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Urban & Renewables

Obstruction Assessment

Oak & Prosper Limited

Long Drive, South Ruislip

November 2025





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ADMINISTRATION PAGE

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Issue	Date	Detail of Changes
1	23rd May 2022	Initial issue
2	26th May 2022	Minor amendments
3	5th February 2025	Assessment of the proposed blocks
4	5th November 2025	Assessment of updated block locations and heights

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EXECUTIVE SUMMARY

Report Purpose

Pager Power has been commissioned to investigate the potential impact of a proposed building development upon RAF Northolt. The proposed development is located at Long Drive, South Ruislip, London, UK, and will comprise four blocks with a maximum altitude of 53.4m above ordnance datum.

The purposed of the assessment is to determine the potential collision risk to aircraft in accordance with current UK military safeguarding regulations.

Conclusions

The analysis has shown that the proposed development will infringe the OLS at RAF Northolt, like the existing buildings they are replacing, based on their currently proposed altitudes. All blocks infringe the Approach Surface for Runway 25 and Take-Off Climb Surface for Runway 07, with the maximum infringements for each surface being 5.40m and 4.18m, respectively.

The analysis has identified additional existing infringement of the surface in the surrounding environment, particularly the Odyssey Business Park buildings which have a larger infringement and are closer to the aerodrome than the proposed development. RAF Northolt also utilises a minimum of 3.5° instrument approach gradient which ensures sufficient clearance over the proposed development. Therefore, it is predicted that the infringement from the proposed development will not adversely affect the safety of RAF Northolt.

It is likely that a crane operation scheme will need to be agreed with the MOD, and aviation lighting for the cranes will be required.

Next Steps

Consultation with the MOD has been started and will continue to confirm the acceptability of the infringement.

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ABOUT PAGER POWER

Pager Power is a dedicated consultancy company based in Suffolk, UK. The company has undertaken projects in 63 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 BACKGROUND

1.1 Introduction

Pager Power has been commissioned to investigate the potential impact of a proposed building development upon RAF Northolt. The proposed development is located at Long Drive, South Ruislip, London, UK, and will comprise a tall building plot. The purposed of the assessment is to determine the maximum altitude the proposed development can be built without causing a collision risk in accordance with current UK military safeguarding regulations.

Building developments have the potential to affect aviation operations in numerous ways. The most common impacts relate to building developments as physical obstructions. In detail the report includes:

- Proposed development and RAF Northolt details.
- Obstacle limitation surfaces assessment for RAF Northolt.
- High-level comments regarding crane usage and lighting requirements.
- Overall conclusions and next steps.

1.2 Proposed Development Site Plan

The proposed site plan is shown in Figure 1[1] below.

