, assumptions and model settings as given in the table below have been used.

Table 3.1 Modelling Parameters Sources and Assumptions

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	Ordnance Survey
Ground levels – around site	Ordnance Survey	Ordnance Survey
Ground levels – other areas	Site Observations and Ordnance Survey	OS 1:25,000 contours and OS 1:10,000 spot heights.
Traffic data, main surrounding roads	WYGE	Traffic flows for local roads based on WYGE observations and experience.
Traffic data – local roads	WYGE	Traffic flows for local roads based on WYGE observations and experience.
Building heights – around site	WYGE Observations	8 m height for two storey residential properties, and 4 m for Bungalows
Barrier heights	WYGE Observations	All existing barriers at 1.0 m with the exception of hedges and trees which are assumed to offer no noise protection.
Receptor positions	WYGE	1 m from façade, height of 1.5 m for ground floor, 4.5 m for first floor properties with a 3m increase per storey. 1.5 m height for model grid and monitoring locations for validation.
Reflections	WYGE	First order reflections have been applied based on mirror image sources
Absorbent Ground	CADNA	Frequency dependant ground absorption has been applied based on values specified in VDI 2714/16 clause 6.3.
Façade Correction	CADNA	Façade corrections have been incorporated into the modelling
Gradient	CADNA	Gradient for each road has been calculated from the height information using the 'calc slope of roads' tool
Proposed Plans	Ben Adams Architects	Proposed Plans: 12-007-P199 – P206 Proposed Elevations:12-007-P400 – P401 Proposed Sections: 12-007-P500 – P501

It is acknowledged that a number of these assumptions will affect the overall noise levels presented in this report. However, it should be noted that certain assumptions made, as identified above, are worst case.

3.2 Model Input Data

3.2.1 Traffic Noise Data

All roads expected to make a significant contribution have been included within this assessment. Noise emissions from existing traffic flows have been derived from verification of the measured noise levels along with observations made during the site survey and/or WYG Environment (WYGE) experience of similar road systems. Estimates of the vehicle speeds have been made based upon the speed restrictions currently in force in the area.

3.2.2 Building Services Plant Noise Data

At this stage, the precise locations and specifications of the Building Services Plant (BSP) are not finalised. Therefore point and area sources have been defined in the model to represent potential building services plant associated with air intake louvers, boiler flues, air conditioning units and extraction fans located on the roof of the proposed development. The maximum sound pressure levels of the point sources at 3 metres were estimated in the model as a conditional maximum level that the noise levels at nearby existing receptors were predicted to meet the BS 4142 assessment criteria. Associated plant is thought to include condensers and air handling units located on the roof of the proposed offices, and backup boilers and water pumps located within the ground floor plant room.

3.3 Existing and Proposed Sensitive Receptors (for Plant Noise Assessment)

The closest existing sensitive receptors are residential premises located at 34 - 36 Jamestown Road and the hotel located at 30 Jamestown Road. The table below summarises receptor locations that have been selected to represent worst-case residential receptors with respect to direct noise from the proposed plant. The locations of the receptors are shown on SK02 in Appendix B:

Table 3.2 Existing and Proposed Receptor Locations

Ref.	Description	Co-ordinates		
		Closest Source	Distance to Source	Height (m)
R1	Top Floor of 34-36 Jamestown Road, Southern Façade	Boiler Flues	12	21
R2	Top Floor of 30 Jamestown Road, South-Western Façade	Intake Louvres	15	24
R3	Top Floor of 30 Jamestown Road, Western Façade	Intake Louvres	5	24
R4	Top Floor of 30 Jamestown Road, North-Western Façade	Intake Louvres	18	24
R5	Top Floor of 34-36 Jamestown Road, Northern Façade	Condenser Unit	10	24
PR1	Top Floor of Proposed Development, Southern Façade	Boiler Flues	8	24
PR2	Top Floor of Proposed Development, Southern Façade	Intake Louvres	18	24
PR3	Top Floor of Proposed Development, Eastern Façade	Intake Louvres	2	24
PR4	Top Floor of Proposed Development, Northern Façade	Condenser Unit	5	24

3.4 Model Verification

The model was verified by modelling the monitoring locations for the 'existing' scenario. Worst case daytime and night time L_{Aeq} and night time L_{Amax} scenarios have been verified. The comparison between the monitoring and modelling results are shown in the tables below.

Table 3.3 Modelled vs. Monitored Results $L_{Aeq;\ daytime\ 07:00 – 23:00}$

Location	Monitored L_{Aeq}	Modelled L_{Aeq}	Difference between Monitored and Modelled Results
LT1	65.9	66.1	0.2
LT2	59.7	59.7	0.0
ST1	71.2	71.1	-0.1
ST2	74.3	74.3	0.0
ST3	63.5	63.5	0.0
ST4	61.9	62.2	0.3
ST5	65.2	65.5	0.3

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

Table 3.4 Modelled vs. Monitored Results $L_{Aeq;\ night\text{-}time\ 23:00– 07:00}$

Location	Monitored L_{Aeq}	Modelled L_{Aeq}	Difference between Monitored and Modelled Results
LT1	62.0	62.4	0.4
LT2	58.5	58.5	0.0
ST1	67.6	67.6	0.0
ST2	75.5	75.5	0.0
ST3	62.6	62.6	0.0
ST4	64.5	64.5	0.0
ST5	66.7	66.7	0.0

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

Table 3.5 Modelled vs. Monitored Results $L_{Amax;\ night\text{-}time\ 23:00– 07:00}$

Location	Monitored L_{Amax}	Modelled L_{Amax}	Difference between Monitored and Modelled Results
LT1	83.6	84.2	0.6
LT2	74.6	75.0	0.4
ST1	82.8	89.6	6.8
ST2	92.2	92.2	0.0
ST3	81.4	81.4	0.0
ST4	80.9	80.9	0.0
ST5	88.9	87.3	-1.6

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

The verification points show a divergence between monitored and modelled results of no more than 3 dB with the exception of ST1 night-time (15 minute measurement) which experienced a lower measured noise level (L_{Amax}) than the noise model has calculated, all models are assumed to be suitably verified.

4.0 Noise Survey

A monitoring survey was undertaken to characterise baseline ambient noise levels currently experienced on the site and to establish the relative local background and traffic noise levels.

4.1 Noise Survey Methodology

Equipment used during the survey included:

B&K 2260	Environmental Noise Analyser (WYG1)	s/n	2361273
B&K 4231	Calibrator	s/n	2176211
Rion NL-52	Environmental Noise Analyser (WYG14)	s/n	610212
Rion NL-52	Environmental Noise Analyser (WYG15)	s/n	1221575

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice and no drift was observed. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

A baseline monitoring survey was undertaken at five locations (as specified in the following table and shown in SK01 of Appendix B from Friday 14th June 2013 to Tuesday 18th June 2013. Attended short term measurements were undertaken at five locations during the day, evening, peak and night-time periods with three additional locations being measured unattended over a 95 hour period. The raw data collected from the long term monitoring is available upon request.

