

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	Annex E	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 1 of 15

<b>Title of Airspace Change Proposal</b>	<b>Land's End Airport Global Navigation Satellite System (GNSS) Instrument Approach Procedures (IAPs)</b>
<b>Change Sponsor</b>	<b>Land's End Airport (LEA)</b>
<b>SARG Project Leader</b>	<b>[REDACTED]</b>
<b>Case Study commencement date</b>	<b>2 December 2015</b>
<b>Case Study report as at</b>	<b>4 February 2016</b>
<b>Report Reference</b>	<b>SARG/ERCD/AG/LandsEndAirportGNSSApproaches</b>

### Instructions

In providing a response for each question, please ensure that the 'Status' column is completed using the following options:

- **Yes**
- **No**
- **Partially**
- **N/A**

To aid the SARG Project Leader's efficient Project Management it may be useful that each question is also highlighted accordingly to illustrate what is resolved ( Green ), **not resolved** ( Amber ) or **not compliant** ( Red ) as part of the SARG Project Leader's efficient project management.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 2 of 15

<b>1.</b>	<b>Introduction</b>	
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This report describes the environmental considerations relevant for the Airspace Change Proposal (ACP) submitted by Land’s End Airport (LEA) for the introduction of GNSS (Global Navigation Satellite System) Instrument Approach Procedures (IAPs) for the four runways at the airport – 07, 16, 25 and 34.

This assessment is based upon information presented in the proposal document entitled “Land’s End Airport – Airspace Change Proposal” (30<sup>th</sup> November 2015), plus associated consultation material and any subsequent information received as the result of queries raised with the sponsor following submission of the ACP.

<b>2.</b>	<b>Guidance to the CAA</b>	<b>Status</b>
<b>2.1</b>	<b>Is the proposal consistent with Government policy and/or guidance from Government to the CAA?</b>	<b>Yes</b>

Guidance issued to the Civil Aviation Authority sets<sup>1</sup> out a framework for the environmental objectives that the CAA must consider when assessing airspace change proposals. In addition to these objectives, there may be other legitimate operational objectives, such as the overriding need to maintain an acceptable level of air safety, the desire for sustainable development or to enhance the overall efficiency of the UK airspace network, which need to be considered alongside these environmental objectives. The Government looks to the CAA to determine the most appropriate balance between these competing characteristics.

Flights over National Parks and AONBs are not prohibited by legislation<sup>2</sup> as a general prohibition against over-flights would be impractical. Government policy focuses on minimising the over-flight of more densely populated areas below 7,000 feet (amsl), but balances this with CO<sub>2</sub> emissions between 4,000 and 7,000 feet (amsl). However, where it is practical to avoid over-flight of National Parks and AONBs below 7,000 feet (amsl), the Guidance asks that the CAA encourages this.

<sup>1</sup> DfT, Guidance to the Civil Aviation Authority on Environmental Objectives Relating to the Exercise of its Air Navigation Functions, January 2014

<sup>2</sup> National Parks and Access to the Countryside Act 1949, National Parks (Scotland) Act 2000, and “Duties on relevant authorities to have regard to the purposes of National Parks, Areas of Outstanding Natural Beauty (AONBs) and the Norfolk and Suffolk Broads Guidance Note”, DEFRA 2005.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 3 of 15

<b>3.</b>	<b>Rationale for the Proposed Change</b>	<b>Status</b>
<b>3.1</b>	<b>Does the rationale for the ACP include environmental reasons?</b>	<b>No</b>

No, environmental reasons are not cited as being a key reason for the proposal. The main reason is to provide improved resilience for air services when bad weather would otherwise prevent flights or entail missed approaches or diversions to other airports. The following extracts from the sponsor's proposal document provide an outline that sets the background and rationale for the proposal:

“Air services from Land’s End Airport are now the most important year-round link between the mainland and the Isles of Scilly. The proposal for the new navigation procedures represents the final stage of a major investment programme to make year-round air services more resilient for the benefit of the island-based community and visitors. The proposals are related to improving the reliability of existing services and not about stimulating new traffic over and above what would otherwise use the airport.”

