

AERONAUTICAL ASSESSMENT REPORT

**RE
PROPOSED DEVELOPMENT AT
BROOMHILL ROAD,
TALLAGHT, DUBLIN 24**

FOR
STRATEGIC HOUSING DEVELOPMENT
PLANNING APPLICATION

BY
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7TH MAY 2022



**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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Note: In all maps /diagrams /aerial photos in this report which do not contain a North Point, north lies to the top.

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1. Scope of Report, Location of the Site, & Development Plan Aspects

1.1 Site Location

This report addresses the aviation impact of a proposed Strategic Housing Development on a site of 1.4 hectares approx. in South County Dublin, located to east of Broomhill Road and south of Broomhill Terrace in Tallaght, Dublin 24.

The site is shown outlined in red in the aerial photograph below.



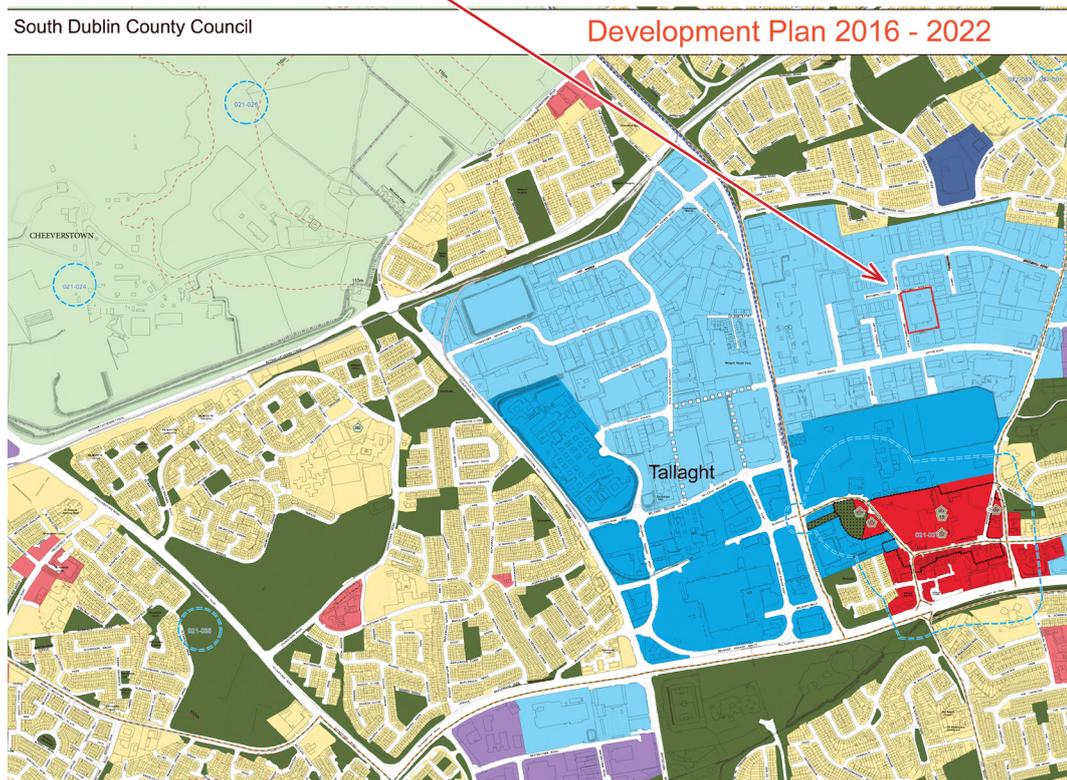
1.2 Some Aviation Changes to Note (subsequent to the 2016 SDCC Development Plan)

- (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 2019 designations, but they refer to the same runways as are in the SDCC Plan.

1.3 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 (formerly part of Broomhill Industrial Estate) is zoned 'Objective REGEN: To facilitate enterprise and/or residential-led regeneration.'

The site is shown outlined in red on the extract from S.D.C.C. Maps 5 & 9 below.



1.4 Items of aeronautical significance in relation to the site are:

- (i) The site lies under the Approach and Take-Off Climb Surfaces to/from Casement Aerodrome's main runway 10/28 in South County Dublin, with the proposed development at 5.49 km from the threshold of Runway 28.
- (ii) The site also lies under the Conical Surface that surrounds Casement military aerodrome (*see illustration in Section 7 on page 11*).
- (iii) The ground level on the site (at ~93m OD) lies 3m below the level of the threshold of Casement Aerodrome's Runway 28, and 6.4m higher than the the aerodrome's datum level (which is at 86.6m OD).
- (iv) The site lies at 1.11km approx. to the north-east of the helipad at Tallaght Hospital.

2. Relevant SDCC Development Plan Paragraphs

Of particular relevance to the aeronautical assessment of the site in question are the paragraphs reproduced below from the South Dublin County Council Development Plan 2016-2022, including —

2.1 (i) Paragraph (a) referring to Casement runway 11/29 [now designated runway 10/28] on page 137 of the Plan (under Section 7.8.1 – ‘IE8 Objective 2’):

The airspace of Casement is defined by the Obstacle Limitation Surfaces, prepared and mapped on the County Development Plan map in accordance with the ICAO Standards and the Irish Aviation Authority ‘Guidance Material on Aerodrome Annex 14 Surfaces (2015)’, including the following:

- a). Prevent objects from penetrating the Obstacle Limitation Surfaces for runway 11/29. The existing main runway (11/29) is considered as an instrument approach Code 4 runway and the relevant Obstacle Limitation Surfaces of the Irish Aviation Authority ‘Guidance Material on Aerodrome Annex 14 Surfaces’ (2015) are applicable.

