Future Airspace Strategy Implementation South (FASI-S)

Bristol Airport

Gateway documentation:

Stage 2 Develop & Assess

Step 2B Options Appraisal

(Phase 1 Initial)

including Safety Considerations

Sign-Off

Action	Role	Date
Produced	Airspace Change Specialist	28/01/2022
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Contents

Introduction

This document forms part of the document set required in accordance with the requirements of the CAP1616 airspace change process. It aims to provide adequate evidence to satisfy *Stage 2 Develop and Assess Gateway, Step 2B Options Appraisal Safety Assessment.*

This document has been submitted to the CAA to satisfy the requirements for Stage 2 alongside the *Design Options* and *Design Principle Evaluation* documentation which can also be found on the portal (link).

This Initial Options Appraisal is the first of three options appraisals as part of CAP1616. The design options presented herein all passed the required criteria of the *Stage 2 – Step 2A Design Principle Evaluation*.

This Initial Options Appraisal builds on the Design Principle evaluation and identifies the key impacted audiences of the design options and a qualitative assessment of each. This assessment takes into consideration feedback received from stakeholders during the Stage 2 engagement activities alongside operational knowledge of the ACP design team.

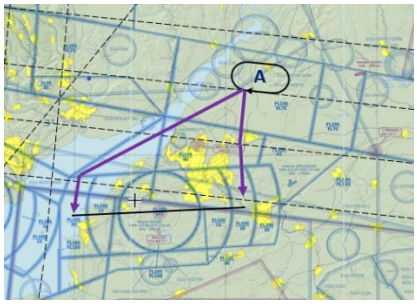
The changes in this ACP impact flights below 7,000ft – including arrival and departure routes to/ from Bristol Airport - and has consequently been categorised as a Level 1 change. In line with the requirements for a Level 1 change, this Initial Options Appraisal contains a qualitative environmental impact assessment which has been conducted on the basic of CO_2 emissions and noise impact.

The baseline (do nothing) option would not deliver any improvement or modernisation from today's operations and is used as the benchmark against which the benefits of the proposed change can be measured. The Design Principles are either not met or met by default for this option, i.e., 'no change'. As such, this option is not being progressed.

The detailed makeup of the baseline option and the Hold/ SID options, including evaluation is detailed in Stage 2 Develop and Assess: *Step 2A(i) Design Options* and *Step 2A(ii) Design Principle Evaluation*.

Following on from the Design Principle Evaluation, Bristol Airport is progressing the following different design options which form the focus of this Initial Options Appraisal:

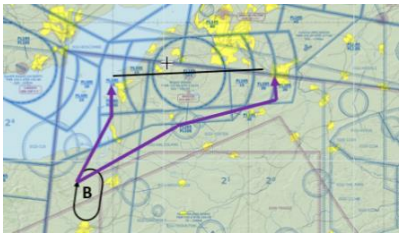
- 4 options for a Hold
- 14 options for Runway 09 SIDs
- 13 options for Runway 27 SIDs



