

Obstacle Limitation Surfaces Assessment

Adamstown Station – Blocks A, C, D

Weston Airport

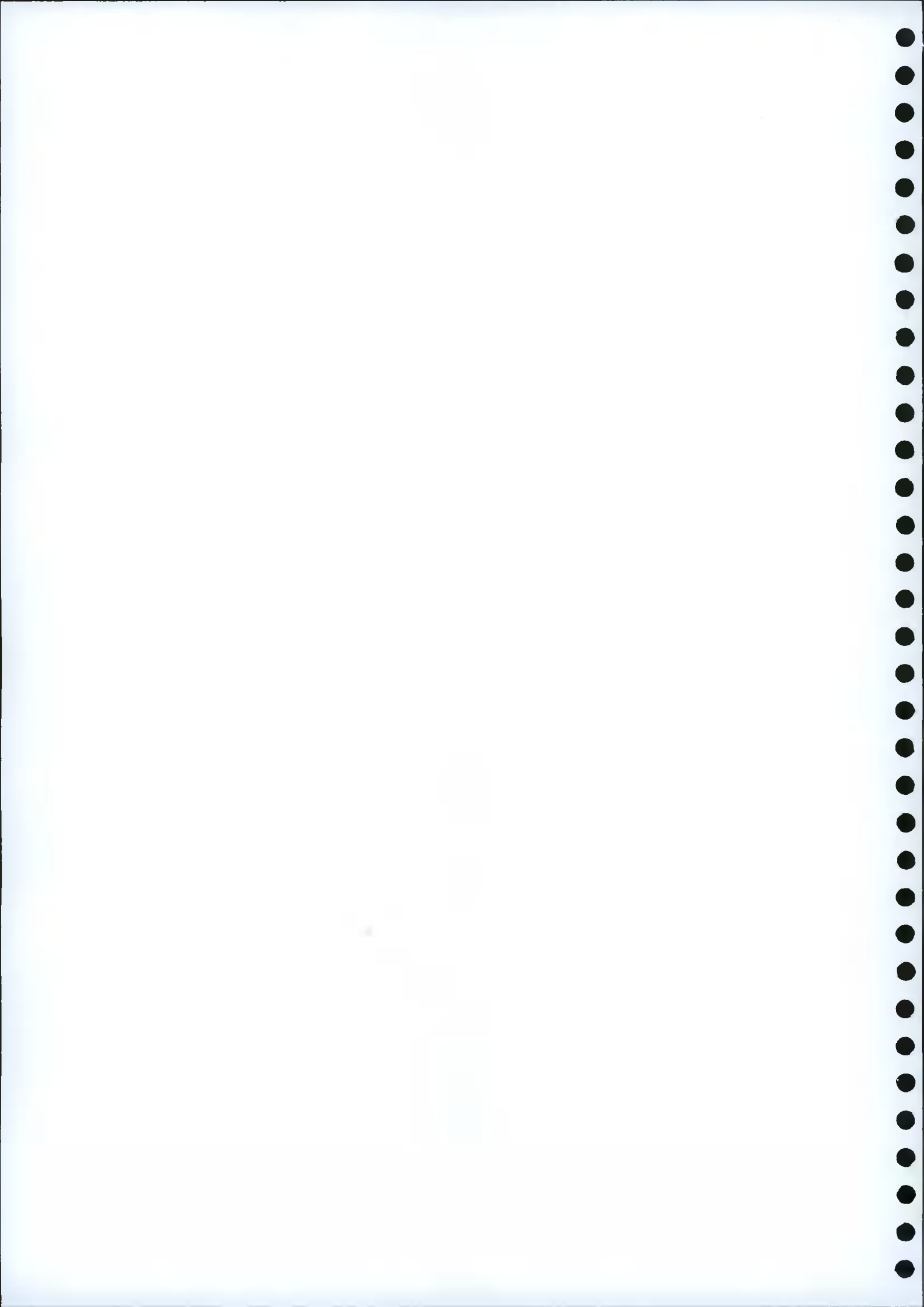
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Executive Summary

Cyrrus Limited has been engaged by Quintain Ireland Development Limited to carry out an assessment of the impact of a series of apartment buildings on the Obstacle Limitation Surfaces (OLS) of Weston Airport. The Block A, C and D developments comprise Blocks A1-A4, Blocks C1-C2 and Blocks D1-D4 and are located approximately 2.1km southeast of the Airport.

The main findings of the study are as follows:

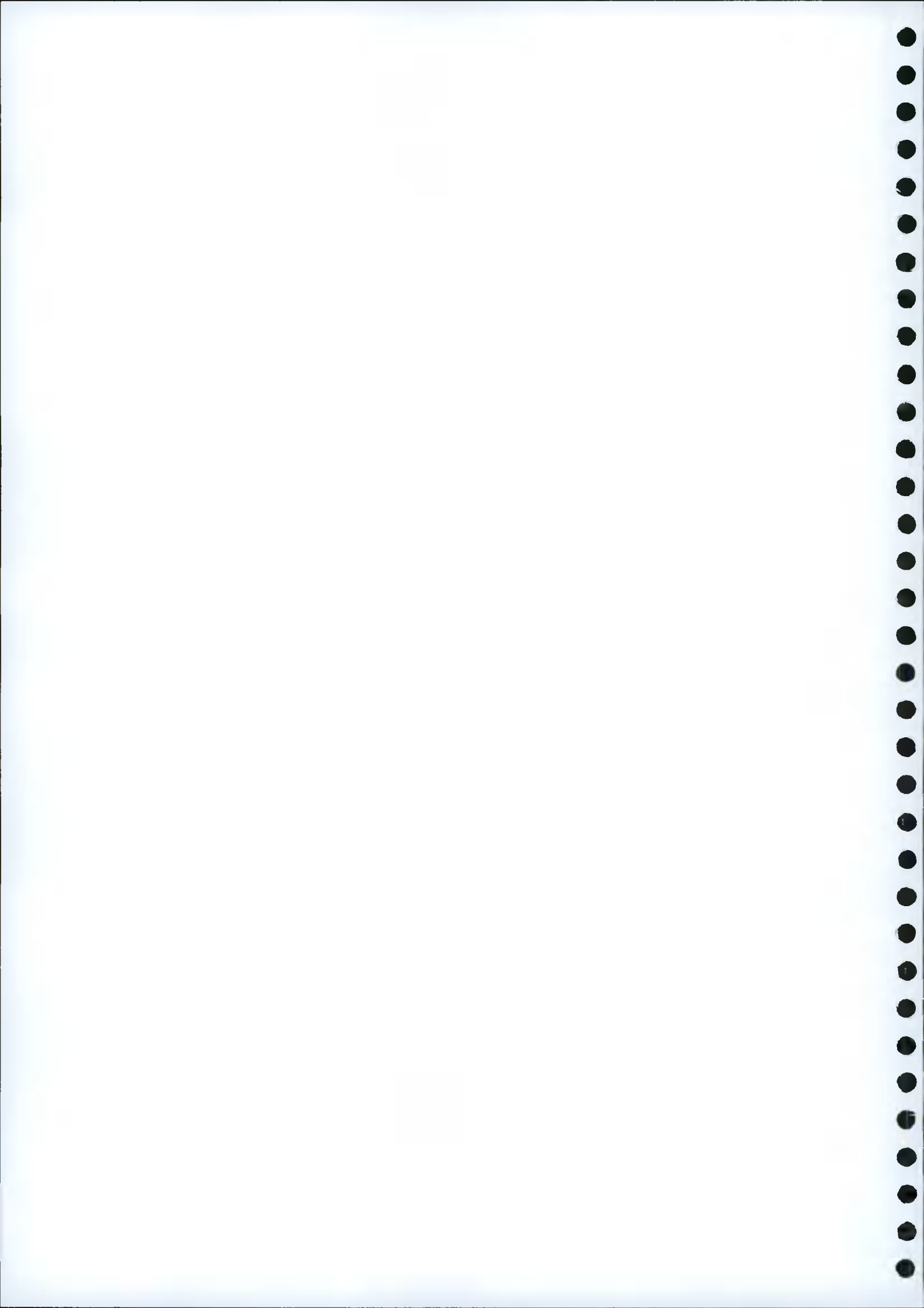
- Blocks A1, A2, A3, A4, C2, D1, D2, D3, D4 of the proposed development **will not infringe** the Weston Airport OLS.
- The plant room enclosure situated on the top of Block C1 **will infringe** the Weston Airport OLS by 1.2m.

