NATS

DVOR Rationalisation
Removal of En-Route Dependencies
WCO/ WOD NDBs & BIG/ BNN/ MID DVORs
Stage 1 Assessment Meeting

September 2019

Agenda

- Statement of need
- Project Background
- Summary of Procedures impacted
- Provisional BNN VOR, WCO and WOD NDBs rationalisation timescales
- Engagement and next steps
- Summary

Statement of Need V5 (#3409)

In order to facilitate the eventual removal of the Westcott (WCO) and Woodley (WOD) NDBs; and Bovingdon (BNN), Midhurst (MID) & Biggin Hill (BIG) DVORs, it is proposed to remove the en-route dependencies from these facilities. Any STARs that use these facilities and not changed by previous DVOR Removals will either be dis-established or made RNAV5, and designated by their start points in line with ICAO. Any alternate STARs a& Holds will be removed.

In the event that the removal of the dependency requires truncation/ rationalisation of existing STARs, then any portions of STARs removed or rationalised will be replaced by an ATS Route or DCT.

The outer Holds at HON, DELBO as well as at OKESI for OCK arrivals will also be made RNAV and added to the relevant RNAV STAR Charts.

Finally, as part of this proposal, NATS will take the opportunity to re-designate other STARs that appear on the same chart.

This proposal will therefore remove the en-route dependency from the Biggin Hill, Bovingdon and Midhurst DVORs, and Westcott NDBs. None of the above will result in a change of tracks over the ground or vertical profile at or below 7,000ft.

This SoN replaces DAP1916-3369 (V4.1).

Current situation
Aircraft flying the routes use the Westcott NDB, Bovingdon VOR to route through.
Issue or opportunity to be addressed, and the cause
The Westcott, Bovingdon NDB/VORs will eventually be removed from service to reduce costs and dependency on ground based aids
Desired outcome
Removal of en-route dependency on the Westcott NDB and Bovingdon VOR
Specific challenges
None identified

Project Background

- NATS operates 46 DVORs around the UK (installed 1982-91)
- These are operating beyond their 15-year design life resulting in:
    - High maintenance costs
    - Airport development work prevented by Safeguarding of DVORs
    - RNAV5 mandate for ATS routes - no need for all 46 DVORs to support en-route ops
- NATMAC consultation (already undertaken)
    - Supported by SARG, UK FAS and UK-Ireland FAB PBN Policy
    - Over time, reduce 46 DVORs to 19, removal from service of 27x DVORs
- Need to rationalise the DVORs and associated flight procedures
    - Removing en route dependencies from SAM/ OCK, GWC, GAM, BIG, GOW and TRN which have been already submitted
    - Works towards UK FAS and PBN policy
    - Reduces dependence on ground infrastructure without reducing en route services
- Overall DVOR Rationalisation Programme
    - Reduces NERL annual operating costs by c. £¼m pa when down to 19 DVORs
    - Removes excess duplication of coverage, retains appropriate redundancy

Procedures

Summary of procedures

Procedure detail

Summary of Procedures I

29 procedures in the AIP which reference BIG/ BNN/ MID DVOR or WCO/ WOD NDB on their charts, serving Birmingham, London City, Gatwick, Heathrow, Luton /Stansted and Southend airports: **5 Holds** and **24 STARs.** These will all be reviewed under the scope of this ACP.

14 STARS and 5 Holds to be modified

10 procedures will be removed

Table 1 provides a summary of all affected procedures

Ref	Airport	Type	Procedure	Dependency
1	Birmingham	STAR	GROVE 1B	Dependent on BIG and routes via WCO
2	Birmingham	STAR	GROVE 1C	Same chart as WCO
3	Birmingham	STAR	GROVE 1A	Same chart as WCO
4	London City	STAR	JACKO 1A	Same chart as WCO
5	Gatwick	Hold	DELBO	Same chart as MID
6	Gatwick	STAR	WILLO 3B	Dependent on MID
7	Gatwick	STAR	DISIT 1G	Same chart as MID
8	Gatwick	STAR	TIMBA 1D	Dependent on MID
9	Heathrow	Hold	HON Hold	Same chart as WCO
10	Heathrow	Hold	WCO Hold	Same chart as WCO
11	Heathrow	Hold	OKESI Hold	Same chart as WCO
12	Heathrow	STAR	BNN 4A	Dependent on BNN and routes via WCO
13	Heathrow	STAR	BNN 1B	Dependent on BNN and routes via WCO
14	Heathrow	STAR	BNN 1C	Dependent on BNN and routes via WCO
15	Heathrow	STAR	BNN 1D	Dependent on BNN

Summary of Procedures II

Ref	Airport	Type	Procedure	Dependency
16	Heathrow	STAR	BNN 1E	Same chart as BNN
17	Heathrow	STAR	BOVVA 4A	Same chart as WCO
18	Heathrow	STAR	BOVVA 1B	Same chart as WCO
19	Heathrow	STAR	BOVVA 1C	Same chart as WCO
20	Heathrow	STAR	BOVVA 1D	Same chart as WCO
21	Heathrow	STAR	BOVVA 1E	Same chart as WCO
22	Luton/ Stansted	STAR	LOREL 5A	Dependent on WCO
23	Luton/ Stansted	STAR	LOREL 1B	Dependent on WCO
24	Luton/ Stansted	STAR	LOREL 2L	Dependent on WCO
25	Luton/ Stansted	STAR	ASKEY 5A	Dependent on WCO
26	Luton/ Stansted	STAR	ASKEY 1B	Dependent on WCO
27	Luton/ Stansted	STAR	ASKEY 2L	Dependent on WCO
28	Southend	STAR	SPEAR 1A	Dependent on WCO
29	Southend	Hold	SPEAR Hold	Same chart as WCO

1 procedure has a dependency on **BIG DVOR**
4 procedures have a dependency on **BNN DVOR**
2 procedures have a dependency on **MID DVOR**
7 procedures have a dependency on **WCO NDB**
15 procedures have a depiction of BIG/ BNN/ MID DVOR or WCO/ WOD NDB on AIP charts but do not rely on it.