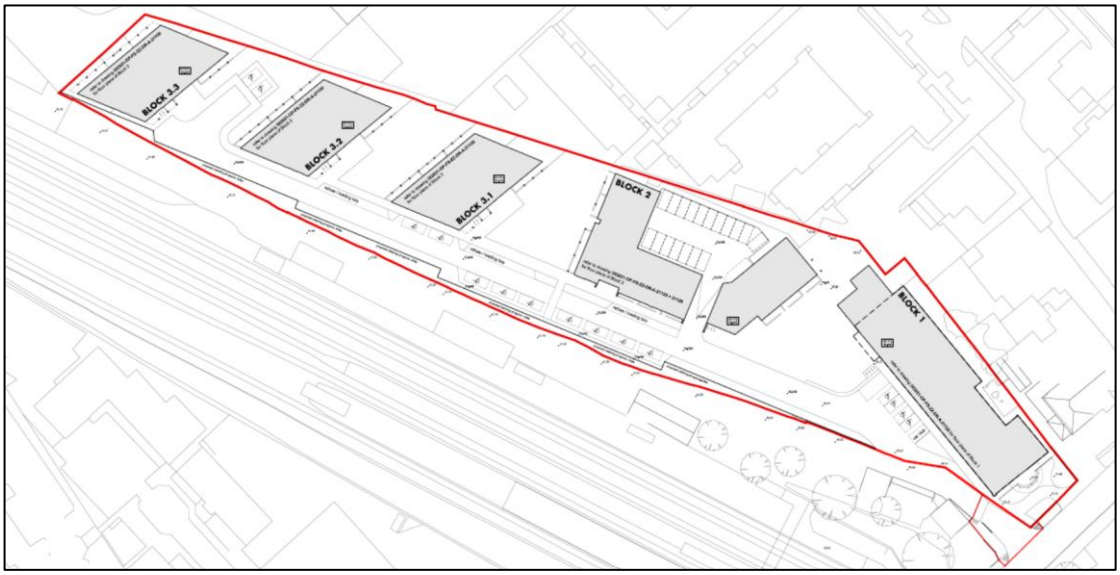

Figure 1 *Proposed development site plan*

[1] Source: 302021-OP-FS-ZZ-DR-A-21110-S2-P3_ProposedSitePlan (cropped).

1.3 Proposed Development Site Layout – Aerial Image

The assessed development footprints (blue) and site boundary (red) overlaid on aerial imagery is shown in Figures 2 and 3 below and on the following page. The block footprint coordinates extrapolated from site drawings are presented in Appendix A.

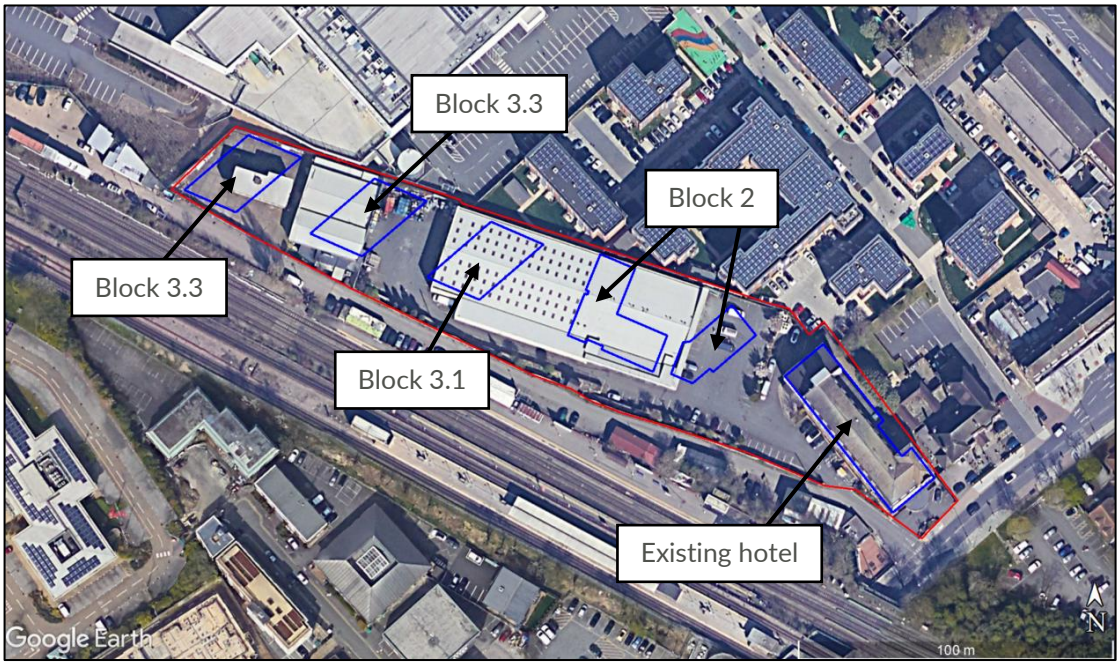

Figure 2 *Proposed development site layout – aerial image*

Figure 3 *Proposed development relative to RAF Northolt – aerial image*

1.4 Proposed Block Altitude Details

The proposed block altitudes are presented in Table 1 below.

Block	Block Altitude (m AOD)	Lift Overrun Altitude (m AOD)
Existing hotel	53.49	
Block 2	52.8	53.4
Block 3.1		
Block 3.2		
Block 3.3		

Table 1 *Proposed block altitudes*

2 OBSTACLE LIMITATION SURFACES ASSESSMENT

2.1 Overview

The Obstacle Limitation Surfaces (OLS) for RAF Northolt have been modelled with respect to the building plot and red line boundary coordinates. The purpose is to identify the maximum altitude to which the development could be built without infringing the OLS at RAF Northolt.