Hold Options

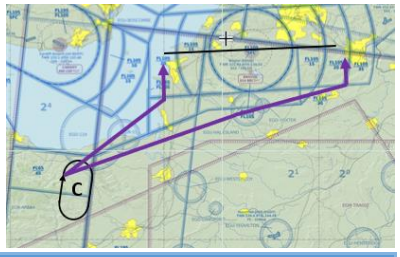
Hold A

Group	Impact
Communities	Noise impact on health and quality of life
Transitions to Runway 27 should avoid overflying any large populations however, may overfly a small (new) quantity of ground-based stakeholders to the east of Bristol Airport. This can be minimised through PBN routing. Whilst transitions to Runway 09 should mainly occur over the Channel.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Arriving aircraft will still descend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either end of the runway. This is close to landing, in the very final stages of the approach, and is no change from today.	
Wider society	Greenhouse gas impact
Appropriate location as this Hold is close to the airport. Fuel planning does not have to take into account additional track miles due to the location therefore no superfluous environmental impact. Net increase in CO_2 emissions would be small as holding will not be employed for most arrivals (only when required for reasons such as delay absorption, or bad weather conditions).	
Wider society	Capacity/ resilience
Removes Hold from the overhead thus enabling more use of continuous climb operations (CCO) for departures. Cross-over with potential departure routes but can be managed through vertical profile restrictions and/or tactically. Well positioned for Bristol arrivals and connectivity from the network. However, further design work required to ensure required Hold levels can be obtained due to busy network traffic.	
General Aviation	Access
Minimum new Controlled Airspace (CAS) required: lower base level of Control Area (CTA) needed south of the Hold to accommodate descent. Expectation that the lowest level would be around 5,500ft so minimal impact on GA.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Appropriate location as this Hold is close to the airport. Fuel planning therefore does not have to take into account additional track miles due to Hold location. No increase in GA routings expected.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Hold B

Group	Impact
Communities	Noise impact on health and quality of life
Transitions would not overfly any large populations with arrivals to Runway 09 partially overflying the water. PBN routing will be used to minimise overflying population centres.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Arriving aircraft will still descend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either end of the runway. This is close to landing, in the very final stages of the approach, and is no change from today.	
Wider society	Greenhouse gas impact
Appropriate location as this Hold is close to the airport. Fuel planning does not have to take into account additional track miles due to the location therefore no superfluous environmental impact. Net increase in CO_2 emissions would be small as holding will not be employed for most arrivals (only when required for reasons such as delay absorption, or bad weather conditions).	
Wider society	Capacity/ resilience
Removes Hold from the overhead thus enabling more use of continuous climb operations (CCO) for departures.	
General Aviation	Access
Small amount of new CAS required for containment of a Hold in this location. Expectation that the lowest level would be around 6,500ft so minimal impact on GA.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Appropriate location as this Hold is close to the airport. Fuel planning therefore does not have to take into account additional track miles due to Hold location. Small increase in GA routings expected, at medium levels only.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Hold C

Group	Impact
Communities	Noise impact on health and quality of life
Transitions would not overfly any large populations with arrivals to Runway 09 partially overflying the water. PBN routing will be used to minimise overflying population centres.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Arriving aircraft will still descend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either end of the runway. This is close to landing, in the very final stages of the approach, and is no change from today.	
Wider society	Greenhouse gas impact
Although a large proportion of flights are from the south, the Transition from Hold C to Runway 27 would increase the environmental impact when compared to other design options. Net increase in CO_2 emissions would be small as holding will not be employed for most arrivals (only when required for reasons such as delay absorption, or technical troubleshooting).	
Wider society	Capacity/ resilience
Removes Hold from the overhead thus enabling more use of continuous climb operations (CCO) for departures. Some new CAS required for containment. Capacity could be constrained due to length of transition to Runway 27. Also situated within a very busy region of airspace.	
General Aviation	Access
Small extension of CAS required to accommodate a Hold in this location. Expectation that the lowest level would be around 6,500ft so minimal impact on GA.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Hold is in an appropriate location for a large proportion of arrivals from the south. However, fuel planning would have to take into account the longer transition to Runway 27 (when compared to other options) which would increase fuel burn for airlines. No increase in GA routings expected.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Hold F

