

AERONAUTICAL ASSESSMENT REPORT

**RE
STRATEGIC DEVELOPMENT ZONE
PLANNING SCHEME**

**AT
CLONBURRIS T2, FONTHILL ROAD
COUNTY DUBLIN**

**FOR
CAIRN HOMES PROPERTIES LTD.**

4TH JULY 2023



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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 and Description of the Site.

1.1 Scope of this Report:

This report assesses the aviation aspects of a proposed SDZ Planning Scheme on a site at Clonburris, County Dublin.

The report addresses in particular the items listed under "Aerodromes" on page 55 of the SDCC *Record Of Executive Business & Chief Executive's Order* (ref. PR/0181/23) in regard to the proposed development at Clonburris (with SDCC Register Ref. no. SDZ22A/0018) —

"Aerodromes

"Parts of the site are located within the following designations:

- Bird Hazards*
- Approach Surface (Casement) – min 152.2OD*
- Take off Climb Surfaces (Casement) – min 93.3OD*
- Inner Horizontal Surface (Casement) – 131.6OD*
- Outer Horizontal Surface (Dublin) – 212OD*

"No comments have been received from the Department of Defence.

"No large water bodies are proposed, and it is not considered any element of the proposal would attract birds. The highest building appears to be approx. 85 OD.

"The applicant is requested to confirm that none of the DoD surfaces would be breached via additional information.

"The IAA has requested a condition regarding cranes. Standard conditions are recommended in the event of grant of permission."

- 1.2 The "DoD surfaces" referred to above (which are the "Obstacle Limitation Surfaces" of Casement Aerodrome) are analysed in this report, and the confirmation requested – that none are breached – is provided in the Summary on page 17.

Other aviation aspects referred to above are also assessed in this report.

1.3 The Site's Location in Relation to Casement and Weston Aerodromes:

The aerial photo below shows the site of the proposed SDZ planning scheme (*outlined in red*) in relation to Weston Airport (at 5-6km to north-west) and Casement Aerodrome (at 3-4km to south-west).



1.4 Description of the Site:

The proposed SDZ development at Clonburris is to be located on a site of 5.18 ha, directly west of Fonthill Road [R113], and directly south of the Clondalkin-Fonthill Station on the Dublin-Cork main rail line. It is about 250m north of the 10th lock of the Grand Canal in County Dublin.

The site (*outlined in red on the aerial photo below*) lies at 3.68km north-east of Casement Aerodrome's Runway 22 Threshold, and at 5.28km south-east of Weston Airport's Runway 25 Threshold. Ground levels on the site are at around 59m to 60m+ OD, with proposed ground floor FFLs at 59.6m, 59.8m & 60.0m OD.



1.5 Site Zoning:

The site is zoned as being within the “Strategic Development Zone Planning Scheme Boundary”, coloured grey in the extract below from SDCC Development Plan Map 4 (*on which the site is outlined in added red+yellow*).

