THE·GREEN SOUTHALL

Aviation Impact Assessment

March 2021

Peabody

ADMINISTRATION PAGE

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1	05 June, 2019	Initial issue (9456C)
2	28 June, 2019	Report update following change to development heights
3	13 November, 2019	Update with latest site plans
4	22 November, 2019	Consultation added
5	17 December, 2019	Client front page added
6	26 March, 2020	Sixth issue
7	19 March, 2021	Seventh issue – updated plans

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KEY FINDINGS

Background

Pager Power has conducted an aviation impact assessment for the proposed development known as 'The Green Southall' located adjacent The Green, in Southall, west London, to determine its impact upon aviation activity in the surrounding area.

The Proposed Development

The proposed development consists of multiple towers of various heights, located approximately 6.2km north east 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.

Analysis Results

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

London Heathrow Airport's Obstacle Limitation Surfaces

- The proposed development is beneath the Conical Surface of the OLS at London Heathrow Airport;
- The analysis has shown that the proposed development does not breach the Conical Surface. The smallest margin of clearance is 0.7m;
- The proposed development will therefore not infringe the OLS;
- Crane usage will need to be carefully considered as their use will almost certainly result in a breach of the Conical Surface during construction. A Crane Management Scheme is likely to be required as part of the planning conditions. An Instrument Flight Procedures (IFP) assessment may also be required. The use of cranes will require close consultation with London Heathrow Airport;
- Previous consultation with the safeguarding team at London Heathrow Airport was initiated. No objection is expected based on the development plans assessed within this report. Their analysis results agreed with the results presented in this report – that no infringement of the OLS will occur.

London Heathrow Airport SSR

- The proposed development is located approximately 6.2km 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, has revealed that mitigation is likely to be required which is a technical fix to the radar implemented by NATS. This solution has been implemented for many developments of this type in the vicinity of SSR;
- This can likely be managed through a planning condition.

RAF Northolt

Consultation with the MOD revealed no objection to the proposed development on the basis of the PAR or OLS however the MOD would need to be made aware of any future plans for green/brown roofs/balcony/terrace gardens.

Planning Conditions

With respect to the aviation infrastructure assessed within this report, it is likely that a planning condition relating to the following will be required for the proposed development:

- The operation and usage of cranes;
- Wildlife and green roofs;
- SSR mitigation;
- The requirement and design of aviation lighting.

Overall Conclusions

The results of the analysis and consultation with London Heathrow Airport/NATS revealed no significant concerns with respect to the OLS however NATS have initially requested mitigation with respect 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 and it is likely this can be managed through a planning condition.

Further consultation with the MOD and London Heathrow Airport regarding roof designs (green roofs), wildlife and cranes is recommended. It is likely this can be managed through the planning process with the appropriate planning conditions.

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ABOUT PAGER POWER

Pager Power is a dedicated consultancy company based in Suffolk, UK. The company has undertaken projects in 49 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 development known as 'The Green Southall' located adjacent The Green, in Southall, west London, to determine its impact upon aviation activity in the surrounding area.

The proposed development consists of multiple towers of various heights, located approximately 6.2km north east of London Heathrow Airport.

Proposed development plans have been assessed against the relevant aviation infrastructure in the surrounding area to understand whether an impact is expected. Consultation has also been 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

Whilst it is formerly safeguarded, the runway extension or the addition of a third runway at London Heathrow Airport has not been considered within the analysis. It is not expected to change the results of this report because runway 09L/27R is closer to 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[1] below shows the red line boundary of the proposed development.