Possible mitigation options include:

- Reducing the building elevation to remain below the OLS;
- Removing the plant room enclosure;
- Promulgation in the IAIP of appropriate information;
- Marking and/or lighting of the building.

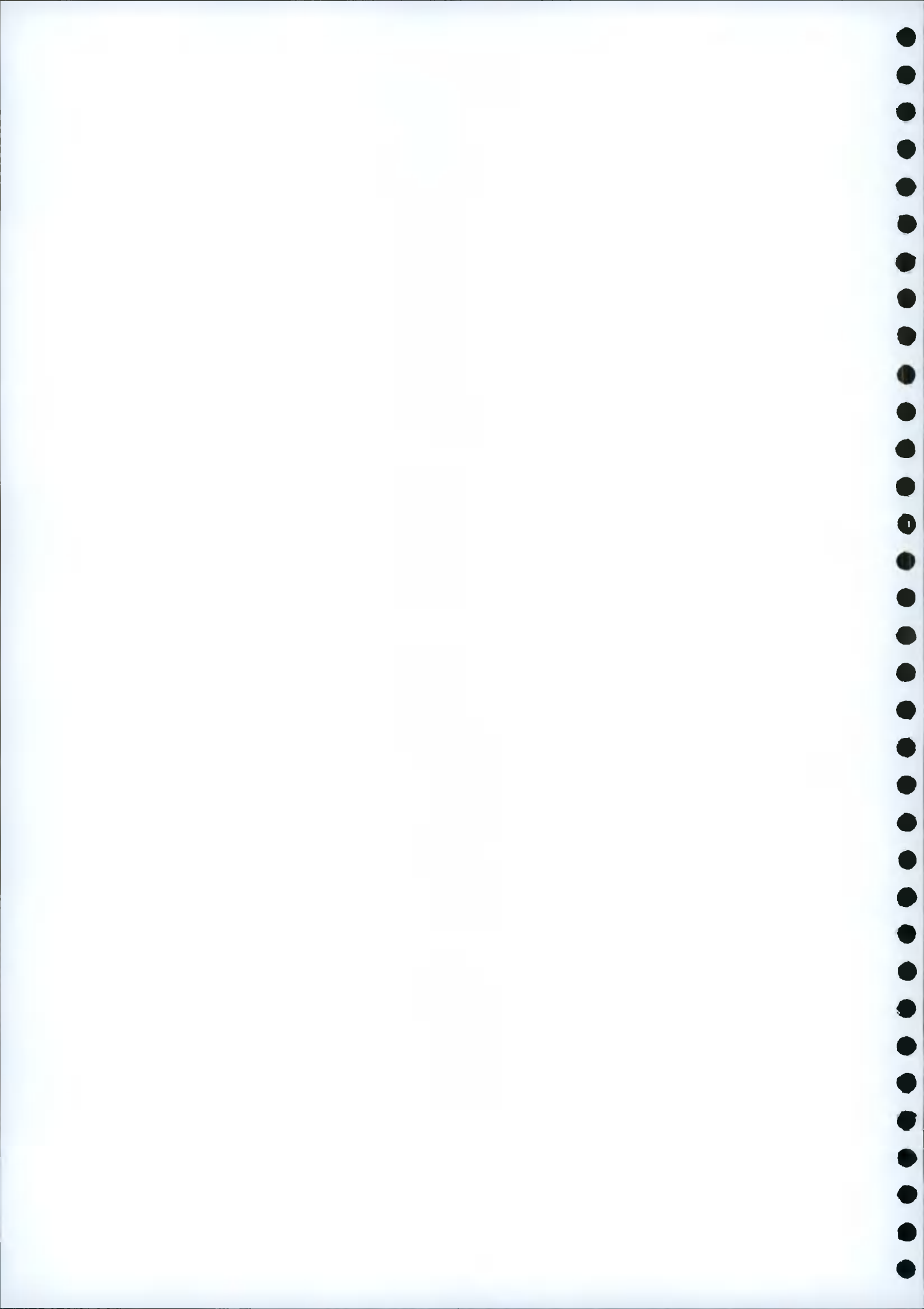
Provided the building is suitably visible to pilots either through appropriate marking and/or lighting then it should not adversely affect the safety or significantly affect the regularity of operations of aeroplanes, however we recommend consulting with the airport if there is no scope for reducing the height of Block C1 to enable them to assess the impact on their operations.

Full details of the investigation and findings are contained within the body of this report.



