

AERONAUTICAL ASSESSMENT REPORT

RE

CIRCULAR ECONOMY HUB

AT

**HUNTSTOWN,
(TO EAST OF MULHUDDART)
COUNTY DUBLIN**

FOR

**RATHDRINAGH LAND ULC
(T/A IRISH RECYCLING LTD.)**

APRIL 2023



**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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CONTENTS

	<i>page</i>
Section 1	
Scope of Report, and Description and Zoning of the Huntstown Site . . .	2
Section 2	
Relevant Paragraphs in the Fingal Development Plan 2023-2029 . . .	4
Section 3	
Aviation Obstacle Limitation Requirements Which Affect the Site . . .	6
Section 4	
Layout and Heights (Elevations O.D.) of the Proposed Development . . .	9
Section 5	
Calculations re Aviation Obstacle Limitation Surfaces near the Site . . .	10
Section 6	
Cross-Section Diagram and Aerial Photo Map	12
Section 7	
Bird Strike Hazard Mitigation at the Huntstown Site	13
Section 8	
Airport Public Safety Zones, & Airport Noise Contours	16
Section 9	
Other Aviation Considerations: Solar/PV Panels, Cranes, & Lighting . . .	17
Section 10	
SUMMARY	18

*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 and Zoning of the Site

1.1 Purpose of this Report:

This Report assesses the aviation impact of the development of Phase #1 of a proposed “Circular Economy Hub” on a site of 9.863 ha. approx. overall at Huntstown in County Dublin. Phase #1 comprises two main buildings: a Materials Recovery Facility, and a Food Container Cleaning Plant.

In particular this Report addresses the requirement stated on page 313 of the current Fingal Development Plan 2023-29 (under *Dublin Airport - Safety*) that “*the effects of proposed development on the safety of aircraft and the safe and efficient navigation thereof*” be assessed.

1.2 Description of the Site:

The site (*outlined in red on the aerial view below*) is located at the west end of Huntstown townland, to north-west of the M50’s Junction 5 (where it joins the N2 Roadway) in north County Dublin.

Dublin Airport is to the north-east of the site, with Threshold 10R (of Dublin Airport’s east-west Runway 10R/28L) at around 2.4km from the nearest corner of the site, and with the flight path to that runway at around 1.7km north of the site.

Ground levels on the site vary from around 78m to 86m OD (i.e. 11m-19m above Dublin Airport’s datum level), with proposed building floor levels at 78.7m OD.



2. Relevant Paragraphs in the current Fingal Development Plan 2023-2029

2.1 Paragraphs relevant to Heavy Industry include the following on page 464 of the Plan:

ZONING OBJECTIVE "HI" HEAVY INDUSTRY		
Objective		
Provide for heavy industry.		
Vision		
Facilitate opportunities for industrial uses, activities and processes which may give rise to land use conflict if located within other zonings. Such uses, activities and processes would be likely to produce adverse impacts, for example by way of noise, dust or visual impacts. HI areas provide suitable and accessible locations specifically for heavy industry and shall be reserved solely for such uses.		
USE CLASSES RELATED TO ZONING OBJECTIVE		
Permitted in Principle		
Abattoir	Concrete/Asphalt	Fuel Depot/Fuel Storage
Heavy Vehicle Park	Industry – Extractive / Quarrying	Industry – High Impact
Office Ancillary to Permitted Use	Open Space	Plant Storage
Restaurant/Café ⁵	Retail – Local < 150 sqm nfa ⁵	Sustainable Energy Installation ³⁵
Telecommunications Structures	Utility Installations	Waste Disposal and Recovery Facility (High Impact)

2.2 Section 8 of the Development Plan (on pages 294 to 315) deals with Dublin Airport.

Policy DAP1 (on pp. 303 & 441 of the Plan) refers to the Dublin Airport Local Area Plan of 2020 – one of the Plan's two current "Operational LAPs" – and Objectives DA01 and DA02 (on page 303, and reproduced below) provide for the Safeguarding of Dublin Airport "in accordance with the Dublin Airport Local Area Plan 2020":

In order to meet the demand forecast (as detailed below), enabling infrastructure will have to be provided and it is important that all future development proposals shall not prejudice the orderly operation and continued growth at Dublin Airport. All proposals shall take into account safeguarding associated with key operational features of the airport which include runways, taxiways, obstacle surfaces, radar and control tower sightlines.

Objective DAO1 – Safeguarding Dublin Airport

Facilitate the operation and future development of Dublin Airport, in line with Government policy and the *Dublin Airport Local Area Plan 2020*, or any subsequent LAP or extension of same, recognising its role in the provision of air transport, both passenger and freight.

Objective DAO2

Safeguard the current and future operational, safety, technical and developmental requirements of Dublin Airport and provide for its ongoing development in accordance with the *Dublin Airport Local Area Plan 2020*, or any subsequent LAP or extension of same, having regard to both the environmental impact on local communities and the economic impact on businesses within the area.

2.3 Paragraphs on page 313 of the 2023-2029 Plan refer to Aviation Safety:

Aviation Safety at and around Dublin Airport (and in Fingal in general) is provided for under Objectives DAO14, DAO18, DAO19, DAO20, DAO21, & DAO22 (reproduced in part below). Objective DAO22 refers to Weston Aerodrome. Casement Military Aerodrome (which affects airspace above Fingal to a greater extent than Weston) is not mentioned in the Fingal Plan.

