An Roinn Cosanta
Department of Defence

SDCC Development Plan
Department of Defence Submission – July 2021

1. The Department of Defence and Irish Air Corps wish to build on the longstanding co-operation with SDCC in the interest of ensuring congruent spatial development complaint with Government policy on spatial development and military policy. It is noted that the current SDCC Development Plan suggests that Runway 22/04 is a non-instrument runway, which is incorrect. Runway 22 is and has been in use as an instrument runway for some time. The difference in protections applied to instrument and non-instrument runways is significant. A general description of the difference between instrument and non-instrument runways is:

   a. Instrument departures and arrivals are published procedures where a flight crew will depart and arrive while looking inside the cockpit at navigation equipment for guidance. It is a critical part of airport procedures. These procedures are highly regulated and must be safeguarded to international standards by the operator.

   b. A non-instrument runway is afforded less protection than an instrument runway with regard to Obstacle Limitation Surfaces (OLS) such as Approach Surface, Take-Off Climb Surface etc.

   c. A non-instrument runway cannot be used as an instrument runway as it is not protected to the standards required for instrument arrivals and departures. Runways 22 and 04 share the same 'concrete' strip as they are reciprocal runways.

      (1) Runway 22 has been in use for 25+ years for instrument departures. Currently this is not recognised by South Dublin County Council for safeguarding.

      (2) Runway 04 will shortly be used for instrument approaches, possibly by the end of 2021. Currently this is not recognised by South Dublin County Council for safeguarding.

2. Development in the environs of Casement Aerodrome is restricted having regard to the following factors which if not adhere to could detrimentally affect military capacity at the Casement Aerodrome :

Bóthar an Stáisiúin, An Droichead Nua, Contae Chill Dara, W12 AD93.
Station Road, Newbridge, Co.Kildare, W12 AD93.
T +353 45 492000 | customer@defence.ie
www.defence.ie

a. By prohibiting development within the immediately adjacent approach areas to reduce the risk to members of the public and the increased risk to occupants of an aircraft in the event of the aircraft accidentally touching down outside the aerodrome boundary while taking off or approaching to land.

(1) In general, no development shall be permitted within the Public Safety Zones (PSZ).

(2) The Red Zone is a protected area where limited development may be allowed where development could not reasonably expect to increase the number of people working or congregating in or at the property (this may include development such as the extension of an existing dwelling or a change of building use).

(3)The Red Zones and Public Safety Zones are described in paragraph 10.

b. By applying height restrictions to development in the environs of the Aerodrome.

c. By eliminating potential sources of interference with the operation of electronic navigation aids.

d. By obviating possible hazards to aircraft through the generation of smoke, dust or fumes which may reduce visibility.

e. By controlling and assessing the locations of any activities which may be an attraction to birds.

f. By limiting the extent, height and type of external lighting to avoid confusing pilots in the interpretation of aeronautical lights or cause dazzle or glare.

3. Proposed development in the vicinity of Casement Aerodrome is assessed by Military ATS and restrictions are applied where appropriate. The extent of the restrictions applied will depend on how any proposed development effects the protected surfaces at Casement Aerodrome. The protected Obstacle Limitation Surfaces are described in detail in the following paragraphs.

Casement Aerodrome Safeguarding.

The International Civil Aviation Organisation (ICAO) is an agency of the United Nations. It sets out the 'Standards and Recommended Practices' (SARP'S) for international aviation through the publication of 19 annexes. ICAO Annex 14 deals with airport surfaces to be protected to ensure safe instrument flight procedures at airports.

ICAO ANNEX 14 Implementation at Casement Aerodrome.

As part of the safeguarding of Casement Aerodrome, Annex 14 Obstacle Limitation Surfaces (OLS) defines that airspace around an aerodrome that is to remain free of obstacles. The Obstacle Limitation Surfaces related to this document as described in ICAO Annex 14 are:

- Approach Surface
- Take Off Climb Surfaces.
- The Transitional Surface
- The Inner Horizontal Surface
- The Conical Surface
- The Outer Horizontal Surface.

a. Details specific to Casement Aerodrome.

