

AERONAUTICAL ASSESSMENT REPORT

**RE COOLDOWN COMMONS SITE AT
CITYWEST ROAD, DUBLIN 24
IN SOUTH COUNTY DUBLIN**

FOR
STRATEGIC HOUSING DEVELOPMENT
PLANNING APPLICATION

FOR
CAIRN HOMES PROPERTIES LTD

21ST MAY 2021



O ' D W Y E R & J O N E S D E S I G N P A R T N E R S H I P
A V I A T I O N P L A N N I N G & A R C H I T E C T U R E C O N S U L T A N T S
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Executive Summary

May 2021

A. Aviation ‘Obstacle Limitation Surfaces’ in General

The site at Cooldown Commons, Citywest, lies well clear of all Approach Surfaces, Take-Off Climb Surfaces, and Transitional Surfaces at Casement Aerodrome, which are the more important Obstacle Limitation Surfaces [as defined by the International Civil Aviation Organization (ICAO) and by the European Aviation Safety Agency (EASA)].

The site is also clear of all Surfaces for Weston and Dublin Airports.

B. Casement Aerodrome’s ‘Inner Horizontal Surface’

Parts of the proposed development project by varying amounts above Casement’s Inner Horizontal Surface, with the highest element being the roof parapet of Block ‘D4’, which – as now revised and reduced – extends to 155.7m OD (i.e. 24.1m above Casement’s Inner Horizontal Surface level).

However, this projection is not aeronautically significant or (in ICAO’s wording) likely to “*affect the safety or the regularity of operation of aeroplanes*”, for the reasons explained in Sections 6, 7, 8, 9, & 10 of this report [on pages 14 to 27], and in particular for the reasons –

- (a) that (in accordance with ICAO guidance) “*the protection afforded by the inner horizontal surface need not extend into*” this sector, because circling of aircraft is prohibited in this sector due to the extensive rising ground; and
- (b) because the proposed development is ‘Shielded’ by a nearby existing permanent object – i.e. Saggart Church – which extends to greater elevation OD and is located 0.6km closer to the centreline of Casement Aerodrome’s subsidiary runway 04/22.

C. Overall

We consider that the proposed residential development at this Cooldown Commons site in Saggart-Citywest complies with ICAO guidance and with all international aviation and aeronautical requirements affecting the location.

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1. INTRODUCTION

1.1 Scope of Report & Site Location

This Report assesses the aviation impact of a proposed Strategic Housing Development on a site of 3.4 hectares *approx.* in South County Dublin, located beside Fortunestown Luas Station in the Saggart-Citywest area of Dublin 24.



1.2 Matters of Aeronautical Significance in relation to the Site

- (i) The site lies at a lateral distance of 1.97 km-2.21 km *approx.* from the centre-line of Casement Aerodrome's subsidiary Runway 04/22. This places the site within the area affected by Casement's 'Inner Horizontal Surface'.
- (ii) The 'Inner Horizontal Surface' (as defined by ICAO [The International Civil Aviation Organization]) is an imaginary horizontal plane extending to 4km from the centrelines of both of the Aerodrome's runways, and located at an elevation of 45m above the level of the Aerodrome's chosen datum elevation.
This Surface is illustrated in a drawing on the following page >.
- (iii) The datum elevation of Casement Aerodrome is at 86.6m OD, so that its 'Inner Horizontal Surface' lies at 131.6m OD [$86.6m + 45m$]. The development site's ground levels vary from 110.7m OD to 117.3m OD *approx.*, so that it lies at up to 30.7m above Casement's datum, and (at its highest) at just 14m below Casement's Inner Horizontal Surface.
- (iv) No part of the site, however, lies under any of the more significant of Casement Aerodrome's 'Obstacle Limitation Surfaces' – 'Approach Surface', 'Take-Off Climb Surface', or 'Transitional Surface'. And the site is outside the area covered by any of the 'Obstacle Limitation Surfaces' for Weston Airport or Dublin Airport.

1.3 Extent of Casement Aerodrome's Inner Horizontal Surface & Conical Surface

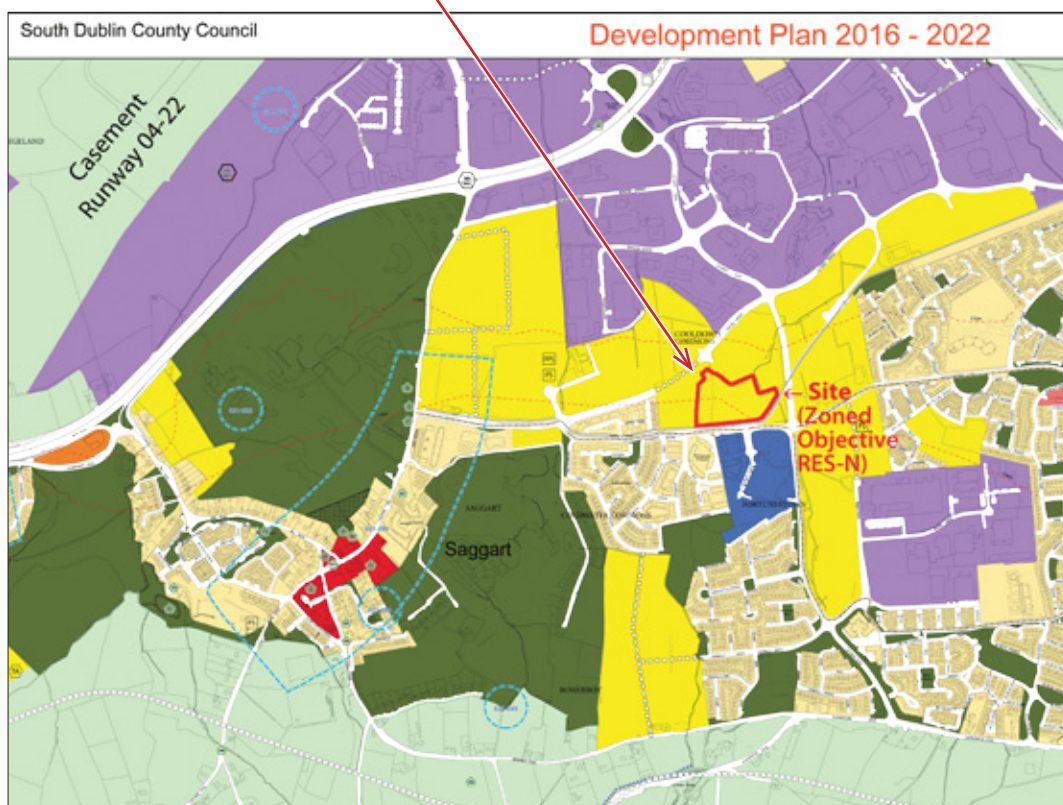
The full extent of Casement's Inner Horizontal Surface is shown below, bounded to the outside by the aerodrome's Conical Surface, and to the inside by Transitional Surfaces and the parts of Approach Surfaces which extend below it. The diagram also shows the extensive areas of rising ground which project above these Surfaces.



1.4 The Site in Relation to the Current S.D.C.C. Development Plan:

In the current South Dublin County Council Development Plan 2016-2022, this site at Cooldown Commons, Fortunestown, is zoned ‘Objective RES-N: To provide for new residential communities in accordance with approved area plans.’

The Site is shown, outlined in red, in the extract below from SDCC Plan Map 8.



1.5 Some Recent Aviation Changes to Note (at variance with SDCC Development Plan 2016-2022 data):

- (i) In **December 2017**, the standards relating to eight international and regional airports in Ireland (including **Dublin**, but not Casement) came **under E.A.S.A.** [European Aviation Safety Agency] standards, rather than I.C.A.O. [International Civil Aviation Organization] standards as previously. Weston Airport is temporarily exempted, and remains (with Casement) under ICAO standards.
- (ii) In **November 2018**, **I.C.A.O. issued revised ‘Annex 14’ Standards** bringing these in line with the new E.A.S.A. Aerodromes Specifications, with several changes to airport design specifications (including narrower Approach Surfaces).
- (iii) In **February 2019**, **Casement’s runway designations** were changed: its main runway (formerly 11/29, as in the SDCC Development Plan) was redesignated as **10/28**, and its subsidiary runway (formerly 05/23) was redesignated as **04/22**. This arose from a shift in magnetic variation which affected Casement. In this report we use the new 2019 designations, but they refer to the same runways as are in the SDCC Plan.

1.6 Recent Background

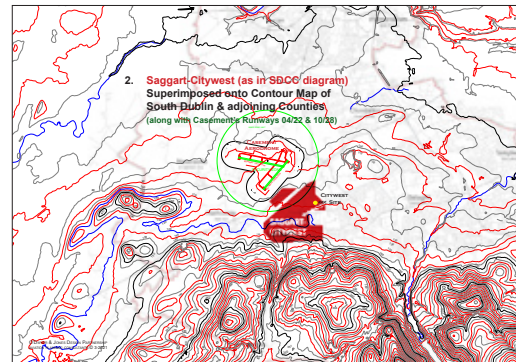
An SHD application on this same site [reference no. ABP-308985-20] has previously been submitted by Cairn Homes Properties Ltd. Following receipt of notification of a Department of Defence objection (dated 1st February '21) to that application, Cairn Homes engaged this firm to provide aviation planning advice to address the comments and objection of the Department of Defence.

[Details of this firm's previous work re Casement Aerodrome is included at Appendix 'A']

1.7 Engagement with Department of Defence on their Issue of Concern

The Department of Defence's original objection (*in paragraphs 'A', 'B', & 'C' of its letter of 1st February 2021*) relates to Casement Aerodrome's Inner Horizontal Surface in the Saggart-Citywest area where the development is located.

- (i) A preliminary meeting, requested by Cairn Homes, was held on 10th March 2021 with Department of Defence and Air Corps personnel, for the purpose of addressing the Department's objection of 1st February '21, and for discussion of any necessary redesign. In advance of this meeting, the Department of Defence and Air Corps were provided with a document [>] of drawings, calculations, and text, which analysed existing obstacles & terrain in the Saggart-Citywest "Moderate Sustainable Growth Town" area, and which indicated how a solution might safely be achieved.



- (ii) In order to effectively address the Department of Defence's concerns, Cairn Homes withdrew the original SHD submission, and instructed that the project be redesigned to take account of the aviation issues raised. Specifically, on aviation planning advice, the original tallest block 'D4' has been **reduced by two storeys to bring it to a lower elevation than Saggart Church** – a nearby existing permanent 'obstacle' which extends to 24.55 metres above the level of Casement Aerodrome's Inner Horizontal Surface.
[This item is explained in detail in Section 8 of this report.]

- (iii) A draft 'Advance Copy' of this Aviation Report – in which the revised (i.e. lowered) development is assessed – was sent to the Department of Defence and Air Corps, and to the Irish Aviation Authority, on 19th April 2021.
- (iv) A meeting with the Department of Defence and Air Corps was requested (through this firm) by Cairn Homes on 29th April 2021, for discussion of the draft 'Advance Copy' of this aviation report and for clarification as to any continuing Air Corps concerns, prior to the re-submission of this SHD.

1.8 Requests by Cairn Homes for a meeting with Department of Defence & Air Corps

With no reply received to the request (of 29th April) for a meeting, Cairn Homes held back the re-submission, and two weeks later on 14th May 2021 wrote again to the Department of Defence, urgently requesting a meeting to ascertain any specific concerns of the Air Corps to be taken into account prior to re-submission. *[Copies of the 3 requests for a meeting are included in Appendix 'B' on pages 34-35]*

The Agenda prepared for discussion at this requested meeting was as follows:

- (i) The profound effect of the Dublin Mountains on the “obstacle limitation surfaces” at Casement Aerodrome.

This issue was not foreseen when the aerodrome was established in 1917 in a location beside the mountains suited to the wind requirements of aircraft of that time. The concept of an “Inner Horizontal Surface” was established by ICAO much later, in 1951, to protect the visual circling of aircraft, but at Casement the mountains rise above this surface, and visual circling is neither possible nor permitted by the IAA or the Air Corps in the Saggart-Citywest area.

- (ii) The recognition by ICAO of the “shielding” effects from pre-existing natural or built objects of relevant height.

For development in Saggart-Citywest, this is a fundamental concept: half of the area of the Inner Horizontal Surface in this sector – from Runway 04 Approach (over Rathcoole) to Runway 28 Approach (over Tallaght) – is breached by existing buildings, pylons, trees, road lighting masts, road surfaces (including Castle Rd in centre of Saggart, parts of Citywest Rd & the N81 Blessington Rd & the N7 Naas Road, and the vehicles on those roads), and a very extensive area of the land itself (projecting by up to **two hundred metres** above Casement’s Inner Horizontal Surface. *[See drawings on pages 3, 15, 20]*

- (iii) That it is agreed that all potential obstacles to aviation should be assessed, but this has not happened in the case of many of the obstacles within the Rathcoole to Tallaght area south of Casement’s Runway 10/28.

These include significant obstacles to which no objection has been raised, but which we believe are a hazard to aviation safety – such as the recent 27.5m-tall lighting masts in the centre of the Approach to Runway 04 (at the Naas Road Rathcoole interchange) which extend above the Approach to 04, above the Take-off from 22, and above Casement’s Inner Horizontal Surface. *[Further details provided at 1.9 below]* The Approach and Take-off Surfaces are immensely more significant for aviation safety than the “Inner Horizontal Surface”.

Neither Saggart Church (extending 24.55m above the I.H.S. *but not above any Approach or Take-off Surface*) nor Rathcoole Church (4.02m above the I.H.S., and beside the Approach to Runway 04) have ever been treated as obstacles or a safety hazard. Since 1917, Saggart Church, at 156m AMSL/OD – unmarked, unlit, and unidentified on aviation charts – has constituted the *de facto* ‘obstacle’ height limit for the area in which it is located.