Measurements were taken in general accordance with BS 4142:1997 and BS 7445-1:2003. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms^{-1} at all times during the survey with a predominant westerly wind direction.

Table 4.1 Noise Monitoring Locations

Ref	Description	Grid Reference	
		X	Y
LT1	Third floor balcony of 32 Jamestown Road, southern façade	528654.07	183992.58
LT2	Roof of 32 Jamestown Road, northern façade	528633.63	184036.08
ST1	Adjacent to entrance of 32 Jamestown Road	528754.17	184091.89
ST2	Adjacent to 279 Camden High Street	528554.92	183908.75
ST3	Adjacent to 31 Oval Road and entrance of Centric Close	528630.10	184068.65
ST4	Tow path opposite 32 Bewlay House, adjacent to Brunel Building	528664.40	184088.18
ST5	Adjacent to 44 Middle Yar, Camden Lock	528654.07	183992.58

4.2 Noise Survey Results

Existing ambient noise levels around the site are dominated by traffic noise from Jamestown Road and noise from the nearby Camden Lock market during the daytime. During the evening and night-time periods noise from music and patrons of nearby pubs and clubs was observed to the north and east of the site, and along Jamestown Road. Noise levels along Camden High Street were dominated by road traffic noise and various sources of music during the daytime, with noise dominated by pedestrians and road traffic during the evening and night-time periods. Distant noise from railway lines to the west and north of the site was also identified during the attended survey.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period).

The results of the statistical measurements and frequency measurements conducted during the survey are summarised in the following table. All values are sound pressure levels in dB (re: 2 x 10^{-5} Pa).

Table 4.2 Results of Baseline Noise Monitoring Survey (Average Levels)

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Weekday Daytime 07:00 - 23:00	31 Hours	14/06/2013 - 18/06/2013 07:00 - 23:00	LT1	65.9	88.6	46.9	69.0	55.9
Weekday Night-time 23:00 – 07:00	16 Hours	14/06/2013 - 18/06/2013 23:00 - 07:00		60.9	83.6	43.8	60.9	49.3
Weekend Daytime 07:00 - 23:00	32 Hours	15/06/2013 - 16/06/2013 07:00 - 23:00		64.8	84.8	45.9	67.9	53.8
Weekend Night-time 23:00 – 07:00	16 Hours	15/06/2013 - 16/06/2013 23:00 - 07:00		62.0	82.6	43.7	62.6	50.3
Weekday Daytime 07:00 - 23:00	30 Hours	14/06/2013 - 18/06/2013 07:00 - 23:00	LT2	58.8	79.8	50.5	59.7	56.0
Weekday Night-time 23:00 – 07:00	16 Hours	14/06/2013 - 18/06/2013 23:00 - 07:00		55.5	74.6	48.2	56.1	52.9
Weekend Daytime 07:00 - 23:00	32 Hours	15/06/2013 - 16/06/2013 07:00 - 23:00		59.7	75.8	49.2	60.4	56.9
Weekend Night-time 23:00 – 07:00	16 Hours	15/06/2013 - 16/06/2013 23:00 - 07:00		58.5	73.3	48.1	58.3	54.7
Day 07:00 - 19:00	15 Mins	14/06/2013 16:01	ST1	71.2	91.4	52.0	74.5	57.5
	15 Mins	14/06/2013 16:19	ST2	74.3	95.6	62.1	76.6	66.6
	15 Mins	18/06/2013 13:50	ST3	63.5	78.3	43.5	67.6	49.1
	15 Mins	14/06/2013 16:50	ST4	61.9	81.4	54.0	64.3	56.7
	15 Mins	14/06/2013 17:11	ST5	65.2	79.5	60.1	67.0	62.5

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Peak 17:00 – 18:00	10 Mins	14/06/2013 17:41	ST1	70.1	84.0	52.0	74.5	56.1
	10 Mins	14/06/2013 17:28	ST2	73.9	90.9	61.4	76.4	66.2
	10 Mins	14/06/2013 17:55	ST3	65.2	79.7	48.4	69.1	53.3
	10 Mins	14/06/2013 18:09	ST4	62.3	82.3	54.3	65.3	57.1
	10 Mins	14/06/2013 18:22	ST5	69.3	90.1	59.7	71.4	63.4
Evening 19:00 - 23:00	15 Mins	14/06/2013 21:51	ST1	63.2	78.8	52.5	67.1	55.7
	15 Mins	14/06/2013 22:09	ST2	72.7	88.4	60.1	76.1	64.7
	15 Mins	14/06/2013 21:33	ST3	63.5	78.5	45.1	67.7	48.3
	15 Mins	14/06/2013 22:46	ST4	64.3	78.4	58.0	66.2	61.6
	15 Mins	14/06/2013 22:26	ST5	65.0	76.1	60.0	66.8	62.7
Night 23:00 - 07:00	15 Mins	14/06/2013 23:56	ST1	63.9	82.8	50.2	67.1	52.9
	15 Mins	14/06/2013 23:38	ST2	75.5	92.2	60.7	78.4	66.5
	15 Mins	15/06/2013 00:20	ST3	62.6	81.4	44.8	65.9	46.7
	15 Mins	14/06/2013 23:02	ST4	64.5	80.9	58.6	66.2	62.0
	15 Mins	14/06/2013 23:19	ST5	66.7	88.9	59.5	68.6	62.8

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

5.0 Assessment of Key Effects

5.1 Noise Intrusion Assessment

5.1.1 Noise Intrusion $L_{Aeq\ Daytime\ and\ Night\text{-}Time}$ and L_{Amax} Glazing Recommendations

Internal noise levels, at all the office and residential bedrooms/living spaces of the proposed development, based on the existing ambient noise climate, have been assessed both with windows open, where a reduction from a partially open window of 15 dB has been used, and with windows closed where an assumption of a glazing with a sound reduction of 30 dB has been used unless stated otherwise.

Where the relevant internal ambient noise level criteria are not met with standard double glazing (sound reduction 30 dB) then higher glazing specifications have been recommended (bold text) accordingly in Table 5.1. Receptor location plans for the floors are shown within SK05 – SK08 of Appendix B.

The glazing and ventilation strategy has been designed to achieve WHO/BS 8233 internal L_{Aeq} daytime noise level criteria of 35 dB and internal night-time L_{Aeq} 'good' noise level criteria (30 dB) with windows closed within residential spaces and the internal L_{Aeq} daytime noise level criteria of 45 dB for open plan offices. The glazing recommendations would also meet the L_{Amax} criteria of 45 dB with windows closed.

