

LAAG/10/L

## 1.0: New Flight Paths

On August 27<sup>th</sup>, 2009 the CAA formally approved RNAV (GNSS) (Area Navigation (Global Navigation Satellite System)) instrument approach procedures (flight paths) to both runway 21 and runway 03. The 3 CAA charts are shown in Appendix ???/. They are:

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- 1) Landing procedure (flight path) for runway 03 for all categories of aircraft
- 2) Landing procedure (flight path) for runway 21 for Category A & B aircraft (=up to Dash 8 size)
- 3) Landing procedure (flight path) for runway 21 for Category C aircraft (B737 etc)

There are a number of operational points to note:

(a) Lydd Airport will now have an instrument approach procedure for both runways - runway 21 and runway 03 - whereas previously it only had an instrument approach to runway 21. There will now be three instrument approach procedures to runway 21, as opposed to two in the past (the 5 degree offset Instrument Landing System (ILS) and a 22 degree offset Non-Directional Beacon approach), and one instrument approach procedure to runway 03, as opposed to none in the past.

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(b) The RNAV approach is a non precision approach procedure, which does not provide guidance to the pilot on the height of the aircraft, whereas the ILS is a precision approach procedure, which does provide vertical guidance. The RNAV approach is very new in the UK and although RNAV procedures are likely to replace ILS procedures in the longer term as the technology is refined, the ILS approach will remain the procedure of choice for the foreseeable future because of its greater precision.

(c) The Runway 21 RNAV procedure at Lydd Airport is offset 14 degrees, from the centre line and is inland of the current ILS approach (flight path). RNAV procedures for category C aircraft (for example, B737/Airbus 319) can be approved with an offset of up to 15 degrees which means the offset at Lydd Airport is close to the limit. This is another non standard flight procedure. The existing ILS is offset 5 degrees - already at the outer limit of ILS specification.

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(c) The runway 03 RNAV procedure is offset 5 degrees west of the centreline. Since it passes through the Lydd Range Danger Area, this approach procedure can only be used when the Range is not active.

(d) The new RNAV procedures will be bound by the same constraints as the existing ILS - activity at the Lydd and Hythe Military Ranges and the prevailing wind directions. As with the ILS, activity levels will be higher on runway 21 since landing on 03 is prohibited when the Lydd Military Range is active - 300 days of the year. The prevailing wind direction also favours activity on runway 21. Since the airport is not proposing to fly at night the 03 procedure could only be used for approximately 65 days or 18% of the year and since the majority of the winds are westerly ~70% favour runway 21, aircraft will only use the 03 approach for circa 25 days. During the 300 days of the year when the Lydd Military Range is active large aircraft such as a

Comment [M1]: But they can also use it when the range closes early for the day and when it opens late in the morning.

B737 will be forced to land on runway 21 irrespective of the wind direction with the associated implications for go-arounds, cancellations and diversions.

### 1.1: What are the implications of these new flight procedures?

(a) The new flight procedures/flight paths will have different noise and pollution profiles to the existing procedures/flight paths which need assessing.

(b) The RNAV approach to runway 21 is 14 degrees offset from the centre line compared to 5 degrees for the ILS. This means there will be almost three times as much turn required to align the aircraft with the centre line of the runway. This means another dimension of manual input and a greater probability of missed approaches and go-arounds than experienced using the existing 5 degree offset ILS procedure - the latter in turn having a greater probability of go-arounds than would be experienced with a standard ILS. This applies particularly to Lydd Airport as aircraft will frequently be forced to land in a tail wind because the Lydd Range is occupied for 300 days of the year. Go-arounds increase the level of activity in the vicinity of the airport with consequences for residents, the environment and nuclear safety.

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(3) The increased manual input by pilots on landing plus the higher incidence of missed approaches and go-arounds raises the incidence of crash damage at Dungeness. The RNAV approach to runway 21 could put aircraft significantly closer to the power station than the current ILS approach. For example, if the crew of an aircraft on a go-around determine that the aircraft cannot follow the right turn required by the missed approach procedure and they are forced to fly straight ahead, and this occurs at a time when D044 (Lydd Range) is active, the crew may decide that it's better to turn slightly left in order to clear the edge of D044. If they do this they will fly very close to, or directly over, the Dungeness nuclear power complex.

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### 1.2: Why has Lydd Airport applied for these new procedures?

It would appear that Lydd Airport now appreciates (no doubt thanks to Spaven Consulting's input included in previous LAAG responses) that it will be unable to fully utilise the extended runway with the existing ILS on runway 21. The airport is on record as stating that they will not be relocating the ILS localiser antenna as part of the runway extension project. Consequently, in order to meet international standards for the minimum distance between the runway threshold and the point where the ILS guidance beam crosses the extended centreline of the runway, the airport will have to declare the first part of the extended runway as not being available for landing.

Since the airport will not be able to declare the full length of the runway as being available for landing, this will seriously impede the commercial attraction of Lydd Airport because of its reduced operational viability, negating the purpose of the extension. For example, operators of larger aircraft such as the B737 and A319, may not be able to land with a full payload on the truncated runway availability in certain weather conditions.

The reduced runway length caused by the ILS configuration will also apply to aircraft using the RNAV approach to runway 21 so the new approach procedure will not give any advantages in that respect.