- 1.8 (iv) Discussion of the Department of Defence's comment (following receipt of the 'advance copy' of this aviation report containing the proposal to reduce the highest building in the development) that: *"There appears to be little other change to the heights of the remaining blocks; therefore, at this juncture the original objections from the Department of Defence would appear to still stand."* [See p.36]
- In respect of aviation constraints, however, what is relevant is the tallest element in any related group of objects, i.e. block 'D4', **from which two storeys have been removed following the Department's original objection.** And it has to be remembered that all of the lower blocks are no higher than the elevations OD/AMSL of other permitted apartment blocks in their immediate vicinity in Citywest.
- (v) That the requirements of the South Dublin Development Plan 2016-22 [in its Section 11.6.6 on page 230] have been met in respect of aviation analysis: *"the applicant should demonstrate that the proposed development is not an obstacle to the Aerodrome airspace"* and that *"a special aeronautical study indicates they do not constitute a hazard to aeroplanes."*
- And that the requirements of ICAO [Annex 14, para. 4.2.4] have been met: *"after aeronautical study it is determined that the object would not adversely affect the safety or significantly affect the regularity of operations of aeroplanes."*
- (vi) That if the Department of Defence might have requirements in excess of those required by ICAO, or by the SDCC Development Plan, then these extra requirements should more appropriately be sought under Section 36 of the **Defence Act, 1954.** [A relevant extract of the Defence Act is in Appendix 'B' p.39]

Cairn Homes was not granted the opportunity to discuss the above agenda with the Department of Defence and the Air Corps, and the Department has made no comment on anything contained in the 'advance copy' of this aviation report received by them on 19th April 2021. [The replies from the Department of Defence, of 21st April 2021 and of 20th May 2021, are included at Appendix 'B' on pages 36-37]

1.9 Aviation Safety Item

On a general note [regarding the aviation safety item in para. 1.8(iii) above]: the recent 27.5m-tall lighting masts across the Approach



to Casement's Runway 04 (which we consider a matter of genuine concern for aviation safety) are illustrated opposite. We do not know the circumstances in which these were erected, but it appears that no objection was made to them, although for safety reasons we think they merited objection, and even at this stage we consider it desirable that they be subjected to analysis. These extend by 5.9m above the steeper (3.33%) Approach to Casement's Runway 04, by 10.4m above Casement's Inner Horizontal Surface, by **20.6m** above the Take-off-Climb Surface from Casement's Runway 22 and by **20.6m** above an Approach Surface to Runway 04 at 2%, and by **30.3m** above the 1.2% slope above which ICAO requires that objects be identified on 'Type A' Aerodrome Charts.

1.10 Previous *An Bord Pleanála* Oral Hearing on the Same Aviation Issue

On 9th July 2019 this firm presented a detailed illustrated submission at an Oral Hearing called by *An Bord Pleanála* for the purpose of examining this same aviation issue – a proposed projection above Casement’s Inner Horizontal Surface in the sector south of Runway 10/28.

Following that submission (and a submission by the Department & Air Corps) permission was granted on 25th July 2019 by *An Bord Pleanála* to Pymont Ltd. for the proposed development [ref. ABP-303803-19], including a ‘shielded’ projection above Casement’s Inner Horizontal Surface. *[In that instance, the ‘shielding’ was provided by an existing aerial (beside Cookstown Road) which extends to 150.1m OD.]*

1.11 Considerations Covered in this Report with regard to the Inner Horizontal Surface in the Saggart-Citywest area

- (i) **In Section 7** on pages 15-18 (and as highlighted in the drawing on page 3 above) it is demonstrated that ICAO’s stated purpose for any Inner Horizontal Surface – “to protect airspace for visual circling prior to landing” – cannot apply in the Saggart-Citywest area, because of the terrain. The circling of aircraft is prohibited in this sector (by GOC Air Corps and by IAA) due to exceptional terrain constraints, i.e. the Inner Horizontal Surface in this area is penetrated by extensive rising ground, buildings, roads, trees, and pylons etc.
- (ii) **In Section 8** on pages 19-24, it is demonstrated that – as an added aviation safety precaution – ICAO’s principle of ‘Shielding’ can be applied to the tallest of the proposed buildings, Block ‘D4’, by reducing its height from 161.25m OD to **lower than 156.15m OD** – i.e. lower than the elevation OD of the highest point of the nearby Saggart Church, an existing permanent ‘obstacle’, which is located closer to Casement’s nearest runway 04/22, and which is not marked or lit, and is not featured in any way on Casement’s aerodrome charts, past or present.
- (iii) **In paragraph 11.4** on page 29, it is recommended – as a further aviation safety precaution – that aviation lighting be provided on the tallest block ‘D4’; and this could also add to aviation safety in respect of Saggart Church (whose tower extends to the same altitude/elevation-OD, but has never been marked or lit).

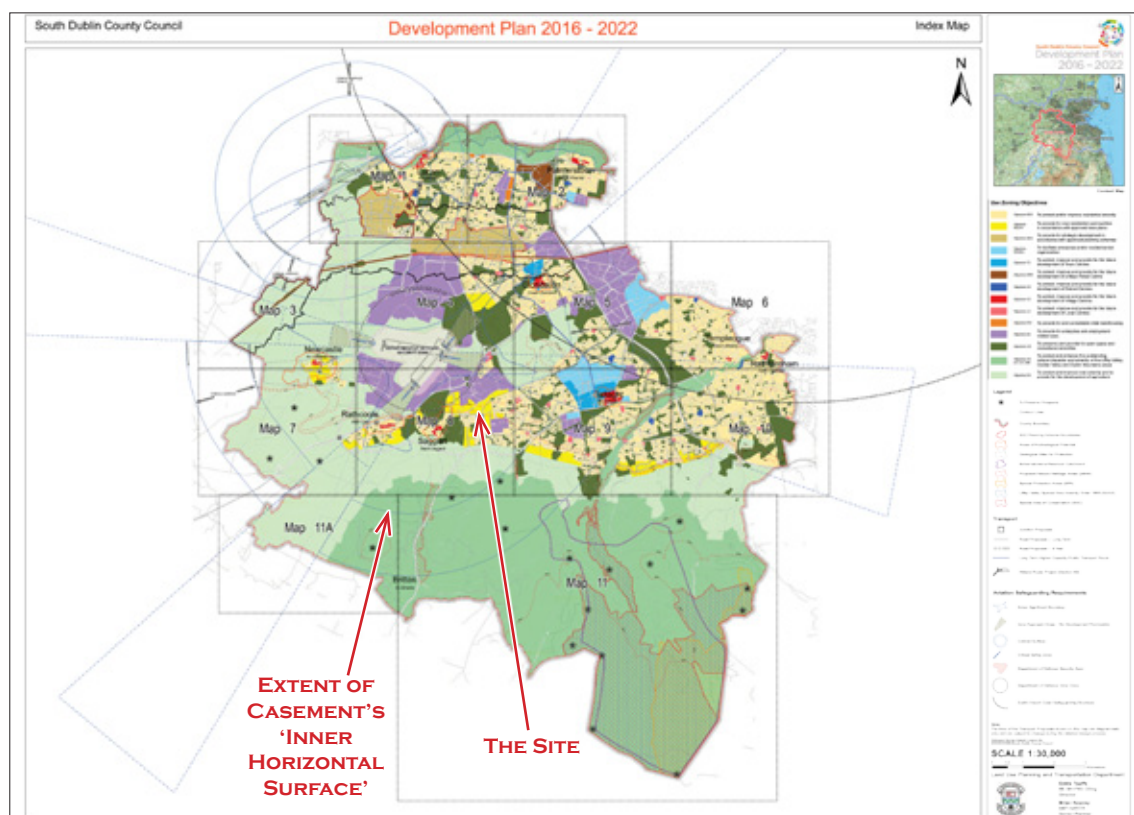
2. Obstacle Limitation Surfaces in Relation to the Site

2.1 The Department of Defence has adopted the I.C.A.O. Obstacle Limitation Surfaces in relation to Casement Aerodrome. Being a military aerodrome, Casement is not bound by these Civil Aviation standards, but the Department of Defence has opted to apply these Standards at Casement (to protect aircraft in flight). These Obstacle Limitation Surfaces – similar to the E.A.S.A. Specifications which now apply at Dublin Airport – are set out by the International Civil Aviation Organization (based in Montreal) as *International Standards and Recommended Practices* in its *Annex 14 – ‘Aerodromes’* document.

[It may be noted that revisions to several *Annex 14* dimensions were made by ICAO on 8th November 2018 (affecting Approach Surfaces etc.) but none of these revisions affects this particular site beside Fortunestown Luas station].

2.2 As noted above (*in paras 1.2-1.3*) the one Obstacle Limitation Surface of relevance to this site at Fortunestown is Casement Aerodrome’s Inner Horizontal Surface, located in a horizontal plane at 131.6m OD.

2.3 This Inner Horizontal Surface at Casement (as designated by the Department of Defence) is marked on the current South Dublin County Council Development Plan Index Map (*illustrated below*), on which the location of the site is also indicated by a red arrow.



3. Relevant S.D.C.C. Development Plan Paragraphs

Of particular relevance to the aeronautical assessment of this Cooldown Commons site at Fortunestown are the paragraphs reproduced below from the South Dublin County Council Development Plan 2016-2022, which include —

3.1 (i) Paragraphs 7.8.0 ‘Aerodromes & Airport’ on page 135 of the Plan:

7.8.0 Aerodromes & Airport

This section sets out the general restrictions and requirements on development within the County for Dublin Airport, Casement Aerodrome and Weston Aerodrome.

The safeguarding requirements in the vicinity of civil aerodromes are principally set out as ‘International Standards and Recommended Practices’ within ‘Annex 14 to the Convention on International Civil Aviation’, which is published by the International Civil Aviation Organisation (ICAO) and the Irish Aviation Authority Guidance Material on Aerodrome Annex 14 Surfaces (2015). These provide dimensions and the basic criteria needed for the preparation of safeguarding maps for all civil aerodromes, with dimensions and criteria varying in relation to the size, shape and usage of different aerodromes.

The main Obstacle Limitation Surfaces for each instrument runway are mapped on the County Development Plan Map Index.

Casement Aerodrome, being a military aerodrome, does not fall under the control of the Irish Aviation Authority but the ICAO Standards and Recommended Practices are applied as policy by the Department of Defence at Casement Aerodrome.

and

3.2 (ii) Paragraphs 7.8.1 ‘Casement Aerodrome’ on pages 136-137 of the Plan, including Policy Objectives IE8:

7.8.1 CASEMENT AERODROME

Casement Aerodrome is in continuous aviation use and is the only fully equipped military airbase in the State and serves as the main centre of Air Corps operations.

INFRASTRUCTURE AND ENVIRONMENTAL QUALITY (IE) Policy 8 Casement Aerodrome

It is the policy of the Council to safeguard the current and future operational, safety and technical requirements of Casement Aerodrome and to facilitate its ongoing development for military and ancillary uses, such as an aviation museum, within a sustainable development framework.

IE8 Objective 1:

To ensure the safety of military air traffic, present and future, to and from Casement Aerodrome with full regard for the safety of persons on the ground as well as the necessity for causing the least possible inconvenience to local communities.

IE8 Objective 2:

To maintain the airspace around the aerodrome free from obstacles to facilitate aircraft operations to be conducted safely, including restricting development in the environs of the aerodrome.

IE8 Objective 3:

To implement the principles of shielding in assessing proposed development in the vicinity of Aerodromes, having regard to Section 3.23 of the Irish Aviation Authority ‘Guidance Material on Aerodrome Annex 14 Surfaces (2015)’.

and

3.3 (iii) The paragraphs on ‘Inner Horizontal Surface’ in Section 11.6.6 ‘Aerodromes’ on pages 227 to 231 of the Plan:

IMPLEMENTATION	SOUTH DUBLIN COUNTY COUNCIL DEVELOPMENT PLAN 2016 - 2022
	<p>Inner Horizontal Surface</p> <p>Generally, development will be acceptable in this zone, subject to the development having an OD height below the height restriction of the Inner Horizontal Surface (generally 45 metres above the elevation datum of the Aerodrome). In general, <u>this will be applicable to development above the prevalent building height (based on OD) of the area.</u> The Inner Horizontal Surface of Casement is 86.6 metres OD and Weston is 91.3 metres OD. <u>Similar to development within the Outer Approach Surface, the applicant should demonstrate that the proposed development is not an obstacle to the Aerodrome airspace.</u></p> <p>The applicant shall be required to detail the OD height of the proposed development, in the context of the relevant Aerodrome.</p> <p>Outer Horizontal Surface</p> <p>In areas beyond the limits of the Conical Surface, objects and proposed development which extend to a height of 150 metres or more above the OD elevation of the Aerodrome should be regarded as obstacles, unless <u>a special aeronautical study indicates that they do not constitute a hazard to aeroplanes.</u></p>

[Correction: this 86.6 figure should read 131.6m O.D.]

3.4 We have noted that there is a misprint in the Development Plan in the paragraph reproduced directly above: the Inner Horizontal Surface of Casement Aerodrome is in fact set at **131.6 metres OD** [not at 86.6m OD as written, which is the aerodrome’s datum level, above which the IHS is established (at 45m higher)].

3.5 Changed Runway Designations

As noted in para. 1.5(iii) above, the runways at Casement Aerodrome have been redesignated in February 2019; this means that where the S.D.C.C. Development Plan refers to Casement runways 11/29 and 05/23, these same runways are now designated (and referred to in this report) as Casement runways 10/28 and 04/22.

[The runways at Weston and Dublin Airports have not been redesignated (and remain the same as described in the current Development Plans. However, since December 2017, Dublin Airport has become subject to E.A.S.A. (European Aviation Safety Agency) standards rather than the I.C.A.O. *Annex 14* Standards referred to in the S.D.C.C. Development Plan.]

3.7 We also point out that much of the information concerning aviation and aerodromes (including data for Casement military aerodrome) has been provided by our own firm to S.D.C.C. (at the time of preparation of the previous Development Plan).

4. Layout, Elevations, & Coordinates of the Proposed Development

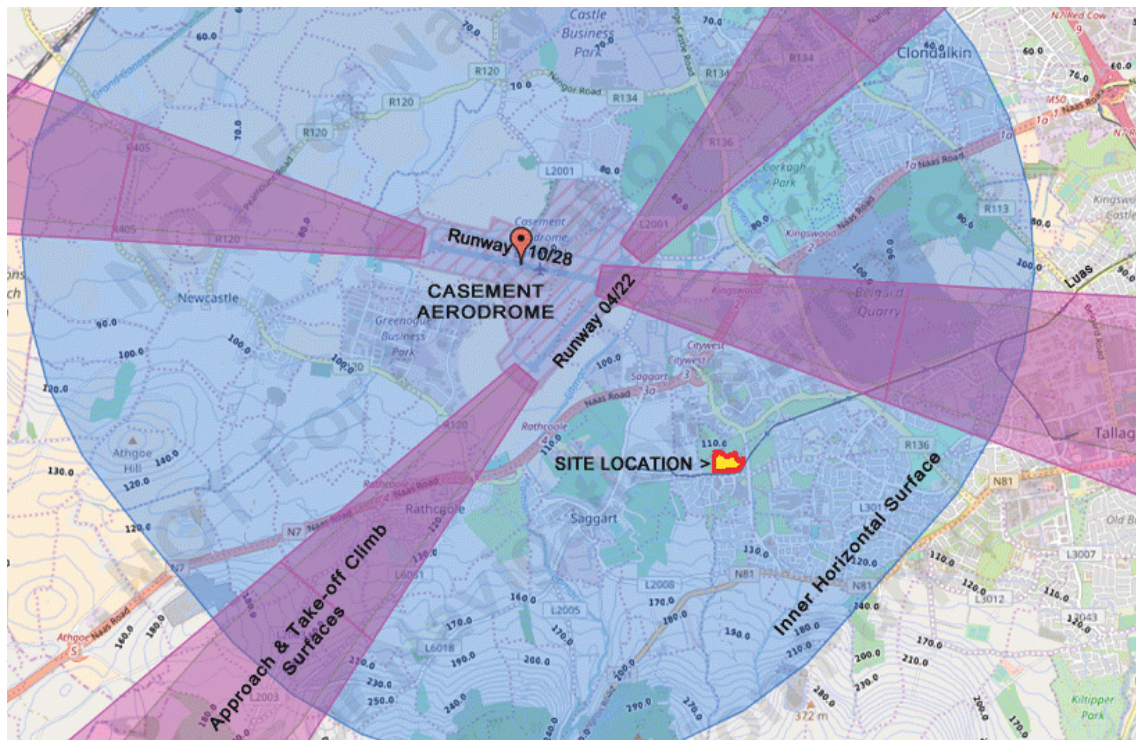
4.1 Below, to approx. scale 1:1,350, is a Roof Plan of the proposed development of 421 residential units beside Fortunestown Luas station, laid out in nine apartment blocks: D1 of 6 storeys, D2 of eight storeys, D3 of 6 & 8 storeys, D4 of 6 & 13 storeys, E1 of 1, 7 & 9 storeys, E2 of 7 storeys, and F1, F2, & G of 3 storeys each. Elevations (OD) of the highest elements, and coordinates of relevant corners, are shown. [\[In this diagram, darker blue shading indicates higher roof areas\]](#)



ROOF PLAN OF PROPOSED DEVELOPMENT
WITH ELEVATIONS (O.D.) OF HIGHEST PARTS
SCALE [A4-SIZE] 1:1350 APPROX.

