Impact Assessment

WHI REMOVAL FROM SERVICE
DECEMBER 2022

Any queries about this document should be addressed to:

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1 Contents list

2 Version History

This document will be amended as required, in accordance with ATCSL Change Management Procedures.

Version	Date of Issue	Description	Author	Checked by
DRAFT	14th June	First Draft	[redacted]	N/A
1	27th June	Issue 1	[redacted]	N/A
2	7th July	Issue 1	[redacted]	N/A
3	1st Augusy	Issue 3	[redacted]	N/A

3 Distribution (soft copy only)

1. CAA IFP
2. ATCSL Accountable Manager
3. ATCSL Safety Manager
4. Head of Airfield Operations (AIP Data Quality)
5. Osprey APDO

4 Abbreviations

AAL	Above Airfield Level
ACP	Airspace Change Proposal
AIP	Aeronautical Information Publication
APDO	Approved Procedure Design Organisation
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATCSL	Air Traffic Control Services Limited
CAA	Civil Aviation Authority
CAS	Controlled Airspace
DEMETER	Distance Measuring Equipment Tracer
DME	Distance Measuring Equipment
DOC	Designated Operational Coverage
FMS	Flight Management System
HON	Honiley
IA	Impact Assessment
IFP	Instrument Flight Procedure
LJLA	Liverpool John Lennon Airport
LoA	Letter of Agreement
LPL	Liverpool NDB
MAN	Manchester Airport
MATS	Manual of Air Traffic Services
MP2	Manual of Air Traffic Services Part 2
MTMA	Manchester Terminal Manoeuvring Area
NANTI	NANTI
NATS	National Air Traffic Services Limited
NDB	Non-Directional Beacon
NM	Nautical Mile
NSD	Non-Standard Departure
PC	Prestwick Centre, referring to Wallasey Sector
PBN	Performance Based Navigation
REXAM	REXAM
RNAV	Area Navigation
RWY	Runway
SID	Standard Instrument Departure
STAR	Standard Arrival Route
VHF	Very high Frequency
VOR	VHF Omnidirectional Range
WHI	Whitegate NDB

5 Purpose

The purpose of this impact assessment is to assess all implications and potential solutions of WHI NDB being removed from service in December 2022.

6 Identified Impacts

1. AIP Textual Data
2. Charts related to an aerodrome
3. MATS Part 2 Entries
4. LoA (Internal and Externa)
5. Engineering Implications

7 AIP Textual Data

All references within the AIP textual data to WHI will need to be removed. See Section 13, Other Remarks.

WHI is also used within the AIP as a trigger point for pilots when left hand downwind to runway 27, to avoid Manchester CAS. When flying right hand downwind to runway 27, the trigger point is 8DME I-LQ, to avoid Manchester CAS. See section 13, Other Remarks.

8 Charts Related to an Aerodrome

The NANTI 2V SID has a dependency upon WHI NDB. See Section 12.

9 MATS Part 2 Entries

All references within the MP2 textual data to WHI will need to be removed.

10 LoA (Internal and External)

All references within the MP2 textual data to WHI will need to be removed.

11 Engineering Implications

There are currently no engineering implications for the removal of WHI NDB from service.

ATCSL, or LJLA, are not required to maintain the WHI NDB.

12 NANTI 2V Options

Options, and impacts, to compensate for removal of this ground base feature:

1. **Removal of the SID**

    a. Removal of the NANTI 2V SID would mean that Liverpool does not have a direct SID towards the Southeast from runway 09. All southbound departures would have to fly a REXAM 2V.
    b. By flying a REXAM 2V when the flight planned route would be towards NANTI, could cause major FMS related discontinuity. FMS would not be able to formulate a route REXAM -NANTI. Increasing the workload for the flight deck on the ground or when airborne.
    c. Potential for confusion on the flight deck
    d. On the ground crews would ask ATC for a confirmation of the routing after REXAM, increasing workload for LJLA ATC.
    e. There is an increased risk of an incorrect routing given to crews.
    f. By routing REXAM- NANTI would increase track miles for departure, increasing fuel burn, CO2, and noise for residents.
    g. ATC could have the option to tactically intervene, however, this would be on a (LJLA and PC) workload basis.

