AERONAUTICAL ASSESSMENT REPORT RE A PROPOSED LARGE-SCALE RESIDENTIAL DEVELOPMENT AT FARRANDAHADORE MORE, SARSFIELD ROAD, WILTON, CORK CITY

FOR THE LAND DEVELOPMENT AGENCY

DECEMBER 2024



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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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page

1. EXECUTIVE SUMMARY

1.1 **Purpose of this Report**

This Report addresses the aviation impact of a proposed Large-scale Residential Development of 348 residential units (and a childcare facility) in three apartment blocks of 5 & 6 storeys, plus two rows of 2-storey townhouses, off Sarsfield Road in the Wilton area of Cork City.

1.2 Executive Summary

This Aeronautical Assessment confirms that the proposed residential development will comply with all aviation and aeronautical requirements affecting the site.

- 1.3 This Report includes
 - (a) an assessment of the various "Obstacle Limitation Surfaces" of the European Union Aviation Safety Agency [EASA] which affect the site, with calculations as to how the proposed LRD will lie in relation to these Surfaces;
 - (b) an assessment of the development in relation to the new helipad at Cork University Hospital, and its helicopter approach and departure routes;
 - (c) assessments of the site in relation to other aviation aspects, including Cork Airport's Public Safety Zones, Noise Contours, and Building Restricted Areas (relating to its navigational equipment);
 Flight Paths in the vicinity of the site, and possible requirements in relation to external lighting and to cranes during construction, etc.



1.4 A 3-D view of the proposed development (looking north-north-west) is shown below:

2. Description and Zoning of the Site

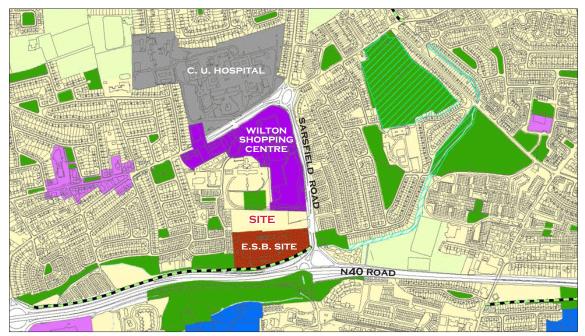
2.1 Site Description:

The site (of area 2.61 ha. approx. – *outlined in red on the aerial photo below*) is located off Sarsfield Road in Wilton, at around 200m north of the N40 roadway.



2.2 **Zoning:**

In Map 8 ["South-western Suburbs"] of the adopted Cork City Development Plan 2022-2028, the site is zoned "ZO-01: Sustainable Residential Neighbourhoods" *(coloured pale yellow)*. Adjoining areas include a "Public Open Space" *(in green)*, the Wilton "District Centre" *(in purple)* to the north, and the ESB "Public Infrastructure & Utilities" *(in brown)* to the south. Cork University Hospital is ~500m to north *(in grey)*.



3. Relevant Cork City Development Plan Paragraphs

3.1 Cork Airport

Cork Airport features in particular on pages 384 to 390 of the Cork City CDP 2022-2028, with Objectives 10.50 to 10.55 relating to the airport and to aviation in general. Of these, Objective 10.55 *(shown opposite >)* refers to the airport's "Obstacle Limitation Surfaces" and "Public Safety Zones" which are of relevance to this LRD proposal at Wilton.

A diagram of these airport-related Surfaces and Zones appears on page 388 of the Cork City Development Plan, and this CDP diagram is reproduced overleaf on the following page of this report.

3.2 Also relevant to this development at Wilton are —

Paragraph 10.194 on page 387 of the Cork City CDP *(see below)*, concerning the Airport's Noise Zones; and

paragraphs 11.252-11-253 on page 529 of the CDP *(see opposite >)* concerning Solar Energy and the need for Glint & Glare analysis in relation to aviation, etc.

Noise

10.194

Cork Airport has at present three noise contours associated with aircraft operations, namely 57db (outer zone) 66dB (inner zone) and 72dB (inner, inner zone) These existing noise contours for the airport are indicated on the following map. The noise environment and contours around the airport are likely to change because of future growth and development. Increased operations, changes in aircraft type and mix, changes in the associated operations such as maintenance and construction activity during implementation of developments will all contribute to increased noise.

