O'DWYER & JONES DESIGN PARTNERSHIP
AVIATION PLANNING & ARCHITECTURE CONSULTANTS
28 LEESON PARK · DUBLIN 6 · TEL.:01-4981893 FAX:01-4964410

Re: South Dublin County Council
Draft Development Plan 2010-2016

REPORT TO S.D.C.C. ON AVIATION MATTERS
in Submissions Received and in Draft Development Plan Documents

INDEX

[Note: Some items may be referred to more than once where they arise under different headings]

WESTON AERODROME page
Submissions made:
[A] GPS Surveying Map (of 2003) 2
[B] Simon Clear & Assocs. Document (of 2009) 2

Aerodrome Elevation and Other Matters discussed with I.A.A. 2

Index Plan Recommendations re Weston ['PA212' etc.] 3

New "Code 1" item 3

CASEMENT AERODROME
Submissions made:
[A] *Review of Policy at Casement Aerodrome* (Mott MacDonald document 2009) 4
Principal New Policy item (Public Safety Zones) 4
Other apparent Casement policy alterations 4
Reservations concerning some items in that report 5

[B] Three Department of Defence letters (of 12/'09, 2/'10 & 6/'10) 6

Index Plan Matters ['PA' items] & Recommendations re Casement 7

WRITTEN STATEMENT
Aviation Items in the proposed Development Plan Written Statement 8
Pages 83-85 (PA109, PA110, PA111, PA112) 8
Pages 124-129 (Schedule 4: Casement) 8
Pages 130-131 (Schedule 5: Weston) 8

GENERAL COMMENTS Re PUBLIC SAFETY ZONES 9
Differences between PZSs at Casement and at other Irish Airports.
Differences in adopted UK and Irish policies re PZSs, etc. 9

APPENDIX 10
Dimensions & Criteria for the precise setting out of Obstacle Limitation Surfaces
For Casement 10
For Weston 11

D. O'DWYER B.ARCH · MBA · ATCL · RIBA S. JONES M.A.

WESTON AERODROME

SUBMISSIONS

[A] GPS Surveying Map:
The "10/1/2003 Safeguarding Map" (by GPS Surveying Ltd) is a currently inapplicable Code 3 map (with a Code 3 Conical Surface [as scaled and dimensioned], a Code 3 Inner Horizontal Surface [as scaled], and with Approach Surfaces not centred on the runway/s), and this map should not be used or referred to in the Development Plan as the applicable Safeguarding Map for Weston.

[B] Simon Clear & Associates Submission:
While the "GPS Surveying" map should be disregarded, the Simon Clear & Associates submission is generally accurate (including its Code 2 Safeguarding dimensions on page 9).
With regard to one minor item (on line 1 of its page 9): it is understood that, while the I.A.A. would require (and it is also required by ICAO Annex 4 [four] para.3.8) that any object projecting above the 1.2% slope/s would be marked on aerodrome charts, the I.A.A. would not necessarily object to such an object unless it projected higher than a 4% gradient at Weston (corresponding to the ICAO Annex 14 Approach Surfaces for Code 2 Visual).

I.A.A. CONFIRMATIONS (re Licensing & Elevations):

Weston is currently licensed Code 2B (Visual operations), and we have confirmed with the I.A.A. (2nd July 2010) that the I.A.A. is unlikely to change this (or to upgrade Weston to Code 2 "Instrument") during the period of this Development Plan. From a planning point of view, the provision of such equipment (to allow "Instrument" status) could be exempted development.

> Code 2 means a field length (runway) of under 1200m length.
> Code B means aircraft of under 24m wingspan and under 6m wheelbase, etc.

Weston Aerodrome elevation (which was previously given as 152ft [46.3m] amsl) is now given on its published aerodrome chart as 155ft [47.2m] amsl). Its runway threshold levels and its aerodrome reference point are currently located a little higher than 46.3m amsl. However it has also been confirmed with the I.A.A. (2nd July 2010) that for Safeguarding Map purposes (i) the aerodrome datum level can be taken as 46.3m amsl (which sets the height of its Inner Horizontal Surface at 46.3+45m, i.e. 91.3m amsl), and (ii) that its two runway threshold levels can also be assumed to be at 46.3m amsl, i.e. the inner edges of its two Approach Surfaces will also be set at 46.3m amsl (and will remain unchanged).
The level of the Inner Horizontal Surface and of the lower edge of the Conical Surface can be given as 91.3m amsl, and the level of the higher (outer) edge of the Conical Surface can be given as 146.3m amsl.
[Note: The term "Outer Horizontal Surface" can be removed from the draft map, as this does not normally apply at a Code 2 aerodrome].

