

AERONAUTICAL ASSESSMENT REPORT

**RE
STRATEGIC HOUSING DEVELOPMENT**

**AT
NEWCASTLE SOUTH
IN COUNTY DUBLIN**

**FOR
CAIRN HOMES PROPERTIES LTD.**

JUNE 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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Aeronautical Assessment Report — 10th June 2022

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1. Purpose of this Report

1.1 This report assesses the aeronautical and aviation aspects of a proposed Strategic Housing Development of 280 residential units on a site of 8.47 hectares overall at Newcastle South in County Dublin.

*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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2. Description and Zoning of the Site

2.1 Site Description:

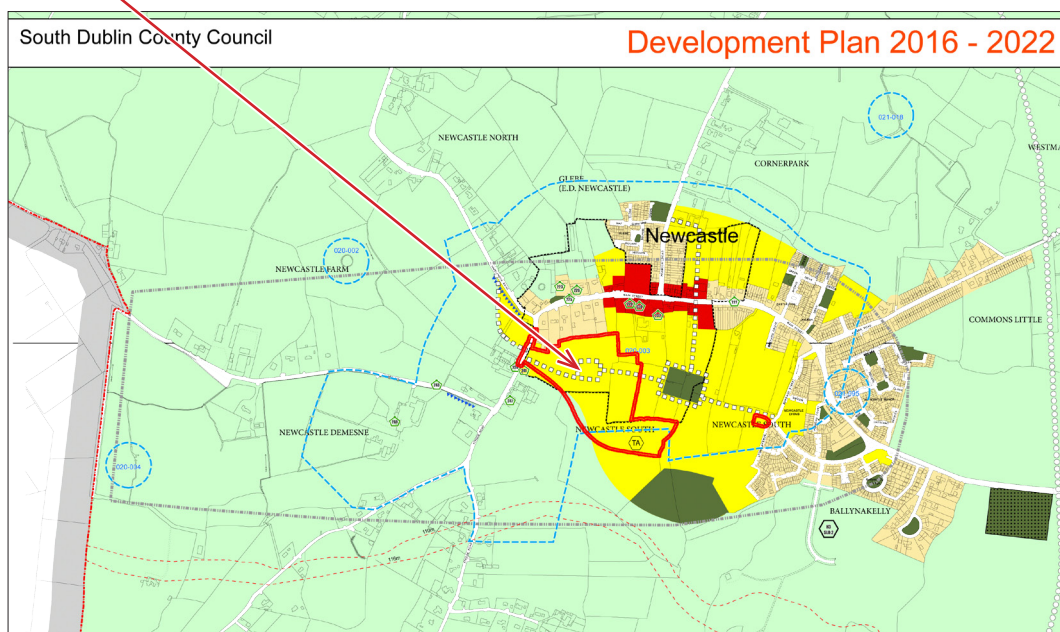
The site at Newcastle South, of overall area 8.47 ha (*outlined in red+yellow on the aerial photo below*) is comprised of a larger residential area of 8.4 ha (containing housing and apartments, with access from the L6001 roadway), and a separate smaller 0.7 ha area (containing a crèche, beside Graydon Green). Ground elevations on the larger site vary from 93.6m to 106.6m OD, and are at ~99.3m OD on the smaller crèche site.



2.2 Zoning:

In the current South Dublin County Council Development Plan 2016-2022, the site in Newcastle South is zoned 'Objective RES-N: To provide for new residential communities in accordance with approved area plans'. *The two parts of the site are outlined in red below on combined extracts from the 2016-2022 Development Plan Maps 3 & 7.*

[& Map 7 of the Draft SDCC CDP 2022-2028 contains similar site zoning.]