5. The Site in Relation to the Inner Horizontal Surface at Casement

As noted above, the **Inner Horizontal Surface** at Casement Aerodrome is at 131.6 metres OD (being 45m above the Department of Defence's chosen datum of 86.6m, which was the elevation of the aerodrome's lowest runway threshold). On the 'Asset' diagram below [containing Irish Aviation Authority & Air Corps data] this I.H.S. is shown coloured blue, with the site's location inserted in red+yellow. Approach Surfaces (and the narrower Take-Off Climb Surfaces) are included in purple. —

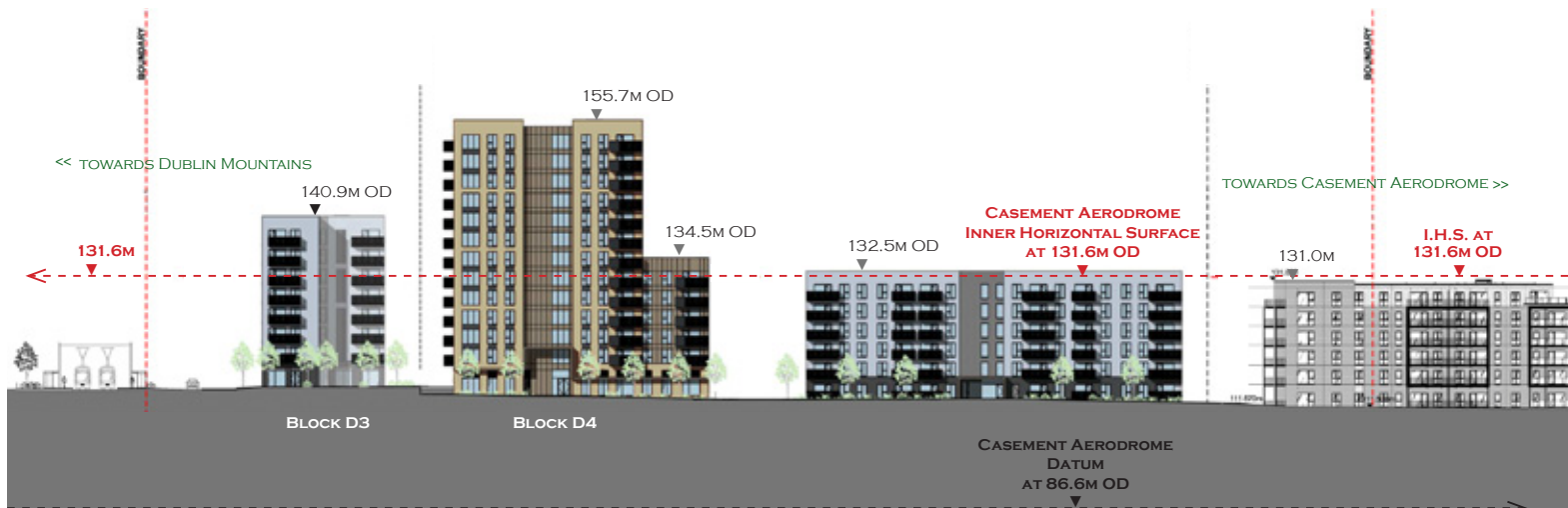


- 5.1 It can be seen that the site (to south-east of Casement's main runway 10/28, and at 1.97km-2.21 km laterally from the centreline of Casement's subsidiary runway 04/22) falls within the area of the aerodrome's Inner Horizontal Surface, but is well clear of all Approach and Take-Off-Climb Surfaces.
- 5.2 Ground levels on the site rise from 110.7m to 117.3m OD which is 14.3m below the Inner Horizontal Surface. Proposed building heights range from ~12m for the lowest 3-storey block [G] to ~43m for Block D4, the tallest of the nine blocks. As shown on the previous page, elevations OD of the highest points of each block are as follows: Block G: 123.8m, F1: 124.6m, F2: 124.9m, D1: 132.5m, E2: 137.4m, D2 & D3: 140.9m, E1: 143.3, and Block D4: 155.7m OD.

This means that parts of the development (Blocks E1, E2, D1, D2, D3 & D4) extend above Casement's Inner Horizontal Surface – by varying amounts of up to 24.1m at Block 'D4'. Consequently the following aeronautical study is required to assess whether these intrusions above Casement's Inner Horizontal Surface will have any significant effect on aviation at the Aerodrome.

6. Assessment in relation to Casement's Inner Horizontal Surface

6.1 Because the proposed development is likely to project above Casement's Inner Horizontal Surface (by varying amounts from 0.9m to 24.1m *as listed in para. 5.2 and as indicated in the diagram below*) an aeronautical study is required to assess whether these intrusions above Casement's Inner Horizontal Surface will have any significant effect on aviation at the Aerodrome. This analysis is provided in Sections 7, 8 & 9, following, with maps, diagrams, and section drawing.



6.2 There are **two primary considerations**/methodologies in assessing the significance of any projection above an aerodrome's/airport's Obstacle Limitation Surface. —

- (i) The first consideration is the **overall significance and applicability (at the aerodrome in question) of the particular Surface** above which an object may be likely to project. In relation to Casement Aerodrome, this is analysed in accordance with the definitions and guidelines of ICAO, as contained in its *Annex 14 - Volume I: Aerodromes*, and in its other documents.
- (ii) The second consideration is an assessment
 - (a) as to the **presence of any other existing 'obstacles'** in the vicinity of the proposed new 'obstacle', and
 - (b) as to **whether or not any such existing 'obstacle' will provide a 'shielding'** for the new obstacle (following guidance by ICAO & other aviation authorities) so that the new object will not constitute a new hazard to aviation.

A third (more subsidiary) consideration with regard to Inner Horizontal Surfaces and Conical Surfaces, is an assessment as to whether any significant (mitigating) factors exist in the **choice of vertical datum or horizontal extent** for the particular Surface. This arises because location of the Inner Horizontal Surface is subject to subjective choice – which varies from airport to airport, and country to country – rather than being objectively and precisely defined by ICAO or EASA.

7. Applicability (per ICAO) of this Sector of Casement's Inner Horizontal Surface

The Aerial Photo Image & Diagram opposite shows the extent of Casement's Inner Horizontal & Conical Surfaces. This drawing includes Ordnance Survey contours & hill /mountain peaks [▲], as well as selected 'obstacles' [●]: Saggart Church, Rathcoole Church, and the 27.5m high lighting masts across the Approach to Runway 04.

CASEMENT AERODROME'S INNER HORIZONTAL SURFACE

CASEMENT AERODROME'S CONICAL SURFACE

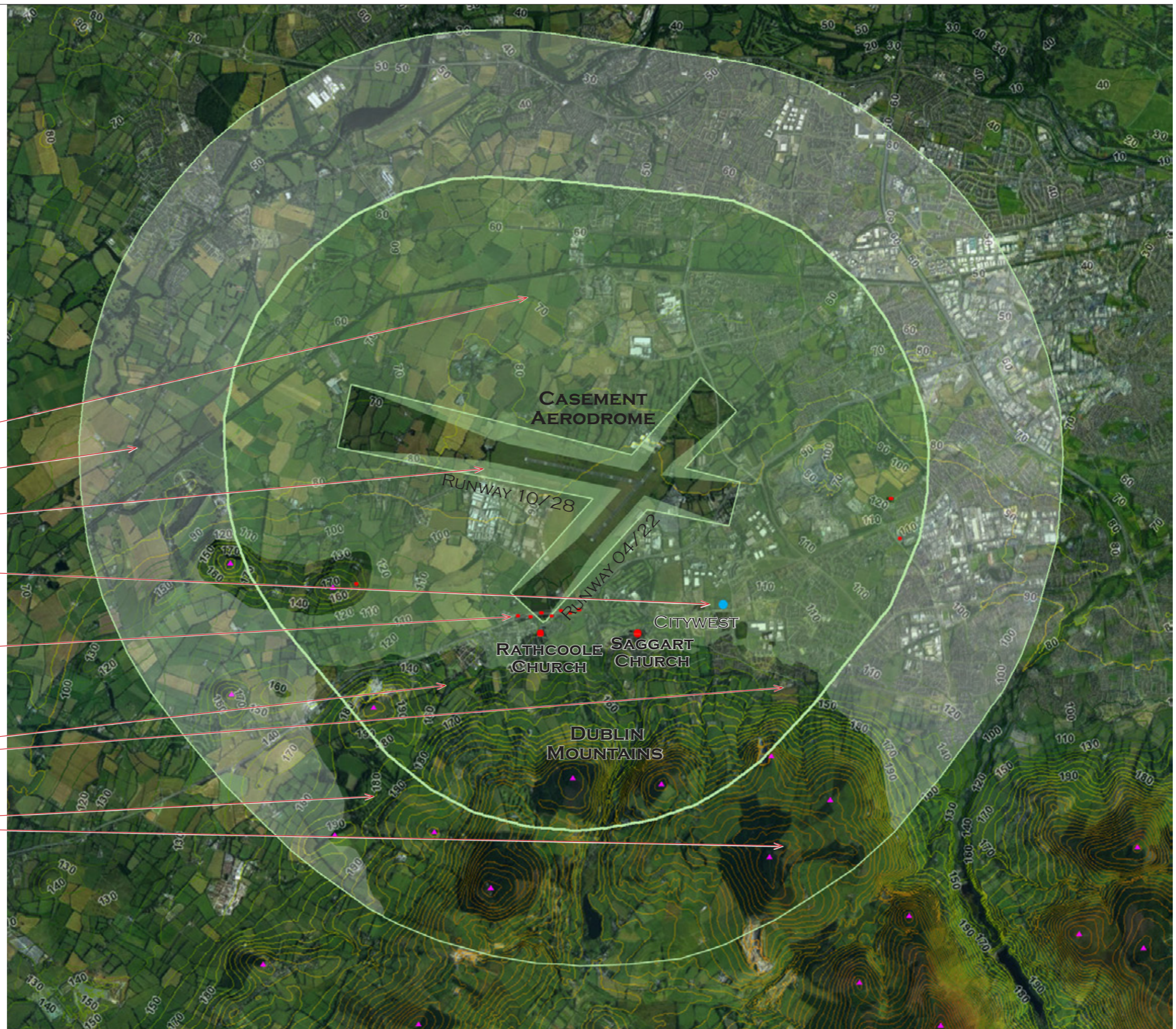
TRANSITIONAL SURFACES

SITE LOCATION

27.5M HIGH LIGHTING MASTS ON NAAS RD. ACROSS THE APPROACH TO RUNWAY 04

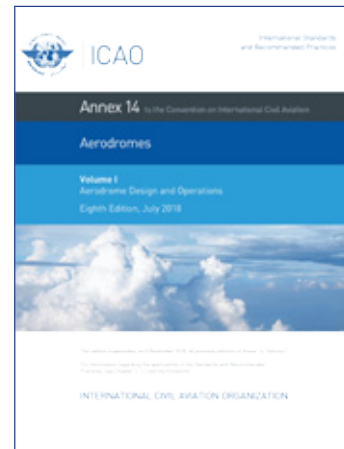
INNER HORIZONTAL SURFACE GOES UNDERGROUND AND HAS NO EFFECT HERE

CONICAL SURFACE GOES UNDERGROUND AND HAS NO EFFECT HERE



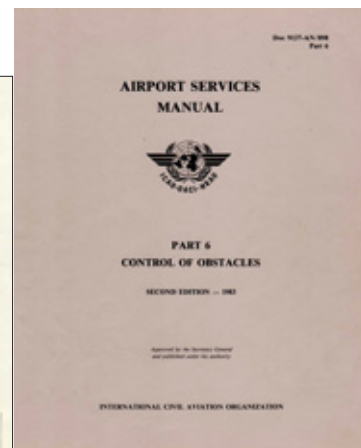
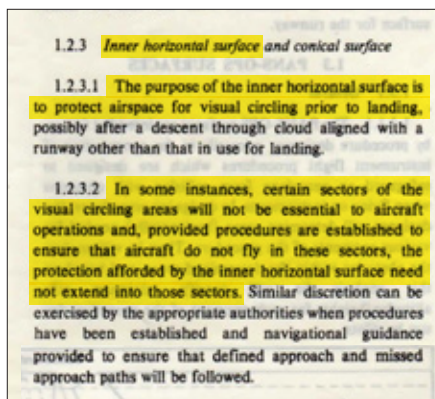
- 7.1 In assessing the overall applicability of the particular Surface [item 6.2(i) above], the relative importance of the particular Surfaces is considered:

The various Obstacle Limitation Surfaces are defined by ICAO in its *International Standards and Recommended Practices* in its *Annex 14 – Volume I: ‘Aerodromes’* document (as revised in 2018 >>).



While it is a ‘Standard’ of I.C.A.O. (i.e. a mandatory requirement, set out in paragraphs 4.2.19 and 4.2.15 of its *Annex 14*) that new objects should not project above an aerodrome’s Approach or its Take-Off Climb Surfaces, it is merely a ‘Recommendation’ (defined by I.C.A.O. as ‘desirable’), under paragraph 14.2.20 of *Annex 14*, that “new objects should not be permitted above ... the inner horizontal surface, **except when ... 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.**” The first consideration is that an Inner Horizontal Surface – while it should normally be protected – is not regarded by I.C.A.O. as one of the more critical Obstacle Limitation Surfaces.