Thus the levels given for Weston Safeguarding on the Development Plan Index Map will remain the same as they were on the previous (2004) Development Plan Index Map. It may however be borne in mind that these are set at a conservative elevation, and that in the event of a particular development being considered, there may be up to 1m additional headroom leeway in certain areas.

INDEX PLAN ITEMS RE WESTON:

PA212:
The principal change in relation to Weston Safeguarding is an elongation of the Inner Horizontal Surface and Conical Surface plan shapes, so that rather than being pure circles (as previously) they would each be shown as two semicircles (of the same radii as previously) centred on the runway thresholds (rather than the runway centre point) and joined two straight lines 924m long (i.e. of the same length as the current Weston runway). This elongation, which is not strictly required by ICAO for Code 1 or 2 runways, arises from a fairly recent adjustment in I.A.A. policy, and provides increased safeguarding.

It has been confirmed with Kildare County Council that the same adjustments to IHS and CS are to be included in the upcoming Kildare Development Plan.

The locations of the Approach Zones, etc., at Weston remain unchanged.

One additional item might be shown, although this has more relevance to Kildare than South Dublin:
'Take-Off Climb Surfaces' are additional important ICAO Obstacle Limitation Surfaces. Where runways operate equally in either direction, Take-Off surfaces are not normally shown, as they coincide with the Approach Surfaces and are at steeper (and therefore less onerous) gradients. Where there is a Clearway (as there is at Weston) however, the Approach Surface (07 direction) and the Take-Off Surface (25 direction) do not coincide towards the Kildare side of the Aerodrome, and a separate Take-Off surface should be shown, of the same overall plan dimensions as the existing Approach Surfaces, but at a different gradient (ideally 1.6%) and 457metres further to the west (beyond the end of the existing Clearway). This is a significant safeguarding surface, preferably included (but as it is located wholly within Kildare, it may not be necessary to include it on the South Dublin Development Plan Index Map).

New 'Code 1' Item:

As far as the stated policy "to revert" to Code 1A, it may be worth noting (a) that such (ICAO) classifications are "aerodrome reference codes" and not runway classifications; (b) that such reversion (if it were to occur) would seem to be more a matter for the I.A.A. (who have licensed the aerodrome Code 2B) than for a planning authority.

It is also worth bearing in mind that Weston has had Code 2 runways for a considerable length of time: e.g. in the 1990s, in its previous ownership, it had two Code 2 runways: one paved of 890m plus a grass runway of 925m (both Code 2 field lengths), and that an enforced field length reduction now could give rise to a significant compensation claim.

CASEMENT AERODROME

SUBMISSION [A]:
The Document *Review of Policy at Casement Aerodrome* prepared by Mott MacDonald Ltd. has been examined by us in detail. On the following two pages is a brief assessment.

Main Policy Change:
The principal policy change appears to be the adoption of four new Public Safety Zones, coupled with a relaxation of the previous ban on any new development with those parts of the "red zones" which lie outside the new Public Safety Zones. We agree fully with the principle of adopting Public Safety Zones (at all airports/aerodromes) but have reservations about the calculation method and the particular (very small) zones chosen at Casement, which are at variance with current adopted Irish policy. This divergence is discussed in a separate section following [on page 9].
One paragraph in particular that raises questions is the second-last paragraph in "7.5 Recommendations" on page 7-9 *"In order to maintain a consistency it is therefore proposed that the newly defined 10^{-5} risk contour assumes the properties of a 10^{-4} risk contour."* This begs the question as to why the consultant did not then feel the need to go on to define a 10^{-6} risk contour and to give that the properties of the 10^{-5} risk contour.
A single (arbitrary) risk zone is rarely applied: in Ireland the adopted policy has been to provide 10^{-5} and 10^{-6} risk contours (and often to ignore a 10^{-4} zone which falls within already-protected zones); in the UK (where airport surroundings are much more intensively developed) the policy has been, for expediency, to provide 10^{-4} and 10^{-5} risk contours, each with different planning policies.