2.2 (ii) The paragraphs on ‘Outer Approach Area’ on page 229 of the Plan (under Section 11.6.6 ‘Aerodromes’) – the longitudinal section referred to is on p.13:

Outer Approach Area

Under the Outer Approach Surface (outside the Inner Approach Area but within the approach funnels), graded heights of development below the Obstacle Limitation Surfaces of the runways may be permitted, subject to demonstration that the development is not an obstacle to the operation of the runway.

The Planning Authority will consult with the DoD and the IAA, as required, in this assessment. The Planning Authority will require the applicant to submit a longitudinal section through the relevant Approach Surface funnel. The section drawing shall include the following:

- The Ordnance Datum (OD) of the relevant runway,
- The approach surface slope for the relevant runway in accordance with Table 3 & 4 of the IAA Guidance Material on Aerodrome Annex 14 Surfaces (2015) and set out in Table 11.26 below,

Table 11.26: Aerodrome Surface Slopes

APPROACH RUNWAY	SURFACE SLOPE
Casement Runways 11/29	2% for first sector (3000m)
Casement Runways 05/23	3.33% (non – instrument runway)
Weston Runway 07/25	4%

- The OD of the highest point and OD of the predominant height of the proposed development,
- A range of OD reference points for the existing ground levels on the subject site,
- The horizontal distance of the subject site from the Aerodrome, and
- Heights of existing permanent obstacles in the vicinity of the site if applying the principle of shielding (see Section 3.23 of the Irish Aviation Authority Guidance Material on Aerodrome Annex 14 Surfaces, 2015).

The distance from threshold shall be taken into account in the section drawing.

For significant developments and in instances of marginal cases, the applicant may be requested to submit an individual aeronautical assessment.

- 2.3 (iii) **The paragraphs on ‘Conical Surface’ on page 230 of the Plan:**
[also referred to on page 228 of the Plan under Section 11.6.6 (ii) ‘Aerodromes’]

IMPLEMENTATION	SOUTH DUBLIN COUNTY COUNCIL DEVELOPMENT PLAN 2016 - 2022
<p>Conical Surface</p> <p>Generally, development will be acceptable in this zone provided the development is under the height restriction of 45 metres above the elevation datum of the Aerodrome (86.6m OD).</p> <p>The applicant shall be required to detail the OD height of the proposed development, in the context of the relevant Aerodrome.</p>	

- 2.4 It may be noted (as illustrated in the I.A.A./I.C.A.O. diagram on page 228 of the Development Plan) that a Conical Surface slopes upwards & outwards (at 5% slope) so that, while the 45m height quoted above is applicable at the lowest edge of the Conical Surface (i.e. at 131.6m OD), considerably greater height is possible under this Surface (up to 145m above the elevation datum of an aerodrome) as distance from the aerodrome increases. For this site, with its nearest corner at 1,180m approx. from the inner edge of Casement’s Conical Surface, an additional 59m height [1180 × 5%] – in addition to the 45m quoted above – is possible anywhere on the site.

*N.B. All references in the Development Plan to Casement’s Runways 11/29 and 05/23 now refer to Casement’s **Runways 10/28 and 04/22** (as redesignated in February 2019).*

- 2.5 Section 5 [below] contains our calculations in relation to the **Approach Surface** to Casement Runway 28 (rising at slopes of 2% and 2.5%), as provided for in the SDCC Plan.

We also include calculations in Section 6 in relation to the **Take-Off Climb Surface** from Casement Runway 10, because – for this category of runway (Code 4, precision approach, *with displaced threshold*) – the Take-off Climb Surface is lower than the Approach Surface. [The Take-off Climb Surface rises continuously (for 15km) at 2% slope, while the Approach Surface slope changes from 2% to 2.5% after 3km].

