Swanwick Airspace Improvement Programme
Airspace Development 5
LAC West – ATS Route Connectivity Improvements

SAIP AD5 LAC West Connectivity

Gateway documentation:
Stage 2 Develop and Assess

Step 2A (ii)
Design Principle Evaluation

Roles

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Introduction

This document forms part of the document set in accordance with the requirements of the CAP1616 airspace change process.

This document is divided into five main sections, describing design option concepts relating to Birmingham traffic, Heathrow arrivals, high-level ATS routes, TRA 002 arrangements, and combinations of CAS volumes.

It is designed to be read in conjunction with document Step 2A(i) which describes and illustrates each component or combination.

This document aims to provide adequate evidence to satisfy
Stage 2 Develop and Assess Gateway, Step 2A Design Principle Evaluation.

See Stage 1 Gateway Design Principles for full details of the six proposed design principles[1].

A green box means	'this design principle has been met by the specified option'
An orange box means	'this design principle has been partially met by the specified option', or 'there would be no significant change'
A red box means	'this design principle has not been met by the specified option'

The first part of this document evaluates each component against the Design Principles (DPs), rejecting the worst-scoring items.

The progression of design components through this evaluation process will then be considered in viable combinations later in the document, concluding with reasonable system options to consider at the next CAP1616 Step 2B Options Appraisal.

[1] Safety is always a design principle – it is not included in this table because it is mandatory.

Baseline Options

1. EGBB Baseline (do nothing)

Option Name: EGBB Baseline (do nothing)			REJECT
Description of option: The current traffic flows relevant to this proposal are the EGBB arrivals and departures which route via MOSUN. Traffic is required to tactically leave CAS between the DTY CTA and Cotswold CTA.			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
No improvement from today's operation.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
No resources required.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
No change to existing arrangements,			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
No change to existing arrangements.			

2. EGLL Baseline (do nothing)

Option Name: EGLL Baseline (do nothing)			REJECT
Description of option: The current routes relevant to this proposal bring EGLL arrivals from the Atlantic and southern Eire. If the OCK stack if full, EGLL arrivals are routed from OCK to BNN, often at late-notice, which can create a highly complex situation.			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
No improvement from today's operation.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
No resources required.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
No change to existing arrangements,			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
No change to existing arrangements.			

EGBB Concept Options

The following seven options are all component variations of the same design concept. This option contains indicative routes for EGBB arrivals and departures which are contained within four distinct blocks of CAS. The CAS bases have been chosen to align, where possible, with typical descent and departure profiles. A larger volume of CAS, close to EGBB, has been proposed in order to provide an increased vectoring area.

3. EGBB-1A

Option Name: EGBB-1A			REJECT
Description of option: All proposed new CAS volumes to be Class A			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class A CAS would cause no particular impact on resources.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
Extensive Class A airspace would negatively impact and inhibit GA users to an extent which is likely to be unacceptable, as it excludes VFR traffic. Design options EGBB-1B, 1C or 1D would allow VFR access to varying extents, hence EGBB-1A not meeting this Design Principle.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not intend to propose the introduction of additional low level Class A CAS in this region.			

4. EGBB-1B

Option Name: EGBB-1B			ACCEPT and PROGRESS
Description of option: All proposed new CAS volumes to be Class C			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class C does not change the resource requirements compared to EGBB-1A.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would be a partial impact on GA and MoD users which would be managed accordingly. However the impact would be less than for design option EGBB-1A as VFR traffic would have limited access, rather than no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
Dependent on where this classification is used - Class C airspace is appropriate for SWK upper airspace and is currently well used. Increased tactical flexibility for EGBB/ TC MIDS. No new training would be required, unlike for design options EGBB-1C or 1D.			

5. EGBB-1C

Option Name: EGBB-1C			ACCEPT and PROGRESS
Description of option: All proposed new CAS volumes to be Class D			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training may be required if Class D was introduced to areas which do not currently use it i.e. SWK upper airspace sectors. This would potentially require more resources than for design options EGBB-1A or 1B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would be a partial impact on GA and MoD users which would be managed accordingly. However the impact would be less than for design option EGBB-1A or 1B as VFR traffic would have access with a clearance, rather than limited or no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Dependent on where this classification is used - Class D airspace is appropriate for lower airspace where it is already used in the region, i.e. around EGBB. It would provide increased tactical flexibility. However it is not currently used in SWK upper airspace and significant training would be required (additional VFR traffic), unlike for design option EGBB-1B. VFR traffic is not compatible with currently used trajectory-based controller tools. This has been scored as 'PARTIAL' due to the unknown element of where this design concept could be implemented.			

6. EGBB-1D

Option Name: EGBB-1D			REJECT
Description of option: All proposed new CAS volumes to be Class E			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)		PARTIAL	
Provides more predictable and optimal flight planning options for EGBB arrivals and departures. However operators may not want to use Class E airspace due to perceived risks. This would not be an issue for design options EGBB-1A, 1B or 1C.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training would be required if Class E was introduced to areas which do not currently use it e.g. SWK upper airspace sectors. This would potentially require more resources than for design options EGBB-1A or 1B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
The routes would provide a fuel burn benefit (cost saving) however airlines may not choose to use them as much, due to Class E airspace. This would not be an issue for design options EGBB-1A, 1B or 1C.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
Class E airspace would mitigate GA community concern, however it would likely impact upon commercial airspace users. There would also still be some impact on GA and MoD users which would be managed accordingly. However the impact would be less than for EGBB-1A as VFR traffic would have access without a clearance required, rather than no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Class E airspace is not currently used in SWK airspace, therefore significant retraining would be required, unlike for design option EGBB-1B. VFR traffic is not compatible with currently used trajectory-based controller tools. Class E airspace would also introduce a new controller workload burden. This level of impact is not acceptable to NATS; therefore this Design Principle is not met.			

7. EGBB-1E

Option Name: EGBB-1E			REJECT
Description of option: New routes and CAS to be established H24/ 365; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures. Available H24.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to this timing.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic H24, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide the maximum possible fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
H24 operations would cause a large impact to MoD and GA airspace users. The relevant stakeholders have indicated that this is likely to be considered as unacceptable when compared to design options EGBB-1F or 1G.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Maximum usage and tactical flexibility for SWK and Birmingham Radar. However this does not meet this Design Principle as the MoD has stated that they would not support H24.			