Objective DAO19
Support the review of Public Safety Zones associated with Dublin Airport and implement the policies to be determined by the Government in relation to these Public Safety Zones.
Objective DAO20
Take into account relevant publications issued by the Irish Aviation Authority in respect of the operations of and development in and around Dublin Airport.
Objective DAO21
Continue to take account of the advice of the Irish Aviation Authority with regard to the effects of any development proposals on the safety of aircraft or the safe and efficient navigation thereof. To refer planning applications for any proposals that may be developed in the environs of the airport to the Irish Aviation Authority and daa in accordance with the Obstacle Limitation Requirements of Regulation (EU) No 139 / 2014 (EASA Certification Specifications), previously required under ICAO Annex 14, and which are depicted on the aerodrome operator's map.
Objective DAO22
Have regard to the safety and environmental impacts of aircraft movements associated with Weston Aerodrome in the assessment of any relevant development proposal.

2.4 Aviation Safeguarding and the Dublin Airport Local Area Plan 2020:

The Monitoring (etc.) of the Dublin Airport LAP is referred to on p.441 of the Plan:

Chapter 8 – Dublin Airport		
Policy	Implementation	Monitoring (key performance indicator/data source)
Policy DAP1 – Dublin Airport Local Area Plan 2020	Development Management, Airport authorities and external bodies	Safeguard future development of airport to accommodate projected growth. Data source: Various

Within the Dublin Airport Local Area Plan 2020, “Obstacle Limitation”, and aviation “Operational Safeguarding” in the vicinity of the Dublin Airport, are referred to on its page 54, and they are provided for in particular in the LAP’s Objective OS01 >>.

The Irish Aviation Authority Obstacle Limitation Safeguarding Map sets out the guidance on the type and height of any structures that may be developed at Dublin Airport and its environs.

Fingal County Council will continue to be advised by the relevant statutory bodies regarding the effects of proposed development on the safety of aircraft navigation through the development management process.

OPERATIONAL SAFEGUARDING OBJECTIVE

OBJECTIVE OS01

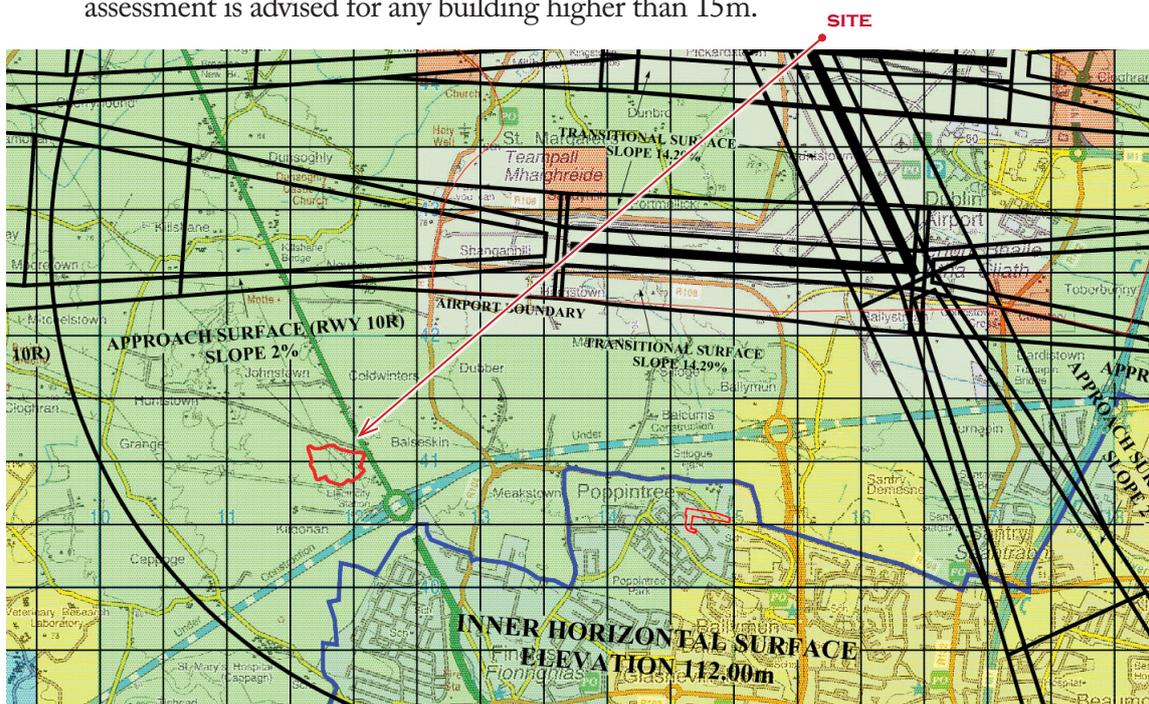
Control the type and height of any structures that may be developed in the environs of the Airport (in consultation with the Irish Aviation Authority and Dublin Airport) in accordance with the Obstacle Limitation Requirements of Regulation (EU) No 139/2014 (EASA Certification Specifications), previously required under ICAO Annex 14 and which are depicted on the aerodrome operator's safeguarding map.