(1) ICAO Aerodrome Reference Code is 4D.

(2) The Aerodrome Reference Point (ARP) is located north of the midpoint of Runway 28/10 at 53°18'10.77"N, 006°27'19.46"W and 97.2m above mean sea level (AMSL).

b. The Inner Horizontal Surface is at 131.6m AMSL
The suggested maximum height allowed for development in the area south of Runway 28/10 should be:

(1) The elevation datum for the Inner Horizontal Surface is the Runway 10 threshold at 86.6m AMSL. There is a difference in threshold altitudes at Casement Aerodrome of 10.33m and therefore the lowest threshold is selected as the datum (ICAO Airfield Services Manual). Therefore the Inner Horizontal Surface at 131.6m AMSL.

(2) It is recognised that terrain rises to the South of Baldonnel, therefore developments which penetrate the Inner Horizontal Surface may be

acceptable that have a maximum height of 30m above ground level subject to appropriate assessment.

(3) For safeguarding purposes, the Inner Horizontal Surface for Casement Aerodrome is measured from the four runway ends out to a distance of 4km.

c. The Conical Surface is a surface extending upwards and outwards from the outer edge of the Inner Horizontal Surface, commencing at 131.6m amsl at a slope of 5% to the height of the Outer Horizontal Surface.

d. The Outer Horizontal Surface is a specified portion of a horizontal plane around an aerodrome beyond the limits of the Conical Surface. The Outer Horizontal Surface represents a level free from obstacles to facilitate practicable and efficient instrument approach procedures.

(1) The Outer Horizontal Surface should extend from the periphery of the Conical Surface to a minimum radius of 15,000m from the Casement Aerodrome Reference Point.

(2) The height of the Outer Horizontal Surface for Casement Aerodrome is 231.6m amsl.

4. Runway 10.

Runway 10 runs west to east and is the longest and primary instrument approach runway at Casement Aerodrome, mainly due to airspace configuration due to the proximity of Dublin Airport. Instrument approaches to Runway 10 are wholly contained within military airspace. Current instrument approaches to Runway 10 are ILS Cat 1, VOR/DME and Surveillance Radar Approach (SRA). Runway 10 is used for instrument departures to the east and south west.

a. Potential runway extension of 300m at the western end of Runway 10 is also safeguarded. The protection of two separate approach surfaces is therefore necessary. The Approach Surfaces will be taken from both current and new threshold locations to assure protection from obstacles. Both surfaces will cover similar areas however to ensure full protection and for clarity, two separate Approach Surfaces will be described and assessed for Runway 10.
Elevation and plan views are shown in figures 1 and 2.

Existing Runway 10 details are shown in Table 1 and future Runway 10 details are shown in Table 2.

Existing Runway 10	
Threshold	53°18'16.88"N, 6°28'07.75"W
Threshold Elevation	86.6m
Runway End	53°18'4.66"N, 6°26'31.18"W
Inner Approach Surface	Begins 60m from the threshold
	Width is 120m
	Length is 900m
	Slope is 2%
Approach Surface	Inner edge is 280m wide
	Inner edge is 60m from the threshold
	Divergence each side is 15%
	Slope of first section is 2%
Take Off Climb Surface	Inner edge is 180m wide
	Inner edge is 60m from runway end
	Divergence each side is 12.5%
	Slope is 2%

Table 1

Future Runway 10	
Threshold	53°18'18.85"N, 6°28'23.51"W
Threshold Elevation	85.0m
Runway End	53°18'4.66"N, 6°26'31.18"W
Inner Approach Surface	Begins 60m from the threshold
	Width is 120m
	Length is 900m
	Slope is 2%
Approach Surface	Inner edge is 280m wide
	Inner edge is 60m from the threshold
	Divergence each side is 15%
	Slope of first section is 2%
Take Off Climb Surface	Inner edge is 180m wide
	Inner edge is 60m from runway end
	Divergence each side is 12.5%
	Slope is 2%