Procedure Detail: Holds and STARs referencing BNN VOR/ WCO NDB

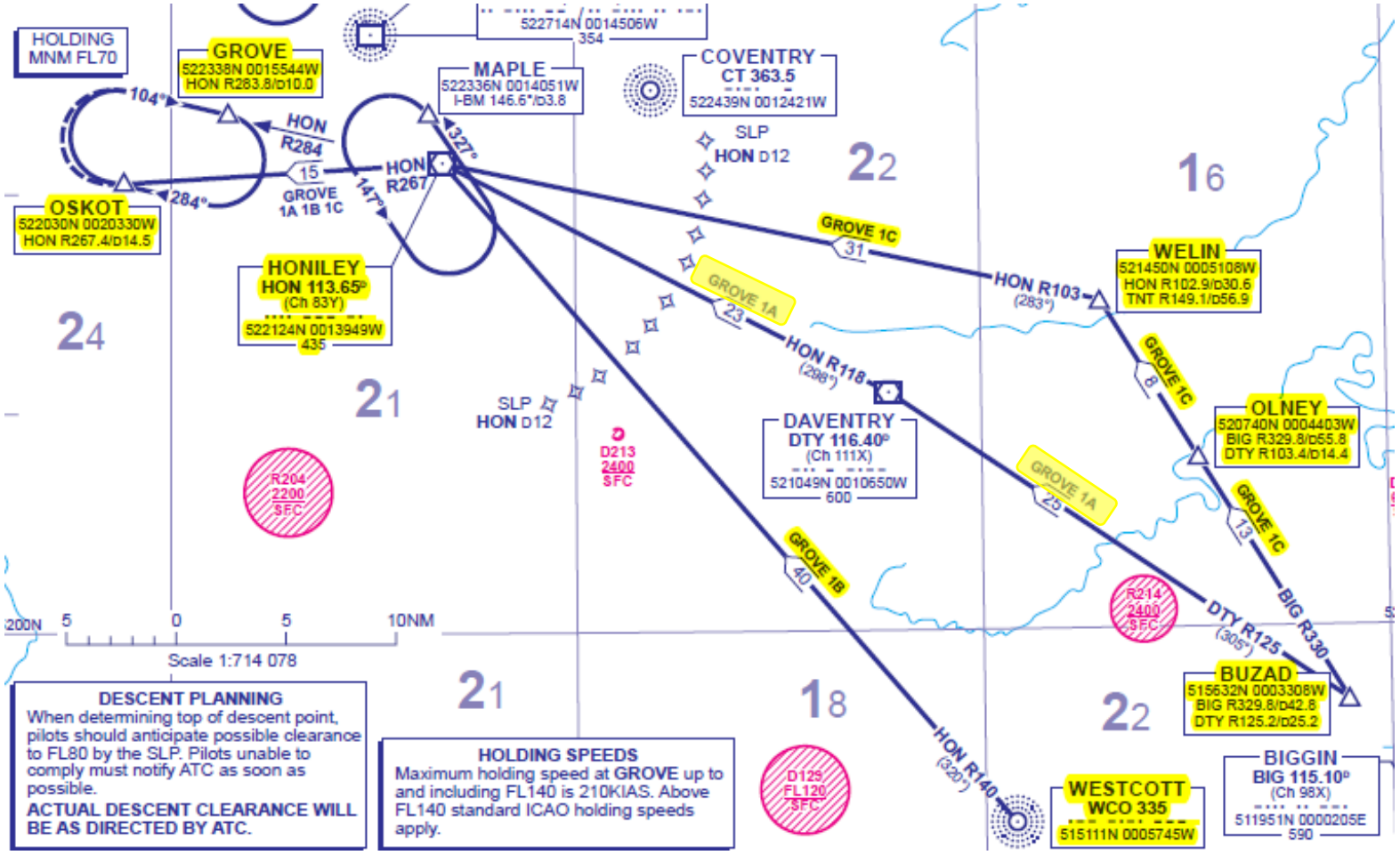
WCO Procedures: Birmingham STARs

The following 3 STARs feature on the same chart as the WCO NDB and associated procedures; which form part of this proposal.

1) **GROVE 1B** has a route connectivity via M183, Q41 of:
WCO – HON – OSKOT – GROVE

2) **GROVE 1C** has a route connectivity via L610, M184, T420 of:
BUZAD – OLNEY – WELIN – HON – OSKOT – GROVE

3) **GROVE 1A** has a route connectivity via L10 of:
BUZAD – DTY – HON – OSKOT - GROVE

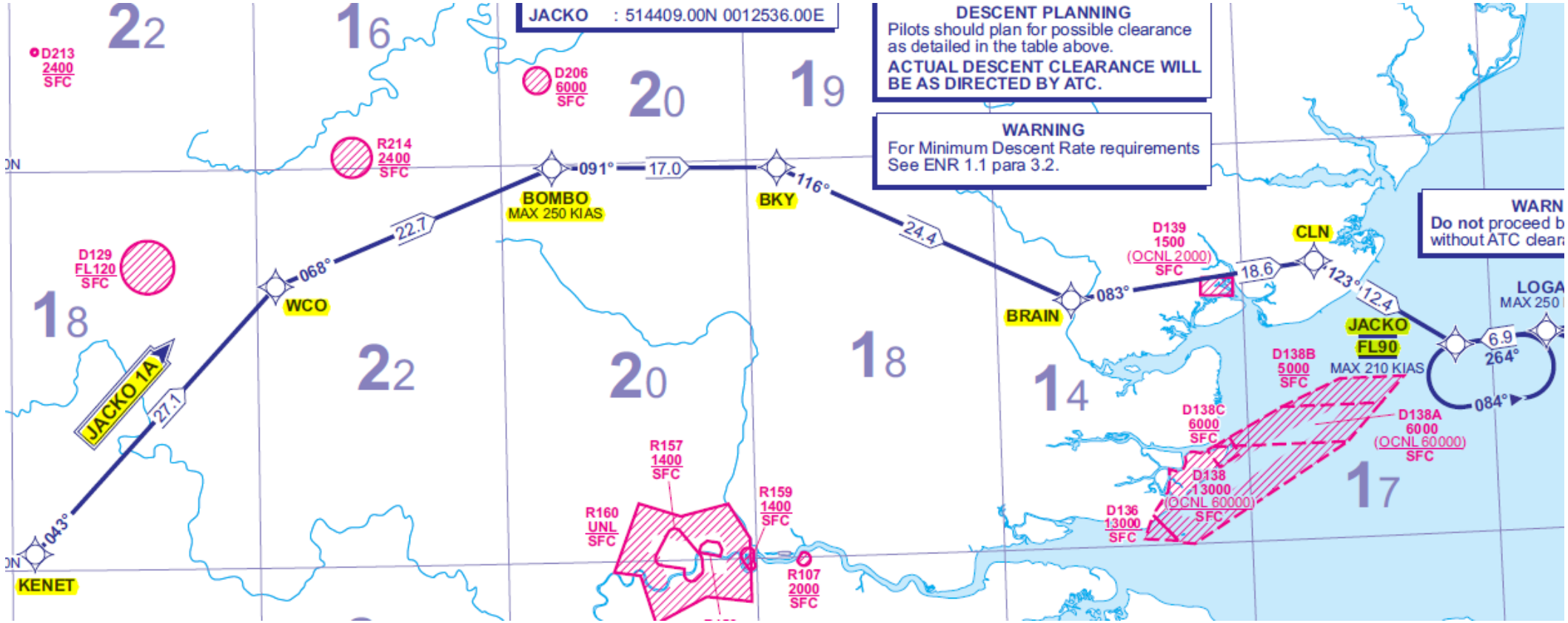


WCO Procedures: London City STAR

The following STAR features on the same chart as the the WCO NDB and associated procedures; which form part of this proposal.

