

Charles Street

Environmental Statement Volume 2: Technical Appendices;

1 of 2



Appendix 5.1: Demolition and Construction Dust Assessment

Dust Assessment Methodology

Reporting of the Environmental Effect and Significance Criteria

The Institute of Air Quality Management (IAQM) methodology within their guidance, *Guidance on the assessment of dust from demolition and construction*, has been used for assessing dust from construction activities for the Proposed Scheme. The potential for dust emissions from demolition, earthworks, construction and trackout activities has been assessed in terms of annoyance, risk to human health and harm to ecological receptors.

Determining Sensitivity of Receptor

Criteria to identify the sensitivity of receptors in the Study Area are provided in the IAQM guidance, as shown in **Table A5.1**, and have been used within the assessment. The sensitivity of affected receptors has been considered on a scale of **high**, **medium**, or **low**. Negligible sensitivity receptors are not outlined within the IAQM guidance. Negligible sensitivity receptors have not been considered in the assessment of dust associated with construction and decommissioning phase impacts as they are receptors of limited or no importance.

Table A5.1: Defining Sensitivity of Receptor (Construction Dust)

Sensitivity of Receptor	Dust Soiling	Health Effects
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM10
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets

Table A5.2 and **Table A5.3** were then used to define the sensitivity of the area to dust soiling and human health effects. This should be derived from demolition, construction, earthworks and trackout activities.

Table A5.2: Sensitivity of the Area to Dust Soiling Effects on People and Property.

Receptor Sensitivity	Number of Receptors	Distance from Source (m)*			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

**distances considered are to the dust source*

Table A5.3: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Determining the Magnitude of Change

In accordance with the IAQM guidance, construction activities have been divided into four types of activity; demolition, earthworks, construction and trackout of material onto local roads. **Table A5.4** provides the criteria to be used in the determination of dust emission magnitude for each activity. The magnitude of change has been considered as the change experienced from the baseline conditions at the sensitive receptor and has been considered on a scale of **large, medium or small**.

Table A5.4: Defining Magnitude of Change

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	Total building volume <12,000 m ³ , construction materials with low potential for dust release.	Total building volume 12,000 m ³ – 75,000 m ³ , potential dusty construction material.	Total building volume >75,000 m ³ , potentially dusty construction material.
Earthworks	Total site area <18,00m ² , soil type with large grain	Total site area 18,000 – 110,000m ² , moderately dusty soil type	Total site area >110,000m ² , potentially dusty soil type
Construction	Total building volume <12,000m ³ .	Total building volume 12,000 – 75,000m ³ .	Total building volume >75,000m ³ .
Trackout	<20 outward HDV trips in any one day. Unpaved road length <50m.	20-50 outward HDV trips in any one day. Unpaved road length 50-100m.	>50 outward HDV trips in any one day. Unpaved road length >100m.

Determining the level of effect

The level of effect has been assessed based on the magnitude of change (dust emission magnitude) from **Table A5.4** and sensitivity of the area and receptors (shown in **Tables A5.2 and A5.3**), and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before secondary mitigation is applied. The level of effect has been determined using the criteria detailed in **Tables A5.5 to A5.8**. In terms of magnitude, the IAQM guidance refers to major as ‘high’, moderate as ‘medium’ and minor as ‘low’; the modification to the IAQM terminology is to ensure consistency throughout the EIA.

Table A5.5: Risk of Dust Impacts – Demolition

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	Major	Moderate	Minor
Medium	Major	Moderate	Minor
Low	Moderate	Minor	Negligible

Table A5.6: Risk of Dust Impacts- Earthworks

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	Major	Moderate	Minor
Medium	Moderate	Moderate	Minor
Low	Minor	Minor	Negligible

Table A5.7: Risk of Dust Impacts- Construction

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	Major	Moderate	Minor
Medium	Moderate	Moderate	Minor
Low	Minor	Minor	Negligible

Table A5.8: Risk of Dust Impacts - Trackout

Potential Impact Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
High	Major	Moderate	Minor
Medium	Moderate	Minor	Minor
Low	Minor	Minor	Negligible

The overall risk of dust impacts has been summarised in a table. An example of a completed risk table is shown in the following **Table A5.9**. In terms of risk, the IAQM guidance refers to major as 'high', moderate as 'medium and minor as 'low', the modification to the IAQM terminology is to ensure consistency throughout the EIA.