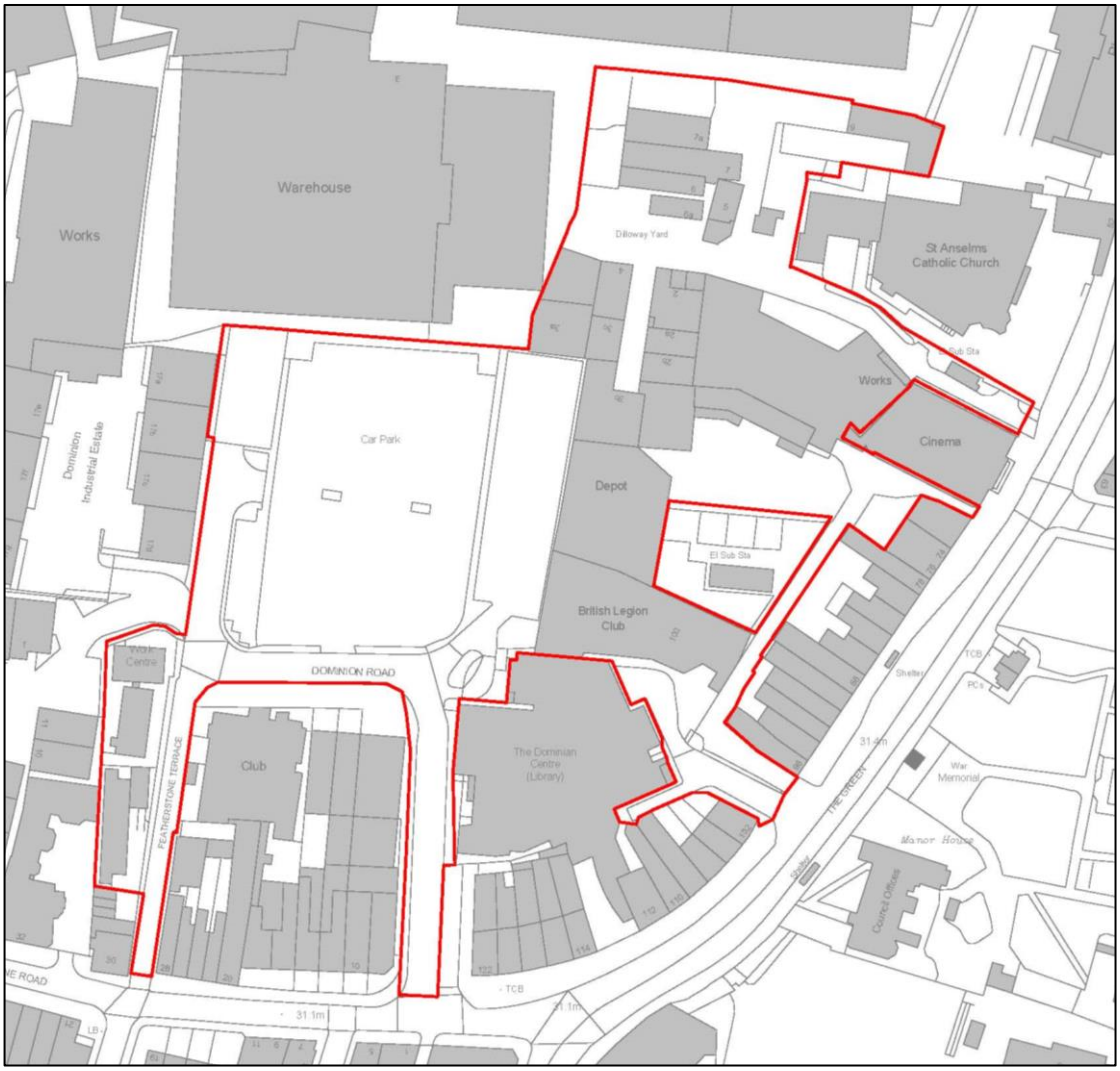

Figure 1 *Red line boundary*

[1] Source: Hunters (cropped).

Figure 2[2] below shows red line boundary overlaid on aerial imagery.

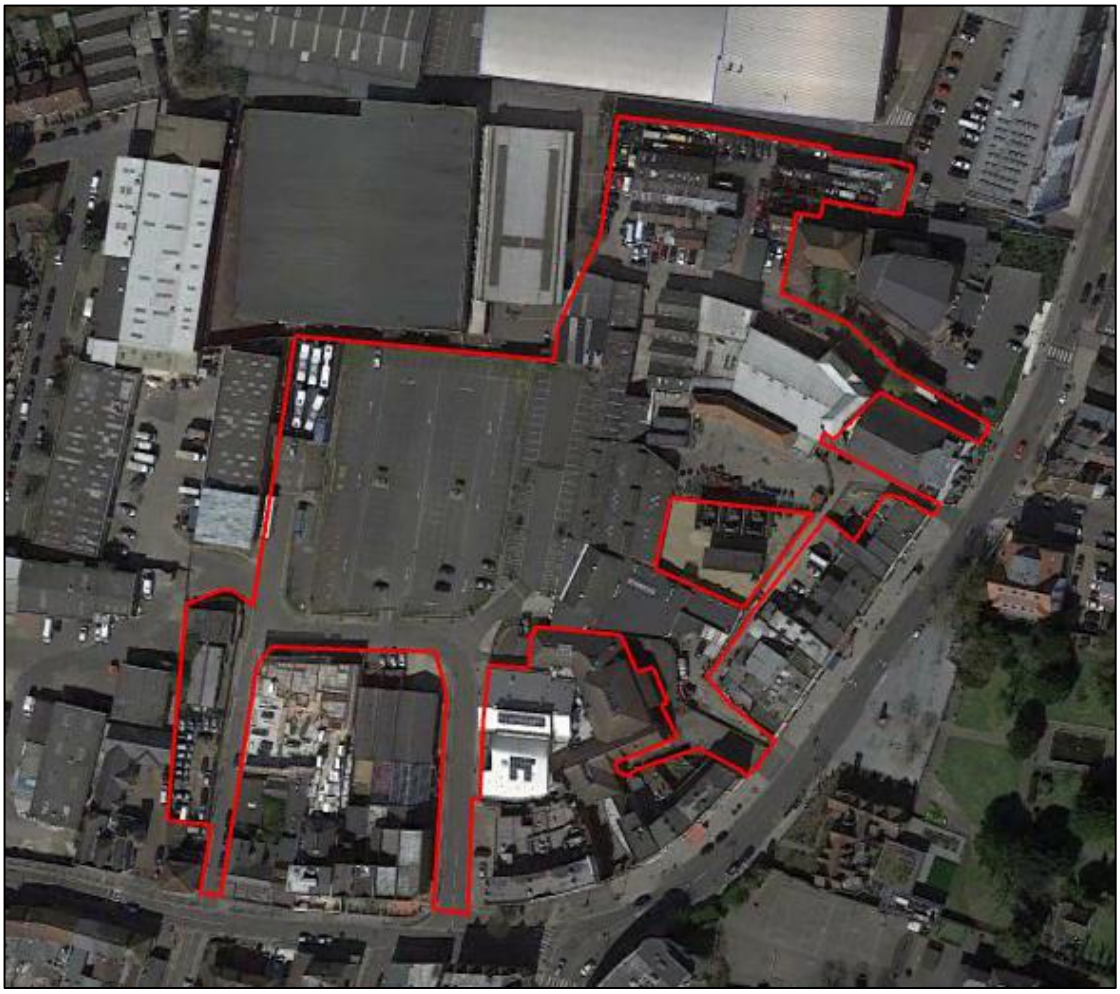

Figure 2 *Red line boundary – aerial imagery*

[2] Source: Aerial imagery copyright © 2021 Google.

Figure 3[3] below shows the ground floor plans of the proposed development.