Other Policy Changes:

Other policy changes appear to have been made, but are not highlighted in that Report's Summary. These are indicated on its other pages (or inferred by comparison with previous policies):

- The intended extension (of 150m) to the 23 end of runway 05/23 is no longer to be provided for. This affects the location of the Obstacle Limitation Surfaces in this (Rathcoole) area.

- Runway 05 is not to be considered an Instrument runway (as was previously requested & provided for). This ought to affect the width of the Approach Surface (etc.) to this runway, but it is not drawn this way in the submission.

- The adoption (as definite policy in relation to Casement Aerodrome) of the International Civil Aviation Organization's Standards and Recommended Practices is less clearly stated than previously. [On page 1-5 (paragraph 1.5, also para. 8.2) it is stated *"This requirement is recommended by the Statutory Instrument S.I. 215/2005..."*, but this is not correct: S.I.215/2005 is obligatory (not "recommended") for Irish civil aviation, but inapplicable for Irish military aviation.] Within the report there is much reprinting of Irish Aviation Authority documents, as well as FAA, NATO and UK Dept. of Defence documents, which are interesting but not directly applicable to Casement. The extensively-quoted I.A.A. document (section 8.4, pages 8-5 to 8-20) on "the Assessment and Treatment of Obstacles" has no applicability to Casement, only ICAO Annex 14 itself applies (if the previously-stated Irish military policy is to be followed).

Reservations Concerning Some Items in the submitted *Review of Policy* Document

There are some items in the Mott report about which we would express caution:

- In Figure 8.8 [on the second page 8-1] the width of the Approach Surface appears incorrect – it appears to be drawn at 300m overall width (i.e. corresponding with Code 3 "Instrument") rather than the 150m overall width set by ICAO Annex 14 for Code 3 "Non-instrument".

- In Figure 8.9 [in "List of Figures" page v, also in Map on the second page 8-2] the Runway shown is Runway **23**, not Runway 29 as titled.

- Figure 8.10 [on the second page 8-3] appears to be correctly drawn (in plan and elevations) for Instrument Approaches to Runway 05, and the same "Instrument" shape is included on other maps, but, given that 05 is said to have Visual approaches only, it is not clear which policy is intended, and this may need clarification with the Air Corps/Dept. of Defence.

- The 1.2% gradient agreed as policy for all Approach Surfaces (and included on previous Development Plan Index Maps) is not shown on figures 8.8 to 8.13 of the Mott report, nor the 1.6% Take-Off Climb gradient referred to by them [item (v) on their first page 8-5]

- Figure 8.14 [on the second page 8-6] contains the only representation of an Inner Horizontal Surface for Casement, but this is of a very different shape than previously insisted upon by the Department of Defence (and as applied at other Irish civil airports), and is not in accordance with paragraph 8.3(ii) on the first page 8-4. The essential difference is that, in the map, arcs are drawn only about the ends of the main runway 11/29, whereas previous practice [and paragraph 8.3(ii)] stipulates arcs about the ends of <u>all</u> runways at Casement.

- Figures 8.10 and 8.14 (referred to above) usefully highlight some "Obstacle Penetration" on the Approach to Runway 05, and through the (reduced-size) Inner Horizontal Surface; however these appear to refer to ground contour levels only, and do not highlight (as they should) the significant penetrations by existing (and planned) structures e.g. in the Rathcoole and Saggart areas, where penetrations of an additional 10m+ occur in most locations.

- The "Safeguarding Map" (the first drawing no.247962/001, after page 1-6; and also included as the last drawing "Figure 11.2") would not be regarded as a sufficient safeguarding map per ICAO requirements (Annex 14, chapter 4, etc.), and it would not be of sufficient use to planners in assessing aviation height/location restrictions.
  In particular, the Inner Horizontal Surface and the Conical Surface, and the full extents of the Approach Surfaces (which reach beyond an Outer Horizontal Surface) are omitted. By contrast, the mutually-unrelated and relatively much less important Outer Horizontal Surface (150m above aerodrome datum level), plus an arbitrary circle at ground level within which bird hazard items might be assessed, are the principal items included. [In any event these 15km & 13km circles cover almost the entirety of South Dublin (overlapping with those of Dublin Airport etc.) so there is little advantage in distinguishing the areas inside and outside them.]

ADDITIONAL CASEMENT SUBMISSIONS [B]:
Department of Defence written submissions
(letters of December '09, February '10 and June '10).

2-12-2009:

- We agree fully with the Department of Defence observation (December 2009) re Mobile Cranes and temporary structures – there is a statutory obligation on crane operators in relation to civil aerodromes, and military flying operations should be similarly protected.