4) JACKO 1A route connectivity via Q63 of:

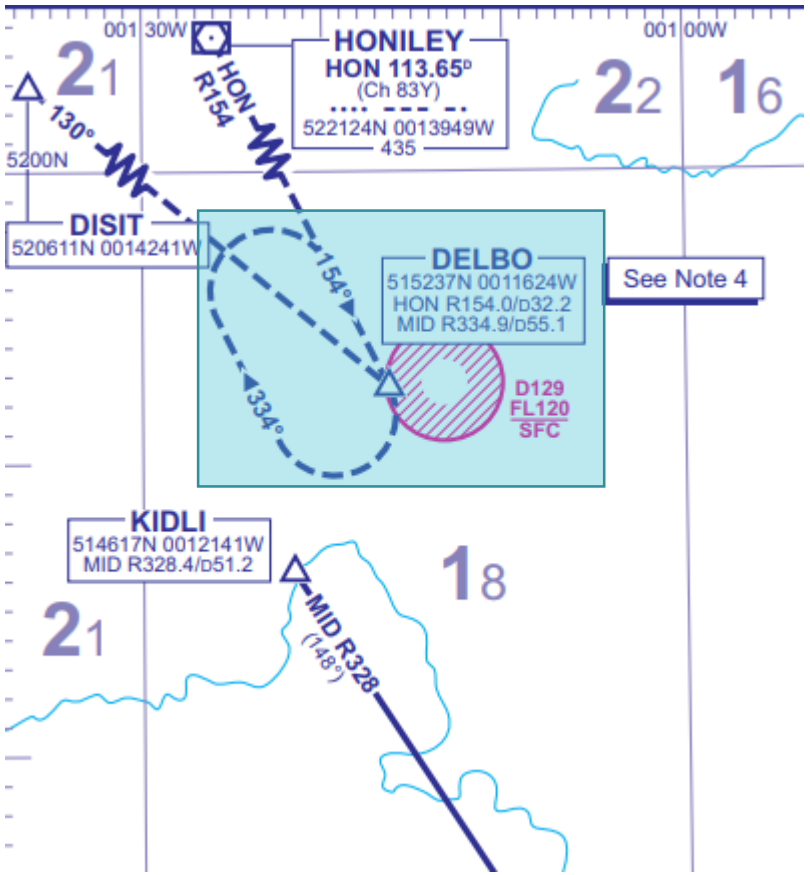
KENET – WCO – BOMBO – BKY – BRAIN – CLN - JACKO



MID Procedures: Gatwick Hold

The Gatwick DELBO Hold is a conventional outer Hold.

5) DELBO Hold – Floating Hold



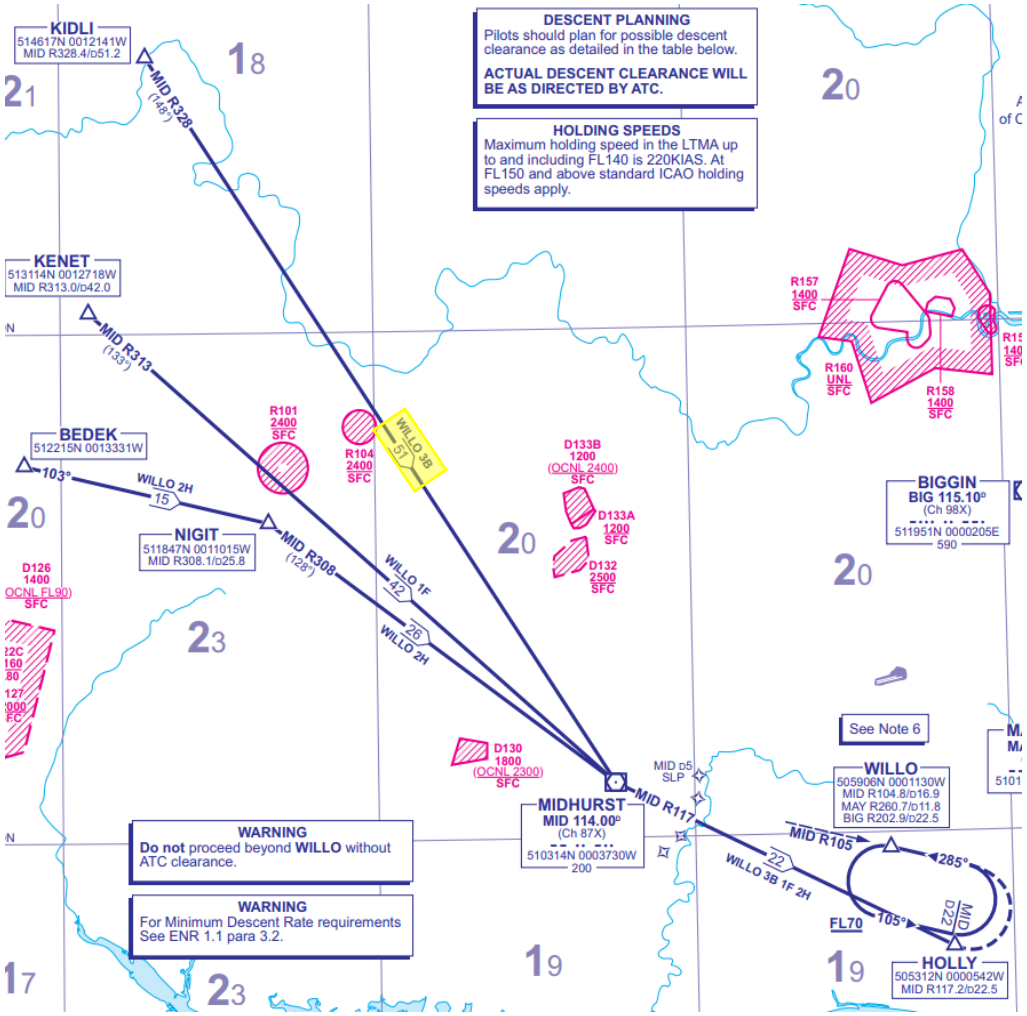
BIG/ MID Procedures: Gatwick STARs

Whilst not dependent on BNN/ WCO, including the WILLO 3B Gatwick STAR will complete the removal of MID en-route dependency. It also impacts the same Sectors as those affected by the BNN STARs.

The WILLO 3B will be RNAV replicated as KIDLI 1G whilst the DISIT 1G STAR will be a replication of the WILLO 3B, but extended back to DISIT to take account of the required Descent Planning Level.

6) **WILLO 3B** has a route connectivity via L151 of:
KIDLI – MID – HOLLY – WILLO

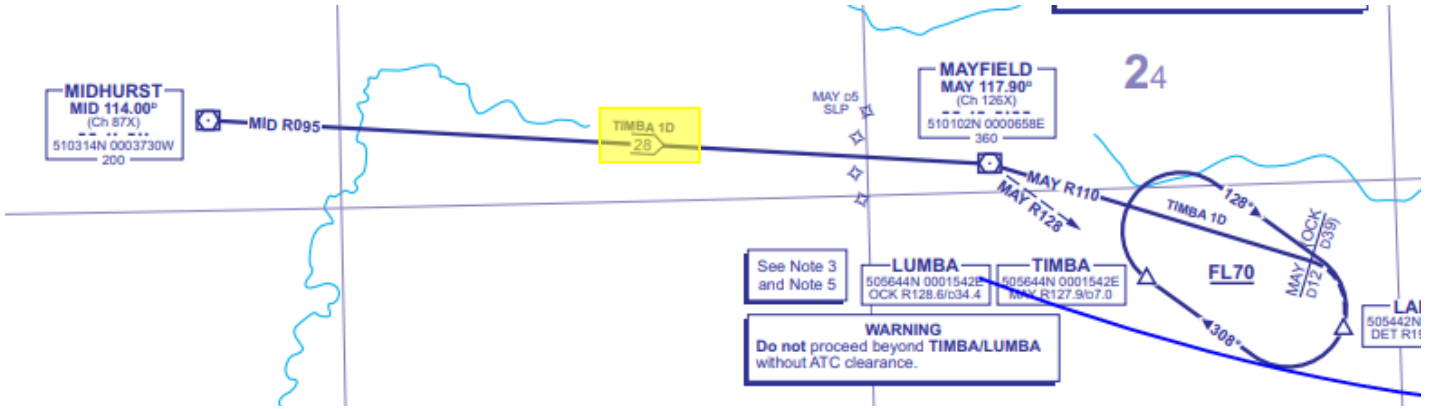
7) **DISIT 1G** rationalisation of current WILLO 3B STAR