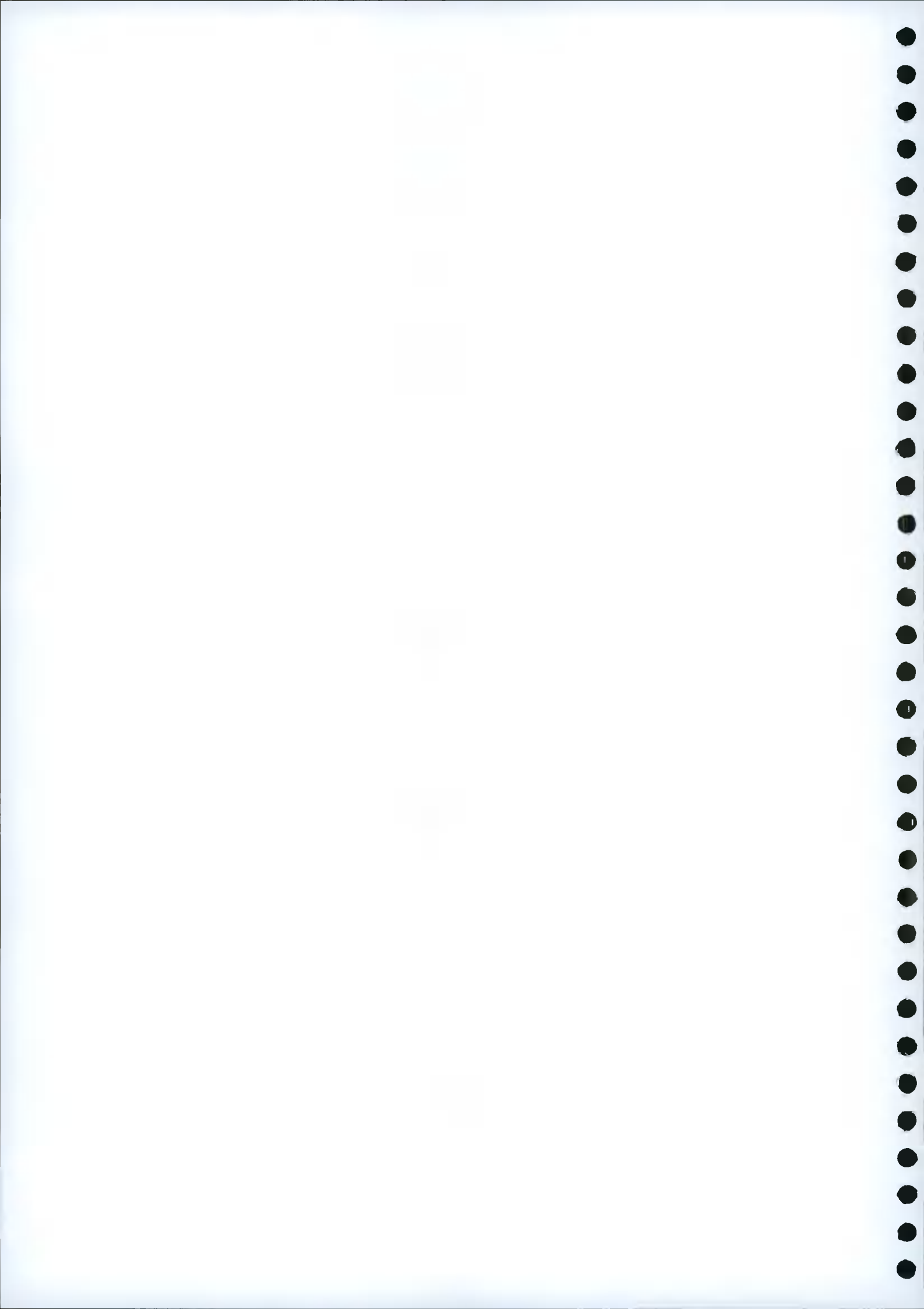
Abbreviations

AMSL	Above Mean Sea Level
ASAM	Aeronautical Services Advisory Memorandum
IAA	Irish Aviation Authority
IAIP	Integrated Aeronautical Information Package
ICAO	International Civil Aviation Organisation
IHS	Inner Horizontal Surface
OLS	Obstacle Limitation Surfaces
TOCS	Take-Off Climb Surface
VFR	Visual Flight Rules



References

- [1] IAA, "Guidance Material on Aerodrome Annex 14 Surfaces", ASAM No. 014 Issue 3, January 2015.
- [2] ICAO, "Annex 14 Volume 1 Aerodrome Design and Operations", Eighth Edition, July 2018.