2.2 RAF Northolt Obstacle Limitation Surfaces

The dimensions and geometry of the surfaces are constructed based on detailed rules defined in the UK Military Aviation Authority (MAA): Regulatory Article (RA) 3512: Permanent Fixed Wing Aerodrome - Obstacle Environment. The size of the surfaces is dependent on the number of runways, their dimensions and the procedures carried out at the airfield.

The proposed development is approximately 635m east northeast of the threshold for runway approach path 25 for RAF Northolt. This means that the proposed development is laterally under the OLS for RAF Northolt. Specifically, it is beneath the Take-off climb surface for Runway 07 and Approach Surface for Runway 25.

The Obstacle Limitation Surfaces for RAF Northolt are presented in Figures 4 below and Figure 5 on the following page. The proposed development building plot coordinates are shown by the red crosses in Figure 4.

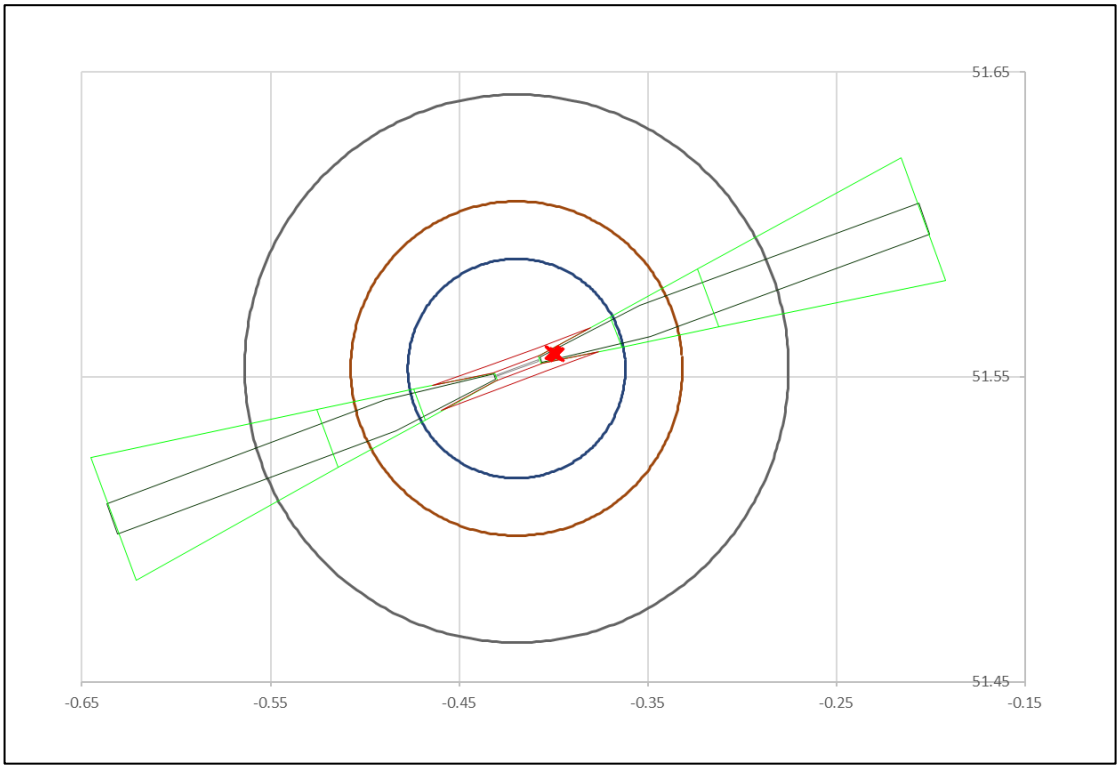

Figure 4 *RAF Northolt Obstacle Limitation Surfaces chart*

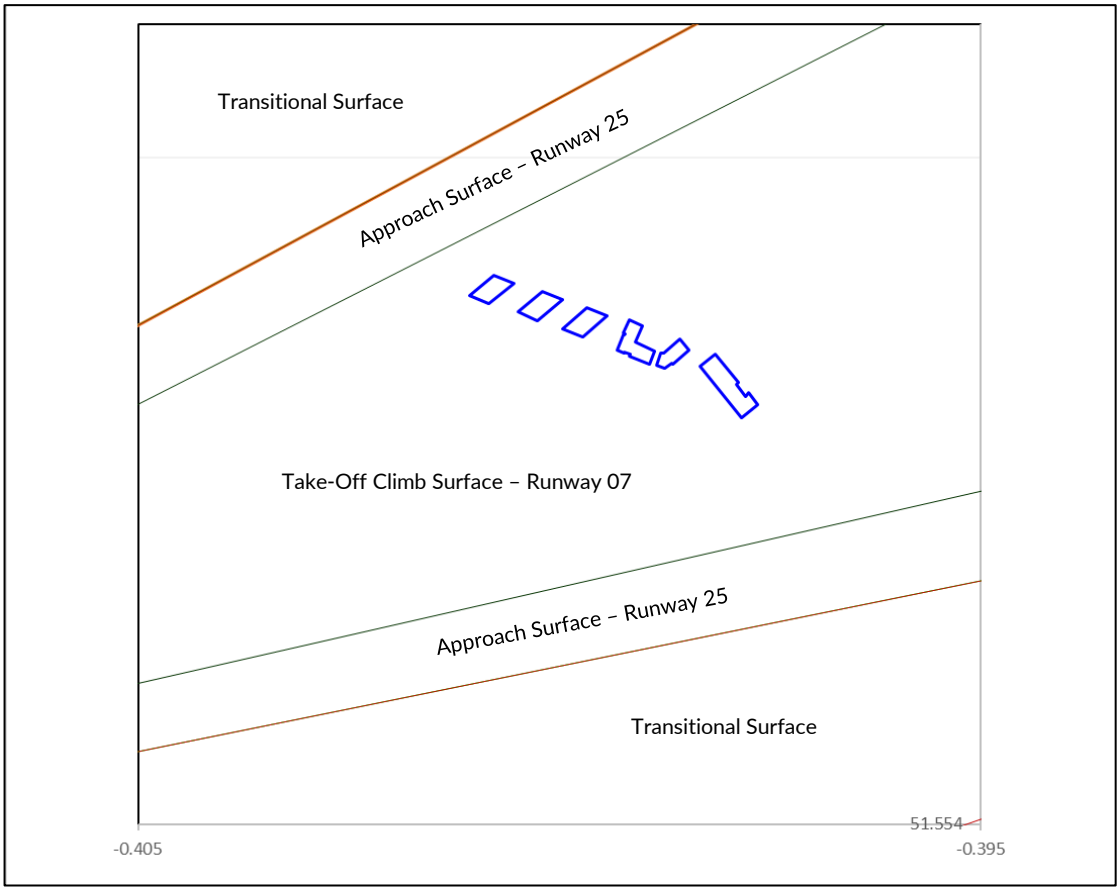

Figure 5 *RAF Northolt Obstacle Limitation Surfaces chart – zoomed in*

Table 1 below presents a summary of the OLS assessment results.

Block	Infringed Surfaces	Infringement (-) / Clearance (+) (m)	
		APPS	TOCS
Existing hotel	Approach Surface (APPS) for Runway 25[2] Take-Off Climb Surface (TOCS) for Runway 07	-2.32	-1.11
Block 2		-3.44	-2.22
Block 3.1		-4.15	-2.93
Block 3.2		-4.75	-3.53
Block 3.3		-5.40	-4.18

Table 2 *OLS detailed results*

[2] Approach Surface for Runway 25 is the most restrictive surface when a 2% slope is used for Take-off climb surface 07. This is further discussed in Appendix B.