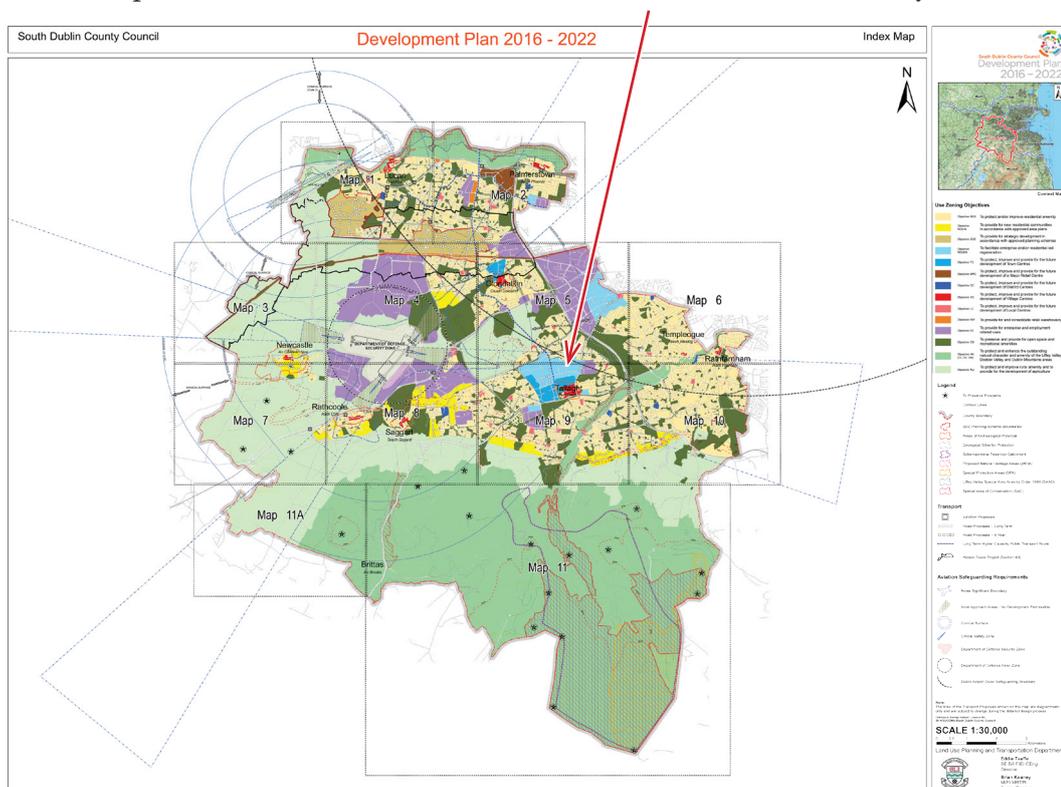
For this category of runway, the Take-off Climb Surface (with an inner edge of 180m width) is narrower than the Approach Surface (with an inner edge of 280m*) [** per ICAO revision of 2018.*] This difference in width is not relevant however for this site, which is located under both Surfaces.

Calculations in relation to Casement’s **Conical Surface** are provided in Section 7.

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

3. Obstacle Limitation Surfaces that Affect the Broomhill Road Site

- 3.1 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 and other Irish airports – are set out by the International Civil Aviation Organization (based in Montreal) as *International Standards and Recommended Practices* in its *Annex 14 – ‘Aerodromes’* document, [with revisions to several Annex 14 dimensions made by ICAO on 8th November 2018].
- 3.2 The Conical Surface for Casement Aerodrome, and the Approach Surface to Casement’s Runway 28, are shown on the current S.D.C.C. Development Plan Index Map (illustrated below) on which the site’s location is indicated by the arrow.



The three Aviation [Obstacle] Surfaces which affect this site at Cookstown are

- (i) the Approach Surface* to Casement’s Runway 28;
- (ii) the Take-Off Climb Surface* from Casement’s Runway 10; and
- (iii) the Conical Surface** for Casement Aerodrome as a whole.

* The Approach and Take-Off Climb Surfaces are inclined planes of different widths which increase as distance from the runway increases, and which rise at different slopes depending on the category of runway (and distance from its threshold).

** The Conical Surface is an inclined plane commencing at 131.6m OD (45m above Casement Aerodrome’s datum level of 86.6m OD), and rising at 5%.

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

4.1 Below, to approximate scale 1:2000, is a Roof Plan of the development, containing four blocks: Block A (to north) of 5 storeys, Block B+C (to west) of 7 storeys, Block D (to south) of 5-7 storeys, and Block E (to east) of 4-5 storeys.

Elevations (OD) of the highest elements, and coordinates of north-west corner, 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 1: 2,000 APPROX.

4.2 Coordinates Data – Proposed Development:

A relevant corner of the proposed development is circled on the previous page. This is the **nearest building corner** to Casement Aerodrome & to Tallaght Hospital helipad, at **117.65m** OD elevation, with coordinates: **53° 17' 44.1" N, 006° 21' 44.5" W**;

4.3 Coordinates Data – Casement & Helipad:

The two relevant Casement coordinates are:

(i) the centre of the threshold of Runway 22 at **53° 18' 12.63" N, 006° 26' 22.02" W**

– the reference point for setting out the Conical Surface above the wider Cookstown area; *and*

(ii) the displaced threshold of Runway 28 at **53° 18' 05.85" N, 006° 26' 40.68" W**

– used for precise calculation of the Inner Edges of the Approach Surface to Runway 28 (at 60m east of that location), and of the Take-off Climb Surface from Runway 10 (at 240m east of that location).

AIP IRELAND		
AERODROME CHART N ICAO W		
RWY	DIRECTION	THR
04	044°	N 53°17'36.90" W 006°27'13.73"
10	105°	N 53°18'16.88" W 006°28'07.75"
22	224°	N 53°18'12.63" W 006°26'22.02"
28	285°	N 53°18'05.85" W 006°26'40.68"

The centre of Tallaght Hospital helipad (with pad elevation 102.8m OD) is at **53° 17' 22" N, 006° 22' 36" W**

4.4 Distances Between Coordinates:

From Runway 22 Threshold to nearest corner of site = **5.18km**

From Runway 28 Threshold to nearest corner of site = **5.49km**

From Hospital helipad to nearest corner of site = **1.11km**

4.5 Distances Along the Extended Centreline of Rwy 10/28:

For Approach and Take-off Climb Surface calculations, the distances along extended runway centreline (rather than the direct distances from site to threshold) are relevant.