“the Airport is now looking to increase its reliability in reduced visibility weather conditions. This will mean that key services such as mainland medical/hospital appointments, stretcher flights, Royal Mail deliveries, newspapers, magazines as well as the business trips will be better served.”

“The Airport decided that the introduction of GNSS [Global Navigation Satellite System] instrument approaches was the best option due to their reliability, accuracy and the lack of requirement to install expensive ground based equipment.”

“The new procedures will provide instrument approaches that are aligned with the runway centre lines. This is optimal for both flight operations and safety.”

However, the proposal additionally claims that the new GNSS (RNAV) IAPs are expected to have environmental benefits:

“The new procedures will also provide an opportunity for aircraft to be configured more efficiently as they approach to land, which is likely to have benefits in terms of reducing aircraft noise and emissions.”

The environmental impacts are covered in more detail later in this report.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 4 of 15

<b>4.</b>	<b>Nature of the Proposed Change</b>	<b>Status</b>
<b>4.1</b>	<b>Is it clear how the proposed change will operate, and therefore what the likely environmental impacts will be?</b>	<b>Yes</b>

There are currently no Instrument Approach Procedures (IAPs) for Land's End Airport (LEA), therefore arriving aircraft use a visual approach procedure. Aircraft arriving at and departing from LEA operate within the Lands End Transit Corridor (LETC), an area of airspace (from surface to 4,000ft) that is primarily in existence to support commercial air transport aircraft flying into or out of Land's End and St Mary's Airports. Air traffic controllers use the LETC on a daily basis for the safe, orderly and expeditious flow of aircraft arriving and departing from both airports.

The airspace in the vicinity of LEA, including the LETC, is categorised as Class G airspace. For all the proposed GNSS (RNAV) IAPs, the final approach segments lie within the LETC, although the initial approach segments for Runways 16 and 34 are marginally outside of the Corridor.

The hours of operation of the proposed approaches would be co-incident with the hours of operation of the airport (which are currently Mon-Sat, 07:45- 18:30 in the Summer and Mon-Fri, 08:15-17:30 and Sat 08:15-12:15 in the Winter).

The new GNSS (RNAV) IAPs will be used in conjunction with the existing visual approach procedures. In terms of anticipated usage of the new GNSS (RNAV) IAPs, the proposal explains as follows:

“Land's End Airport will handle approximately, 4,775 (predicted 2015 figure) landings this year. Of these, it is estimated that the four proposed GNSS approaches would take account of 10% of the 4,775 landings per year. When runway 07 is excluded from these figures, due to there being no change in flight procedures, it is believed that GNSS approaches would represent only approximately 7% (334) of all landings (or less than one per day on average) on the other three runways. The exact number at any point in time would be dependent upon prevailing weather conditions and the overall level of aircraft movements planned to be using the airport. The remaining number of aircraft landings (93%) would be operated as they are today, visually.”

The sponsor makes it clear in the consultation document that the GNSS (RNAV) IAP for Runway 07 is excluded from the consultation because the traffic pattern displayed by aircraft using that approach will remain unchanged from current practice. It states that the new procedure for Runway 07 will not change the flight tracks over the ground for approaches to this runway, either laterally or vertically. The GNSS (RNAV) IAP for Runway 07 would be used as a priority approach when possible over the other three GNSS (RNAV) IAPs.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 5 of 15

The description of the Runway 16 approach advises that aircraft will overfly St Just at 500ft though the consultation document also explains that the location is already currently overflown by aircraft at that height arriving from another approach.

The description for Runway 25 recognises that there may be a change to where aircraft currently fly during the initial segment of the proposed approach (namely as the aircraft travel from north to south in order to join the runway centreline at approximately 6nm from the airport. The procedure crosses the north Cornwall coast in the vicinity of Zennor). The description for Runway 34 advises that traffic on the GNSS (RNAV) IAP will continue to follow the current routing of traffic that joins from the south of the airfield.