- It may be necessary to distinguish separately the four different runway directions at Casement: 11 (Code 4, Instrument), 29 (Code 4, Instrument), 23 (Code 3, Instrument), and 05 (Code 3,Visual), (rather than quoting them in pairs, e.g. 11/29 and 05/23).

- Runway 23, 1,463m long, is not of sufficient length for a fully-laden Boeing 737, which has a field/runway requirement of ~2,300 metres. [737 usage of the 1,829m long main runway/s 11/29 would also involve a load penalty.]

- Consultation with the Department of Defence (as well as the I.A.A.) re Bird Hazard is desirable.

16-2-2010:

- The restricted area is a military/security matter rather than aviation.

17-6-2010:

- A general observation as to a "remit to amend the policy of a Government Department" is that the Department of Defence has, under the Defence Act, all the necessary powers it may need to impose any restriction whatever, except that such restrictions made under that Act could give rise to compensation.
  With regard to the comment as to "international best practice" and "civil" aviation matters, the ICAO Standards and recommended Practices, (designed for civil aviation) are applied at Casement because the Department of Defence has had a stated policy that these will be applied at Casement. In the context of paragraph 3.2.2ii(a) the Department's wording "best military practice" seems reasonable (as noted on page 8 following).

- Re PA211 etc., the comment re "no development" for 1,350 metres on the approaches to 05 and 23 appears to be contradicted by the new policy arising from the Mott report. While it is our view that the Public Safety Zones would be better drawn to much greater distances at Casement, there is no prohibition by ICAO on development under an Approach Surface, merely height restrictions under defined gradients, and the choice of any "red zone" length (i.e. of the distance within which any new development may be prohibited by a local authority) is, in relation to Casement, an arbitrary choice of the local authority.

  [Similarly, in relation to Weston, the length of any "red zone" is also arbitrary, and a matter arising from I.A.A. advice].

INDEX PLAN ITEMS RE CASEMENT AERODROME:

PA.211 – Security Zone
This is a purely a Department of Defence matter, and does not arise from any broader aviation issue. It seems desirable, and we agree with giving equal protection to taxiways and runways, but we have no special aviation view on this item.

PA.211 – Public Safety Zones and "Red Zones"
We agree with the provision of Public Safety Zones (although we think that as calculated they are much too small to give any added protection to persons in critical areas on the ground, or to be in line with other adopted Irish Public Safety Zones (where ultimate airport/aerodrome capacity is provided for, rather than a limited 13-year forecast, and where 10^{-6} risk contours are provided in addition to 10^{-5} contours).
We see no harm in providing these, but would advise some caution in lifting restrictions in all other parts of the former "red zones", particularly in those parts of the "red zones" closest to the runway ends.
[See further Public Safety Zone comments on page 9 following.]

PA.205 & PA.232
These areas are more or less on the centreline of the main runway/s 11/29 at Casement, and are located in a zone, which would very likely lie centrally in a 10^{-6} risk contour if such were calculated, and – if the same restrictions were applied as at the other state airports – would require occupation density and building type restrictions, (including community facility restrictions).

PA.228
This zone appears to approach very close to the side of runway 05/23, and lies (on slightly rising ground) under the Transitional Surface to those runways. This will greatly limit the height of (or prohibit) possible development in the areas closest to the Runway.

"Red Zone" & Obstacle Limitation Surfaces to Runway 05 (Rathcoole area):
These are shown the same as for the other runways (i.e. for full Instrument Approaches) and may remain as shown, but as the Department of Defence has indicated that Runway 05 is to be used for Visual Approaches only, different geometry would apply: the Approach Surface would be much narrower (commencing at 150m width rather than 300m as shown), and if a Take-Off Surface were to be included (commencing at the current 300m width, it would rise at a different gradient, i.e. 1.6% or 2%, depending on the presence of existing obstacles.
This Non-Instrument status of runway 05 may need clarification with Air Corps/Dept. of Defence.

As the Rathcoole area (being on high ground and directly in line with runway 05) is the most restricted area with regard to Obstacle Limitation Surfaces, any reduction in these restrictions would be beneficial, e.g. a reduction in Approach Zone width (to Code C Non-instrument), or an increase in Approach Surface/Take-Off Surface gradient.