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

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

3.1 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 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 The paragraphs on the 'Inner Horizontal Surface' in Section 11.6.6 'Aerodromes' on pages 225 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, this will be applicable to development above the prevalent building height (based on OD) of the area. The Inner Horizontal Surface of Casement is 86.6 metres OD and Weston is 91.3 metres OD. Similar to development within the Outer Approach Surface, the applicant should demonstrate that the proposed development is not an obstacle to the Aerodrome airspace.</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>[Correction: 131.6m O.D.]</p>

- 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, 45m above which the IHS is established].
- 3.5 It is demonstrated on the following pages that the site at Newcastle South that is the subject of this report lies well outside (and is not affected by) any Approach or Take-Off Climb Surfaces mentioned in the Development Plan (which ICAO indicates are the more important obstacle limitation surfaces).
- 3.6 Due to a shift in magnetic variation, the runways at Casement Aerodrome have been redesignated in February 2019, so that where the S.D.C.C. Development Plan refers to Casement runways **11/29 and 05/23** (as in the paragraphs quoted above), these same runways are now designated (and referred to in this report) as Casement runways **10/28 and 04/22**.

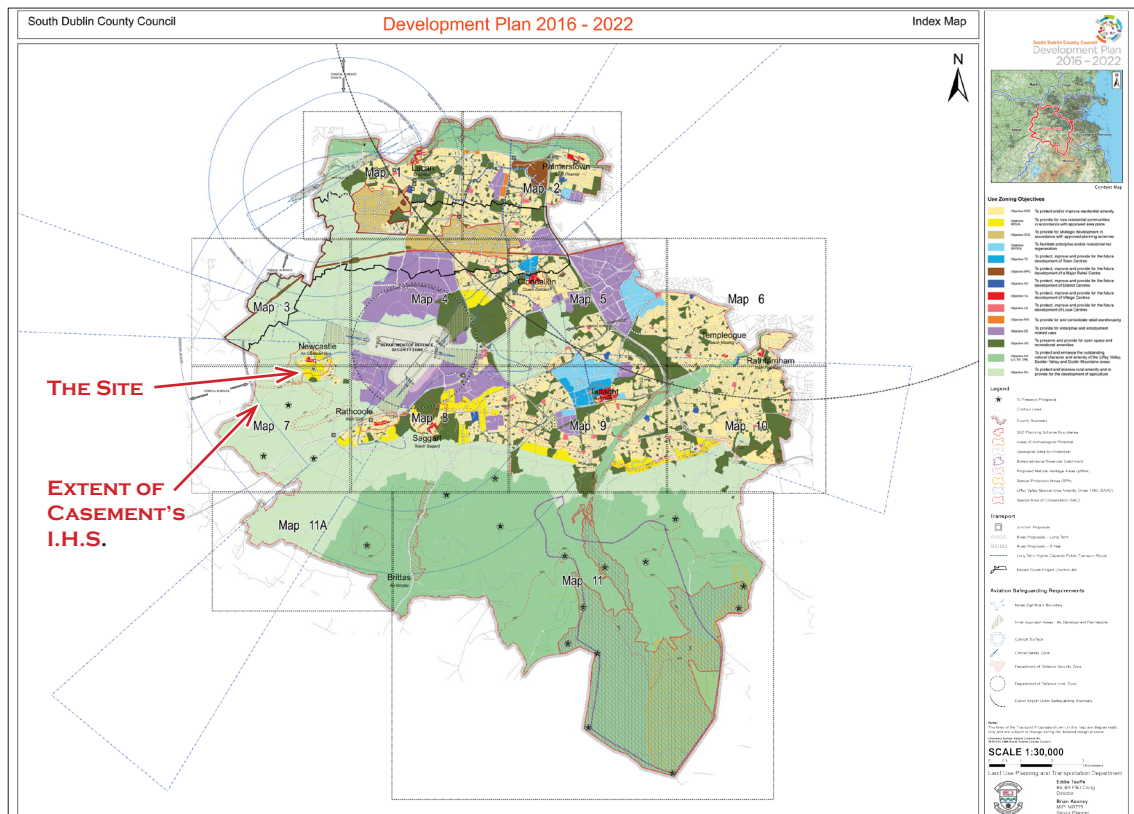
The runways at Weston and Dublin Airports remain designated as described in the 2016-22 Development Plan. However, since December 2017, Dublin Airport has become subject to E.A.S.A. [European Aviation Safety Agency] standards rather than the I.C.A.O. 'Annex 14' Standards referred to in the S.D.C.C. Development Plan. These ICAO Standards & Recommended Practices (which do not necessarily apply to military aerodromes) are applied as policy by the Department of Defence at Casement Aerodrome.