In terms of the anticipated environmental impacts, the proposal explains as follows:

“The proposed approaches have longer track miles than the current visual approaches, but the current proportion of failed attempts to land involve further track miles in order to conduct missed approach procedures or diversions to an alternative airport, (ie Newquay Airport, which would involve at least an additional 36 nm track miles). Any diversion also results in repositioning the aircraft once the weather improves and the road transport of the diverted passengers and their baggage.”

In essence, the sponsor expects that the proposed new GNSS (RNAV) IAPs, whilst ostensibly increasing the track miles flown by any aircraft that use them rather than a visual approach (and thereby increasing fuel burn and CO<sub>2</sub> emission as a result), the “extra” procedural mileage is more than offset by the additional mileage if an aircraft had to either undertake a missed approach or had to divert to another airport further away. However the sponsor has not provided any quantitative evidence to support this expectation other than the reference to the distance to Newquay Airport cited above – the claim is presented as being largely self-evident, which in the case of this proposal is not an unreasonable stance.

<b>4.2</b>	<b>Have alternative options been considered, and have the environmental impact of each alternative been assessed?</b>	<b>Partially</b>
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Various design options were considered (see pages 6-7 of the sponsor’s proposal), but most of these were rejected prior to consultation for technical reasons rather than environmental. That said, one option is outlined as having environmental benefits:

“After consultation with potential users and operators, and following a CAA meeting, it was decided to reduce the initial and intermediate approach legs from the standard 5nm to 2.8nm respectively. This resulted in many benefits in terms of track miles flown; reduced noise and CO<sub>2</sub> emissions, time and fuel saved and size of affected airspace. It was also decided to use combined IAF/IF which will enable more direct routings resulting in similar benefits to those above.”

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 6 of 15

Other options were considered during the design process though were not presented for consultation:

- The establishment of two new holds, to the east and west of the airport. This was discounted due to the possible impact resulting from the new flight paths this would create, notably over Penzance.
- Additional approach legs to Runways 25 and 34.
- Consideration was given to offsetting the approach for Runway 16 which takes arriving aircraft over St Just but procedure design criteria would not permit this modification.

Having discounted options during the design process, two options were presented in the consultation – the proposed GNSS (RNAV) IAPs or the “do nothing” option.

<b>5.</b>	<b>Noise</b>	<b>Status</b>
<b>5.1</b>	<b>Has the noise impact been adequately assessed?</b>	<b>Yes</b>

In the proposal, the sponsor states:

“As there are no extra movements or change in aircraft types should this proposal be implemented, the Airport and its key aviation stakeholders believe there will be no net increase in noise from aircraft operations. However, noise may now be distributed differently when the Instrument Approaches are used (for each Instrument Approach flown there will be less noise on the corresponding visual approach track and additional noise on the Instrument Approach track). This has been addressed in a detailed noise study report within the Airport’s Consultation Document. Please refer to Appendix E.”

Taking account of the current level of activity at the airport, the type of aircraft operating there and the fact that any aircraft using the GNSS (RNAV) IAP will be arriving along an extended runway centre line, the proposed new approaches would be very unlikely to have any impact upon  $L_{eq}$  noise contours at the airport. Therefore, despite the proposal representing a change to airspace below 4,000ft, it is reasonable to omit  $L_{eq}$  noise contours from both the consultation and proposal documents because they would not have shown any difference as a result of the GNSS (RNAV) IAPs.

<b>5.2</b>	<b>Has the noise impact been adequately presented in the consultation and the submitted proposal?</b>	<b>Yes</b>
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The consultation document does acknowledge that GNSS (RNAV) IAPs lead to “greater consistency of flight paths” (i.e. concentration rather than the dispersion that is more typical of visual approaches) but then also notes that this is in line with DfT policy.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 7 of 15

Appendix F of the consultation document portrays the proposed GNSS (RNAV) IAPs and gives an indication of which segments of those procedures are likely result in areas being overflowed more often as a result of longer approach paths, these are the areas on the extended runway centrelines for runway 16 (arriving from the north, over St Just), runway 25 (arriving from the east) and runway 34 (arriving from the south).