- 7.2 Secondly, in assessing the overall applicability of the particular Surface [per 6.2(i) above], the purpose of an Inner Horizontal Surface (as stated by ICAO) must be noted:

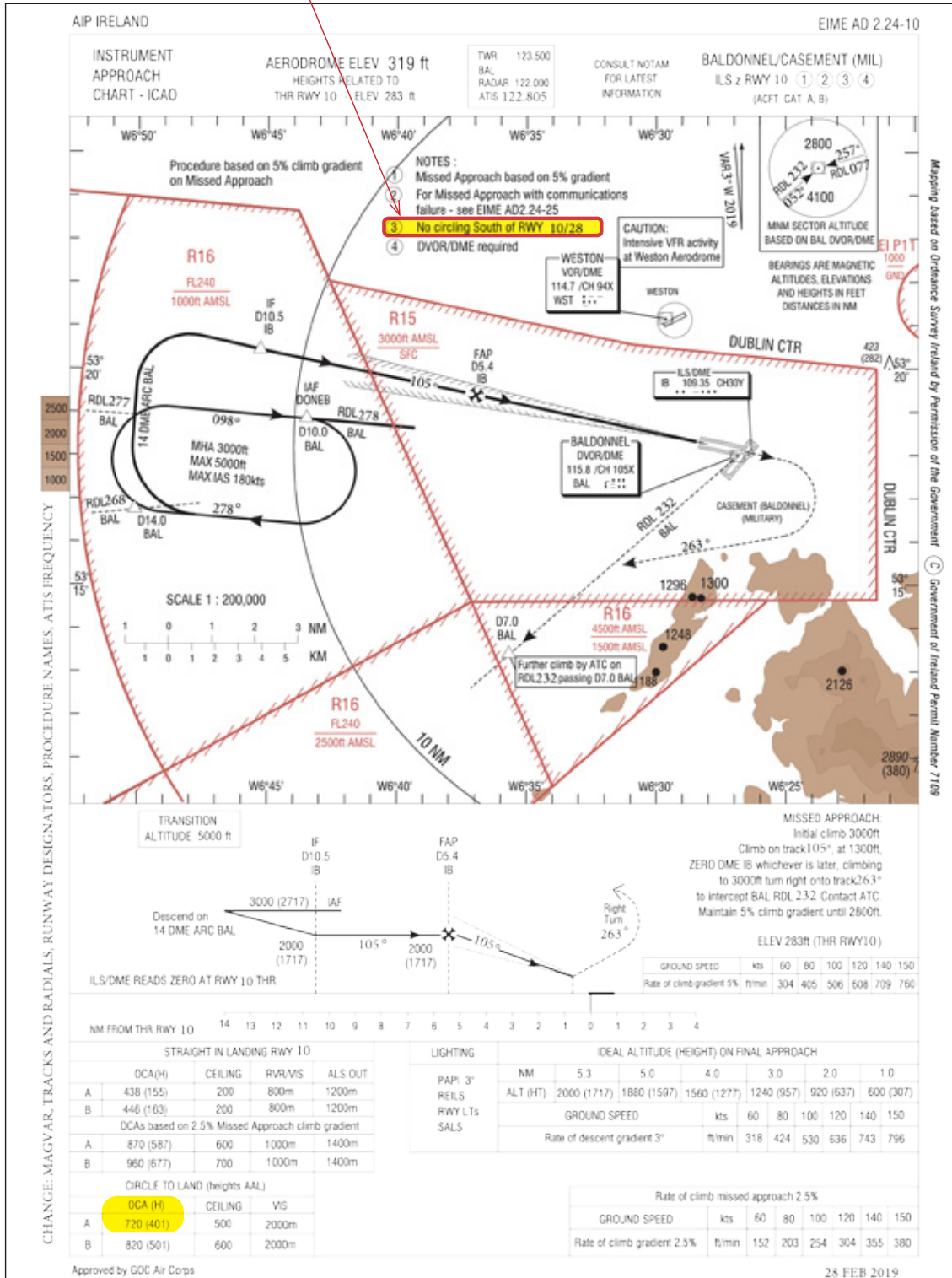


The purpose of an Inner Horizontal Surface is stated by I.C.A.O. (in Section 1.2.3 of its *Airport Services Manual* >) as being “**to protect airspace for visual circling prior to landing.**” It also goes on to say that “***In some instances, certain sectors of the visual circling areas will not be essential to aircraft operations, and provided procedures are established to ensure that aircraft do not fly in these sectors, the protection afforded by the inner horizontal surface need not extend into those sectors.***”

[See Aerodrome Chart on the following page >.]

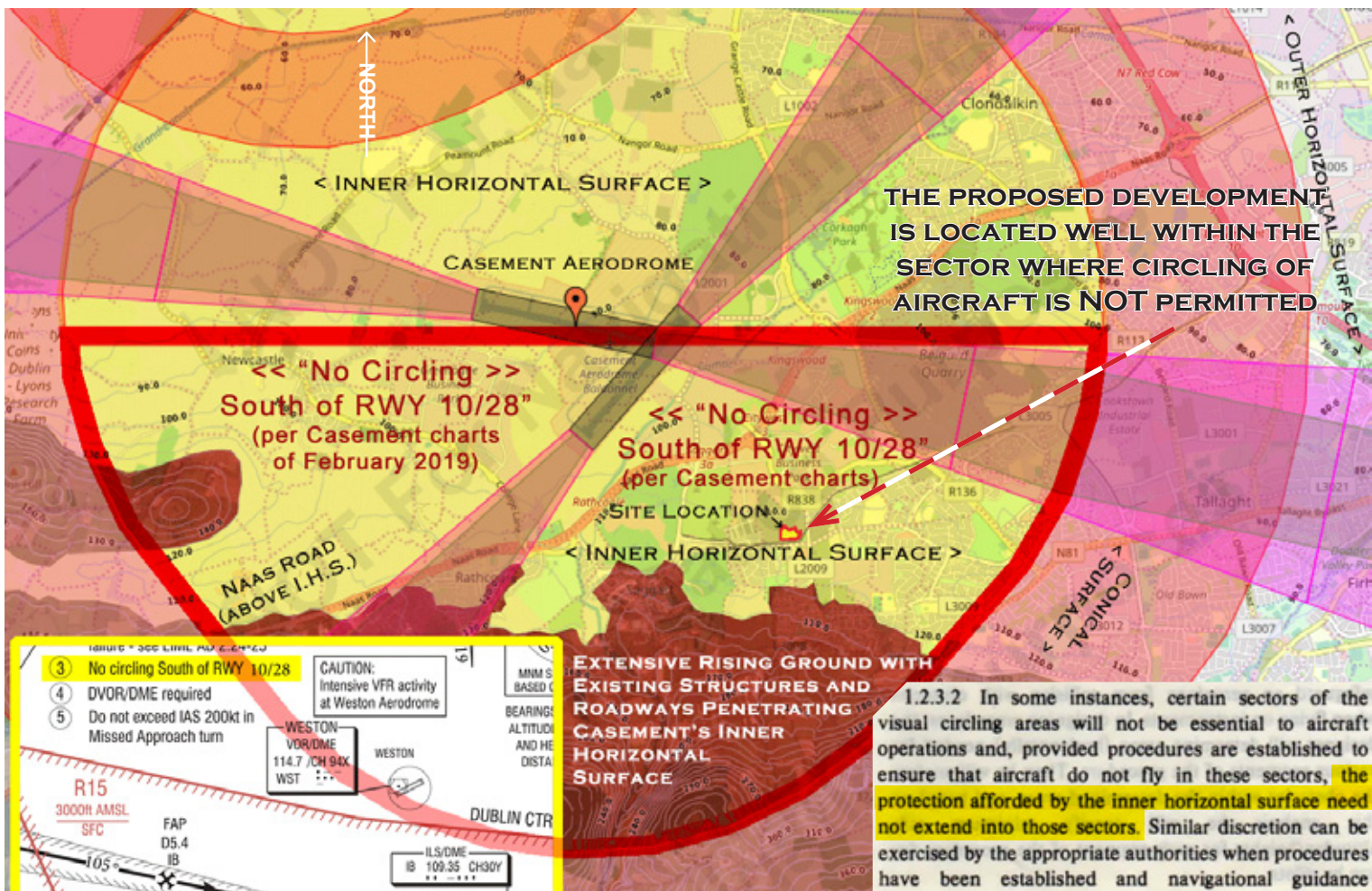
- 7.3 In relation to the above provisions set out in ICAO’s *Airport Services Manual*, it is important to note that – due to the extensive rising ground to the south and east of Casement Aerodrome –
- (a) **circling by aircraft is prohibited by the I.A.A. (and by GOC Air Corps) in the area to south of Casement’s main Runway 10/28; and**
 - (b) **this is the sector where this Cooldown Commons site is located.**

7.4 “No Circling South of Rwy [Runway] 10/28” is stated on all current and all recent Casement charts, of which one example dated February 2019 is shown below.



[<< NOTE: ON AVIATION CHARTS, VERTICAL DIMENSIONS ARE GIVEN IN FEET, & HORIZONTAL DIMENSIONS IN METRES]

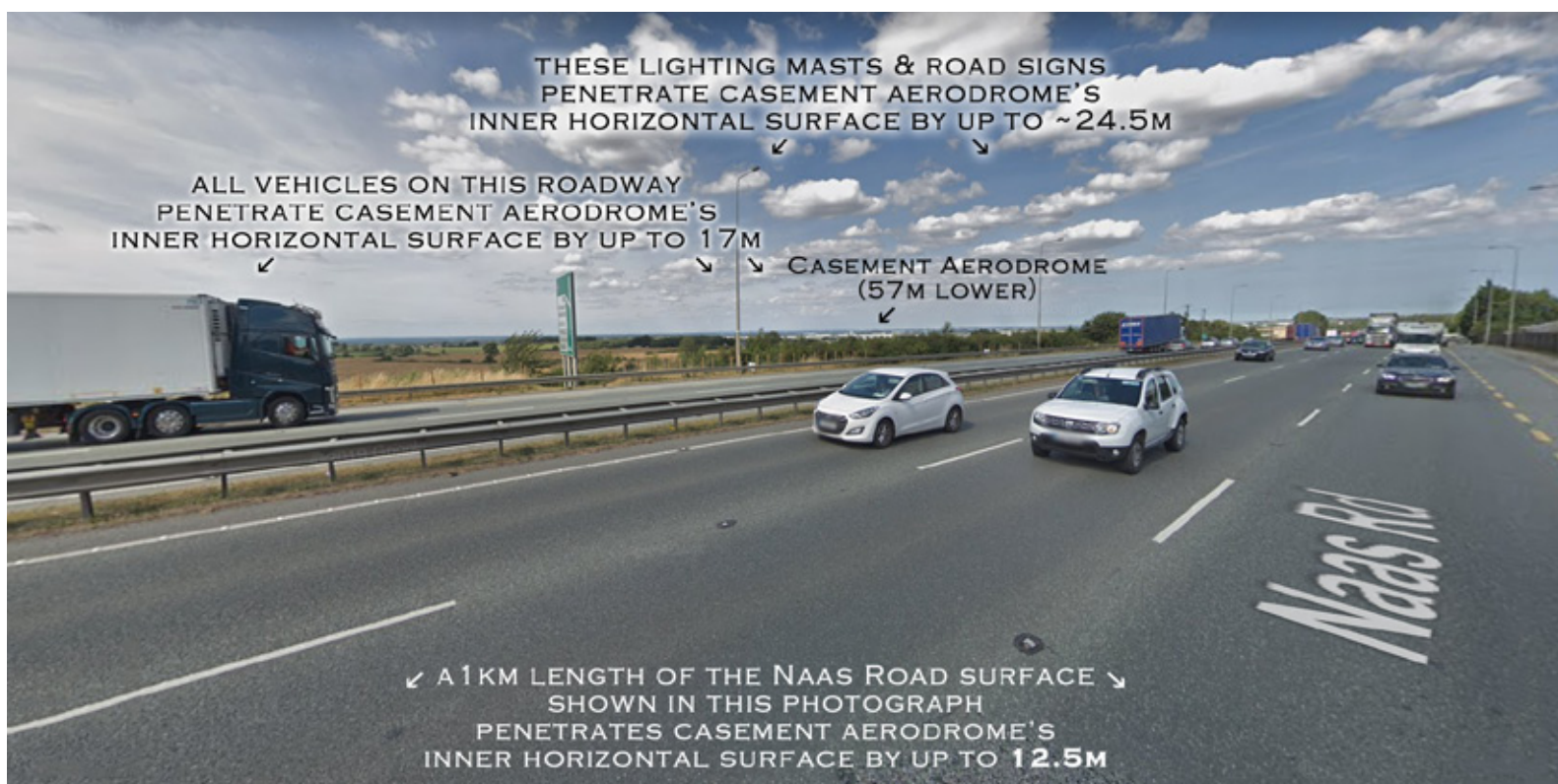
7.5 The reason this prohibition has been made on the circling of aircraft to the south (and east) of Casement’s main runway 10/28, is that there is extensive rising terrain (i.e. the Dublin Mountains) in this sector, as indicated on page 15 and in the diagram below. This land rises to such an extent that the ground itself – including 1 kilometre length of the Naas Road, and a large number of existing structures – penetrate Casement’s I.H.S. to a significant extent. This means that aircraft cannot fly (or circle) anywhere near the elevation of Casement’s Inner Horizontal Surface: they are required to fly at much higher ‘obstacle clearance altitudes/heights’ [as in the Chart on the previous page]. Additionally, the *Rules of the Air Order* requires aircraft to fly generally at a minimum of 150m above ground level or above any structure (and at a minimum of 300m above any built-up area). The existing intrusions above Casement’s Inner Horizontal Surface include Verschoyle’s Hill, directly to the south of this Citywest site, which projects above Casement’s Inner Horizontal Surface to an elevation of 336m OD. This is a projection of 204m – more than 4½ times the height of the Surface itself.



7.6 This means that the protections normally afforded by the Inner Horizontal Surface do not apply above this particular site, and for that reason alone the proposed projection (by 24.1m) above the Inner Horizontal Surface will not constitute a hazard to aviation. However further ‘shielding’ reasons also apply (as in Section 8 following) >>.

8. Assessment of Potential ‘Shielding’ by Other Existing ‘Obstacles’

- 8.1 An assessment as to whether or not the proposed intrusion above Casement’s Inner Horizontal Surface would also be ‘shielded’ by other existing ‘obstacles’ [as per assessment item (ii) in paragraph 6.2 on page 14 above] is as follows:
- 8.2 By way of setting the context for this, we include below a photograph (with Casement Aerodrome visible in the distance) taken on the Naas [N7] Road at the location where a 1km stretch of the road surface itself – at 144m OD – projects (by up to **12.5 metres**) *above* Casement Aerodrome’s Inner Horizontal Surface. The vehicles on this road constitute ‘obstacles’ which project by up to **17m** above Casement’s Inner Horizontal Surface, and the road signs and lighting masts along it project above it by up to **24.5m**. Although in a different sector, this is comparable to the **24.1m** projection of the proposed D4 apartment block at Fortunestown.