- 3.7 Much of the information concerning aviation and aerodromes in the SDCC Development Plan (including data for Casement military aerodrome) has been provided by this firm to SDCC (at the time of preparation of the previous Development Plan).

3.8 SDCC Index Map

The S.D.C.C. Development Plan Index Map referred to in CDP paragraph 7.8.0 (quoted in this report on page 3 above) is illustrated below, with the site's location indicated by a red arrow.

This Index Map contains the outlines (*appearing faintly below*) of various Obstacle Limitation Surfaces including Approach Surfaces (which do not affect this site) and Casement Aerodrome's Inner Horizontal Surface (which lies above the site).

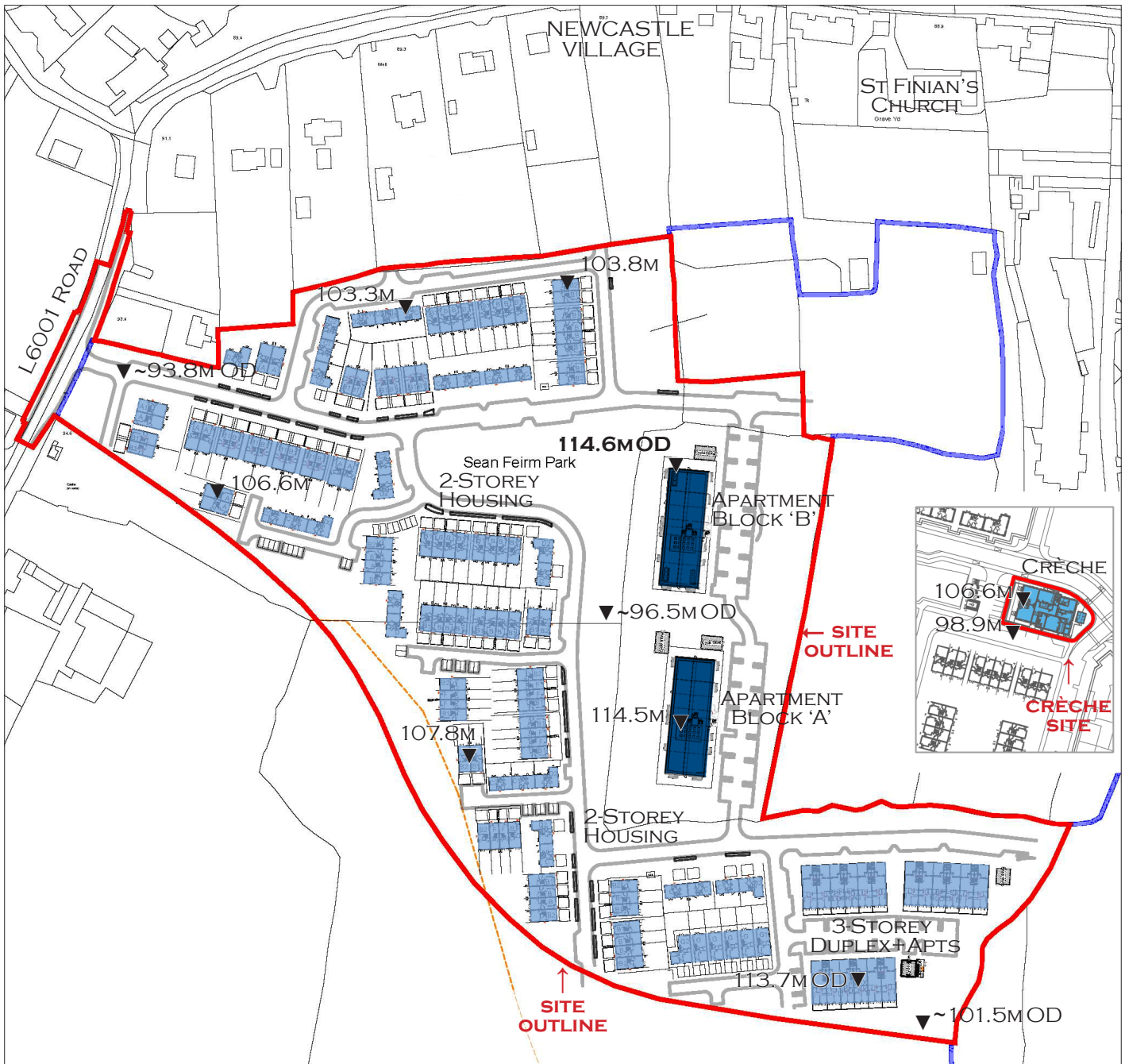


3.9 In addition to the re-designation of Casement Aerodrome's runways in 2019 (*see para 3.6 above – i.e. the runways referred to in the Development Plan as 11/29 & 05/23 now being designated 10/28 & 04/22 respectively*), it should also be noted that there have been changes to the “obstacle limitation surfaces” of all aerodromes in 2017 and 2018. These changes arose (and affected Dublin Airport) with the introduction of European Aviation Safety Agency Specifications in 2017, and in the following year ICAO adjusted its *Annex 14* Standards to bring them in line with the new EASA Specifications. These 2018 adjustments to ICAO *Annex 14* Standards (principally to Approach Surfaces and Transitional Surfaces) affect Weston and Casement aerodromes (where ICAO Standards continue to apply).