8. EGBB-1F

Option Name: EGBB-1F			ACCEPT and PROGRESS
Description of option: New routes and CAS to be established evenings/ overnights/ mornings, 7 days a week,; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures. This Design Principle is met, however to a lesser extent than EGLL-1E and EGLL-1G.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to FUA timings, however activation/deactivation requires resource to manage.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for these time periods for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving) but less often than for design options EGBB-1E or 1G.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
Timings would cause a partial impact to MoD and GA airspace users, outside their typical core daytime operating hours. This would be to a lesser extent than for design option EGBB-1E.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Slightly limited usage and tactical flexibility for Birmingham Radar/ TC MIDS. The MoD has indicated that they would support this design concept, unlike design option EGBB-1E.			

9. EGBB-1G

Option Name: EGBB-1G			ACCEPT and PROGRESS
Description of option: New routes and CAS to be established evenings/ overnights/ mornings during the week, and H24 at weekends; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures, mimicking current ATSOCAS availability. Not available 24/7.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to FUA timings, however activation/deactivation requires resource to manage.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for these time periods for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving) more often than EGBB-1F.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The timings would cause a partial impact to MoD and GA airspace users (less than EGBB-1F), outside MoD core weekday daytime hours but potentially impacting GA at weekends. This would be to a lesser extent than for design option EGBB-1E.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Slightly limited usage and tactical flexibility for Birmingham Radar/ TC MIDS (more flexibility than EGBB-1F but also more potential GA impact). The MoD has indicated they are more likely to support this design option, unlike design option EGBB-1E.			

The following seven options are all component variations of the same design concept. This option contains the same indicative routes for EGBB arrivals and departures as the first sub-options; EGBB-1A – EGBB-1G. However, the segment of CAS close to EGBB has been reduced in size, in order to reduce the amount of new CAS required.

10. EGBB-2A

Option Name: EGBB-2A			REJECT
Description of option: All proposed new CAS volumes to be Class A			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class A CAS would cause no particular impact on resources.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
Extensive Class A airspace would negatively impact and inhibit GA users to an extent which is likely to be unacceptable, as it excludes VFR traffic. Design options EGBB-2B, 2C or 2D would allow VFR access to varying extents, hence EGBB-2A not meeting this Design Principle.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not intend to propose the introduction of additional low level Class A CAS in this region.			

11. EGBB-2B

Option Name: EGBB-2B			ACCEPT and PROGRESS
Description of option: All proposed new CAS volumes to be Class C			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class C does not change the resource requirements compared to EGBB-2A.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The amount of new CAS has been reduced in order to reduce the impact on the GA community. There would still be some impact on GA and MoD users which would have to be managed accordingly. However the impact would be less than for design option EGBB-2A as VFR traffic would have limited access, rather than no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
Dependent on where this classification is used - Class C airspace appropriate for SWK upper airspace and is currently well used. Increased tactical flexibility for EGBB/ TC MIDS. No new training would be required, unlike for design options EGBB-2C or 2D.			

12. EGBB-2C

Option Name: EGBB-2C			ACCEPT and PROGRESS
Description of option: All proposed new CAS volumes to be Class D			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training may be required if Class D was introduced to areas which do not currently use it i.e. SWK upper airspace sectors. This would potentially require more resources than design options EGBB-2A or 2B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The amount of new CAS has been reduced in order to reduce the impact on the GA community. There would still be some impact on GA and MoD users which would be managed accordingly. However the impact would be less than for design option EGBB-2A or 2B as VFR traffic would have access with a clearance, rather than limited or no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Dependent on where this classification is used - Class D airspace is appropriate for lower airspace where it is already used in the region, i.e. around EGBB. It would provide increased tactical flexibility. However it is not currently used in SWK upper airspace and significant training would be required (additional VFR traffic), unlike for design option EGBB-2B. VFR traffic is not compatible with currently used trajectory-based controller tools. This has been scored as 'PARTIAL' due to the unknown element of where this design concept could be implemented.			

13. EGBB-2D

Option Name: EGBB-2D			REJECT
Description of option: All proposed new CAS volumes to be Class E			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)		PARTIAL	
Provides more predictable and optimal flight planning options for EGBB arrivals and departures. However operators may not want to use Class E airspace due to perceived risks. This would not be an issue for design options EGBB-2A, 2B or 2C.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training would be required if Class E was introduced to areas which do not currently use it e.g. SWK upper airspace sectors. This would potentially require more resources than for design options EGBB-2A or 2B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
The routes would provide a fuel burn benefit (cost saving) however airlines may not choose to use them as much, due to Class E airspace. This would not be an issue for design options EGBB-2A, 2B or 2C.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The amount of new CAS has been reduced in order to reduce the impact on the GA community. Class E airspace would also mitigate GA community concern, however it would likely impact upon commercial airspace users. There would also still be some impact on GA and MoD users which would be managed accordingly. However the impact would be less than for design option EGBB-2A as VFR traffic would have access without a clearance required, rather than no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Class E airspace is not currently used in SWK airspace, therefore significant retraining would be required, unlike for design option EGBB-2B. VFR traffic is not compatible with currently used trajectory-based controller tools. Class E airspace would also introduce a new controller workload burden. This level of impact is not acceptable to NATS; therefore this Design Principle is not met.			

14. EGBB-2E

Option Name: EGBB-2E			REJECT
Description of option: New routes and CAS to be established H24/ 365; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures. Available H24.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to this timing.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide the maximum possible fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
H24 operations would cause a large impact to MoD and GA airspace users. The relevant stakeholders have indicated that this is likely to be considered as unacceptable when compared to design options EGBB-2F or 2G.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Maximum usage and tactical flexibility for SWK/ Birmingham Radar. However this does not meet this Design Principle as the MoD has stated that they would not support H24.			

15. EGBB-2F

Option Name: EGBB-2F			ACCEPT and PROGRESS
Description of option: New routes and CAS to be established evenings/ overnights/ mornings, 7 days a week; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures. This Design Principle is met, however to a lesser extent than EGLL-2E and EGLL-2F.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to FUA timings, however activation/deactivation requires resource to manage.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for these time periods for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving) but less often than for design options EGBB-2E or 2G.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The amount of new CAS has been reduced in order to reduce the impact on the GA community. Timings would cause a partial impact to MoD and GA airspace users, outside their typical core daytime operating hours. This would be to a lesser extent than for design option EGBB-2E.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Slightly limited usage and tactical flexibility for Birmingham Radar/ TC MIDS. The MoD has indicated that they would support this design concept, unlike design option EGBB-2E.			