Group	Impact
Communities	Noise impact on health and quality of life
Transitions may overfly new populations, albeit not huge numbers of people. PBN routing will be used to minimise impact.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Arriving aircraft will still descend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either end of the runway. This is close to landing, in the very final stages of the approach, and is no change from today.	
Wider society	Greenhouse gas impact
Appropriate location as this Hold is close to the airport and the majority of arrivals are from the south and east. Fuel planning does not have to take into account additional track miles due to the location therefore no superfluous environmental impact. Net increase in CO_2 emissions would be small as holding will not be employed for most arrivals (only when required for reasons such as delay absorption, or technical troubleshooting).	
Wider society	Capacity/ resilience
Removes Hold from the overhead thus enabling more use of continuous climb operations (CCO) for departures. Geographically well suited for Bristol arrivals and connectivity from the network. Some new CAS required for containment – more than Hold B or Hold C.	
General Aviation	Access
New CAS required to accomodate a Hold in this location but base level expected to be around 6,500ft. Impact on GA therefore expected to be minimal.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Appropriate location as this Hold is close to the airport and the majority of arrivals are from the south and east. Fuel planning therefore does not have to take into account additional track miles due to Hold location. Small increase in GA routings expected, at medium levels only.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
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Airport/ ANSP	Deployment costs
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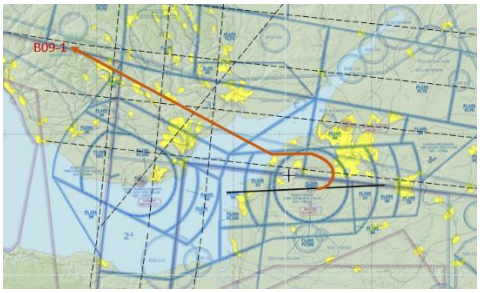
Runway 09 SID Options

Runway 09 SID: B09-1 (north-west departure)



Group	Impact
Communities	Noise impact on health and quality of life
Some of the climb will be over the Channel. It turns earlier than the current SID which could reduce the population overflown by avoiding central Bristol. Any re-alignment from the current NPR could overfly new communities closer to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current Noise Preferential Routes (NPR) to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
More direct route than the current departure therefore, reducing greenhouse gas impact. Should also allow CCOs.	
Wider society	Capacity/ resilience
A more systemised route compared to the current procedure and well positioned for network connectivity. Anticipated to support 1-minute splits from other east and northbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact. However, the early turn to minimise population overflown may require lowering part of CTA7.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in modest savings for commercial traffic. Airline fuel planning would take in account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
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Airport/ ANSP	Operational costs
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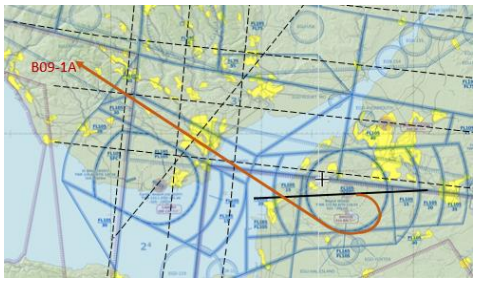
Runway 09 SID: B09-1A (alternate north-west departure)



Group	Impact
Communities	Noise impact on health and quality of life
Some of the climb will be over the Channel. The right turn from Runway 09 would completely avoid overflying Bristol City. However, it would overfly the Mendip AoNB. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
A direct route to the north-west from Runway 09 therefore minimal environmental impact. Should also allow CCOs.	
Wider society	Capacity/ resilience
Well positioned for network connectivity. Anticipated to support 1-minute splits from other east and northbound departures. Offers a potential alternative to SID B09-1 to provide respite. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Direct route will minimise fuel burn. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
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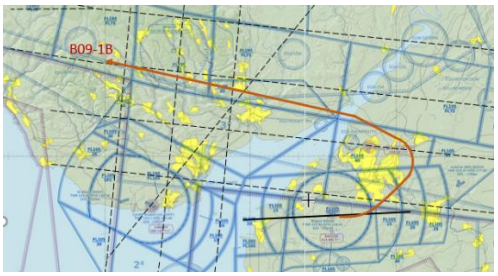

Runway 09 SID: B09-1B
(alternate left turn north-west departure)

Group	Impact
Communities	Noise impact on health and quality of life
Some of the climb will be over the Channel and avoids overflying Bristol City centre. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Longer track distance than B09-1 therefore increased environmental impact.	
Wider society	Capacity/ resilience
Provides an alternative route to B09-1 for low performance aircraft. Anticipated to support 1-minute splits from southbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
A longer track distance than B09-1 will result in an increase in fuel burn. Airline fuel planning would take into account an increase in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
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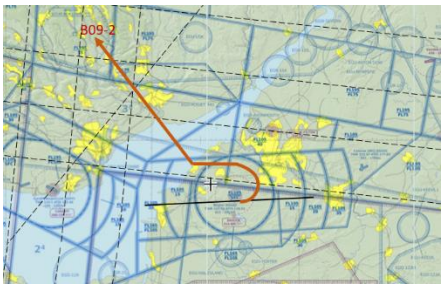
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Runway 09 SID: B09-2 (left turn north-west departure)