3.10 All aviation aspects (and adjustments to aviation items) that are in the **Draft SDCC CDP 2022-2028** are also taken into account in this report (as in para. 5.2 on page 7 where the ‘inner edge’ of the Approach Surface to Casement's future Runway 10 is noted as lowered to 85m OD, and in para 9.4 on page 11 which refers to the new Outer Public Safety Zones introduced in the Draft SDCC CDP 2022-2028).

4. Site Plan Drawing with Elevations-OD

4.1 Below, to approximate scale 1:2,500, is a Site Plan of the proposed development, of 128 two-storey houses, 36 three-storey apartment-plus-duplex units, and two 5-storey apartment blocks containing 116 apartments. A two-storey crèche on a nearby separate site to the east is included as an insert, and elevations (OD) of the highest elements are indicated. *[The two- & three-storey elements are shown in lighter blue, and the two 5-storey apartment blocks are shown in darker blue shading.]*



SITE PLAN OF PROPOSED DEVELOPMENT WITH ELEVATIONS (O.D.) OF HIGHEST PARTS SCALE 1:2500 APPROX.

5. The Site in Relation to the Approach, Take-off-Climb, & Transitional Surfaces at Casement Aerodrome

- 5.1 The nearest Approach Surface, Take-off Climb Surface and Transitional Surface to the Newcastle South site are those of Casement's main runway 10/28, as illustrated in the diagram below. *(In this diagram, the Transitional Surfaces have an added grey tint.)* The nearest corner of the main (housing) site is at 2.31 km from Threshold 10, and the nearest corner of the separate crèche site is at 20.4 km from Threshold 10.

In order to calculate the site's location in relation to the nearest Approach and Transitional Surfaces, it is necessary to establish the site's lateral distance from the extended centreline of Runway 10/28. This is at 1.1 km from the centreline, and opposite a point 2.12 km from Thr10 along the centreline *(as illustrated below)*.