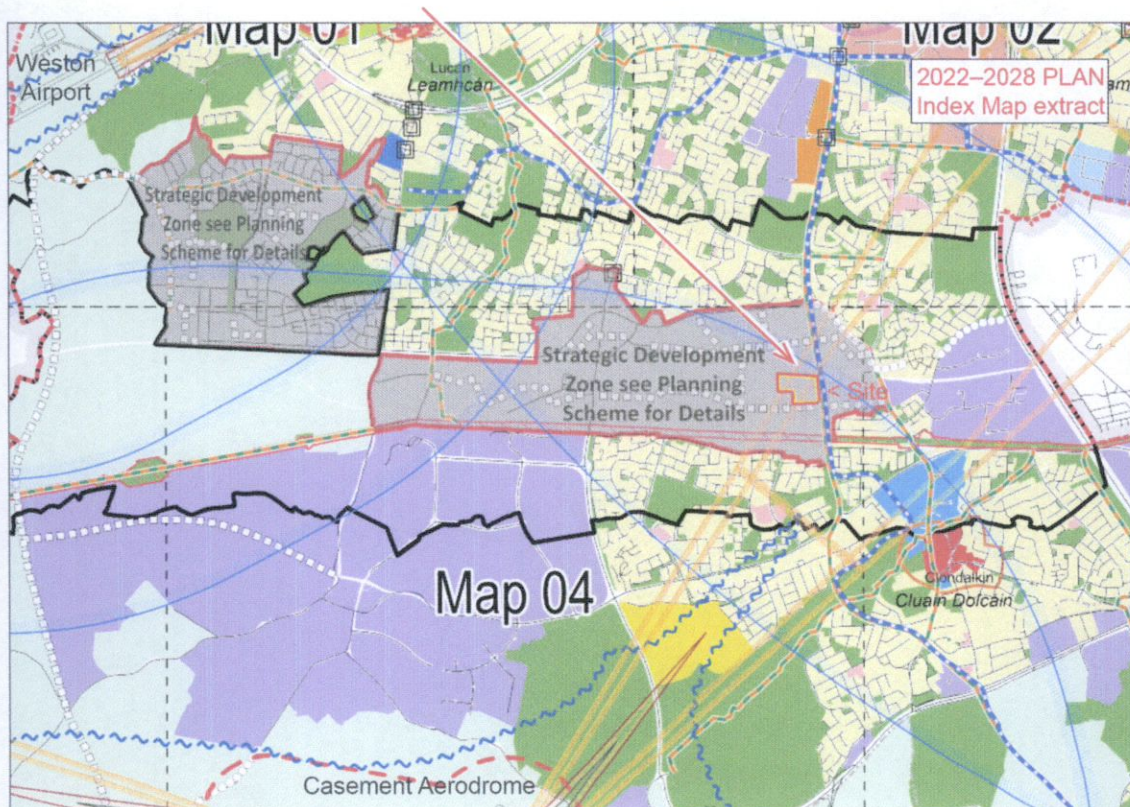


2. Aviation-Related Items Affecting the SDZ Site at Clonburris

2.1 The Department of Defence has adopted the International Civil Aviation Organization's [ICAO's] "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 "Surfaces" – which also currently apply at Weston Airport – are outlined on the SDCC Index Map, and are as set out by ICAO as *International Standards and Recommended Practices* in its 'Annex 14 – Aerodromes' document, [eighth revised edition of 8th November 2018].

2.2 The Site's location in relation to Aviation & Aeronautical Features:

The site's location is arrowed on the extract below from the SDCC Index Map 2022–28:



It can be seen (from the Index Map extract above) that most of the site, at 3.68km from Casement's Threshold 22, lies **under the Approach Surface to Runway 22** (in orange), and that a large part of the site also lies **under the Take-off Climb Surface from Casement's Runway 04** (also in orange). All of the site also lies **under Casement Aerodrome's Inner Horizontal Surface**, and **under Dublin Airport's Outer Horizontal Surface** (blue lines centred on relevant airports).

However the site lies outside Casement's Security Zone (red hatch), outside all Airport Noise Zones (blue chain-hatch), outside all new Public Safety Zones for Casement and Weston (in brown), and outside all of Weston Airport's current ICAO "obstacle limitation surfaces".

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

3.1 Of relevance to the aeronautical /aviation assessment of the SDZ site at Clonburris are the paragraphs reproduced below from the current South Dublin County Council Development Plan 2022-2028, which include —

3.2 Section 11.8 re 'Airports and Aerodromes' in general, on page 417 of the Plan:

11.8 Airports and Aerodromes

This section sets out the general restrictions and requirements on development within the County for Dublin Airport, Casement Aerodrome and Weston Airport. The safeguarding requirements in the vicinity of civil aerodromes located in South Dublin (Dublin Airport and Weston Airport) are set out in:

- a. 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);
- b. Certification Specifications & Guidance Material for Aerodromes Design published in 2017 by the European Aviation Safety Agency (EASA).

Safeguarding is dealt with in more detail in Chapter 12: *Implementation and Monitoring*.

Casement Aerodrome is a fully equipped military base and includes the main centre for Air Corps Operations. Its operations and requirements are dealt with by the Department of Defence.

3.3 Paragraphs 11.8.1 & 11.8.2 re 'Casement Aerodrome,' on page 418 of the Plan:

Casement Aerodrome, being a military aerodrome, does not come under the control of the Irish Aviation Authority but the ICAO Standards and Recommended Practices are applied as policy by the Department of Defence. Additionally, the Department of Defence applies a 'Security Zone' closely aligned with the areas around the runways known as flight strips.

