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Urban & Renewables

Aviation Impact Assessment

Inland Homes PLC

Former Masonic Hall and Old Telephone Exchange site

September, 2020





ADMINISTRATION PAGE

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Date:	December, 2019
Prepared for:	Inland Homes PLC
Author:	Danny Scrivener
Telephone:	01787 319001
Email:	danny@pagerpower.com

Reviewed By:	Kai Frolic
Second reviewer	Mike Watson
Date:	December, 2019
Telephone:	01787 319001
Email:	kai@pagerpower.com; mike@pagerpower.com

Issue	Date	Detail of Changes
1	December, 2019	Initial issue
2	September, 2020	Updated heights and description

Pager Power Limited, Stour Valley Business Centre, Brundon Lane, Sudbury CO10 7GB

T: +44 (0)1787 319001 E: info@pagerpower.com W: www.pagerpower.com

KEY FINDINGS

Background

Pager Power has conducted an aviation impact assessment for the proposed building development known as 'Elmsleigh Road' located at Staines upon Thames, to determine its impact upon aviation activity in the surrounding area.

The Proposed Development

The proposed development is to consists of two towers measuring a maximum altitude of 66.45m above mean sea level (amsl) and is located approximately 4km south west of London Heathrow Airport.

Key Aviation Risks

The key aviation risks identified were the potential impact upon the Secondary Surveillance Radar (SSR) at London Heathrow Airport as well as the potential infringement of the Obstacle Limitation Surfaces (OLS) at London Heathrow Airport.

Overall Conclusions

The results of the analysis revealed that the proposed development would not infringe the OLS at Heathrow Airport. NATS may however have some concerns regarding the visibility of the proposed development to the SSR. It is unlikely that the identified issue would be a 'show stopper' if mitigation is implemented, the fee for implementation would be payable to NATS. Consultation with London Heathrow Airport, NATS and the MOD[1] to discuss the results of this report will be undertaken. A breakdown of the results is presented below.

Analysis Results

The results of the analysis for the key identified aviation risks are presented below.

London Heathrow Airport's Obstacle Limitation Surfaces[2]

- The proposed development is beneath the Inner Horizontal Surface of London Heathrow Airport;
- The analysis has shown that the maximum altitude of the proposed development (66.45m amsl) would be beneath the Inner Horizontal Surface height;
- The proposed development would therefore not infringe the OLS;

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[1] MOD consultation for completeness.

[2] In accordance with CAP168

- Crane usage will need to be considered due to the close proximity to the OLS. It is likely a Crane Operations Scheme will be required;
- Consultation with the safeguarding team at London Heathrow Airport will be undertaken to confirm the analysis results and to identify any other safeguarding issues.

London Heathrow Airport SSR

- The proposed development is located approximately 5.8km from the SSR at London Heathrow Airport and will be visible to it;
- The proposed development will not be significantly screened by existing buildings along the line of sight path;
- The proposed development will be of size and height greater than those developments immediately surrounding it;
- Consultation with NATS, who safeguard the London Heathrow Airport radar, will therefore be undertaken to discuss the requirement for mitigation due to reflection effects. If mitigation is requested, it is expected that it will be a technical fix applied to the radar and implemented by NATS. This solution has been implemented for many developments of this type in the vicinity of SSR and typically costs in the region of £45k.

RAF Northolt

Consultation with the MOD will be undertaken for completeness however no impact with regard to the OLS at RAF Northolt is anticipated.

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ABOUT PAGER POWER

Pager Power is a dedicated consultancy company based in Suffolk, UK. The company has undertaken projects in 48 countries within Europe, Africa, America, Asia and Australasia.

The company comprises a team of experts to provide technical expertise and guidance on a range of planning issues for large and small developments.

Pager Power was established in 1997. Initially the company focus was on modelling the impact of wind turbines on radar systems. Over the years, the company has expanded into numerous fields including:

- Renewable energy projects.
- Building developments.
- Aviation and telecommunication systems.

Pager Power prides itself on providing comprehensive, understandable and accurate assessments of complex issues in line with national and international standards. This is underpinned by its custom software, longstanding relationships with stakeholders and active role in conferences and research efforts around the world.

Pager Power's assessments withstand legal scrutiny and the company can provide support for a project at any stage.

1 INTRODUCTION

1.1 Overview

Pager Power has conducted an aviation impact assessment for the proposed building development known as 'Elmsleigh Road' located at Staines upon Thames, to determine its impact upon aviation activity in the surrounding area.

The proposed development is to consists of two towers measuring a maximum altitude of 66.450m above mean sea level and is located approximately 4km south west of London Heathrow Airport.

The existing proposed development plans and the red line boundary have been assessed against the relevant aviation infrastructure in the surrounding area to understand whether:

- The maximum height/altitude to which the towers can be built without infringing the Obstacle Limitation Surfaces London Heathrow Airport considering the two towers;
- An impact upon the Secondary Surveillance Radar (SSR) at London Heathrow Airport is possible and whether mitigation is possible.

Consultation will also be undertaken with the relevant stakeholders. The development as a whole is referred to as 'proposed development' throughout this report.

In detail the report includes:

- Identification of relevant aviation infrastructure including:
  - Aerodromes (licensed, unlicensed and military);
  - Radar;
  - Radio navigation aids.
- Overview of relevant safeguarding assessment distances;
- Obstacle limitation surfaces assessment for London Heathrow Airport;
- Radio line of sight assessment for the relevant infrastructure, including:
  - Radar installations;
  - Radio navigation aids.
- Consideration of the potential impact upon RAF Northolt;
- Overall risk and key issues.

Following the results of the analysis, conclusions and recommendations are made.

1.1.1 London Heathrow Airport Third Runway

Though it is not built, the runway extension or the addition of a third runway at London Heathrow Airport is formally safeguarded. Its presence would not be expected to affect the results of this report because runway 09R/27L is closest the proposed development.

2 PROPOSED DEVELOPMENT INFORMATION

2.1 Overview

The following section presents the relevant information for the proposed development.

2.2 Proposed Development Details

Figure 1[3] below shows the top down site plans with the red line boundary of the proposed development.

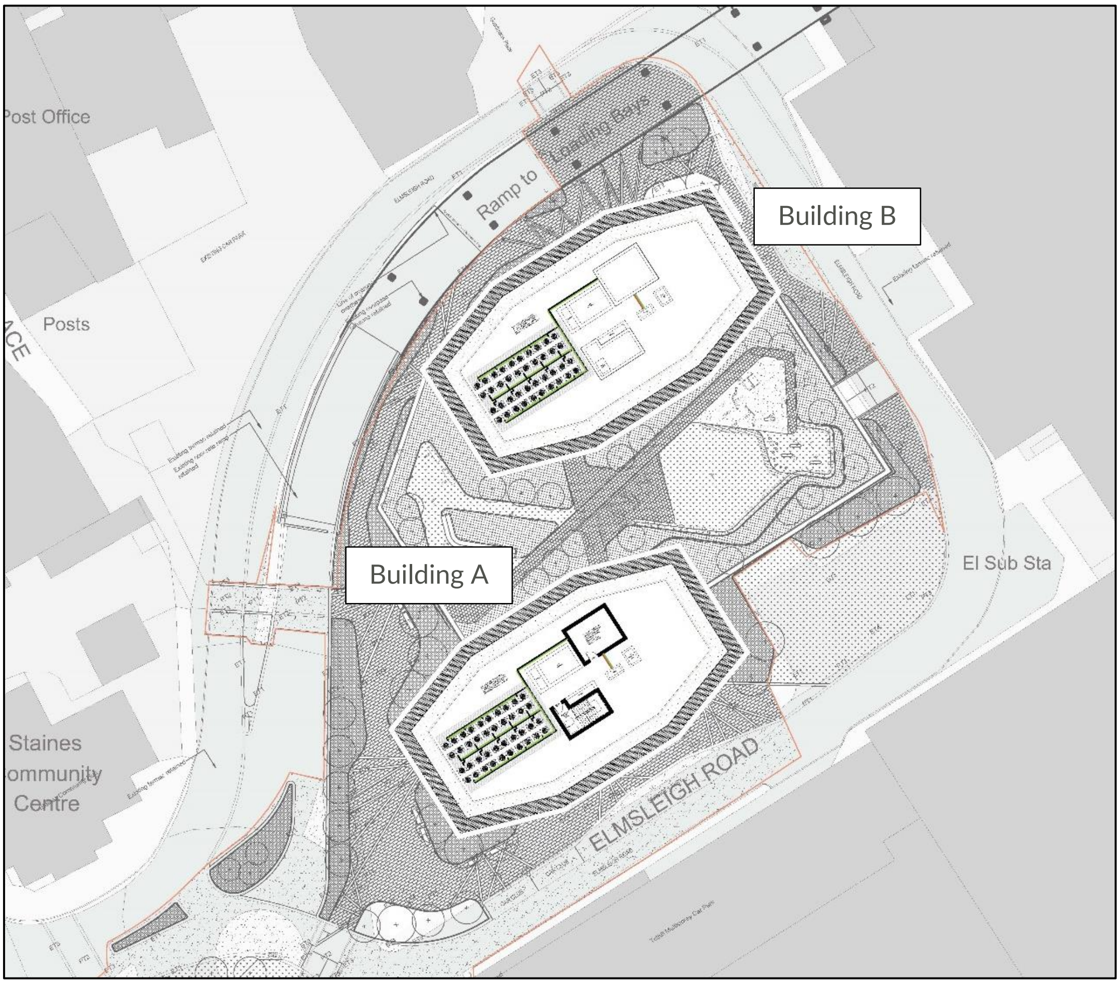


Figure 1 *Top-down site plan and red line boundary*

[3] Source: Assael (cropped).