3. Aviation Obstacle Limitation Requirements Which Affect the Site

- 3.1 The Obstacle Limitation Requirements and Surfaces which currently apply at Dublin Airport are those set down by the European Aviation Safety Agency [EASA] in its Aerodrome Certification Specifications (EASA document CS-ADR-DSN), as noted in Objective OS01 of the Dublin Airport LAP on the previous page. These EASA Specifications supersede the ICAO ‘Annex 14’ Standards which applied at Dublin Airport up to November 2017.
- 3.2 The “aerodrome operator’s map” referred to in Objective DAO21 of the current 2023-29 Fingal Plan (*illustrated at para. 2.3 above*) – also referred to as the “aerodrome operator’s safeguarding map” in Operational Safeguarding Objective OS01 of the Dublin Airport Local Area Plan 2020 (*illustrated at para. 2.4 above*) – is the ‘Safeguarding Chart’ for Dublin Airport of July 2017, prepared by SLC Associates.

This Chart provides a multi-coloured 0.5 × 0.5km grid with guidelines as to building heights in each grid-square – 0m, 10m, 15m, 45m, 90m – above which it is advised that a proposed development be referred for consultation “with the airport licensee” (i.e. with DAA). It also indicates the principal Obstacle Limitation Surfaces which apply around Dublin Airport (and although stated to be based on former ICAO dimensions in the *IAA Aerodrome Licensing Memorandum* of 2014 – broadly corresponds with current EASA requirements).

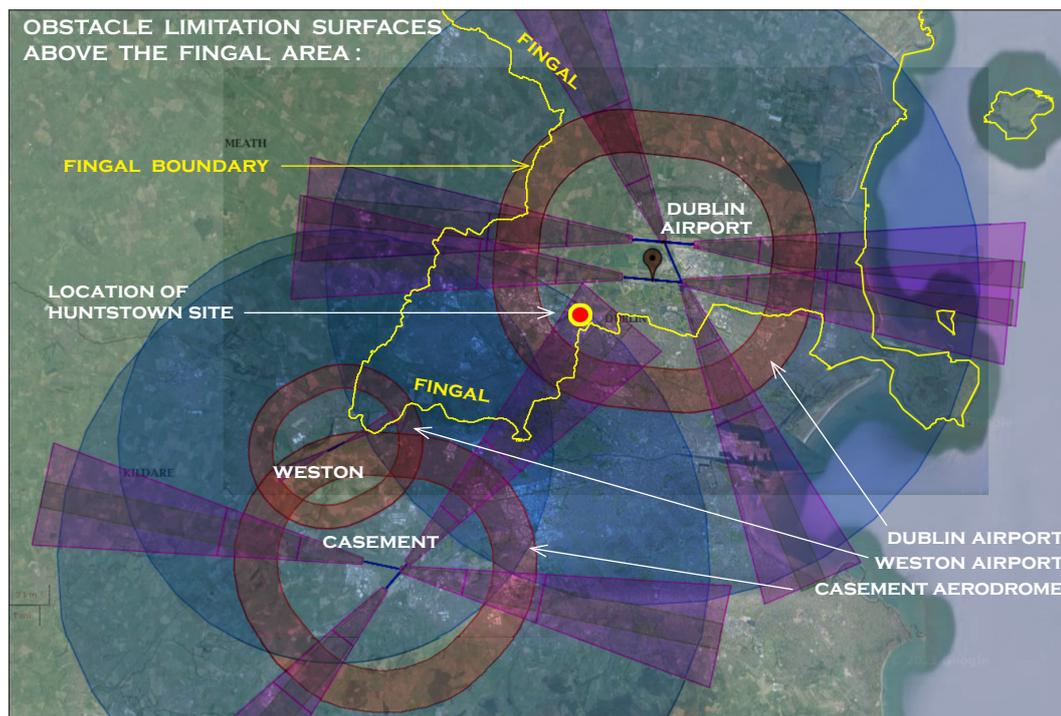
- 3.3 Below is an extract from this Safeguarding Chart. The Huntstown site (outlined in red below) lies within green grid-squares which have a height dimension of 15m – above which a referral to the airport licensee (DAA) is requested. The proposed 16m-tall Materials Recovery building, to south side of the site, lies in a green grid-square in which assessment is advised for any building higher than 15m.



3.4 The EASA & ICAO ‘Obstacle Limitation Surfaces’ which affect Fingal:

These “Surfaces” are indicated in the diagram below (which is based on Irish Airport Authority “Asset” data of 2019, onto which we have overlaid the outline of Fingal).

The “Surfaces” shown below include the new EASA “Obstacle Limitation Surfaces” for Dublin Airport, and the ICAO “Surfaces” for Casement Aerodrome and Weston Airport. These constitute the principal height restrictions which now apply in the vicinity of the various airports/aerodromes. In the south-west part of Fingal, the “Surfaces” of all three airports overlap (with the lowest Surface being the limiting one).



- 3.5 The following “Obstacle Limitation Surfaces” lie directly above the Huntstown site:
- (i) The Inner Horizontal Surface for Dublin Airport;
 - (ii) The Approach Surface to Casement Aerodrome’s Runway 22;
 - (iii) The Outer Horizontal Surface for Casement Aerodrome.