Group	Impact
Communities	Noise impact on health and quality of life
Some of the climb will be over the Channel and avoids overflying Bristol City centre. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
More direct route than the current departure therefore, reducing its greenhouse gas impact. Should also allow CCOs.	
Wider society	Capacity/ resilience
Should allow CCOs and is anticipated to support 1-minute splits from other southbound and possibly eastbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS. However, an early turn to minimise population oveflown may result in lowering part of CTA7.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Direct route will minimise fuel burn. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
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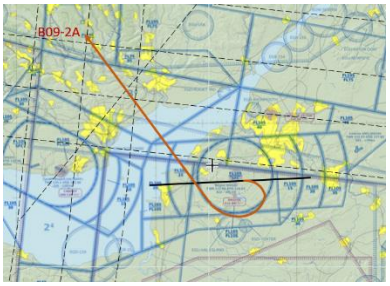
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 09 SID: B09-2A
(alternate right turn north-west departure)

Group	Impact
Communities	Noise impact on health and quality of life
Some of the climb will be over the Channel. The right turn from Runway 09 would completely avoid overflying Bristol City. However, it would overfly the Mendip AoNB. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Longer route than some of the other options to the north-west therefore an increased environmental impact.	
Wider society	Capacity/ resilience
Should support 1-minute splits from other east and northbound departures. Good connectivity to the network. Potentially a respite alternative to SID B09-2 All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Longer route than some of the other options to the north-west therefore an increase in fuel burn. Airline fuel planning would take into account an increase in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
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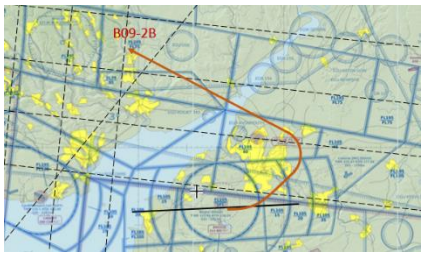
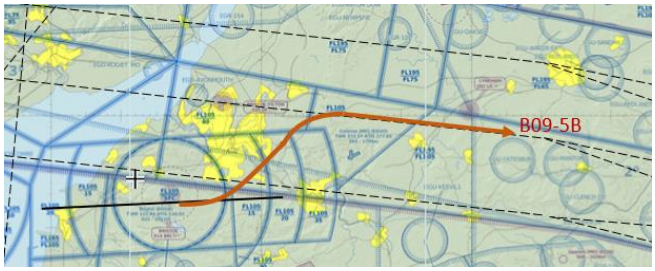


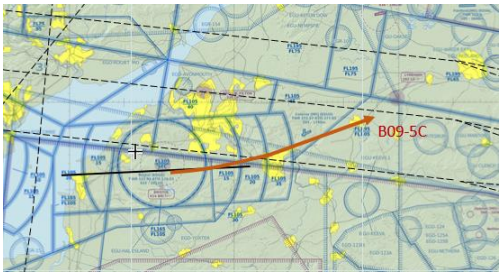
Runway 09 SID: B09-2B
(alternate left turn north-west departure)