Strategic Consolidation and Regeneration Areas Objectives

4. Cork Airport



🗥 Objective 10.55

Government in relation to Public Safety Zones for Cork Airport. Additionally, the Obstacle

applications in the vicinity of these zones will be referred to the Irish Aviation Authority for

observations as part of the statutory planning process. Issues such a proposed development's

height and proximity to these zones will form

Limitation Surfaces will be safeguarded. Planning

Airport Safety Zones Implement the policies to be determined by

Solar Energy

part of considerations.

11.252

Solar energy has the potential as a clean source of energy to reduce dependence on fossil fuels and help achieve climate change targets on greenhouse gas emissions. The retrofitting of existing buildings and the integration of solar infrastructure into the design of new buildings will generally be encouraged.

11.253

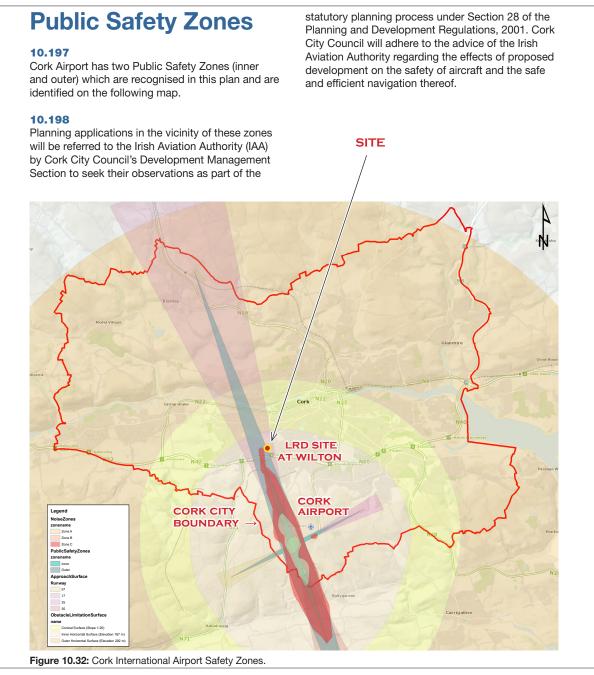
In the assessment of any planning applications for solar farms, Cork City Council will consider these renewable energy developments having regard to:

- 1. Any future national guidance to be published on Solar Farms
- 2. The landscape character of the area in which the site is located
- 3. Visual impact
- 4. Glint and Glare
- 5. Ecology
- 6. Heritage and Archaeology
- 7. Security requirements such as CCTV, security lights, fencing
- 8. Construction impacts and impact on drainage patterns and water tables
- 9. Suitability of and access to the electricity grid
- 10. Decommissioning

3.3 Extended Cork City Area and Cork City Development Plan 2022-2028:

Under the Local Government Act 2019, the administrative area of Cork City was greatly extended, so that it now includes Cork Airport.

Map 10.32 on p.388 of the Cork City CDP shows "Obstacle Limitation Surfaces", "Public Safety Zones", and Noise Contours for Cork Airport, superimposed onto a map of the enlarged Cork City area. *[See below, with added notes in red and location of the LRD site at Wilton indicated by an arrow & red dot]*. It can be seen that the Wilton site lies (i) under Cork Airport's "Inner Horizontal Surface", (ii) under the Approach to Runway 16, (iii) partly within an Outer Public Safety Zone, and (iv) touches Airport Noise Zone 'C'. [These aviation features are assessed in Section 6 following >>]



4. Layout and Elevations-OD of the Proposed Development

4.1 Below to approximate scale 1:1,750 is a Site & Roof Plan of the proposed development at Wilton in Cork City, which comprises 348 residential units in all, of which 332 of the units are in three apartment blocks (two of which are U-shaped blocks in the centre of the site of 5 & 6 storeys each, with one 6-storey apartment block to the east of the site), with 16 of the residential units in two blocks of 2-storey townhouses at the west side of the site. Elevations OD of the highest elements of each block are indicated on this diagram.