BIG/ MID Procedures: Gatwick STARs

Whilst not dependent on BNN/ WCO, including these Gatwick STARs will complete the removal of MID en-route dependency. They also impact the same Sectors as those affected by the BNN STARs.

8) TIMBA 1D Stack-swap STAR, not flight plannable



WCO Procedures: Heathrow Holds

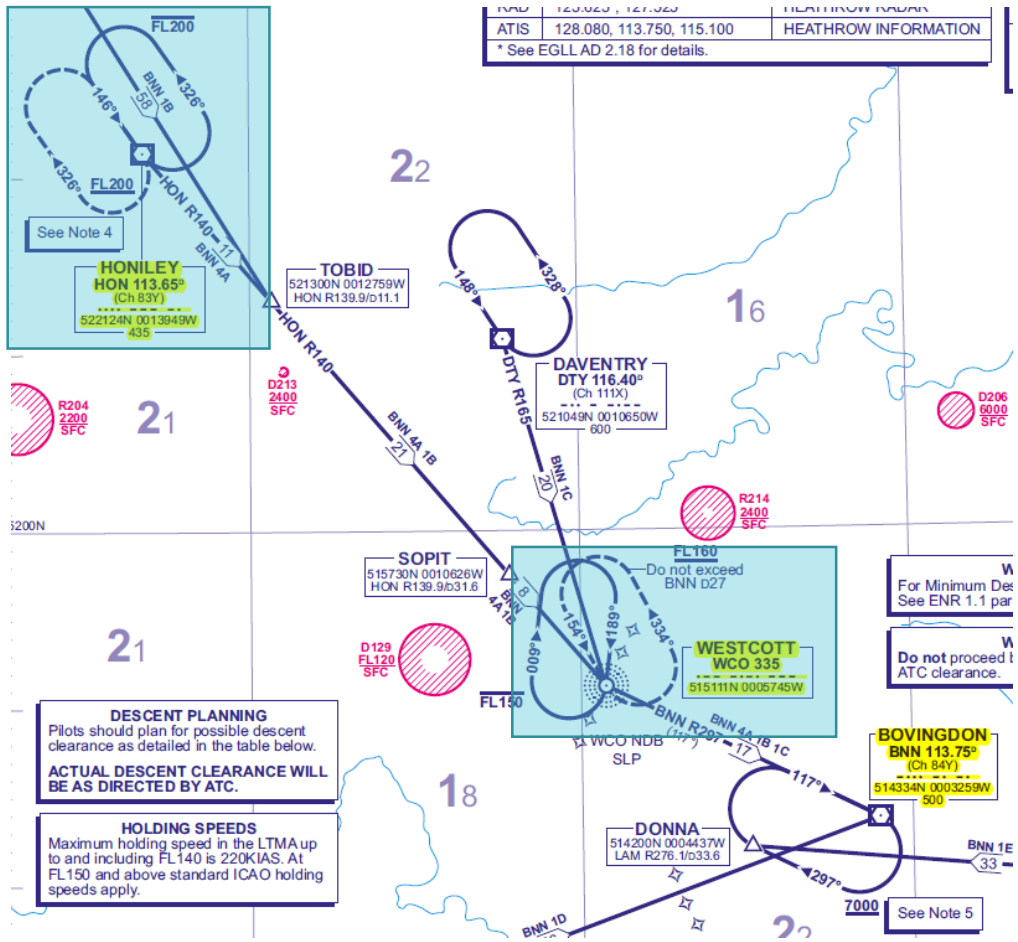
There are 10 Heathrow STARs and 2 Holds using the WCO NDB/BNN VOR, or featuring on the same charts

The HON and WCO Holds feature on the same chart as the WCO NDB; which form part of this proposal. The OKESI Hold is published as an RNAV Hold in ENR 3.6.

9) HON Hold

10) WCO Hold

11) OKESI Hold



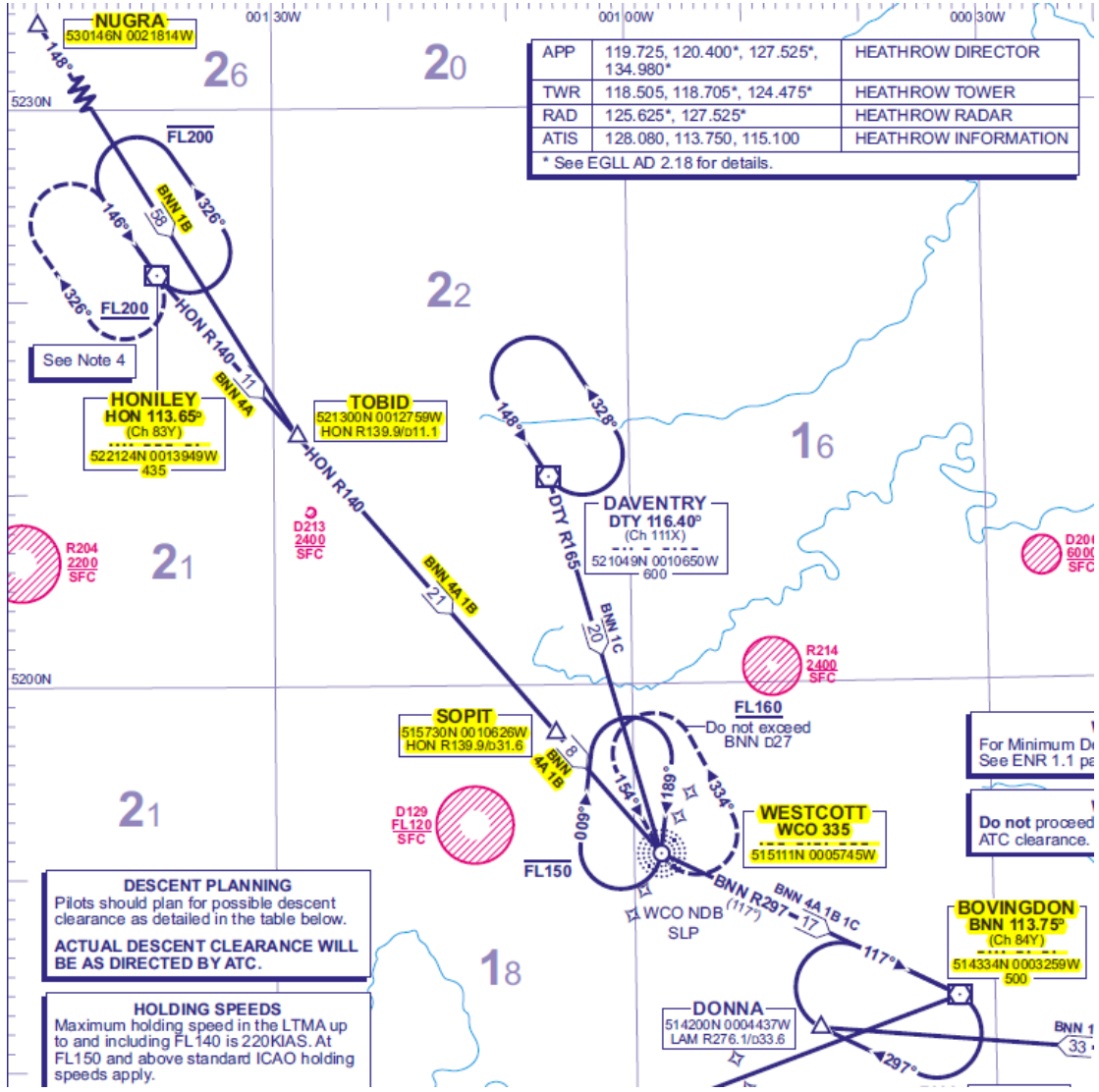
HLDG ID/ FIX/ WPT Coordinates	INBD TR (°MAG)	Direction of PTN	MAX IAS (KT)	MNM/ MAX HLDG LVL	TIME or DIST OUBD	Controlling Unit and Frequency	Remarks
OKESI 512636N 0020342W	103°	Left	240	_ / _	1.5 MIN		RNAV Hold