Table A5.9: Risk of Dust Impacts

Potential Impact	Dust Risk		
	Earthworks	Construction	Trackout
Dust Soiling	Moderate risk	Moderate risk	Moderate risk
Human Health	Minor risk	Minor risk	Minor risk
Ecological	Negligible	Negligible	Negligible

The dust risk categories for each of the activities assessed have been used to define the appropriate, site-specific, mitigation measures to be adopted. Moderate and Major risk activities will generally be defined as “**significant**” impacts, although professional judgement has been applied.

Demolition and Construction Dust Assessment

The site boundary is within 250m of human receptors. Additionally, there are human receptors within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance. Therefore, a detailed assessment of the construction phase of the development on residential receptors has been undertaken. Demolition is not required at the Site.

Dust Emission Magnitude

The scale and nature of works onsite were considered to determine the potential dust emission magnitude for demolition, construction, earthworks and trackout activities as outlined in **Table A5.10**.

Table A5.10: Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	Justification
Construction	Medium	The total building volume to be constructed is between 12,000 m³ - 75,000 m³
Earthworks	Small	The total site area is less than 18,000 m²
Trackout	Small	There are likely to be below 20 HDV outward movements in any one day

Sensitivity of the Receptors to Dust Soiling and Health Effects

The sensitivity of all receptors in relation to health effects is considered to be High as there are a children's nursery and residential apartments within 20 m of the Site.

The sensitivity of the area to dust soiling effects has been determined using the criteria detailed in **Table A5.2**.

- Construction - sensitivity is considered to be High as construction activities take place less than 20 m of over 100 high sensitivity receptors;
- Earthworks - sensitivity is considered to be High as earthworks activities take place less than 20 m of over 100 high sensitivity receptors; and
- Trackout activities – sensitivity is considered to be High as there are over 100 high sensitivity receptors within 20 metres of roads which relevant vehicles are likely to use that are up to 500 metres from the site

Based on nearby monitoring and Defra background maps, the PM₁₀ concentrations are likely to be less than 24 µg/m³ during construction.

Using this information and **Table A5.3** the sensitivity of human receptors to health impacts from dust and PM₁₀ for each activity were defined as:

- Construction - sensitivity is considered to be Medium as construction activities take place less than 20 m from over 100 high sensitivity receptors and the background PM₁₀ concentration is expected to be less than 24 µg/m³;

- Earthworks - sensitivity is considered to be Medium as earthworks activities take place less than 20 m from over 100 high sensitivity receptors and the background PM₁₀ concentration is expected to be less than 24 µg/m³;
- Trackout activities – sensitivity is considered to be Medium as there are over 100 high sensitivity receptors within 20 metres of roads which relevant vehicles are likely to use that are up to 500 metres from the site, and the background PM₁₀ concentration is expected to be less than 24 µg/m³.

The sensitivity of the area to dust soiling and human health in each activity, before mitigation measures are applied, is summarised in **Table A5.11**.

Table A5.11: Outcome of Defining the Sensitivity of the Area

Potential Impact	Dust Risk		
	Earthworks	Construction	Trackout
Dust Soiling	High	High	High
Human Health	Medium	Medium	Medium

A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table A5.12**.

Table A5.12 Risk of Dust Impacts

Potential Impact	Dust Risk		
	Earthworks	Construction	Trackout
Dust Soiling	Minor Adverse	Moderate Adverse	Minor Adverse
Human Health	Minor Adverse	Moderate Adverse	Negligible Adverse

Demolition and Construction Dust Mitigation

Mitigation measures are provided in **Table A5.13 – Table A5.15**. Within **Table A5.13 – Table A5.15** ‘xx’ in the stands for highly recommended and ‘x’ stands for desirable. There are no specific mitigation measures for earthworks because the risk is considered minor.