Table 5.1 Noise Intrusion Levels L_{Aeq} and L_{Amax}

Location	Daytime External L_{Aeq}	Night-Time External L_{Aeq}	External L_{Amax}	Recommended Glazing Specification (SRI) to Achieve 35 dB L_{Aeq} day, 30 dB L_{Aeq} night and L_{Amax} 45 dB	Alternative Ventilation Required?
Ground Floor 1	70.8	N/A	N/A	30.0	**Yes**
Ground Floor 2	52.8	N/A	N/A	30.0	**Yes**
Ground Floor 3	53.1	N/A	N/A	30.0	**Yes**
Ground Floor 4	52.7	N/A	N/A	30.0	**Yes**
Ground Floor 5	52.0	N/A	N/A	30.0	**Yes**
First Floor 1	69.6	N/A	N/A	30.0	**Yes**
First Floor 2	69.4	N/A	N/A	30.0	**Yes**
First Floor 3	69.3	N/A	N/A	30.0	**Yes**
First Floor 4	54.5	N/A	N/A	30.0	**Yes**
First Floor 5	53.6	N/A	N/A	30.0	**Yes**
First Floor 6	52.9	N/A	N/A	30.0	**Yes**
First Floor 7	52.1	N/A	N/A	30.0	**Yes**
Second Floor 1	68.4	N/A	N/A	30.0	**Yes**
Second Floor 2	68.1	N/A	N/A	30.0	**Yes**
Second Floor 3	68.1	N/A	N/A	30.0	**Yes**
Second Floor4	54.8	N/A	N/A	30.0	**Yes**
Second Floor 5	53.9	N/A	N/A	30.0	**Yes**
Second Floor 6	53.1	N/A	N/A	30.0	**Yes**
Second Floor 7	52.3	N/A	N/A	30.0	**Yes**
Third Floor 1	67.3	N/A	N/A	30.0	**Yes**
Third Floor 2	67.0	N/A	N/A	30.0	**Yes**
Third Floor 3	67.0	N/A	N/A	30.0	**Yes**
Third Floor 4	55.2	N/A	N/A	30.0	**Yes**
Third Floor 5	54.2	N/A	N/A	30.0	**Yes**
Third Floor 6	53.5	N/A	N/A	30.0	**Yes**
Third Floor 7	52.9	N/A	N/A	30.0	**Yes**
Fourth Floor 1	56.7	N/A	N/A	30.0	**Yes**
Fourth Floor 2	58.3	N/A	N/A	30.0	**Yes**
Fourth Floor 3	59.3	N/A	N/A	30.0	**Yes**
Fourth Floor 4	50.1	54.9	67.4	30.0	**Yes**
Fourth Floor 5	51.0	55.4	68.3	30.0	**Yes**
Fourth Floor 6	50.4	54.7	69.7	30.0	**Yes**
Fourth Floor 7	50.0	54.1	69.1	30.0	**Yes**
Fourth Floor 8	49.2	53.6	69.1	30.0	**Yes**
Fifth Floor 1	56.7	57.4	69.0	30.0	**Yes**
Fifth Floor 2	57.6	56.2	75.2	**31.0**	**Yes**
Fifth Floor 3	57.9	55.9	76.1	**32.0**	**Yes**
Fifth Floor 4	58.0	55.9	76.4	**32.0**	**Yes**
Fifth Floor 5	57.5	55.6	76.0	**31.0**	**Yes**
Fifth Floor 6	54.1	56.4	69.2	30.0	**Yes**
Fifth Floor 7	55.3	57.0	69.8	30.0	**Yes**
Fifth Floor 8	56.9	57.9	70.3	30.0	**Yes**
Fifth Floor 9	54.8	56.5	71.0	30.0	**Yes**
Fifth Floor 10	52.3	55.3	71.0	30.0	**Yes**
Fifth Floor 11	51.9	55.1	71.4	30.0	**Yes**

Four bedrooms/living spaces on the fifth floor will require improved glazing and all areas require an alternative means of ventilation in order to meet both ventilation and internal ambient noise criteria.

Alternative ventilation can be provided in several ways from acoustic trickle vents (which need to have the same acoustic performance as the glazing), other passive ventilation systems or mechanical ventilations systems.

5.2 Building Services Plant Noise Assessment

This assessment has been undertaken in order to establish the maximum external plant noise levels for the proposed development. The calculations are based on the potential location of the plant as shown in drawing no. CS-05-001 dated 17 June 2013, and the resulting noise levels will therefore change should this not be the final location of the plant or if alternative mitigation is added. The assessment compares the predicted average noise levels from proposed building service plant (BSP) noise, with the measured background noise L_{A90} at the surrounding proposed and existing residential receptors (worst case façade direction and floors were selected). As the proposed plant noise may contain a 'distinguishable hum', a 5 dB acoustic feature correction (specified in 8.2 of BS 4142) has been added to create the Plant 'Rating Level at Receptor'.

A series of predictions were made by defining different sound power levels at the point and area sources. When the sound pressure levels are set as shown in Table 5.2, the noise rating levels are 5 dB below the background levels at all existing representative residential receptor locations during daytime and night-time as shown in Table 5.3.

Table 5.2 Proposed Emission Limits for BSP as Modelled

BSP Location	Sound Pressure Level at 3 metres from BSP	
	Daytime Emission Limit (dB(A)	Night-time Emission Limit (dB(A)
Proposed Condenser Unit, North West of Building	58.0	55.5
Toilet Extract Fan, West of Building	60.0	60.0
Boiler Flue Termination, South West of Building	52.0	52.0
Air Intake Louvres, East of Building	46.0	43.0

Table 5.3 BS 4142 Assessment for Proposed Building Services Plant

Ref	Existing Background L_{A90}		Noise rating level from plant (with +5 dB Correction)		BS 4142 Score	
	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
R1	55.9	49.3	32.6	32.3	-23.3	-17.0
R2	55.9	49.3	35.5	34.5	-20.4	-14.8
R3	56.0	52.9	44.2	41.6	-11.8	-11.3
R4	56.0	52.9	38.4	37.1	-17.6	-15.8
R5	56.0	52.9	45.9	43.8	-10.1	-9.1
PR1	55.9	49.3	39.2	38.9	-16.7	-10.4
PR2	55.9	49.3	34.2	33.7	-21.7	-15.6
PR3	56.0	52.9	51.0	47.9	-5.0	-5.0
PR4	56.0	52.9	50.0	47.9	-6.0	-5.0

All values are sound pressure levels in dBA re: 2x 10^{-5} Pa.

6.0 Conclusions

NPPF 123 A & B

In considering the NPPF test in section 123, points A & B, the proposed development is not expected to have an 'adverse impact' on health or quality of life. Similarly, with regard to NPPF (123) point B, it is considered that all 'adverse impacts on health and quality of life' (relating to noise) are mitigated by the use of the following mitigation.

Glazing and Ventilation Strategy

A glazing and ventilation strategy has been provided which achieves both ventilation and internal ambient noise level requirements of $L_{Aeq\ daytime}$ 35 dB, $L_{Aeq\ night\text{-}time}$ of 30 dB and $L_{Amax\ night\text{-}time}$ of 45 dB in all residential bedroom/spaces and internal L_{Aeq} daytime noise level criteria of 45 dB for open plan offices of the proposed development. The suggested glazing specifications are understood to achievable.