Figure 2[4] on the following page shows the proposed elevations of the two towers. Currently the maximum proposed altitude is 66.450m above mean sea level. The ground level at each of the towers is:

- GF datum of Building A 15.000 – the southerly tower;
- GF datum of Building B 15.800 – the northerly tower.

[4] Source: Assael (cropped).

Figure 2 *Proposed development elevations*

2.3 Red Line Boundary Co-Ordinate Data

Co-ordinate data for a previous red line boundary has been extrapolated from the project plans. The results of the analysis remain applicable. The details are presented in Table 1 below. The co-ordinates are in WGS84 format.

ID	Longitude (°)	Latitude (°)	Height above ordnance datum (m)
1	-0.51066	51.43345	15.5m – taken based on the highest terrain altitude of both towers as provided by the develop (Building B). This offers a more conservative analysis. For reference, the lowest terrain altitude (at Building A) was 15m.
2	-0.51053	51.43334	
3	-0.5105	51.43329	
4	-0.51028	51.43308	
5	-0.51057	51.43298	
6	-0.51049	51.4329	
7	-0.51114	51.43265	
8	-0.51122	51.43308	
9	-0.51114	51.4332	
10	-0.51101	51.43331	
11	-0.5109	51.43337	

Table 1 *Building perimeter points assessed within the red line site boundary*

The co-ordinates assessed are shown in Figure 3[5] below.

Figure 3 *Assessed co-ordinates*

[5] Source: Aerial imagery copyright © 2019 Google.

3 KEY AVIATION RISKS

3.1 Overview

An aviation risk assessment was completed for the proposed development. The following sections outlines the initial results.

3.2 Results

3.2.1 Airports and Airport Radar

Aviation Risk	Distance	Risk Level
London Heathrow PSR (Primary Surveillance Radar)	5.8 km	Low
London Heathrow Airport – Obstacle Limitation Surfaces	6.0 km	Medium
London Heathrow SSR	5.8 km	Medium
Farnborough PSR	24.9 km	Low
London Gatwick SSR	39.5 km	Low

Table 2 *Identified airport risks*

3.2.2 NATS En Route

Aviation Risk	Distance	Risk Level
Bovingdon PSR	30.8 km	Low
London Heathrow Beacon	5.0 km	Low
London Heathrow Beacon	5.0 km	Low
London Heathrow Beacon	6.2 km	Low
London Heathrow Beacon	6.2 km	Low
London VOR/DME (Closing 2019) Beacon	6.8 km	Low
London Heathrow Beacon	7.1 km	Low
Fairoaks Beacon	10.2 km	Low

Aviation Risk	Distance	Risk Level
Fairoaks Beacon	10.2 km	Low
Northolt Beacon	14.1 km	Low
Ockham VOR/DME (Closing 2018) Beacon	14.9 km	Low
Burnham NDB (Closing 2019) Beacon	15.0 km	Low
Pease Pottage SSR	44.1 km	Low
Debden SSR	81.9 km	Low

Table 3 *Identified NATS En Route risks*

3.2.3 Civil Airfields

Aviation Risk	Distance	Risk Level
London (Crowne Plaza London Heathrow) Heliport	8.3 km	Low
Fairoaks, Licensed	10.0 km	Low

Table 4 *Identified civil airfield risks*

3.2.4 Met Office

Aviation Risk	Distance	Risk Level
Chenies MET Radar	28.5 km	Low

Table 5 *Identified Met Office risks*

3.2.5 MOD - Ministry of Defence

Aviation Risk	Distance	Risk Level
Northolt PAR	14.7 km	Low
Northolt Airfield	14.8 km	Low
Odiham PAR	37.4 km	Low
Odiham PSR	37.5 km	Low
Benson PSR	45.8 km	Low

Aviation Risk	Distance	Risk Level
Low Flying System	-	Low

Table 6 *Identified MOD risks*

3.2.6 RAF Northolt

The MOD has been known to object to building developments, primarily due to the potential for infringement of its Obstacle Limitation Surfaces. Consultation with the MOD will be undertaken for completeness.

3.3 Aviation Risk Conclusions

The initial assessment identified two keys risks; the SSR at London Heathrow Airport and the OLS defined around the airport. The following sections provide an assessment of each identified risk (medium or higher) in greater detail.

4 RADAR INFORMATION

4.1 Co-Ordinates and Heights

Table 7 below provides the details for the assessed Heathrow SSR radar. All height data has been provided by NATS.

Radar	Secondary Surveillance Radar (SSR)
Height of ground at the radar above mean sea level (amsl)	22m
Height of radar agl	45m
Overall radar height above mean sea level	67m
Approximate distance between the proposed development and radar	5.79km
Average grid bearing from radar to proposed development	238.4°

Table 7 *Heathrow SSR radar location details*

4.2 Radar Photograph and Location

A photograph of the Heathrow SSR is shown in Figure 4[6] below.

Figure 4 *Photograph of the Heathrow SSR*

[6] Source: Aerial imagery copyright © 2019 Google.

The location of the Heathrow SSR is shown in Figure 5[7] below.

Figure 5 *Heathrow SSR location*

4.3 Radar Types and Usage

There are two radar situated upon the metal lattice tower. The lower radar is a non-cooperative PSR, the taller is the co-operative SSR which has been assessed within this report.

SSR broadcast interrogating radio signals that are detected by aircraft with on-board transponders. The transponder responds by broadcasting a radio reply which normally contains identification and altitude information. The SSR determines the aircraft's horizontal position from the direction the antenna is orientated and the time taken to receive a response from the interrogation.

Both radar will be used by air traffic controllers to provide approach services to aircraft landing at and departing London Heathrow Airport. Both radar will also be used by air traffic controllers at national air traffic control centres to provide services to en-route aircraft.

The radar of significance with respect to the predicted impact is the SSR. The PSR is not expected to be significantly affected.

[7] Source: Aerial imagery copyright © 2019 Google.

4.4 SSR and Proposed Development Location

The location of SSR relative to the proposed development is shown in Figure 6[8] below.

Figure 6 *SSR and proposed development relative location*

[8] Source: Aerial imagery copyright © 2019 Google.

5 RADAR INTERFERENCE

5.1 Overview

An overview of the various possible interference mechanisms is presented in the following subsections.

5.2 Interference

Buildings, structures and terrain can interfere with SSR. The level of interference normally depends on the size of the interfering structure and its distance from the radar. A larger structure closer to the radar is more likely to interfere than a smaller structure which is further away. The two predominant forms of interference are considered. These are:

5.2.1 Reflections

Reflections from a structure can potentially result in genuine aircraft returns being plotted in the wrong place as a result of the structure reflecting signals in a specular (mirror-like) way. This means that an air traffic controller could mis-manage aircraft, leading to safety implications.

Both in-bound and out-bound signals are weakened due to reflections because they are reflected by a structure in both directions.

5.2.2 Shadowing

Radar signals are weakened by physical obstacles. The most significant signal blocking is often caused by terrain. Large obstructions within a radar's area of coverage can have a 'shadowing' effect, reducing the signal strength immediately behind them.

This effect is most pronounced immediately behind the structure and becomes less pronounced with distance. This is important because it means a structure's 'shadow' does not block radar coverage indefinitely, and the areas with the highest losses should be considered in an operational context.

Both in-bound and out-bound signals are weakened by shadowing because signals are attenuated by a structure in both directions.

5.3 SSR Capabilities

The radar is a Secondary Surveillance Radar (SSR) fitted with a Large Vertical Aperture (LVA) antenna. The radar is located to the south of London Heathrow Airport. It is a Mode S monopulse SSR supplied by Raytheon Systems Limited as part of a nationwide contract to upgrade NATS' national network of twenty sites.

The radar is understood to be a Condor 300 dual channel system with Mode S capabilities. This radar has a range of advanced built-in capabilities for increasing its reliability and performance. Specific features that reduce the radar's susceptibility to interference from buildings are listed in Table 8 on the following pages.