In any event, in the Rathcoole area, tight building height restrictions will apply in most of the newly-zoned areas (both residential and employment/industrial zonings), in particular under the Approach Surface to Runway 05 and on all elevated ground. In some areas there may be insufficient headroom for any development or structure (or any lighting masts), and it would be advisable to prepare a detailed "headroom map" for this area (subtracting actual ground elevations from the obstacle limitation surface elevations), before development or further zoning might proceed.

DRAFT DEVELOPMENT PLAN WRITTEN STATEMENT

Pages 83-85 [General]

PA109 page 83 para.3.2.21ii — No special comment.

PA110 page 84 para.3.2.21ii(a) — The Department's proposal "best military practice" seems reasonable.

PA111 page 84 para.3.2.21.iii — The wording is not precise: Code 2B (etc.) is an 'aerodrome reference code,' not a runway classification, and a reversion to Code 1A seems unachievable (without compensation) and then only possible to be done by the I.A.A.

PA112 page 84 para.3.2.22 — The "GPS Surveying" map is Code 3 and inapplicable, and should not be referred to in the Plan. We would suggest simply omitting the entire second-last sentence (including all green [and red]).

PA112 page 85 para.3.2.22(top line) *Proposal:* "...within the 'red zones', some development **may be** permissible..." – ?

Pages 124-129 Schedule 4: Casement:

Page 124 para.1: *Proposal:* 1. "...has stated in its 'Review of Policy 2009' that runways 11, 29, & 23 are categorised as instrument runways, and that runway 05 is categorised as a non-instrument (or visual) runway because of the land contours on the approach path." – ?

Page 125 second-last paragraph:

Proposal: "The main runway paving 11/29 at Casement contains two (opposite) Runways 11 and 29 which are both categorised as Code 4 instrument approach runways. The subsidiary runway paving 05/23 contains Runway 23 which is a Code 3 instrument runway and Runway 05 which is a Code 3 non-instrument runway." – ?

Page 127 third-last paragraph

Proposal: "...are a matter for **consultation with** the Department of Defence."

Pages 130-131 Schedule 5: Weston:

Page 130 first paragraph:

The GPS Surveying map is inapplicable, and reference to it should be omitted i.e. all in green, except maybe a rephrased last sentence: "Details of the Safeguarding at and around Weston Aerodrome are indicated on the Development Plan Index Map."

Page 130 third-last paragraph:

Omit red and green (GPS "10 January 2003" map reference). Proposal: "The ICAO approach surface is a plane surface commencing 60m beyond the runway thresholds and rising upwards and outwards within the Approach Zone boundaries at a gradient of 4% (slope of 1:25) for this category of runway."

Page130 second-last paragraph:

"The I.A.A. **may** object to any obstacle extending above a 1.2% gradient from the flight strip on a runway approach (above which any such object should be included on the aerodrome charts)."

Page 131 fifth paragraph "Noise":

Omit red+green (reference to GPS "10 January 2003" map). Proposal: "...is indicated by a **dotted** blue line on the Development Plan **Index Map**.

Page 131 second-last paragraph:

"... from a direction **broadly** perpendicular ..."

[Note (page 131 last paragraph, etc.): In ICAO's name, 'Organization' is usually spelled with 'z'.]

ADDITIONAL COMMENTS RE PUBLIC SAFETY ZONES IN GENERAL
and re the Zones now proposed at Casement

We agree fully with the introduction of Public Safety Zones, which are much better suited to the safety (and convenience) of persons on the ground, rather than merely designed to facilitate the navigation of aircraft (which are the principal matters of concern in the ICAO Annex 14 surfaces).

However, we believe that the Zones currently proposed for Casement are not sufficiently large, are too limited in having a single risk level, and not sufficiently related to the criteria applied at Dublin Cork and Shannon. Some explanation of the differences seems necessary.