Plant Noise Assessment

A building service plant noise assessment has recommended noise emission limits with the aim of achieving a plant noise rating level at neighbouring residential properties of at least 5 dB below the existing background noise levels.

NPPF 123 C & D

Given that nearby the site is surrounded by similarly sensitive residential and commercial properties to the east and west, it is not considered that existing businesses wanting to develop would be particularly restricted by the introduction of the new sensitive use of the proposed development.

The development is situated in a CPRE Zone 1 area of tranquillity (Zone 10 being the most tranquil and Zone 1 being the least tranquil), as such NPPF 123 point D is not considered to apply to this site.

Appendices

Appendix A – Acoustic Terminology and Abbreviations

Acoustic Terminology

dB — Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A) — Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.

L_{Aeq} — Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq,\ 07:00 - 23:00}$ for example, describes the equivalent continuous noise level over the 12 hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower that the $L_{Aeq,\ 07:00 - 23:00}$.

L_{Amin} — The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.

L_{Amax} — The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.

L_n — Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say. 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10,\ 1\ hr}$ = x dB.

The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.

R_w — The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Abbreviations

CADNA – Computer Aided Noise Abatement

DMRB – Design Manual for Roads and Bridges

HGV – Heavy Goods Vehicle

PPG24 – Planning Policy Guidance

UDP – Unitary Development Plan

UKAS – United Kingdom Accreditation Service

WYGE – WYG Environment

Appendix B – Sketches

SK01 Noise Monitoring Locations

SK02 Building Services Plant Assessment Receptor Locations

SK03 Daytime $L_{Aeq,16hr}$

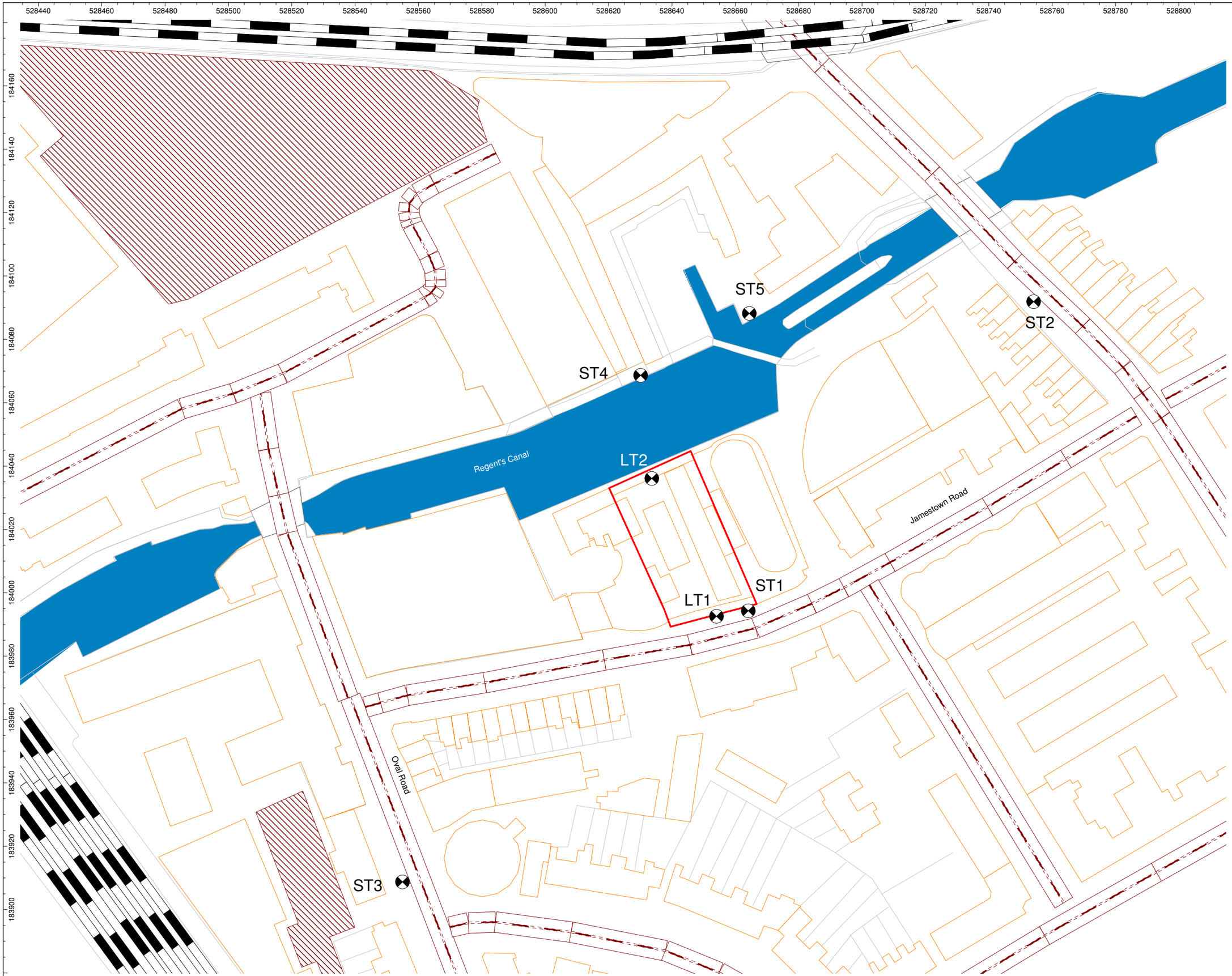
SK04 Night-time $L_{Aeq,8hr}$

SK05 Ground Floor Noise Intrusion Receptor Locations

SK06 1st Floor – 3rd Floor Noise Intrusion Receptor Locations

SK07 4th Floor Noise Intrusion Receptor Locations

SK08 5th Floor Noise Intrusion Receptor Locations



Client:
London & Regional (Bewlay House) Ltd.

Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Noise Monitoring Locations

Drawing Number:
SK01

Scale : Not to scale

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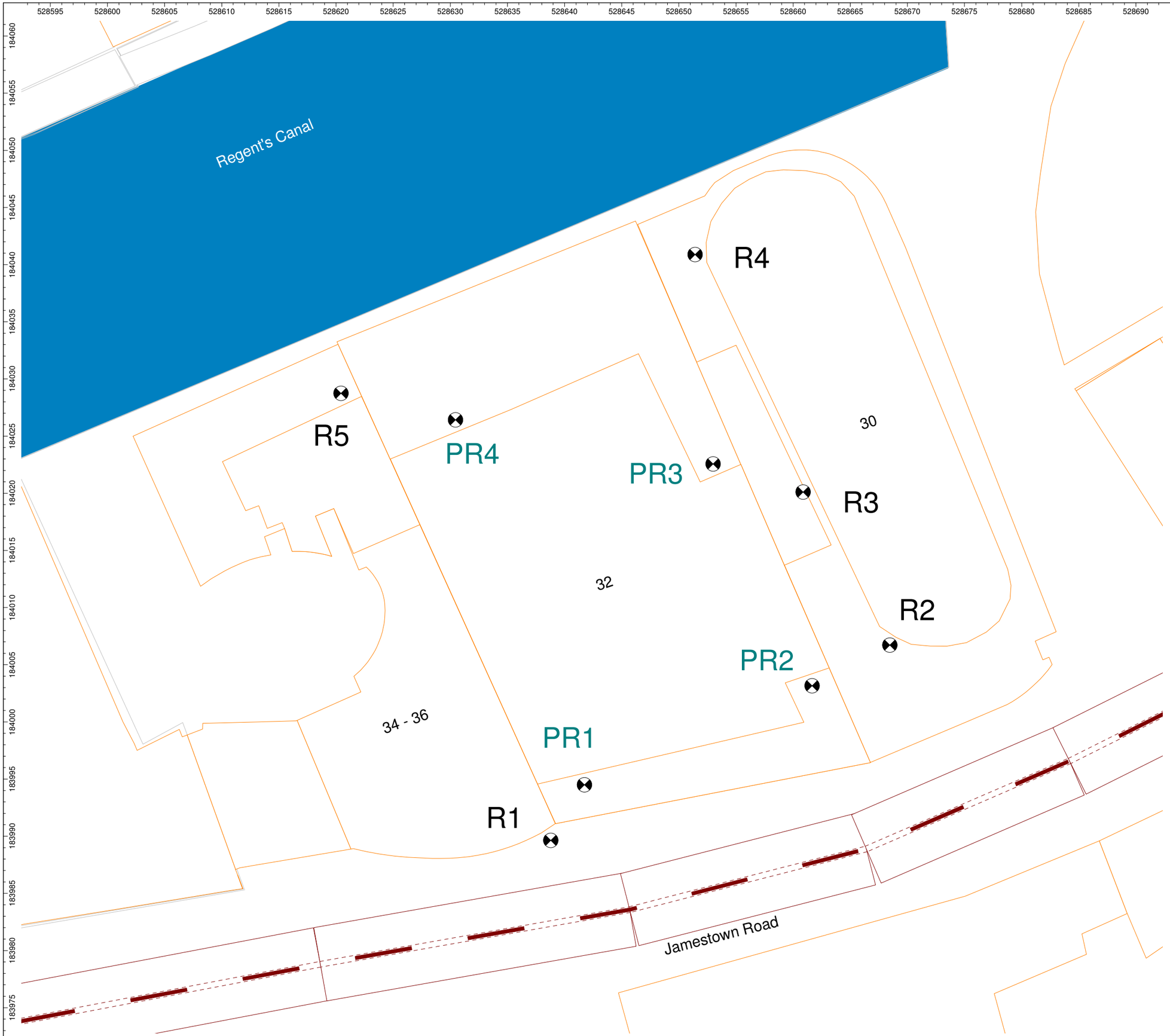
Executive Park
Avalon Way
Anstey
Leicestershire
LE7 7GR
Tel 0116 234 8000



Client:
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Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
BSP Assessment Sensitive Receptor Locations

Drawing Number:
SK02

Scale : Not to scale

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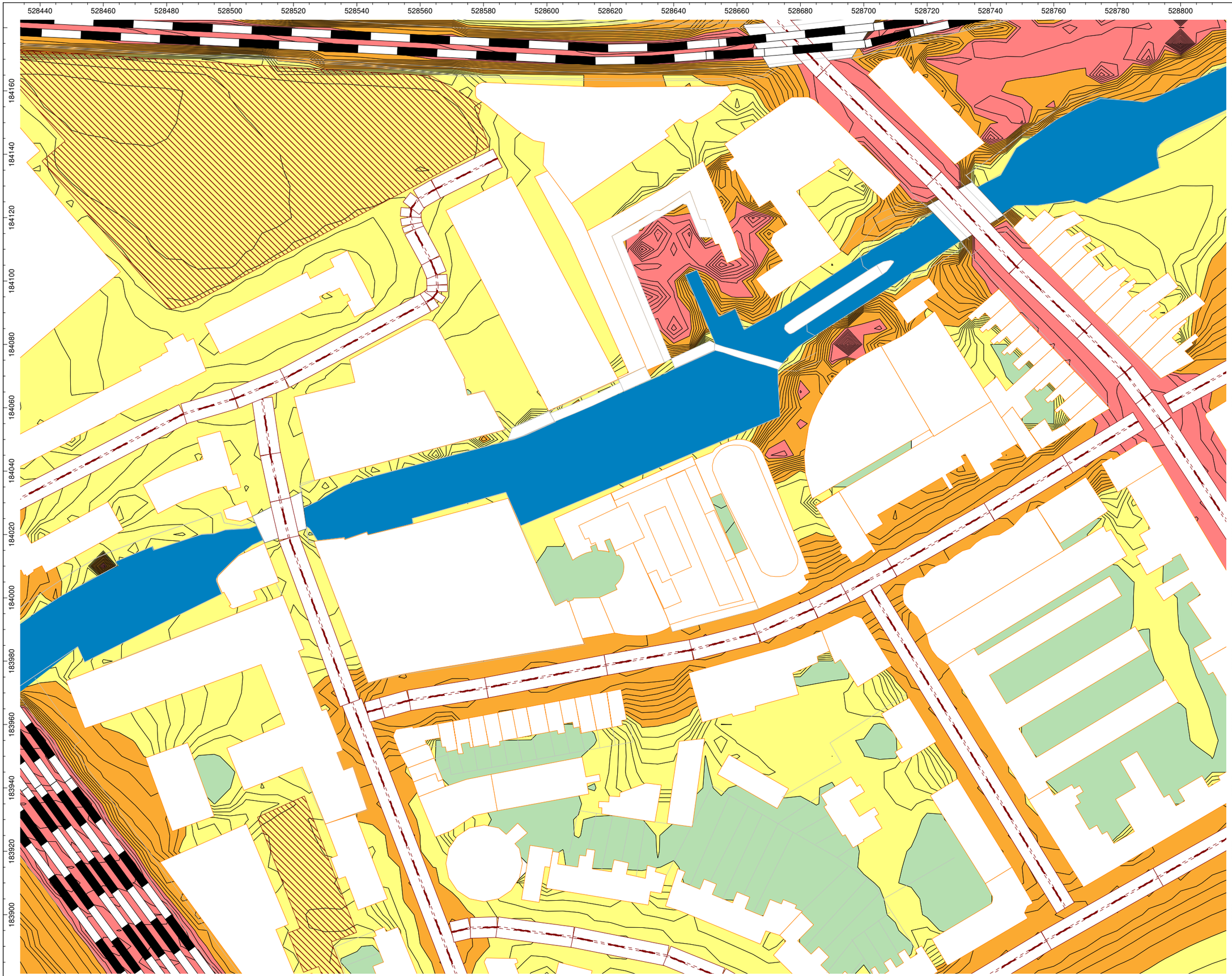

Client:
London & Regional (Bewlay House) Ltd.

Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Daytime LAeq 16hr

Drawing Number:
SK03

Key:

- 0.0 - 55.0 dB
- 55.0 - 63.0 dB
- 63.0 - 72.0 dB
- 72.0 - 90.0 dB

Scale : Not to scale

Please note: Noise contour plots are for illustrative purposes only

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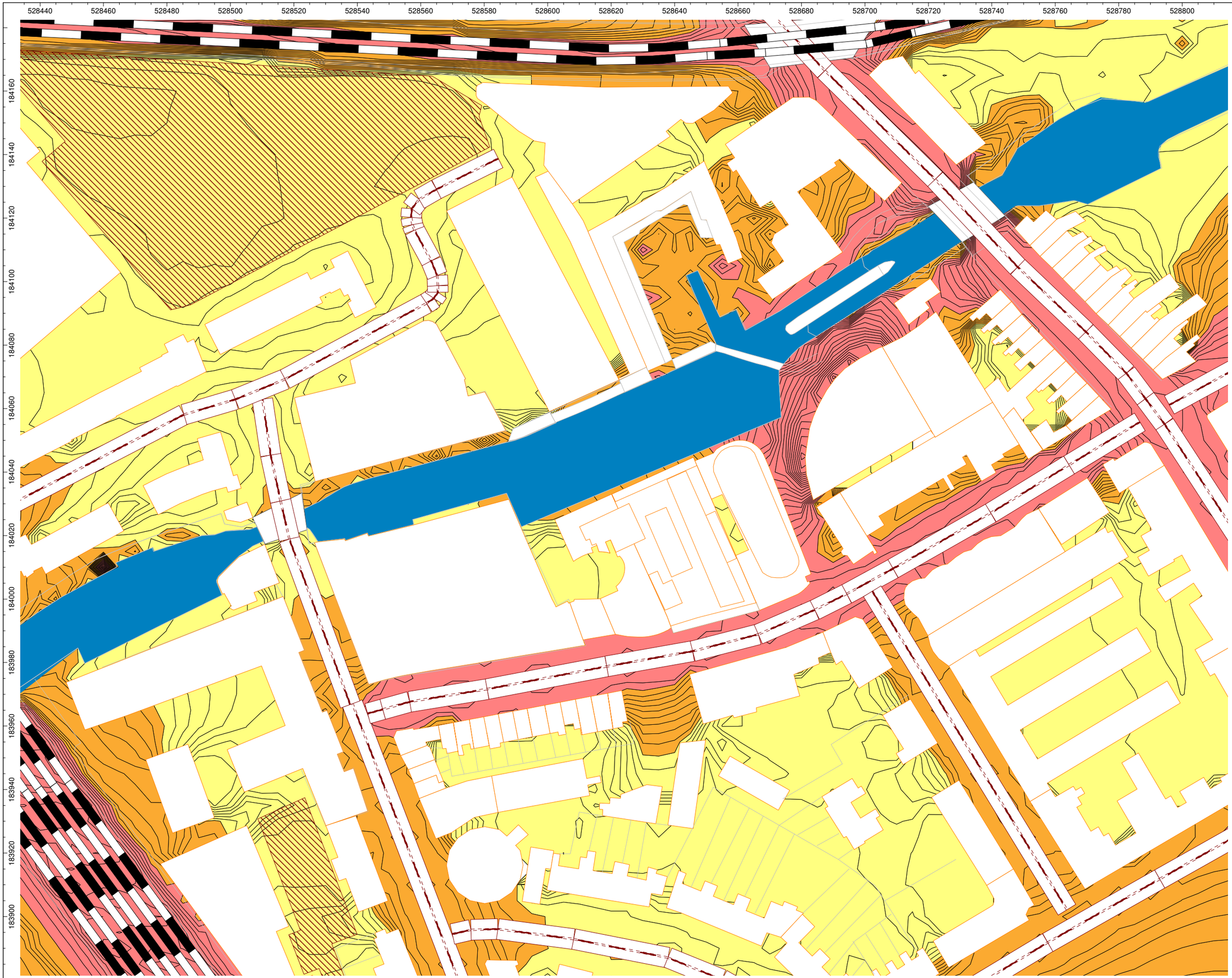

Client:
London & Regional (Bewlay House) Ltd.

Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Night-time LAeq 8hr

Drawing Number:
SK04

Key:

- 0.0 - 45 dB
- 45.0 - 57.0 dB
- 57.0 - 66.0 dB
- 66.0 - 90.0 dB

Scale : Not to scale

Please note: Noise contour plots are for illustrative purposes only

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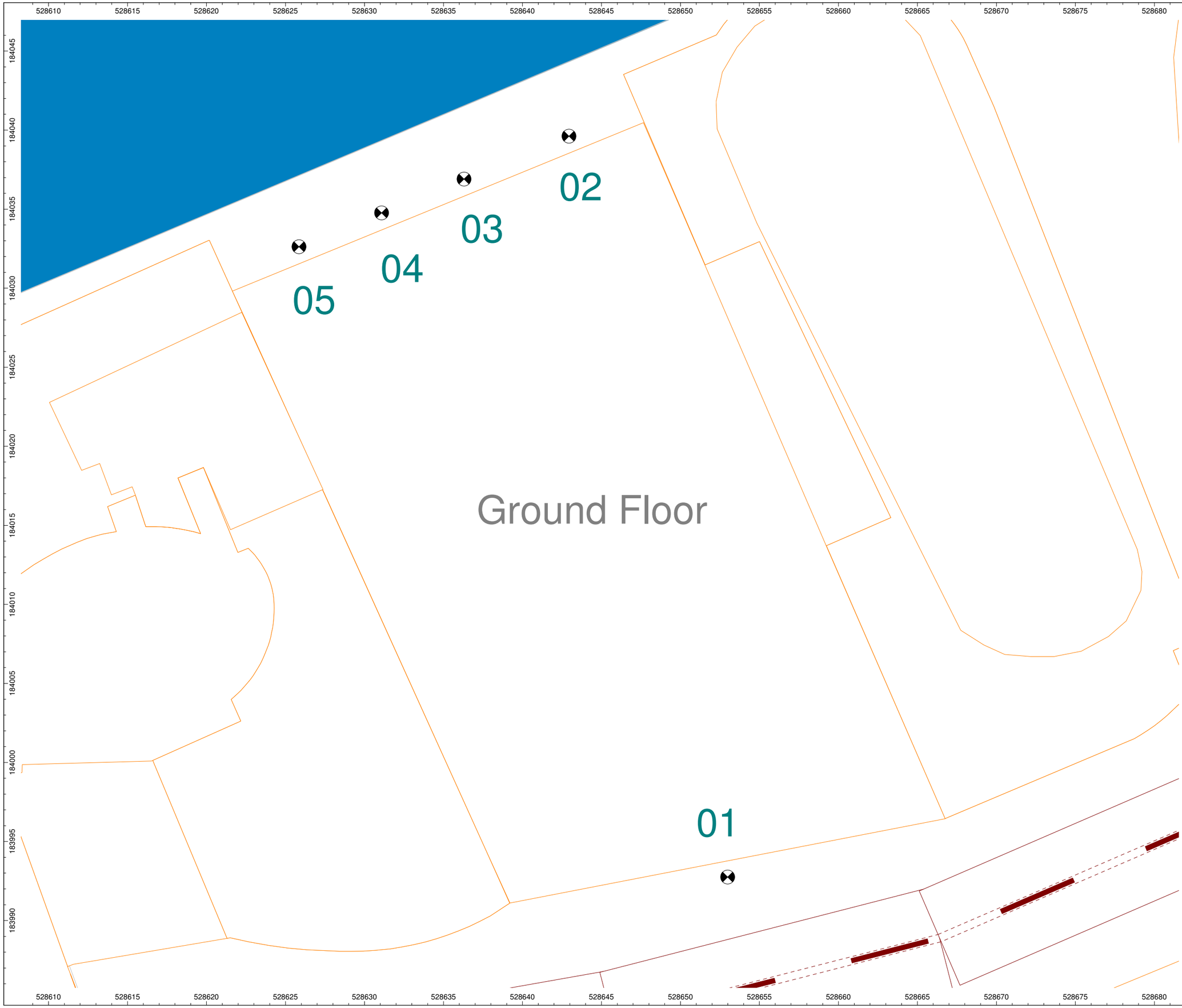
LE7 7GR
Tel 0116 234 8000