Feature	Form of interference	How feature reduces interference	Additional Information
Integral Tracking Function	Reflections	More likely to determine return is genuine if it moves as an aircraft return is expected to.	Ensures good false target suppression.
Refined Algorithms	Reflections and Shadowing	Experience on many sites used to enhance performance.	Ensures good performance in complex environments.
Identification and rejection of false replies	Reflections	False returns are rejected	If two or more replies are identified from the same source all but the first is rejected.
Side Lobe Suppression	Reflections	False returns arising from antenna sidelobes are rejected	P1 and P2 pulses are used. This is an encoding system which enables sidelobe signals to be detected by comparing pulse sizes.
Sensitivity Time Control (STC)	Reflections	Removes reflections	Removes relatively low amplitude replies
Minimum Detection Signal Level (MDS)	Shadowing	Maximises radar coverage whilst minimising noise detections	-
Dynamic Threshold	Shadowing	Weak signals stronger than any interference signals are detected.	-
Reply to Reply Correlation	Reflections	Multiple replies required for target processing	Single reply reports are rejected.

Feature	Form of interference	How feature reduces interference	Additional Information
FRUIT[9] Rejection	Reflections	Track initiation only allowed if report contains two or more correlating replies in the same SSR mode	e.g. two or more Mode A replies
Track Processing	Reflections and Shadowing	Improvements are made in target location using history of target position.	Improvements made when confidence in location information is low
False Target Processing	Reflections	Advanced processing that applies a series of tests to identify and reject false returns	Techniques include: 1: Check whether Mode A code is unique 2: Check “known” reflection zones 3: Use geometric analysis for checking reflection zones 4: Self adaptive processing

Table 8 *Radar features for reducing interference*

[9] FRUIT – False Replies Unsynchronized in Time

6 OBSTACLE LIMITATION SURFACES ASSESSMENT

6.1 Overview

The obstacle limitation surfaces for London Heathrow Airport have been modelled with respect to the reference points defined within the red line boundary. The aim is to identify the maximum height to which the development could be built within the red line boundary without infringing the OLS at London Heathrow Airport.

6.2 Heathrow Obstacle Limitation Surfaces

Obstacle limitation surfaces are imaginary planes defined in three dimensions for physical safeguarding purposes (i.e. ensuring that physical structures do not present a safety hazard at an airfield) and are defined around licensed airfields.

The dimensions and geometry of the surfaces are constructed based on detailed rules defined in the UK Civil Aviation Authority's Civil Aviation Publication 168. The size of the surfaces is dependent on the number of runways, their dimensions and the procedures carried out at the airfield. The obstacle limitation surfaces for London Heathrow Airport are presented in Figure 7[10] on the following page along with the assessed points.

[10] OLS data courtesy of London Heathrow Airport.

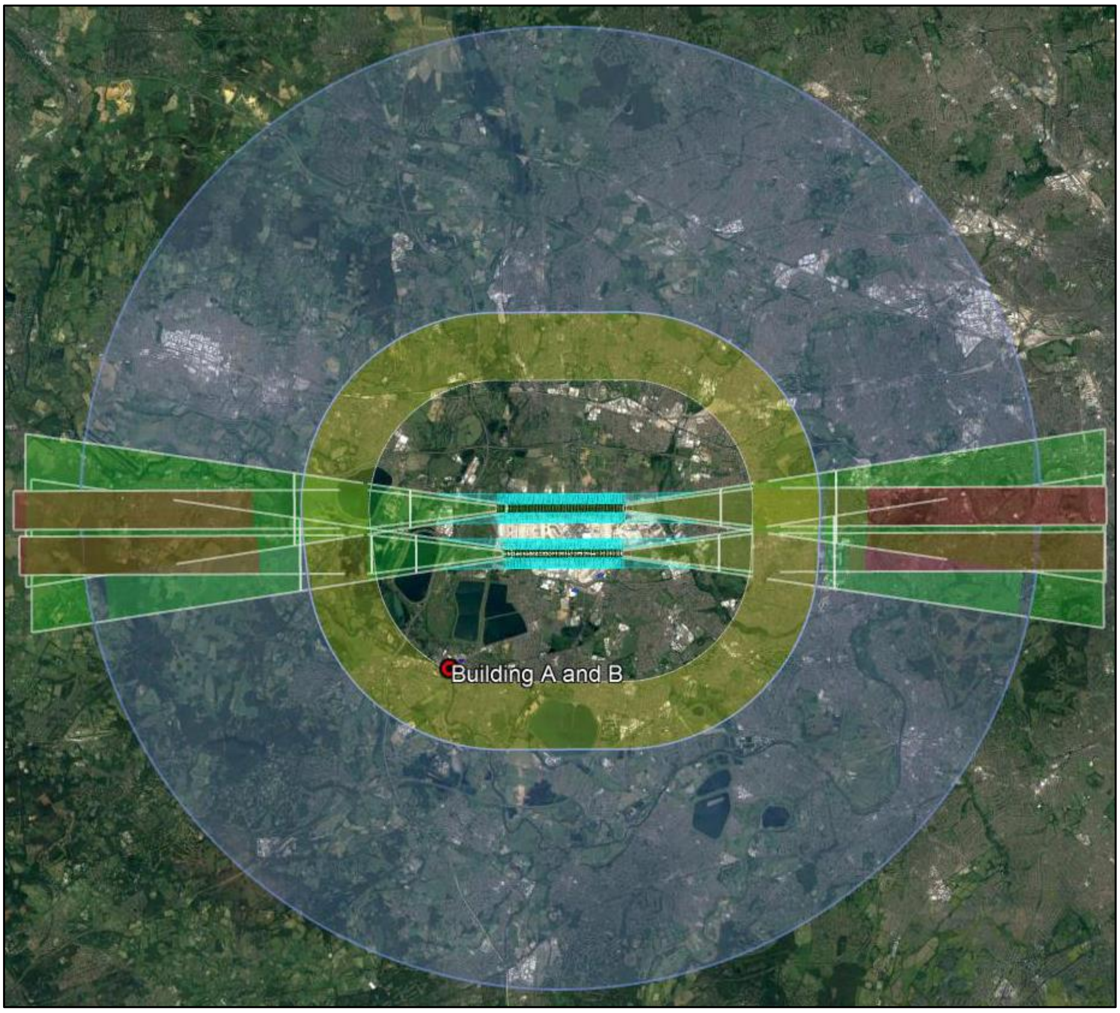


Figure 7 *London Heathrow Airport obstacle limitation surfaces aerial image*

6.3 Obstacle Limitation Surfaces Conclusions

The analysis has shown that the proposed development is beneath the inner horizontal surface in accordance with London Heathrow Airport's OLS model. The maximum altitude to which the proposed development can be built under this surface is 67.86m[11] amsl and the proposed development does not infringe the OLS considering a building maximum altitude of 66.450m.

[11] The lowest runway threshold altitude + 45m. London Heathrow Airport have stated that the Inner Horizontal Surface Altitude is 67.95m however, as per the AIP, the lowest runway threshold is 75ft or 22.86m, which give an Inner Horizontal Surface altitude of 67.86m (a difference of 9cm).

6.4 Important Consideration – Crane Usage

The analysis within the section does not account for crane usage. If the proposed development is built up to the inner horizontal surface, then cranes will likely infringe the OLS during construction. This may lead to other safety concerns and an objection if not managed appropriately. This should therefore be considered within the design of the proposed development.

Consultation with London Heathrow Airport will be conducted regarding crane usage and any possible temporary infringement. Aviation lighting will be required for any infringement of the OLS, even temporary.

A Crane Operations Scheme will likely be requested regardless of any infringement of the OLS.

7 RADAR LINE OF SIGHT AND INTERFERENCE ANALYSIS

7.1 Methodology

The approach taken within this report is presented in the following section.

7.1.1 Technical Assessment

- Radar line of sight assessment based on the tower co-ordinates assessed at their relative height above ground level;
- Screening assessment to determine whether existing buildings and/or landscape features would hide/shield the proposed development from the SSR;
- Consideration of the distance from the SSR.

7.1.2 Cumulative Assessment

- Assessment of the predicted impact in the context of the existing environment has been undertaken.