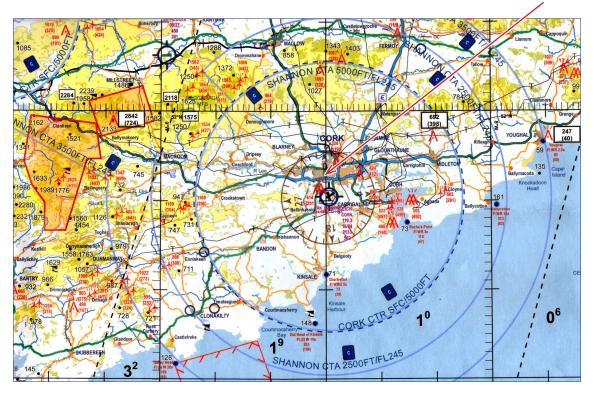
The western two-thirds of the site (approximately) lies under one of Cork Airport's Outer Public Safety Zone. This area includes the two blocks of townhouses, the western apartment block and around half of the middle apartment block.



In this diagram, darker blue shading indicates higher roof elements.

5. Aeronautical Considerations in Relation to the Site

- 5.1 There have been some significant developments affecting aviation at Cork
 - (i) In April 2016, the designations of Cork Airport's main runway changed from 17/35 to 16/34, due to a magnetic shift affecting compass bearings. [It is noted that the legend of Cork Airport map on p.388 of the 2022–28 Cork City Development Plan (shown on p.5 of this report) refers to the older rwy designations, although other references to Cork's runways in the Plan's text have been updated].
 - (ii) In December 2017, the Standards relating to eight international and regional airports in Ireland (including Cork Airport) came under E.A.S.A. control [European Union Aviation Safety Agency], rather than I.C.A.O. control [International Civil Aviation Organization] as previously applied, with several changes to airport design specifications (including narrower Approach Surfaces and Runway Strips).
 - (iii) In November 2018, I.C.A.O. issued revised 'Annex 14' Standards bringing these in line with the new E.A.S.A. Aerodrome Specifications.
 - (iv) In September 2024, the new Aero-medical Helipad at Cork University Hospital, was opened, with Approach & Departure Surfaces oriented east-west.
- 5.2 Below is an extract from the IAA's Aeronautical Chart of Ireland, showing (in the inner blue circle) the Cork Airport Air Traffic Control area, which extends from ground level ['SFC'] to 5,000ft amsl. The location of the Wilton site is indicated by an arrow, north of the N40 dual carriageway (marked in blue on the chart) and west of the R641 [Sarsfield] road (marked in green).



6. The Development in Relation to Cork Airport

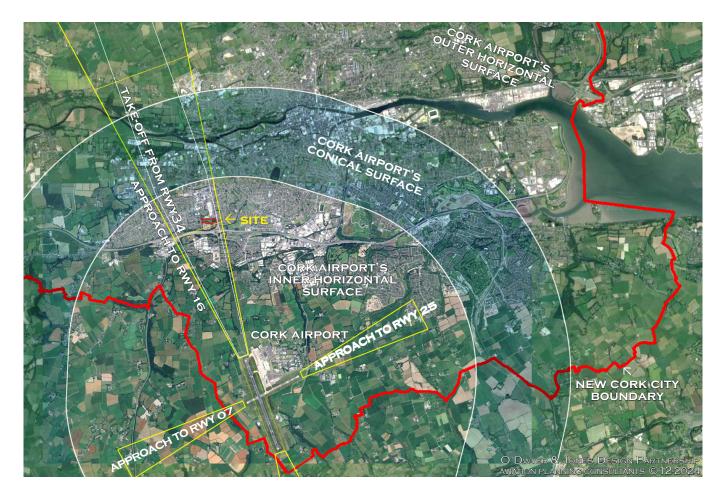
6.1 The Site in Relation to Cork Airport's "Obstacle Limitation Surfaces":