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1. Introduction

1.1. Background

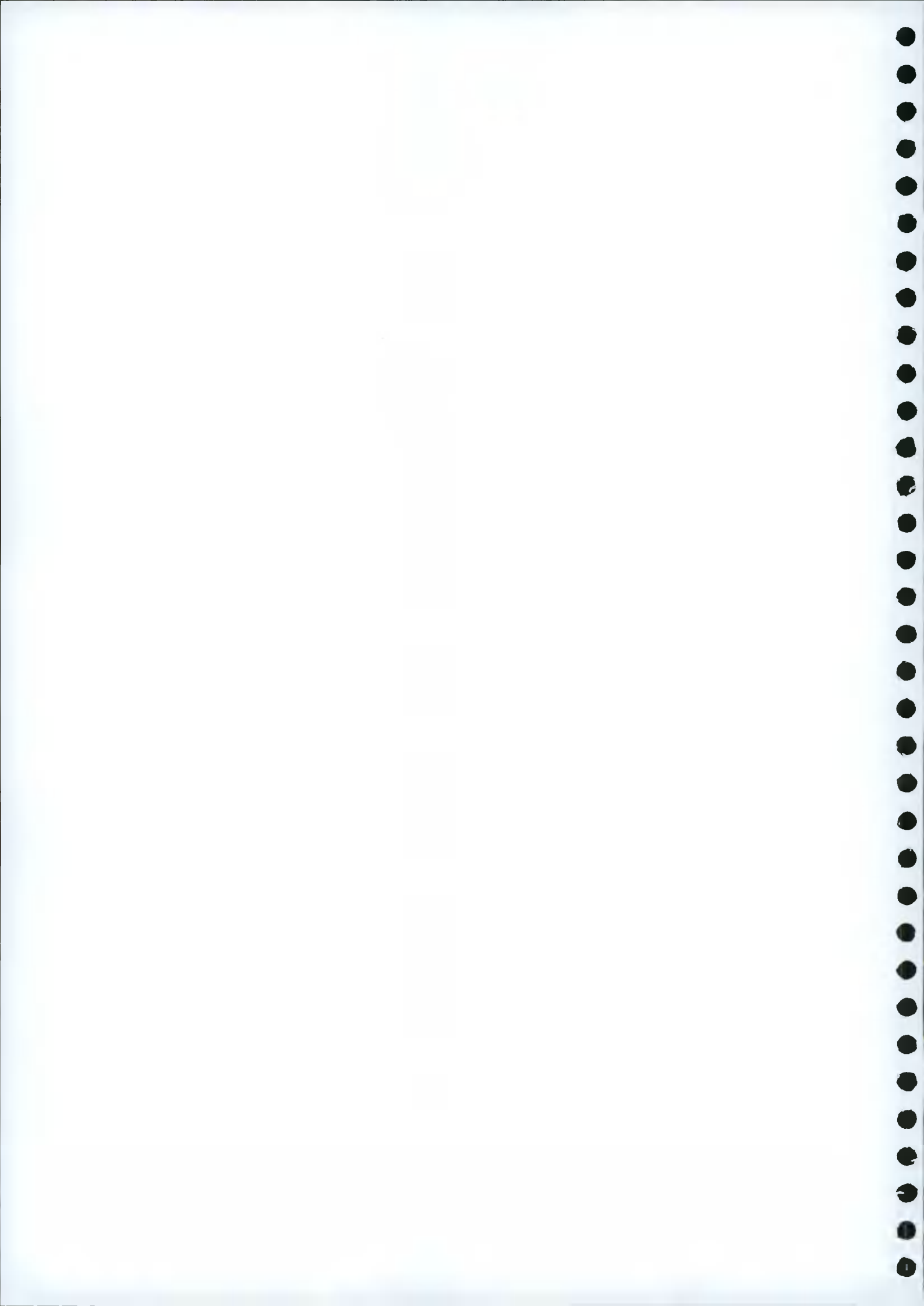
1.1.1. Cyrrus Limited has been engaged by Quintain Ireland Development Limited to carry out a physical safeguarding assessment of the next phase of the proposed Adamstown Station development project in Dublin.

1.1.2. The Block A development (comprising Blocks A1, A2, A3, A4), Block C development (comprising Blocks C1 and C2), and Block D development (comprising Blocks D1, D2, D3, D4) are located approximately 2.1km southeast of Weston Airport and so, to satisfy Planning Authority and Irish Aviation Authority (IAA) requirements, an assessment of the possible impact on the aerodrome's Obstacle Limitation Surfaces (OLS) is necessary.

1.2. Assumptions and Constraints

1.2.1. Weston Airport is an IAA licensed aerodrome with a single bitumen/macadam runway designated 07/25. In the absence of previous OLS drawings for Weston Airport, Cyrrus Limited has used the requirements set out in the IAA's Aeronautical Services Advisory Memorandum (ASAM) No. 014 'Guidance Material on Aerodrome Annex 14 Surfaces'[1] and the International Civil Aviation Organisation (ICAO) document Annex 14[2] to construct the OLS for runway 07/25.

1.2.2. The runway dimensions (924m x 23m) indicate that it is a Code 2 runway. There are no radio navigation or landing aids installed at Weston Airport, therefore the OLS is for a Code 2 non-instrument runway.



1.3. Site Position

1.3.1. The site location is outlined in Figure 1.



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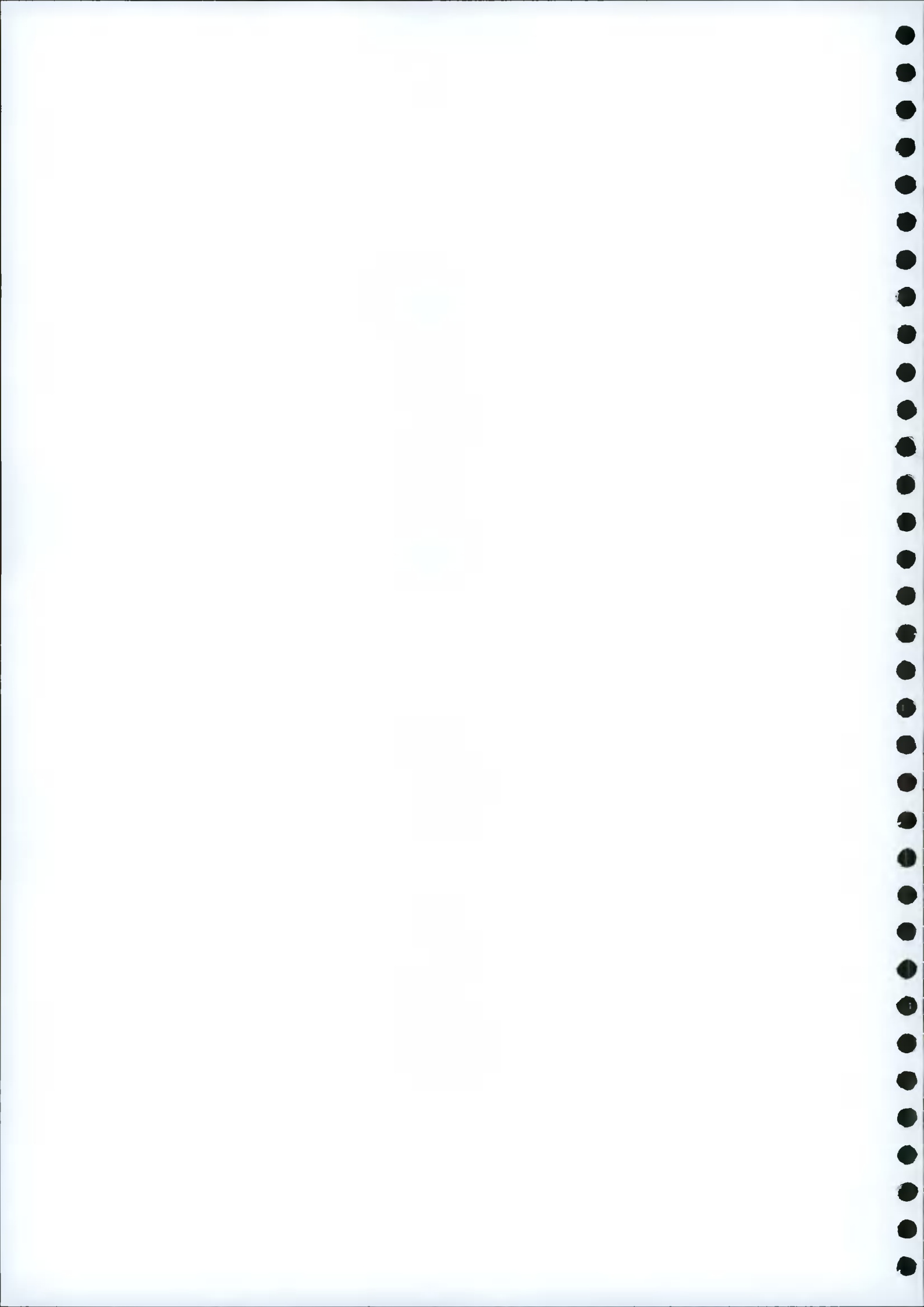
Figure 1: Site location