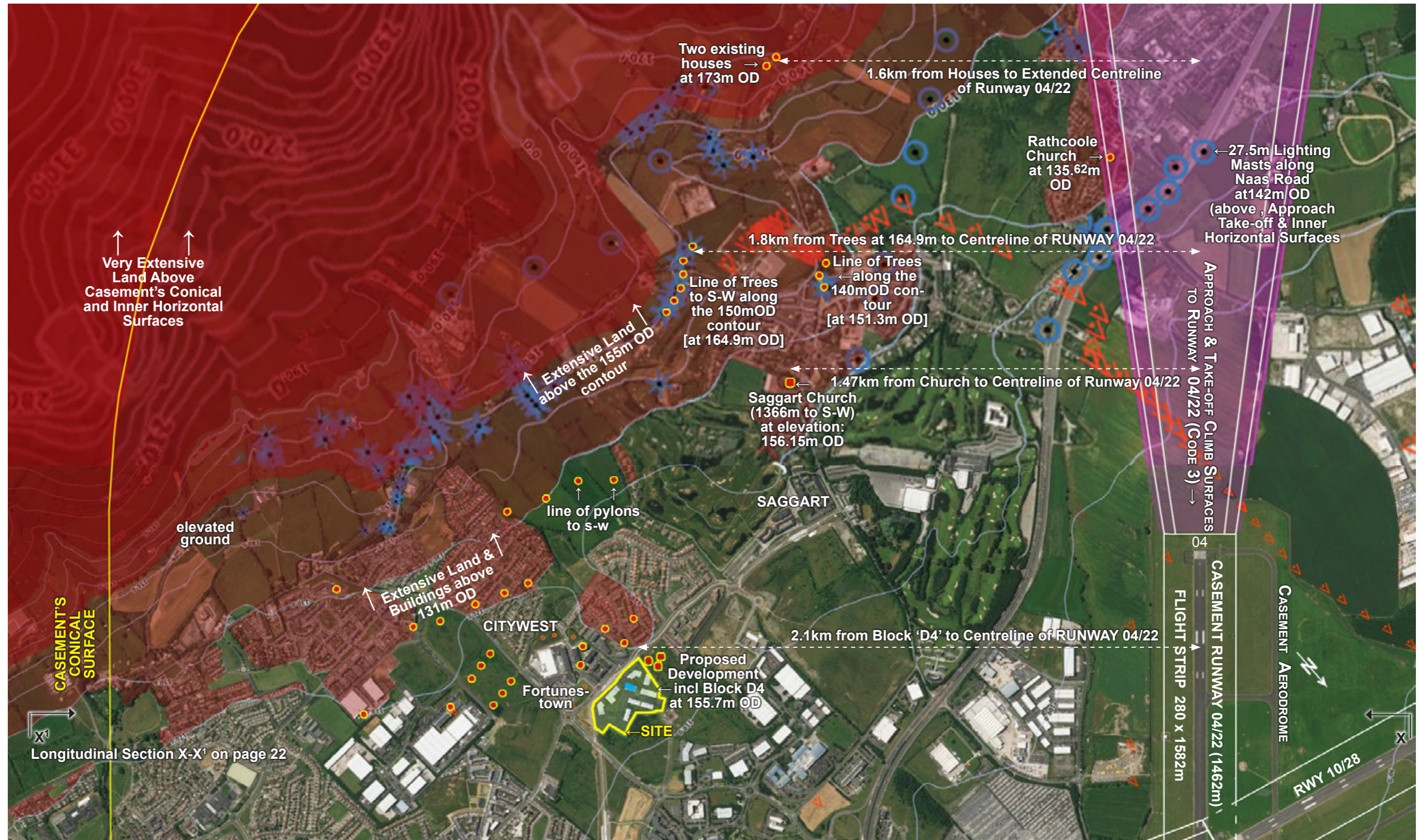


- 8.3 Further details of existing tall (or elevated) buildings, trees, and pylons in the vicinity of the Cooldown Commons site at Fortunestown – and relevant to the analysis of its ‘shielding’ – are shown on an aerial photo map on the following page on which the site is outlined in yellow. [The map is oriented in a direction perpendicular to Casement’s subsidiary Runway 04/22, so that the relative distances of the various objects from that runway’s centre-line are more easily apparent].

A portion of the aerial photo map on the following page is also shown on page 24, along with a Longitudinal Section through the site taken perpendicular to Runway 04/22, on which elevations OD of the relevant items are included.

8.5 Aerial Map View [perpendicular to Runway 04/22]

SCALE 1:13,333 APPROX. [A3-SIZE]



AERIAL PHOTO MAP

PLAN SCALE [A3-SIZE] 1:13,333 APPROX.

WITH 10M CONTOURS AND OBSTACLES AS MARKED ON CASEMENT CHARTS:

SITE OUTLINE: █ OBJECTS ABOVE I.H.S.: ●
 OBSTACLES: ✳ TREE ● POLE/PYLON ▲ MAST (UNLIT)

O'DWYER & JONES DESIGN PARTNERSHIP
 AVIATION PLANNING CONSULTANTS © 5-2021

- 8.5 ICAO provides guidance with regard to ‘shielding’ of ‘obstacles’ within its *Airport Services Manual – Part 6: Control of Obstacles*. [This is the same document referred to in para. 7.2 above.] EASA also refers to this document in regard to ‘Shielding’.

ICAO provides (in its *Airport Services Manual* para.2.9.3) that “*the formula for shielding should be based on a horizontal plane projected from the top of each obstacle away from the runway [etc.]*” It also notes that “*objects would be shielded by existing structures of a permanent and substantial character or by natural terrain or topographic features of equal or greater height...*”

- 8.6 The *ICAO Airport Services Manual* refers to Australian shielding policy as an example, and current Australian policy [under its *Part 139 (Aerodromes) Manual of Standards 2019*] provides – in relation to objects to the side of a runway strip – that “*A new obstacle may be assessed as not imposing additional restrictions if it does not exceed the height of an existing obstacle which is closer to the runway strip and the new obstacle is located perpendicularly behind the existing obstacle relative to the runway centre line.*”
- 8.7 It can be seen from the maps and section drawing on the preceding page and on page 24 following that the site is surrounded by other tall objects including permitted buildings on adjoining sites (and immediate vicinity) rising to 137m OD to the west, 138.7m OD to south, and 143.3m OD to south-east.

Using the principle outlined in 8.5 & 8.6 above, Block D1 (132.5m) is shielded by the permitted building at 137m to its west. And Blocks D2, D3, E1, & E2 (which are all lower or equal to the permitted building at 143.3m to their east) can all be assessed together with D4 (at 155.7m OD), the tallest of the 6 apartment blocks.

It should be noted that Block D4 has been reduced in height by two storeys for the resubmission of this planning application, for the following reasons:

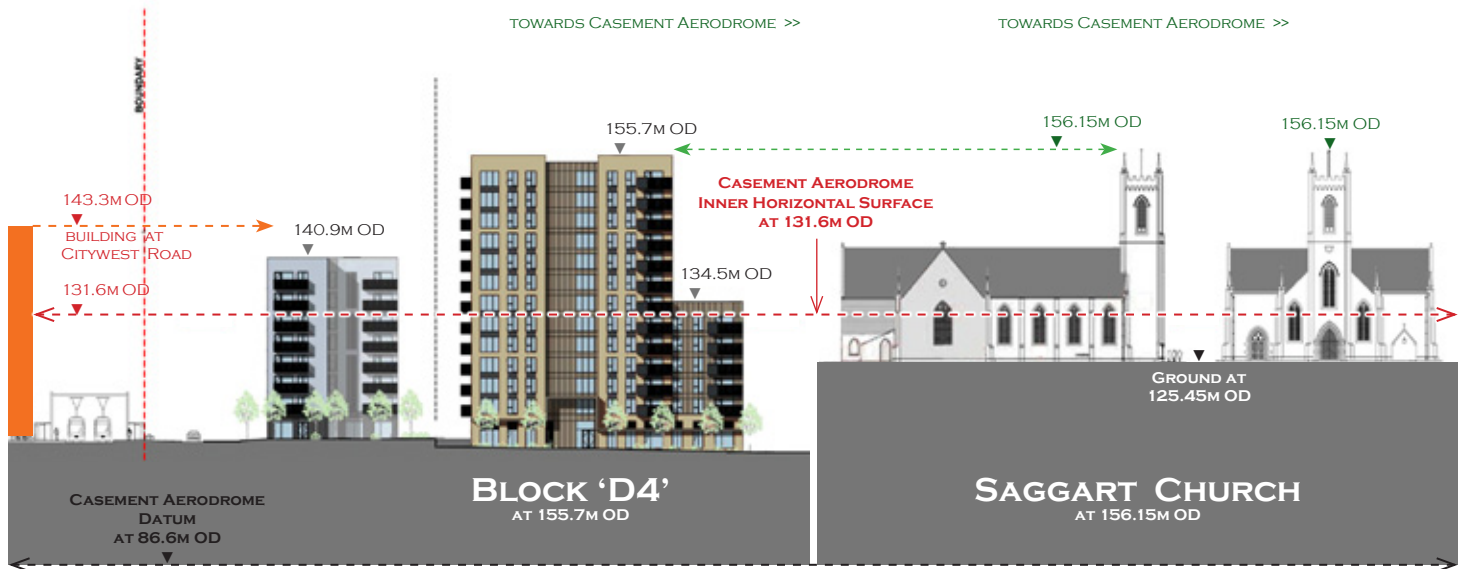
- (a) to take into account the concerns of the Department of Defence & Air Corps, and**
(b) to avail of the shielding provided by an existing permanent ‘obstacle’ in the vicinity of the development – and located 0.6km+ closer to the centreline of runway 04/22.

- 8.8 The existing permanent ‘obstacle’ which provides the necessary ‘shielding’ for all of the proposed development (at 1.97km-2.21 km from Runway 04/22) is the nearby Saggart Church (at 1.47km from Runway 04/22).

St Mary’s Church, to the Citywest side of Saggart, stands on elevated ground at 125.45m OD (~10 metres higher than the Fortunestown site), and it rises by 30.7m to 156.15m OD (at its lightning rod) and to 155.7m OD at each of its four stone pinnacles. This is a projection of 24.55m above Casement’s I.H.S. (but not marked or lit, or seen as a hazard to aviation – i.e. it is not shown on any aviation chart).



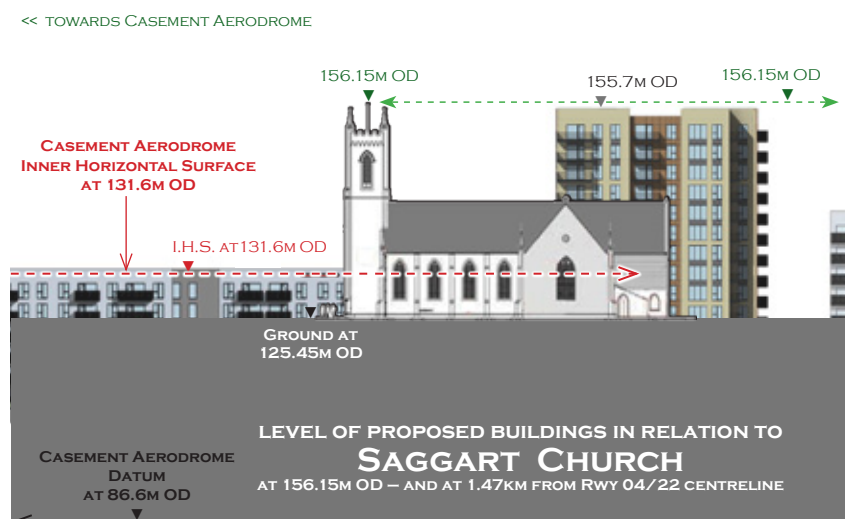
- 8.9 The relationship of the proposed apartment block D4 to Saggart Church – which is on higher ground and nearer to runway 04/22 – is illustrated below.
[To ensure the permanency of the ‘shielding’, the level chosen for the reduced height of D4 is the level of the top of the church’s four pinnacles (rather than of its lightning rod half a metre higher).]



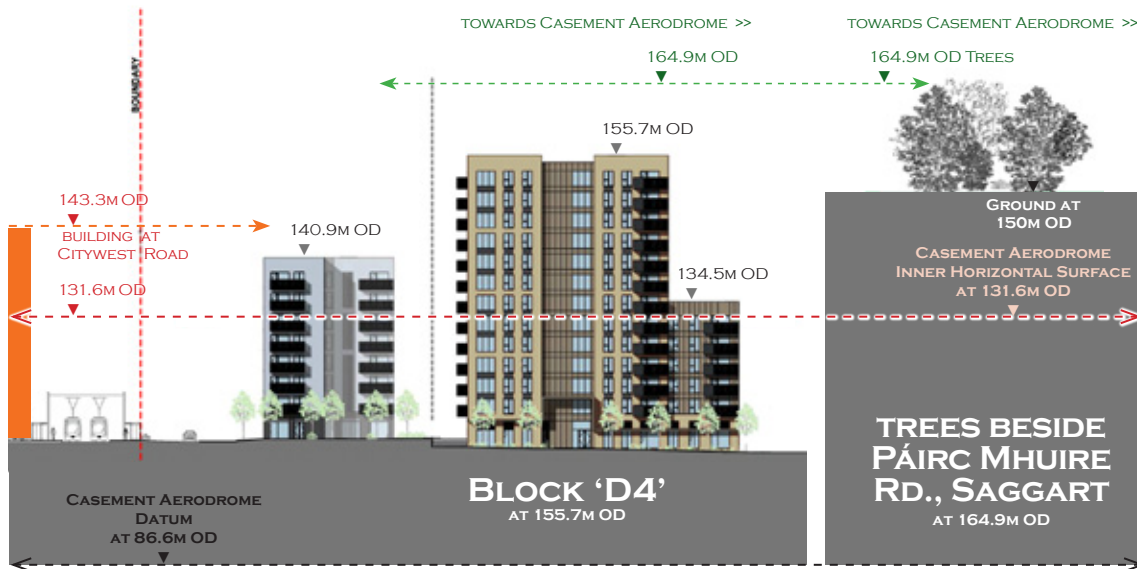
- 8.10 The views above look towards the south-west (from Fortunestown towards Saggart), and it can be seen that Block D4 – at 2.07 km from the centreline of Runway 04/22 – lies below the level of the topmost point of Saggart Church (being at the same elevation as the four stone pinnacles of its tower) – which is at 1.47km from the centreline of the Runway 04/22 (i.e. at 0.6km closer to that runway).