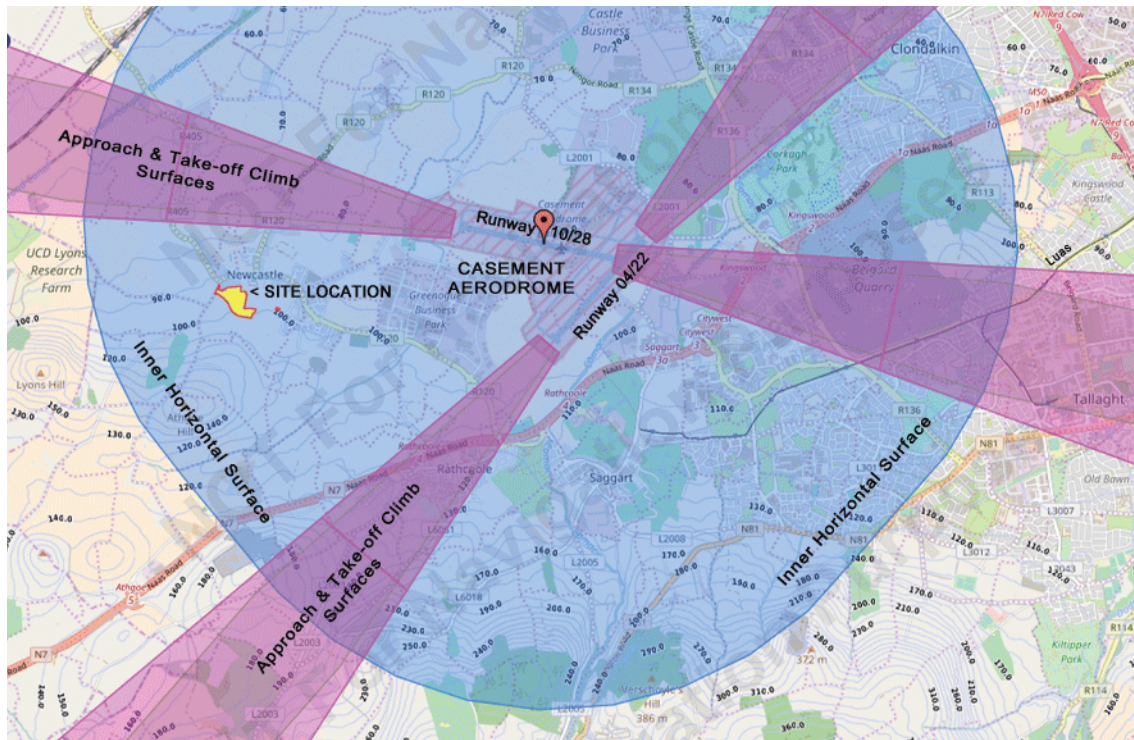


- 5.2 The inner edge of the Approach Surface to Runway 10 is at 85.0m OD, and at 360m from the current Threshold 10 (making provision for a 300m runway extension at the 10 end). The lowest point of the Transitional Surface is also at 85mOD and it rises at 14.3% over a distance of 326m to meet the Inner Horizontal Surface, which is at 131.6m OD. Opposite the Newcastle South site, the distance from the extended runway centre-line at which the Transitional Surface meets the IHS is: $326\text{m} + 140\text{m} + (1760 \times 1\%) = 483\text{m}$. Thus the site is **at 617m laterally from the Transitional Surface**.