1.3.2. The proposed development site relative to Weston Airport is depicted in Figure 2.



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Figure 2: Development site relative to Weston Airport

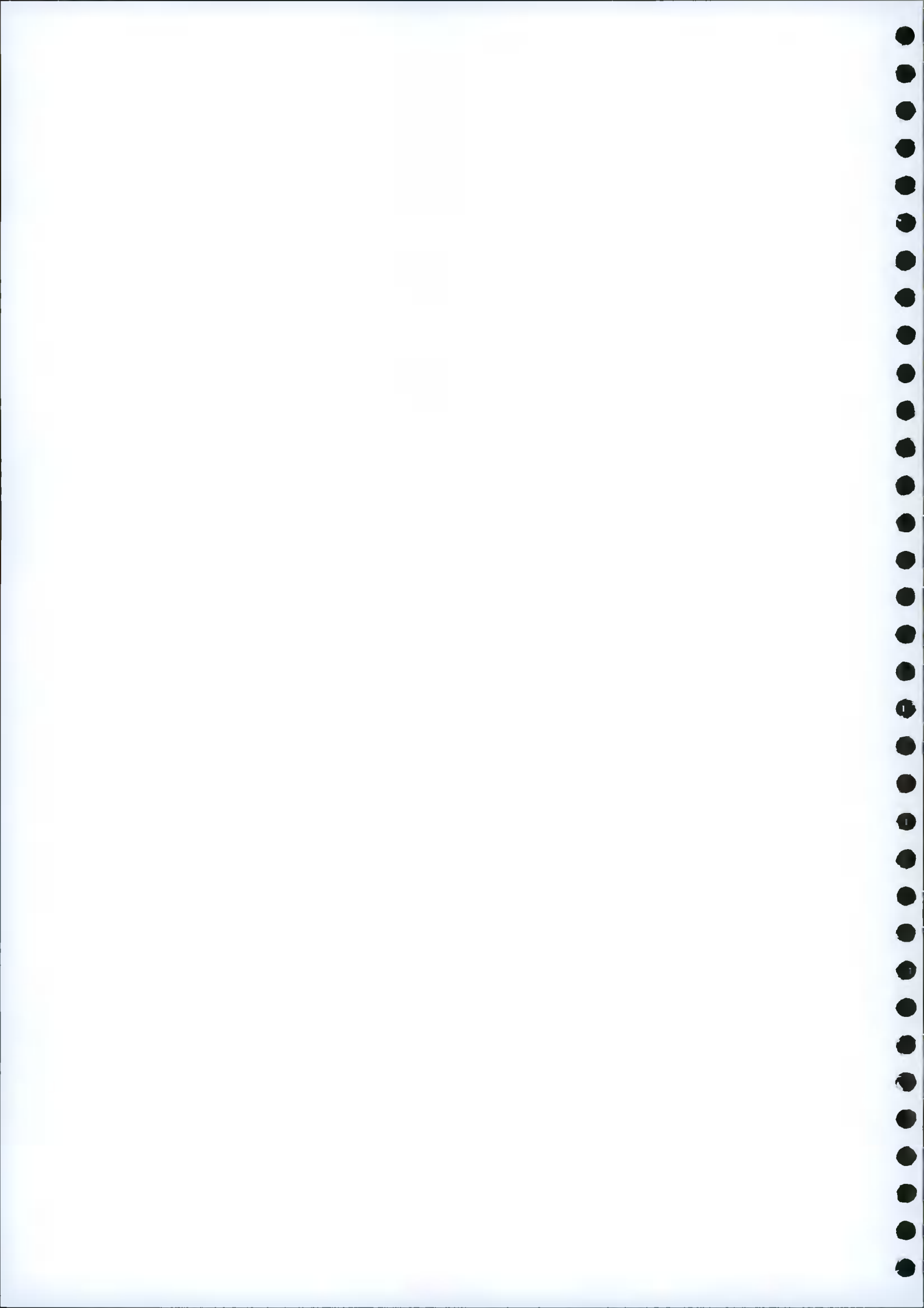


1.4. Data provided by Client

- ADC-HJL-A-XX-DR-A-2010.dwg
- ADC-HJL-A-ZZ-DR-A-2011.dwg
- ADC-HJL-C-ZZ-DR-A-2012.dwg
- ADC-HJL-D-ZZ-DR-A-2014.dwg
- ADC-HJL-D-ZZ-DR-A-2015.dwg
- FloorPlan-SitePlanCAExport.dwg
- L1L2-HJL-ACD-RF-DR-A-SK0001_SITE PLAN - ITM COORDINATES.pdf

1.5. Other Data

- EI_AD_2_EIWT_EN.pdf – Weston Airport details in Integrated Aeronautical Aviation Package (IAIP) Ireland, effective date 24 March 2022.



2. Assessment

2.1. Why are OLS required?

2.1.1. Obstacles in the vicinity of an aerodrome can pose risks of collision and a reduction in safety margins for aircraft. Therefore, it is extremely important that any construction is assessed and scrutinised to ensure that it does not cause an obstacle risk.

2.1.2. OLS are a series of complex 3D surfaces described around a runway within which the control of obstacles is necessary. Figure 3 gives a 3D depiction of the OLS.

2.1.3. If a proposed construction does penetrate the OLS, then the impact on aerodrome operations must be assessed and mitigation strategies considered to ascertain whether the development would have an unacceptable effect on airport operations.

2.1.4. When the obstacles penetrate the OLS, the safety measures applied could be:

- Promulgation in the IAIP of appropriate information;
- Marking and/or lighting of the obstacle;
- Variation of the runway declared distances as available;
- Reducing the height of the obstacle.