Figure 3 *Proposed development ground level plans*

2.3 Co-Ordinate Data

Co-ordinate data for each of the proposed towers has been taken from documents provided to Pager Power[4]. The co-ordinates and heights used in this assessment are shown in Table 1 on the following page. The co-ordinates are in WGS84 format.

[3] Source: Hunters (cropped).
[4] Source: Hunters – document M9516-HUN-ZZ-00-DR-A-02-0002-ProposedSitePlan.

Tower	ID	Longitude (°)	Latitude (°)	Height above ground level (m)	Height above ordnance datum (m)
A2	West North 1	-0.38318	51.50356	44.86	+77.010m
	West North 2	-0.38292	51.50353		
	West North 3	-0.38297	51.50334		
	West North 4	-0.38323	51.50337		
A1	West South 1	-[5]	-	55.1	+87.250m
	West South 2	-	-		
	West South 3	-0.38306	51.50301		
	West South 4	-0.38331	51.50304		
A3	Central North 1	-0.38262	51.50351	57.875	+90.025m
	Central North 2	-0.38236	51.50349		
	Central North 3	-0.38239	51.50330		
	Central North 4	-0.38265	51.50332		
A4	Central South 1	-	-	40.435	+72.585m
	Central South 2	-	-		
	Central South 3	-0.38244	51.50300		
	Central South 4	-0.38270	51.50302		
C1	East North 1	-0.38196	51.50405	61.18	+93.330m
	East North 2	-0.38157	51.50402		
	East North 3	-0.38160	51.50386		
	East North 4	-0.38198	51.50389		
B2	East Central 1	-0.38201	51.50371	62.25	+94.400m
	East Central 2	-0.38171	51.50369		
	East Central 3	-	-		
	East Central 4	-	-		

[5] Co-ordinates not provided for these points.

Tower	ID	Longitude (°)	Latitude (°)	Height above ground level (m)	Height above ordnance datum (m)
B1	East South 1	-	-	53.025	+85.175m
	East South 2	-	-		
	East South 3	-0.38184	51.50297		
	East South 4	-0.38214	51.50299		

Table 1 *Building perimeter points assessed within the redline site boundary*

The co-ordinates assessed are shown in Figure 4 below.

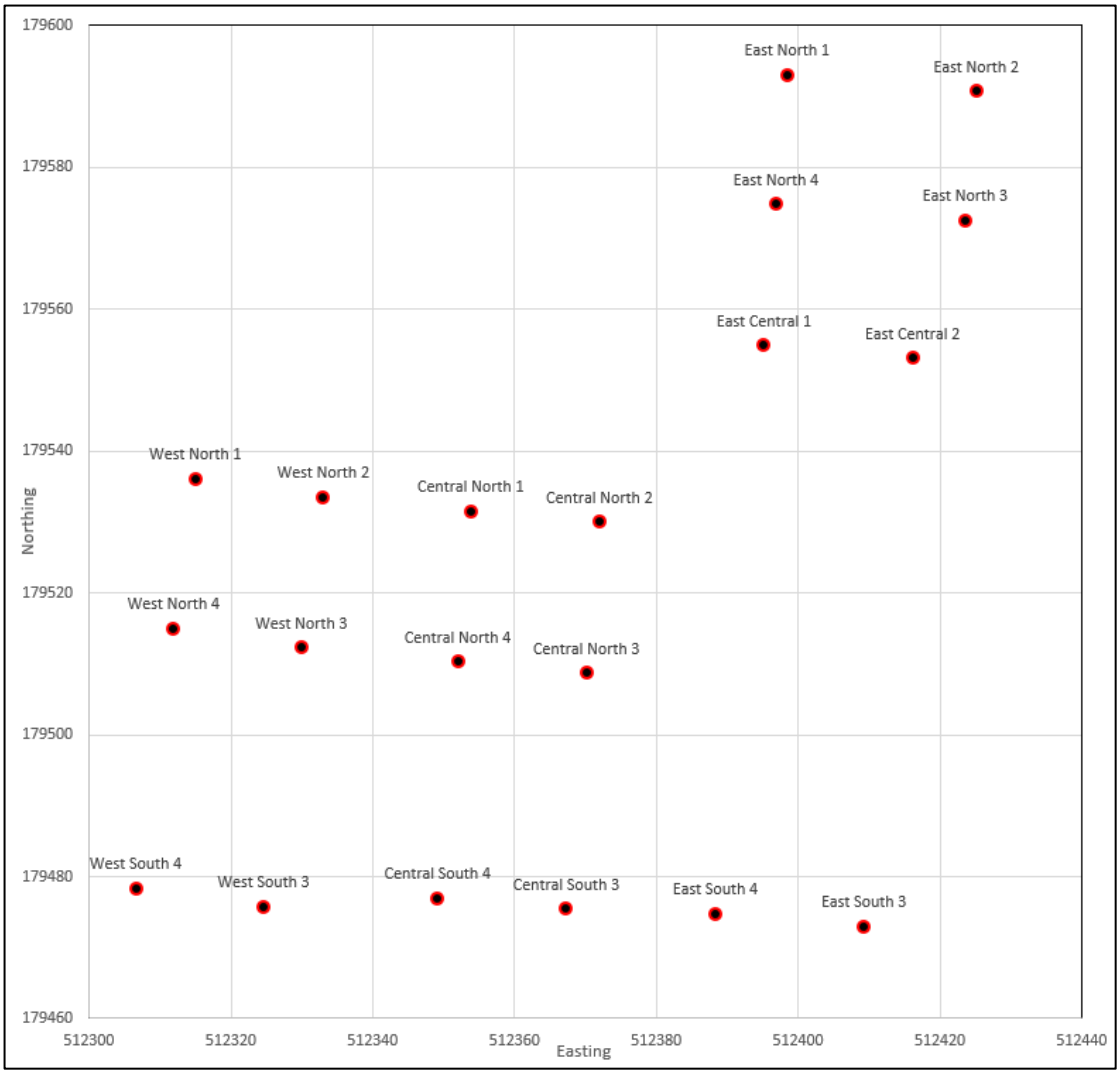

Figure 4 *Assessed co-ordinates*

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)	6.2 km	Low
London Heathrow Airport – Obstacle Limitation Surfaces	6.2 km	Medium
London Heathrow SSR	6.2 km	Medium
Farnborough PSR	36.8 km	Low
London Gatwick PSR	42.2 km	Low
London Stansted PSR	60.1 km	Low
Cranfield (proposed) PSR	64.9 km	Low