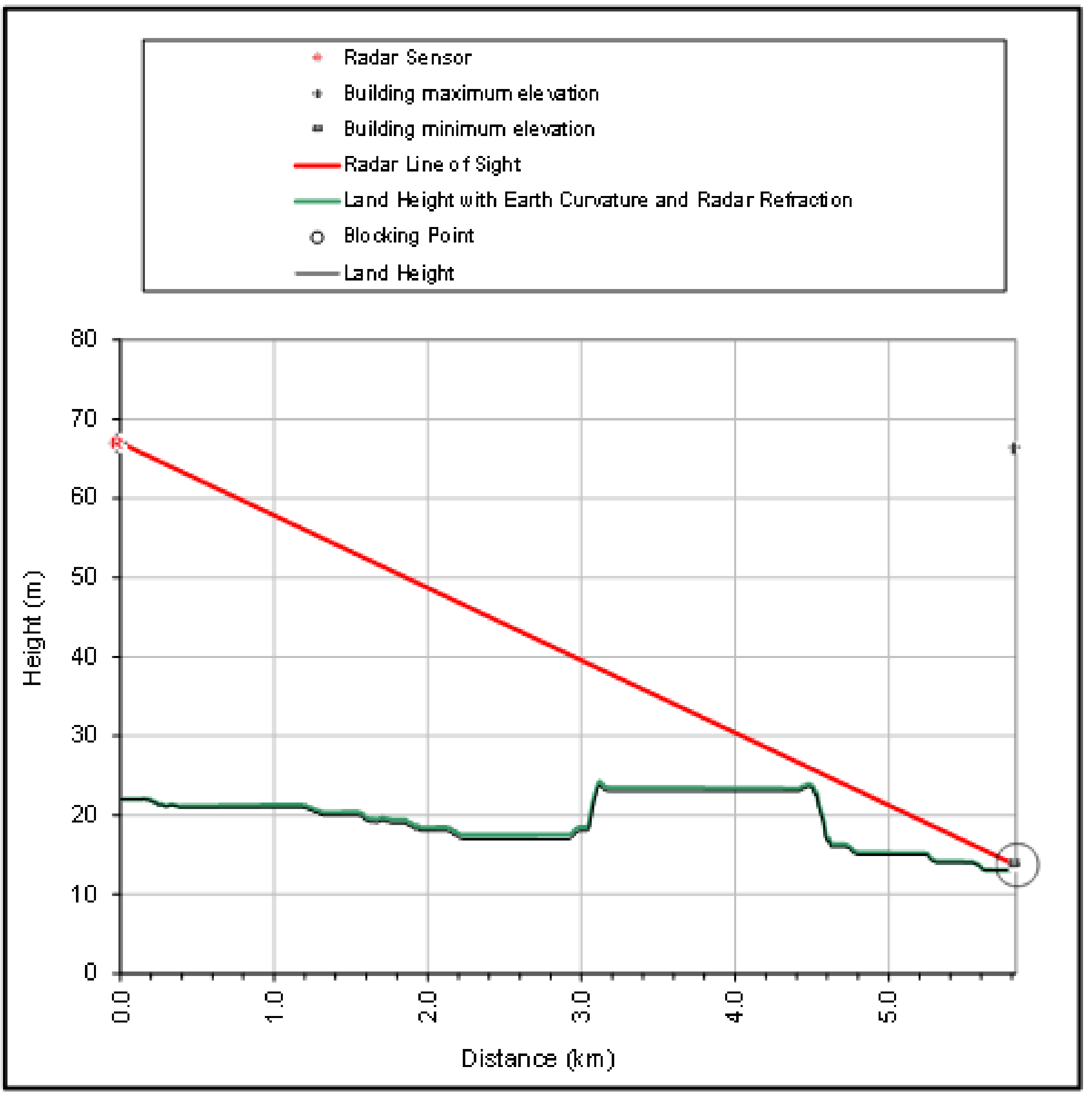
7.2 Radar Line of Sight Analysis

Figure 8 and 9 on the following pages show the line of sight chart for the approximate site centre of Building A and B respectively. Information regarding the methodology or the additional line of sight charts can be provided upon request. The tower height above ground level has been adjusted to account for the terrain height based on OSGB36 terrain data at that particular location. The overall altitude of the tower is therefore accurate (66.45m amsl).

Radar Line of Sight Calculation

London Heathrow Airport SSR

SSR LOS assessment	
Building	Buidling A
Result	**VISIBLE**
Certainty	52.75 metres



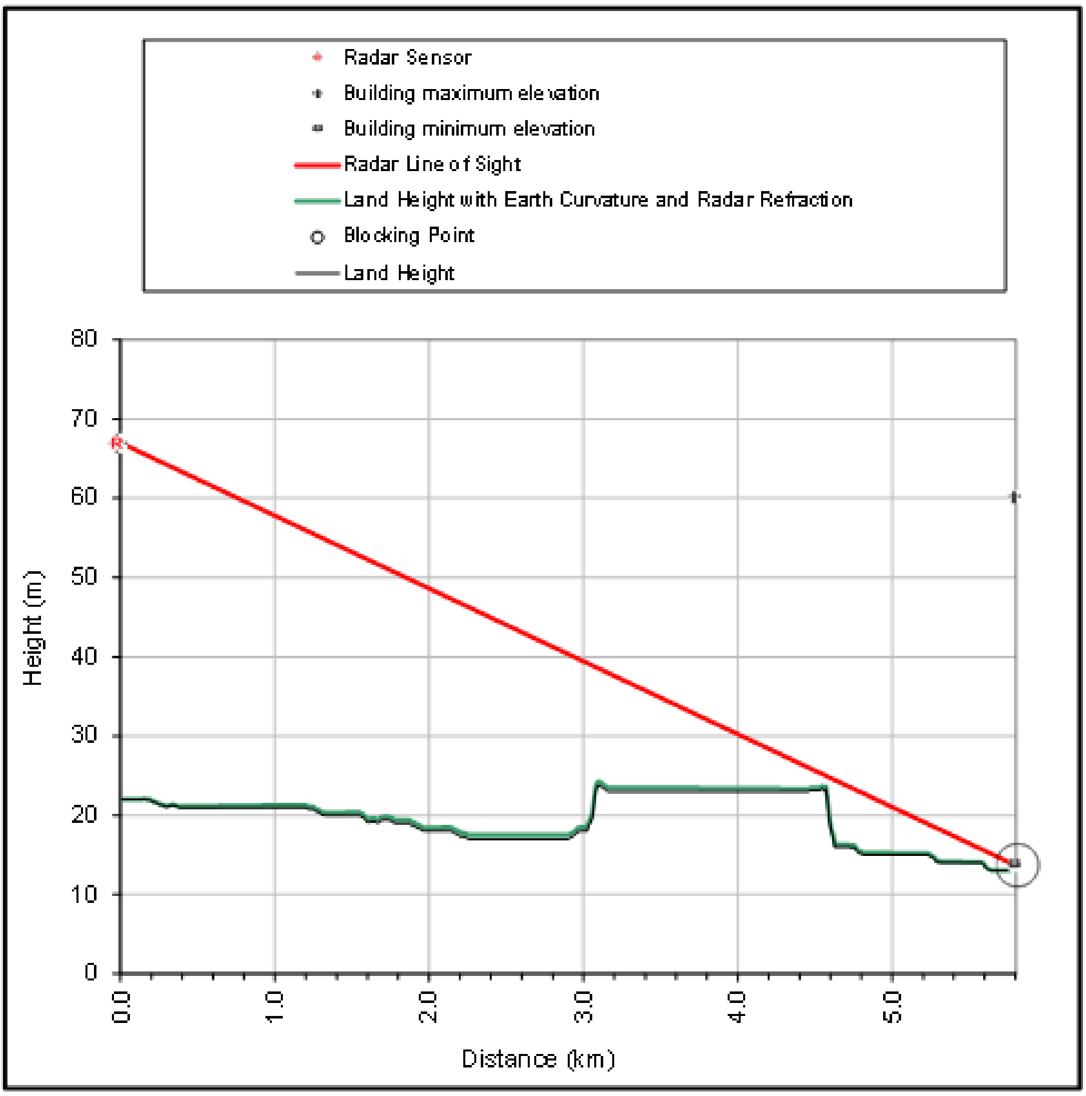
Height agl (m)	52.75
Ground Elevation (m)	13.7
Location	E503614 N171488
Distance to radar (km)	5.8
Blocking Point Location	E503614 N171488
Distance to BP (km)	0.0

Additional Analysis	
Angle (Radar to Tip)	0.025 degrees down

Figure 8 *Radar line of sight chart – approximate centre of Building A*

Radar Line of Sight Calculation
London Heathrow Airport SSR

SSR LOS assessment	
Building	Building B
Result	VISIBLE
Certainty	46.60 metres



Height agl (m)	46.6
Ground Elevation (m)	13.7
Location	E503615 N171530
Distance to radar (km)	5.8
Blocking Point Location	E503615 N171530
Distance to BP (km)	0.0

Additional Analysis	
Angle (Radar to Tip)	0.086 degrees down

Figure 9 *Radar line of sight chart – approximate centre of Building B*

7.2.1 Line of Sight Chart Results Description

The box labelled 'certainty' within Figures 8 and 9 provide the distance (in metres) by which the proposed development is or is not within line of sight to the assessed radar.