Table 2

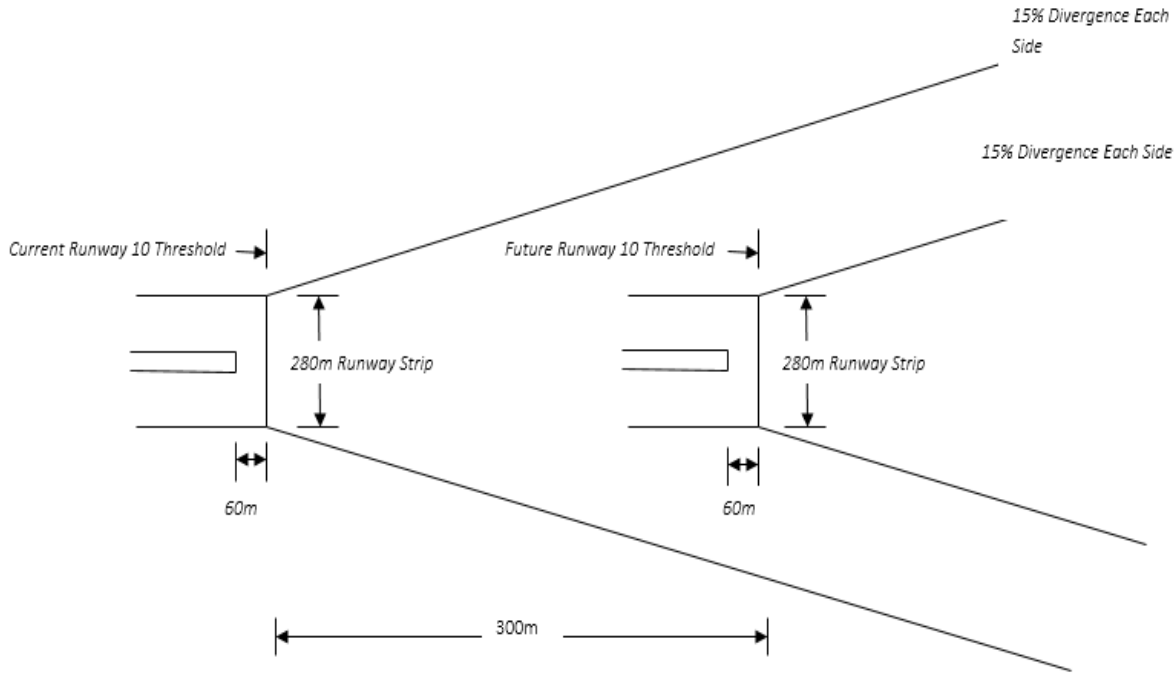

Figure 1

Plan view of Approach Surfaces to current and future Runway 10 Thresholds. The Approach Surface commences 60m from the actual runway and 140m either side of the extended centerline as outlined in ICAO Annex 14.

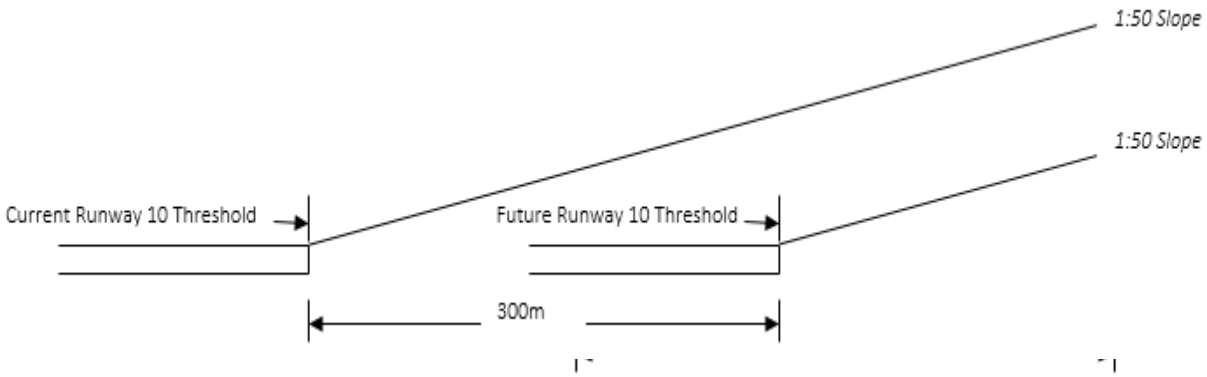

Figure 2

Elevation view showing Approach Surfaces to current and future Runway 10 Thresholds. The first section of the Approach surface is protected out to 3000m at a 2% (1:50) slope as described in ICAO Annex 14.