2.3 OLS Analysis

The OLS assessment has shown that the proposed development infringes the APPS for Runway 25 and TOCS for runway 07. RA 3512 sets out the position of the MOD in relation to infringement – the relevant excerpt is as follows:

> *4.2.21 Recommendation.— Existing objects above an approach surface, a transitional surface, the conical surface and inner horizontal surface should as far as practicable be removed except when, in the opinion of the appropriate authority, an object is shielded by an existing immovable object, or after aeronautical study it is determined that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes*

A review of the existing environment shows that there are several buildings that infringe these surfaces and the proposed development would be in keeping with the other buildings in the area. Specifically, the Odyssey Business Park buildings at 50m AOD (discussed further on the next page) and ASDA / Cineworld at 54.31m AOD are shown to infringe this surface by a greater margin than the proposed development.

The proposed development and existing environment relative to the APPS for Runway 25 (the most restrictive surface) (green) is shown in Figure 6 below.

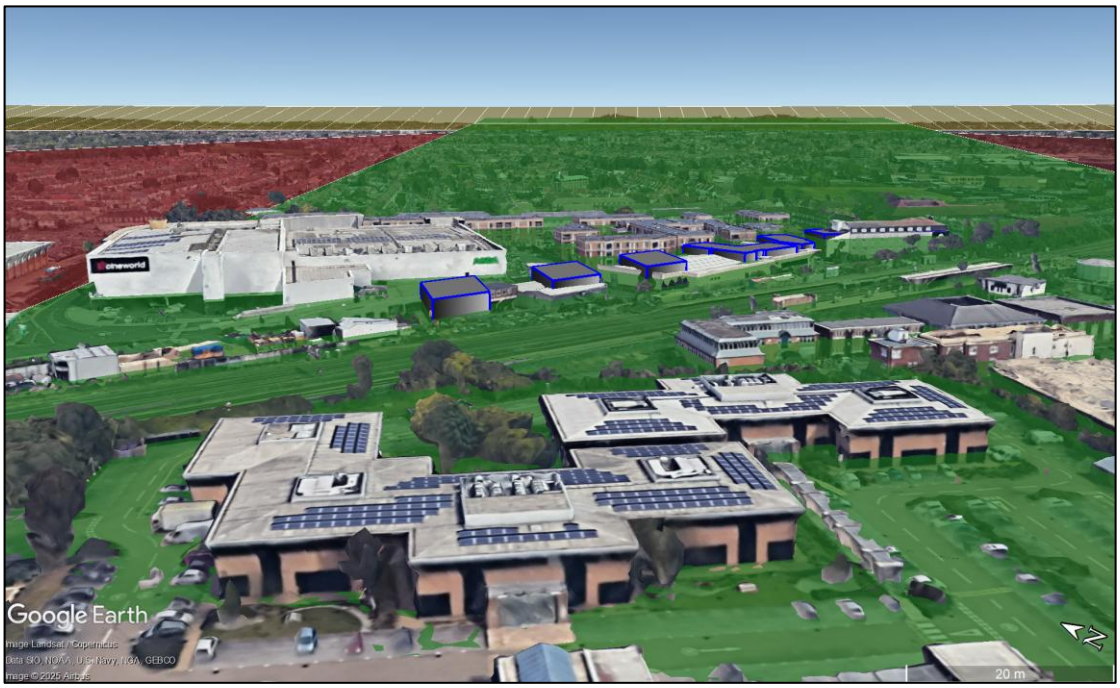

Figure 6 *Proposed development relative to existing environment*

The proposed development and existing environment relative to the APPS for Runway 25, from the viewpoint of an approaching aircraft, is shown in Figure 7 on the following page. The Odyssey Business Park buildings have been circled as it is discussed further on the following page.