16. EGBB-2G

Option Name: EGBB-2G			ACCEPT and PROGRESS
Description of option: New routes and CAS to be established evenings/ overnights/ mornings during the week, and H24 at weekends; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Provides more predictable and optimal flight planning options for EGBB arrivals and departures, mimicking current ATSOCAS availability. Not available 24/7.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to FUA timings, however activation/deactivation requires resource to manage.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for these time periods for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving) more often than EGBB-2F.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The amount of new CAS has been reduced in order to reduce the impact on the GA community. The timings would cause a partial impact to MoD and GA airspace users (less than EGBB-2F), outside MoD core weekday daytime hours but potentially impacting GA at weekends. This would be to a lesser extent than for design option EGBB-2E.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Slightly limited usage and tactical flexibility for Birmingham Radar/ TC MIDS (more flexibility than EGBB-2F but also more potential GA impact). The MoD has indicated that they are more likely to support this design option, unlike design option EGBB-2E.			

The following seven options are all variations of the same design option. This option contains a single bidirectional route for EGBB arrivals and departures; thus minimising new CAS required.

17. EGBB-3A

Option Name: EGBB-3A			REJECT
Description of option: All proposed new CAS volumes to be Class A			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Provides predictable and optimal flight planning options for EGBB arrivals and departures. However ATC ability to manage busy bidirectional flows would be significantly compromised due to lack of systemisation, requiring more tactical vectoring and an increased workload.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class A CAS would cause no particular impact on resources.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
Extensive Class A airspace would negatively impact and inhibit GA users to an extent which is likely to be unacceptable, as it excludes VFR traffic. Design options EGBB-3B, 3C or 3D would allow VFR access to varying extents, hence EGBB-3A not meeting this Design Principle. Airspace required would not be significantly reduced compared with concepts EGBB-1 and EGBB-2.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not intend to propose the introduction of additional low level Class A CAS in this region.			

18. EGBB-3B

Option Name: EGBB-3B			REJECT
Description of option: All proposed new CAS volumes to be Class C			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Provides predictable and optimal flight planning options for EGBB arrivals and departures. However ATC ability to manage busy bidirectional flows would be significantly compromised due to lack of systemisation, requiring more tactical vectoring and an increased workload.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class C does not change the resource requirements compared to EGBB-3A.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would be a partial impact on GA and MoD users which would be managed accordingly. However the impact would be less than for design option EGBB-3A as VFR traffic would have limited access, rather than no access. Airspace required would not be significantly reduced compared with concepts EGBB-1 and EGBB-2.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
Dependent on where this classification is used - Class C airspace is appropriate for SWK upper airspace and is currently well used. Increased tactical flexibility for EGBB/ TC MIDS. No new training would be required, unlike for design options EGBB-3C or 3D.			

19. EGBB-3C

Option Name: EGBB-3C			REJECT
Description of option: All proposed new CAS volumes to be Class D			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Provides predictable and optimal flight planning options for EGBB arrivals and departures. However ATC ability to manage busy bidirectional flows would be significantly compromised due to lack of systemisation, requiring more tactical vectoring and an increased workload.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training may be required if Class D was introduced to areas which do not currently use it i.e. SWK upper airspace sectors. This would potentially require more resources than design options EGBB-3A or 3B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would be a partial impact on GA and MoD users which would be managed accordingly. However the impact would be less than for design option EGBB-3A or 3B as VFR traffic would have access with a clearance, rather than limited or no access. Airspace required would not be significantly reduced compared with concepts EGBB-1 and EGBB-2.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Dependent on where this classification is used - Class D airspace is appropriate for lower airspace where it is already used in the region, i.e. around EGBB. It would provide increased tactical flexibility. However it is not currently used in SWK upper airspace and significant training would be required (additional VFR traffic), unlike for design option EGBB-3B. VFR traffic is not compatible with currently used trajectory-based controller tools. This has been scored as 'PARTIAL' due to the unknown element of where this design concept could be implemented.			

20. EGBB-3D

Option Name: EGBB-3D			REJECT
Description of option: All proposed new CAS volumes to be Class E			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Provides predictable and optimal flight planning options for EGBB arrivals and departures. However operators may not want to use Class E airspace due to perceived risks. This would not be an issue for design options EGBB-3A, 3B or 3C. ATC ability to manage busy bidirectional flows would be significantly compromised due to lack of systemisation, requiring more tactical vectoring and an increased workload.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training would be required if Class E was introduced to areas which do not currently use it e.g. SWK upper airspace sectors. This would potentially require more resources than for design options EGBB-3A or 3B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
The routes would provide a fuel burn benefit (cost saving) however airlines may not choose to use them as much, due to Class E airspace. This would not be an issue for design options EGBB-3A, 3B or 3C.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
Class E airspace would mitigate GA community concern, however it would likely impact upon commercial airspace users. However the impact would be less than for design option EGBB-3A as VFR traffic would have access without a clearance required, rather than no access. Airspace required would not be significantly reduced compared with concepts EGBB-1 and EGBB-2.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Class E airspace is not currently used in SWK airspace, therefore significant retraining would be required, unlike for design option EGBB-3B. VFR traffic is not compatible with currently used trajectory-based controller tools. Class E airspace would also introduce a new controller workload burden. This level of impact is not acceptable to NATS; therefore this Design Principle is not met.			

21. EGBB-3E

Option Name: EGBB-3E			REJECT
Description of option: New routes and CAS to be established H24/ 365; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Provides predictable and optimal flight planning options for EGBB arrivals and departures. However ATC ability to manage busy bidirectional flows would be significantly compromised due to lack of systemisation, requiring more tactical vectoring and an increased workload.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to this timing.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide the maximum possible fuel burn benefit (cost saving).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
H24 operations would cause a large impact to MoD and GA airspace users. The relevant stakeholders have indicated that this is likely to be considered as unacceptable when compared to design options EGBB-3F or 3G.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Maximum usage and tactical flexibility for SWK and Birmingham Radar. However this does not meet this Design Principle as the MoD has stated that they would not support H24.			