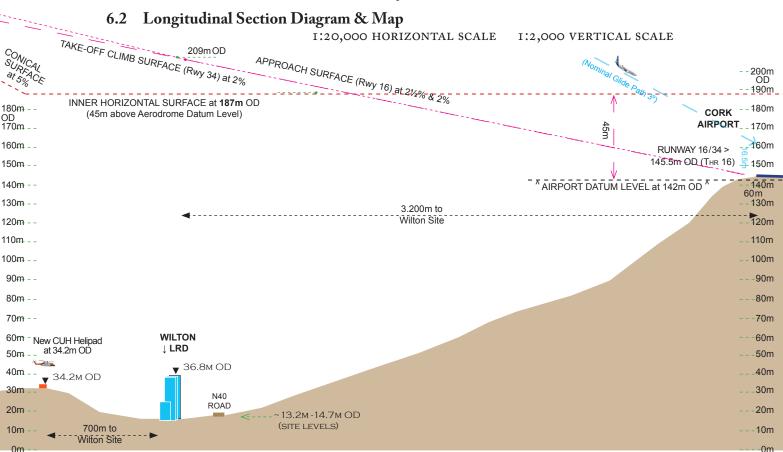
Below, superimposed on an aerial photograph, is a diagram of Cork Airport's "Obstacle Limitation Surfaces" per EASA [European Union Aviation Safety Agency] 'Specifications', which now apply at Cork Airport. [The Wilton LRD site is shown outlined in red, and Cork's Conical Surface is shaded in blue.]

On this map it can be seen that the Wilton LRD site lies simultaneously under three of Cork Airport's "Obstacle Limitation Surfaces":

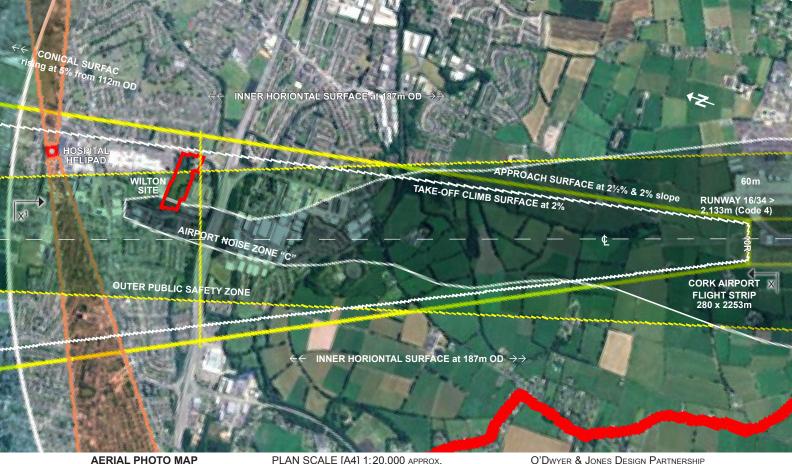
- (i) It lies **under the "Approach Surface"** (outlined in yellow) to Cork Airport's Runway 16 (at 3.2 km from Threshold 16); and
- (ii) it lies **under the "Take-off Climb Surface**" (outlined in white) from Cork Airport's Runway 34; and
- (ii) it lies under Cork Airport's "Inner Horizontal Surface".

A Longitudinal Section taken between the Wilton site and Cork Airport (along the centreline of the Approach Surface to Runway 16) is shown on the following page 9, and calculations in relation to the three "Surfaces" under which the site lies are given on page 10 >>.





LONGITUDINAL SECTION X1-X A4-SIZE: TO HORIZONTAL SCALE 1:20,000 APPROX. WITH VERTICAL SCALE 1:2,000 APPROX. ALONG APPROACH TO RUNWAY 16 (NOTE AERONAUTICAL SECTION: VERTICAL SCALE =10x HORIZONTAL SCALE)



SITE OUTLINE: -

PLAN SCALE [A4] 1:20,000 APPROX.

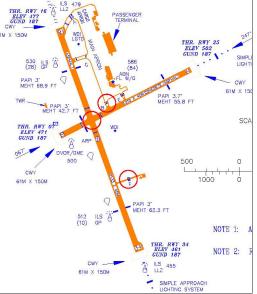
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(i) Cork Airport's Inner Horizontal Surface:

The **Inner Horizontal Surface** extends for 4km from runway centrelines and lies horizontally at 45m above the airport's datum level (which is at 142m OD). Therefore Cork Airport's Inner Horizontal Surface lies above the site at **187m OD**, which is **150.2 metres** above the highest point of the proposed development (at 36.8m OD).