The following “Surfaces” are close to (but not directly above) the Huntstown site:

- (iv) The Transitional Surface to the south side of Dublin’s Runway 10R/28L;
- (v) The Approach Surface to Dublin Airport’s Runway 10R;
- (vi) The Take-Off Climb Surface from Dublin Airport’s Runway 28L;
- (vii) The Take-Off Climb Surface from Casement Aerodrome’s Runway 04.

- 3.6 A more detailed drawing of all of the above “Surfaces” is shown on the following page, and calculations in relation to the most relevant of these “Surfaces” are provided in Section 5.

3.7 The EASA and ICAO “Obstacle Limitation Surfaces” near the Huntstown Site

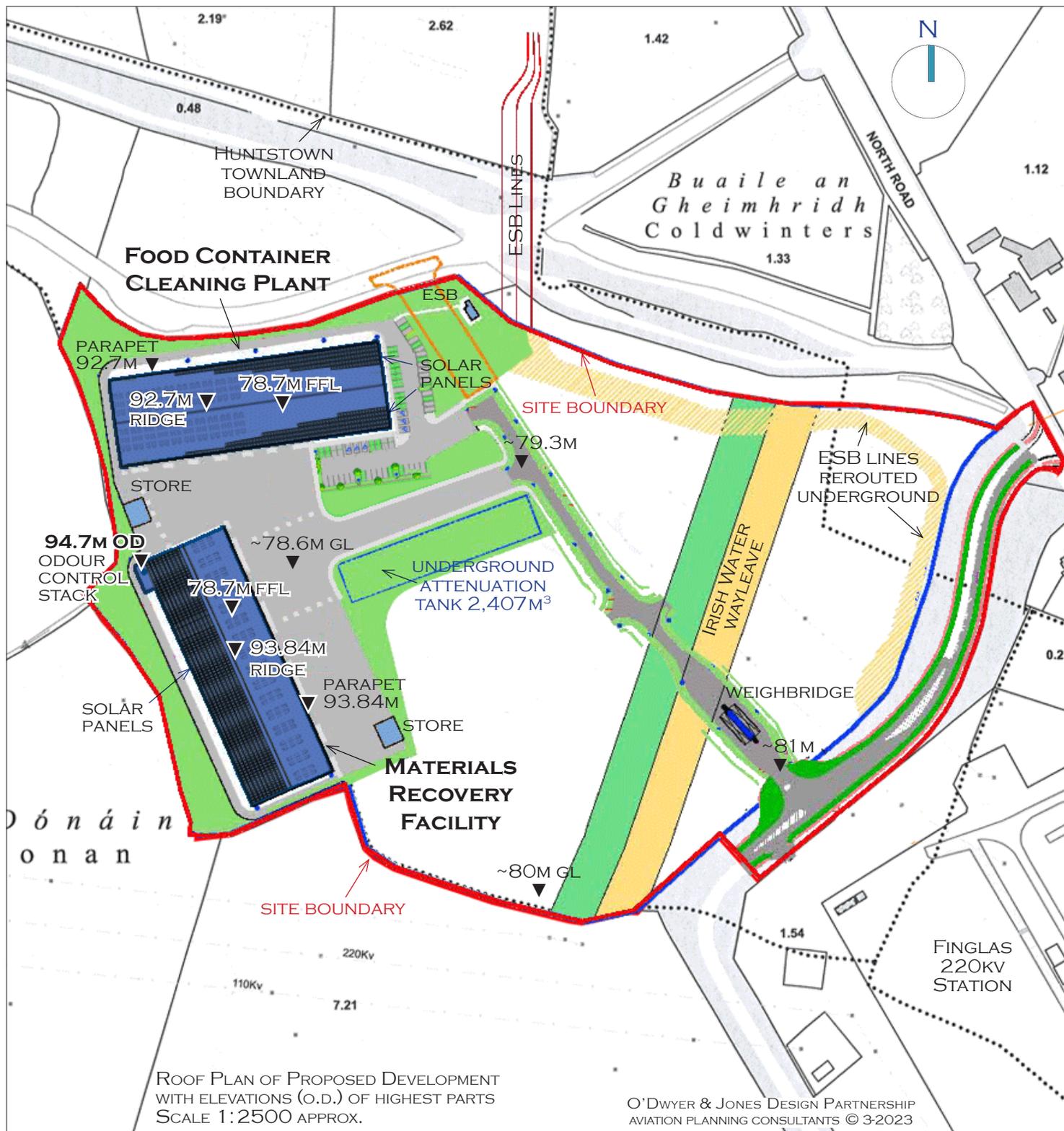
- 3.1 **The Obstacle Limitation Surfaces set out by EASA in its Aerodrome Specifications of December 2017** constitute the principal height restrictions which now apply in the vicinity of Dublin Airport. These Specifications differed in a few respects from the ICAO “Annex 14” Standards which previously applied at Dublin Airport. However subsequent updates to the ICAO Standards (in November 2018) have ensured that they now correspond fully with the new EASA Specifications.
- 3.2 The EASA Obstacle Limitation Surfaces for Dublin Airport, and the two ICAO Surfaces arising from Casement Aerodrome, which apply at (and in the vicinity of) the Huntstown site (*outlined in red*), are shown in the following diagram:



- 3.3 This diagram shows that the Huntstown site – which is at ~1.7km from the centreline of east-west runway 10R/28L, and about 2.4km from Threshold 10R – lies under Dublin Airport’s Inner Horizontal Surface, at ~1.3km from the Transitional Surface to the side of Runway 10R/28L. It also shows that the site additionally lies under the the Approach Surface to Casement Aerodrome’s Runway 22 (at 14km from its Threshold 22), and under Casement Aerodrome’s Outer Horizontal Surface.