5. Runway 28.

Runway 28 is the second longest runway at Casement Aerodrome running east to west. Currently there is a VOR/DME approach to Runway 28. Runway 28 is used for instrument departures to the west and south west. Runway 28 details are shown in Table 3. It is protected as a Precision Approach Runway.

Runway 28	
Threshold	53°18'05.85"N, 6°26'40.68"W
Threshold Elevation	96.0m
Runway End	53°18'16.88"N, 6°28'07.75"W
Inner Approach Surface	Begins 60m from the threshold
	Width is 120m
	Length is 900m
	Slope is 2%
Approach Surface	Inner edge is 280m wide
	Inner edge is 60m from the threshold
	Divergence each side is 15%
	Slope of first section is 2%
Take Off Climb Surface	Inner edge is 180m wide
	Inner edge is 60m from runway end
	Divergence each side is 12.5%
	Slope is 2%

Table 3

6. Runway 22.

Runway 22 is the most frequently used runway for takeoff and landing due to the prevailing wind. Runway 22 runs from the north east to south west. Current Runway 22 instrument approaches are VOR/DME and Surveillance Radar Approach (SRA). Runway 22 instrument departures are to the south west and west. Runway 22 details are shown in Table 4. It is protected as a Precision Approach Runway.

Runway 22	
Threshold	53°18'12.63"N, 6°26'22.02"W
Threshold Elevation	93.2m
Runway End	53°17'36.90"N, 6°27'13.73"W
Inner Approach Surface	Begins 60m from the threshold
	Width is 120m
	Length is 900m
	Slope is 2%
Approach Surface	Inner edge is 280m wide
	Inner edge is 60m from the threshold
	Divergence each side is 15%
	Slope of first section is 2%
Take Off Climb Surface	Inner edge is 180m wide
	Inner edge is 60m from runway end
	Divergence each side is 12.5%
	Slope is 2%

Table 4

7. Runway 04.

Runway 04 runs from south west to north east. Runway 04 is not currently used for instrument approaches but is safeguarded as an instrument approach runway to protect against obstacles for instrument approach procedures in the near future. If the approach to Runway 04 is not protected, instrument approach procedures to Runway 04 may not be possible.
Runway 04 is currently in use for instrument departures to the east and south west.
Runway 04 details are shown in table 5. It is protected as an Instrument Approach Runway.

Runway 04	
Threshold	53°17'36.90"N, 6°27'13.73"W
Threshold Elevation	97.2m.
Current Runway End	53°18'12.63"N, 6°26'22.02"W
Approach Surface	Inner edge is 280m wide
	Inner edge is 60m from the threshold
	Divergence each side is 15%
	Slope of first section is 2%
Take Off Climb Surface	Inner edge is 180m wide
	Inner edge is 60m from runway end
	Divergence each side is 12.5%
	Slope is 2%

Table 5

Non- ICAO measures applied by the Department of Defence for security reasons:

8. **2 kilometer Zone**.

   a. Comprises an area contained within a radius of 2km from Baldonnel Aerodrome Reference Point (ARP) established for security reasons as well as the safety of specific flight profiles in the vicinity of the aerodrome.

   b. The maximum height allowed for development within the Inner Zone is 20m above the highest point on the site or a horizontal surface of 106.6m AMSL whichever is higher.