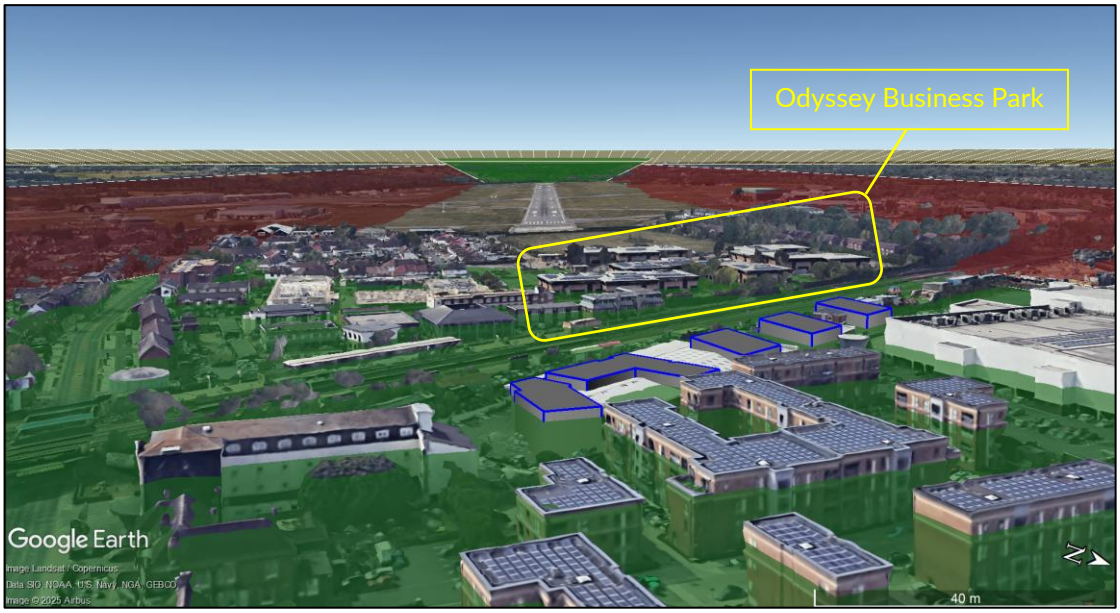

Figure 7 *Proposed development relative to existing environment - approaching aircraft*

The Odyssey Business Park buildings have a maximum altitude of approximately 50m above mean sea level and therefore infringe the APPS by a maximum of approximately 6.8m. This is a greater infringement than the proposed development at a more sensitive location closer to the runway threshold. This infringement is considered more significant than the proposed development as it is beneath an aircraft at the most critical stage of the approach and they are the first obstacles an aircraft will meet as they depart from the runway.

A review of the Military AIP also shows that the ILS/DME approach for Runway 25 utilises a steeper approach gradient of 3.5° - this is supported by the textual data which states that *v. A minimum glidepath of 3.5° is mandatory for all instrument approaches to Runway 25.* This will therefore ensure sufficient vertical clearance from the proposed development to aircraft using the instrument approach.

As such, it is predicted that the proposed development will not adversely affect the safety or significantly affect the regularity of operations of aeroplanes at RAF Northolt.

2.4 OLS Conclusions

The analysis has shown that the proposed development will infringe the OLS at RAF Northolt, like the existing buildings they are replacing, based on their currently proposed altitudes. All blocks infringe the APPS for Runway 25 and TOCS for Runway 07, with the maximum infringements for each surface being 5.40m and 4.18m, respectively.

The analysis has identified existing infringement of the surface in the surrounding environment, particularly the Odyssey Business Park buildings which have a larger infringement and are closer to the aerodrome than the proposed development. RAF Northolt also utilises a minimum of 3.5° instrument approach gradient which ensures sufficient clearance over the proposed development. Therefore, it is predicted that the infringement from the proposed development will not adversely affect the safety of RAF Northolt.

3 CRANE USAGE AND AVIATION LIGHTING

3.1 Crane Usage Overview

During the construction phase, cranes will be present at the site that may reach elevations greater than the final building height. In principle, safeguarding concerns for cranes are the same as for building developments.

Due to the proposed development infringing the OLS, cranes will further infringe the OLS. It is likely that a crane operation scheme will need to be agreed with the MOD and steady red medium intensity aviation lighting will be required for cranes.