BNN Procedures: Heathrow STARs

12) BNN 4A (BNN dependency) has a route connectivity via L8, L15, L10 and L612 of:
HON – TOBID – SOPIT – WCO – BNN

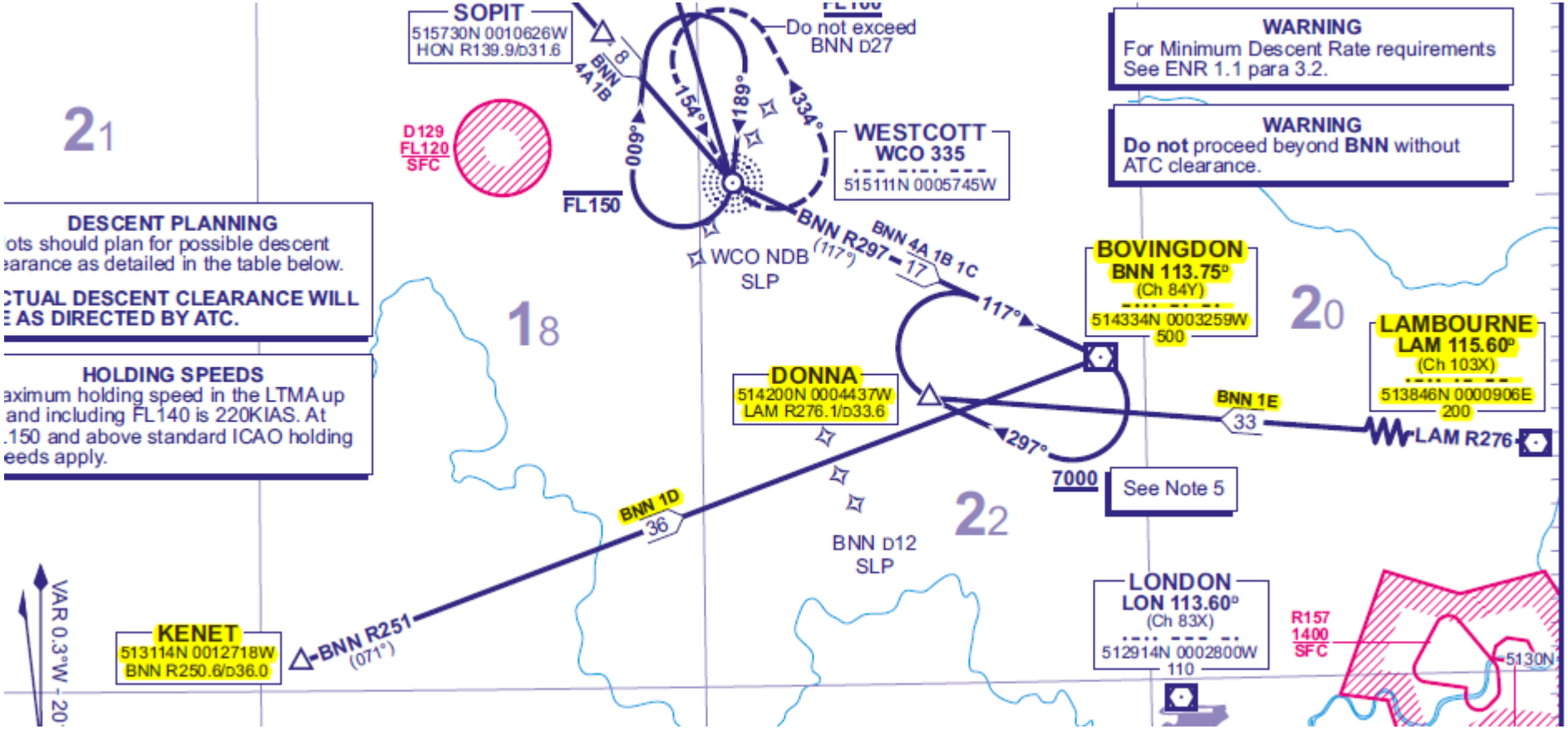
13) BNN 1B (BNN dependency) has a route connectivity Q36, Q38 and Y53 of:
NUGRA - TOBID – SOPIT – WCO – BNN

14) BNN 1C (BNN dependency) has a route connectivity of:
DTY – WCO - BNN



BNN Procedures: Heathrow STARs

15) BNN 1D (BNN dependency) Stack-swap STAR, not flight plannable
16) BNN 1E (same chart as BNN VOR) Stack-swap STAR, not flight plannable