(ii) Take-off Climb Surface from Runway 34:

The **Take-off Climb Surface from Runway 34** lies above all of the development site, and the slope of this Take-off Climb Surface is 2% (as defined by EASA for Code 4 runways in its *Certification Specifications* for Aerodromes). This Surface commences at 60m from the end of runway 16/34, i.e. at 3140m from the site, and at an elevation of 477ft amsl (i.e. 145.5m OD). Thus, at its lowest above the site (at 3140m from the Flight Strip of Runway 16/34), the Take-off Climb Surface from Runway 34 lies at **208.3m OD***, and therefore at **171.5 metres** above the highest point of the proposed development.



* calculated as follows — $3140 \times 2\% + 145.5m \text{ OD} = 62.8 + 145.5m = 208.3m \text{ OD}$

(iii) Approach Surface to Runway 16:

The slopes of the **Approach Surface to Rwy 16** are at 2% in its 'first section' of 3,000m length, and at 2.5% in its 'second section' of 3,600m length (per EASA specifications for a Code 4 instrument runway).

Thus, *at its lowest, above the site* (at 3.140m from the Flight Strip of Runway 16/34), the Approach Surface to Runway 16 lies at **209m OD****, and therefore at **172.2 metres** above the highest point of the proposed development.

** calculated as follows — $(3000 \times 2\%) + (140 \times 2.5\%) + 145.5 m OD = 60 + 3.5 + 145.5 m = 209m OD$

(iv) **Overall:**

The proposed development (with its highest element at 36.8m OD) is well clear of all three of Cork Airport's "Obstacle Limitation Surfaces" which lie above the site, the lowest of which (the airport's "Inner Horizontal Surface") is at more than 150m above the highest point of the proposed development at Wilton.

6.4 Cork Airport's Navaids, Noise Contours, & "Public Safety Zones" :

Below, superimposed on an aerial photograph of Cork City, are the outlines -

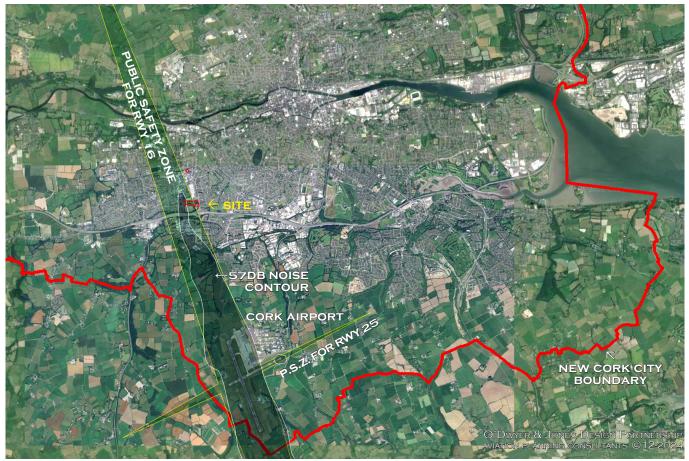
- (a) of the outer limit of Cork Airport's current **Public Safety Zones**, and
- (b) of the outer limit of Cork Airport's current **Noise Contours**.

It can be seen that the Wilton site (outlined in red) lies partly within one of Cork Airport's current Outer Public Safety Zones (*shaded pale grey*); and that a smaller portion of the site (to its west side, *shaded darker grey*) lies within Cork Airport's outer Noise Contour "C". This contour "C" delineates the area where airport noise in excess of 57dB Laeq may occur.

No part of the site lies within an Inner Public Safety Zone, or within any of the higher Airport Noise Contours "A" or "B".

(i) Airport Navigational Equipment –

Being at more than 100m below the elevation of Cork Airport, the site is well outside all ICAO 'Building Restricted Areas' relating to the airport's **Navigational, Communications, and Security equipment** and cannot adversely affect this equipment.