2. **RNAV Substitution**

    a. RNAV 1 equipped aircraft at Liverpool is 85.2%
    b. Those aircraft unable to fly an RNAV substitution, would need to advise ATC on first contact.
    c. A heading and level following the track of the SID would be offered as part of the clearance on start-up.
    d. This is already a managed situation at LJLA when Manchester operates on runway 05.
    e. Engagement with PC to ensure workable headings and levels.
    f. Amendment to both LJLA and PC MP2, to account for the heading and level for those not equipped to fly and RNAV 1.
    g. No change in fuel burn, noise, or CO2 emissions.

3. **Non-Standard Departure Routings**

    a. Non-equipped RNAV 1 aircraft at LJLA is 14.8%
    b. No chart could be written, therefore full explanation would be need as part of the ATC clearance
    c. Although LJLA ATC does manage this situation when Manchester operates on runway 05, this option has the potential to increase the workload for ATC.
    d. More potential for crews to fly the wrong routing, assuming it is the current in service NSD.

e. Engagement with PC to ensure workable headings and levels.

f. Amendment to both LJLA and PC MP2.
g. NPR ends at 3,000ft meaning ATC can vector where needed.
h. No change in fuel burn, noise, CO2 emissions or against current routings.

4. Use of another feature

a. HON has been discussed as a potential replacement feature.
b. Aircraft departing Liverpool runway 09, might not be able to pick up the ident of HON within the required distance to replicate the NANTI 2V SID.
c. Based operator has attempted to ident HON when departing Liverpool Airport, first ident received was when passing through 5,000ft and an automatic ident at 7,000ft.
d. Second based operator found no HON ident when on the ground, received audio ident at 5,500ft and FMS was able to detect it at 6,000ft.
e. Annex A contains the DOC of HON at 3,500ft, using Eurocontrol DEMETER.

5. Re-design

a. LJLA is currently involved with the MTMA ACP, which is a redesign of SID's. STAR's and transitions. A re-design of the NANTI2V SID would lead LJLA to additional ACP inside of the long-term plan.
b. LJLA would not be able to resource a further ACP for a new SID.
c. A newly designed SID would only be in service for a relatively short period.

13 Other Remarks

1. During initial engagement with IFP, it was felt the "or" instruction should be considered for removal from the SID.

   a. By using an "or" instruction it can lead to differing flight profiles dependent upon the airline or where the crew originate from. I.e., an LJLA crew could interpret to manually turn the aircraft at 580ft, whereas a MAN based crew would turn at the 1DME point, as this is coded into the FMS.

2. In EGGP AD 2.22 FLIGHT PROCEDURES, the following is listed within para 6.2

   2.Manchester Runway 23L or 23R

   Left Hand Circuit to Runway 27 is available. Aircraft shall be required to pass south abeam Liverpool Airport at or below 3000 FT descending to be 2000 FT or below north abeam WHI NDB. For a Right-Hand Circuit to Runway 27, aircraft shall be required to pass north abeam Liverpool Airport, WAL 10d, at or below 4000 FT descending to be 2500 FT or below by WAL 18d.

A potential solution could be offered by changing the wording from AD 2.EGGP-8-5 Caution 2.

When receiving radar vectors for RWY 27 approaches, pilots should question ATC if no base leg turn has been passed by the time the aircraft reaches WAL D18 east of the airfield, due to proximity of the Manchester CTA. In the event of suspecting a loss of comms, aircraft are to select the appropriate squawk and carry out the RCF procedures.

3. To account for WHI no longer identing our proposal would for the AIP entry would be as follows:

Left Hand Circuit to Runway 27 is available. Aircraft shall be required to pass south abeam Liverpool Airport at or below 3000 FT descending to be 2000 FT, by I-LQ D8 east of the airfield. For a Right-Hand Circuit to Runway 27, aircraft shall be required to pass north abeam Liverpool Airport, WAL 10d, at or below 4000 FT descending to be 2500 FT or below by WAL 18d.