WCO/BNN Procedures: Heathrow STARs

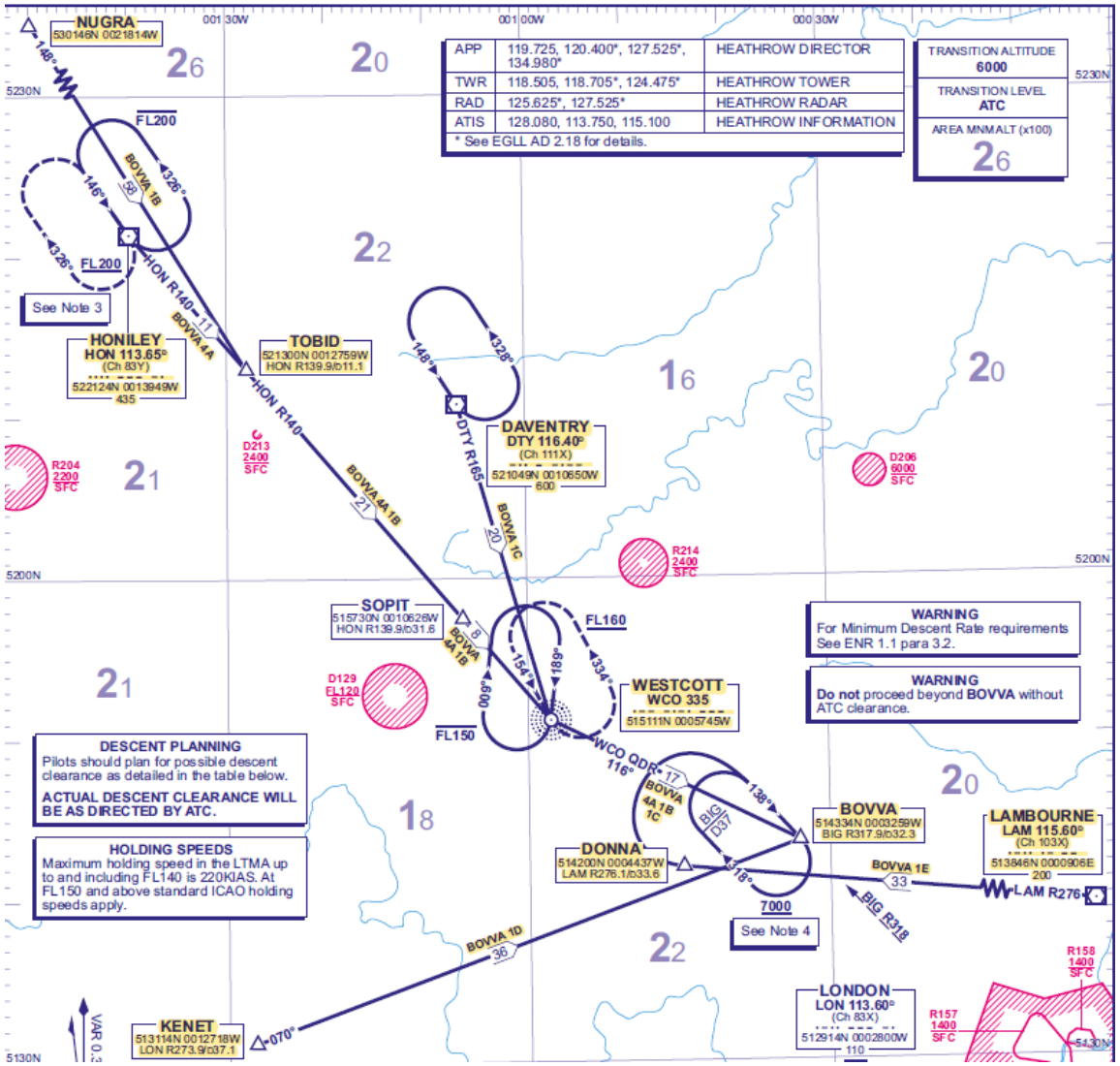
17) BOVVA 4A (same chart as WCO NDB) has a route connectivity via L10, L15 and L612 of:
HON - TOBID - SOPIT - WCO - BOVVA

18) BOVVA 1B (same chart as WCO NDB) has a route connectivity via (U)Y53 of:
NUGRA - TOBID - SOPIT - WCO - BOVVA

19) BOVVA 1C (same chart as WCO NDB) has a route connectivity via M605 of:
DTY - WCO - BOVVA

20) BOVVA 1D (same chart as WCO NDB) Stack-swap STAR, not flight plannable

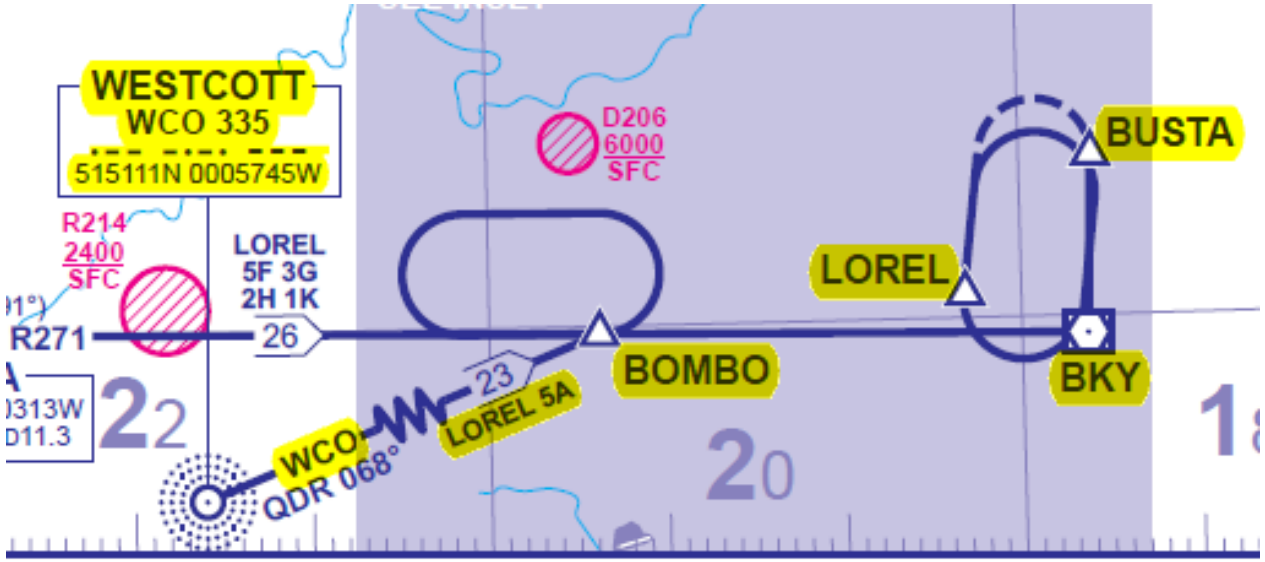
21) BOVVA 1E (same chart as WCO NDB) Stack-swap STAR, not flight plannable



WCO Procedures: Luton & Stansted STARs

There are 6 Luton / Stansted STARs which either use the WCO NDB or feature on the same chart.