Group	Impact
Communities	Noise impact on health and quality of life
Some of the climb will be over the Channel. The left turn from Runway 09 would avoid overflying Bristol City centre. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Longer route than the other options to the north-west therefore an increased environmental impact.	
Wider society	Capacity/ resilience
Should be suitable for low performance aircraft. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Longer route than the other options to the north-west therefore an increase in fuel burn. Airline fuel planning would take into account an increase in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 09 SID: B09-5B
(alternate eastern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Avoids overflying Bath and Bristol. Could potentially be used as a respite route. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Less direct and longer track distance than B09-5C therefore an increased environmental impact.	
Wider society	Capacity/ resilience
Well positioned for connectivity to the network. Suitable for low performance aircraft providing greater track distance to achieve network height requirements. Formalises what is currently a tactical route. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Less direct and longer track distance than B09-5C therefore an increase in fuel burn. Airline fuel planning would take into account an increase in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 09 SID: B09-5C
(north-east departure)

Group	Impact
Communities	Noise impact on health and quality of life
Precisely positioned to minimise population overflown (subjcet to detailed design). Any re-alignment from the current NPR could overfly new communities closer to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Direct departure route and shorter than current route. However, speed restrictions may be required to achieve network height requirements which could increase emissions.	
Wider society	Capacity/ resilience
Well positioned for connectivity to the network. Suitable for high performance aircraft. Formalises what is currently a tactical route (today's NPR). All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Direct departure route and shorter than current route. Should achieve continuous climbs. However, network speed restrictions may be required to achieve climb which could increase fuel burn (airline fuel planning would have to take account of this).	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

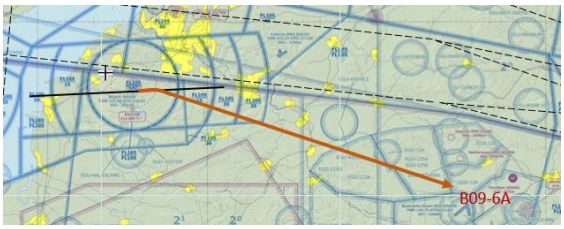
Runway 09 SID: B09-6

(south-east departure for first rotation traffic)

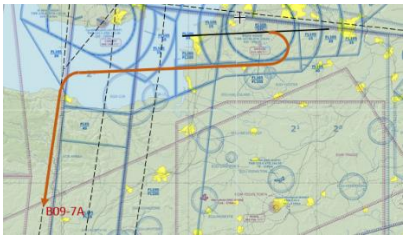
Group	Impact
Communities	Noise impact on health and quality of life
New route intended only for some early morning departures. Does not overfly any heavily populated areas.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
When in use, this route will provide good greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today).	
Wider society	Capacity/ resilience
Would be used to reduce pre-departure delay during first rotation (a known high demand period). However, it would not comply with current network connectivity (further work required). Potential to achieve reduced departure separation from north and eastbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
This SID will require change of classification of airspace but limited to early morning periods (e.g. before 08.30) so impact on GA access or military operations should be minimal.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic when available (early mornings only). Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Runway 09 SID: B09-6A

(alternate south-east departure for first rotation traffic)

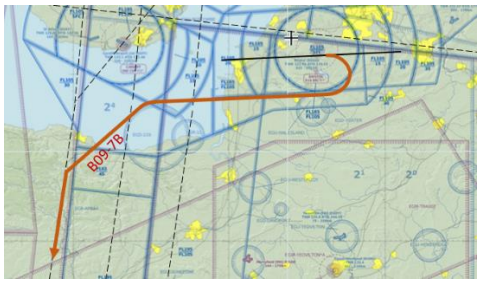


Group	Impact
Communities	Noise impact on health and quality of life
New route intended only for some early morning departures. Does not overfly any heavily populated areas.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
When in use, this route will provide good greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today).	
Wider society	Capacity/ resilience
Would be used to reduce pre-departure delay during first rotation (a known high demand period). However, it would not comply with current network connectivity (further work required). Achieving reduced departure separation from east or southbound traffic will depend upon NPR changes. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
This SID will require change of classification of airspace but limited to early morning periods (e.g. before 08.30) so impact on GA access should be low.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic when available (early mornings only). Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