As  $L_{eq}$  noise contours would not have revealed any impact from the proposed change (since changes to noise exposure that occur are at levels below 57dBA  $L_{eq}$ ), the consultation took steps to assess and present the noise impact for typical aircraft in use at the airport at representative heights, and then draw comparisons to current noise levels, notably for the community of St Just. The values are derived from monitoring and recording the noise levels from passing aircraft at varying heights, resulting in noise levels for two aircraft types at 500ft, 750ft and 1,000ft. It is assumed that the values portrayed in the consultation are  $L_{max}$  values based upon their description in the text (i.e. "maximum readings").

The consultation explains that aircraft arriving on Runway 16 using the GNSS (RNAV) IAP will typically be at 500ft above St Just, but also explains that the location is already overflowed by other aircraft that are arriving from the north (though no description of the frequency of such flights is provided). In addition, the assurance is provided that Runway 16 would only be used when no other Runway is available – and this is estimated to be 86 flights per year (i.e. 18% of GNSS arrivals). The recorded maximum noise levels for the two aircraft types at 500ft were 68 dBA (for a Twin Otter) and 66.4 dBA for an Islander). Based upon the  $L_{max}$  values and the number of flights using the new approaches, the  $L_{eq}$  value at that location would remain below 57 dBA.

Track diagrams that portray a sample of the current paths of arriving aircraft are in Appendices D & E of the consultation. However they are poor quality – the tracks are too faint against the map upon which they are overlaid, meaning that the current pattern of arriving traffic is very difficult to see. In addition, it is not clear the time period that the tracks portray. This means that the consultation did not include an easy-to-view representation of current flight patterns in comparison with the proposed GNSS (RNAV) IAPs (e.g. the procedures overlaid upon a representative sample of actual radar tracks from arriving aircraft) which could have helped non-aviation consultees to better understand where they could expect a change in traffic patterns.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 8 of 15

<b>6.</b>	<b>Emissions</b>	<b>Status</b>
<b>6.1</b>	<b>Has the impact on CO<sub>2</sub> emissions been adequately assessed?</b>	<b>Yes</b>

In the proposal, the sponsor states:

“The GNSS approach proposed will allow aircraft to fly on a straight line over the ground to land with minimal alterations to their direction of travel and engine settings. This type of approach will allow pilots to configure the aircraft more efficiently and potentially minimise fuel burn, CO<sub>2</sub> and noise during the approach. The Airport is confident that CO<sub>2</sub> emissions, fuel burn and noise will not increase as a result from the implementation of this proposed airspace change. Please refer to Appendix E.”

Whilst there is no quantitative assessment of the estimated impact on fuel burn and CO<sub>2</sub> emissions, this possible fuel saving is a reasonable expectation on the basis of the characteristics of this proposal rather than any sponsor’s assertion about more efficient configurations – specifically the small number of flights affected, the aircraft types and the sponsor’s argument that the longer tracks miles arising from the GNSS (RNAV) IAPs are more than offset by the saved miles by eliminating missed approaches and diversions.

<b>6.2</b>	<b>Has the impact on CO<sub>2</sub> emissions impact been adequately presented in the consultation and the submitted proposal?</b>	<b>Yes</b>
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In terms of fuel burn and CO<sub>2</sub> emissions, the consultation states that the sponsor is “confident that CO<sub>2</sub> emissions, fuel burn and noise will not increase as a result from implementation of this proposed airspace change.” The sponsor’s rationale (that the new approaches will enable pilots to configure their arrival path more efficiently, as noted in 6.1 above) appears questionable as a justification for claiming a fuel benefit – on the face of it the longer approaches will incur additional fuel to fly a longer distance. However, for determining fuel and emissions impacts the best comparison is between those aircraft flying the proposed GNSS (RNAV) IAPs versus the alternative which would typically be either missed approaches or diversions to an airport further away. On this basis, it is more reasonable to conclude that any negative impacts upon fuel burn and CO<sub>2</sub> emissions are likely to be minor and may even be neutral or beneficial.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 9 of 15