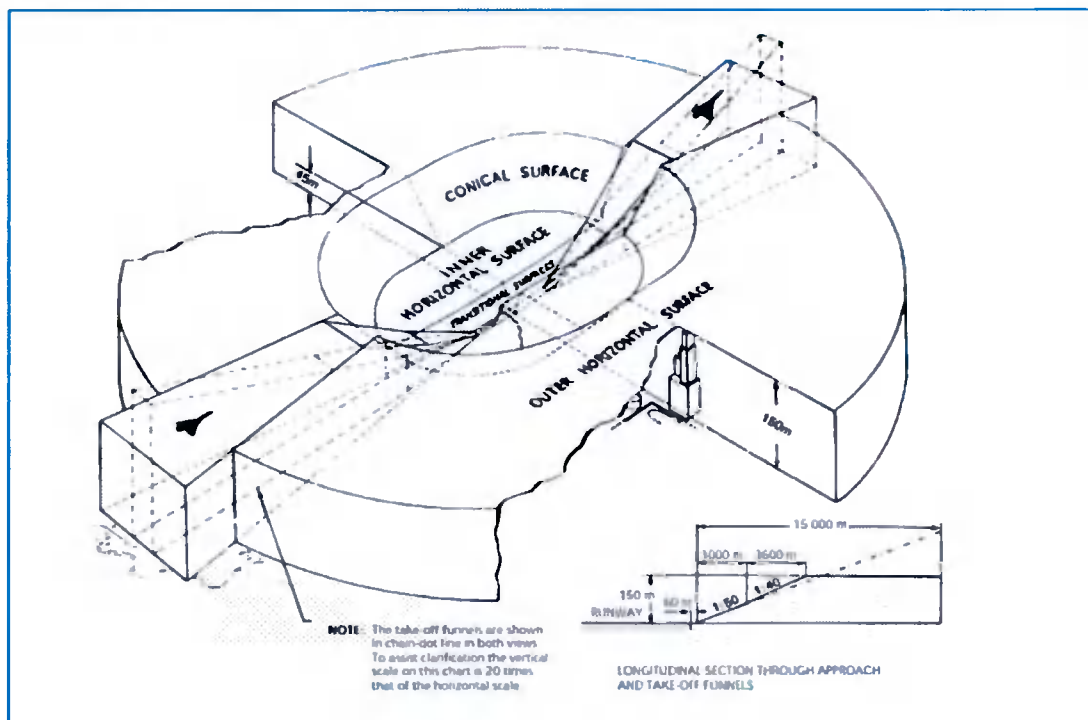
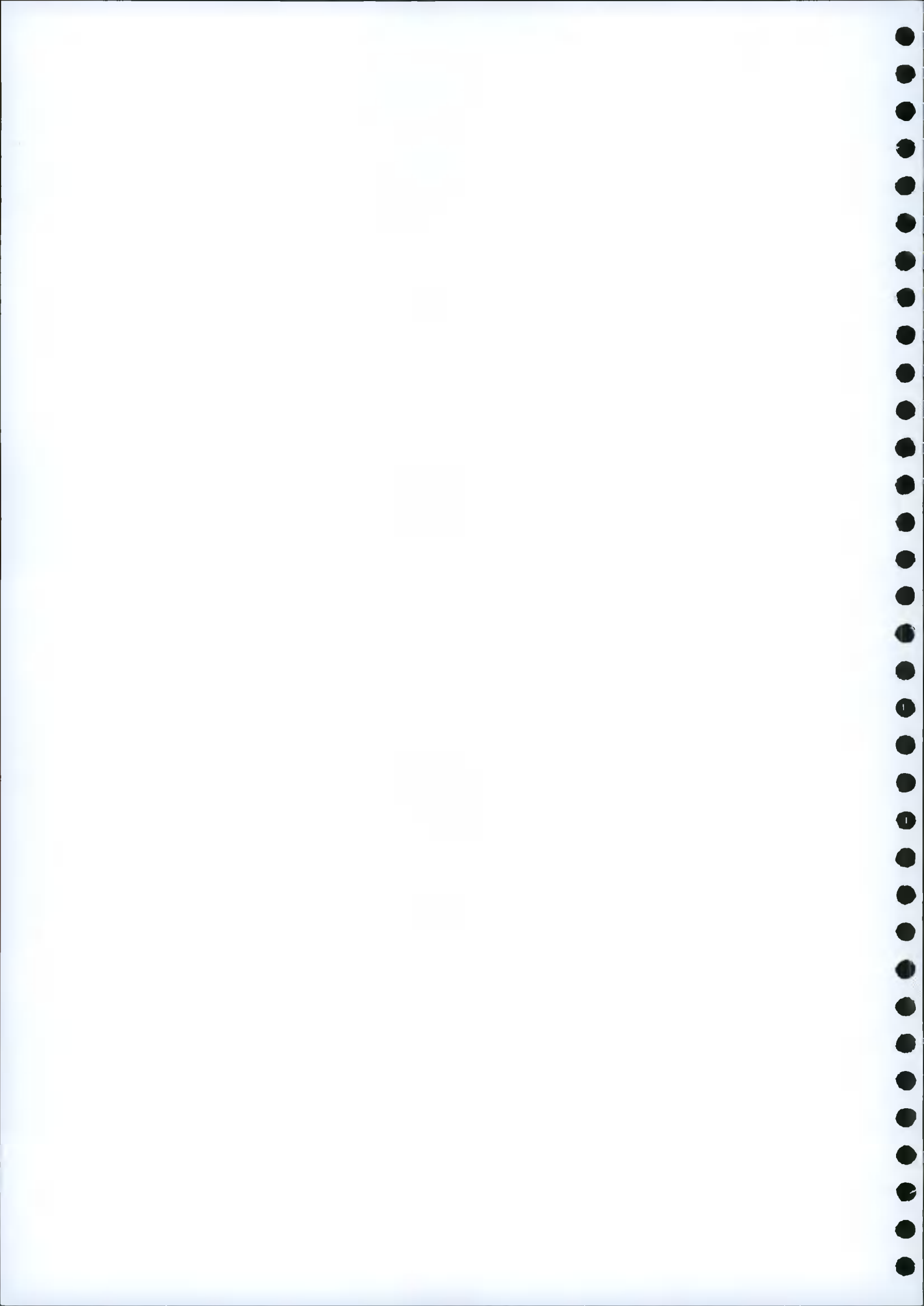