The combined view below is a Cross-section taken at Saggart Church, looking north-east towards Fortunestown, with Block D4 at its actual elevation behind the church (and located at 0.6km more distant from Runway 04/22).

- 8.11 Consequently, Block D4 is fully shielded by the Church tower at Saggart. And this same ‘shielding’ also applies to all other proposed blocks: D1, D2, D3, E1, & E3, so that all of the development is shielded per ICAO guidance.



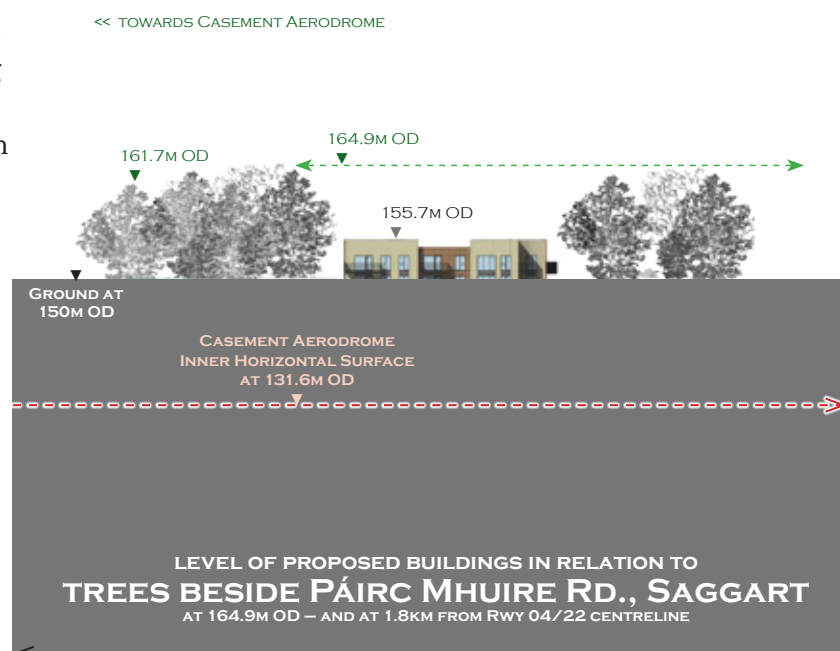
8.12 Further shielding is provided by other objects which appear on the maps and section on pages 20 & 24, of which another example is illustrated below. This shows the location of a line of trees just beyond Saggart, located beside the 150m OD contour, with a 15.7m-tall tree measured at 164.9m OD, i.e. 9.2m higher than the proposed development and closer to Runway 04/22 (at 1.8km):



8.13 The views above look towards the south-west (from Fortunestown towards Saggart), and it can be seen that Block D4, at 2.1km from the centreline of Runway 04/22, lies 9.2m below the trees which are at 1.8km from the centreline of the same runway.

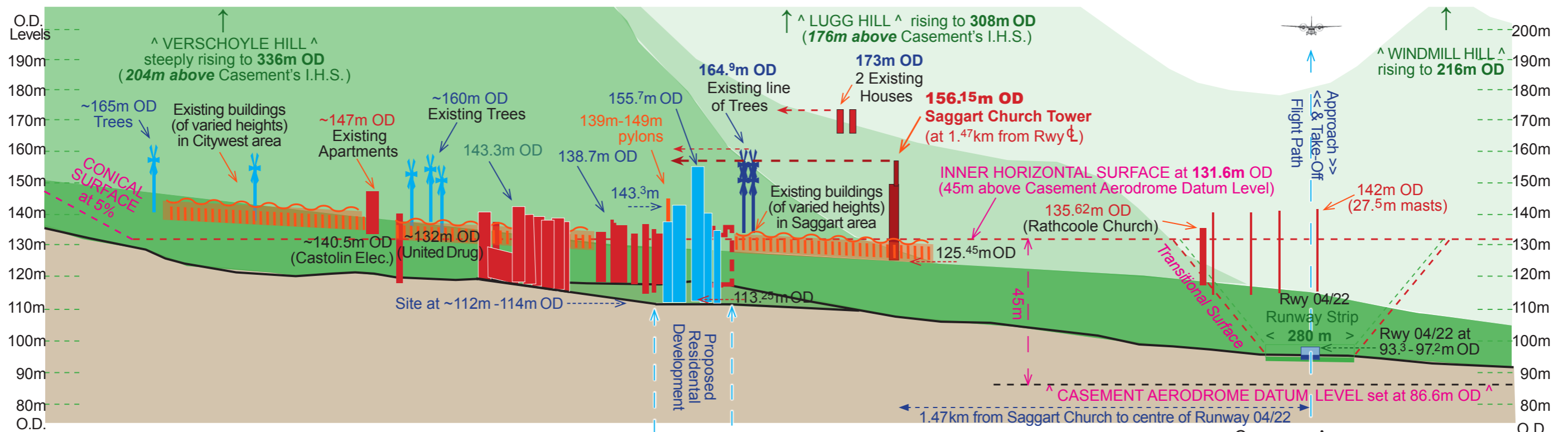
The combined view below is a Cross-section taken through Páirc Mhuire Road, looking north-east towards Fortunestown, with Block D4 at its actual elevation behind these trees (and located at 0.2 km more distant from Runway 04/22).

8.14 These trees, (and other trees along the 140m OD contour at 1.6km from the centreline of Runway 04/22) – all of which are shown as ‘obstacles’ on IAA ‘Asset’ data – provide further shielding for the proposed development. *All these items are on the Map & Section following.*

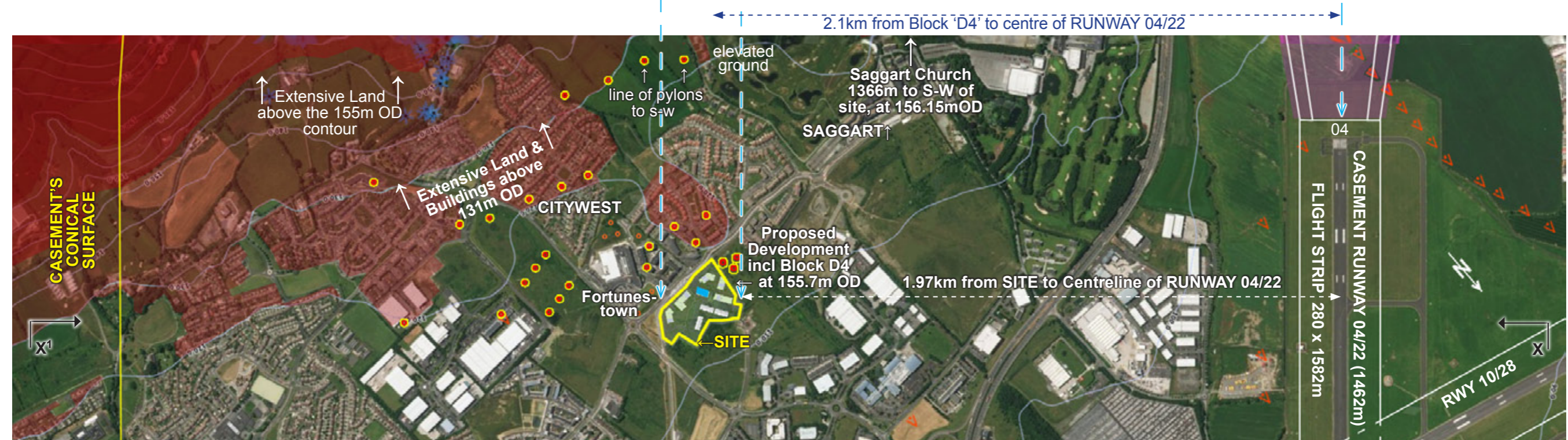


8.15 Longitudinal Section Diagram & Map

1:13,333 HORIZONTAL SCALE 1:1,333 VERTICAL SCALE APPROX. [A3-SIZE]



LONGITUDINAL SECTION X¹-X [A3-SIZE]: TO HORIZONTAL SCALE 1: 13,333 APPROX. WITH VERTICAL SCALE 1: 1,333 APPROX. PERPENDICULAR TO RUNWAY 04/22, LOOKING SOUTH (NOTE AERONAUTICAL SECTION: VERTICAL SCALE = 10x HORIZONTAL SCALE)



AERIAL PHOTO MAP PLAN SCALE [A3-SIZE] 1: 13,333 APPROX. WITH 10M CONTOURS AND OBSTACLES AS MARKED ON CASEMENT CHARTS:

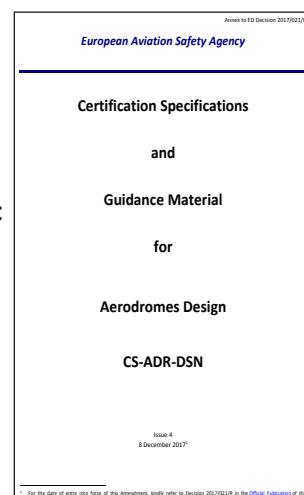
SITE OUTLINE: NEARBY OBJECTS ABOVE I.H.S.:
 OBSTACLES: TREE POLE/PYLON MAST (UNLIT)

O'DWYER & JONES DESIGN PARTNERSHIP AVIATION PLANNING CONSULTANTS © 5-2021

9. Assessment of Other I.H.S. Factors – Choice of Datum Level for Casement:

9.1 The choice of datum level for an Inner Horizontal Surface is, to a degree, subjective (unlike Approach and Take-Off-Climb Surfaces, the elevations of which are very precisely determined). It is up to each aerodrome to choose its own datum for the setting out of its I.H.S., and at Casement *a particularly low datum* (i.e. the level of the aerodrome's *lowest* threshold) was chosen, so that its I.H.S. was set at a particularly low level relative to other aerodromes. A frequent datum for setting out an I.H.S. is the elevation of the Aerodrome's Reference Point – which for Casement is given as 319ft /97.2m OD. If this 10.6m (35ft) higher datum had been chosen, the I.H.S. would lie at 142.2m OD, i.e. above almost all of the development except Blocks D4 & E1 (and just barely below the top of Block E1)

9.2 E.A.S.A. [The European Aviation Safety Agency] – which since the end of 2017 sets the standards for Dublin and other medium-to-large European airports – provides (among other options) the following guidance for the establishment of a datum for an Inner Horizontal Surface in its *Guidance Material for Aerodromes Design* of 2017 [[>](#)]: “*the elevation of the highest point of the highest threshold of the related runway*” or “*the aerodrome elevation*”, etc. If either of these had been chosen for Casement Aerodrome, its Inner Horizontal Surface would also lie at 142.2m OD (45m above the aerodrome elevation of 97.2m), i.e. above most of the proposed development, and above most other nearby buildings.

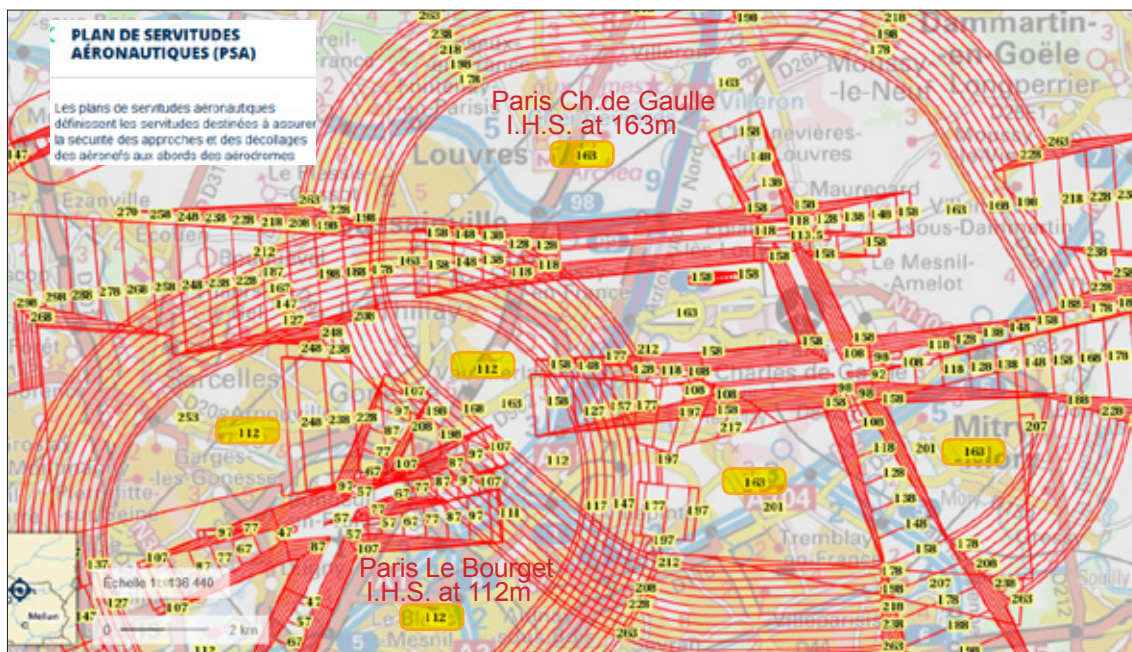


9.3 I.C.A.O. states (in its *Airport Services Manual, Part 6 'Control of Obstacles'*) that ‘*selection of the datum*’ for an I.H.S. ‘*should take account of (a) the elevations of the most frequently used altimeter setting datum points;*’ and ‘*(b) minimum circling altitudes in use or required.*’ If the altimeter setting datum at Casement were adopted as the datum for its I.H.S., as indicated by I.C.A.O., its I.H.S. would lie significantly higher than at present, at between 136m OD and 142.2m OD.

9.4 The Irish Aviation Authority recommends consideration of a midpoint between runway end elevations as the datum for setting out an Inner Horizontal Surface (as done at Dublin Airport), which if applied at Casement would place its I.H.S. at up to 5.15m higher.

- 9.5 Internationally, the choice of datum for the setting out (45m higher) of an Inner Horizontal Surface varies from country to country: Germany and Spain tend to use the elevation of the aerodrome's reference point [ARP], while France uses the elevation of the airport's/aerodrome's **highest** runway threshold. Below is a diagram of the overlapping Obstacle Limitation Surfaces around Paris Charles de Gaulle and Paris Le Bourget Airports, at both of which airports the elevation of the **highest** runway threshold* is the datum for its I.H.S.:

Data:	Paris Ch. de Gaulle lowest threshold = 97m	highest threshold = 118m *
		I.H.S. at 118m + 45m = 163m
	Paris Le Bourget lowest threshold = 44m	highest threshold = 67m *
		I.H.S. at 67m + 45m = 112m



At Paris Charles de Gaulle Airport ↑ (with 76m passengers & 498,000 aircraft movements in 2019), and at other French airports, the airport's **highest** runway threshold – not the lowest as at Casement – is the airport's datum for setting the levels of its obstacle limitation surfaces.

- 9.6 If the datum for Casement Aerodrome had been set using any of the different national or international methods outlined above (*in paragraphs 9.1 to 9.5*), the Inner Horizontal Surface at the Aerodrome could have been up to 11m higher (e.g. at 143m OD). This would have meant that fewer objects on the elevated land to south of the Aerodrome would have been deemed 'obstacles' to aviation.