Table 2 *Identified airport risks*

3.2.2 NATS En Route

Aviation Risk	Distance	Risk Level
Bovingdon PSR	25.4 km	Low
AGA 30[6]	5.6 km	Low
AGA 21	7.3 km	Low
London Heathrow Beacon	4.8 km	Low
London Heathrow Beacon	6.0 km	Low
London Heathrow Beacon	6.0 km	Low
London VOR/DME (Closing 2019) Beacon	6.1 km	Low

[6] Air-Ground-Air – an aeronautical radio system.

Aviation Risk	Distance	Risk Level
Northolt Beacon	6.2 km	Low
London Heathrow Beacon	6.9 km	Low
London Heathrow Beacon	6.9 km	Low
Pease Pottage PSR	48.2 km	Low
Debden PSR	70.2 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	5.0 km	Low
Rainham (Coldharbour Point) Heliport	6.7 km	Low
Denham, Licensed	13.1 km	Low

Table 4 *Identified civil airfield risks*

3.2.4 Met Office

Aviation Risk	Distance	Risk Level
Chenies MET Radar	23.1 km	Low

Table 5 *Identified Met Office risks*

3.2.5 MOD - Ministry of Defence

Aviation Risk	Distance	Risk Level
Northolt PAR	6.0 km	Low
Northolt Airfield – Obstacle Limitation Surfaces	6.1 km	Low
Odiham PSR	49.4 km	Low
Benson PSR	51.4 km	Low
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 impact upon a Precision Approach Radar (PAR) or infringement of its OLS. Consultation with the MOD revealed no objection to the proposed developed on the basis of the PAR or the OLS, however the MOD would need to be made aware of any future plans for green/brown roofs/balcony/terrace gardens. The consultation is presented in Appendix A.

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 (during and post-construction). 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
Average distance between the proposed development and radar	6.23km
Average grid bearing from radar to proposed development	38.7°

Table 7 *Heathrow SSR radar location details*

4.2 Radar Photograph and Location

A photograph of the Heathrow SSR is shown in Figure 5[7] below.

Figure 5 *Photograph of the Heathrow SSR*

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

The location of the Heathrow SSR is shown in Figure 6[8] below.

Figure 6 *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.

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

4.4 SSR and Proposed Development Location

The location of SSR relative to the red line boundary is shown in Figure 7[9] below.

Figure 7 *SSR and red line boundary relative location*

[9] Source: Aerial imagery copyright © 2021 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.
FRUIT[10] 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

[10] FRUIT – False Replies Unsynchronized in Time

Feature	Form of interference	How feature reduces interference	Additional Information
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*

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 OLS for London Heathrow Airport are presented in Figure 8 on the following page along with the assessed points.