Figure 3: Three-dimensional depiction of the OLS



2.2. Description of the OLS

- 2.2.1. Approach Surface. An approach surface is an inclined plane or combination of planes preceding the threshold and is established for each runway direction intended to be used for the landing of aircraft.
- 2.2.2. Take-Off Climb Surface. A take-off climb surface (TOCS) is an inclined plane located beyond the end of the take-off run available or the end of the clearway where one is provided and is established for each runway direction intended to be used for take-off. There is a clearway established at the end of the runway 25 at Weston Airport.
- 2.2.3. Transitional. A transitional surface is a complex surface sloping up to the inner horizontal surface from the side of the runway strip and from part of the side of the approach surface. Transitional surfaces are established for every runway intended to be used for landing.
- 2.2.4. Inner Horizontal. An inner horizontal surface (IHS) is a horizontal plane located above an aerodrome and its vicinity. It represents the level above which consideration needs to be given to the control of new obstacles and the removal or marking of existing obstacles to ensure safe visual manoeuvring of aeroplanes in the vicinity of the aerodrome. The inner horizontal surface is contained in a horizontal plane located 45m above the elevation of the lowest runway threshold at the aerodrome.
- 2.2.5. Conical Surface. A conical surface slopes upwards and outwards from the periphery of the IHS.



2.3. Location within the OLS

2.3.1. Figure 4 shows the OLS for the Code 2 runway at Weston Airport. The proposed development site lies within the IHS.

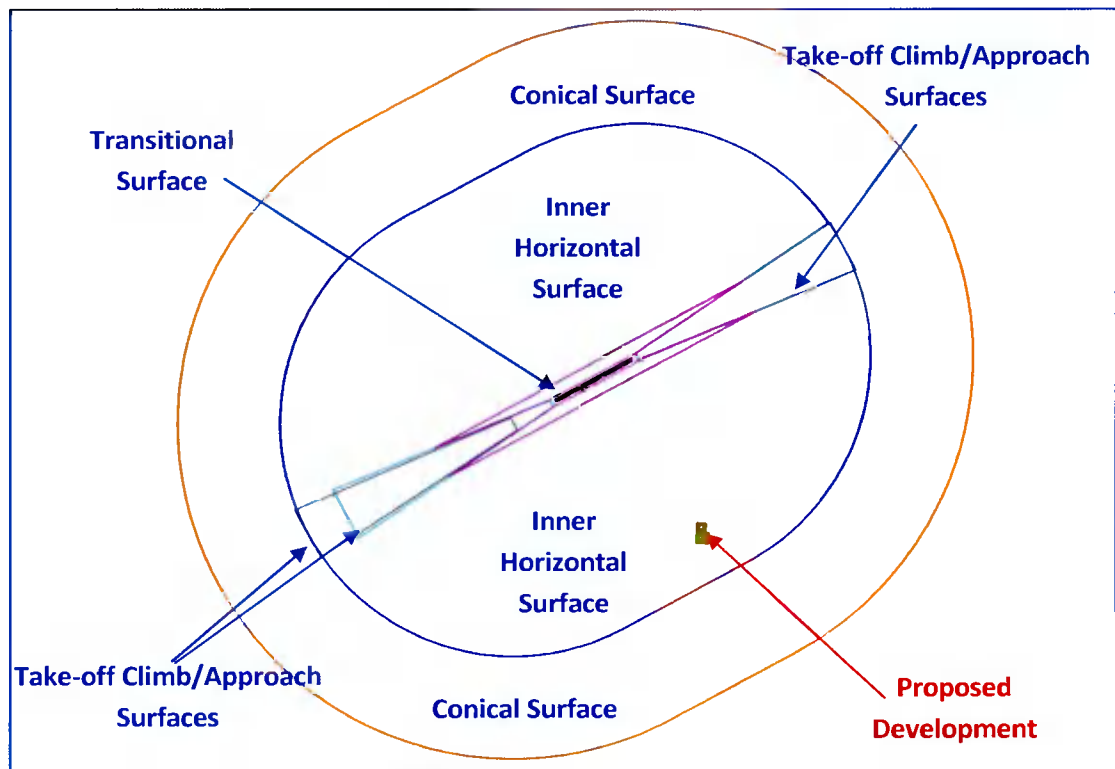


Figure 4: Weston Airport OLS

2.3.2. The lowest runway threshold at Weston Airport is the threshold for runway 25, with an elevation of 152ft Above Mean Sea Level (AMSL) or 46.3m AMSL. At 45m above the lowest runway threshold, the elevation of the IHS plane is $46.3 + 45 = 91.3\text{m AMSL}$.

2.3.3. It therefore follows that any elevations within the proposed development that exceed 91.3m AMSL will penetrate the IHS.



2.3.4. Figure 5 shows the maximum elevations for the main roof areas of Blocks A, C and D.



Figure 5: Elevations of Blocks A, C and D

2.3.5. If considering the maximum elevations of the blocks' roofs, none of the blocks will infringe the IHS.

2.3.6. However, the Client submitted a drawing (ADC-HJL-C-ZZ-DR-A-2012) showing the elevations of Blocks C. Here, it can be seen that a plant room enclosure on top of Block C1 will increase the maximum elevation of the building, as shown in Figure 6.