4. Layout and Heights (Elevations O.D.) of the Proposed Development

4.1 **Site and Roof Plan Drawing** of the Development to approximate scale 1:2500 — Phase 1: a Materials Recovery Facility of 15.14m height & 5,032m² floor area, and a Food Container Cleaning Plant of 14m height & 5,216m² floor area, plus two small storage units.



5. Calculations re Aviation “Obstacle Limitation Surfaces” near the Site

5.1 The Site in Relation to the Dublin Airport’s “Inner Horizontal Surface”:

As defined by EASA [>>], this is a flat Surface which extends to 4km from the centrelines of all runways at Dublin Airport, and which lies at 45m above the airport’s datum (set at 67m OD), i.e. it is a flat Surface **at 112m OD**.

This Surface extends above all of the Huntstown site (the site is well within 4km of the runway centrelines).

However, the highest element of the proposed development – which is the odour control unit exhaust stack at the west corner of the Materials Recovery Facility – rises to just **94.7m OD**. **The proposed development is therefore very comfortably below Dublin Airport’s “Inner Horizontal Surface” which lies at directly above the site (at 17.3m above the proposed highest element).**



5.2 The Site in Relation to the two Casement Aerodrome “Surfaces” lying above it:

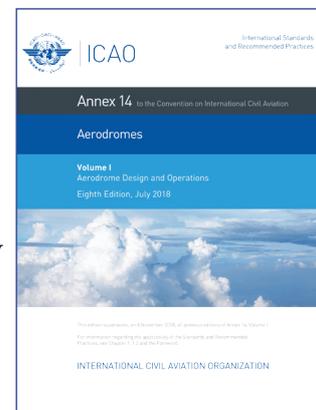
As indicated in Section 3 above, two of Casement Aerodrome’s “Obstacle Limitation Surfaces” also lie above the Huntstown site. These are — Casement Aerodrome’s Outer Horizontal Surface; and the Approach Surface to Casement’s Runway 22.

For Casement Aerodrome, these Surfaces are specified by ICAO >> (rather than by EASA).

Casement Aerodrome’s “Outer Horizontal Surface” is now at 145m above the aerodrome’s chosen datum (at 86.6m OD), i.e. it is a level surface at **231.6m OD**, and extends for 15km from the aerodrome’s reference point.

The **Approach Surface to Casement’s Runway 22** extends for 15.06km from the 22 Threshold, and the outer 8.4km of that distance is level at 150m above the elevation of Casement’s Threshold 22 (at 306ft amsl /93.3m OD), i.e. the section of this Approach Surface which lies above the Huntstown site is level at **243.3m OD**.

These two Casement “Surfaces”, at 231.6m OD and 243.3m OD, are therefore very substantially higher (by 136.9m and 148.6m) than the highest element of the proposed Huntstown development (which rises to 94.7m OD).



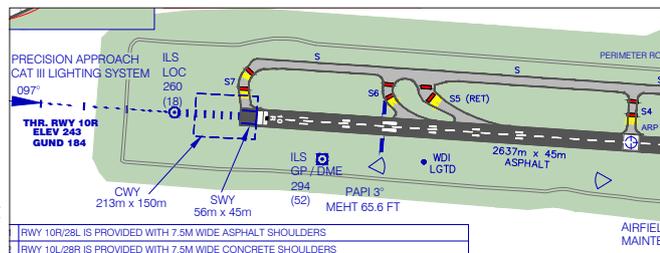
5.3 Other Aviation “Surfaces” in the vicinity of the Huntstown site:

These include:

- (i) The Transitional Surface to the south of Dublin Airport’s Runway 10R/28L, at 1.28km from the site;
- (ii) The Approach Surface to Dublin Airport Runway 10R, at 1.31km from the site;
- (iii) The Take-off Climb Surface from Dublin Airport Runway 28L, at 1.4km from the site;
- (iv) The Inner Approach Surface to Dublin Airport’s Runway 10R, at 1.75km from the site; and
- (v) The Take-off Climb Surface from Casement Aerodrome’s Runway 04, at 0.75km to south-east of the site.

While item (v) above – the Take-off Surface from Casement – is the closest of these nearby Surfaces to the site, it is very significantly higher (at around 370m OD).