In this case the proposed development would be fully visible considering bare earth terrain.

7.3 Line of Sight Results – Bare Earth Terrain

The overall are presented in Table 9 below.

Reference Point	Result and Visibility
Building A	Fully visible to the SSR.
Building B	

Table 9 *Line of sight results for each assessed tower corner – bare earth terrain*

7.4 Additional Screening

A review of the line of sight profiles was undertaken to identify the potential for additional screening. Key obstructions were then incorporated into the line of sight chart for the approximate building site centres. The locations of the identified screening are shown in Figures[12] 10 and 11 on the following pages.

[12] Source: Aerial imagery copyright © 2019 Google.

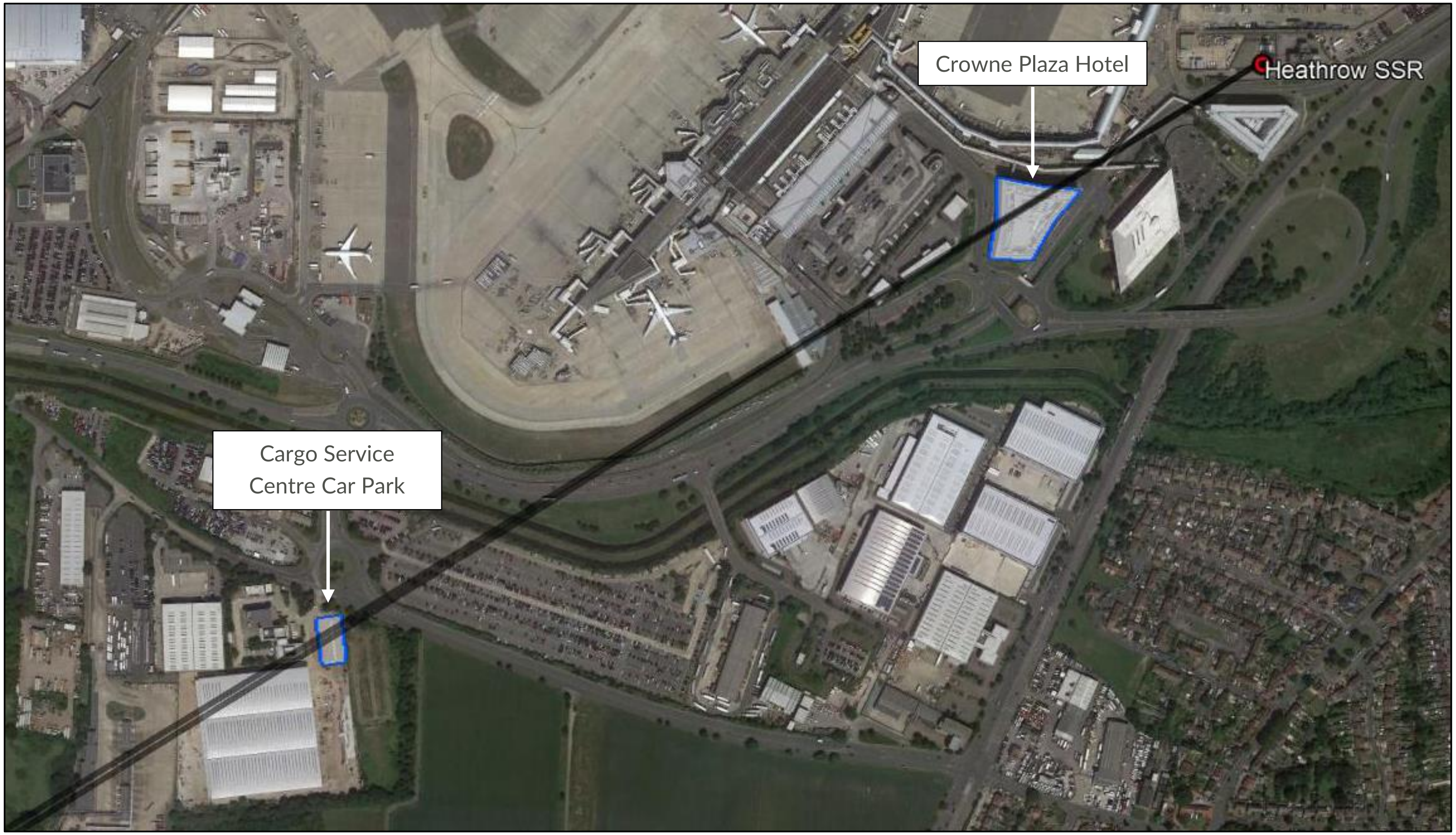


Figure 10 *Identified screening locations near the SSR*

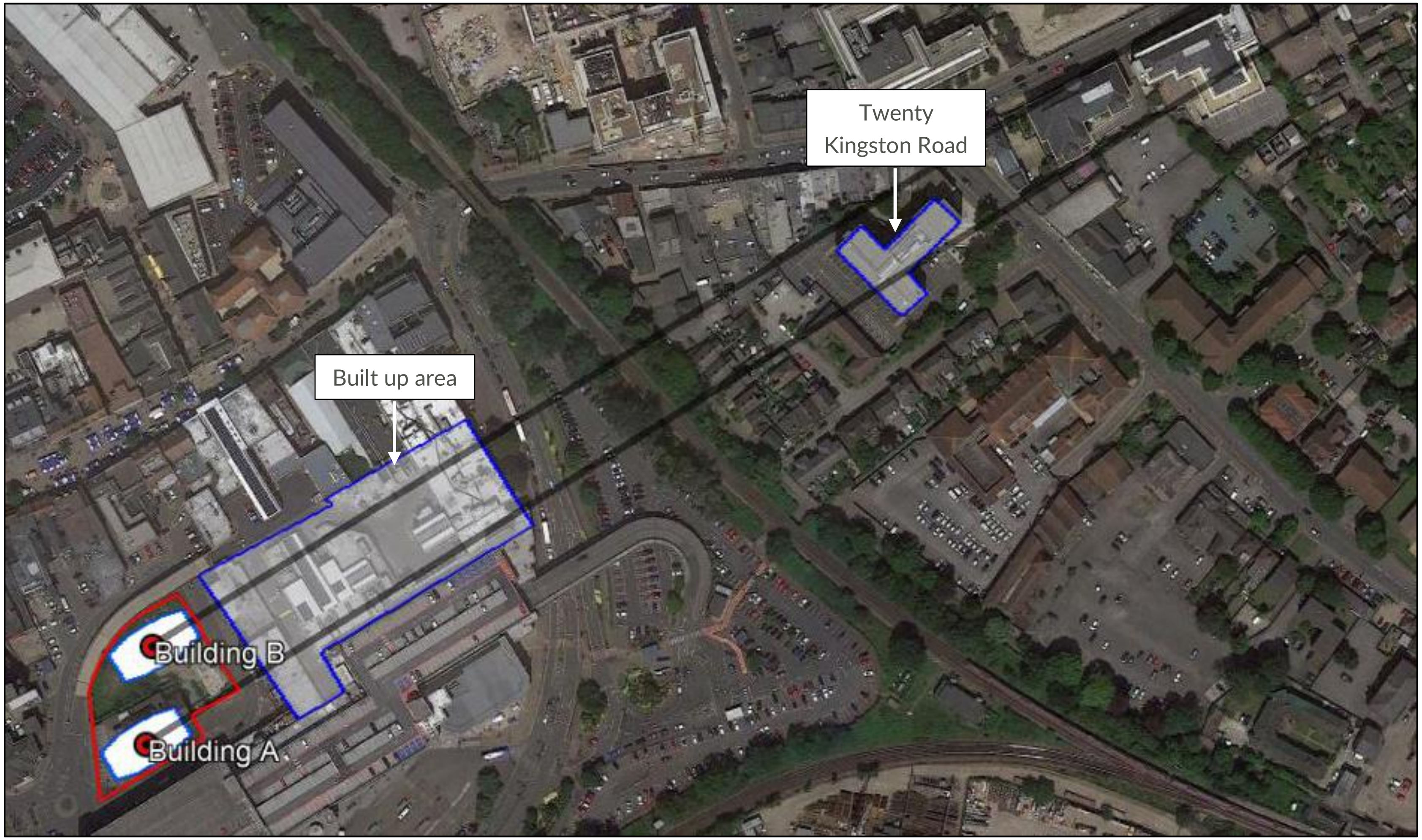


Figure 11 *Identified screening locations near the proposed development*

Figures[13] 12-15 below and on the following pages show the identified obstructions overlaid on Google 3D imagery. The representative tower locations and heights are also shown.