Table A5.13 Measures relevant for earthworks, construction and trackout

Mitigation Measure	Moderate Risk
Communications	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	xx
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	xx
Display the head or regional office contact information.	xx
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. In London additional measures may be required to ensure compliance with the Mayor of London’s guidance. The DMP may include monitoring of dust deposition, dust flux, realtime PM ₁₀ continuous monitoring and/or visual inspections.	xx
Site management	
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	xx
Make the complaints log available to the local authority when asked.	xx
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.	xx
Monitoring	
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.	x
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.	xx
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	xx

Agree dust deposition, dust flux, or real-time PM ₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	XX
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Preparing and maintaining the site

Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	XX
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Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	XX
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Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	XX
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Avoid site runoff of water or mud.	XX
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Keep site fencing, barriers and scaffolding clean using wet methods.	XX
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Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	XX
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Cover, seed or fence stockpiles to prevent wind whipping.	XX
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Operating vehicle/machinery and sustainable travel

Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.	XX
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Ensure all vehicles switch off engines when stationary - no idling vehicles.	XX
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Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	XX
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Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	X
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Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	XX
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Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	X
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Operations

Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	XX
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Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	XX
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Use enclosed chutes and conveyors and covered skips.	XX
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Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	XX
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Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	xx
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Waste management

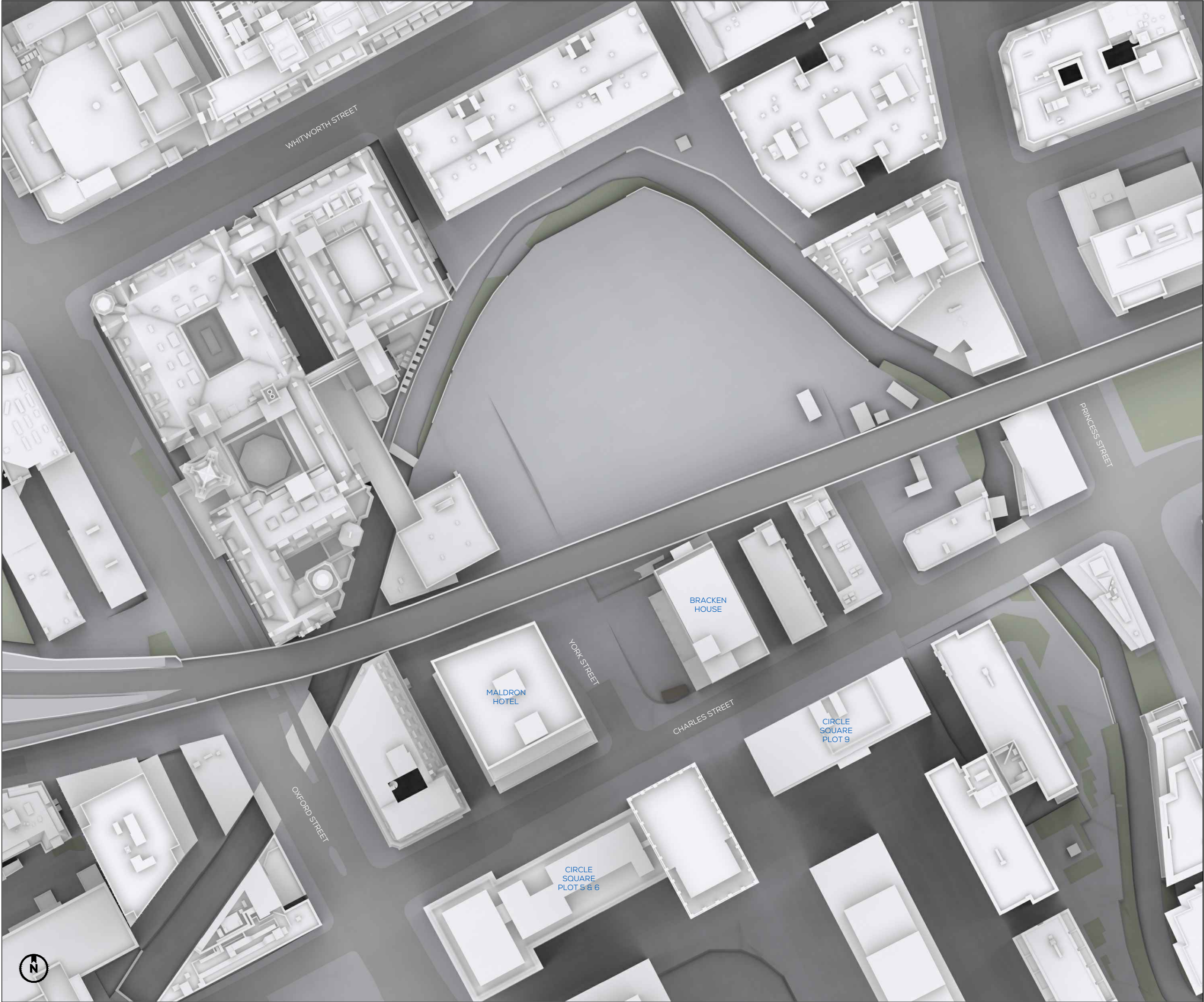
Avoid bonfires and burning of waste materials.	xx
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Table A5.14 Measures specific to construction