The calculation of Public Safety Zones in the UK and in Ireland has been based on different criteria, as follows:
In Ireland Public Safety Zones have been calculated in relation to *ultimate* airport capacity, whereas in the UK most Zones are based on a 15-year forecast. For Casement, a UK model (developed for very busy commercial airports, such as Heathrow) was applied, and a 13-year restricted-growth forecast was used (which excluded helicopter movements). The one significant (fatal) Irish Air Corps recent crash was a helicopter crash (admittedly not at the aerodrome, but statistically that is where most helicopter movements occur).
Also in the UK, the 1 in 1,000,000 risk contour (10^{-6}) is not applied, only the 10^{-4} and 10^{-5} contours, mainly for the reason that the environs of UK aerodromes having PZSs were/are very heavily built up, and the application of a 10^{-6} contour could be both onerous and costly. This does not apply in Ireland, where most airports are in reasonably open land, and consequently extensive 10^{-6} contours have been calculated and are now applied at Dublin, Cork and Shannon.
These differences (between U.K. [e.g. NATS] models and Irish [ERM] model) were outlined in this firm's report of 2007 on Public Safety Zones for South Dublin County Council, in which we proposed much more extensive Public Safety Zone contours (including 10^{-5} and 10^{-6} contours) for Casement, based not so much on its current very limited use (a fraction of Weston's traffic, with small aircraft) but on an ultimate possible capacity of the aerodrome and with combined military and civil use (as previously proposed). We believe that this approach – given that it can be applied at Casement etc. (while no longer possible at most UK airports) – would lead to a better planned environment in the overall vicinity of the aerodrome, with greater public safety and less noise intrusion. We have reservations concerning (i) the very small size of the proposed Public Safety Zones at Casement, which are wholly out of proportion with those at other similar-sized airports in Ireland (e.g. Cork and Belfast); (ii) the arbitrary application of "10^{-4} properties" to the calculated 10^{-5} contours (apparently because the contours turned out too small); (iii) the absence of any "10^{-5} properties" applied anywhere; and (iv) the absence of any 10^{-6} contours (as have been adopted at Dublin, Cork & Shannon). In addition the differences between adopted Irish and UK planning policies (in relation to the various risk contours) was not addressed.
It is our view that there is too much (extreme) variance between the Public Safety Zones proposed for Casement and those adopted at Dublin Cork & Shannon, and that, while the proposed Casement zones may well be included in the Development Plan, they really are too small to have any useful planning effect, as they are all located in zones which were already subject to the same (or greater) restrictions.
At present Public Safety Zones in general are somewhat arbitrarily applied, using very different models and policies, and it seems likely that, in time, these will have to become more rationalised and simpler to apply consistently at all aerodromes. It is noted that Mott MacDonald (who seem not to specialise particularly in aviation technical matters) subcontracted the Public Safety Zones element to another firm [NATS]. We believe that the Public Safety Zones at Casement would benefit from further analysis/development, which would, we believe, lead to relocated 10^{-5} contours and more extensive 10^{-6} contours (broadly on the centrelines of the four runways). In order that future planning policy can allow for this, we would recommend that all vulnerable or high-occupancy development be prohibited for a minimum of 3-4 km along the extended centrelines of each runway (at both aerodromes).

APPENDIX

[This is a copy of text emailed to Padraic Larkin of S.D.C.C. on 2nd July 2010]

THE CRITERIA FOR THE PRECISE SETTING OUT OF
I.C.A.O. "OBSTACLE LIMITATION SURFACES"
[The Department of Defence is not obliged to comply with I.C.A.O. (civil aviation) requirements, but has chosen as policy to do so.]

For Casement:

The Approach Surfaces for both runways (all four ends) are the same even though the runways are of different Codes ["Code 3" for the shorter, and "Code 4" for the longer]. This is because the army has wanted to make provision for full (precision) instrument approaches to all 4 ends (although this currently isn't the case, and probably unlikely to happen, at the runway end nearest Rathcoole).
These "Approach Surfaces" all commence at 60m from the runway thresholds (which at Casement corresponds with ends of runway paving). [*Note:* Runway 05 dimensions could be subject to revision].
They commence 300m wide overall, i.e. 150m to either side of the extended runway centreline. The Surfaces then widen at 15% (both sides) and extend for at total distance of 15 kilometres, measured horizontally (i.e. along the ground) and along the extended runway centreline. [As a cross-check, the final width should work out at 4800m, i.e. 15000x15%x2,+300m]. The angle at which these inclined surfaces rise (as drawn for the Development Plan) has been chosen (in consultation with the I.A.A.) to be an angle of 1.2% (as this is the elevation above which any objects should be marked on aviation charts). [Note: I.C.A.O. would allow a 2% slope on these Approach Surfaces, but a more conservative limitation slope was chosen in 2004 for the Development Plans]. Each surface commences at the same elevation (above mean sea level) of its corresponding runway end, so that – for Casement – the elevations are different for all 4 Approach Surfaces.
The various "crossbar" lines (at about 1km intervals) are simply arbitrary lines to give an indication of the elevation (a.m.s.l.) of the four surfaces at those various locations.
Similarly, the "red" areas (and the lengths of them) are arbitrary choices of the Department of Defence and of the local authority. [I.C.A.O. would generally allow structures of decreasing heights down to 0 in such areas.]