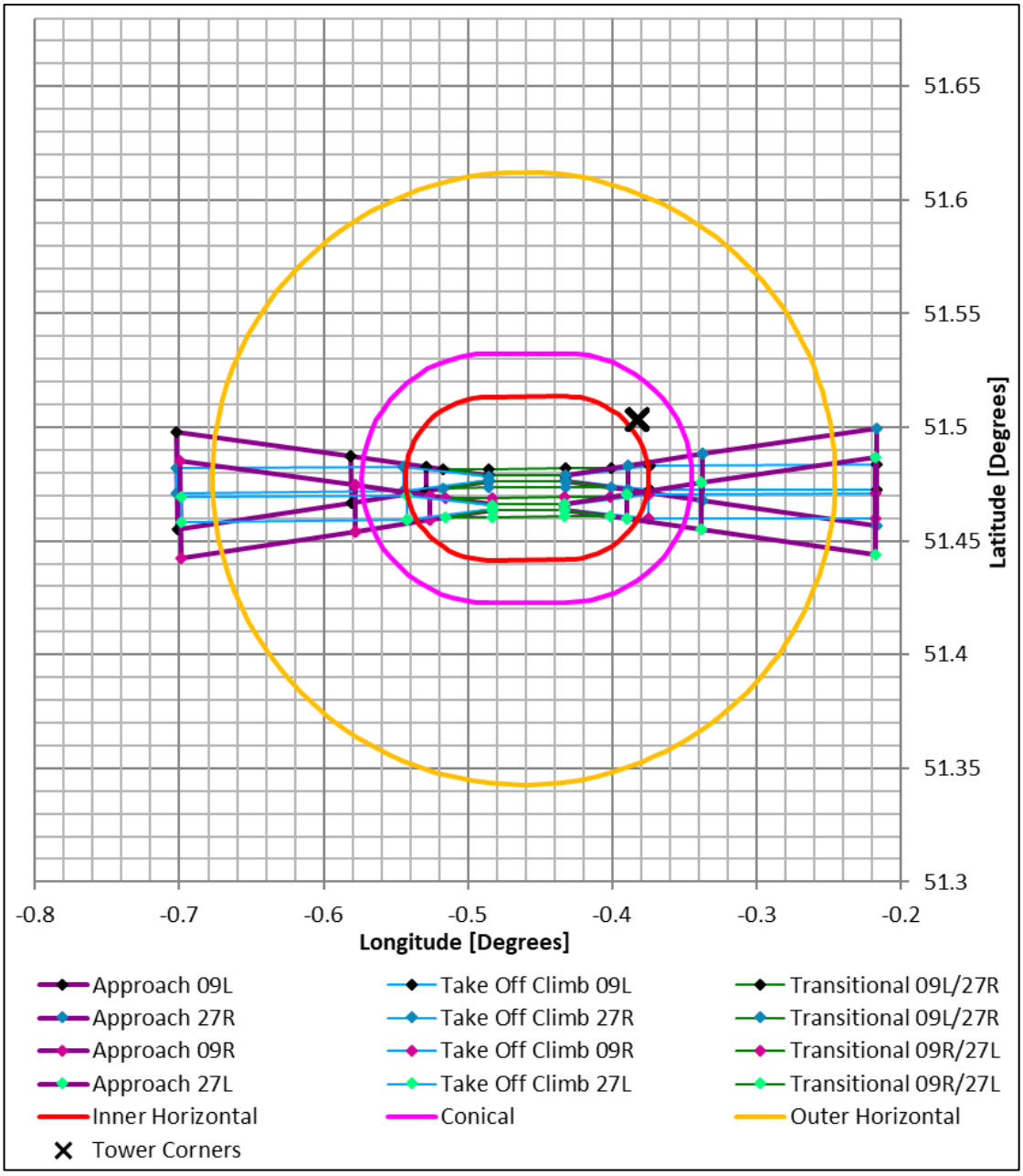

Figure 8 *London Heathrow Airport Obstacle Limitation Surfaces chart*

Figure 9 below shows a zoomed in Obstacle Limitation Surfaces chart.

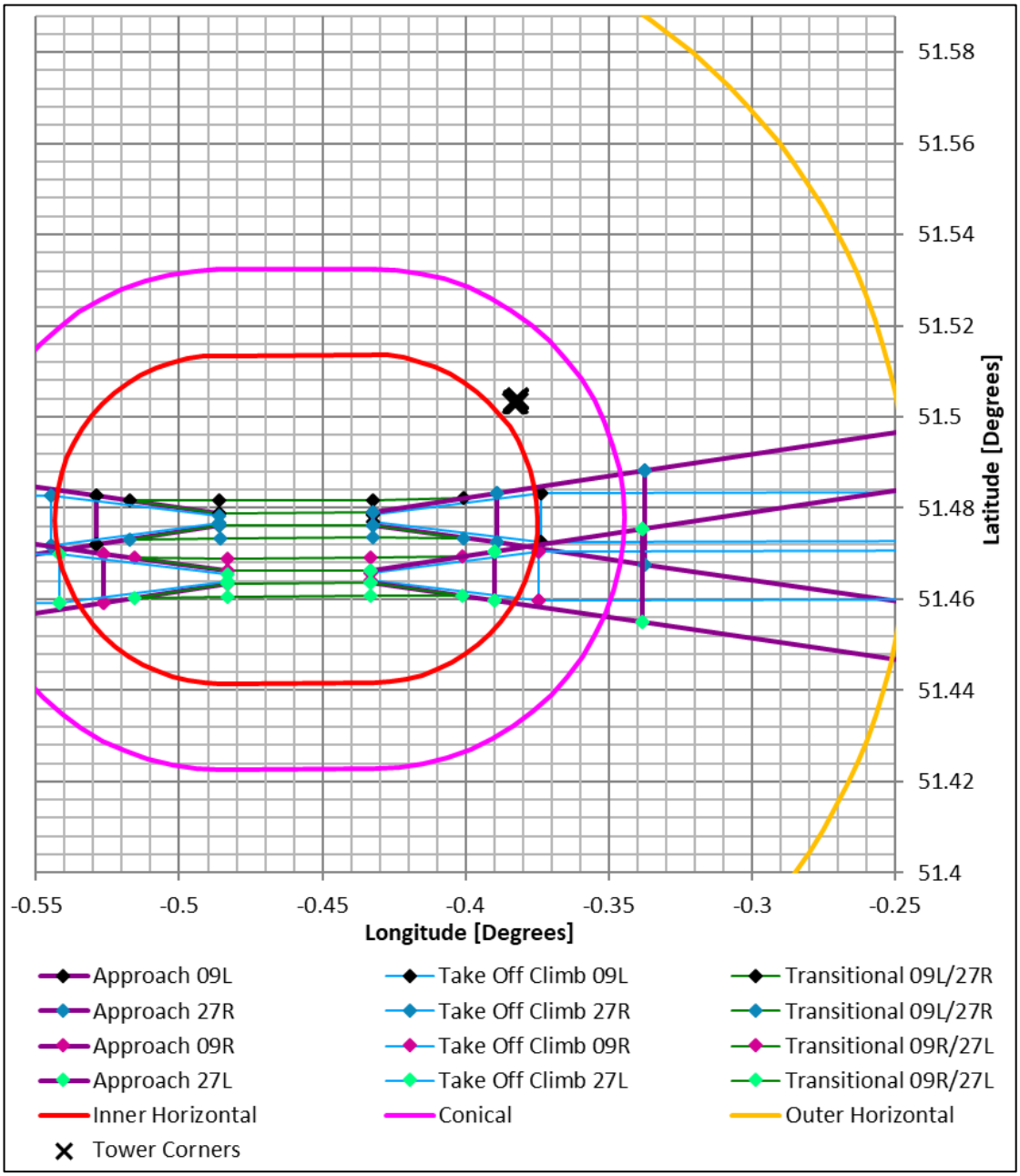

Figure 9 *London Heathrow Airport Obstacle Limitation Surfaces chart – zoomed*

Table 9 below presents a summary of the Obstacle Limitation Surfaces assessment results.