10. Conclusion with regard to Casement's Inner Horizontal Surface)

- 10.1 We are satisfied, for the reasons given in Sections 6, 7, 8, & 9 above, that the proposed development is sufficiently shielded (by multiple existing objects, including Saggart Church in particular) that the intrusions above Casement's Inner Horizontal Surface (by varying amounts of up to 24.1m above it) are such that (in I.C.A.O.'s terms) these "*would not adversely affect the safety or affect the regularity of operations of aeroplanes.*"
- 10.2 These reasons for this assessment can be summarized as follows:
- (a) There are large numbers of existing projections (of greater height), both land and structures, in the vicinity of the Cooldown Commons site.
 - (b) Because of this, circling of aircraft is not permitted by the I.A.A. or by the Air Corps in the sector (south of Casement's main runway) where this site is located.
 - (c) Inner Horizontal Surface protection is not required in sectors where the visual circling of aircraft is not permitted.
 - (d) The Inner Horizontal Surface is considered by I.C.A.O. as a less significant surface, and the avoidance of new projections above it is an I.C.A.O. "*Recommendation*" (i.e. "desirable") rather than an I.C.A.O. "Standard" (i.e. "necessary").
 - (e) Existing (and future permitted) development in the immediate vicinity of the site provides a variety of 'Shielding' to the proposed development, and the nearby Saggart Church – at 0.6km closer to the centre-line of Casement's subsidiary runway 04/22, and extending to a higher elevation OD – provides 'Shielding' to all of the proposed development.
 - (f) The Inner Horizontal Surface at Casement has been set at an unusually low elevation, and if a higher [97.2m OD] datum had been chosen (in accordance with E.A.S.A. and other international guidelines) all but two of the proposed apartment blocks would lie entirely below the aerodrome's Inner Horizontal Surface.

For all the above reasons, the intrusion of up to 24.1m above Casement's Inner Horizontal Surface would be considered aeronautically acceptable in this location.

11. Other Aviation Considerations

11.1 Tower Cranes etc During Construction

(a) Notifications:

Any tower cranes used in the construction of the proposed development will project to a greater extent above the Inner Horizontal Surface.

It will be necessary [under S.I. 215 of 2005 – ‘Irish Aviation Authority (Obstacles to Aircraft in Flight) Order’] for prior notification of the use of any crane/s to be submitted, at least 30 days in advance, to the Irish Aviation Authority and to Casement Aerodrome, who may need to issue the necessary notifications to pilots, and who may require to have any tower cranes fitted with obstruction lighting.

(b) ‘PANS-OPS’ Considerations:

As well as the *Annex 14* Surfaces described above, there are other higher PANS-OPS* Surfaces [>>].

These are used to establish flying minima [OCA/H**] in the vicinity of an aerodrome, which are published in the Aerodrome’s Approach/Departure Charts.

* = *Procedures for Air Navigation Services – Aircraft Operations*.

** = *Obstacle clearance altitude/height*.

It is beyond the scope and purpose of this report to enter into any detailed PANS-OPS calculations.† These will have been prepared by the Air Corps (based on a survey of all controlling obstacles), and consultation with the Aerodrome is advised prior to construction on site, to ensure that any proposed temporary structures (in particular any tower cranes) will not interfere with PANS-OPS surfaces or affect the aerodrome’s published OCA/H.



† Our own outline calculation (per ICAO *Doc 8168* ↑, for a Runway 22 ‘missed approach’ turn, indicates an ‘MOC’ (*minimum obstacle clearance*) above the Fortunestown site at 28m approx*** above the highest element on this site, i.e. at (or above) an elevation of 183.7m / **603ft** OD.

[*** 2.2 km laterally = 3.5 km semicircular distance × 0.8% slope = 28m MOC.]

As the lowest OCA/H published for this more elevated sector is 219.5m / **720ft** OD [see *Chart on p.17, with heights given in feet*] it would seem that this 36m /117ft distance between the MOC and OCA/H indicates that no amendment of procedural minimum altitudes is anticipated.

And in regard to the Department of Defence’s reference (*in its letter of 1st February ’21*) to “PANS-OPS Surfaces”, a concern with regard to such Surfaces would not now arise, for the reason that the elevations OD of Saggart Church – and of the many tall trees in the Saggart area (at above 160m OD) – have already been taken into account in designing these Surfaces, and the revised Block ‘D4’, at a lower elevation, will have no further effect.

11.2 Existing Cranes in the Immendiate Vicinity

A current NOTAM [a 'Notice to Airmen', included at Appendix 'B' on page 38] issued by Casement and the IAA gives notice of the presence of two tower cranes directly beside this Citywest site, which extend to 78 metres above ground level ['AGL']. At the location of the coordinates given for these two cranes the ground level is at 112m OD, so that these two cranes extend to 190m OD (i.e. 34.5m higher than the highest point of the proposed development). Since these tower cranes have apparently not given rise to any necessary adjustment to Casement's declared OCA(H) ['Obstacle Clearance Altitude/s (Height/s)'], this provides additional reassurance that the proposed development (with highest point 34.3m lower than these cranes) will not give rise to a change to Casement's declared OCA(H) or to its PANS-OPS surfaces.

11.3 Glint & Glare

The solar/PV panels being provided on the roofs of the six apartment blocks have been assessed in a separate Glint & Glare Assessment by Innovision.

The Innovision report predicts that *"major nuisance or hazardous glare can not be expected for aircraft landing at any of the runways or the ATCT at Casement Aerodrome, nor for the approaches for a helicopter landing at Tallaght Hospital Helipad."* And in the event that the Air Corps may require any adjustments done to PV panels after installation, this will be done.

11.4 Possible Aviation Obstruction Lighting

The site is not in a location where aircraft warning lights are essential (as it does not lie under any Approach Surface, or in a sector where visual circling of aircraft prior to landing is permitted). However, consideration should be given to the provision of such lighting if this may be considered desirable by the I.A.A. or Air Corps, with low-intensity lighting provided to the top of Block D4 (the highest element).

The provision of such lighting would add to safety in respect of other existing unmarked and unlit tall objects in the vicinity (such as Saggart Church's tower, extending to a slightly higher elevation).

11.5 Lower Blocks D1, D2, D3, E1 & E2

In regard to the other (lower) blocks, it is worth noting that none of these lower blocks has aviation significance –

- (a) because none is higher than other recently permitted buildings in the immediate vicinity in the same Saggart-Citywest area; and
- (b) because in any group of closely co-located objects it is only the altitude of the most elevated object (i.e. Block 'D4') that has aviation significance.

12. SUMMARY

12.1 Obstacle Limitation Surfaces in General

The site at Cooldown Commons, Citywest, lies well clear of all Approach Surfaces, Take-Off Climb Surfaces, and Transitional Surfaces at Casement Aerodrome, which are the more important ICAO Obstacle Limitation Surfaces.

12.2 Casement Aerodrome's Inner Horizontal Surface

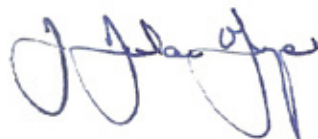
Parts of the proposed development project by varying amounts above Casement's Inner Horizontal Surface, with the highest element being the roof parapet of Block 'D4' which extends to 155.7m OD (i.e. 24.1m above the I.H.S.). However, this projection is not aeronautically significant or (in ICAO's wording) likely to "affect the safety or the regularity of operation of aeroplanes", for the reasons listed in Sections 6, 7, 8, 9, & 10 above [on pages 14-27] – and in particular for the reasons

- that (in accordance with ICAO guidance) "the protection afforded by the inner horizontal surface need not extend into" this sector, because circling of aircraft is prohibited in this sector due to the extensive rising ground; and
- because the proposed development is Shielded by a nearby existing permanent object – i.e. Saggart Church – which extends to greater elevation OD and is located 0.6km closer to the centreline of Runway 04/22.

12.3 General

We consider that the proposed residential development at this Cooldown Commons site complies with all aviation and aeronautical requirements affecting the location.

Prior to submission of this report — (a) we have discussed this proposed development, and its potential shielding etc., at a meeting on 10th March 2021 with Department of Defence and Air Corps personnel; and (b) we have provided to those authorities and to the Irish Aviation Authority a draft 'advance copy' of this report.



J. Declan O'Dwyer B.Arch MBA RIBA
21st May 2021
O'Dwyer & Jones Design Partnership
Aviation Planning Consultants

O ' D W Y E R & J O N E S D E S I G N P A R T N E R S H I P
A V I A T I O N P L A N N I N G & A R C H I T E C T U R E C O N S U L T A N T S
2 8 L E E S O N P A R K • D U B L I N 6 • T E L . : 3 5 3 - 1 - 4 9 8 1 8 9 3 [F A X : 3 5 3 - 1 - 4 9 6 4 4 1 0]

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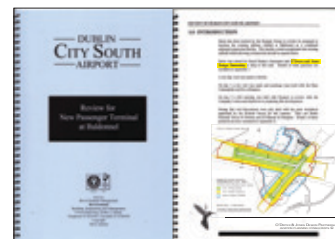
APPENDIX 'A'

Previous Work by this Firm in regard to Aviation Planning at/re Casement Aerodrome

Since 1980, this firm, and the author of this report, have been closely involved in the planning of – and in aviation standards matters relating to – **Casement Aerodrome** (and other Irish & international military aerodromes), including —

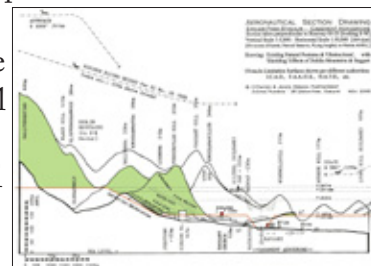
Casement (& other) Projects for the Department of Defence –

1. The Master Plan 1981-1991 for Casement Aerodrome (including first setting out of ICAO Obstacle Limitation Surfaces on Casement's airfield) written by the author of this report. [>]
2. The Master Plan 1984-1994 for Gormanston Military Aerodrome (including setting out of its Obstacle Limitation Surfaces, etc.) written by the author of this report.
3. The Design [>] Project Management and Supervision on Site in 1986 of the first replacement Irish military hangar with military workshops (Hangar no. 3 at Casement Aerodrome) by the author of this report.
4. The planning by this firm in 1995 (jointly for the Department of Defence and Ryanair and Bovis Construction) of Dublin CitySouth combined Military & Civil Airport at Baldonnel. [>]



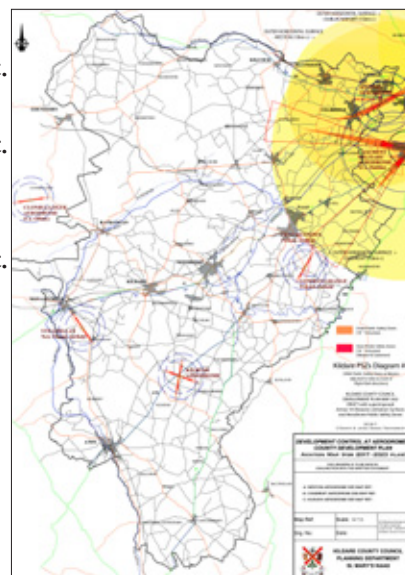
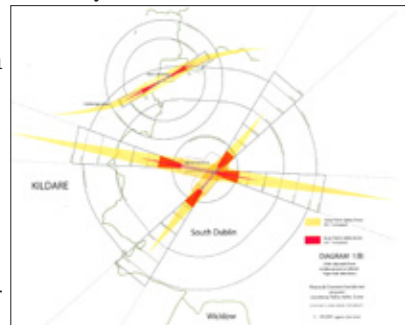
Casement Projects by O'D&JDP for private firms and affected landowners –

5. The planning by this firm in 1997 of a civil business airport at Gormanston former military aerodrome for PARC Aviation.
6. Planning Appeal Response by this firm in 2000 for the FAI, in respect of proposed Eircom Park football stadium, including detailed analyses of Inner Horizontal Surface at Casement & international IHS practice, and analyses of Casement 'obstacles' incl. terrain & Saggart Church etc. [>]
7. Numerous Aeronautical Assessment Reports by this firm in respect of Casement Aerodrome for planning applications, planning appeals, and SHD applications by various landowners and developers, re sites in South Dublin at Baldonnel, Rathcoole, Saggart, Citywest, Tallaght, Cookstown, Lucan etc., and re sites in Fingal and Kildare located under Casement's 'obstacle limitation surfaces'.
8. Oral Hearing presentation to *An Bord Pleanála* by this firm, on 9th July 2019, on the issue of Casement Aerodrome's Inner Horizontal Surface for SHD application ref. ABP-303803-19 at Cookstown.
9. Analyses by this firm in 2020-21 re Irish Air Corps and Coastguard Helicopter operations in Dublin, Wicklow, Galway (re HSE hospital helipads etc.)



Casement Projects by O'D&JDP for Local Authorities –

10. Analysis of 1999 *Frederick Snow Policy Review for Casement Aerodrome* carried out by this firm in 2003 for South Dublin County Council.
11. Aviation planning content by this firm re Casement & Weston aerodromes etc. for the 2004-2010 SDCC Development Plan.
12. Public Safety Zones assessment and proposals for Casement Aerodrome & Weston Airport by this firm in 2007 for South Dublin County Council.
13. Further Public Safety Zones proposals for Casement & Weston & other aerodromes by this firm in 2008 for Kildare County Council. [>]
14. Detailed Analysis of the 2009 *Mott MacDonald Review of Policy for Casement Aerodrome* carried out by this firm for South Dublin County Council in 2010.
15. Reports by this firm in 2000-2010 on various aviation-related planning queries re Casement, for South Dublin & Kildare planning departments.
16. Aviation planning content by this firm re Casement etc. for the 2010-2016 SDCC Development Plan.
17. Aviation planning content by this firm re Casement etc. for the 2011-2017 Kildare County Development Plan. [>]
18. Aviation planning content by this firm re Casement etc. for the 2017-2023 Kildare County Development Plan.
19. Current Aviation planning content by this firm re Casement Aerodrome etc. for the 2022-2028 SDCC Development Plan Review.
20. Current Aviation planning content by this firm re Casement Aerodrome etc. for the 2023-2029 Kildare County Development Plan Review.