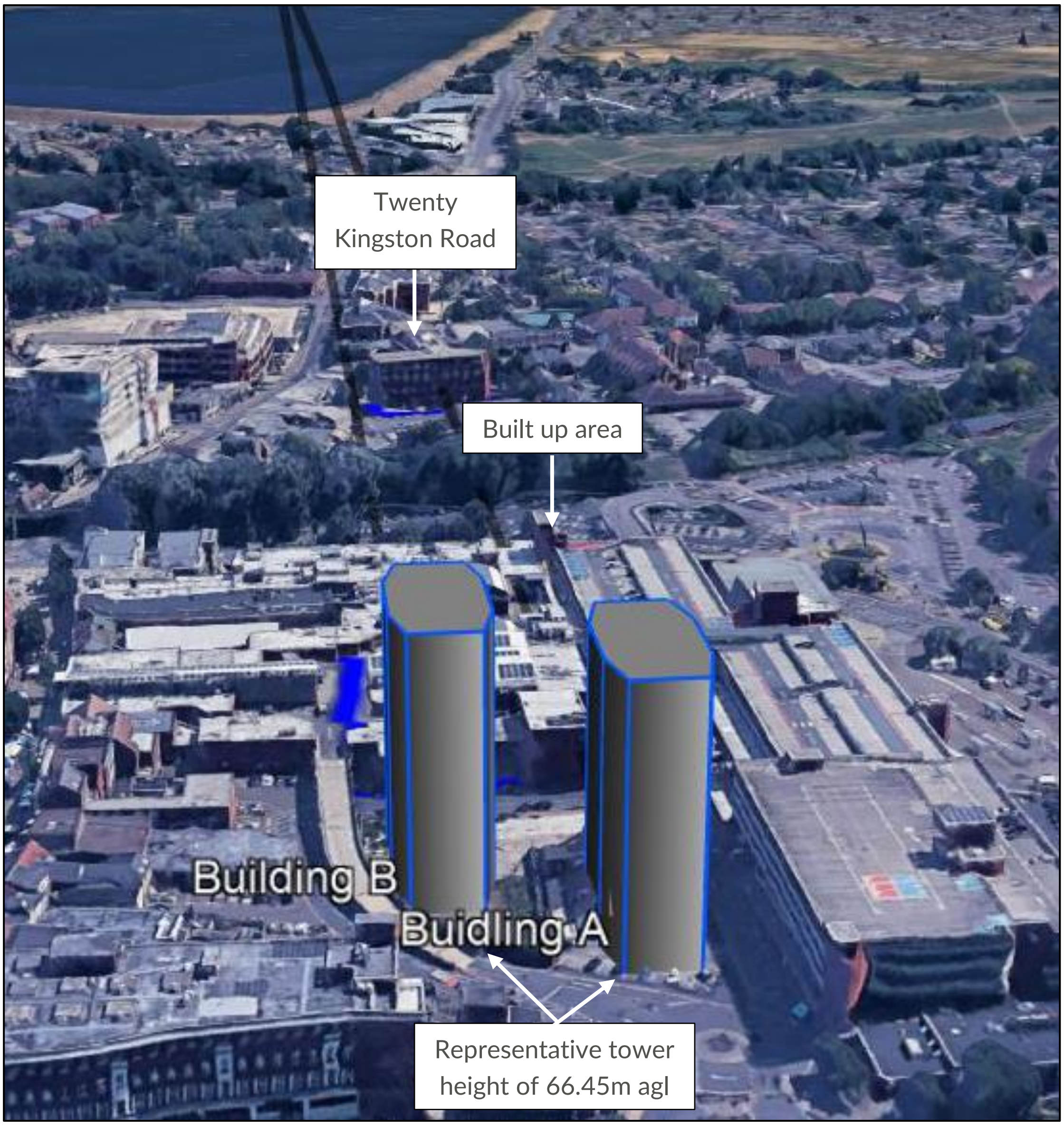


Figure 12 *Identified screening locations near the proposed development – 3D 1*

[13] Source: Aerial imagery copyright © 2020 Google.