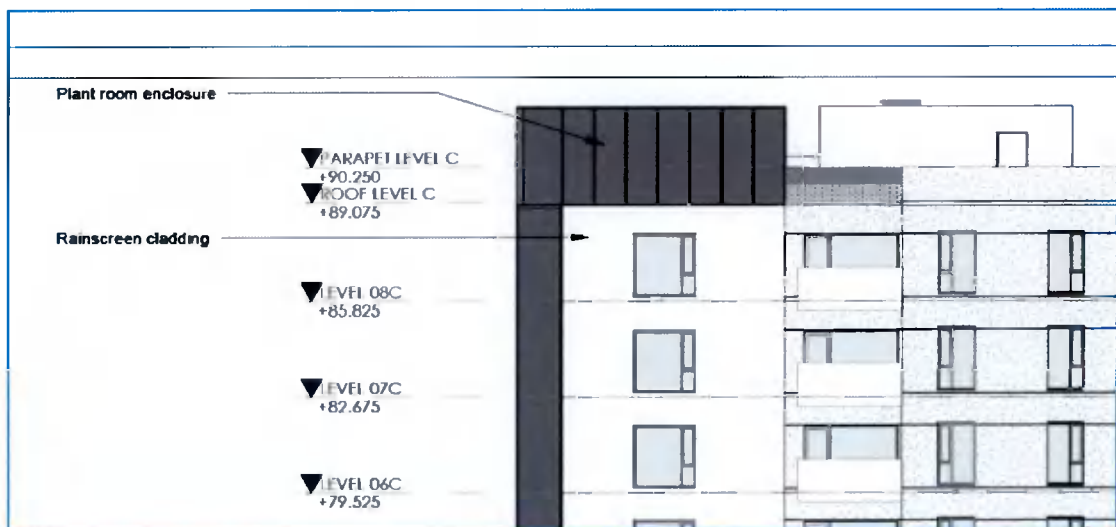
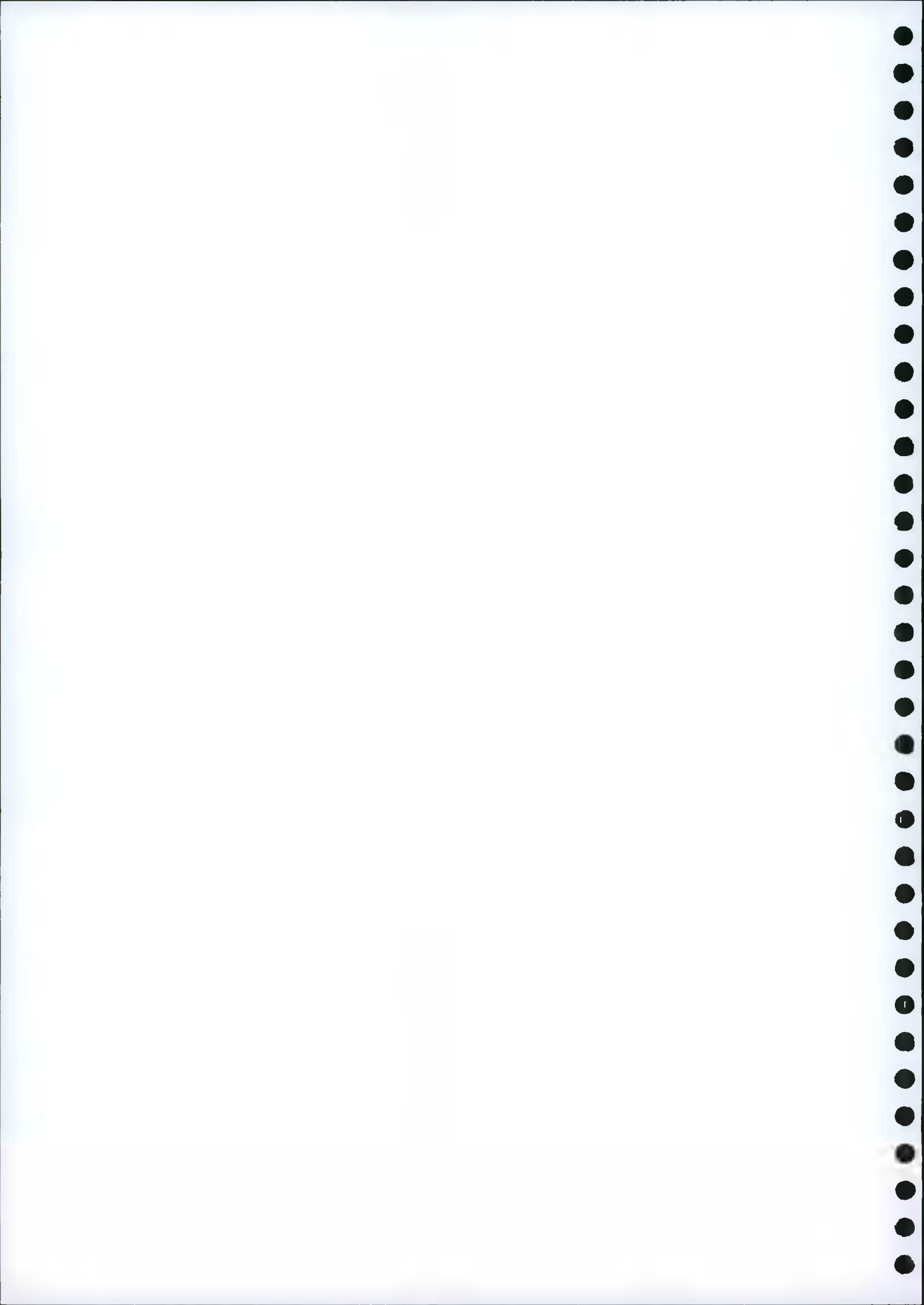


Figure 6: Block C1 with Plant Room Enclosure



- 2.3.7. In the absence of accurate dimensions of the plant room enclosure, it is estimated that this will add an extra 2.25m to the parapet level (90.250m AMSL), giving a total elevation of 92.5m AMSL.
- 2.3.8. At 92.5m AMSL, the plant room enclosure situated on top of Block C1 will infringe the Weston Airport IHS by $92.5 - 91.3 = 1.2\text{m}$.



3. Conclusion

- 3.1. Blocks A1, A2, A3, A4, C2, D1, D2, D3, D4 of the proposed development **will not infringe** the Weston Airport OLS.
- 3.2. The plant room enclosure situated on the top of Block C1 **will infringe** the Weston Airport OLS by 1.2m.
- 3.3. Paragraph 3.14.6 of ASAM No. 014 states the following:

“New objects or extensions of existing objects should not be permitted above the approach surface beyond 3 000 m from the inner edge, the conical surface or inner horizontal surface except when the object would be 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.”
- 3.4. Possible mitigation options include:
 - Reducing the building elevation to remain below the OLS;
 - Removing the plant room enclosure;
 - Promulgation in the IAIP of appropriate information;
 - Marking and/or lighting of the building.
- 3.5. Weston Airport only permits Visual Flight Rules (VFR) traffic. The method of collision avoidance for VFR flights is the “See and Avoid” principle. A pilot flying under VFR is required to actively scan in order to see and avoid obstacles and other aircraft. Provided the building is suitably visible either through appropriate marking and/or lighting then it should not adversely affect the safety or significantly affect the regularity of operations of aeroplanes.
- 3.6. Details of Weston Airport circuit procedures in IAIP section EIWT AD 2.22.5 suggest that aircraft in visual circuits should never be lower than 650ft or 198m AMSL when in the vicinity of the development.
- 3.7. We recommend consulting with the airport if there is no scope for reducing the height of Block C1/removing the plant room enclosure, to enable them to assess the impact on their operations.





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