APPENDIX 'B'

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Recent Aeronautical Information Services' "NOTAM" re cranes in Citywest extending to 190m OD	38
Defence Act, 1954, section 36 extracts	39

From: O'Dwyer & Jones - Aviation Planning <admin@aviationplanning.ie>
Sent: 29 April 2021 14:24
To: 'Gareth O'Flaherty (Defence)' <Gareth.OFlaherty@defence.ie>
Cc: 'Aidan McLernon' <aidan.mclernon@cairnhomes.com>; 'Brenda Butterly' <Brenda@mcgplanning.ie>; 'Kosta Kapetangiannis | Reddy A+U' <kkapetangiannis@reddyarchitecture.com>; 'trevor@mcgplanning.ie' <trevor@mcgplanning.ie>; 'Cliona Eogan' <cliona.eogan@cairnhomes.com>; 'Saoirse Kavanagh' <Saoirse@mcgplanning.ie>
Subject: Proposed Cooldown Commons [Cairn] SHD application in Saggart-Citywest area of South Dublin

O'DWYER & JONES DESIGN PARTNERSHIP

AVIATION PLANNING CONSULTANTS
28 LEESON PARK, DUBLIN 6, D06E338, IRELAND

TEL: 00-353-1-4981893, EMAIL: ADMIN@AVIATIONPLANNING.IE OR DESIGNPARTNERS@IOL.IE WEB: WWW.AVIATIONPLANNING.IE

FROM: J. DECLAN O'DWYER B.ARCH MBA RIBA

TO: GARETH O'FLAHERTY, PROPERTY MANAGEMENT BRANCH, DEPARTMENT OF DEFENCE

Dear Gareth,

Thank you for your email of 21st April regarding the Cairn Homes development at Citywest, and I also refer to Jason Kearney's emails of 26th and 27th April (on the same matter) sent to Aidan McLernon of Cairn Homes.

In Jason's email of 27th April he requests fuller details "of a revised application." Consequently I am forwarding this link to the online dropbox which contains details of the rest of the revised application which is scheduled for resubmission to ABP next week: <https://www.dropbox.com/sh/z9cdkis47c04cn2/AACqns3VGwVJahtEWiv9sRFNa?dl=0>

Following the objection (in February '21) of the Department of Defence to the Cairn Homes residential development in the Saggart-Citywest area as originally submitted, this firm was consulted regarding ICAO considerations and requirements in that location; and, among other matters, we pointed out the ICAO principle of shielding, and advised that none of the buildings should be higher than the level of Saggart Church (measured at 156.150m OD/AMSL to its highest point) – a nearby permanent obstacle, located closer to Runway 04/22, and not marked or lit or featured in any way on Casement Aerodrome's charts, past or present. A presentation document explaining this was sent to the Department and to the Air Corps in advance of a meeting held to discuss the technical aspects of this on 10th March '21, but at which no input (or subsequent comment) was made by the Air Corps.

In all the circumstances, Cairn Homes decided to withdraw the Submission from An Bord Pleanála, and instructed that the project be redesigned to take account of the Department's and Air Corps's concerns. They also instructed that an aviation analysis Report be prepared in relation to the redesigned scheme vis-à-vis: ICAO requirements and guidance; the principle of shielding; and the peculiarities of the Inner Horizontal Surface in this particular sector. An Advance Copy of this Report has been provided to the Department of Defence and Air Corps, and to the Irish Aviation Authority, on 19th April '21.

The one comment that has been received from the Department is as follows: *"There appears to be little other change to the heights of the remaining blocks; therefore, at this juncture the original objections from the Department of Defence would appear to still stand."* In relation to this comment, we observe that – with regard to the application of aviation restrictions – the heights of the lower blocks are not relevant. The Air Corps will be aware that in any group of closely co-located objects (not under an Approach Surface, or Take-off Climb Surface, or Transitional Surface) it is only the height/altitude/elevation(OD/AMSL) of the most elevated object that is relevant. In this case, two storeys have been removed from the most elevated object, Block D4. [And in respect of the remaining blocks, it must also be taken into account that the elevations OD of these lower blocks are the same as the elevations OD of other permitted buildings in the same Saggart-Citywest area.]

In the circumstances, we think it may be helpful if another meeting could be arranged before resubmission of the redesigned project at the end of next week – and if possible using 'Teams' rather than 'Skype' (which caused some difficulty all around on the last occasion) – at which the technical and ICAO aspects affecting the proposed development might be discussed more fully with the relevant Air Corps personnel.

Kind regards,

Declan

J. Declan O'Dwyer B.Arch MBA RIBA
O'Dwyer & Jones Design Partnership
Aviation Planning Consultants, Dublin

From: Aidan McLernon <aidan.mclernon@cairnhomes.com>
Sent: 14 May 2021 17:18
To: Gareth O'Flaherty (Defence) <Gareth.OFlaherty@defence.ie>; O'Dwyer & Jones - Aviation Planning <admin@aviationplanning.ie>
Cc: 'Brenda Butterly' <Brenda@mcgplanning.ie>; 'Kosta Kapetangiannis | Reddy A+U' <kkapetangiannis@reddyarchitecture.com>; trevor@mcgplanning.ie; Cliona Eogan <cliona.eogan@cairnhomes.com>; 'Saoirse Kavanagh' <Saoirse@mcgplanning.ie>
Subject: RE: Proposed Cooldown Commons [Cairn] SHD application in Saggart-Citywest area of South Dublin
Importance: High

Gareth,

I trust you are well.

As previously indicated, Cairn are keen to engage with your colleagues in the Air Corps and Dept of Defence before we lodge our revised planning application to discuss the advice of our Aviation Consultant that has informed our amended and lower design. Can you confirm if it is possible to arrange a meeting or a call in the next week or so or alternatively respond to Declan's email below?

Thanks in advance,

Aidan McLernon
Head of Planning



CAIRN PLC
7 Grand Canal,
Grand Canal Street Lower, Dublin 2,
T: +353 1 696 4600 M: +353 86 8263135
E: aidan.mclernon@cairnhomes.com www.cairnhomes.com

From: Aidan McLernon <aidan.mclernon@cairnhomes.com>
Sent: 14 May 2021 17:21
To: Jason Kearney (Defence) <Jason.Kearney@defence.ie>; Sarah Zacharia (Defence) <Sarah.Zacharia@defence.ie>; Don.Watchorn@defence.ie
Cc: 'Brenda Butterly' <Brenda@mcgplanning.ie>; 'Kosta Kapetangiannis | Reddy A+U' <kkapetangiannis@reddyarchitecture.com>; trevor@mcgplanning.ie; Cliona Eogan <cliona.eogan@cairnhomes.com>; 'Saoirse Kavanagh' <Saoirse@mcgplanning.ie>; O'Dwyer & Jones - Aviation Planning <admin@aviationplanning.ie>; Gareth O'Flaherty (Defence) <Gareth.OFlaherty@defence.ie>
Subject: RE: Proposed Cooldown Commons [Cairn] SHD application in Saggart-Citywest area of South Dublin

NB: Circulation email to Jason Kearney, Sarah Zacharia and Don Watchorn given that Gareth is currently on leave and to avoid unnecessary delays.

Aidan McLernon
Head of Planning



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7 Grand Canal,
Grand Canal Street Lower, Dublin 2,
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E: aidan.mclernon@cairnhomes.com www.cairnhomes.com

From: Gareth O'Flaherty (Defence) <Gareth.OFlaherty@defence.ie>
Sent: 21 April 2021 13:00
To: O'Dwyer & Jones - Aviation Planning <admin@aviationplanning.ie>
Cc: Sarah Zacharia (Defence) <Sarah.Zacharia@defence.ie>; Jason Kearney (Defence) <Jason.Kearney@defence.ie>; Don Watchorn (Defence) <Don.Watchorn@defence.ie>
Subject: RE: Advance Copy of Aviation Report re Cooldown Commons [Cairn] SHD attached

Declan,

In response to your query below in relation to a prospective revised planning application for Cooldown Commons SHD, I wish to advise at the outset that any determination in relation to a planning consent is solely a matter for the planning authorities and/or ABP, as appropriate. Therefore, the following observations are made on a non-prejudicial basis, and are not intended to be used to rely on for a prospective planning application, nor are these observations to be relied on in the event of any commercial transaction pertaining to such lands and they are not to be relied on in the event of any contract exchange pertaining to same.

Following consultations with the Air Corps, the Department of Defence notes that it appears that Block D4 (the tallest building) has been reduced from 161.25m to 155.7m AMSL, giving a reduction of approximately 2 floors/5.5m and that Block D4 will still penetrate the Inner Horizontal Surface by 24.1m. There appears to be little other change to the heights of the remaining blocks. Therefore, at this juncture, the original objections from the Department of Defence would appear to still stand.

Nothing in the above observations shall be taken as a binding response by the Minister for Defence in the event that a planning application is made. The Minister reserves the right to comment on an actual planning application as and when it is submitted in accordance with the provisions of the planning regulatory code.

Kind regards,

Gareth O'Flaherty

Higher Executive Officer – Property Management Branch

—

An Roinn Cosanta

Department of Defence

Bóthar an Stáisiúin, An Droichead Nua, Contae Chill Dara, W12 AD93.

Station Road, Newbridge, Co.Kildare, W12 AD93.

T +353 (0)45 45 2162 M +353 (0)87 437 4237

gareth.oflaherty@defence.ie

www.defence.ie

From: Gareth O'Flaherty (Defence) <Gareth.OFlaherty@defence.ie>
Sent: 20 May 2021 10:48
To: Aidan McLernon <aidan.mclernon@cairnhomes.com>
Cc: Jason Kearney (Defence) <Jason.Kearney@defence.ie>; Sarah Zacharia (Defence) <Sarah.Zacharia@defence.ie>; Don Watchorn (Defence) <Don.Watchorn@defence.ie>
Subject: RE: Proposed Cooldown Commons [Cairn] SHD application in Saggart-Citywest area of South Dublin

Dear Mr. McLernon,

Thank you for your email of 14 May 2021. I wish to advise at the outset that any determination in relation to a planning consent is solely a matter for the planning authorities and/or ABP, as appropriate. Therefore, the following observations are made on a non-prejudicial basis, and are not intended to be used to rely on for a prospective planning application, nor are these observations to be relied on in the event of any commercial transaction pertaining to such lands and they are not to be relied on in the event of any contract exchange pertaining to same.

The Department of Defence has consulted with subject matter experts in the Air Corps and their view on the proposed changes indicated in the revised plans remains as previously set out by way of email to Mr. O'Dwyer on 21 April 2021, and the previous objections from the Department of Defence remain. Therefore, the Department of Defence will reserve its position on the proposed development until an application for permission is formally lodged with An Bord Pleanála.

Nothing in the above observations shall be taken as a binding response by the Minister for Defence in the event that a planning application is made. The Minister reserves the right to comment on an actual planning application as and when it is submitted in accordance with the provisions of the planning regulatory code.

Yours sincerely,

Gareth O'Flaherty

Higher Executive Officer – Property Management Branch

—

An Roinn Cosanta

Department of Defence

Bóthar an Stáisiúin, An Droichead Nua, Contae Chill Dara, W12 AD93.

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—

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Daily Pre-Flight Bulletin

 <p>IRELAND AERONAUTICAL INFORMATION SERVICES</p>	
Pre-Flight Information Bulletin: AREA	VALIDITY (UTC): 18 APR 2021 08:07 - 19 APR 2021 08:07
Id: EINN2104180024	
Profile: AISOPS	
Service Type: FULL	
Date: 18 APR 2021 Time: 08:06 UTC	Height Limits:
Flight Rules: IFR/VFR	Lower: 000 Upper: 999
Contents: Aerodromes, En-route, Warnings, including miscellaneous information	
Briefing Type: International, National, Military	
FIR: EISN EGPX EGGX	
Aerodromes: EGAA EGAB EGAC EGAD EGAE EGNT EGPF EGPB EGPK EGPB EIAB EIBN EIBR EICA EICK EICL EICN EIDL EIDW EIIM EIIR EIKK EIKN EIKY EIMH EIMN EINC EINN EIRT EISG EIWF EIWT EIME	
Legend: + NOTAM not older than 250 days * Different from original - Beginning of the message	

EISN - SHANNON FIR**AERODROMES****EIAB - ABBEYSHRULE***No information received or matching the query*

+ TWY C4 CLOSED
FROM: 09 FEB 2021 10:13 **TO:** 09 MAY 2021 20:00 A0374/21

+ OBSTACLE ERECTED, CRANE ESTABLISHED AT THE INTEL FACTORY IN COUNTY KILDARE CENTRED ON 532241.18N 0063129.53W WITHIN A RADIUS OF 2NM.
WITHIN THE FOLLOWING LATERAL LIMITS:
532241.49N 0063132.54W
532241.64N 0063127.35W
532239.45N 0063127.16W
532239.30N 0063132.36W
ELEVATION 510FT/HEIGHT 330FT
FROM: 03 MAR 2021 10:46 **TO:** 02 JUN 2021 20:00 N0017/21

EIME - CASEMENT

+ OBSTACLES ERECTED. 2 TOWER CRANES OPERATING AT POSITION 531709N 0062535W 1.5NM SOUTH EAST OF CASEMENT AERODROME. MAX HEIGHT 78M AGL. RADIUS OF OPERATION 40M. OBSTACLES LIGHTED.
FROM: 15 APR 2021 13:34 **TO:** 15 JUL 2021 15:00 EST N0030/21

EN-ROUTE

+ please see NOTAM A0671/21 :- EIKY

+ please see NOTAM A0611/21 :- EIDW

Note: These tower crane coordinates are located at Citywest (directly beside the Cooldown Commons site) where ground level is at 112m OD; thus "78M AGL" [above ground level] = **190m OD**

Defence Act, 1954

Restrictions on use of land in vicinity of service aerodromes. 36.—(1) Whenever the Minister is of opinion that the unrestricted use of a particular area of land in the vicinity of an aerodrome vested in or occupied by him would interfere with the navigation of aircraft flying to or from that aerodrome, he may by order (in this section referred to as a protected area order) do the following things—

- (a) declare that particular area of land shall be a protected area for the purposes of the order,
- (b) declare that, within the protected area, it shall not be lawful for any person, save under and in accordance with a permit granted by the Minister, to erect or add to any building or to erect or place any post, pole or other thing so that any part of the building, post, pole or thing (in this section referred to as an obstruction) will be at a greater height than that fixed by the order.

(5) The Minister may grant permits for the purposes of a protected area order, and the following provisions shall apply in relation to any permit so granted—

- (a) the Minister may—
 - (i) attach to it such conditions as he thinks fit,
 - (ii) revoke or amend it;
 - (b) the permit shall not operate as a release from any restrictions imposed under the Town and Regional Planning Acts, 1934 and 1939, or any other enactment and applicable to the area to which the order relates.
- (6) (a) If any person, having an estate or interest in land within an area to which a protected area order applies, proves that his estate or interest is injuriously affected by the refusal of the Minister to grant him a permit or by any conditions attached to a permit granted to him by the Minister, he shall be entitled to recover compensation from the Minister for the injury to that estate or interest, and any question whether compensation is payable under this subsection or as to the amount of any compensation so payable shall, in default of agreement (which agreement shall be subject to the consent of the Minister for Finance), be determined by an arbitrator appointed under the Acquisition of Land (Assessment of Compensation) Act, 1919, and under and in accordance with that Act.