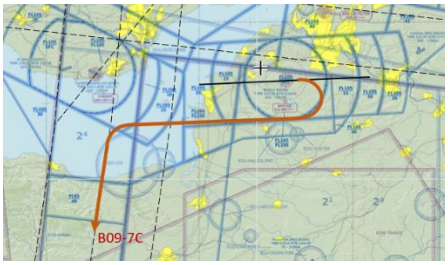
Runway 09 SID: B09-7A
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Does not overfly any heavily populated areas however, overflies the Mendip AoNB. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
This route should allow CCOs depending on cross-over with the inbound Transition.	
Wider society	Capacity/ resilience
Should support 1-minute splits from north or eastbound departures. Well positioned for connectivity to the network. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Likely to require new permanent CAS which could impact GA operations (gliding site in this region).	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 09 SID: B09-7B
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Does not overfly any heavily populated areas however, overflies the Mendip AoNB. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
This route should also CCOs depending on cross-over with inbound Transition.	
Wider society	Capacity/ resilience
Should support 1-minute splits from north or eastbound departures. Well positioned for connectivity to the network. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Likely to require new permanent CAS which could impact GA operations (gliding site in this region).	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 09 SID: B09-7C
(alternate southern departure)

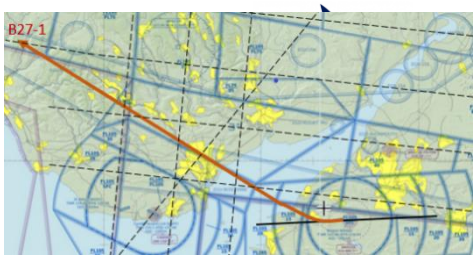
Group	Impact
Communities	Noise impact on health and quality of life
Does not overfly any heavily populated areas however, overflies the Mendip AoNB. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
This route should allow CCOs depending on cross-over with the inbound Transition.	
Wider society	Capacity/ resilience
Should support 1-minute splits from north or eastbound departures. Well positioned for connectivity to the network. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Likely to require new permanent CAS which could impact GA operations (gliding site in this region).	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Runway 09 SID: B09-7D
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Does not overfly any heavily populated areas however, overflies the Mendip AoNB. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
This route is shorter than what is currently flown therefore, will provide good greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today). It should also allow CCOs as it is designed to be separated from the inbound Transition.	
Wider society	Capacity/ resilience
Should support 1-minute splits from east or northbound departures. Well positioned for connectivity to the network. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Would require a significant amount of new permanent CAS which could potentially impact GA or military operations. Although, this new CAS would be limited to above 4,000ft which would lessen the impact. This option would require more CAS than options B09-7A, B09-7B or B09-7C.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

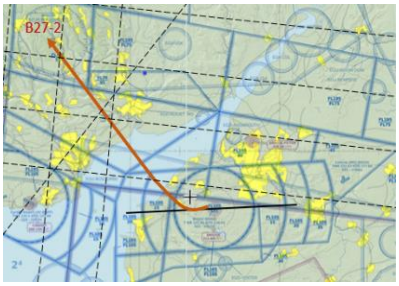
Runway 27 SID Options

Runway 27 SID: B27-1 (north-west departure)

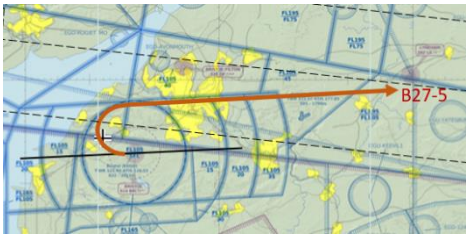


Group	Impact
Communities	Noise impact on health and quality of life
Much of the climb will be over the Channel however a small (new) population could be affected by a re-alignment from the current NPR which could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
More direct route than the current departure therefore, reducing greenhouse gas impact. Should also allow CCOs (subject to design separation from Cardiff procedures).	
Wider society	Capacity/ resilience
A more systemised route compared to the current procedure and well positioned for network connectivity. Should support reduced separation from southbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in fuel burn savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Runway 27 SID: B27-2 (north-west departure, towards Brecon)