Calculations in relation to the distances from the site of the nearest two Dublin Airport “Surfaces” above (which safeguard runway 10R/28L >) are as follows:



The site is at 2.4km from Threshold 10R (above ↗), and at 1.7 km from the extended centreline of Runway 10R/28L, and is therefore opposite at point along that extended centreline at 1.7km* from Threshold 10R. [** confirmed as follows $1.7^2 + 1.7^2 = 2.4^2$*]

At 1.7km from THR10R, the **Approach Surface** will be 772m** wide overall, i.e. at **1,314m from the site.**
 ** $(1700-60 \times 15\%) \times 2 + 280m = 772m$
 & 1700 - (772 ÷ 2) = 1314m

At this point the Approach Surface will have risen 32.8m*** above THR10R (at 74m), i.e. to 106.8m OD.
 *** $(1700-60) \times 2\% = 32.8m$ & $32.8 + 74 = 106.8m$

From this point the **Transitional Surface** rises at 14.3% up to the IHS at 112m OD, – i.e. it will extend to 422.4m**** from the runway centreline, so that it will be at **1,278m from the site.**
 **** $(112-106.8) \div 14.3\% + (772 \div 2)m = 422.4m$

5.4 Conclusion in relation to all “Obstacle Limitation Surfaces” near the site:

Of the three Surfaces which lie above the Huntstown site, **Dublin Airport’s Inner Horizontal Surface is the closest, at 112m OD. This is at 33.4m above ground level on the site, and 17.3m above the highest element of the development.** Consequently the development will not affect any aviation “Obstacle Limitation Surface”, but care will need to be taken to ensure that crane operations are limited to ~33m above ground level (see also para. 8.4 following).

A Cross-section and Plan of the above Surfaces are on the following page >.

7. Bird Strike Hazard Mitigation at the Huntstown Site

7.1 FCC Development Plan SuDS Considerations

Paragraph 4.5.2.8 on pages 170-171 of the Fingal Development Plan 2023-2029 (and other subsequent paragraphs in other chapters) outline a Sustainable Urban Drainage System strategy, and refer applicants to the FCC SuDS Guidance Document – “Green/Blue Infrastructure for Development” in Appendix 11 of the Plan. Paragraph 4.5.2.8 also includes the comment *“Underground tanked systems, whether concrete or plastic, are the least favoured means for surface water management and shall only be used when green solutions have proven not feasible”* – a comment which is discussed below in relation to aviation safety considerations.

SuDS also features in various Objectives in the FCC Development Plan 2023-29, including Objective IU011 “SuDS in New Developments”, on page 397, which states:

“SuDS shall be incorporated into all parts of a development (open spaces, roads, footpaths, private areas), and have regard to the FCC SuDS Guidance Document – ‘Green/ Blue Infrastructure for Development’, as amended (Appendix 11), and shall ensure: That the design of SuDS enhances the quality of open spaces and when included as part of any open space provision, it must contribute in a significant and positive way to the design and quality of the open space. Open space areas shall not be dominated by SuDS features. Underground tanked systems, whether concrete or plastic, are the least favoured means for surface water management and shall only be used when green solutions have proven not feasible. See also Appendix 11 (SuDS Guidance Document), and Chapter 14 Development Management Standards (Section 14.20.3 SuDS).”

7.2 Overall Aviation Safety Considerations

Aviation Safety considerations require assessment of potential bird strike hazard in the landscaping (and in drainage provision) on any site in the vicinity of an airport or aerodrome, or under any flight path.

Guidance on this issue (and on wildlife considerations generally) are provided by various aviation authorities, including –

- The Irish Aviation Authority’s recently published manual on “Bird and Wildlife Strike Management at Aerodromes (2021)”; >>
- The International Civil Aviation Organization’s Airport Services Manual Part 3 – “Wildlife Control & Reduction”; and
- The Federal Aviation Administration’s “Wildlife Hazard Management at Airports.”



7.3 An additional aviation safety consideration involves the avoidance or restriction of items which might give rise to glint and glare that could adversely affect pilots on flight paths, or air traffic controllers, at an airport/aerodrome. This is principally analysed in respect of solar/PV panel arrays (using the FAA’s “Solar Glare Hazard Analysis Tool”), but can also arise in relation to open bodies of standing water, which are recognised (by aviation analysts) as being potentially more reflective than standard solar/PV panels.

7.4 **Control Measures to Minimise Bird Strike (and Other) Aviation Hazard:**

- (i) Control of any bird & wildlife attractants during construction.
- (ii) Avoidance of landscape elements which might provide avian food.
- (iii) Avoidance of unnecessary standing water features which might attract birds.
- (iv) Management of any necessary standing water elements (e.g. flood-control swales) in locations where they will be less attractive to birds.
- (v) Implementation of ongoing bird control and deterrence measures.

Landscape measures to minimise glint or glare hazards to aviation include:

- (vi) Avoidance of unnecessary standing water in vicinity of flight paths & aerodromes.
- (vii) Avoidance of all standing water in direct line of sight from an airport’s Control Tower cab.

7.5 From the above list, it can be seen that – on aviation-sensitive sites – the general guidance in regard to SuDS provision might not apply. – In particular the general preference for overground ponds and swales rather than underground solutions (such as attenuation tanks) would be reversed, although permeable ground surfaces would be acceptable at all sites (whether near or far from aviation facilities).



This potential conflict between the standard SuDS guidelines, and considerations of aviation safety, is already recognised by Fingal, for example, in the Cherryhound Local Area Plan, which relates to an area just north of the Huntstown site. This Cherryhound LAP (of 2012) is listed on page 55 of the adopted Fingal Plan 2023-2029 as being one of the “Operational LAPs”, and it includes the following statements in respect of Cherryhound:

“... The lands are located under the flight paths of aircraft using Dublin Airport. This may pose considerations on the nature and scale of uses and on provision of noise insulation. ...”

and

“... Care will be required to ensure that significant bird populations are not attracted to water bodies in view of its proximity to Dublin Airport and its flight paths. ...”