For the 2 "racetrack" shapes which represent the "Inner Horizontal Surface" and both sides of the "Conical Surface", the inner line (representing the I.H.S.) is at 4km from the centrelines of both runways, and the Conical Surface rises beyond this (at 1 in 20) to a horizontal distance of a further 2km [or sometimes 2.1 km – in order to reach the elevation of an Outer Horizontal Surface (if that is being provided)].

As drawn, the Surfaces for Casement appear to be correct, but in checking their precise locations, the above figures would apply.

Note also: Within the "Review of Policy" document (by Mott McDonald), there are items on the first (and also on the last) folded drawing (no. 247962/001) which could cause misunderstanding – the two circles shown on this drawing are NOT the Inner Horizontal Surface and Conical Surface (the two circles/racetracks usually drawn around an aerodrome), but they are two mutually unrelated items, they represent (in brown) a "third" obstacle limitation surface [the "Outer Horizontal Surface"] which sometimes is set around large Code 4 aerodromes (i.e. Dublin & Casement), which is a circle of 15km centred on the aerodrome reference point, located at 150m above the relevant aerodrome; [& there is usually no need to include this on a Development Plan map]. The other (wholly unrelated) blue circle on the same folded drawings, is the 13km circle at ground level within which garbage dumps are considered undesirable.

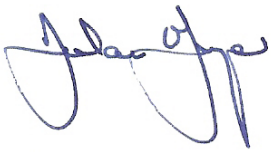
For Weston:

[Subsequent to the meeting held at S.D.C.C. on 30th June 2010, we have discussed Weston Aerodrome matters with both the I.A.A., and with the Kildare planners.]

The I.A.A. has confirmed that Weston, which is currently licensed "2B – Non-instrument", is unlikely to achieve "Instrument" licensing within the period of this Plan. The I.A.A. has also confirmed that, while purely circular lines [for Inner Horizontal Surface and Conical Surface] would be common for Code 2, an elongated shape would be desirable. Kildare proposes to use this elongated shape, i.e. with two semicircles of 2.5km & 3.6km centred on both runway thresholds, and joined by 924m straight lines (i.e. the same as the current runway length). This is shown on Kildare's website, chapter 6, Map ref 6.2 dated April 2010. As far as the aerodrome elevation goes, the I.A.A. is happy to have the more conservative 46.3m (152') given on Development Plans, rather than the 47.2m (155') now given on aerodrome charts. Thus the elevations of I.H.S. and top of C.S. will remain unchanged at 91.3m & 146.3m amsl.

For the Approach Surfaces (the wedge-shapes) these commence at 60m from both runway thresholds (i.e. not from the end of paving), and start off (for Code 2 Non-instrument runways) at 80m wide overall (i.e. 40m to either side of extended runway centreline) and they diverge at 10% to each side, and are of total length 2.5km. [As a cross-check, this would give an overall max. width of 580m at their outer edge, i.e. 2500x10%x2,+80]. Previously we have taken the runway at Weston to be level overall at 46.3m amsl, and the I.A.A. is happy with this assumption. Therefore, both Approach Surfaces will have the same elevations. A 1.2% slope was agreed with the I.A.A. for these Approach Surfaces, for the reasons given above (I.C.A.O. Annex 14 allows a 4% slope for such Code 2 Non-Instrument Approach Surfaces).

There is one additional Surface which is relevant for Weston – a "Take-Off Surface" which commences at the end of its Clearway. [*See also page 3 above*]
This would be of the same plan dimensions as its "Approach Surfaces", but commencing at a different location and rising at 1.6% (rather than 1.2%). This Surface however affects structures in Kildare rather than South Dublin. Where there are no clearways (or displaced runway thresholds), Take-Off Surfaces are not normally shown, as they are less limiting than the Approach Surfaces.



Declan O'Dwyer
B.Arch MBA RIBA

14th July 2010

O'DWYER & JONES DESIGN PARTNERSHIP
AVIATION PLANNING & ARCHITECTURE CONSULTANTS
28 LEESON PARK, DUBLIN 6. T.:01-4981893 F.:-4964410