14 Based Operator's Comment

Substitution of the NANTI 2V SID is supported by based operators at Liverpool.

Removing of "or" within the SID would be helpful for coding in the FMS.

HON VOR/DME did not ident on the ground in LPL nor during initial departure. Aural ident (morse) was received passing 5000'AAL and automatic ident passing 7000'AAL.

No HON ident on the ground. Eventually received an audio ident passing 5500' and the aircraft systems detected it at 6000'.

Replacement for WHI is needed to ensure aircraft can meet height profiles.

15 Osprey APDO Comment

We believe the NANTI 2V SID is suitable for RNAV substitution.

The removal of the 'or' qualifier is supported.

16 Summary

WHI NDB is due to be turned off at the end of December 2022 and removed from service during 2023. LJLA are currently engaging in a process with other users of MTMA to redesign SID's, STAR's and transitions based upon PBN, rather than traditional Ground Based Aids. It is therefore the intention that any solution proposed will be a short-term solution between using WHI and the eventually deployment of the MTMA ACP.

Removal of the NANTI 2V SID leaves LJLA with only one SID heading towards the South, meaning aircraft would need to fly away from the track they need to reach mainland Europe. Having all south bound departures head Southwest first, then needing to be turned Easterly, will lead to increased workload for the flight deck and ATC around Hawarden airport. There is also a major risk around discontinuity for the FMS, not being able to create a link from REXAM to NANTI.

A redesign of a new NANTI 2V SID is not a solution for LJLA, this could lead to a full ACP. Given the amount of resource invested in the MTMA ACP, LJLA wouldn't be able to commit any more to a further ACP. Theoretically, MTMA deployment could be in service before the redesigned SID is approved.

From a technical point, the DOC for HON, is not strong enough at 3,500ft to support a Ground Based Nav aid SID. This means there is no other feature available to base a NANTI 2V SID on. Therefore, a PBN solution would be the basis for any SID heading to the Southeast.

RNAV Substitution would allow LJLA to continue operations as it does today, causing the least disruption to residents, fuel burn, CO2, noise and MTMA operations. With those equipped operators at LJLA supporting a substitution rather than any form of replacement or removal.

The percentage of users unable to fly an RNAV 1 is 14.8%. In these cases, a tailored solution would be agreed as part of this change process. LJLA ATC would work in-coordination with PC. Once agreed these instructions would then be entered into both MP2's and inserted to the AIP. With this percentage of aircraft ATC would be able to monitor to ensure they follow the instructions correctly.

An all operators use of non-standard routings to replace the SID option, would increase LJLA ATC workload dramatically as all aircraft would need the heading and level information on start, even if they can fly an RNAV Substitution. In the initial phase of this deployment there is a real risk that crews could fly the incorrect NSD. LJLA ATC would need to monitor each departure flying this route to ensure they comply correctly.

In summary, a blend of both Option 2, RNAV Substitution and Option 3, Non-standard Departure Routings, would be the ideal situation for LJLA once WHI is turned off. By blending the two options would allow LJLA to continue the current operations as we do today and allow for a variety of fleet mixes which might be unable to fly an RNAV substitution. Of XX% unable to fly an RNAV1, ATC would be able to monitor these departures to ensure the complied with the alternative NSD.