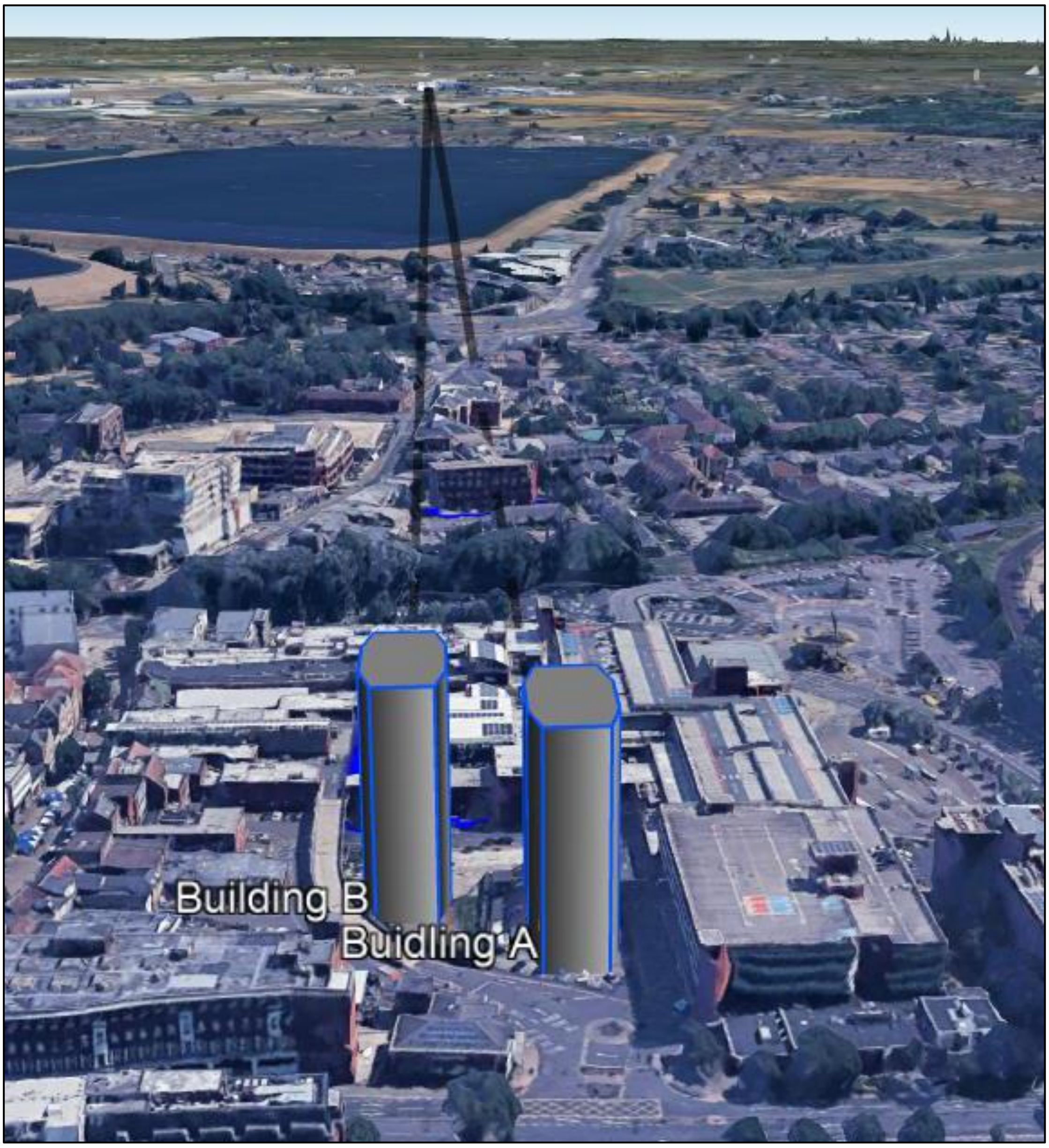


Figure 13 *Identified screening locations near the proposed development – 3D 2*

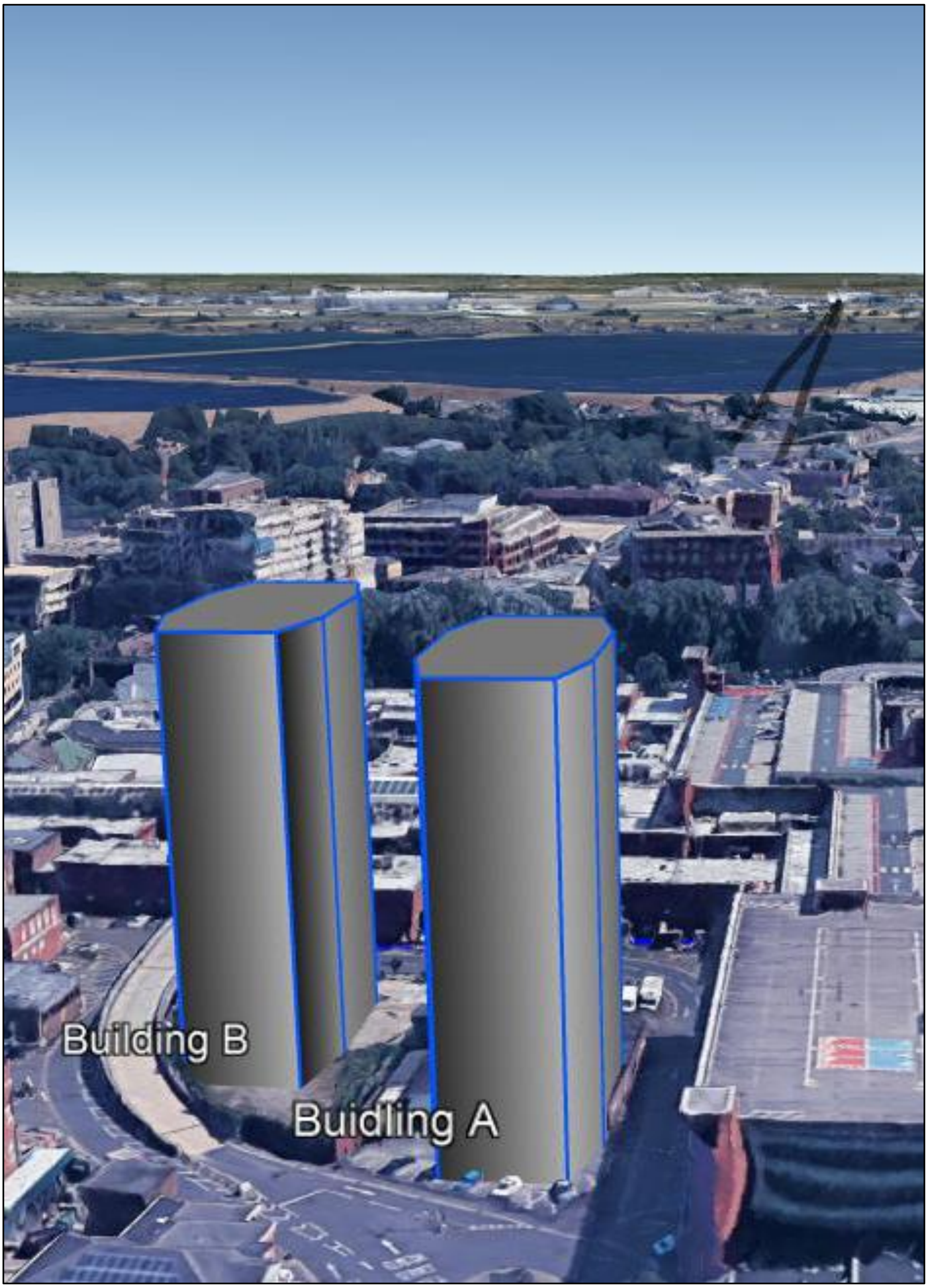


Figure 14 *Identified screening locations near the proposed development – 3D 3*

Figure 15 *Identified screening locations near the SSR – 3D 1*

The largest areas of built up obstruction along the line of sight path were identified. Locations of screening consisted of buildings (measuring approximately from 8m to 28m agl). The Crowne Plaza Hotel nearest the SSR measures 47.6m AOD[14]. The maximum altitude of the Cargo service centre car park is 36.884m AOD[15]. The height of the remaining identified obstructions was estimated.

The height data for both buildings was incorporated into the updated line of sight chart presented in Figures 16 and 17 below and on the following page.

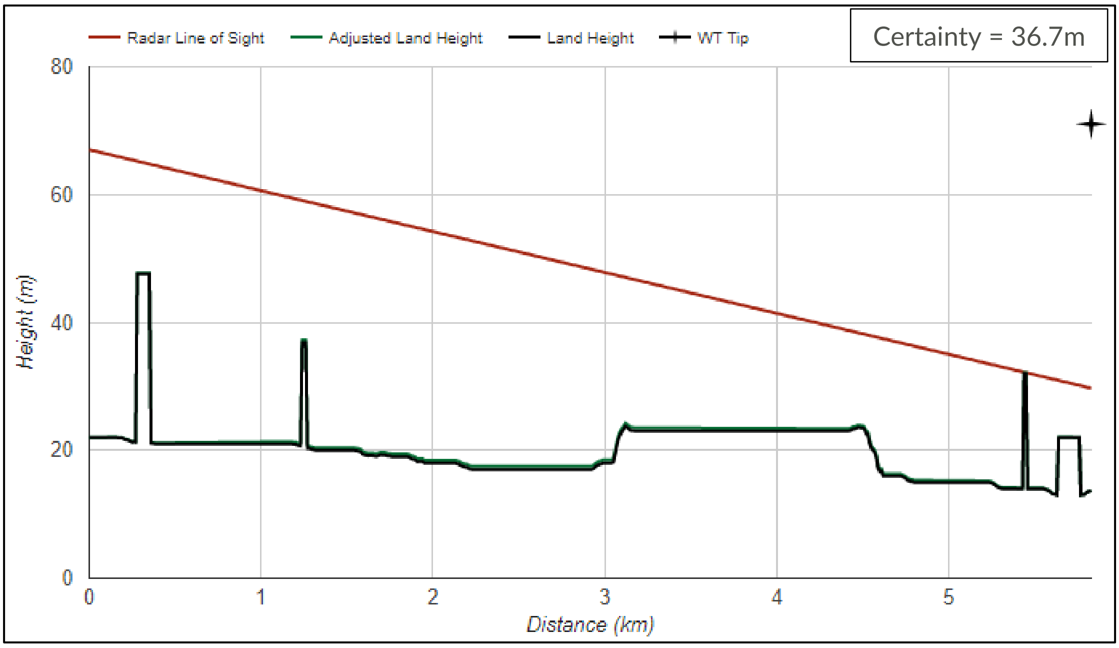


Figure 16 *Building A line of sight profile adjusted for the identified significant screening*

[14] London Borough of Hillingdon: Planning reference: 67622/APP/2016/3198.

[15] Known based on previous analysis.

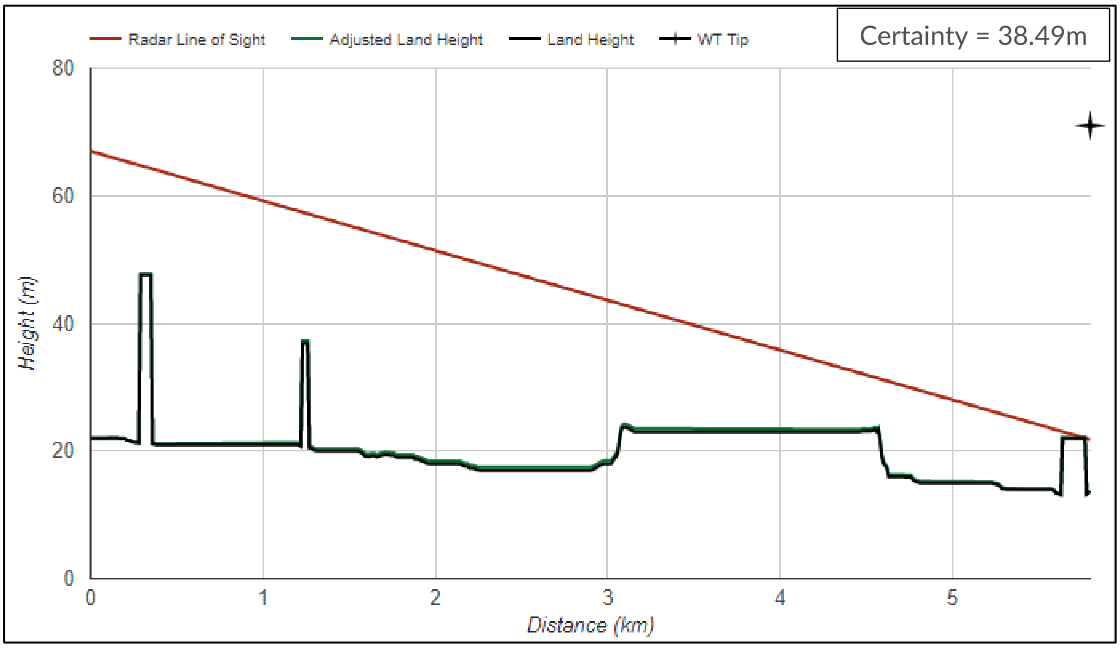


Figure 17 *Building B line of sight profile adjusted for the identified significant screening*

7.5 Radar Line of Sight Conclusions

The result shows that the identified buildings would not add significant screening from the SSR. The estimated minimum visibility is 36.7m based on its currently assessed height (Building A). This means the proposed development is still significantly visible to the SSR

7.6 Interference Assessment

SSR radar broadcast interrogating radio signals that are detected by aircraft with on-board transponders. The transponder responds by broadcasting a radio reply which normally contains identification and altitude information. The SSR determines the aircraft's horizontal position from the orientation of the antenna and the time taken to receive a response from the interrogation.