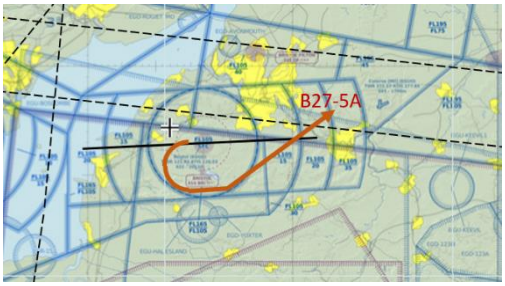
Group	Impact
Communities	Noise impact on health and quality of life
Much of the climb will be over the Channel and can be aligned to avoid large population centres. Any re-alignment from the current NPR could overfly new communities close to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
More direct route than the current departure therefore, reducing greenhouse gas impact. Should also allow CCOs (subject to design separation from Cardiff procedures).	
Wider society	Capacity/ resilience
A more systemised route compared to the current procedure and well positioned for network connectivity. Should support reduced separation from southbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in fuel burn savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



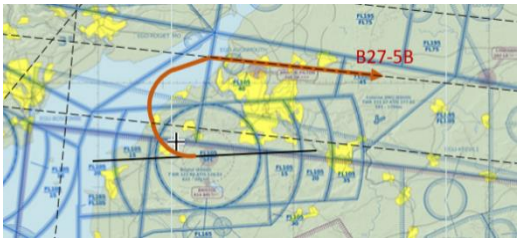
Runway 27 SID: B27-5 (eastern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Principal eastbound departure route, however depending on climb requirements may be below 7,000ft above parts of Bristol City. Any re-alignment from the current NPR could overfly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
More direct route than the current departure therefore, reducing greenhouse gas impact. Should also allow CCOs.	
Wider society	Capacity/ resilience
Direct connectivity to the network therefore reduced ATC and pilot workload compared to current procedures. However, may require step-climb to avoid other traffic flows and speed limits to achieve required turn performance. Should support reduced departure separation from southbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS therefore minimal impact.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in fuel burn savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Runway 27 SID: B27-5A (alternate eastern departure)



Group	Impact
Communities	Noise impact on health and quality of life
A new route which formalises the current tactical option of left-turn out. Could potentially be used as a respite route – avoiding both Bath and Bristol - from the normal right-turn departure route. However, will overfly the Mendip Area of Outstanding Natural Beauty (AoNB).	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Network alignment results in shorter track than the current departure therefore, reducing greenhouse gas impact.	
Wider society	Capacity/ resilience
Well positioned for connectivity to the network. However, may require step-climb to avoid other traffic flows and speed limits to achieve required turn performance. Should support reduced separation from northbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
New SID but design intention is to contain within existing CAS.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in fuel burn savings for commercial traffic. Airline fuel planning would take into account a reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 27 SID: B27-5B

(alternate eastern departure for slow climbing aircraft)

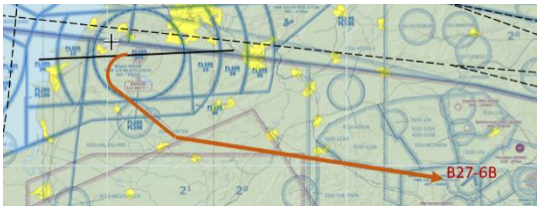
Group	Impact
Communities	Noise impact on health and quality of life
Possibility for some of the climb to be over the channel and avoids Bristol City. Could be used as a respite route to the east or for low performance aircraft as it provides a longer track distance to achieve height requirements. Any re-alignment from the current NPR could over-fly new communities.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Shorter track than the current departure therefore, reducing greenhouse gas impact. However, an increased environmental impact when compared to SID B27-5.	
Wider society	Capacity/ resilience
Could be used for low performance aircraft and well positioned for connectivity to the network. Reduced ATC and pilot workload. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain within existing CAS.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter track than the current departure therefore, reducing airline fuel burn. However, an increased track length when compared to SID B27-5 due to its positioning to avoid populated areas. Airline fuel planning would have to take into account this increase in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Runway 27 SID: B27-6
(south-east departure for first rotation traffic)