- 5.3 The site is therefore **comfortably clear of the Transitional, and the Approach, and the Take-off Climb Surfaces**. *[See also: Cross-section diagram on page 9 >]*

6. 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 is the elevation of the aerodrome’s lowest runway threshold). On the 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. —

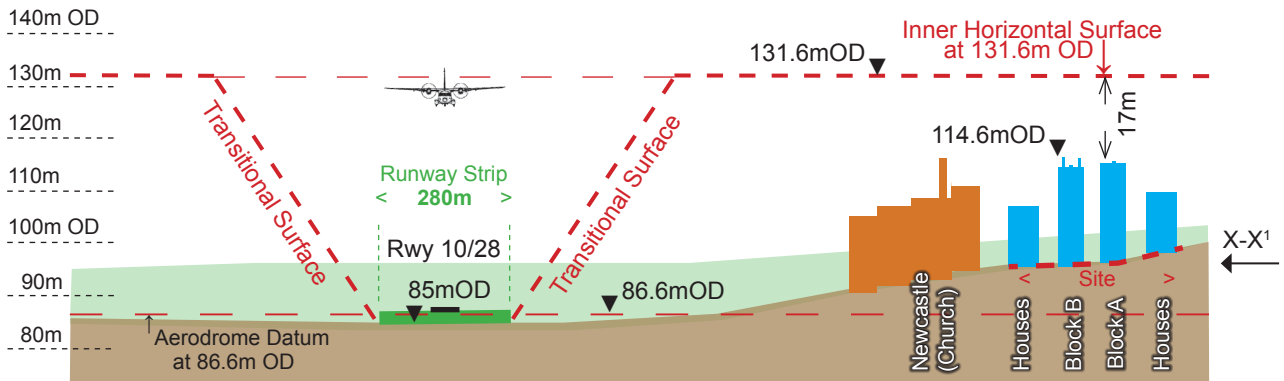


- 6.1 It can be seen that the site at Newcastle (to west of Casement Aerodrome) falls **within the area of the aerodrome’s Inner Horizontal Surface**, but is well clear of all of the (more important, per ICAO) Approach and Take-Off-Climb Surfaces.
- 6.2 Ground levels on the site rise from 93.6m to 101.6m OD, i.e. up to 15m above Casement’s datum level, and up to 30m below the Inner Horizontal Surface. The highest points of the development are on the roofs of its two apartment blocks (each 16.1m tall to parapet level): Block A whose lift-shaft extends to 114.53m OD, and Block B with rooftop telecommunication equipment extending to 114.6m OD. The ridges of the roofs of the two- & three-storey accommodation vary from 103.32m OD (the lowest roof ridge) to 113.7m OD (the highest roof ridge).
- 6.3 **Consequently the entire development is comfortably below Casement’s Inner Horizontal Surface** which lies above the site, with 17m to spare between the Inner Horizontal Surface and the very highest item (on Apartment Block ‘B’).

A Section & Plan drawing (showing the development in relation to Casement’s Inner Horizontal Surface) appears on the following page 9.