Building	ID	Assessed Altitude (m AOD)	Relevant Surface	Vertical Clearance[11] (m)
A2	West North 1	+77.010m	Conical Surface	2.7
	West North 2			3.3
	West North 3			2.6
	West North 4			1.9
A1	West South 3	+87.250m		N/A
	West South 4			N/A
A3	Central North 1	+90.025m		0.7
	Central North 2			1.4
	Central North 3			3.1
	Central North 4			4
A4	Central South 3	+72.585		3.4
	Central South 4			2.4
C1	East North 1	+93.330		7.8
	East North 2			7
	East North 3			14.4
	East North 4			15
B2	East Central 1	+94.400		14.2
	East Central 2			13.6
B1	East South 3	+85.175	Conical Surface	2.5
B1	East South 4	+85.175	Conical Surface	2

Table 9 *Obstacle Limitation Surfaces detailed results*

[11] Vertical clearance between the top of the assessed tower and the Conical Surface.

6.3 Crane Usage

Crane usage will need to be carefully considered as their use will almost certainly result in a breach of the Conical Surface during construction and this could affect the safety of operations at London Heathrow Airport. There may therefore be limiting factors on the size of crane that can be used and the time it can operate.

A Crane Management Scheme is likely to be required as part of the planning conditions. An Instrument Flight Procedures (IFP) assessment may also be required. The use of cranes will require close consultation with London Heathrow Airport.

6.4 Obstacle Limitation Surfaces Conclusions

The analysis has shown that the proposed development is clear of the Conical Surface. The smallest margin of clearance is 0.7m.

Consultation with the safeguarding team at London Heathrow Airport was initiated with no objection expected regarding the building itself however crane use will also need to be considered. The results of the consultation are presented in Appendix A.

7 RADAR LINE OF SIGHT 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 10 on the following page shows the line of sight chart for location 'West South 4' (the point located closest the radar and within the main development area). 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 the same.

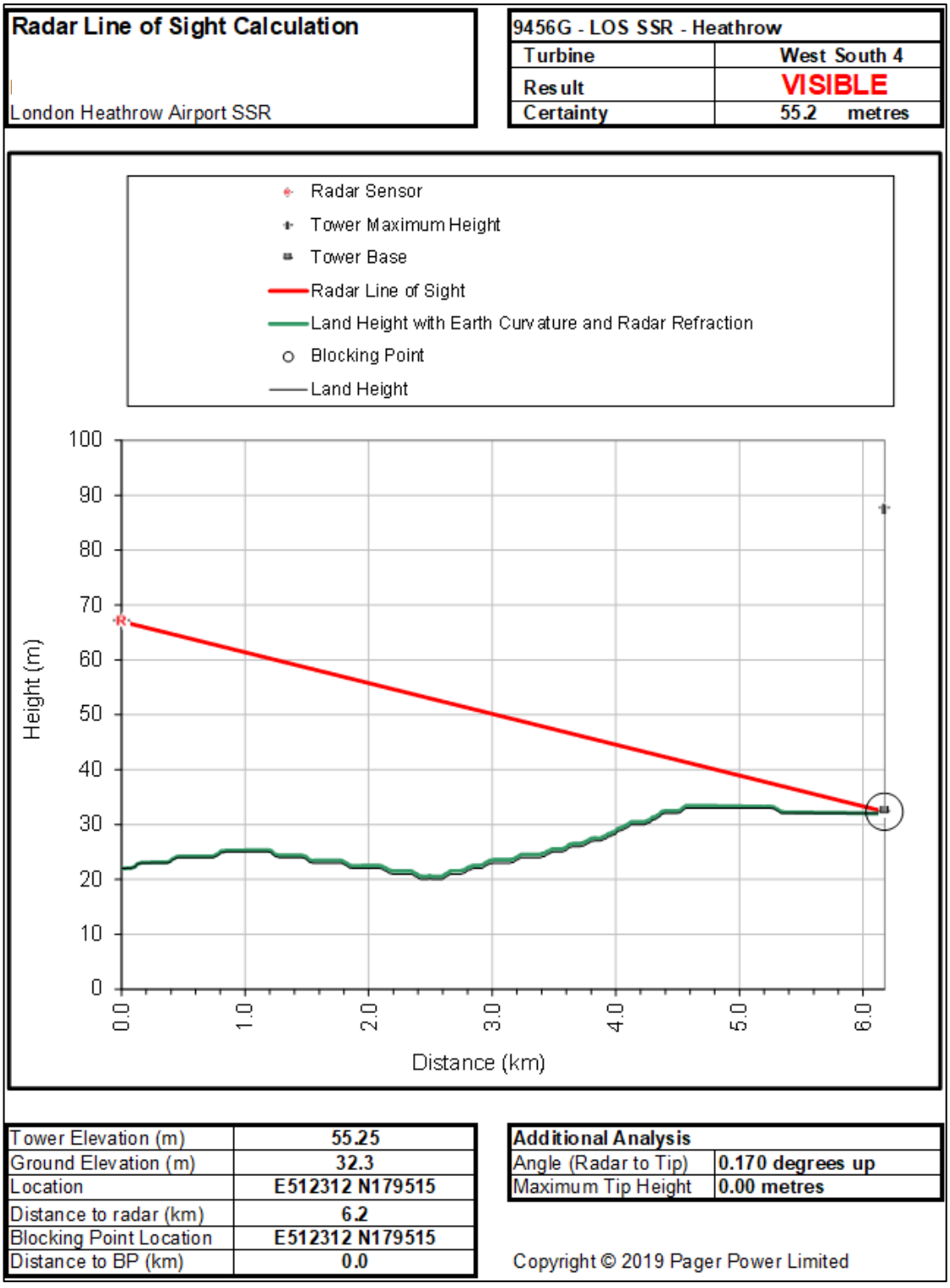

Figure 10 *Radar line of sight chart – location 'West South 4'*

7.2.1 Line of Sight Chart Results Description

The box labelled 'certainty' in Figure 10 provides 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 10 below.