Client:
London & Regional (Bewlay House) Ltd.

Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Ground Floor Receptor Locations

Drawing Number:
SK05

Scale : Not to scale

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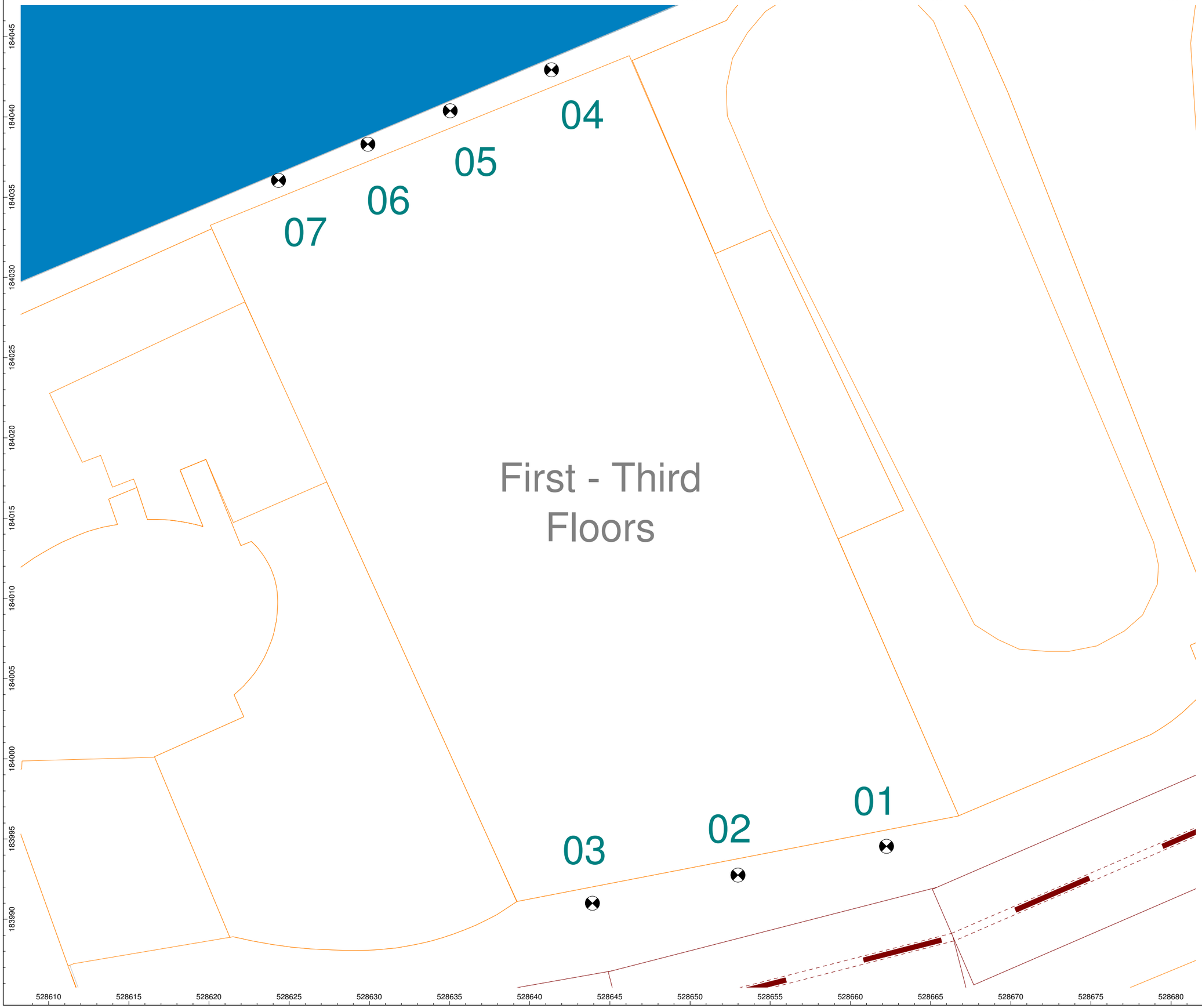

Client:
London & Regional (Bewlay House) Ltd.

Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
First - Third Floor Receptor Locations