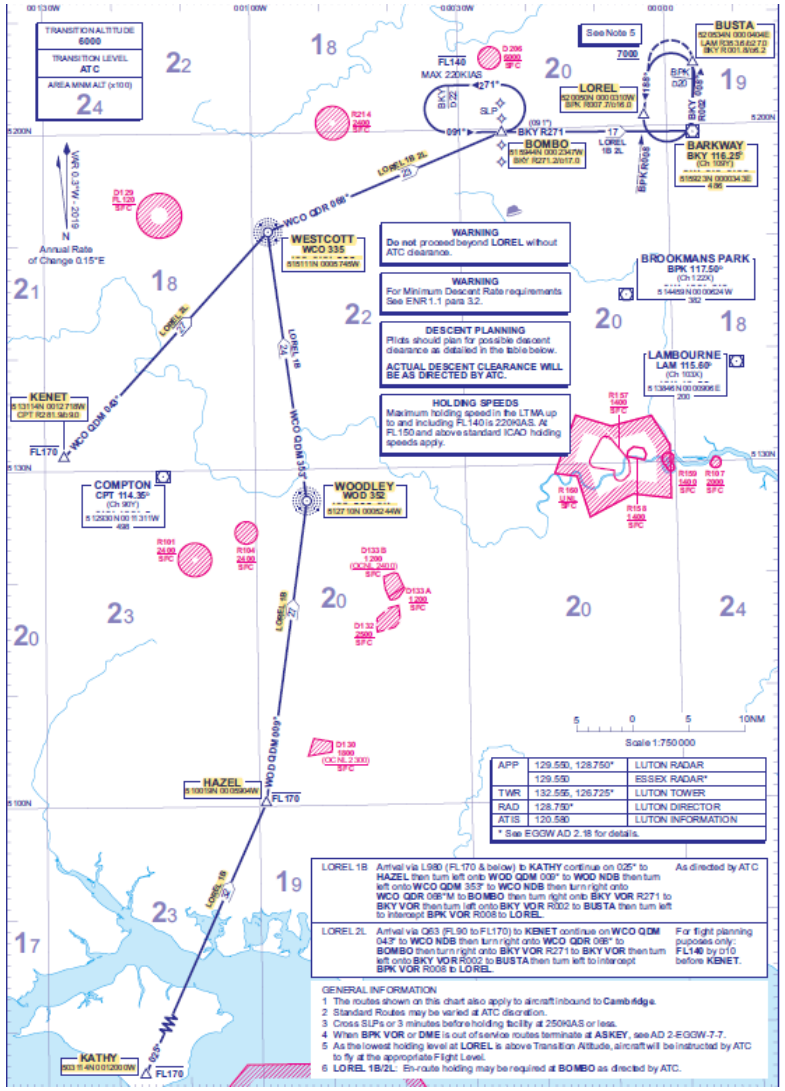
22) LOREL 5A (WCO dependency) has a route connectivity of:
WCO – BOMBO – BKY – BUSTA – LOREL



WCO Procedures: Luton & Stansted STARs

23) LOREL 1B (WCO dependency) has a route connectivity of:
KATHY – HAZEL – WOD – WCO – BOMBO – BKY – BUSTA – LOREL

24) LOREL 2L (WCO dependency) has a route connectivity via Q63 of:
KENET – WCO – BOMBO – BKY – BUSTA – LOREL

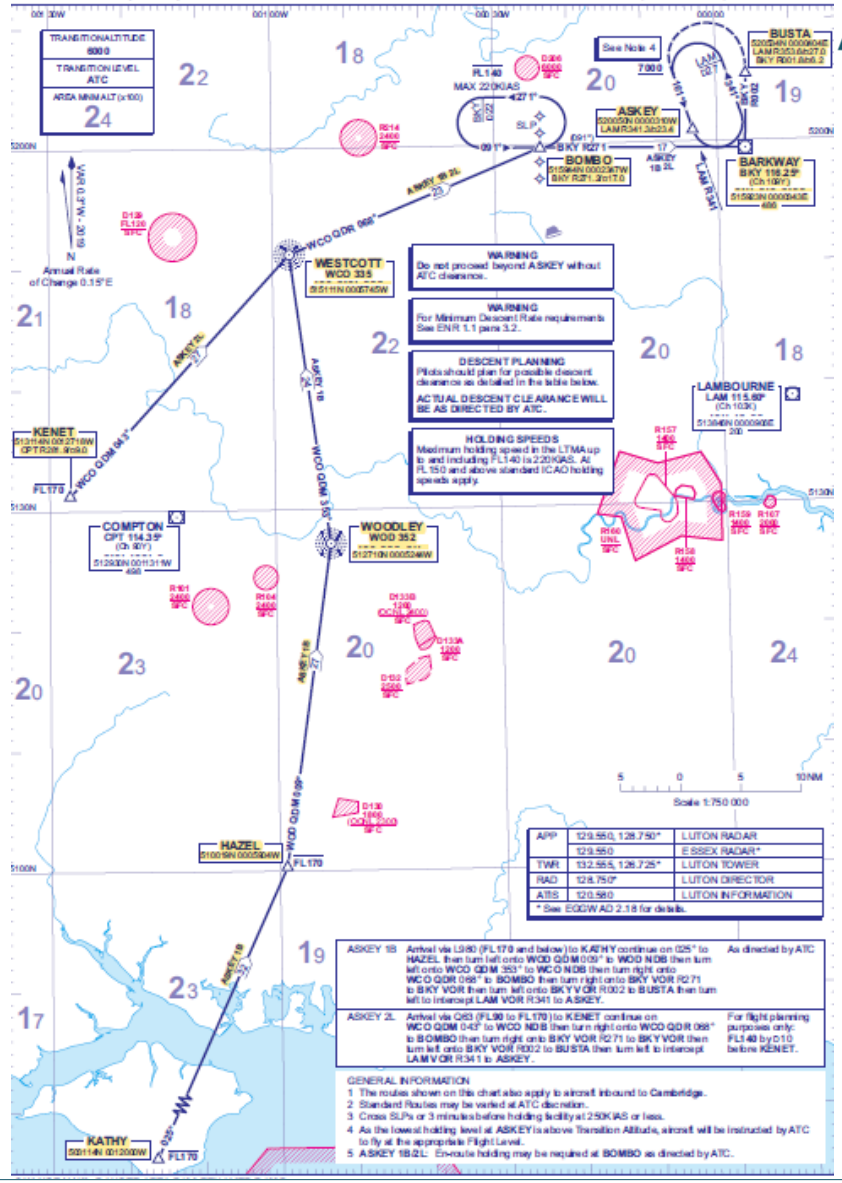


WCO Procedures: Luton & Stansted STARs

25) ASKEY 5A (WCO dependency)

26) ASKEY 1B (WCO dependency) has a route connectivity via L980 of:
KATHY - HAZEL - WOD - WCO - BOMBO - BKY - BUSTA - ASKEY

25) ASKEY 2L (WCO dependency) has a route connectivity via Q63 of:
KENET - WCO - BOMBO - BKY - BUSTA - ASKEY