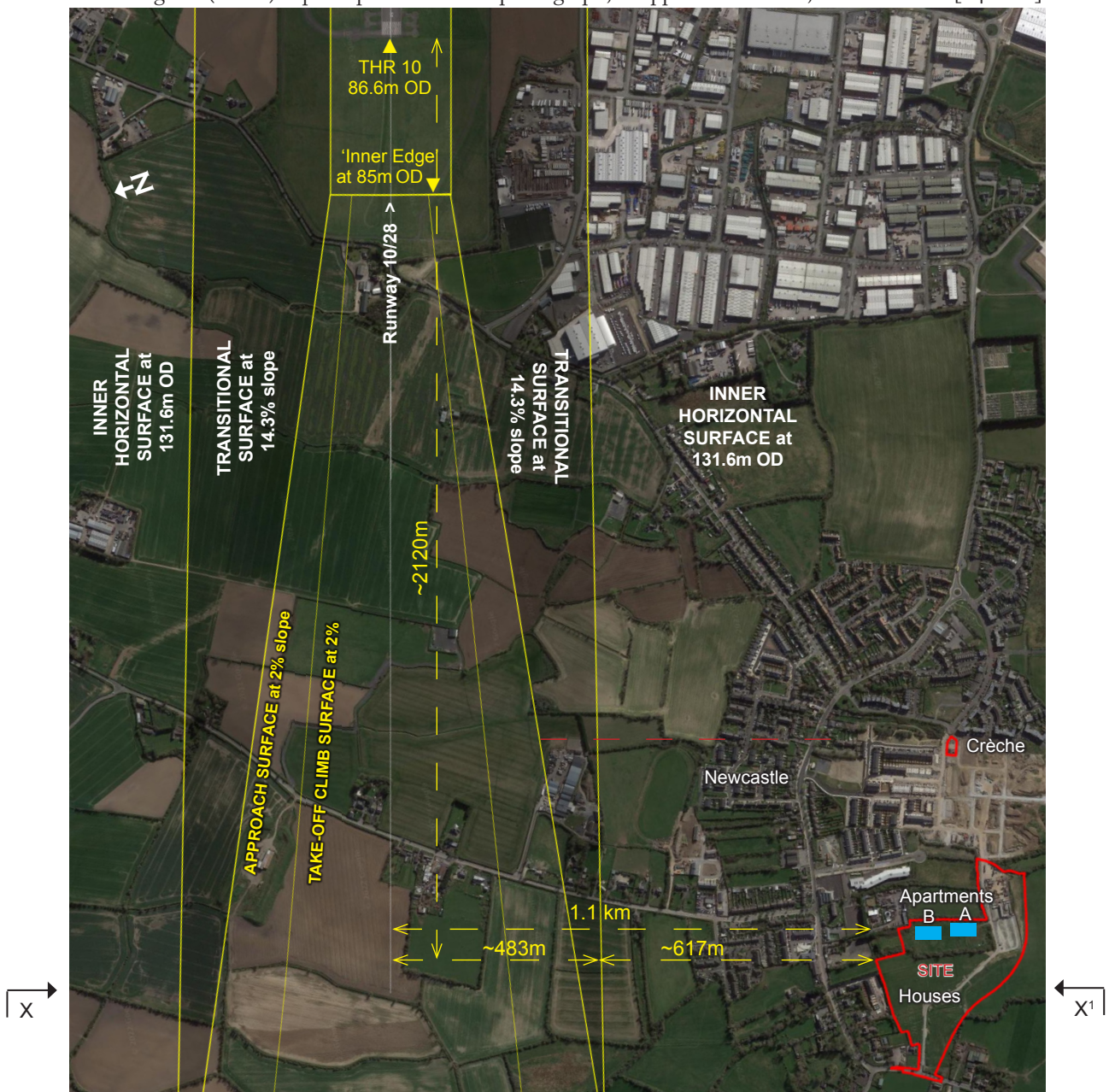
7. Cross Section & Aerial Map Diagrams

NB – Aeronautical Diagram:
horizontal scale = 10x vertical scale.



Cross-Section Diagram (above) to approx. Scales 1:1,500 (vertical) and 1:15,000 (horizontal) [A4-SIZE]

Plan Diagram (below) superimposed on aerial photograph, to approx. Scale 1:15,000 [A4-SIZE]



8. Aviation Navigational Equipment

8.1 ICAO Guidance on 'Building Restricted Areas'

As the site is located to the west of Casement (towards which direction its Nav aids operate), consideration is also given to any effect the development might have on this navigational equipment – specifically the ILS [Instrument Landing System] for Runway 10, and the aerodrome's DVOR/DME (distance measuring equipment).

- 8.2 In its *'European Guidance Material on Managing Building Restricted Areas'* of 2015, ICAO sets out locations in the vicinity of Nav aids in which consideration is advised as to potential interference with radio waves (due to reflections from buildings). These can extend to considerable distances (i.e. to 6km from runway thresholds), and are indicated below for Casement's nav aids: two rising fan-shapes for ILS (*in yellow for Glidepath, and yellow+red for Localiser*) and circular for DVOR/DME —



- 8.3 It can be seen that the site lies well outside the 'building restricted areas' related to DVOR/DME and Glidepath equipment, but partially under the Localiser's wider fan-shape. This fan-shape slopes upwards from threshold level to 70m higher over 6km, and consequently is above the level of the development on the site, and unaffected by it.
- 8.4 In addition (*as can be seen in the diagram on the previous page*) the town of Newcastle – with adjacent buildings of similar heights and a church of greater height – lies directly between the development and the aerodrome, so that the new development could not give rise to any reflections affecting Casement Aerodrome's nav aids.