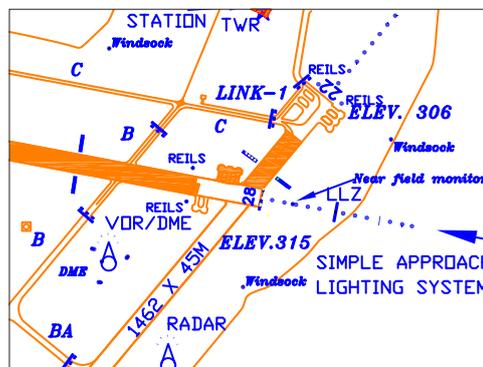
Thus, for the nearest corner of the site, at **5,490m direct distance**, lying **500m** north of the extended centreline of Runways 10/28, its distance as measured along that runway centreline is **5,467m***.

* Calculation: $(5490)^2 \text{ minus } (500)^2 = (5467)^2$

5. Calculations with regard to the Approach Surface to Runway 28

5.1 Relevant Data:

The relevant runway threshold (28) is stated on the current Aerodrome Chart [>] to be at 315ft AMSL elevation, i.e. at **96m OD**, which is also the elevation of the Inner Edge of the Approach Surface commencing at **60m** from that runway threshold.



By deducting 60m from the 5,467m listed in paragraph 4.5 (*on the previous page*) it is established that the nearest corner of the site lies at **5,407m** from the inner edge of the Approach Surface to Casement's Runway 28 (as measured along the centre of that Surface – i.e. along the extended centreline of Runway 28).

5.2 The ground levels on the site are set at 93m OD, i.e. at 3m lower than the Threshold of Casement's Runway 28.

5.3 The slopes of the **Approach Surface to Runway 28** (as stated in the Development Plan [*in which it is referred to as Runway 29*]) – are at 2% for the first 3,000 metres and at 2.5% for the next 3,600 metres (per ICAO definition for a Code 4 instrument runway).

The development's highest element – one of two roof parapets at 117.65m OD – is located at the development's nearest corner to Casement Aerodrome. At this nearest corner of the site to Casement (at **5,407m** from the Surface's Inner Edge) the Approach Surface to Rwy28 lies at **216.2m OD***, and therefore lies 123.2m above the 93m OD ground elevation, and **98.55m** above 117.65m OD – the highest element of Block B+C at that corner.

* calculated as follows —

$$(3000 \times 2\%) + (2407 \times 2.5\%) + 96m \text{ OD} = 60 + 60.2 + 96m = 216.2m \text{ OD}$$

5.5 Thus the proposed development complies fully with the requirements of the S.D.C.C. Development Plan with regard to the Approach Surface to Runway 28.

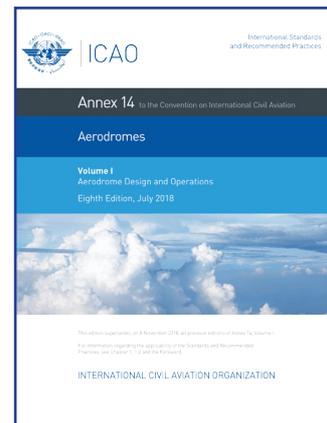
5.6 A Longitudinal Section Diagram (*on page 13*) illustrates the features noted above.

6. Calculations with regard to the Take-off Climb Surface from Runway 10

6.1 The **Take-off Climb Surface** from Runway 10 commences at 240m [180+60m] from the displaced Threshold of Runway 28. This places the Take-off Surface's Inner Edge at **5,227m*** from the development, and at ~96m OD elevation [*'highest point' per ICAO Annex 14 para. 4.1.27*]. Rising at 2% (*as defined by ICAO for this category of runway*) the Take-off Climb Surface from Runway 10 therefore rises to **200.5m OD*** in this location – well above any part of the proposed development.

* *calculated as follows* ($5467 - 240 = 5227m$):
 $5227 \times 2\% + 96m \text{ OD} = 104.5 + 96m = 200.5m \text{ OD}$

6.2 Thus the proposed development (which extends to **117.65m OD**) will not affect the Take-Off Climb Surface from Casement Runway 10 (as defined by I.C.A.O.), which lies at **82.85m above the development's highest element**.



6.3 I.C.A.O. also includes a *recommendation* (in paragraph 4.2.26 of its *Annex 14 – 'Aerodromes'*) that *'If no object reaches the 2% take-off climb surface, new objects should be limited to ... a surface down to a slope of 1.6% ...'* We therefore include the following calculation in relation to a possible 1.6% Take-off Climb Surface, and this would lie at **179.6m OD**** above the highest element (at 117.65m OD) of the development.

** *calculated as follows* —
 $5227 \times 1.6\% + 96m \text{ OD} = 83.6 + 96m = 179.6m \text{ OD}$

6.4 In addition, I.C.A.O. includes a provision (in paragraph 3.8.1.1 of its *Annex 4 – 'Aeronautical Charts'*) that any obstacle projecting above a 1.2% slope in the take-off flight path area be considered a significant obstacle, and be shown on Aeronautical Charts. We therefore include an additional calculation in relation to a 1.2% slope, which lies at **158.7m OD***** above the highest element (at 117.65m OD), i.e. at **41m+** above the highest point of the proposed development.