22. EGBB-3F

Option Name: EGBB-3F			REJECT
Description of option: New routes and CAS to be established evenings/ overnights/ mornings, 7 days a week; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Provides predictable and optimal flight planning options for EGBB arrivals and departures. However ATC ability to manage busy bidirectional flows would be significantly compromised due to lack of systemisation, requiring more tactical vectoring and an increased workload.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to FUA timings, however activation/deactivation requires resource to manage.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for these time periods for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving) but less often than for design options EGBB-3E or 3G.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
Timings would cause a partial impact to MoD and GA airspace users, outside their typical core daytime operating hours. This would be to a lesser extent than for design option EGBB-3E.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Slightly limited usage and tactical flexibility for Birmingham Radar/ TC MIDS. The MoD has indicated that they would support this design concept, unlike design option EGBB-3E.			

23. EGBB-3G

Option Name: EGBB-3G			REJECT
Description of option: New routes and CAS to be established evenings/ overnights/ mornings during the week, and H24 at weekends; with appropriate clawback arrangements			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Provides predictable and optimal flight planning options for EGBB arrivals and departures, mimicking current ATSOCAS availability.. However ATC ability to manage busy bidirectional flows would be significantly compromised due to lack of systemisation, requiring more tactical vectoring and an increased workload. Not available 24/7.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No additional training or manning requirements due to FUA timings, however activation/deactivation requires resource to manage.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for these time periods for relevant EGBB traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The routes would provide a fuel burn benefit (cost saving) more often than EGBB-3F.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The timings would cause a partial impact to MoD and GA airspace users (less than EGBB-3F), outside MoD core weekday/ daytime hours but potentially impacting GA at weekends. This would be to a lesser extent than for design option EGBB-3E.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
Slightly limited usage and tactical flexibility for Birmingham Radar/ TC MIDS (more flexibility than EGBB-3F but also more potential GA impact). The MoD has indicated that they are more likely to support this design, unlike design option EGBB-3E.			

EGLL Concept Options

The following seven options are all variations of the same design concept. This design concept contains unidirectional eastbound OCK offload route(s) for EGLL arrivals. Two separate blocks of CAS with different base levels and an en-route contingency hold would also be introduced.

24. EGLL-1A

Option Name: EGLL-1A			REJECT
Description of option: All proposed new CAS volumes to be Class A			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
The offload concept would provide flightplannable options for the tactical balancing of flows with vectoring flexibility and adequate consideration of the desired descent profile.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class A CAS would cause no particular impact on resources.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
Extensive Class A airspace would negatively impact and inhibit GA users to an extent which is likely to be unacceptable, as it excludes VFR traffic. Design options EGLL-1B, 1C or 1D would allow VFR access to varying extents, hence EGLL-1A not meeting this Design Principle.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not intend to propose the introduction of additional low level Class A CAS in this region.			

25. EGLL-1B

Option Name: EGLL-1B			ACCEPT and PROGRESS
Description of option: All proposed new CAS volumes to be Class C			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
The offload concept would provide flightplannable options for the tactical balancing of flows with vectoring flexibility and adequate consideration of the desired descent profile.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class C does not change the resource requirements compared to EGLL-1A.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The lateral design is simple. There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. However the impact would be less than for design option EGLL-1A as VFR traffic would have limited access, rather than no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
Dependent on where this classification is used - Class C airspace is appropriate for SWK upper airspace and is currently well used. Reduction in workload and ATC complexity for NATS (NERL). No new training would be required, unlike for design options EGLL-1C or 1D.			

26. EGLL-1C

Option Name: EGLL-1C			REJECT
Description of option: All proposed new CAS volumes to be Class D			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
The offload concept would provide flightplannable options for the tactical balancing of flows with vectoring flexibility and adequate consideration of the desired descent profile.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training would be required if Class D was introduced to areas which do not currently use it i.e. SWK upper airspace sectors. This would potentially require more resources than for design options EGLL-1A or 1B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The lateral design is simple. There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. However the impact would be less than for design option EGLL-1A or 1B as VFR traffic would have access with a clearance, rather than limited or no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Class D is not currently used in SWK upper airspace by NATS (NERL) and significant training would be required, unlike for design option EGLL-1B. VFR traffic is not compatible with current trajectory-based controller tools.			

27. EGLL-1D

Option Name: EGLL-1D			REJECT
Description of option: All proposed new CAS volumes to be Class E			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)		PARTIAL	
The offload concept would provide flightplannable options for the tactical balancing of flows and adequate consideration of the desired descent profile. However operators may not want to use Class E airspace due to perceived risks. This would not be an issue for design options EGLL-1A, 1B or 1C.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training would be required if Class E was introduced to areas which do not currently use it i.e. SWK upper airspace sectors. This would potentially require more resources than for design options EGLL-1A or 1B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location. However airlines may not choose to use them due to the Class E airspace. This would not be an issue for design options EGLL-1A, 1B or 1C.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The lateral design is simple. There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. However the impact would be less than for design option EGLL-1A as VFR traffic would have access without a clearance required, rather than no access.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Class E airspace is not currently used in SWK airspace by NATS (NERL); therefore significant retraining would be required, unlike for design option EGLL-1B. VFR traffic is not compatible with current trajectory-based controller tools. Class E airspace would also introduce a new controller workload burden. This level of impact is not acceptable to NATS; therefore this Design Principle is not met.			

28. EGLL-1E

Option Name: EGLL-1E			REJECT
Description of option: CDR1 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Although this concept would provide flightplannable options for aircraft operators – part of this DP – it would not allow for any tactical balancing of flows by ATC and would be quite inflexible. A CDR1 status does not provide the great tactical flexibility that this offload route requires. Our reservations on the application of pure-CDR1 status for this offload route are so strong that we conclude that it does not meet this DP. EGLL-1F and EGLL-1G meet this DP to greater extents due to their greater tactical flexibility.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
A CDR1 route would be flightplannable during its hours of operation which could potentially result in more aircraft flightplanning to use this offload route than are stack-swapped today. Whereas we do not intend to increase the number of flights using the BNN flow. This concept therefore has the potential to require a sector split and increased ATC manning due to the CDR1 (flightplannable) status; unlike for design option EGLL-1G which would not.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the number of flights using the route does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
NATS (NERL) and the MoD would support this design concept. It would provide a reduction in workload and ATC complexity for NATS (NERL).			