9. Other Aviation Considerations

9.1 Use of Cranes During Construction

It is intended that cranes used during construction will operate below the level of Casement Aerodrome's Inner Horizontal Surface, which lies at up to 30m above the site, and at 17m 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 at 01-4037681], who may need to issue notifications to pilots, and who may require cranes to be fitted with aviation warning lights.

9.2 Solar/PV panels

Within this development of 280 residential units over 8.47 hectares, it is proposed that a small number of solar/PV panels will be provided on the roofs of the two apartment blocks – 15 panels on each of these two roofs. The site's location (to west-south-west of Casement Aerodrome) means that all these panels will inevitably be angled away from the aerodrome's runway thresholds and away from its control tower (which area at 2.3-4.5 km distances), so that unwanted glint or glare from these few panels is highly unlikely to arise.

However in the event that the Department of Defence or Air Corps may require any changes or adjustments done to any solar/PV panels after installation, it is agreed by Cairn Homes Properties Ltd that this will be done without delay.

9.3 Aviation Noise

The site lies outside the noise contours for Casement and Weston Aerodromes (as shown on the SDCC Index Map), and no additional sound insulation arises.

9.4 Public Safety Zones

The site is outside all of the new Outer Public Safety Zones for Casement and Weston Aerodromes (as are shown in the Draft CDP 2022-2028 maps).

9.5 Weston Airport's Surfaces

The site is well outside all of the 'obstacle limitation surfaces' for Weston airport, which is at 5.5km due north. [The previous Outer Horizontal Surface for Weston – which extended above the site at 196.3m OD – has been discontinued in 2021 by the IAA].

10. SUMMARY

10.1 Obstacle Limitation Surfaces in General

The site at Newcastle South lies well clear of all Approach Surfaces, Take-Off Climb Surfaces, and Transitional Surfaces at Casement Aerodrome (which are the more important I.C.A.O. Obstacle Limitation Surfaces). It does however lie under Casement Aerodrome's Inner Horizontal Surface, which is at 131.6m OD.

10.2 The Site in relation to Casement Aerodrome's Inner Horizontal Surface

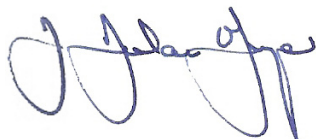
Ground levels on the site are at 7-15m above the elevation of the nearest runway threshold [THR 10] at 86.6m OD, which is also the elevation of Casement's datum level. The proposed development is of low-rise 2-storey housing and 3-storey apartment & duplex units, with two 5-storey apartment blocks of 16.1m height each (to parapet level). The highest items on the site are telecommunications shrouds on one of the apartment blocks whose tops are at 114.6m OD elevation.

Consequently, all of the development is fully clear of Casement's Inner Horizontal Surface – with 17 metres to spare above its highest points. This will provide ample room for the operation of cranes on site.

In addition, the proposed development is fully clear of any 'building restricted areas' associated with the navigational equipment at Casement Aerodrome.

10.3 Overall

We are satisfied that the proposed residential development at Newcastle South complies fully with all aviation and aeronautical requirements affecting the site.

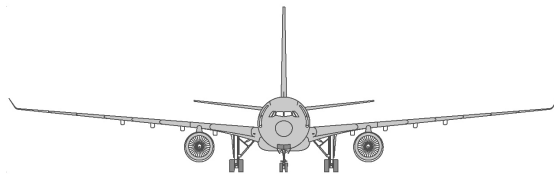


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