*** *calculated as follows* —
 $5227 \times 1.2\% + 96m \text{ OD} = 62.7 + 96m = 158.7m \text{ OD}$

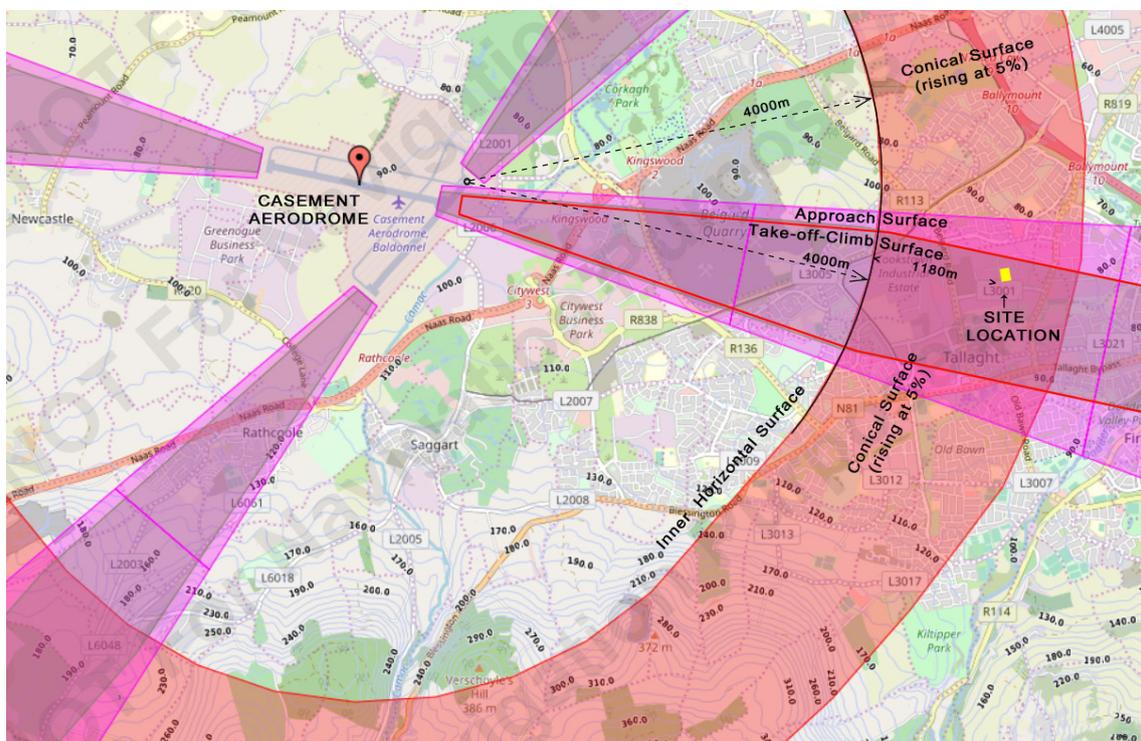
6.5 Thus the proposed development will not affect –

- (i) Casement's Take-off Climb Surface from Runway 10 (at 2% slope), or
- (ii) a lower Take-off Climb Surface (at 1.6% slope), and
- (iii) it does not constitute an 'obstacle' in respect of the 1.2% slope.

7. Calculations with regard to the Conical Surface at Casement

7.1 As noted in Section 3 above, the **Conical Surface** at Casement Aerodrome commences from the outer edge of the aerodrome's Inner Horizontal Surface [which lies at 131.6 metres OD, being 45m above the Department of Defence's chosen datum of 86.6m]. From this 131.6m OD elevation at its inner edge, the Conical Surface at Casement rises at a gradient of 5% for a distance of 2 km horizontally, reaching an elevation of 145m above the aerodrome's datum at its outer rim (i.e. rising to an elevation of 231.6m OD).

The drawing below (with Conical Surface shown coral-coloured, and Approach & Take-off Climb Surfaces in purple & grey) is taken from the former I.A.A. 'Asset' data: onto which we have added the site in yellow, and notes + dimensions in black. —



[In this 'Asset' diagram above, which pre-dates ICAO's 2018 amendments to 'Annex 14', Approach Surfaces are shown commencing at 300m rather than at current 280m widths; this 10m reduction to both sides of the Approach Surface does not however affect this site. In addition, the Inner Edge of the Take-off Climb Surface from Runway 10 was shown as coinciding with the Inner Edge of the Approach Surface to Runway 28 (rather than at 180m separation, due to recent displacement of 28 Threshold) – we have amended the location of this Take-off Climb Surface from Runway 10 in an added red outline included above.]

7.2 It can be seen that this site lies under the Conical Surface of Casement Aerodrome (as well as being under – but not projecting above – the Approach and Take-off Climb Surfaces to/from Runways 10/28). The Conical Surface (although less important at an aerodrome than the more critical Approach and Take-off Climb Surfaces) is, in this location, the lowest of the three Obstacle Limitation Surfaces which affect this site.