6.4 (ii) Airport Noise Contours –

Airport Noise Contour "C" lies above one row of proposed townhouses to the west side of the site, and these townhouses will be provided with noise insulation suitable for locations in which noise levels of 57dB Laeq to 60dB Laeq might occur.

(iii) Outer Public Safety Zone –

Approximately two-thirds of the site lies with an Outer Public Safety Zone, as originally proposed in the ERM Public Safety Zones study of 2005 and as marked *(in pale grey with a yellow outline)* in the diagram opposite >.

It is important to note that these proposed Public Safety Zones for the three State airports, dating from a study done in 2000-2005, have now become very much out of step with



Public Safety Zones at all other airports worldwide. The UK criteria used by ERM in 2000-2005 have now been abandoned as out of date in the UK, where currently (as of October 2021) very much smaller standardized Zones – of no more than 1.5km maximum length – now apply at all UK airports which have more than 45,000 annual traffic movements. The Public Safety Zones at Cork are now larger than those applying at much busier UK airports (such as at Heathrow and Gatwick). It is likely that a review of the Zones at Cork, Shannon & Dublin would give rise to a significant reduction in their size, with no PSZ reaching as far as the Wilton site. It is also worth noting that the original ERM study did not take into account the unique topography of Cork Airport, which should have resulted in much shorter Public Safety Zones in locations where ground levels fall away from the airport by substantial amounts (i.e. by more than 100m height at the Wilton site).

In any event, a calculation based on the ERM criteria indicates that the proposed development is in compliance with that study's recommendations (and it is noted that the proposed 138m² childcare facility lies *outside* the Public Safety Zone area). —

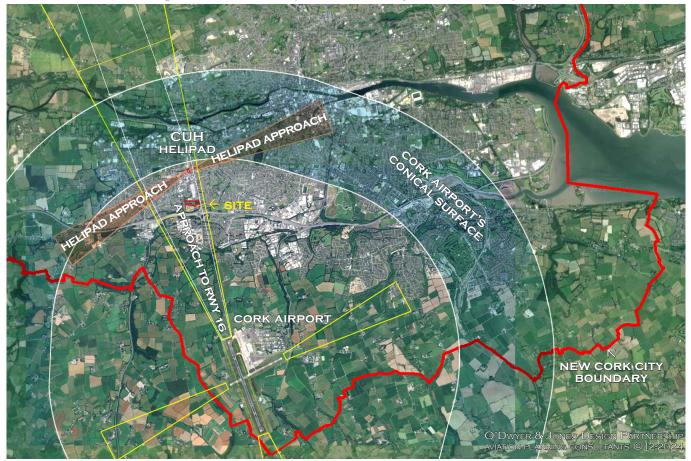
The ERM Report provides (in its Table 6.1) that there should be no more that 60 persons per half hectare in any new residential development. It also pointed out (in para. 6.2 on p.37) that this applied to the half-hectare/s within which a proposed development was located (i.e. not to a property ownership boundary). We estimate (from the very small-scale map provided by ERM) that approximately the western two-thirds of the Wilton site would lie within ERM's Outer Public Safety Zone, i.e. both blocks of townhouses, the western apartment block, and around half of the middle apartment block. The occupancy of these buildings would come to around 461 persons (48+215+198). In this location, the ground area within the site boundary under the PSZ comes to ~1.85ha, with substantial unoccupied open space to the north and south of this part of the site. Of these adjoining unoccupied areas, the nearest unoccupied hectare of each can be applied (per ERM) for occupancy calculation purposes, i.e. giving a total area of 3.85 ha., i.e. 7.7 half hectares, in which an occupancy of up to 462 persons would match the ERM proposals. Therefore the proposed development is in compliance with Public Safety Zone occupancy requirements.

7. The Development in Relation to Helipads

7.1 The nearest helipad to the site is at Cork University Hospital in Wilton. [Recent aero-medical operations by Coastguard and Air Corps helicopters have taken place on the pitch of the adjoining GAA grounds to the west of the hospital.]