11.8.2 Casement Aerodrome

Casement Aerodrome is in continuous aviation use and is the only fully equipped military airbase in the State serving as the main centre of Air Corps operations. The aerodrome has two runways:

- 1 Runway 10 / 28: The existing main runway with east to west orientation (north of Newcastle and over Kingswood);
- 2 Runway 04 / 22: Existing secondary runway with a south-west to north-east orientation (04 over Rathcoole and 22 over Corkagh Park).

3.4 Policy (and Objectives) IE9 re Casement Aerodrome on pp. 418-9 of the Plan:

<p>Policy IE9: Casement Aerodrome</p> <p>Safeguard, having regard to the requirements of the Department of Defence, the current and future operational, safety and technical requirements of Casement Aerodrome and facilitate its ongoing development for military and ancillary uses.</p>
<p>IE9 Objective 1:</p> <p>To ensure the safety of military and other 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.</p>
<p>IE9 Objective 2:</p> <p>To maintain the airspace around Casement aerodrome free from obstacles to facilitate aircraft operations to be conducted safely, as identified in the Development Plan Index map and Map 12 and as outlined in Chapter 12: <i>Implementation and Monitoring</i>.</p>
<p>IE9 Objective 3:</p> <p>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 <i>Guidance Material on Aerodrome Annex 14 Surfaces</i> (2015) (See Chapter 12: <i>Implementation and Monitoring</i>).</p>
<p>IE9 Objective 4:</p> <p>To prohibit and restrict development in the environs of Casement aerodrome, where it may cause a safety hazard. (See also Policy IE13 Public Safety Zones and Chapter 12: <i>Implementation and Monitoring</i>).</p>