<i>Mitigation Measure</i>	<i>Moderate Risk</i>
Avoid scabbling (roughening of concrete surfaces) if possible.	x
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	xx
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	x
For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	x

Table A5.15 Measures specific to trackout

<i>Mitigation Measure</i>	<i>Minor Risk</i>
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	x
Avoid dry sweeping of large areas.	x
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	x
Record all inspections of haul routes and any subsequent action in a site log book.	x
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	x



SOURCES OF INFORMATION

IR03-20230913-Research
IR07-20231013-Vucity Tiles
IR09-20231106-SH-Frozen Scheme
IR10-20231109-SH Frozen Scheme
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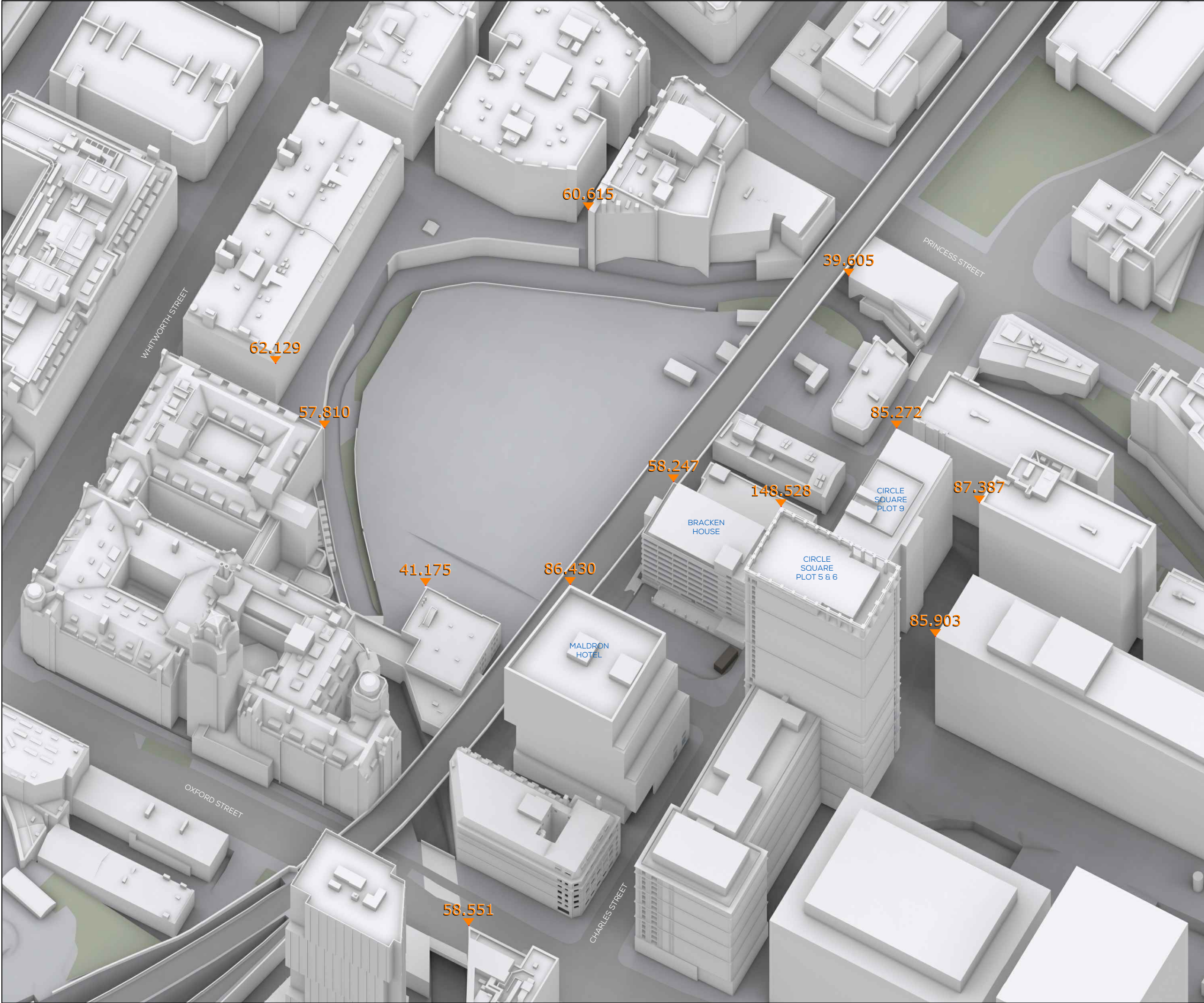
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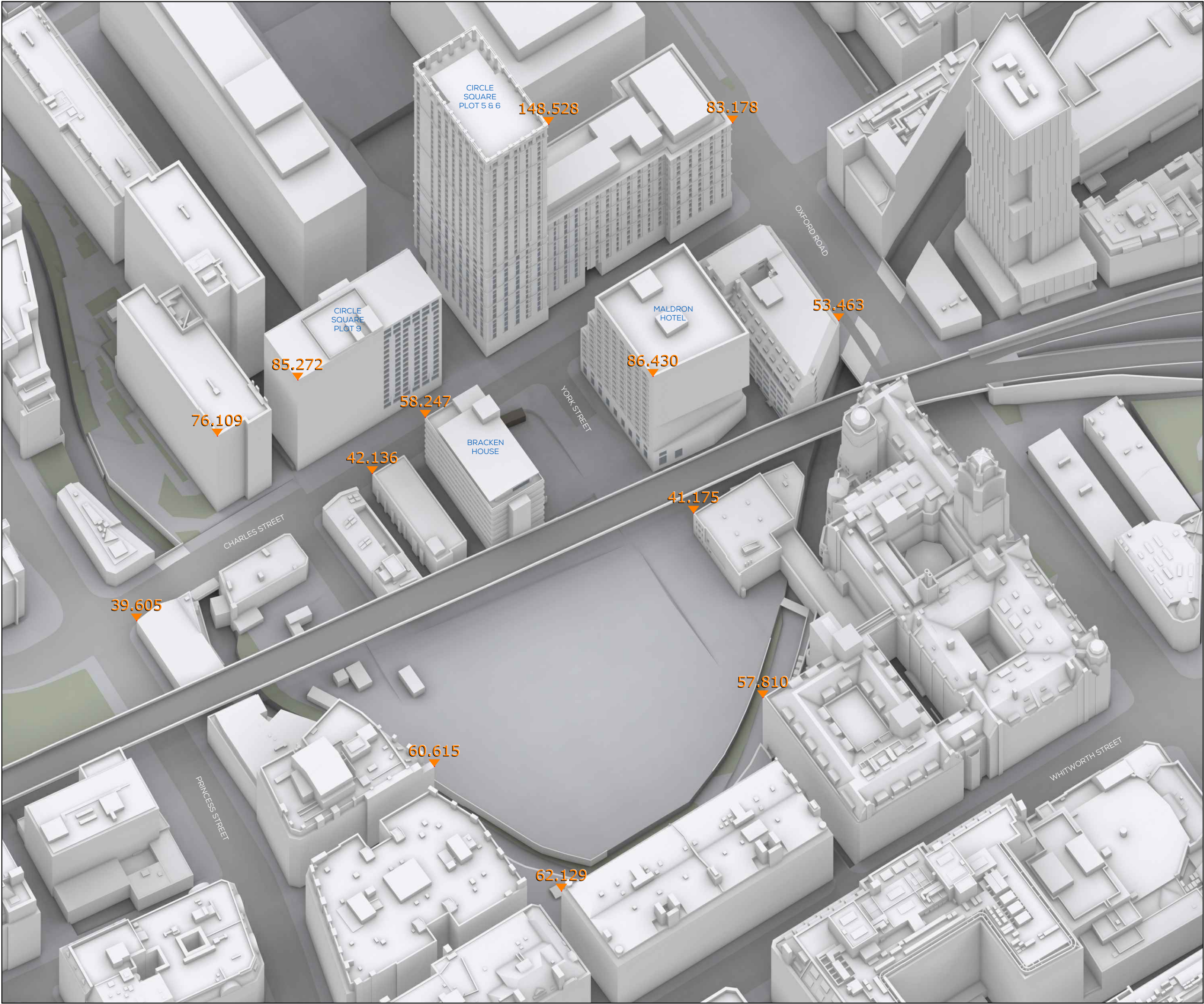
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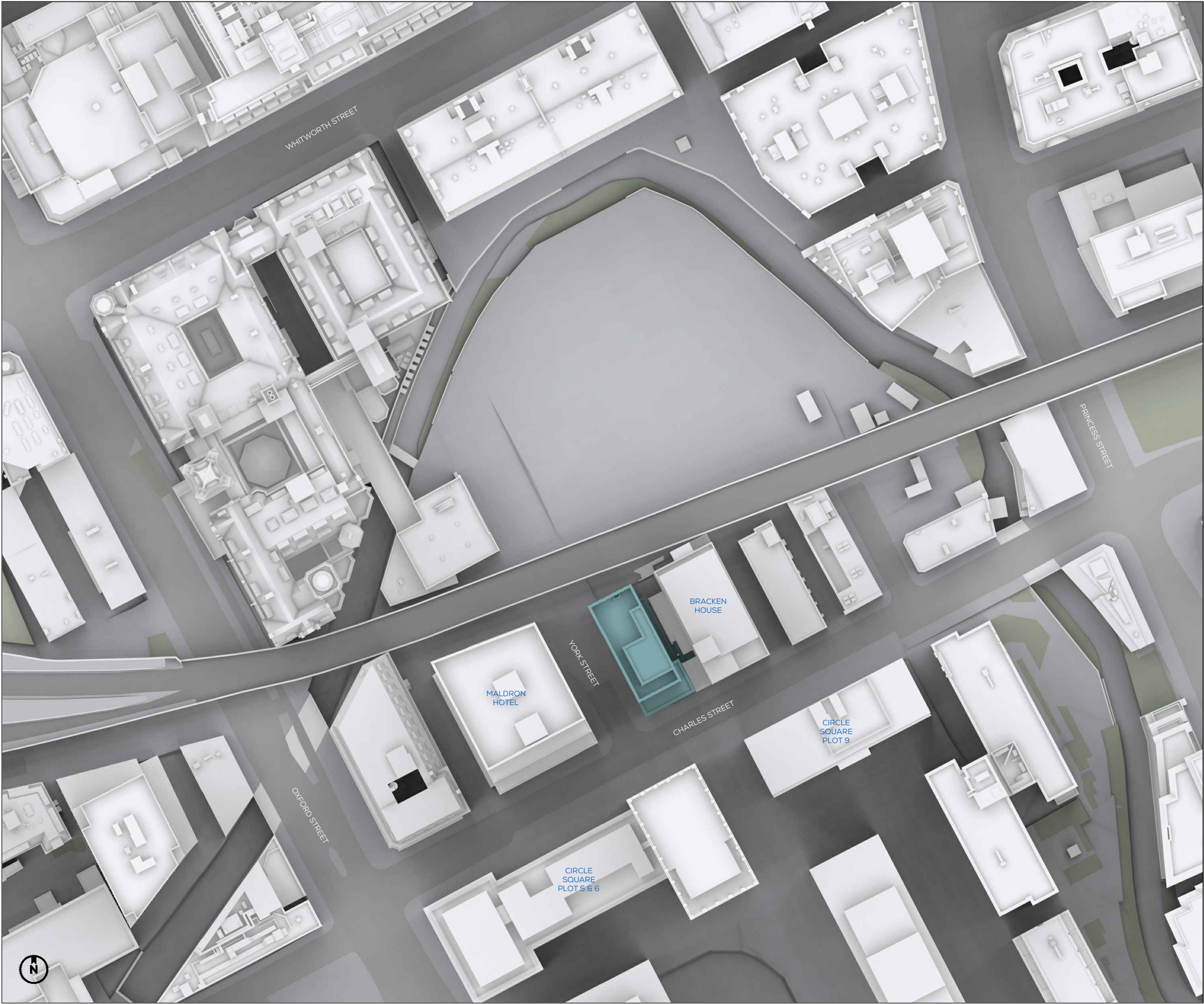