Reference Point	Result and Visibility
West North 1	All reference points significantly visible to the SSR.
West North 2	
West North 3	
West North 4	
West South 3	
West South 4	
Central North 1	
Central North 2	
Central North 3	
Central North 4	
Central South 3	
Central South 4	
East North 1	
East North 2	
East North 3	
East North 4	
East Central 1	

Table 10 *Line of sight results for each assessed tower corner – bare earth terrain*

7.4 Additional Screening

The modelling described in the sections above accounts for the intervening terrain. It does not account for additional obstructions on the ground along the radar line of sight e.g. buildings or vegetation.

Following a review of the line of sight profiles, it was determined that there would be no significant screening by existing buildings of the proposed development.

7.5 Radar Line of Sight 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. Consultation with NATS, who safeguard London Heathrow Airport's radar, has therefore been undertaken and mitigation has initially been requested by NATS. It is expected this can be managed via a planning condition.

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 Conical Surface of the OLS at London Heathrow Airport;
- The analysis has shown that the proposed development does not breach the Conical Surface. The smallest margin of clearance is 0.7m;
- The proposed development will therefore not infringe the OLS;
- Crane usage will need to be carefully considered as their use will almost certainly result in a breach of the Conical Surface during construction. A Crane Management Scheme is likely to be required as part of the planning conditions. An Instrument Flight Procedures (IFP) assessment may also be required. The use of cranes will require close consultation with London Heathrow Airport;
- Consultation with the safeguarding team at London Heathrow Airport was initiated. No objection is expected based on the development plans assessed within this report. Their analysis results agreed with the results presented in this report – that no infringement of the OLS will occur.

8.1.2 London Heathrow Airport SSR

- The proposed development is located approximately 6.2km 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, has revealed that mitigation is likely to be required which is a technical fix to the radar implemented by NATS. This solution has been implemented for many developments of this type in the vicinity of SSR.

8.1.3 RAF Northolt

Consultation with the MOD revealed no objection to the proposed development on the basis of the PAR or OLS however the MOD would need to be made aware of any future plans for green/brown roofs/balcony/terrace gardens.

8.2 Planning Conditions

With respect to the aviation infrastructure assessed within this report, it is likely that a planning condition relating to the following will be required for the proposed development:

- The operation and usage of cranes;
- Wildlife and green roofs;
- SSR mitigation;
- The requirement and design of aviation lighting.

8.3 Overall Conclusions

The results of the analysis and consultation with London Heathrow Airport/NATS revealed no significant concerns with respect to the OLS however NATS have initially requested mitigation with respect 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 and it is likely this can be managed through a planning condition.

Further consultation with the MOD and London Heathrow Airport regarding roof designs (green roofs) wildlife and cranes is recommended. It is likely this can be managed through the planning process with the appropriate planning conditions.

APPENDIX A – CONSULTATION OVERVIEW

NATS

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

Hi Danny, all is well here thank you, hope things ok over there.

Yes, best to seek advice from safeguarding@heathrow.com who should be able to advise on lighting, birds, cranes and confirm OLS. In terms of the SSR, this area has seen a number of high rise buildings, most of which have been objected to and required mitigating against. This building from a quick look is in front of most of the others, so I'm pretty sure we will have a reflections issue.

As with the others, it is likely that we can simply modify the radar to accommodate these buildings and suppress false targets, so as with the other schemes, a commercial agreement will likely be needed around funding. However, assuming that is the case, we should be supportive of planning conditions.

Please let us know when it's due to go into planning, or alternatively to open up a dialogue etc, you can advise them to submit a pre-planning assessment request.

MOD

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

Hi Danny

I hope all is well.

Thank you for obtaining and providing the details I required to perform an initial safeguarding analysis.

The statutory safeguarding maximum height for the application site is 91.4m AGL, therefore we have no concerns regarding the heights of the towers currently proposed.

We would request, however a crane management plan to be submitted for any demolition and the construction phases of the development, should the cranes reach above 91.4m AGL.

As the application site falls within the statutory birdstrike safeguarding zone, we would need to be made aware of any future plans for green/brown roofs/ balcony/terrace gardens. We would then be able to assess the potential for increased risk of birdstrike and advise/communicate accordingly. Alternatively, any plans can be submitted for a pre application assessment and we can advise on design to prevent birdstrike concerns.

I hope the above information is of some assistance. Please let me know if you require any further advice.

Defence

Infrastructure

Organisation

Defence Infrastructure Organisation

London Heathrow Airport

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

Re: Enquiry into 'The Green' proposed building development

Location: Southall, West London.

I refer to an email received 12th June 2018.

I have listed below the areas which will be of interest to Heathrow Airport Ltd and which should be taken into account when considering final design prior to submitting for full planning.

The site is located beneath the following Safeguarding surface for Heathrow Airport Ltd.

The Conical Surface which is a sloping 1 in 20 surface that ranges from 87m to 100m AOD as it passes over the site.

All of these safeguarding surfaces restrict the height of buildings, plant, and roof structures such as aerials, flagpoles and it will be very unlikely for any development to be permitted to penetrate these surfaces.

It must also be noted that even if a building doesn't infringe any of the safeguarded surfaces, this doesn't necessarily mean we would accept a building of this height. National Air Traffic Services (NATS) would still have to carry out an operational assessment following full planning to ensure no impact on the navigational aids and radars which assists in the operation of both runways.