3.5 And Policy (and Objective) IE11 re Dublin Airport on p. 420 of the Plan:

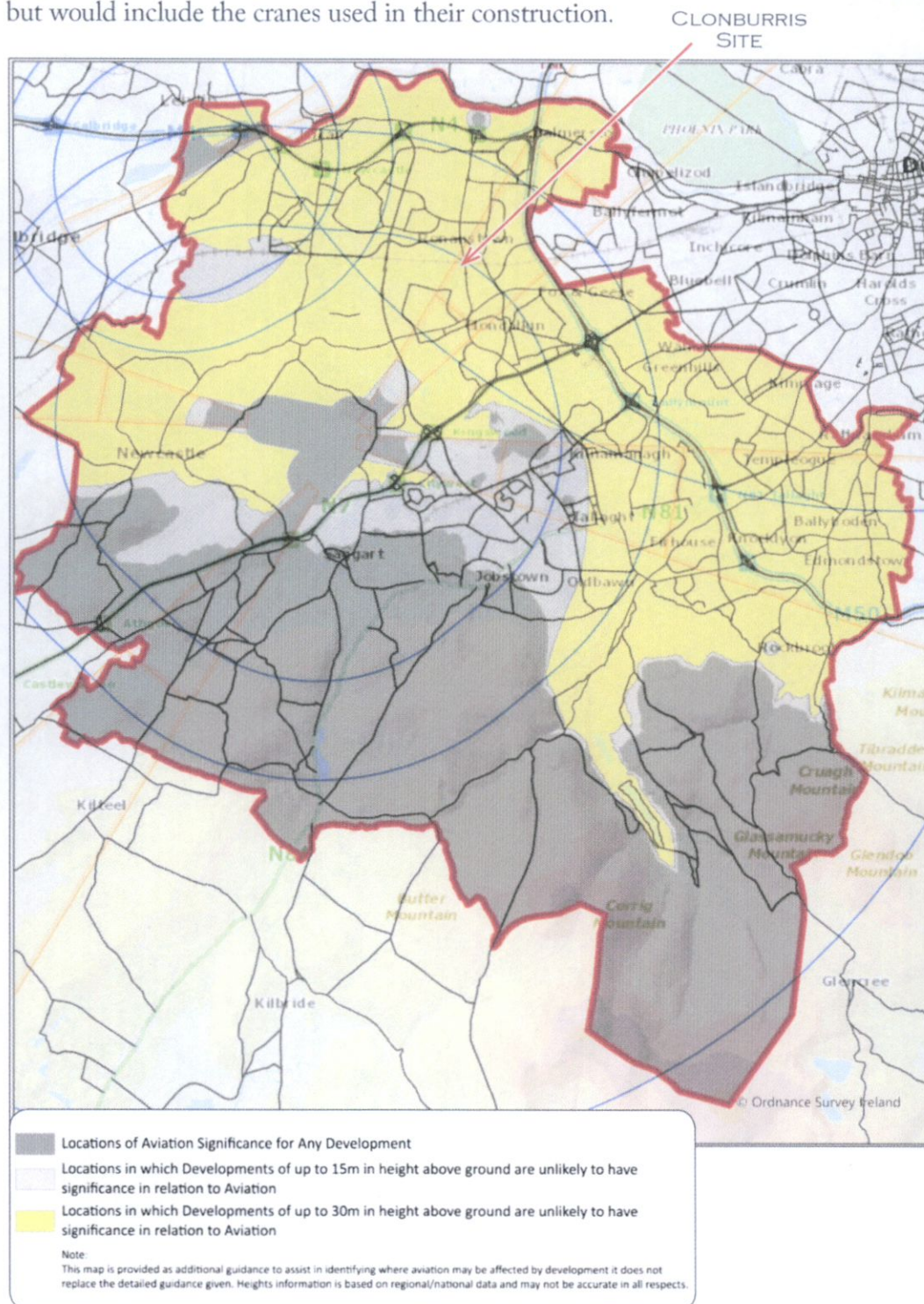
11.8.4 Dublin Airport

The outer horizontal surface for Dublin airport overlaps a limited area to the north of the County. The area is delineated on the Development Plan Maps.

<p>Policy IE11: Dublin Airport</p> <p>Refer planning applications for development within the Outer Horizontal Surface of Dublin Airport (and of over 90m in height above ground level) to the airport operator and regulator (DAA and IAA) and to have regard to the requirements of the IAA and DAA in the assessment of development proposals (see Index Map and Map 12 for details).</p>
<p>IE11 Objective 1:</p> <p>To limit building heights to 90m above ground level so as to prevent any object from penetrating the Outer Horizontal Surface for Dublin Airport (as defined in the 2017 <i>Certification Specifications</i> of the European Aviation Safety Agency, and in accordance with Irish Aviation Authority guidance material in relation to this Surface).</p>

3.6 **Figure 12.1 on page 525 of the 2022-28 Plan (containing general height guidelines), in Section 12.11.5 re 'Aviation, Airports and Aerodromes':**

The SDZ site at Clonburris, to north-north-east of Casement Aerodrome and to south-east of Weston Airport, is in the cream-coloured area shown on this map – in which structures of more than 30m in height require aviation assessment. As the proposed buildings are just under 30m in height, this would not include the buildings, but would include the cranes used in their construction.



4. Site & Roof Plan with Elevations-OD of the Proposed Development

4.1 Below, to approximate scale 1:1750, is a Site & Roof Plan of the proposed SDZ Planning Scheme at Clonburris, which is comprised of seven residential blocks of 4 to 7 storeys, and one office block [C] of 6 storeys (plus rooftop plant area). Elevations-OD of roof elements are indicated – the highest elements being parapets on Blocks C, E & F, and liftshafts on Blocks A, B, D, G & H.

In this diagram darker blue shading indicates higher roof elements.



SITE PLAN OF PROPOSED DEVELOPMENT WITH ELEVATIONS (O.D.) OF HIGHEST PARTS SCALE 1:1,750 APPROX. [AT A4 SIZE]

5. “Obstacle Limitation Surfaces” in the Vicinity of the Site

- 5.1 The I.C.A.O. “Obstacle Limitation Surfaces” for Casement Aerodrome and for Weston Airport are indicated in the drawing below (featuring Irish Aviation Authority “Asset” data), on which the Clonburris site’s location is indicated by a red+yellow dot.



It can be seen from the diagram above that the site – at 3.68 km from Casement’s Runway 22 Threshold – lies close to the outer edge of Casement’s “Inner Horizontal Surface” and also under the “Approach Surface” to Casement’s Runway 22, and it is also under the “Take-off Climb Surface” from Casement’s Runway 04.

However the site – at 5.28 km from Weston’s Runway 25 Threshold – lies well outside all of Weston’s “obstacle limitation surfaces” which currently extend to 3.6 km from Weston’s Runway 07/25.