29. EGLL-1F

Option Name: EGLL-1F			ACCEPT and PROGRESS
Description of option: CDR1/3 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
This concept would provide flightplannable options for aircraft operators, and would allow for tactical balancing of flows by ATC. We therefore have no reservations over using this design concept for an offload route.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
A CDR1 route would be flightplannable during its hours of operation which could potentially result in more aircraft flightplanning to use this offload route than are stack-swapped today. Whereas we do not intend to increase the number of flights using the BNN flow. This concept therefore has the potential to require a sector split and increased ATC manning due to the CDR1 (flightplannable) status; unlike for design option EGLL-1G which would not.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the number of flights using the route does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
NATS (NERL) and the MoD would support this design concept. It matches similar CDRs crossing the NWMTA.			

30. EGLL-1G

Option Name: EGLL-1G			ACCEPT and PROGRESS
Description of option: CDR3 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)		PARTIAL	
CDR3 routes are not available for flight planning; they might require airline operators to fuel for alternative routes than those potentially available, should the offload be needed. However this concept would provide predictable flexibility for ATC to be able to offload traffic when required. We have fewer reservations over using this design concept for an offload route, due to this increased flexibility, than EGLL-1E.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
This option will only be used when the need arises; therefore no particular additional resource is required; unlike for design options EGLL-1E or 1G.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
This would not reduce flightplan mileage due to its tactical nature, unlike for design options EGLL-1E or 1F. However, actual fuel burn may be reduced (cost benefit).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
NATS (NERL) and the MoD would support this design concept. It would provide NATS (NERL) with additional flexibility.			

The following seven options are all variations of the same design concept. This design concept contains the same indicative unidirectional OCK offload route(s) and en-route contingency hold for EGLL arrivals as the first EGLL design sub-options; EGLL-1A – EGLL-1G. There would be a single block of CAS, rather than two, with a base of FL145.

31. EGLL-2A

Option Name: EGLL-2A			REJECT
Description of option: All proposed new CAS volumes to be Class A			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
The offload concept would provide flightplannable options for the tactical balancing of flows with vectoring flexibility and adequate consideration of the desired descent profile.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class A CAS would cause no particular impact on resources.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)	NOT MET		
The lateral design is simple. However, extensive Class A airspace would negatively impact and inhibit GA users to an extent which is likely to be unacceptable, as it excludes VFR traffic. Design options EGLL-2B, 2C or 2D would allow VFR access to varying extents, hence EGLL-2A not meeting this Design Principle.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not intend to propose the introduction of additional low level Class A CAS in this region.			

32. EGLL-2B

Option Name: EGLL-2B			ACCEPT and PROGRESS
Description of option: All proposed new CAS volumes to be Class C			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
The offload concept would provide flightplannable options for the tactical balancing of flows with vectoring flexibility and adequate consideration of the desired descent profile.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Class C does not change the resource requirements compared to EGLL-2A.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The lateral design is simple. There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. However the impact would be less than for design option EGLL-2A as VFR traffic would have limited access, rather than no access. Impacts would be slightly greater due to the extent of the lower base compared to Concept EGLL-1.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
Dependent on where this classification is used - Class C airspace is appropriate for SWK upper airspace and is currently well used. Reduction in workload and ATC complexity for NATS (NERL). No new training would be required, unlike for design options EGLL-2C or 2D.			

33. EGLL-2C

Option Name: EGLL-2C			REJECT
Description of option: All proposed new CAS volumes to be Class D			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
The offload concept would provide flightplannable options for the tactical balancing of flows with vectoring flexibility and adequate consideration of the desired descent profile.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training would be required if Class D was introduced to areas which do not currently use it i.e. SWK upper airspace sectors. This would potentially require more resources than design options EGLL-2A or 2B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The lateral design is simple. There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. However the impact would be less than for design option EGLL-2A or 2B as VFR traffic would have access with a clearance, rather than limited or no access. Impacts would be slightly greater due to the extent of the lower base compared to Concept EGLL-1.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Class D is not currently used in SWK upper airspace by NATS (NERL) and significant training would be required, unlike for design option EGLL-2B. VFR traffic is not compatible with current trajectory-based controller tools.			

34. EGLL-2D Option – Design Principle Evaluation

Option Name: EGLL-2D			REJECT
Description of option: All proposed new CAS volumes to be Class E			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)		PARTIAL	
The offload concept would provide flightplannable options for the tactical balancing of flows and adequate consideration of the desired descent profile. However operators may not want to use Class E airspace due to perceived risks. This would not be an issue for design options EGLL-2A, 2B or 2C.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
Additional training would be required if Class E was introduced to areas which do not currently use it i.e. SWK upper airspace sectors. This would potentially require more resources than for design options EGLL-2A or 2B.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location. However airlines may not choose to use them due to the Class E airspace. This would not be an issue for design options EGLL-2A, 2B or 2C.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The lateral design is simple. There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. However the impact would be less than for design option EGLL-2A as VFR traffic would have access without a clearance required, rather than no access. Impacts would be slightly greater due to the extent of the lower base compared to Concept EGLL-1.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
Class E airspace is not currently used in SWK airspace, therefore significant retraining would be required, unlike for design option EGLL-2B. VFR traffic is not compatible with current trajectory-based controller tools. Class E airspace would also introduce a new controller workload burden. This level of impact is not acceptable to NATS; therefore this Design Principle is not met.			

35. EGLL-2E

Option Name: EGLL-2E			REJECT
Description of option: CDR1 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Although this concept would provide flightplannable options for aircraft operators – part of this DP – it would not allow for any tactical balancing of flows by ATC and would be quite inflexible. A CDR1 status does not provide the great tactical flexibility that this offload route requires. Our reservations on the application of pure-CDR1 status for this offload route are so strong that we conclude that it does not meet this DP. EGLL-2F and EGLL-2G meet this DP to greater extents due to their greater tactical flexibility.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
A CDR1 route would be flightplannable during its hours of operation which could potentially result in more aircraft flightplanning to use this offload route than are stack-swapped today. Whereas we do not intend to increase the number of flights using the BNN flow. This concept therefore has the potential to require a sector split and increased ATC manning due to the CDR1 (flightplannable) status; unlike for design option EGLL-2G which would not.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the number of flights using the route does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. Impacts would be slightly greater due to the extent of the lower base compared to Concept EGLL-1.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
NATS (NERL) and the MoD would support this design concept. It would provide a reduction in workload and ATC complexity for NATS (NERL).			