I have carried out a safeguarding assessment of the following locations and respective elevation. It can be seen from the table below the co-ordinates and elevations provided indicate no infringement of the Conical Surface:

Tower	ID	Easting	Northing	Height above ground level (m)	Height above ordnance datum (m)	Infringement of OLS
A2	West North 1	512315.0	179536.1	44.025	76.175	No
	West North 2	512333.0	179533.4	44.025	76.175	No
	West North 3	512329.9	179512.3	44.025	76.175	No
	West North 4	512311.9	179514.9	44.025	76.175	No
A1	West South 1			-	-	
	West South 2			-	-	
	West South 3	512324.6	179475.7	54.675	86.825	No
	West South 4	512306.6	179478.3	54.675	86.825	No
A3	Central North 1	512353.8	179531.5	58.175	90.325	No
	Central North 2	512371.9	179530.0	58.175	90.325	No
	Central North 3	512370.1	179508.7	58.175	90.325	No
	Central North 4	512352.0	179510.3	58.175	90.325	No
A4	Central South 1			-	-	
	Central South 2			-	-	

Tower	ID	Easting	Northing	Height above ground level (m)	Height above ordnance datum (m)	Infringement of OLS
	Central South 3	512367.3	179475.4	40.175	72.325	No
	Central South 4	512349.1	179477.0	40.175	72.325	No
C1	East North 1	512398.4	179593.0	62.625	94.775	No
	East North 2	512425.1	179590.7	62.625	94.775	No
	East North 3	512423.5	179572.5	62.625	94.775	No
	East North 4	512396.9	179574.8	62.625	94.775	No
B2	East Central 1	512395.2	179554.9	61.425	93.575	No
	East Central 2	512416.1	179553.1	61.425	93.575	No
	East Central 3			-	-	
	East Central 4			-	-	
B1	East South 1			-	-	
	East South 2			-	-	
	East South 3	512409.2	179473.0	52.200	84.350	No
	East South 4	512388.3	179474.8	52.200	84.350	No

Building/Roof Design:

It is important that the building/roof structures are designed so that they are unattractive to birds. Buildings may be used by birds depending upon the design and use of the buildings and the availability of food in the nearby environment. Pigeons, starlings and gulls are the most common birds hazardous to aviation to be found in and around buildings. Pigeons make use of ledges of buildings to roost whilst starlings may roost both on and in buildings in vast numbers. Gantries and other complex structures offer potential perches and gulls are increasingly nesting on flat and shallow pitched roofs. 'Green' roofs can also be very attractive to birds.

For further information please see attached Safeguarding of Aerodromes, Advice Note 3 Wildlife hazards around Airports.

Note: If the overall size of the flat/shallow pitched roof/s exceeds 500Sq.M then we would apply a condition to ensure the roof space was monitored for bird activity throughout the year and for the life of the building. To avoid any such condition then we would advise the roofs to be pitched greater than 15 degrees.

Landscape Design:

Where a proposed development is within 13Km of an Aerodrome it could have the potential to attract birds. To avoid the need for modifying proposals at full planning stage, it is suggested that developers consult with the aerodrome Safeguarding team at a preliminary stage. For this particular site the following will apply:

Stands of trees with the potential to provide canopy's for bird species such as Rooks, Crows should be planted at 4 metre centres or greater.

Tree species such as Oak (Quercus sp.) Scots Pine (Pinus Sylvestris), and Beech (Fagus Slyvatica) should be excluded from the planting scheme.

Large quantities of berry bearing species should be avoided. If they are essential to the integrity of the proposed planting scheme, low numbers of berry bearing plants may be dispersed amongst other non berry species to reduce the total food supply for birds. In this location, berry bearing species should be kept below 20% of the total planting palette.

For further information please see attached Safeguarding of Aerodromes, Advice Note 3 Wildlife hazards around Airports.

Sustainable Urban Drainage Schemes (SUDS):

SUDS are increasingly used to attenuate water flows for flood alleviation purposes and to treat contaminated water prior to discharge into watercourses. Government agencies and local planning authorities frequently require SUDS to be incorporated into designs for buildings, housing estates etc. including those near aerodromes. Unfortunately, some SUDS designs have the potential to attract birds to the local area. Birds, especially large flocking species, can constitute a significant hazard to aircraft, therefore if a SUDS design intended for this development will incorporate an area of open water then full details must be provided to the Safeguarding Manager at Heathrow Airport Ltd.

For further information please see attached Safeguarding of Aerodromes, Advice Note 3 Wildlife hazards around Airports.

Wind Turbines:

Wind turbine developments of any kind have the potential to impact aviation safety. If located within 15Km of an aerodrome turbines could infringe the Obstacle Limitation Surfaces (OLS) They could also interfere with the aerodrome radar and other aids to air navigation, therefore full details of any turbine proposals no matter the size should be provided to the Heathrow Airport Safeguarding Officer, to allow a full impact assessment to be completed.

For further information see attached Safeguarding of Aerodromes Advice Note 5 Renewable Energy & Impact on Aviation.

Crane & Construction Operations:

Given the sites close proximity to Heathrow Airport it is paramount that the relevant permits are obtained from Heathrow Airport, contact details below, for the use of cranes or any other equipment used for the construction process.

The use of cranes in this location could infringe the OLS as well as potentially having an impact on Instrument Flight Procedures (IFP). Additionally, cranes could interfere with the aerodrome radar and other aids to air navigation, therefore full details of any crane proposals no matter the size should be provided to the Airside Works Approval Team, to allow a full impact assessment to be completed. The necessary email address is as follows:

Airside_Works_Aprovals@heathrow.com

For further information see attached Safeguarding of Aerodromes Advice Note 4 Crane and other construction issues.

I hope you find this information helpful, but please feel free to contact me if you require further clarification.

PAGERPOWER

Urban & Renewables

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