In the event that the airport decides that not having the whole of the newly extended runway length available for landing is unacceptable, they will have to move the ILS localiser antenna so that the ILS beam stays at the maximum 5 degree offset angle from the runway, but still meets the requirements for minimum distance to the runway threshold. This will require a re-design and approval of the ILS approach procedure.

A new ILS procedure will take time to be approved for the following reasons.

(a) The ILS localiser antenna will require moving. The existing localiser aerial is on the old cross runway which is outside the Dungeness Special Area of Conservation (SAC) and the Dungeness, Romney Marsh and Rye Bay SSSI. The new localiser aerial is likely to be further out from the centre line on the cross runway. Its close proximity to the boundaries of these important protected habitats means the environmental impact of the aerial's installation would need to be assessed.

(b) The airport won height concessions over the Western corner of the Hythe Range from the MOD for the existing ILS approach in a local agreement. Since the new ILS would result in further lateral encroachment into the Hythe Range this would need to be assessed and approved by the MOD. An FOI request to the MOD by LAAG revealed that the granting of the existing concession was controversial. There is thus no guarantee that a new concession will be granted, unless the lateral movement is small enough to be included under the existing local agreement.

### 1.3: Commercial Implications

If Lydd Airport does not apply for a revision of the ILS approach procedure, or it is denied one because the MOD will not grant further concessions at the Hythe Range, it will not be able to realise its stated ambitions in the planning application in the foreseeable future, since it will be difficult to attract the type of aircraft for which the runway extension is designed. The availability of the alternative RNAV procedure will not compensate for the limitations of the current or any new ILS.

The new RNAV procedures at Lydd are unlikely to make the airport more attractive to commercial operators. This is because:

- the runway 21 approach is significantly offset from the runway centreline, making it even more challenging to fly than the existing ILS approach
- the runway 03 approach is only usable when Lydd Range is not active
- these are non-precision approaches, with no vertical guidance
- the minimum heights to which aircraft are permitted to descend on the RNAV approach to runway 21 are the same as, or higher than, the minima for the ILS approach, so offer no advantages in that respect
- the minimum visibility in which the RNAV approach can be used is between 1200 and 1600 metres, compared to 900 metres for the ILS approach, so it requires better weather conditions

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Deleted: not yet standard procedures in the UK and it is unlikely that low cost operators, the most likely customers at Lydd, would embrace them because of their lack of precision – even relative to Lydd Airport's sub optimal ILS procedure (5 degree offset ILS).

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The result is that, like the existing ILS approach, the RNAV approach to runway 21 is likely to lead to more missed approaches, diversions and cancellations of flights than would be the case with a conventional straight-in approach procedure. The availability of an approach procedure to runway 03 will do little to alter this since it will not be available most of the time. This introduces greater uncertainty about the reliability of services to and from Lydd and therefore reduces the commercial attractiveness of the airport to airlines.

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## Summary

- The new RNAV approach procedures give Lydd Airport an instrument approach to runway 03 for the first time. However, this is a non precision approach so is inferior to an ILS procedure. The RNAV approach for 03 can only be used when the Lydd Range is inactive.
- Runway 21 now has three instrument approaches. The ILS approach is likely to continue to be the procedure of choice in the foreseeable future due to its greater precision. In the longer term once the RNAV (GPS) technology is refined, these procedures are expected to replace ILS procedures.
- The RNAV approach procedure for category C aircraft (for example, B737, A319) for runway 21 is 14 degrees offset from the centre line requiring a higher degree of manual input to bring aircraft onto the centre line than the existing 5 degree offset ILS procedure. The incidence of missed approaches and go-arounds is likely to be even higher than with the existing ILS.
- In the event of an aircraft emergency on approach the RNAV approach to runway 21 could put aircraft significantly closer to the power station than the current ILS approach.
- The new flight procedures/flight paths have different noise, pollution and safety profiles to the existing procedures/flight paths. These have not been assessed.
- The new RNAV approach procedure for runway 21 provides an alternative to the existing ILS approach procedure but without moving the ILS antenna, neither procedure will permit use of the full length of the extended runway 21 for landing,
- If Lydd Airport wishes to utilise the full length of the proposed extended runway for landing, they will need to have the ILS procedure re-designed.
- A new ILS procedure would involve the localiser aerial being moved which could have environmental consequences. It would also require concessions from the MOD as there would also be further encroachment into the Hythe Military Range.

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- Failure to obtain a new ILS procedure, in the foreseeable future, would further compromise the commercial future of Lydd Airport as aircraft such as the B737/A319 - for which the extended runway was designed - would not be able to utilise the full extension using the existing procedures,

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Recommendations

- Redo noise and pollution studies to take account of the new flight paths.
- Revisit the crash damage safety case through the Nuclear Installations Inspectorate
- Seek clarification from Lydd Airport as to whether it proposes to apply for a re-design of the ILS procedure. The operational viability of the airport would be further reduced if a new ILS were not secured, while the environmental consequences of the installation of a new ILS localiser aerial should be assessed before the planning application is determined, if one were to be secured
- The economic case for Lydd Airport must be re-appraised to take into account the possibility that the airport is not able, or chooses not to re-design the Instrument Landing System procedure.
- Lydd Airport should provide an overdue base case - an analysis as to why passenger numbers have been consistently lower than 5000 ppa for the last 10 years and why Lydd Airport needs to extend the runway when it is still only operating today at less than 1% of its current terminal and runway capacity of 300,000ppa and less than 2.0% of the Aviation White Paper's assessment of its likely projected operating capacity of 125,000 in 2030.

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