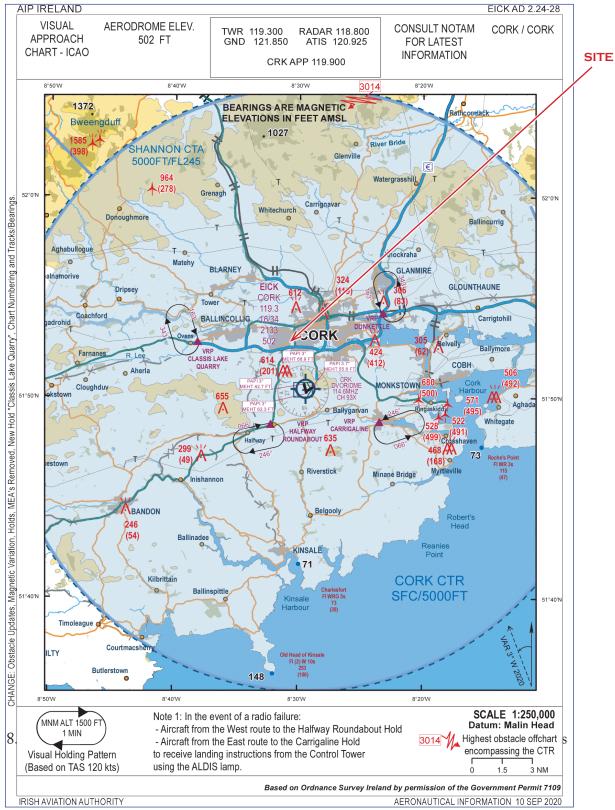
In September 2024 landings commenced at the new helipad within the hospital grounds, at 700m north of the LRD site, in the location marked by a red square in the aerial photograph below (which also contains an outline of the Development Site, and Cork Airport's 'obstacle limitation surfaces'). Other hospital helipads in the State (which are all private and unlicensed) do not have designed Approach and Departure Surfaces, however the planning application documents for new CUH helipad have indicated specific Approach and Departure Surfaces at 4.5% slopes, of a category which (per ICAO specifications) extends to 3.386m in length. These are shown in their standard shape* (tinted orange) in the diagram below.

It can be seen that none of the new Helicopter Approach or Departure Surfaces pass over (or close to) the LRD site. The elevation of the helipad surface (at 34.2m OD) is just 2.6m lower than the highest point of the proposed LRD, so that a departure/arrival (rising at 4.5% slope in any direction from the new helipad surface) would be wholly unaffected by the proposed development. *[* It is also possible that these Surfaces could be designed as curved Surfaces.]*



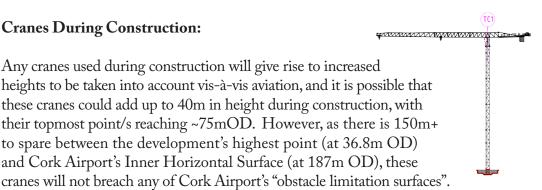
8. Aeronautical Charts, Flight Paths, & Obstacles in Cork City area

8.1 The current Visual Approach Chart for Cork Airport is shown below. This includes four VFR Reporting Points ▲ with associated Visual Holding Patterns, and various obstacles (masts etc.) are indicated by the symbol: A, all of which are substantially taller than the proposed LRD (whose location is indicated by an arrow), and no flight path or holding pattern will be affected by the proposed development.



9. **Other Aviation Considerations Relevant to this Site**

9.1 **Cranes During Construction:**



In any event S.I. 215 of 2005 – Trish Aviation Authority (Obstacles to Aircraft in Flight) Order' requires that prior notification of any such crane (i.e. any object of greater than 45m in height above ground, within 10km of a licensed aerodrome) be submitted, at least 30 days in advance, to the Irish Aviation Authority and to the airport operator i.e. to Cork Airport Authority.

In regard to helicopter operations at CUH, advance notice of cranes on site should also be given to the HSE's Aero-Medical Unit (in Phoenix Park, Dublin).

An obligation to provide crane notifications should be included in the project's CEMP.

9.2 **External Lighting:**

As the site is at more than 3km from Cork Airport, and well below any flight path, it seems unlikely that there will be any requirement for the proposed apartment buildings to be fitted with I.C.A.O. aviation warning lights. However cranes on site may be required by the IAA to be fitted with aviation warning lights.