<b>7.</b>	<b>Local Air Quality</b>	<b>Status</b>
<b>7.1</b>	<b>Has the impact on Local Air Quality been adequately assessed?</b>	<b>Yes</b>

In the proposal, the sponsor states:

“The Airport has considered the effects the proposed change may have on local air quality and in particular the effect on local air quality in the area surrounding the airport below 1,000 ft. The Airport has concluded that there is no net change in air quality as there is no increase in aircraft movements from this proposal. The number of individual aircraft movements under the new GNSS proposals by small and efficient aircraft is so small in absolute terms that the impact is believed to be negligible. Please refer to Appendix E.”

This rationale is reasonable. The airport does not sit within an Air Quality Management Area and the scale of the impact (relatively few light aircraft using slightly longer approaches) mean that there is very unlikely to be a detrimental impact on Local Air Quality from this proposal.

<b>7.2</b>	<b>Has the impact on Local Air Quality been adequately presented in the consultation and the submitted proposal?</b>	<b>Yes</b>
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Yes - the expectation of no impact on Local Air Quality (LAQ) is explained in both documents.

The expected negligible impact upon LAQ is explained in the consultation document. It advises that the GNSS (RNAV) IAPs have an increase in track miles (in comparison with the current approach paths), but that on the other hand the GNSS (RNAV) IAPs should ensure that missed approaches or diversions to other airports are reduced. Regardless of this argument from the sponsor for an offset in impacts, the scale of any impact (as noted above in 7.1) is likely to be insignificant, if any at all.

<b>8.</b>	<b>Tranquillity</b>	<b>Status</b>
<b>8.1</b>	<b>Has the impact on tranquillity been adequately considered?</b>	<b>Yes</b>

The Cornwall Area of Outstanding Natural Beauty (AONB) consists of 12 separate geographic areas, and Lands End Airport is situated in one of these (West Penwith) and the area is therefore overflowed by aircraft that use the airport. There will be no increase in traffic as a result of this proposal, and the sponsor has advised that vertical profiles are unchanged. Considering the modest degree to which the GNSS (RNAV) IAPs modify the approach paths for some of the runways (notably Runway 25), the small number of aircraft that are expected to use the GNSS (RNAV) IAPs, the fact that no increase in aircraft activity is anticipated, and that the airport currently already sits within an AONB, it is reasonable to expect that any negative impacts upon either tranquillity or visual intrusion as a direct result of this proposal will be minor.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	Annex E	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 10 of 15

<b>8.2</b>	<b>Has the impact on tranquillity been adequately presented in the consultation and the submitted proposal?</b>	<b>Yes</b>
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The possible impact upon tranquillity has been adequately presented in both the consultation and the proposal.

<b>9.</b>	<b>Visual Intrusion</b>	<b>Status</b>
<b>9.1</b>	<b>Has the impact of visual intrusion been adequately considered?</b>	<b>Yes</b>

As noted in 8.1, the airport is already sited within the Cornwall AONB. Based upon the expectation that this change will have minor changes on traffic patterns, the potential impact on visual intrusion has been adequately considered by the sponsor.

<b>9.2</b>	<b>Has the impact of visual intrusion been adequately presented in the consultation and the submitted proposal?</b>	<b>Yes</b>
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Yes – the possible impact due to visual intrusion has been adequately presented in both documents.

<b>10.</b>	<b>Biodiversity</b>	<b>Status</b>
<b>10.1</b>	<b>Has the impact upon biodiversity been adequately considered?</b>	<b>Yes</b>

Yes – based on the anticipated impacts of this proposal, there is unlikely to be any impact specifically upon biodiversity.