Buildings, structures and terrain can interfere with SSR. The level of interference normally depends on the size of the interfering structure and its distance from the radar. A larger structure closer to the radar is more likely to interfere than a smaller structure which is further away. Two forms of interference have been considered. These are:

1. Reflections – Either in-bound or out-bound signals are reflected off a structure;
2. Shadowing – Either in-bound or out-bound signals are weakened because they are attenuated by a structure.

The proposed development's location, height and orientation has been reviewed and the reflection and shadow zones considered.

7.6.1 Interference Zones

Due to the proposed development's orientation, only the eastern façades will be significantly exposed to radar signals from the Heathrow SSR. These are highlighted in Figure 18[16] below.

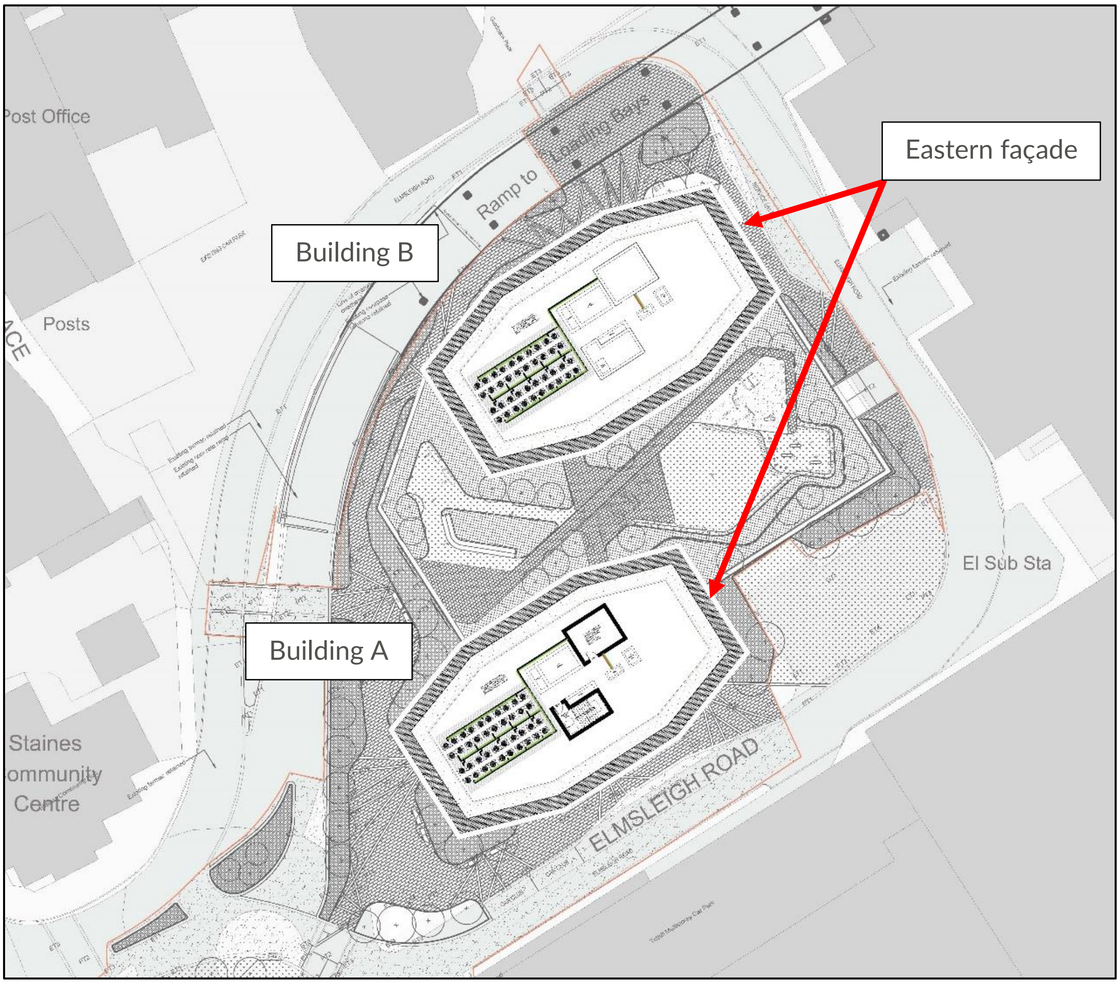


Figure 18 *Façades facing the Heathrow SSR*

[16] Source: Assael (cropped).

Each of the identified reflectors are discussed in further detail in Table 10 below.

Reflector	Approximate azimuth angle relative to grid north	Comment
Building A	57.1	Any reflection from the radar would be orientated (approximately) back in the direction of the SSR.
Building B	57.4	

Table 10 *Proposed reflector information*

7.6.2 Reflections

The proposed development can be considered a flat façade, which would be a worst-case scenario with respect to SSR reflection effects.

The specific reflection zone has not been plotted however as the reflection will almost be a perfect reflection to the radar, it can be seen illustrated based on the line of sight profile shown in Figure 10 and 11 (black lines).

Considering the reflection zone (in front of the building relative to the radar), it means that any aircraft would be detected directly by the SSR rather than by the reflection. The radar's internal processing is therefore likely to determine that returns associated with reflected signals are false[17] and the radar display is consequently unlikely to be affected by reflections.

7.6.3 Shadowing

The radar shadow extends on a bearing beyond the proposed development relative to the radar (237.1° and 237.4° for Building A and B respectively). The shadow zone has a geometric width of approximately 20 metres at the proposed development for each tower. The shadow will not intercept the ground considering the relative altitudes.

The coverage of the SSR in the shadow zone is insignificant because no aircraft under the supervision of Heathrow ATC would ever reasonably be located there.

It is understood that shadowing effects are less significant for NATS radar compared to the impact of reflections, based on previous analysis and consultation.

[17] Because they are received later than the genuine returns

7.7 Assessment Conclusions

The modelling has revealed that the proposed development will be significantly visible to the SSR at London Heathrow Airport.

The proposed development may have an impact upon the SSR at London Heathrow Airport due to reflection effects. Consultation with NATS, who safeguard London Heathrow Airport's radar, will therefore be undertaken. Mitigation may be required at the cost of the developer and typically costs in the region of £45k.

8 OVERALL CONCLUSIONS AND MITIGATION

8.1 Analysis Results

The results of the analysis for the key identified aviation risks are presented below.

8.1.1 London Heathrow Airport's Obstacle Limitation Surfaces

- The proposed development is beneath the Inner Horizontal Surface of London Heathrow Airport;
- The analysis has shown that the maximum altitude of the proposed development (66.45m amsl) would be beneath the Inner Horizontal Surface height;
- The proposed development would therefore not infringe the OLS;
- Crane usage will need to be considered due to the close proximity to the OLS. It is likely a Crane Operations Scheme will be required;
- Consultation with the safeguarding team at London Heathrow Airport will be undertaken to confirm the analysis results and to identify any other safeguarding issues.

8.1.2 London Heathrow Airport SSR

- The proposed development is located approximately 5.8km from the SSR at London Heathrow Airport and will be visible to it;
- The proposed development will not be significantly screened by existing buildings along the line of sight path;
- The proposed development will be of size and height greater than those developments immediately surrounding it;
- Consultation with NATS, who safeguard the London Heathrow Airport radar, will therefore be undertaken to discuss the requirement for mitigation due to reflection effects. If mitigation is requested, it is expected that it will be a technical fix applied to the radar and implemented by NATS. This solution has been implemented for many developments of this type in the vicinity of SSR and typically costs in the region of £45k.

8.1.3 RAF Northolt

Consultation with the MOD will be undertaken for completeness however no impact with regard to the OLS at RAF Northolt is anticipated.

8.2 Overall Conclusions

The results of the analysis revealed that the proposed development would not infringe the OLS at Heathrow Airport. NATS may however have some concerns regarding the visibility of the proposed development to the SSR. It is unlikely that the identified issue would be a 'show stopper' if mitigation is implemented, the fee for implementation would be payable to NATS.

Consultation with London Heathrow Airport, NATS and the MOD[18] to discuss the results of this report will be undertaken.

[18] MOD consultation for completeness.

APPENDIX A – CONSULTATION OVERVIEW

NATS

The overall result of the consultation with NATS is presented below.

To be completed.

MOD

The overall result of the consultation with the MOD is presented below.

To be completed.

London Heathrow Airport

The overall result of the consultation with London Heathrow Airport is presented below.

To be completed.

PAGERPOWER
Urban & Renewables

Pager Power Limited
Stour Valley Business Centre
Sudbury
Suffolk
CO10 7GB

Tel: +44 1787 319001 **Email:** info@pagerpower.com **Web:** www.pagerpower.com