9. **The Security Zone** comprises an area contained within 400m of the aerodrome runways and taxiways. The Security Zone is shown in the current South Dublin Development Plan 2016-2022.

   a. A sterile zone shall be created from the existing aerodrome boundary fence to the boundary of the development, subject to a minimum width of 2.5 meters. This zone shall be gated with access confined to Defence Forces personnel (or other by arrangement).

   b. A three meter high clear visibility fence with integrated ram defence barriers shall be erected where the development shares a boundary with the Aerodrome.

   c. Any new development along the aerodrome perimeter shall be covered by tilt and zoom cameras with a minimum zoom of 20:1, or an improved magnification as agreed. Facilities shall be provided for the images from these cameras to be shared with the military authorities as and when required.

   d. No buildings shall be located within 10 meters of the edge of the sterile zone. Use of this area for car parking may be acceptable.

   e. Site layout shall be designed with roads and yard areas located near the aerodrome boundary to provide clear lines of sight for monitoring and surveillance.

   f. Buildings overlooking the perimeter shall have limited windows (with frosted glass) above ground floor level.

10. Measures to reduce the slight risk to persons or property on the ground.

Public Safety Zones (PSZ) are areas underlying the approach area serving the runways intended to reduce the number of people on the ground at risk in the unlikely event of an aircraft accident on take-off or landing. These are triangular in shape with the base centered on the midpoint of the runway threshold and with dimensions outlined in table 5. **No development should be permitted within these zones.**

Runway	Length of Modified Triangle	Width at Base of Triangle
04	721.90m	76.37m
22	476.09m	75.30m
10	758.92m	85.43m
28	680.90m	85.33

Table 6 Mott MacDonald 2009

Additionally, under the approach surface of the associated runway to a distance of 1,370m from each runway end development should be prohibited, unless the development could not be reasonably expected to increase the number of people working or congregating in or at the property. This may include development such as the extension of an existing dwelling or a change of building use. The inner edge is 300m wide and outer edge is 700m wide The Public Safety Zone and Red Zone for Runway 28 is shown in figure 3.

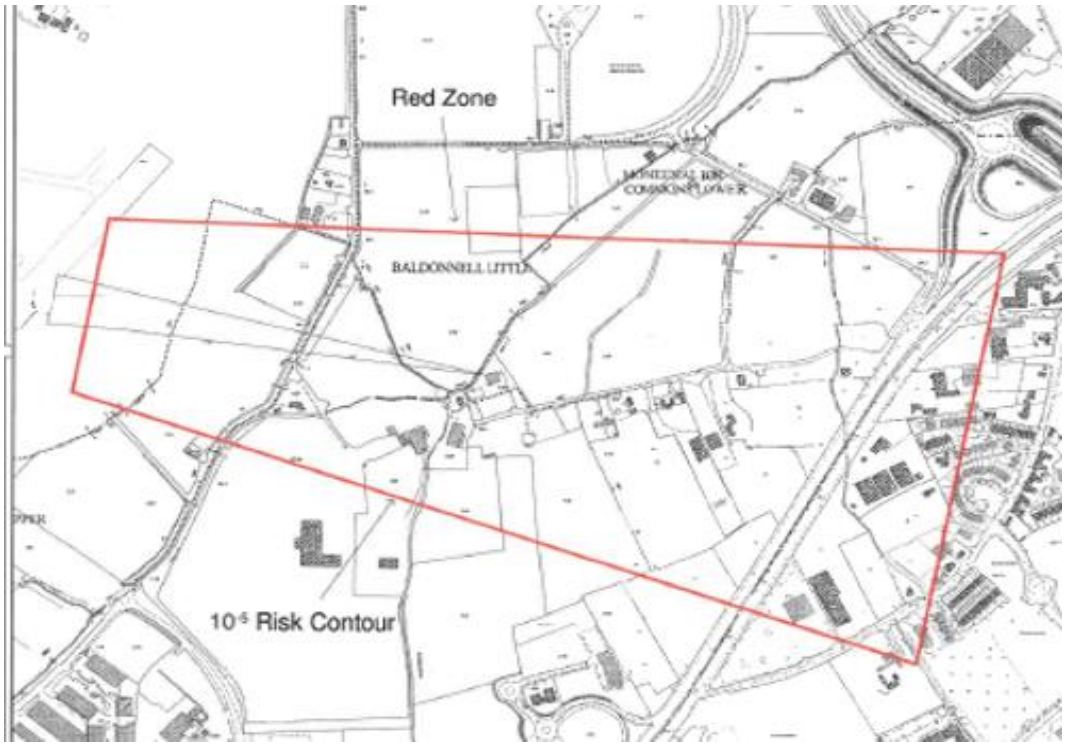

Figure 3 Mott MacDonald 2009

11. **Activities likely to increase hazard to aircraft due to wildlife**.