APPENDIX A – BLOCK FOOTPRINT COORDINATES

Existing Hotel

ID	Longitude	Latitude	ID	Longitude	Latitude
1	-0.39784	51.55705	7	-0.39816	51.55752
2	-0.39765	51.55714	8	-0.39819	51.55750
3	-0.39775	51.55723	9	-0.39828	51.55756
4	-0.39780	51.55720	10	-0.39834	51.55753
5	-0.39791	51.55729	11	-0.39832	51.55751
6	-0.39788	51.55730	12	-0.39839	51.55748

Existing hotel footprint coordinates

Block 2

ID	Longitude	Latitude	ID	Longitude	Latitude
1	-0.39886	51.55755	12	-0.39916	51.55752
2	-0.39909	51.55761	13	-0.39916	51.55751
3	-0.39901	51.55774	14	-0.39893	51.55745
4	-0.39917	51.55778	15	-0.39885	51.55744
5	-0.39923	51.55768	16	-0.39875	51.55742
6	-0.39922	51.55768	17	-0.39867	51.55746
7	-0.39923	51.55767	18	-0.39865	51.55745
8	-0.39924	51.55767	19	-0.39846	51.55755
9	-0.39932	51.55755	20	-0.39857	51.55764
10	-0.39923	51.55753	21	-0.39876	51.55754
11	-0.39923	51.55754	22	-0.39879	51.55753

Block 2 footprint coordinates

Block 3.1

ID	Longitude	Latitude	ID	Longitude	Latitude
1	-0.39996	51.55772	3	-0.39943	51.55781
2	-0.39972	51.55765	4	-0.39967	51.55788

Block 3.1 footprint coordinates

Block 3.2

ID	Longitude	Latitude	ID	Longitude	Latitude
1	-0.40049	51.55784	3	-0.39996	51.55793
2	-0.40026	51.55778	4	-0.40020	51.55800

Block 3.2 footprint coordinates

Block 3.3

ID	Longitude	Latitude	ID	Longitude	Latitude
1	-0.40107	51.55797	3	-0.40054	51.55806
2	-0.40083	51.55790	4	-0.40078	51.55812

Block 3.3 footprint coordinates

APPENDIX B – TAKE-OFF CLIMB SURFACE FOR RUNWAY 07 DISCUSSION

Discussion

In determining the calculations for the Obstacle limitation surfaces, the following guidance was used: UK Military Aviation Authority (MAA): Regulatory Article (RA) 3512: Permanent Fixed Wing Aerodrome - Obstacle Environment.

The proposed development is beneath both Approach Surface for Runway 25 and Take-off climb surface for runway 07. Of relevance is the calculation for Take-off climb surface for runway 07.

Appendix B of RA 3512 states that a 2% slope for Take-off climb surface for runway 07 should be used for code 3 or 4 runways. This 2% slope does though mention ICAO Annex 14 Vol I para 4.2.26 which states *"Recommendation.— If no object reaches the 2 per cent (1:50) take-off climb surface, new objects should be limited to preserve the existing obstacle free surface or a surface down to a slope of 1.6 per cent (1:62.5)."*

Furthermore, the following is stated in RA 3512:

"*Take-off Climb Surface. 6. The Take-Off Climb Surface should: a. Be an inclined plane or other specified Surface beyond the end of the runway or clearway (Figure 1)*".[3]

From the footnote it is mentioned that *"the elevation of the inner edge will be highest point on the extended runway centreline or clearway supplied on the Measured Height Survey"*. Since the data for the height of the clearway is not available the height has been extrapolate based on OSGB terrain data which has determined this value to be 40m. Furthermore, it is understood the inner edge is located 140m[4] from the threshold location for runway 25.

On the basis of the above, from modelling of the surfaces in 3D within Google Earth it is noted that there are existing obstructions for the 2% slope. Therefore, a 2% has been used rather than a 1.6% slope. It is therefore understood that on this basis, when a 2% value is used, that the Approach Surface for Runway 25 becomes the most restrictive surface for the assessed coordinate points (Appendix A).

[3] For statutory safeguarding purposes, the take-off climb surfaces will not be varied where the take-off flight path involves a turn. The elevation of the inner edge will be highest point on the extended runway centreline or clearway supplied on the Measured Height Survey.

[4] 140m x 150m is the clearway dimensions detailed within the Military AIP for RAF Northolt.

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