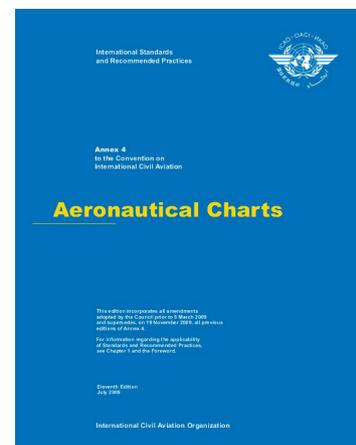
- 7.3 The setting-out locations for Casement's Inner Horizontal and Conical Surfaces are the centrelines of the nearest runways, and for the Cookstown area the reference point is the centre of Threshold 22 – about which a 4km arc is described (to N-E of the R136 road, extending from Grange Castle Road to Cheeverstown Road approximately). —See diagram on previous page. The coordinates and distances from the site of this Threshold 22 reference point are given in paragraphs 4.2–4.4 above.
- 7.4 As noted in paragraph 4.4 [on page 8 above], the corner of this development nearest to Casement Aerodrome lies at 5,180m from the reference point at the centre of Threshold 22, i.e. it lies at 1,180m from the inner (lower) edge of the aerodrome's Conical Surface. This means that the Conical Surface in this location (where the building height is **117.65m OD**) lies **72.95m** above this corner, at **190.6 metres OD***, calculated as follows:
- $$* 131.6 + (1180 \times 5\%) = 131.6 + 59 = 190.6m OD$$
- 7.6 Thus all parts of the proposed development (with its highest points extending to a maximum of 117.65m OD) are significantly lower than the Conical Surface above the site.

8. Summary re Casement Aerodrome's Obstacle Limitation Surfaces

- 8.1 Calculations (in Sections 5, 6, & 7 above) in relation to the development's nearest corner, and to its highest element, show that all parts of the proposed development on this site are significantly lower than any of Casement Aerodrome's three Obstacle Limitation Surfaces which lie above the site.

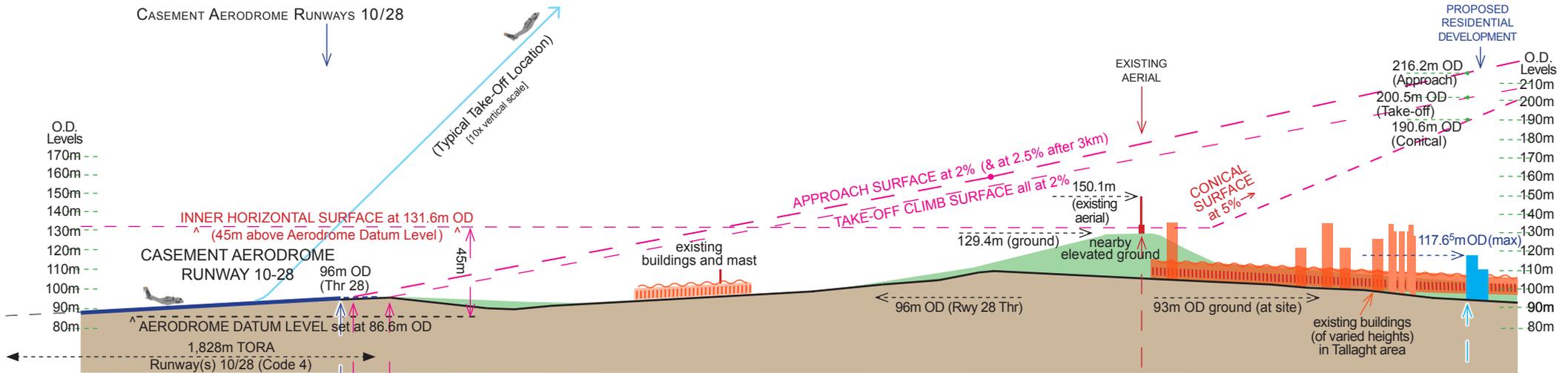
This is illustrated in the Longitudinal Section Diagram *on the following page 13*, on which all three Obstacle Limitation Surfaces are shown.

- 8.2 As noted in para. 6.4 above, the proposed development also lies at **41m+** below a 1.2% slope extended from the inner edge of the take-off flight path from Casement's Runway 10, and therefore does not require to be shown on aerodrome charts (per paragraph 3.8.1.1 of I.C.A.O.'s *Annex 4 – 'Aeronautical Charts'* >>).



9. Longitudinal Section Diagram

A4-SIZE SCALE 1:30,000 HORIZONTAL & 1:3,000 VERTICAL APPROX.
 A3-SIZE SCALE 1:22,000 HORIZONTAL & 1:2,200 VERTICAL APPROX.



LONGITUDINAL SECTION X¹-X [A4-SIZE] TO HORIZONTAL SCALE 1:30,000 APPROX. WITH VERTICAL SCALE 1:3,000 APPROX.
 TAKEN ALONG CENTRE-LINE OF RUNWAY 10/28 (NOTE AERONAUTICAL SECTION: VERTICAL SCALE =10x HORIZONTAL SCALE)