- 5.2 A more detailed drawing of the “obstacle limitation surfaces” above the Clonburris site, superimposed on an aerial photograph, is provided on the following page 11, in which it can be seen that the site – in addition to lying under three of Casement Aerodrome’s “Surfaces” – also lies under the “Outer Horizontal Surface” of Dublin Airport (which extends to 15km from that airport).

A further Aerial View, plus a Longitudinal Section through the site and the various aviation “Obstacle Limitation Surfaces”, is shown in Section 7 on page 14 following.

5.3 Below is a more detailed aerial photo drawing showing all current aviation “obstacle limitation surfaces” in the vicinity of the site (outlined in red). —



It can be seen above (i) that all of the site lies under Casement’s “Inner Horizontal Surface”; (ii) that most of it also lies under the “Approach Surface” to Casement’s Runway 22; (iii) that almost half of it also lies under the “Take-off Climb Surface” from Casement’s Runway 04; and (iv) that all of the site also lies under Dublin Airport’s “Outer Horizontal Surface”. These are assessed in Section 6 following, and a Longitudinal Section through these Surfaces is shown in Section 7 on page 14 >>.

6. Assessments in Relation to the "Obstacle Limitation Surfaces" above the Site

6.1 Re Weston Airport:

The site lies well outside all of Weston's "obstacle limitation surfaces", and Weston Airport is therefore unaffected by the development.

6.2 Re Dublin Airport;

Dublin Airport's "Outer Horizontal Surface" lies above all of the site. However this "surface" is at **212m OD**, and, as the highest point of the proposed development is at 86.15m OD (more than **125m** lower), there is no possibility that the development will affect Dublin Airport or its "Outer Horizontal Surface."

6.3 Re Casement Aerodrome:

The nearest corner of the Clonburris site is at **3,680** metres from the Threshold of Casement's Runway 22, and (as shown on the drawings on the previous two pages) it lies simultaneously under the "Approach Surface" to Runway 22, the "Take-off Climb Surface" from Runway 04, and the Aerodrome's "Inner Horizontal Surface". The elevations of these Surfaces are calculated in paras. 6.4-6.6 below.

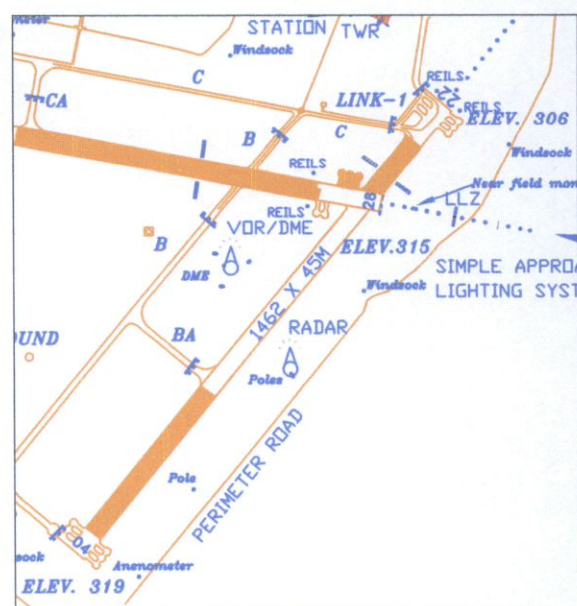
The elevations of any Approach and Take-off Climb Surfaces are calculated in relation to a site's location vis-à-vis the extended centreline the relevant runway: this data at Clonburris is that the site is at **460m** laterally from the centreline of Runway(s) 04/22, and opposite a point at **3651m** from Thr22 along that centreline.

Calculated as follows: $(3680)^2 \text{ minus } (460)^2 = (3651)^2$

6.4. Calculations in regard to the Approach Surface to Casement Runway 22

The relevant runway threshold (22) is stated on the current Aerodrome Chart [>] to be at 306ft AMSL elevation, i.e. at **93.3m 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 3651m (listed above at 6.3) it is established that the nearest corner of the building lies at **3,591m** from the inner edge of the Approach Surface to Casement's Runway 22 (as measured along the extended centreline of Runway 22).