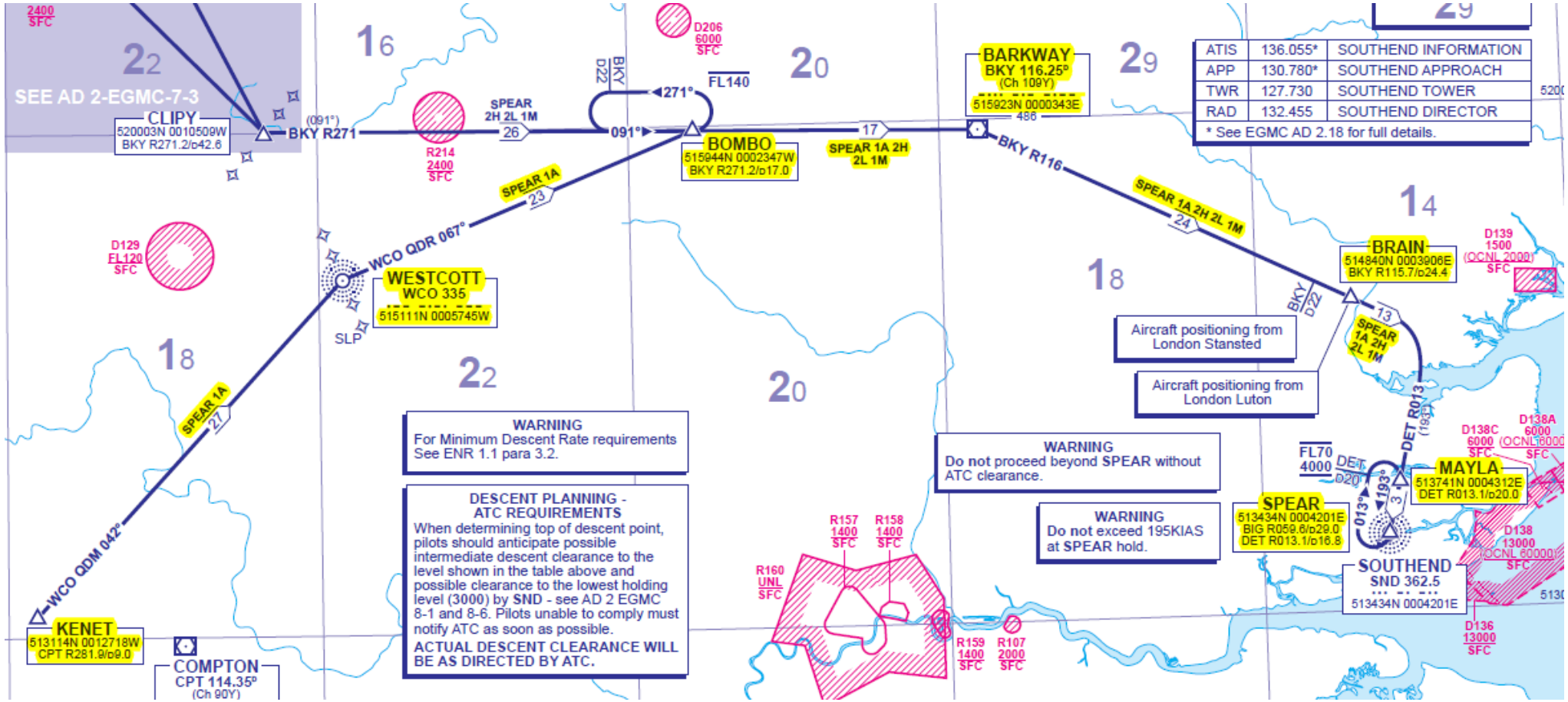


WCO Procedures: Southend STAR

There is 1 Southend STAR using the WCO NDB.

28) SPEAR 1A has a route connectivity via Q63 of:

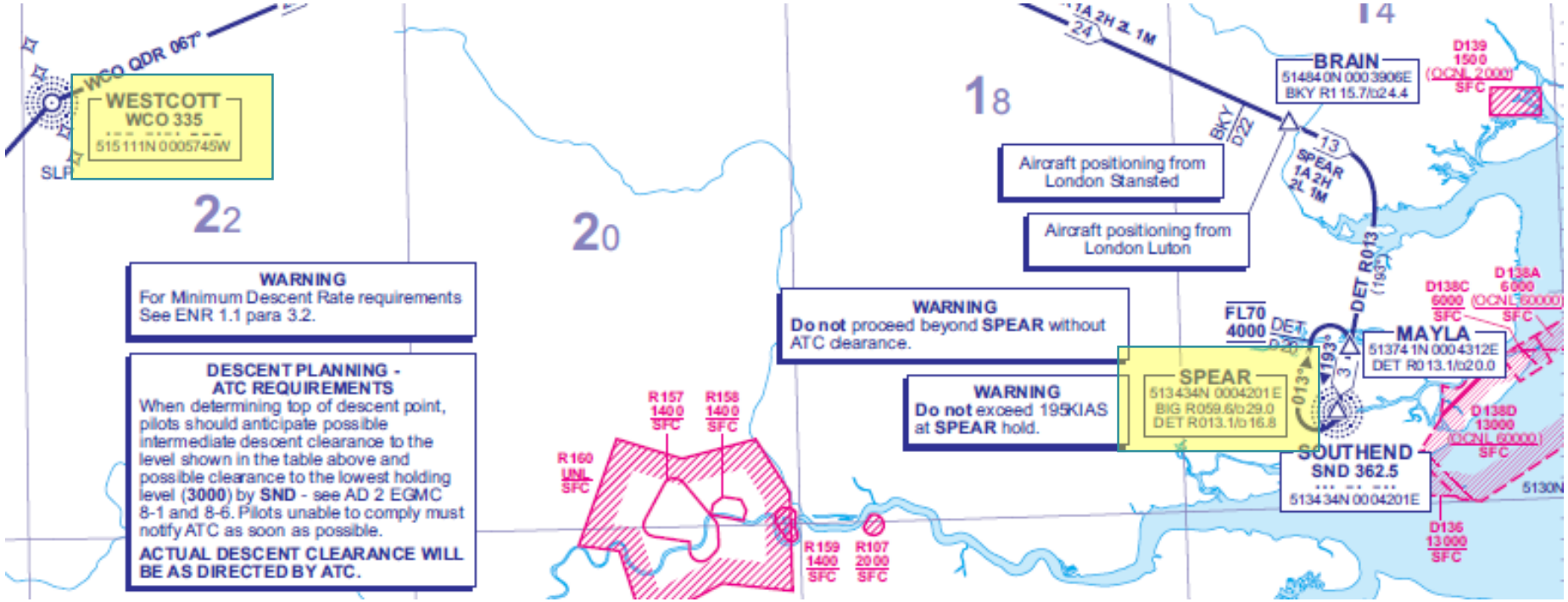
KENET – WCO – BOMBO – BKY – BRAIN – MAYLA - SPEAR



WCO Procedures: Southend Hold

There is 1 Southend Hold featuring on the same chart as the WCO NDB

29) SPEAR Hold



Provisional Timescales

Stage	Date
Assessment meeting	04/09/19
Stage 1 – Define	13/09/19 (Gateway Assessment meeting on 27/09)
Stages 2 – Develop and Stage 3 – Consult	11/10/19 (Gateway Assessment meeting on 25/10)
Stage 4 – Update and Submit	15/11/19
Stage 5 – Decide	11/06/20
Stage 6 – Implement	AIRAC 10/2020 (10/09/20)

This timeline gives a period of over 12 weeks for the CAA assessment

Engagement and next steps

- Engagement planned with: Airport operators which have STARs affected by the removal of the en-route dependency on BNN/WCO/WOD, along with ATC.
- No other engagement is planned
- Plan of work is submission for a CAP1616 Stage 1 Gateway Assessment on 27th September 2019; the document deadline for this gateway is 13th September 2019.

Summary

- Expectation of a Level 2C Change
- Minimal operational impact and proposed changes which will take current usage into consideration
- Improves compliance with Eurocontrol/ICAO/CAA guidance

Questions?