7.6 Specific Aviation Aspects Affecting the Huntstown Site

As noted above, the Huntstown site has the following aviation-related aspects:

- It is at ~2.4km from a main runway threshold at Dublin Airport (Threshold 10R).
- It is on elevated ground directly under Dublin Airport's "Inner Horizontal Surface".
- Its ground surfaces are directly in view of Dublin Airport's new 90m-tall Control Tower, and in line with the control tower's view towards aircraft landing on Runway 10R.
- It is well within the 13km distance from Dublin Airport, identified as the area of potential bird hazard risk.
- It is directly under the end of the "Approach Surface" to Casement Aerodrome's runway 22; and it is directly under Casement Aerodrome's "Outer Horizontal Surface".

Because of all of the above aviation aspects, the arrangement of landscape and drainage features (and site management) on this site would require that all potential bird strike hazard elements be minimised or eliminated.

In addition, the nature of the intended operations on the site (which involve minimal pedestrian activity, and the transport of potential bird attractants) means that some commonly adopted bird hazard reduction features would be inappropriate. – These would include the locating of swales or ponds close beside well-trafficked pathway and roads – a feature sometimes adopted on sites near aerodromes (and suggested by the IAA) for the reason that birds are discouraged from roosting close to busy populated areas.

7.7 Recommended SuDS Provision, for Aviation Safety reasons, on the Huntstown Site

Any ponds or swales on this site could give rise to a bird strike hazard, and ponds or swales could also give rise to a glint & glare potential affecting visibility from Dublin Airport's Control Tower cab. Consequently, there should be no permanent ponds, and minimal swale provision (if any). In effect, this is a site on which the otherwise "green solutions" (referred to in paragraph 4.5.2.8. of the Fingal Plan, and quoted above) would be "not feasible".

Taking into account the various aviation safety aspects (including bird strike and glint & glare potential, and affecting both Dublin Airport and Casement Aerodrome), the appropriate SuDS provision on this particular site – for aviation safety reasons – would be underground attenuation tank provision (of large capacity, *as proposed* >>), and permeable pavings where possible.

The ongoing management of operations on the site would also require the avoidance of bird strike potential, including the unloading indoors of any potential bird attractant material.



8. The Development in relation to Public Safety Zones and Noise Contours

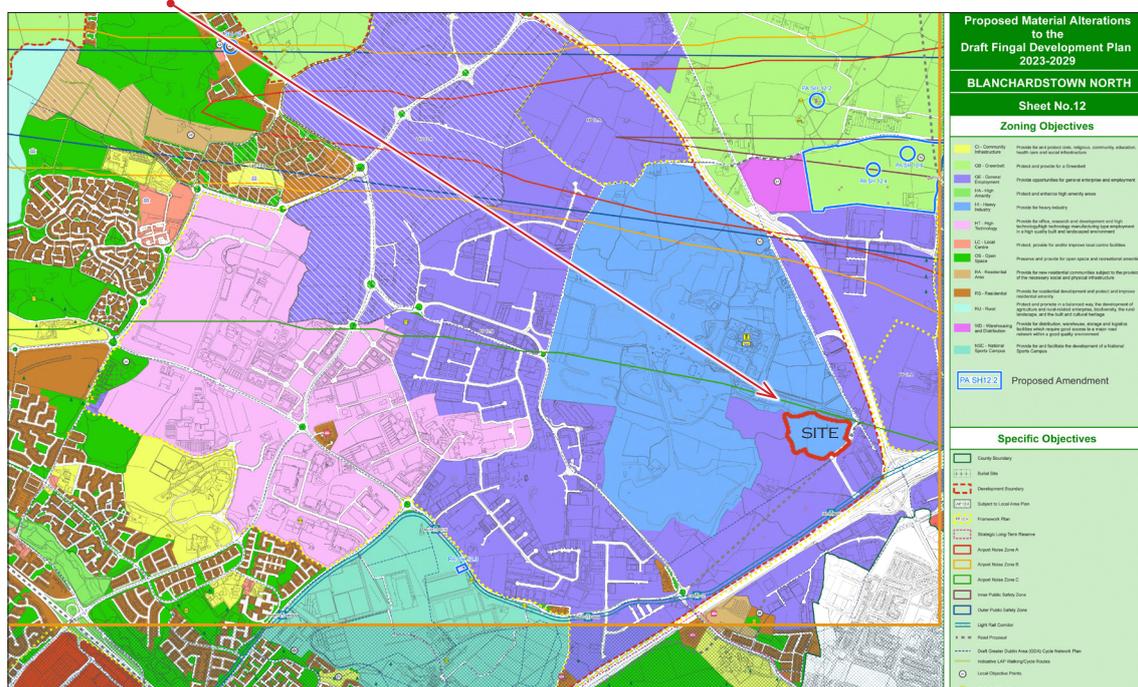
8.1 Aviation Items on the Fingal Development Plan Maps

Two aviation considerations appear on the Fingal Development Plan Maps 2023-29. These are the Public Safety Zones plotted around Dublin Airport within the ERM study of 2000-2005, and the recently updated Dublin Airport Noise Contours. [The previous “Airport Red Approach Areas” have been removed and replaced by written references to the EASA “Obstacle Limitation Surfaces” etc.]