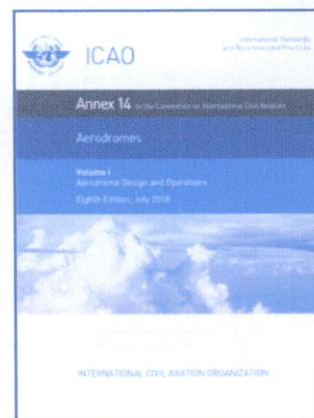
[6.4 Continued]

The slopes of the **Approach Surface to Runway 22** (per ICAO Annex 14 for a Code 3 instrument runway >>) are: 2% for the first 3,000 metres and 2.5% for the next 3,600m.

Thus, at the nearest corner of the site (at **3591m** from the Surface's Inner Edge) the Approach Surface to Rwy 22 lies at **168.1m OD***, and therefore lies **108.1 metres** above the 60m OD ground elevation, and at **82m** above the highest proposed roof element (which is at **86.15m OD**).

* calculated as follows —

$$(3000 \times 2\%) + (591 \times 2.5\%) + 93.3m \text{ CD} = 60 + 14.8 + 93.3m = 168.1m \text{ CD}$$



6.5 Calculations in regard to the Take-off Climb Surface from Casement Runway 04:

The **Take-off Climb Surface** from Runway 04 also commences at 60m from the 22 Threshold. Per ICAO definitions, the Take-off Climb Surface from Runway 04 rises constantly at 2% from 93.3m OD, and will therefore be at **165.1m OD**** above the Clonburris site's nearest corner, i.e. at **105.1m** above ground level on the site, and **79m** above the highest proposed roof element (the parapet of Block C at **86.15m OD**).

** calculated as follows —

$$3591 \times 2\% + 93.3m \text{ CD} = 71.8m + 93.3m = 165.1m \text{ CD}$$

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 should be shown on Aeronautical Charts. We therefore include an additional calculation in relation to a 1.2% slope, which lies at **136.4m OD***** above the nearest corner of the site, and therefore at **50m+** above the highest point of the proposed development.

*** calculated as follows —

$$3591 \times 1.2\% + 93.3m \text{ CD} = 43.1 + 93.3m = 136.4m \text{ CD}$$

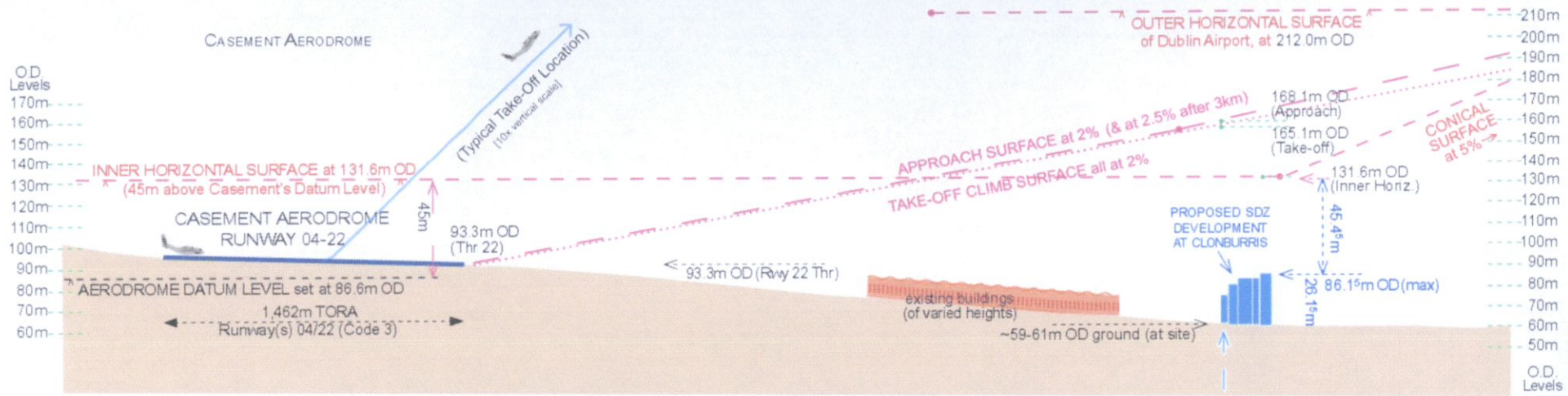
6.6 Calculations in regard to Casement Aerodrome's Inner Horizontal Surface:

Casement's **Inner Horizontal Surface** (extending to 4km from all runways, and at 45m above the aerodrome's chosen datum) lies at **131.6 metres OD**. It is therefore the lowest of the Casement "Surfaces" above the site, at **71.6m** above ground level, and at **45.45m** above the highest element of the proposed development.