<b>10.2</b>	<b>Has the impact upon biodiversity been adequately presented in the consultation and the submitted proposal?</b>	<b>Yes</b>
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Yes – whilst there is no specific mention of biodiversity in the documents, this is not unreasonable considering that any environmental impacts are likely to be minimal (if any).

<b>11.</b>	<b>Continuous Descent Approaches</b>	<b>Status</b>
<b>11.1</b>	<b>Has the implementation of, or greater use of, CDAs been considered?</b>	<b>No</b>

Consideration of CDAs is not relevant for this proposal.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 11 of 15

<b>12.</b>	<b>Impacts Upon National Parks and/or AONBs</b>	<b>Status</b>
<b>12.1</b>	<b>Does the proposed change have an impact upon any National Parks or Areas of Outstanding Natural Beauty (AONBs)?</b>	<b>No</b>

The statutory purposes of National Parks are to conserve and enhance their natural beauty, wildlife, and cultural heritage and to promote opportunities for the understanding and enjoyment of their special qualities by the public. The statutory purpose of AONBs is to conserve and enhance the natural beauty of their area. In exercising or performing any functions in relation to, or so as to affect, land in National Parks and AONBs, the CAA is required to have regard to these statutory purposes under s.19 and Schedule 2 of the Civil Aviation Act 1982. This duty was re-stated in the revised Air Navigation Guidance issued in 2014.

This duty was also reiterated in the Aviation Policy Framework (March 2013) which stated “the CAA has legal duties to have regard to the purposes of National Parks and Areas of Outstanding Natural Beauty and must therefore take these into account when assessing airspace changes.”

Whilst recognising this duty it is also true that flights over National Parks and AONBs are not prohibited by this legislation as a general prohibition against over-flights would be impractical.

In the case of this proposal the airport is already sited within the Cornwall AONB (as noted in 8.1 above) and the proposal is not expected to have any worse impact upon the AONB than already occurs from the airport's activity.

<b>13.</b>	<b>Traffic Forecasts</b>	<b>Status</b>
<b>13.1</b>	<b>Have traffic forecasts been provided, are they reasonable, and have these been used to reflect the future impact of the proposal?</b>	<b>Yes</b>

Traffic growth forecasts were not provided other than an estimate for 2015 in comparison to historic air transport movements, but there is a statement confirming that a modest increase in traffic numbers might be expected but that this would not be as a direct result of implementing the proposed GNSS approaches.

However the consultation document does include an estimated forecast that 478 flights will use the GNSS (RNAV) IAPs each year. The breakdown of the 478 flights using the new approaches is:

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 12 of 15

- Runway 07 = 143 (30%)
- Runway 16 = 86 (18%)
- Runway 25 = 100 (21%)
- Runway 34 = 148 (31%)

<b>14.</b>	<b>Consultation</b>	<b>Status</b>
<b>14.1</b>	<b>If undertaken, has evidence of non-aviation stakeholder consultation been provided?</b>	<b>Yes</b>

A stakeholder consultation ran from 18 Aug 2015 to 16 Oct 2015, and LEA also took steps to ensure that appropriate community publicity was given to the consultation.

Consultees included Councillors and Officials of County, District and Parish Councils, and other representative organisations of communities which may be affected by the proposed change. Certain environmental organisations were included, as well as the airport's representative Member of Parliament.

The sponsor confirms that:

“A total of 23 responses were received, which included 6 emails, 6 letters and 11 feedback forms. Within the 23 responses received; 10 were from local residents, 4 were received from NATMAC members, 1 was received from MPs, 2 were from Councils, 1 was from a Health representative, 2 were from local ATCU's and 3 were from Environmental representatives.”