36. EGLL-2F

Option Name: EGLL-2F			ACCEPT and PROGRESS
Description of option: CDR1/3 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
This concept would provide flightplannable options for aircraft operators, and would allow for tactical balancing of flows by ATC. We therefore have no reservations over using this design concept for an offload route.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
A CDR1 route would be flightplannable during its hours of operation which could potentially result in more aircraft flightplanning to use this offload route than are stack-swapped today. Whereas we do not intend to increase the number of flights using the BNN flow. This concept therefore has the potential to require a sector split and increased ATC manning due to the CDR1 (flightplannable) status; unlike for design option EGLL-2G which would not.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the number of flights using the route does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. Impacts would be slightly greater due to the extent of the lower base compared to Concept EGLL-1.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
NATS (NERL) and the MoD would support this design concept. It matches similar CDRs crossing the NWMTA.			

37. EGLL-2G Option – Design Principle Evaluation

Option Name: EGLL-2G		ACCEPT and PROGRESS	
Description of option: CDR3 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)		PARTIAL	
CDR3 routes are not available for flight planning; they might require airline operators to fuel for alternative routes than those potentially available, should the offload be needed. However this concept would provide predictable flexibility for ATC to be able to offload traffic when required. We have few reservations over using this design concept for an offload route, due to this increased flexibility, than EGLL-2E.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
This option will only be used when the need arises; therefore no particular additional resource is required; unlike for design options EGLL-2E or 2G.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
This would not reduce flightplan mileage due to its tactical nature, unlike for design options EGLL-2E or 2F. However, actual fuel burn may be reduced (cost benefit).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly. Impacts would be slightly greater due to the extent of the lower base compared to Concept EGLL-1.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
NATS (NERL) and the MoD would support this design concept. It would provide NATS (NERL) with additional flexibility.			

The following three options are all variations of the same design concept, where no new CAS would be required. Compared with concepts EGLL-1 and EGLL-2, it considers a more northerly orientation of an indicative unidirectional OCK offload route, with no en-route contingency hold.

38. EGLL-3A

Option Name: EGLL-3A			REJECT
Description of option: CDR1 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
This concept would provide flightplannable options for aircraft operators. However it would not allow for the tactical balancing of flows by ATC and would be inflexible. Above all, the inability to descend means the traffic must join the existing flow further north than EGLL-1 or EGLL-2, increasing the likelihood of conflictions with existing north-south traffic flows such as EGCC southbound departures. Hence this Design Principle not being met.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)	NOT MET		
The sector flow would change from Sector 35 – AC Sector 5 – TC COWLY, to Sector 27/32 before TC COWLY. This could require significant changes to current sector boundaries and ATC procedures, leading to a much larger ATCO training requirement than option concepts EGLL-1 or EGLL-2.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the number of flights using the route does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would still likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not agree to this suggestion due to the excessive operational impact and lack of flexibility.			

39. EGLL-3B

Option Name: EGLL-3B			REJECT
Description of option: CDR1/3 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
This concept would provide flightplannable options for aircraft operators, and would allow for the tactical balancing of flows by ATC. Above all, the inability to descend means the traffic must join the existing flow further north than EGLL-1 or EGLL-2, increasing the likelihood of conflictions with existing north-south traffic flows such as EGCC southbound departures. Hence this Design Principle not being met.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)	NOT MET		
The sector flow would change from Sector 35 – AC Sector 5 – TC COWLY, to Sector 27/32 before TC COWLY. This could require significant changes to current sector boundaries and ATC procedures, leading to a much larger ATCO training requirement than option concepts EGLL-1 or EGLL-2.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
The proposed route is shorter than the equivalent flightplannable route within UK airspace, and can therefore enable a fuel saving (cost saving) depending on oceanic exit point location.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would still likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not agree to this suggestion due to the excessive operational impact and lack of flexibility.			

40. EGLL-3C Option

Option Name: EGLL-3C			REJECT
Description of option: CDR3 route status for the unidirectional offload route(s)			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
Although this design concept would provide predictable flexibility for ATC, CDR3 routes are not available for flight planning and might require airline operators to fuel for alternative routes than those potentially available. Above all, the inability to descend means the traffic must join the existing flow further north than EGLL-1 or EGLL-2, increasing the likelihood of conflictions with existing north-south traffic flows such as EGCC southbound departures. Hence this Design Principle not being met.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)	NOT MET		
The sector flow would change from Sector 35 – AC Sector 5 – TC COWLY, to Sector 27/32 before TC COWLY. This could require significant changes to current sector boundaries and ATC procedures, leading to a much larger ATCO training requirement than option concepts EGLL-1 or EGLL-2.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
The routes would provide a CO_2 reduction for relevant EGLL arrivals. They would not change below 7,000ft due to a limiting mechanism which would ensure the flow balance does not exceed the equivalent of today's stack swap numbers.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
This would not reduce flightplan mileage due to the tactical nature, unlike design options EGLL-3A or 3B. However, actual fuel burn may be reduced (cost benefit).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
There would still likely be an impact on MoD operations within this area, such as northbound military traffic routing OAT; this would be coordinated accordingly.			
Design principle 6: Operational: Full ANSP agreement (Priority B)	NOT MET		
NATS does not agree to this suggestion due to the excessive operational impact and lack of flexibility.			

ATS Routes

SAIP AD5 is proposing to improve a number of ATS routes within the sectors specific to this proposal by shortening the flightplan track mileage. Some of the proposed changes formalise today's common tactical behaviour, known as a tactical-direct. Some mimic trajectories expected to be seen in Free Route Airspace, and others remove unnecessary restrictions on existing routes.

The design options for the ATS route segments are being considered as either "do-nothing" or "implement some or all of the proposed routes".
This is due to the potential permutations of components under consideration, requiring a disproportionate combination of analyses should each be considered individually against all others and a baseline do-nothing.
We contend that this is reasonable at this stage, as it avoids unnecessary duplication of table 42 below (which would be the same for each ATS route component).
All ATS Routes are as described in the Stage 2 Step 2A(i) Airspace Design Options document.

41. Do not implement ATS Routes (do nothing)

Option Name: Do not implement ATS Routes			REJECT
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)	NOT MET		
No improvement from today's operation, no additional flexibility.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
No resources required.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
No change to existing arrangements,			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
No change to existing arrangements.			