Drawing Number:
SK06

Scale : Not to scale

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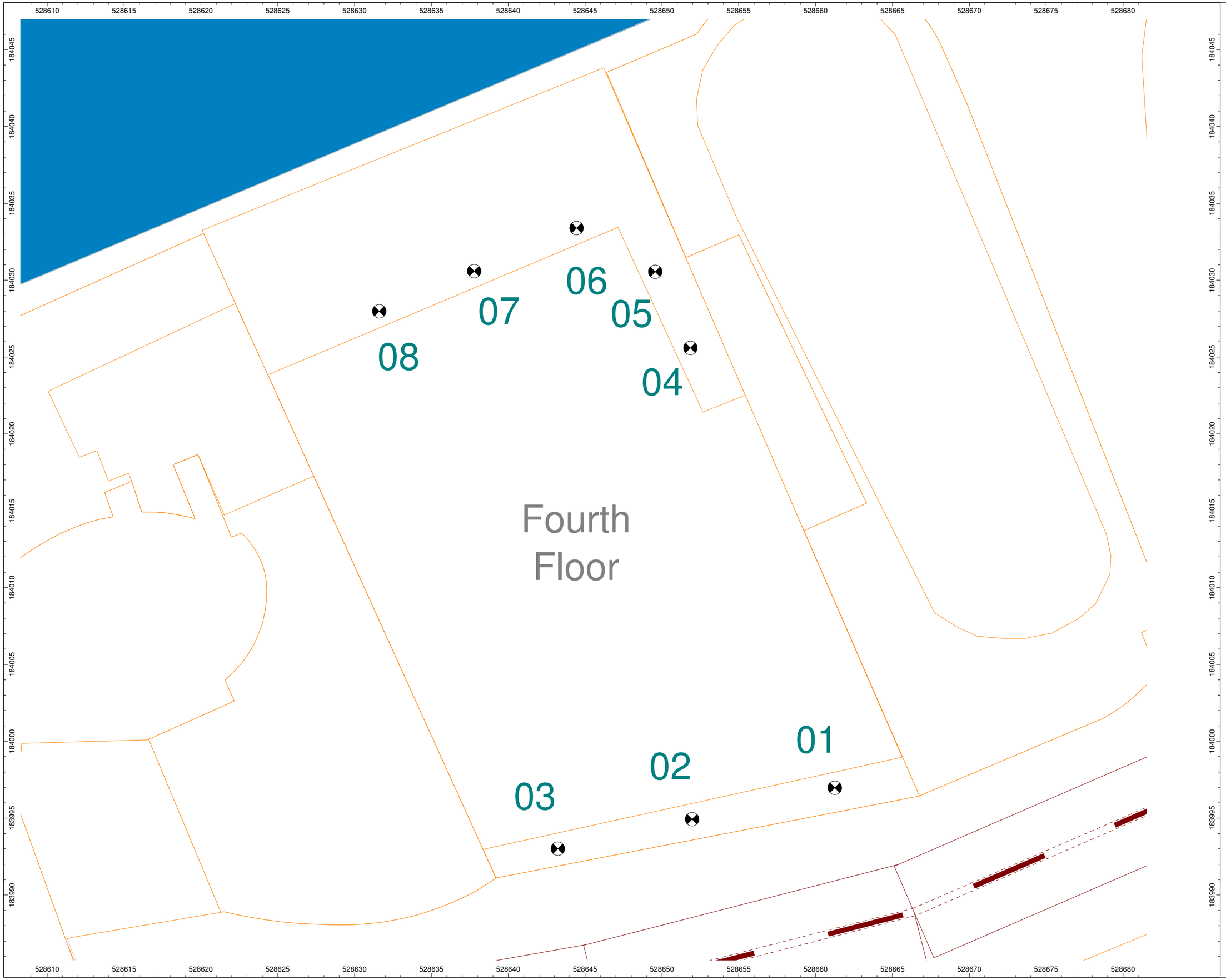

Client:
London & Regional
(Bewlay House) Ltd.

Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Fourth Floor
Receptor Locations

Drawing Number:
SK07

Scale : Not to scale

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Licence Number AL 553611

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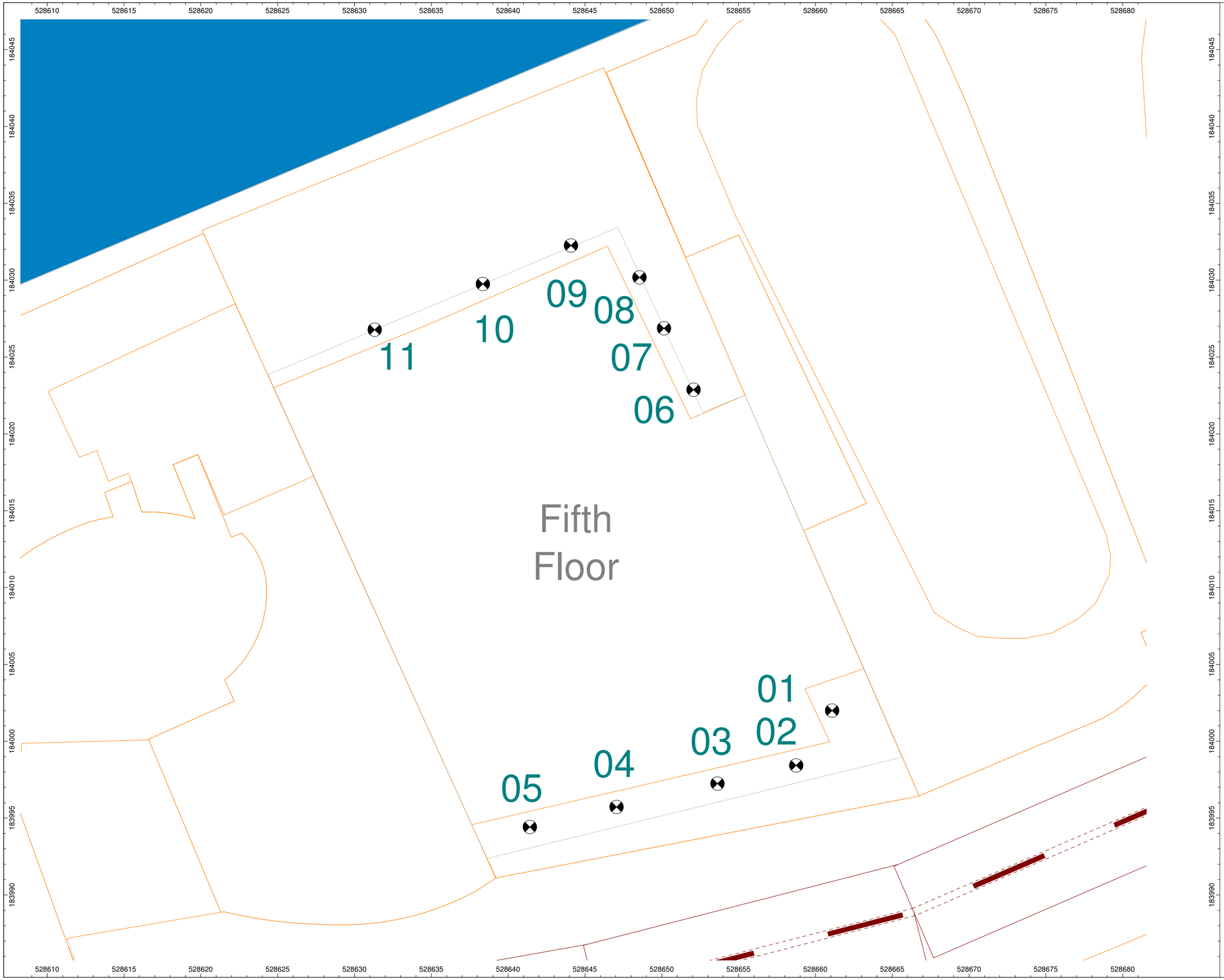

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London & Regional
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Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Fifth Floor
Receptor Locations

Drawing Number:
SK08

Scale : Not to scale

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