Bird activity is a hazard to aviation. The introduction of bird hazards as a result of works close to an aerodrome should be examined so the risk to aircraft, aircrew and passengers can be minimized.
Consultation is required on proposed landfills or Civic Amenity facilities within 13km radius of Casement Aerodrome due to the potential of such sites to act as a bird attractant.
Developments with potential bird attractants may need to provide temporary or permanent mitigation.

a. Permanent features include attenuation ponds, water amenities,

b. Waste disposal facility, waste recovery, building materials recovery, recycling facilities etc.

c. Landscaping, especially sowing of plant species which provide attractive food sources to birds.

d. Temporary features including landscaping work, broken ground, soil etc.

e. Appropriate waste management methods should be employed to avoid sites becoming a bird attractant such as:

(1) On site waste management plan.

(2) Food waste disposal bins with lids.

(3) Education and training of contractors.

(4) Use of a range of suitable bird scaring equipment.

(5) Continuous monitoring and evaluation.

Permission should not be granted to such development unless it has been demonstrated that the development will not increase bird hazard to aircraft operating to/from Casement.

Where permission is granted it should be a condition that mitigating measures must be taken if such sites were to impact on Irish Air Corps flight operations.

12. **Temporary hazards associated with development**.

a. During construction, the use of cranes, other tall construction equipment, activities likely to produce dust or smoke, temporary lighting, equipment impacting radar or other navigational aids must be managed to reduce any impact on regularity or safety of flight operations at Casement Aerodrome. Appropriate conditions should be applied to ensure that these temporary hazards do not pose a danger to aviation.

b. **Cranes**.
Crane operations in the vicinity of Casement Aerodrome must receive prior permission from Military Air Traffic Services to mitigate the impact on flight operations. In certain circumstances a Notice to Airmen (NOTAM) will be required to notify airspace users of the obstacle.
For this reason it should be a condition that crane operators shall contact Military Air Traffic Services 90 days in advance of planned crane operations for assessment, contactable at *airspaceandobstacles@defenceforces.ie*.

c. **Visibility**.

Obstacle lighting may be required as a temporary or permanent fixture by Military Air Traffic Services. **Obstacle lighting requirements as assessed by Military ATS are separate to any IAA lighting requirements**. Civil obstacle light requirements do not provide adequate visibility for military aircraft operating with Night Vision Equipment (NVE). A given obstacle light may comply with ICAO standards but may not comply with requirements specific to military aviation.
Where obstacle lighting is required it should be a condition that:

> *Obstruction lights used should be incandescent or of a type visible to Night Vision Equipment. Obstruction lighting fitted to obstacles must emit light at the near Infra-Red (IR) range of the electromagnetic spectrum specifically at or near 850nanometres (nm) of wavelength. Light intensity to be of similar value to that emitted in the visible spectrum of light.*

13. **Other hazards associated with development**.

a. Communication Navigation and Surveillance (CNS) Equipment.
Development in the vicinity of Casement Aerodrome may be assessed against potential impacts on CNS equipment. Aerodrome navigation equipment may also be included in these assessments. In the event of interference with CNS equipment the owners will take measures to mitigate the effects or remove the source of the interference.

b. 5G Masts or other telecommunications infrastructure.
In the event of interference from telecommunications infrastructure such as 5G masts, the owners will take measures to mitigate the effects or remove the source of the interference.

c. **Noise**.
Development in the environs of Casement Aerodrome may be subject to a high level of noise from aircraft operating in the vicinity of the aerodrome. SDCC should take account of the effects of aircraft activity when considering residential or other developments susceptible to noise.

ENDS.