42. Implement some or all of the proposed ATS Routes

Option Name: Implement ATS Routes			ACCEPT and PROGRESS
Description of option: This project is proposing to introduce a number of high-level ATS routes in order to enable fuel and CO_2 savings for airline operators.			
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
Greater flightplanning flexibility, flightplans get closer to typical actual flown tracks.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
No new resources, minimal additional training required (if combined with other SAIP AD5 training).			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
All of the proposed ATS Route changes are above FL195 and would not cause a change to low level tracks. They would deliver a fuel saving for airline operators, reducing CO_2 emissions.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
These proposed ATS Routes would allow shorter flightplan routes for aircraft and deliver a fuel uplift saving (cost benefit).			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)			MET
There are no expected impacts on GA users. Potential interactions between civil and military traffic would be coordinated and managed.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
No particular impact on other ANSPs. MoD interactions would be coordinated and managed.			

TRA 002 Design Concept

TRA 002 is a Class C, Temporary Reserved Area of CAS between FL195-FL245 weekday daytimes. It is positioned close to where the aforementioned EGBB arrival and departure routes have been proposed; particularly its northwest corner which only gets rarely used by the military.
SAIP AD5 is proposing to introduce new routes linking EGBB traffic with the wider route network in the vicinity of this NW corner. To avoid that corner (vicinity of waypoint LAMAT), the newly-routed EGBB departures would need to either stay below FL195, or exceed FL245, by the time they reach the Bristol area. The design reason is that Birmingham departures could climb more continuously in the region, either SW-bound across the corner, or S-bound improving the likelihood of exceeding FL245 before crossing the TRA's revised boundary – for more details see the Stage 2 Step 2A(i) Design Options document.

The MoD, via DAATM, has formally agreed for NATS to progress this on their behalf as part of this proposal. The design options for the TRA 002 design concept are being considered as either "do-nothing to the TRA, considering the new Birmingham flows" or "implement the corner-cut, considering the new Birmingham flows". This is due to the potential permutations of network components under consideration, requiring a disproportionate combination of analyses should each be considered individually with each other. We contend that this is reasonable at this stage.

43. Do not implement TRA 002 concept (do nothing), considering new EGBB flows

Option Name: Do not implement TRA 002 corner-cut concept			REJECT
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)		PARTIAL	
No improvement from today's operation.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)		PARTIAL	
No additional resources required.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
No change to existing arrangements,			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
No change to existing arrangements.			
Design principle 6: Operational: Full ANSP agreement (Priority B)		PARTIAL	
No change to existing arrangements.			

44. Implement TRA 002 concept, considering new EGBB flows

Option Name Implement TRA 002 corner-cut concept			ACCEPT and PROGRESS
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
ATC tactical flexibility would increase			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Some MoD training may be required; however this could be part of the MoD's wider SAIP AD5 training requirement, thus minimal additional training burden.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)			MET
No change to low level traffic. Would enable more continuous climbs which can reduce fuel burn and CO_2 emissions.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
Would enable more continuous climbs which can reduce fuel burn, saving operators money.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)			MET
Has potential to impact MoD operations; however the MoD has agreed that this is not a significant issue.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
MoD agreement. No impact on other ANSPs.			

Design Components – summary of progression

Reference	Description	Summary of progression
EGBB-1B	CAS volumes to be Class C	Class C is an appropriate classification.
EGBB-1C	CAS volumes to be Class D	Class D is an appropriate classification.
EGBB-1F	Routes/ CAS to be established 7 days a week (evenings/ overnights/ mornings)	These FUA timings are appropriate
EGBB-1G	Routes/ CAS to be established 5 days a week (evenings/ overnights/ mornings), H24 at weekends	These FUA timings are appropriate
EGBB-2B	CAS volumes to be Class C	Class C is an appropriate classification.
EGBB-2C	CAS volumes to be Class D	Class D is an appropriate classification.
EGBB-2F	Routes/ CAS to be established 7 days a week (evenings/ overnights/ mornings)	These FUA timings are appropriate
EGBB-2G	Routes/ CAS to be established 5 days a week (evenings/ overnights/ mornings), H24 at weekends	These FUA timings are appropriate
EGLL-1B	Two separate blocks of CAS for EGLL arrivals, volumes to be Class C	Class C is an appropriate classification.
EGLL-1F	Two separate blocks of CAS for EGLL arrivals, CDR1/3 route status	CDR1/3 is an appropriate category
EGLL-1G	Two separate blocks of CAS for EGLL arrivals, CDR3 route status	CDR3 is an appropriate category
EGLL-2B	One block of CAS for EGLL arrivals, volumes to be Class C	Class C is an appropriate classification.
EGLL-2F	One block of CAS for EGLL arrivals, CDR1/3 route status	CDR1/3 is an appropriate category
EGLL-2G	One block of CAS for EGLL arrivals, CDR3 route status	CDR3 is an appropriate category
ATS routes	All, or some, of the proposed high level routes	These routes would provide predictable fuel savings
TRA 002	Revision of NW corner	This revision would provide improved ATC flexibility for EGBB departures

The point of these design components is to explore each scenario in isolation.
We can now take the best scoring parts of each component and consider them as follows:

Class C and Class D are both suitable classifications for the proposed CAS. We will consider an appropriate mix of these two classifications, based on the characteristics of each specific CAS volume, in the combined design option concepts.

FUA, CDR3, CDR1/3 are suitable mechanisms to be considered re times and conditions of activation of the proposed EGBB/EGLL routes/CAS. We will consider the possible on/off permutations vs the simplicity of a single combined activation, in the combined design option concepts.

The higher level ATS routes will be considered in the combined design option concepts.
The TRA 002 boundary revision will be considered in the combined design option concepts.

Final Combined Design Option Concepts

As described in the Stage 2 Step 2A(i) Design Options document, the longlist of components has been evaluated against the design principles and a logical shortlist of components has emerged – those components designated "Accept and Progress".

These shortlisted components have been combined into two system-wide design concepts; each of which has two sub-options based on time of availability. These combined options take into consideration extensive engagement with, and feedback from, civilian ATC, military ATC, GA experts, airline and airport representatives, development simulations and the design principle evaluation of the components earlier in this document.

Combined designs which support airspace sharing, CAS classifications considered in relation to the location and base level of each specific volume, and the ability to activate/ deactivate under FUA have therefore been prioritised.

For draft charts and more detail please see Step 2A(ii) Design Options document.