6.7 Summary in regard to Casement's Obstacle Limitation Surfaces:

The Approach Surface, Take-off Climb Surface, and Inner Horizontal Surface – at their lowest above the Clonburris site – are (respectively) at 168.1mOD, 165.1mOD, & 131.6m OD – i.e. at **82m, 79m, & 45.45m** above the highest proposed element. It is therefore confirmed that **none of Casement's "Obstacle Limitation Surfaces" will be infringed by the proposed SDZ development at Clonburris.**

7. Longitudinal Section Diagram



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)

← CASEMENT AERODROME RUNWAY 04/22 → 3.65 km (along runway centreline) from THR 22 to Development Site at Clonburris → Proposed Development



AERIAL PHOTO MAP

PLAN SCALE [A4-SIZE] 1:30,000 APPROX.

SITE OUTLINE: — OBSTACLE LIMITATION SURFACES: —

O'DWYER & JONES DESIGN PARTNERSHIP AVIATION PLANNING CONSULTANTS © 7-2023

[A4-SIZE] 1:30,000 HORIZONTAL SCALE
1:3,000 VERTICAL SCALE

8. Other Aviation Considerations

8.1 Possible Solar/PV panels:

It is possible that a number of Solar/PV panels may be provided on the roofs of the residential Blocks A, B, D, E, F, G & H, and their proposed locations are indicated (in yellow+red) on the Roof Plan diagram shown opposite. >>



(i) Re Control Towers —

A prime consideration in relation to Solar/PV panels is that no Glint or Glare should affect an aerodrome's control tower – FAA guidance states that no solar reflection towards the ATC tower should be produced by a proposed solar PV development. This is best achieved by ensuring that panel surfaces are not visible from any ATC tower cab, and this is assessed as follows in relation to the Clonburris SDZ Planning Scheme. —

All of the proposed Solar/PV panel locations are on roof surfaces (at 72.4m–81.3m OD) which are surrounded by parapets of 1.2m in height (at 73.6m–82.5m OD). The relevant control towers are those at Weston Airport (at ~5.5km distance) with its cab at ~60m OD, and at Casement Aerodrome (at 3.64km from the site) with its cab at ~102.6m OD. As the control tower at Weston is substantially lower than the Clonburris SDZ Scheme's parapets, that control tower can be discounted fully in relation to any possible Glint & Glare. In regard to Casement Aerodrome (whose control tower is higher than the proposed development) it is necessary to calculate as follows whether any panels might be visible from that control tower:

It is assumed that any rooftop solar/PV panels will be no higher than 600mm above roof slab levels, i.e. their tops would be at 600mm below parapet levels. It is calculated that, behind the lowest parapets at 73.6m OD (29m below Casement's control tower cab) objects of up to 600mm in height could not be seen for a distance of 75m behind that parapet; and behind higher parapets at 79.9m OD (22.7m below Casement's control tower cab) objects of up to 600mm in height could not be seen for a distance of 97m. As the proposed PV panel locations are all well within those distances it is therefore confirmed that **none of the proposed panels would be visible from Casement Aerodrome's control tower cab.**

(ii) Re Flight Paths —

In addition – in relation to flight paths – the developer has agreed to give an assurance that, if any future panel (or panels) on the roof of the development may be found by Air Corps pilots (or Department of Defence) to produce unwanted Glint or Glare which might affect operations at Casement Aerodrome, all such panels will be immediately removed or adjusted to the Air Corps's satisfaction.

8.2 External Lighting:

Being at 460m from the centreline of Approach and Take-off Climb Surfaces to and from Casement Runway(s) 04/22, it is recommended that external lighting on the site should be of the cut-off type (i.e. showing no light above the horizontal).

The buildings are not in a location, or of a height, which would require the placing of aircraft warning lights on their highest points (unless requested by the IAA).