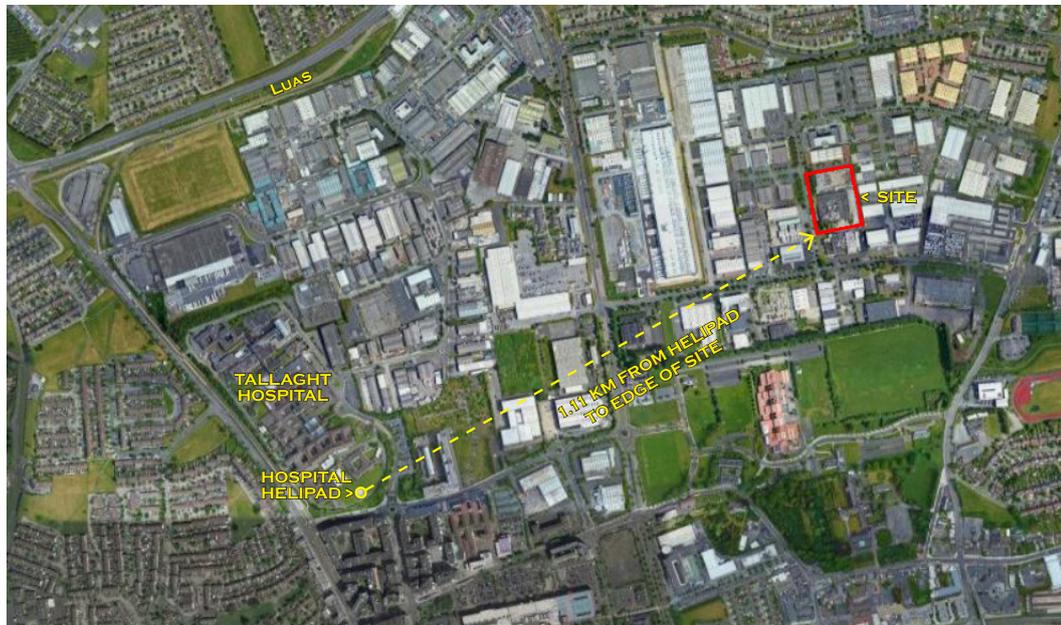


AERIAL PHOTO MAP PLAN SCALE [A4-SIZE] 1:30,000 APPROX.
 WITH 10M CONTOURS AND OBSTACLES AS MARKED ON CASEMENT CHARTS

SITE OUTLINE: — 10M CONTOURS: —
 OBSTACLES: ▲ MAST (UNLIT) ■ BUILDING

10. Tallaght Hospital Helipad

- 10.1 The helipad at Tallaght Hospital is located at 1.11km to south-west of the nearest corner of this site. Being a private helipad, it has no established obstacle limitation surfaces.



On the Broomhill Road site, Block 'D' (1.11km from the helipad's centre) rises to 7 storeys in height above ground (with nearest corner at 14.35m higher than the helipad). These dimensions indicate that all parts of the development will lie below a very shallow 1 in 77 (1.3%) slope rising from the edge of the helipad.

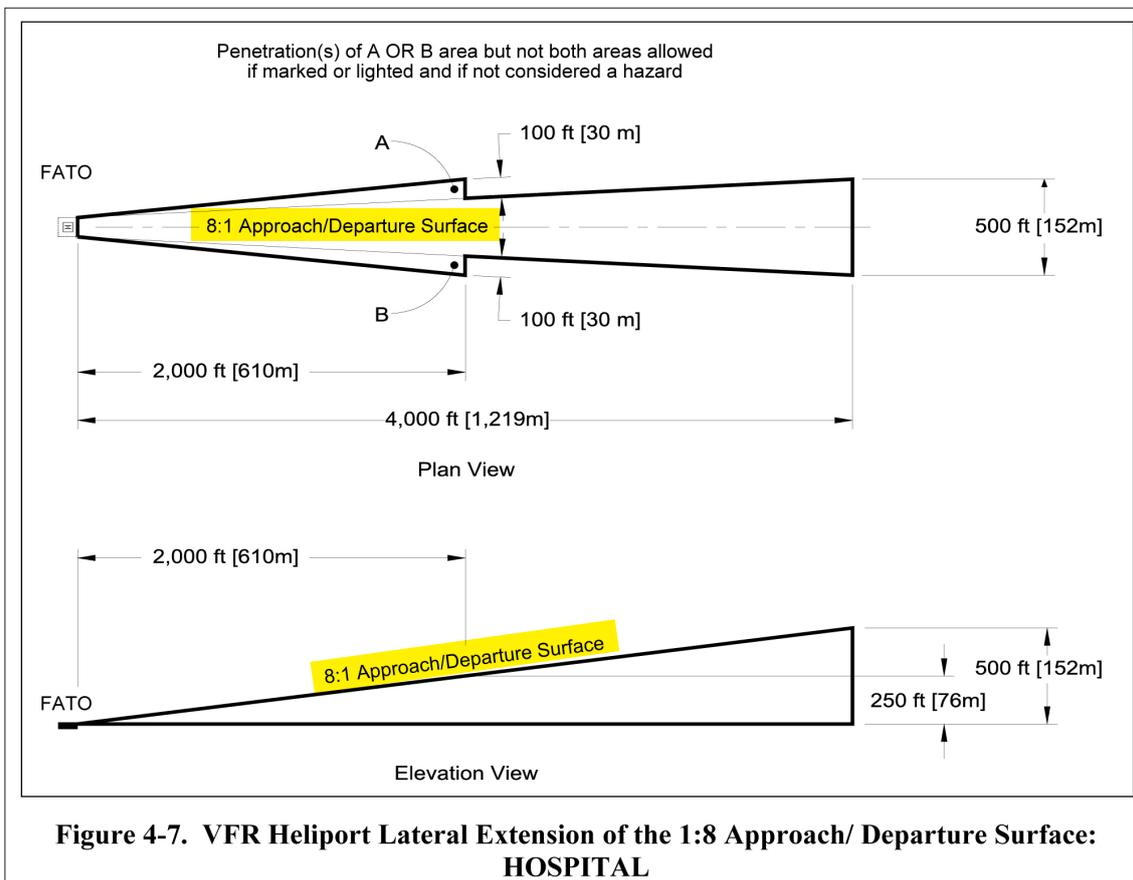
The three possible helicopter Approach and Departure slopes (to any helipad or heliport) are specified by ICAO and by EASA as being at 4.5%, 8%, or 12.5%, depending upon the helicopter's design category, and any one of these slopes could easily be accommodated above the highest elements of the proposed development at Broomhill Road. In fact the proposed development will have no effect whatever on any nearby helicopter operations to or from the hospital helipad, as there are other tall buildings already existing between the helipad and the Broomhill site, and it is these other buildings which would dictate the slopes of any Approach or Departure Surface to or from this helipad.