In view of the proximity of the new hospital helipad (at 700m north of the site) it is suggested that any external lighting would be of the "cut-off" type, i.e. not showing light above the horizontal.

9.3 **Bird Strike Hazard Mitigation:**

As the site lies under an Approach Surface (at ~3km from an airport) and at 0.7km from the new hospital helipad, aviation safety advice (by IAA, EASA etc.) recommends avoidance of all bird attractants (including any permanent standing water) in any SuDS provision on the site, and it is confirmed that this will be done.

In addition, all necessary bird strike hazard mitigation measures will be adopted on the site during the construction period (including avoidance of exposed earth and of any food debris), and we are assured that this requirement will be included in the project's CEMP.

9.4 Solar /PV Panels:

Solar/PV panels are proposed on the roofs of all three apartment blocks. The site lies within three of the new Solar Safeguarding Zones set out in S.I. 492 of 2022, and these panels have been the subject of a Glint & Glare Study by MacroWorks Ltd. in relation to these Zones. This Study has found that all proposed panels will be satisfactory in regard to any Glint or Glare which might affect pilots on approach to, or departure from, any of Cork Airport's runways, or the Hospital helipads, or which might affect Cork Airport's control towers. Solar/PV panels



The Results and Overall Conclusion on pages 7 & 8 of the Glint & Glare Study of December 2024 by MacroWorks – in which Cork Airport's flight paths and its control tower, and the nearby CUH hospital helipad were assessed – are as follows:

"Results:

Runway Approaches –

The SGHAT results are contained in Appendix A and show that of the 4 runway approaches analysed, two showed potential for reflectance. Runway 25 recorded the greatest potential reflectance at 2,537 minutes of Green Glare over the course of the year. None of the runway receptors showed any potential for Yellow Glare. The absence of Yellow Glare is regarded as a pass in this assessment as there would be no potential for after-image.

Air Traffic Control Towers –

The SGHAT results contained in Appendix A also show there is no potential for glare at 1–ATCT as a result of the proposed development. Thus, there will be no potential for glint or glare to occur at Cork Airport ATCT.

Observation Points –

The SGHAT results are contained in Appendix A and show that of the 26 Observation Points (OPs) analysed, at Bishopstown (OP15-27) and Cork University Hospital (OP2-14), none had any potential to experience any reflectance. Thus, the results are considered a 'Pass' result as there is no potential for yellow glare."

" Overall Conclusion:

From the analysis and discussions contained herein, it is considered that the proposed array[s], at LDA Wilton, Cork, results in a 'Pass' at Cork Airport, Cork University Hospital, and Bishopstown aviation receptors."

10. CONCLUSIONS

10.1 The Development in Relation to Cork Airport's "Obstacle Limitation Surfaces":

Three of Cork Airport's "obstacle limitation surfaces" lie above the site – the "Approach Surface" to Runway 16, the "Take-off Climb Surface" from Runway 34, and the airport's "Inner Horizontal Surface" (which is the lowest of the three Surfaces above the site). These are wholly unaffected by the proposed development, which lies at more than 150m below the lowest of these Surfaces.

10.2 The Development in Relation to Cork University Hospital's Helipad:

The site is well clear of the **Approach and Departure Surfaces to the new Helipad at CUH** (700m to the north), which is unaffected by the proposed development.

10.3 **Other Aviation Considerations:**

Parts of the site lie within an **Outer Public Safety Zone** and airport **Noise Zone 'C'**, however the development will comply with the requirements of these zones.

The proposed development will not have any effect on Cork Airport's **Navigational Equipment**, or on any **Flight Paths**, or give rise to any **Bird Strike Hazard**.

Cranes on site during construction will not extend near any "obstacle limitation surface", but cranes must be notified 30 days in advance to the IAA and to Cork Airport, and it is desirable that they also be notified to the HSE's aero-medical unit.

10.4 **Overall:**

We consider that the proposed LRD at Sarsfield Road, Wilton, in Cork City will comply with all aviation and aeronautical requirements affecting its site.

J. Declan O'Dwyer B.Arch MBA RIBA 17th December 2024 O'Dwyer & Jones Design Partnership Aviation Planning Consultants

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