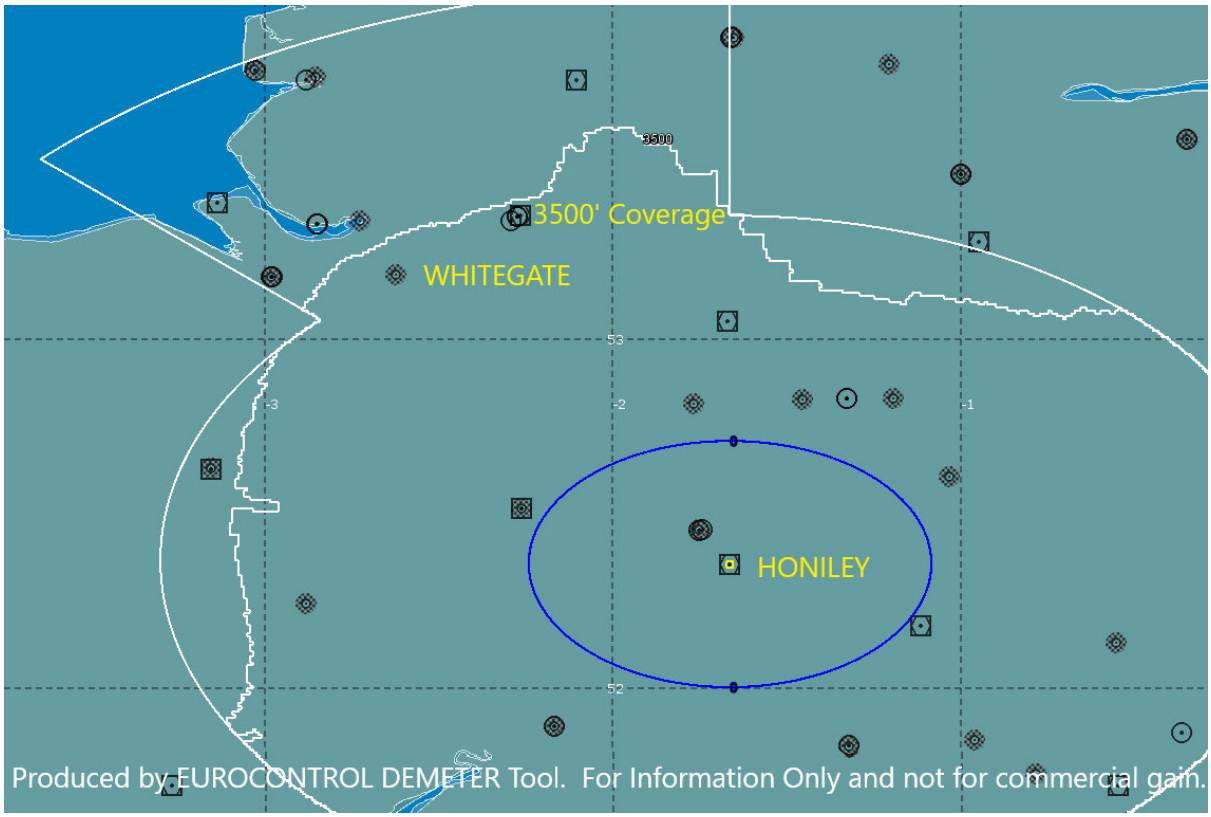
During this work to find a solution for when WHI is turned off, it does seem the most opportune point to look at what the "or" instruction offers the departure SID. It can lead to different interpretations of the initial turning point when departing. Therefore, basing the SID on 1DME would mean all operators fly the SID the same, regardless of aircraft performance. Allowing easy entry to the FMS.

A replacement marker for height profiles is needed to ensure that crews can follow the requirements of downwind left hand for runway 27 at LJLA.

Furthermore, as WHI will no longer be active, all references should be removed from the AIP, during this process.

Overall, the basis of this IA is to provide a link between today's operation and the deployment of the MTMA ACP, with least impact to all.

Annex A – HON 3,500ft Coverage DEMETER Tool



Annex B – FMS Coding Visuals


RECALL
FROM
SEC
NANT2V TIME SPD/ALT
EGGP09 0000 ---/ 60
C086° 2NM
60 ---- ---/ -----
NANT2V TRK111° 0
LVR10 ---- ---/ +580
NANT2V 11
WHI ---- ---/ +3500
NANT2V 4
NANTI ---- ---/ 4000
DEST TIME DIST EFOB
EGGP ---- 33 -----
A/C POSITION INVALID
BRT
DIR
PROG
PERF
INIT
DATA
F-PLN
RAD NAV
FUEL PRED
SEC F-PLN
ATC COMM
MCDU MENU
AIR PORT
NEXT PAGE
A B C D E
F G H I J
K L M N O
1 2 3

Annex C – Liverpool RWY 09 Departures/ Manchester RWY 23R Departures