- 10.2 In this context it is worth noting that this helipad currently faces existing 9- & 10-storey buildings [>>] immediately to its south at the other side of the Belgard Square North roadway. These buildings are at substantially closer distances to the helipad [at 55m distance to the south, and rising ~30m above it].



EXISTING 9-10 STOREY BUILDINGS BESIDE TALLAGHT HOSPITAL ENTRANCE & HELIPAD

10.3 While this is a private helipad without established Approach or Take-off Surfaces (and is not a heliport), the FAA [in its document AC 150/5390-2B – ‘Hospital Heliports’ (from which the extract below is taken)] for all heliports; recommends a 1 in 8 slope to/from hospital heliports. This slope would lie at more than 124 metres above the proposed building.



10.4 The SDCC Draft Development Plan 2022-28 includes a provision that any new development in the vicinity of hospital helipads in the South Dublin area should be clear of a 1 in 8 slope (in any direction from the helipad’s edges), and the proposed development at Broomhill Road complies fully with this new (Draft) CDP requirement in regard to hospital helipads.

11. Other Aviation Considerations Relevant to this Site

11.1 Outer Horizontal Surfaces for Dublin Airport

The Broomhill Road site and proposed development lie just outside the Outer Horizontal Surface for Dublin Airport, at 200m beyond it (*see SDCC Index Map diagram on p.6 above*), and this is unaffected by the development.

11.2 Solar/PV Panels

There are no Solar/PV panels proposed as part of this development, so that no separate Glint & Glare study is required.

11.3 External Lighting

Being under the Approach and Take-off Climb Surfaces to and from Runway(s) 10/28, it is recommended that any external lighting (including any road lighting) should be of the cut-off type (i.e. showing no light above the horizontal).

11.4 Use of Cranes During Construction

It is envisaged that any cranes used during construction will operate well below all of Casement's Obstacle Limitation Surfaces, the lowest of which lies at 72.9m above the highest element of the development.

In any event, 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 cranes to be submitted, at least 30 days in advance, to the Irish Aviation Authority, and to Casement Aerodrome [at airspaceandobstacles@defenceforces.ie or 01-4037681], who may need to issue notifications to pilots, and who may require cranes to be fitted with aviation warning lights.

Depending on actual cranes heights intended, prior notification to the HSE's Aero-Medical Section [at Phoenix Park] may also be desirable in respect of Tallaght Hospital helipad, e.g. by means of their *Crane Notification Form*.

It is noted that, on the elevated ground beside Cookstown Road (at around 1.6km north-west of this site, and also lying under the Approach Surface to Runway 28 but much closer to that runway) there is an existing reservoir pump-house building, constructed at a ground level of 129.4m OD, which building itself projects above Casement's Inner Horizontal Surface, and above which there is an aerial extending to an elevation of 150.1m OD. This existing obstacle provides a 'shielding' to objects of similar height (or less) located to its south-east.



12. SUMMARY

12.1 Approach & Take-Off Climb Surfaces

The proposed development lies substantially lower than the Approach Surface to Casement's Runway 28 and the Take-off Climb Surface from its Runway 10, which are the significant Obstacle Limitation Surfaces in relation to this site. The development's highest elements (parapets at 117.65m OD) lie at **98+ metres** below the Approach Surface, and at **82+ metres** below the Take-off Climb Surface. The development is also **41m** lower than the 1.2% slope above which it would be required for a structure to be identified as a potential obstacle on aeronautical charts.

12.2 Conical Surface

The Conical Surface, while being a less significant Surface than the Approach or Take-off Climb Surfaces, is the lowest of the three Obstacle Limitation Surfaces for Casement Aerodrome lying above this site. However this Conical Surface (sloping upwards at 5%) lies at **72.9 metres** above the highest point of the proposed development on this site, and is unaffected by it.

12.3 Tallaght Hospital Helipad

The proposed development will not interfere with current helicopter operations to/from the hospital helipad. While this helipad is not a 'heliport', Approach and Departure Surfaces, at all ICAO & EASA slopes, and in compliance with international 'heliport' standards [and as provided for in the SDCC Draft CDP 2022-28], can, if required, be designed above the proposed building.

12.4 Overall

We consider that the proposed residential development at the Broomhill Road site complies fully with all aviation and aeronautical requirements affecting the site.



J. Declan O'Dwyer B.Arch MBA RIBA

7th May 2022

*O'Dwyer & Jones Design Partnership
Aviation Planning Consultants*

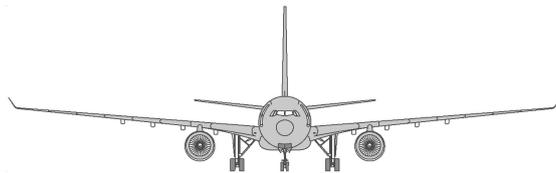
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