8.2 Dublin Airport Public Safety Zones

Objective DAO19 on page 313 of the 2023-29 Fingal Plan supports “the review” of these Public Safety Zones. Such a review is desirable, as the UK criteria applied in setting out these Zones at Dublin is considered outdated in the UK (as of October 2021) – so that the PSZs at Dublin Airport have become out of step with other international practice, and are currently, for example, ten times the size of the PSZs at the much busier Heathrow and Gatwick Airports.

Below is an extract from the current Fingal Map #12, on which it can be seen that the site lies well outside all of Dublin Airport’s Public Safety Zones.



8.3 Dublin Airport Noise Contours

It can also be seen that the site lies just outside the new “Airport Noise Zone C” (marked as a green line in the above Map #12 extract). This means that no special noise insulation is required (in relation to airport noise levels ≥ 54 dB LAeq). In any event, the Circular Economy Hub development is not noise-sensitive.

9. Other Aviation Considerations

9.1 Solar/PV Panels:

Solar/PV panels are to be provided on roofs of the two main buildings (as indicated on the Roof Plan drawing on page 9).

Because the new control tower at Dublin Airport is particularly tall > (extending to 526ft/160m OD, i.e. to more than double the height of the airport's Inner Horizontal Surface), care has been taken in the layout of the rooftop solar/PV panels to ensure that roof parapets (which extend to 1.66m above roof gutter level) will obscure all panels from any view from the new Control Tower cab.



These panels have also been the subject of a separate Glint+Glare Study by Macroworks Ltd. in relation to Dublin Airport's control tower and flight paths. The Macroworks analysis (dated April 2023) found that all proposed solar/PV panels would be satisfactory in relation to the SGHAT Glint & Glare criteria. The Overall Conclusion of the analysis by Macroworks Ltd. is stated as follows in paragraph 6.3 (on page 10) of their report:

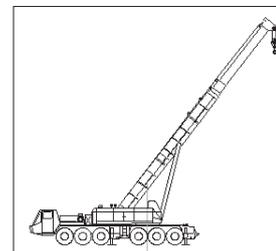
“Overall Conclusion

From the analysis and discussions contained herein, it is considered that there will not be any hazardous glint and glare effects upon the Dublin Airport aviation receptors identified as a result of the proposed roof mounted solar PV panels.”

9.2 Use of Cranes during Construction:

It is intended that a mobile crane will be used in construction of this development, and it is confirmed that the operating height of any cranes on site will be limited to no more than 33m above (finished) ground level, and 17m above the highest element of the development (i.e. to no higher than 112m OD).

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 and to Dublin Airport Authority, who may need to issue any necessary notifications, and who may require cranes in this location to be fitted with aviation warning lights.



9.3 External Lighting:

As the development is near the flight path to/from Dublin Airport's Runway 10R/28L, it is recommended that external lighting on the site be of the cut-off type (i.e. not showing light above horizontal). However, the proposed development is not in a location, or of a height, where aviation obstruction lighting on it would be required.

10. SUMMARY

10.1 Dublin Airport's & Casement Aerodrome's "Obstacle Limitation Surfaces":

The Huntstown site, at ~2.4km from Runway Threshold 10R, lies well clear of all Approach and Take-off Climb Surfaces for Dublin Airport. It lies directly under Dublin Airport's Inner Horizontal Surface, and under two of Casement Aerodrome's Surfaces – Casement's Outer Horizontal Surface and the Approach to Casement Runway 22. Dublin's Inner Horizontal Surface (at 112m OD) is at 33.4m above the Huntstown site, and at 17.3m above the highest point of the proposed development.

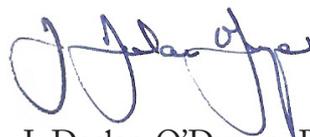
It is confirmed that no aviation "Obstacle Limitation Surface" will be infringed by the proposed development.

10.2 Additional Aviation Considerations:

- (a) The Huntstown site lies well outside all of Dublin Airport's **Public Safety Zones**, and outside the **Airport Noise Contours** shown on the Development Plan Maps.
- (b) The rooftop **Solar/PV panels** will not be visible from the new control tower, and are the subject of a separate Glint & Glare Study by Macroworks Ltd.
- (c) Due to the site's proximity to Dublin Airport, and its location under three "Obstacle Limitation Surfaces" for Dublin Airport and for Casement Aerodrome, it is recommended – for **Bird Strike Hazard** reasons – that SuDS provision be made by means of a large underground attenuation tank.
- (d) Arrangements will be made that **Mobile Cranes** use during construction will operate well below 112m OD – i.e. below the level of Dublin Airport's "Inner Horizontal Surface" (which is the nearest "Surface" above the site). And 30 days' advance notice of any crane use will be given to IAA and DAA.

10.3 Overall:

We consider that the proposed Circular Economy Hub development at Huntstown complies fully with all aviation and aeronautical requirements affecting its location.



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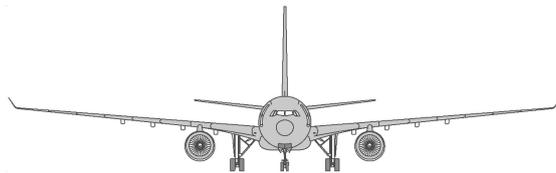
17th April 2023

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

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