45. Combined Concept 1A

45.1 This design concept contains a larger Class D CAS volume near EGBB.

45.2 The airspace would be available evenings, overnights and mornings, 7 days a week, with appropriate clawback arrangements or consideration of planned special events.

45.3 This design concept takes elements from EGBB-1B, EGBB-1C, EGBB-1F, EGLL-1B, EGLL-1F, EGLL-1G, ATS Routes and TRA 002.

Option Name: Combined Concept 1A		ACCEPT and PROGRESS	
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
There would be predictable route availability for EGBB routes and flexibility for EGLL arrivals.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Development simulations indicate this is both manageable and achievable with an acceptable resource effort.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
This option would allow a reduction in flightplan mileage and fuel uplift/burn but not as much as Concept 1B			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The use of different airspace classifications for different volumes takes better account of the needs of other airspace users when compared with the blanket classifications considered at the design component evaluation. The larger Class D volume near EGBB potentially has a greater impact on GA and MoD operations compared with Concept 2. The deactivation of the structures during core daytime hours minimises the impact on MoD and GA.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
This option would be acceptable for the ANSPs and provides a simpler airspace structure than Concept 2.			

46. Combined Concept 1B

46.1 This design concept contains a larger Class D CAS volume near EGBB.

46.2 The airspace is established evenings, overnights and mornings on weekdays, and H24 at weekends, with appropriate clawback arrangements or consideration of planned special events.

46.3 This design concept takes elements from EGBB-1B, EGBB-1C, EGBB-1G, EGLL-1B, EGLL-1F, EGLL-1G, ATS Routes and TRA 002.

Option Name: Combined Concept 1B		ACCEPT and PROGRESS	
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
There would be predictable route availability for EGBB routes and flexibility for EGLL arrivals.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Development simulations indicate this is both manageable and achievable with an acceptable resource effort.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
This option would allow a reduction in flightplan mileage and fuel uplift/burn, more than Concept 1A.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The use of different airspace classifications for different volumes takes better account of the needs of other airspace users when compared with the blanket classifications considered at the design component evaluation. The larger Class D volume near EGBB potentially has a greater impact on GA and MoD operations compared with Concept 2. The deactivation of the structures during core weekday daytime hours minimises the impact on MoD, however it is recognised that there could be specific GA impacts at weekends which may need further mitigation.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
This option would be acceptable for both ANSPs and provides a simpler airspace structure than Concept 2, however the times would be preferable for both ANSPs as it matches existing ATSOCAS availability (described in para 4.1.2 of Step 2A(i)).			

47. Combined Concept 2A

47.1 This design contains a smaller Class D CAS volume near EGBB.

47.2 The airspace would be available evenings, overnights and mornings, 7 days a week, with appropriate clawback arrangements or consideration of planned special events.

47.3 This design concept takes elements from EGBB-2B, EGBB-2C, EGBB-2F, EGLL-1B, EGLL-1F, EGLL-1G, ATS Routes and TRA 002.

Option Name: Combined Concept 2A			ACCEPT and PROGRESS
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
There would be predictable route availability for EGBB routes and flexibility for EGLL arrivals.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Development simulations indicate this is both manageable and achievable with an acceptable resource effort.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)		PARTIAL	
This option would allow a reduction in flightplan mileage and fuel uplift/burn but not as much as Concept 2B			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The use of different airspace classifications for different volumes takes better account of the needs of other airspace users when compared with the blanket classifications considered at the design component evaluation. The smaller Class D volume near EGBB has a lesser impact on GA and MoD operations compared with Concept 1. The deactivation of the structures during core daytime hours minimises the impact on GA and MoD.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
This option would be acceptable for both ANSPs and provides a slightly more complex airspace structure than Concept 1.			

48. Combined Concept 2B

48.1 This design contains a smaller Class D CAS volume near EGBB.

48.2 The airspace is established evenings, overnights and mornings on weekdays, and H24 at weekends, with appropriate clawback arrangements or consideration of planned special events.

48.3 This design concept takes elements from EGBB-2B, EGBB-2C, EGBB-2G, EGLL-1B, EGLL-1F, EGLL-1G, ATS Routes and TRA 002.

Option Name: Combined Concept 2B			ACCEPT and PROGRESS
Design principle 1: Operational: Increase in predictable flight planning for operators and ATC flexibility to better manage busy flows (Priority C)			MET
There would be predictable route availability for EGBB routes and flexibility for EGLL arrivals.			
Design principle 2: Operational: Minimise resources needed to progress the proposal (Priority C)			MET
Development simulations indicate this is both manageable and achievable with an acceptable resource effort.			
Design principle 3: Environmental: Avoid low-level changes and reduce CO_2 emissions where possible (Priority B)		PARTIAL	
The routes would provide a CO_2 reduction for relevant traffic, which would not change below 7,000ft. A new FL65 CAS base may cause some GA flights to reroute or fly lower than they do today.			
Design principle 4: Economic: Reduce flight plan mileage and associated fuel uplift/ burn (Priority C)			MET
This option would allow a reduction in flightplan mileage and fuel uplift/burn, more than Concept 2A.			
Design principle 5: Technical: Minimise negative impact on other airspace users (Priority C)		PARTIAL	
The use of different airspace classifications for different volumes takes better account of the needs of other airspace users when compared with the blanket classifications considered at the design component evaluation. The larger Class D volume near EGBB potentially has a lesser impact on GA and MoD operations compared with Concept 1. The deactivation of the structures during core weekday daytime hours minimises the impact on MoD, however it is recognised that there could be specific GA impacts at weekends which may need further mitigation.			
Design principle 6: Operational: Full ANSP agreement (Priority B)			MET
This option would be acceptable for both ANSPs even though it provides a slightly more complex airspace structure than Concept 1, however the times would be preferable for both ANSPs as it matches existing ATSOCAS availability (described in para 4.1.2 of Step 2A(i)).			

49. Conclusion and Shortlist

49.1 The design component options have been evaluated, and the best scoring components have been combined into system concepts which have also been evaluated.

49.2 We conclude that the Combined Concepts 1A, 1B, 2A and 2B best meet the design principles and their relative priorities.

49.3 The shortlist therefore comprises the baseline do-nothing option, and these four combined concepts.

50. Next Steps

50.1 These four options will be formally appraised under Stage 2 Step 2B Options Appraisal (Phase 1 Initial) including Safety Assessment.

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