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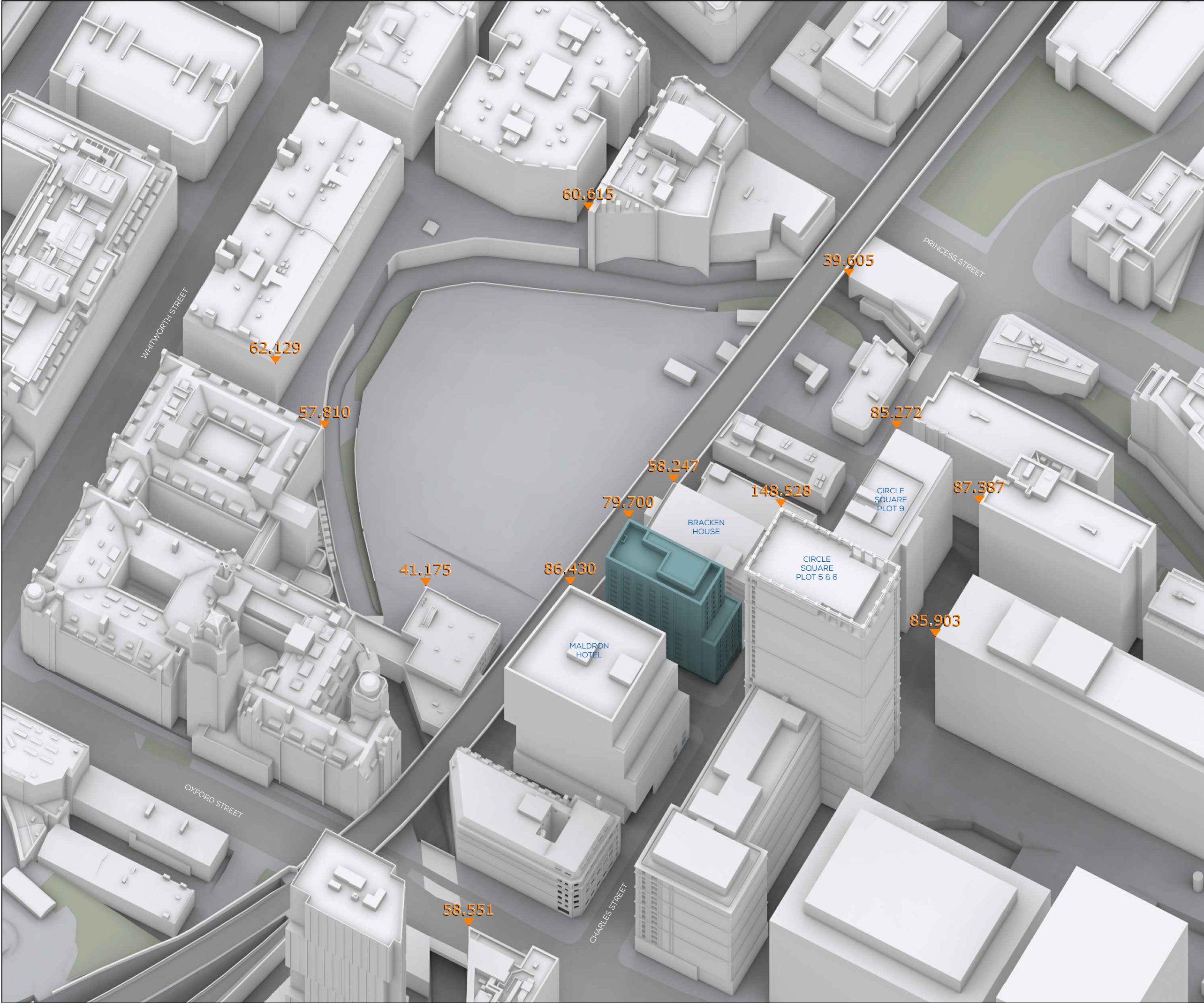
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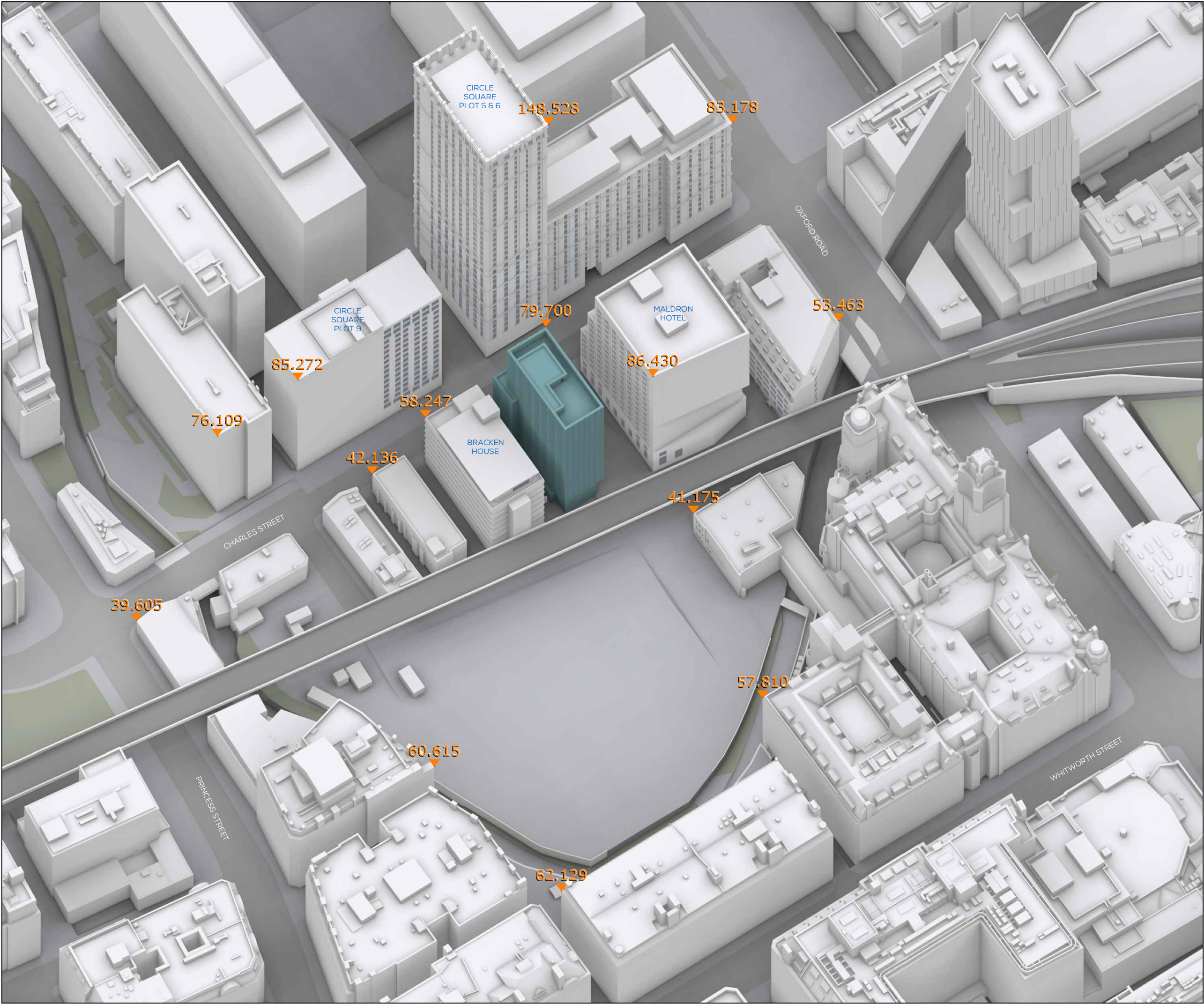
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