<b>14.2</b>	<b>Has account been taken of the results of the environmental factors raised by consultees or has evidence been provided to indicate why this has not been possible?</b>	<b>Yes</b>
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The sponsor states that there were “no modifications suggested or needed to the proposed structure” and that there were no negative responses – 21 of the 23 responses were supportive. This is borne out by our review of the responses received.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 13 of 15

<b>15.</b>	<b>Compliance with CAP 725</b>	<b>Status</b>
<b>15.1</b>	<b>Have all environmental assessment requirements specified in CAP 725 been met, where applicable?</b>	<b>Yes</b>

All relevant environmental assessment requirements have been met.

<b>16.</b>	<b>Other Aspects</b>	<b>Status</b>
<b>16.1</b>	<b>Are there any other aspects of the ACP, that have not already been addressed in this report, that may have a bearing on the environmental impact?</b>	<b>No</b>

There are no other aspects to note.

<b>17.</b>	<b>Recommendations</b>	<b>Status</b>
<b>17.1</b>	<b>Are there any recommendations for the Post-Implementation Review?</b>	<b>Yes</b>

- Monitor and record the use of GNSS (RNAV) IAPs for each of the runways, to ensure that post-implementation usage figures are available for comparison to estimated usage provided in support of the proposal.
- It would also be useful to compare the frequency of missed approaches and diversions pre-implementation with the frequency of occurrence post-implementation and so these instances should also be recorded for comparison.
- A representative sample of radar tracks portrayed on a map for comparison as part of the PIR. The portrayal should enable a clear comparison of GNSS (RNAV) IAPs versus visual approaches, in order to illustrate and difference in traffic patterns.

<b>18.</b>	<b>Government Approval</b>	<b>Status</b>
<b>18.1</b>	<b>Is the approval of the Secretary of State for Transport required in respect of the environmental impact of the airspace change proposal?</b>	<b>No</b>

No – there are no significant detrimental environmental impacts likely to arise as a result of this proposal, and therefore approval is not required from the Secretary of State.

	<b>Safety &amp; Airspace Regulation Group</b>	<b>DAP 1E</b>
Doc Type:	<b>Annex E</b>	Version: 1/2012
Title:	<b>Airspace Change Proposal Environmental Assessment</b>	Page 14 of 15

<b>19.</b>	<b>Conclusions</b>	
<b>19.1</b>	<b>Can an overall environmental benefit be demonstrated (or justified/supported)?</b>	<b>No</b>

Whilst no overall environmental benefit can be demonstrated, there is a good case for accepting the sponsor's argument that the introduction of GNSS (RNAV) IAPs will have a neutral impact (or at worse, a minor negative impact if it transpires that the noise impact upon St Just is perceptible).

### **Noise**

Any aircraft that flies the new GNSS (RNAV) IAPs will represent a re-distribution of the noise impacts, specifically for those geographical areas that are beneath the longer runway centrelines and the new initial segments. However, on the basis that the new procedures are likely to be used infrequently, by smaller aircraft and mostly over sparsely populated areas, this re-distribution is unlikely to have a major noise impact. The main location where an impact may be perceived is St Just where the aircraft arriving on the Runway 16 approach will fly over the town.

### **CO<sub>2</sub> Emissions**

Whilst the GNSS (RNAV) IAPs represent an increase in track mileage (and therefore increased fuel burn and emissions) in comparison with the visual approaches, the better comparison is with the fuel burn associated with missed approaches or diversions to other airports. Introducing GNSS (RNAV) IAPs should reduce the occurrence of both of these, and therefore there is a good case for accepting that the new approaches will at least be neutral in terms of CO<sub>2</sub> emissions, or may even provide a small benefit.

### **Local Air Quality**

This proposal is very unlikely to have any impact upon local air quality.

### **Tranquillity and Visual Intrusion**

As the airport is already sited with the Cornwall AONB, and the proposal is not expected to result in an increase in traffic, there is unlikely to be an impact upon tranquillity or visual intrusion as a result of this proposal other than the redistribution of a few arriving flights (i.e. those using the GNSS (RNAV) IAPs).

### **Biodiversity**

There is no anticipated impact upon biodiversity.