8.3 Cranes on Site During Construction:

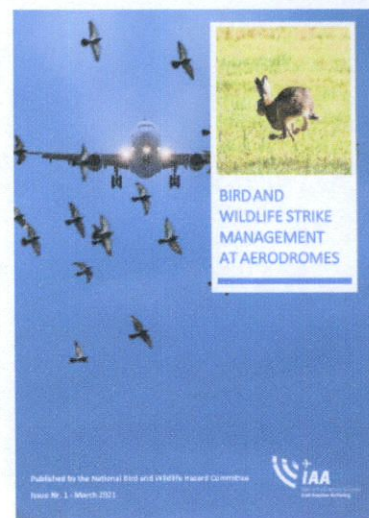
It is proposed that up to eight tower cranes, of up to 55m in height above ground level, may be used in the construction of the development. These could extend to 115m OD or thereabouts, i.e. to ~29m above the highest roof elements of the development. However, as the lowest "Obstacle Limitation Surface" which lies above the proposed buildings – Casement Aerodrome's "Inner Horizontal Surface" – is at 131.6m (71m+ above ground level on the site), these cranes will not interfere with, or project above, any of Casement Aerodrome's "Obstacle Limitation Surfaces" (or above the "1.2% slope").

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 crane/s to be submitted, at least 30 days in advance, to the Irish Aviation Authority, to Weston Airport, and to Casement Aerodrome, who may need to issue any necessary notices to pilots. Advance notification in regard to cranes is proposed to be given to Air Corps Air Traffic Services by email to airspaceandobstacles@defenceforces.ie and/or by telephone to 01-4037681 at Casement Aerodrome.

8.4 Bird Strike Hazard Aspects:

The site is at 5-6km from Weston, and at 3-4km from Casement Aerodrome, and ~0.5km from the nearest flight path, and is not likely to give rise to any bird strike hazard. There are no ponds or other likely bird attractants proposed as part of the development.

During construction, building-site management will ensure control of all debris on site, in particular any food waste; and management of trenches, topsoil removal, and earth-moving in general, will ensure that debris or earth will not remain exposed as attractants to gulls or other birds, and that any flooded or exposed areas will be covered. The guidance provided in the IAA's recent document "*Bird and Wildlife Strike Management at Aerodromes*" will be observed [>>].



9. SUMMARY

9.1 The Development in Relation to Casement's "Obstacle Limitation Surfaces":

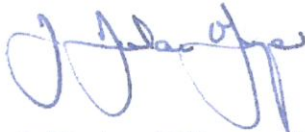
The development site lies under three of Casement Aerodrome's "Obstacle Limitation Surface", the lowest of which is Casement's "Inner Horizontal Surface" at 131.6m OD. However, the site is low-lying site in relation to the Aerodrome, and the highest proposed element – a parapet at 86.15m OD – is lower than all of Casement's runways, and more than 45m lower than Casement's "Inner Horizontal Surface". **It is confirmed that no part of the proposed development will breach any of Casement Aerodrome's "Obstacle Limitation Surfaces."**

9.2 Other Aviation Considerations

- (i) The site also lies under Dublin Airport's "Outer Horizontal Surface", but as this Surface is at 212m OD (more than 125m above the highest proposed element) it will not be affected in any way by the proposed development.
- (ii) The site lies outside all of Weston Airport's "Obstacle Limitation Surfaces" and the development will not affect Weston Airport.
- (iii) The development does not contain any ponds or other features which might give rise to increased bird strike hazard.
- (iv) Possible solar/PV panels on apartment block roofs will not be visible from the control towers at Weston or Casement Aerodrome.
- (v) Cranes on site during construction will not extend above any "Obstacle Limitation Surface". In any event it will be necessary for 30 days' advance notice of any proposed cranes to be given to the IAA, to Casement, and to Weston.

9.3 Overall:

We consider that the proposed SDZ Planning Scheme at Clonburris complies fully with all aviation and aeronautical requirements affecting its location.



J. Declan O'Dwyer B.Arch MBA RIBA

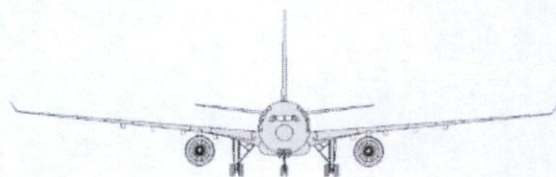
4th July 2023

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