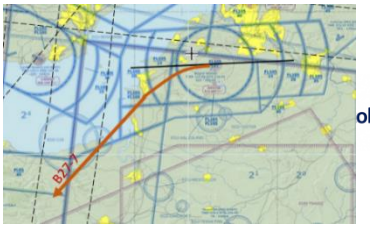
Group	Impact
Communities	Noise impact on health and quality of life
New route intended only for some early morning departures. Does not overfly any heavily populated areas however, will overfly the Mendip AONB.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
When in use, this route will provide good greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today).	
Wider society	Capacity/ resilience
Would be used to reduce pre-departure delay during first rotation (a known high demand period). However, it would not comply with current network connectivity (further work required). All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
The SID will require a change of airspace classification but limited to early morning periods (e.g. before 08.30) so impact on GA access should be minimal.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic when available (early mornings only). Airline fuel planning would take into account this reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Runway 27 SID: B27-6B

(alternate south-east departure for first rotation traffic)



Group	Impact
Communities	Noise impact on health and quality of life
An alternative route 6 intended only for some early morning departures. Does not overfly any heavily populated areas however, will overfly the Mendip AONB.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
When in use, this route will provide good greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today).	
Wider society	Capacity/ resilience
Would be used to reduce pre-departure delay during first rotation (a known high demand period). All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
The SID will require a change of airspace classification but limited to early morning periods (e.g. before 08.30) so impact on GA access should be low.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter and more direct route will result in good savings for commercial traffic when available (early mornings only). Airline fuel planning would take into account this reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

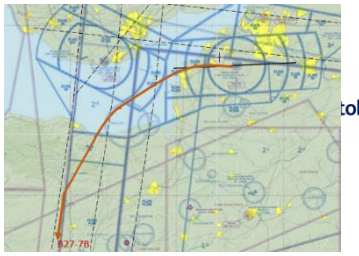


Runway 27 SID: B27-7 (southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Potential to avoid overflying large population centres. Some of the climb is situated over the Channel. Any re-alignment from the current NPR could over-fly new communities close to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
This route will provide greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today).	
Wider society	Capacity/ resilience
Well positioned for network connectivity and would support reduced separation from north or eastbound departures. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
The SID will require some change of airspace classification but only at higher levels so impact on GA access should be low.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter route than currently published; airlines will often request this route for fuel saving. Airline fuel planning would take into account this reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

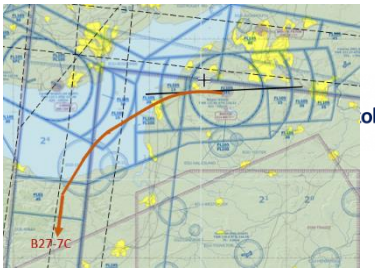
Runway 27 SID: B27-7A
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Much of the initial climb will be over the Channel although lower performance aircraft may overfly Weston-Super-Mare below 7,000ft. Any re-alignment from the current NPR could over-fly new communities close to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
N/A - little change from route alignment today.	
Wider society	Capacity/ resilience
Should support CCOs and well positioned for connectivity to the network. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter route than the current published route. Airline fuel planning would take into account this reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



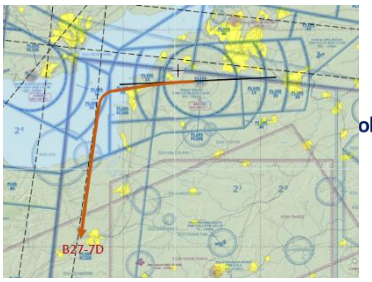
Runway 27 SID: B27-7B
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Low performance aircraft may overfly some of Weston-Super-Mare below 7000ft. Much of the remaining climb is situated over the Channel. Any re-alignment from the current NPR could over-fly new communities close to the airport..	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
This route will provide some greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today).	
Wider society	Capacity/ resilience
Well positioned for connectivity to the network and should support CCOs. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter route than the current published route. Airline fuel planning would take into account this reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



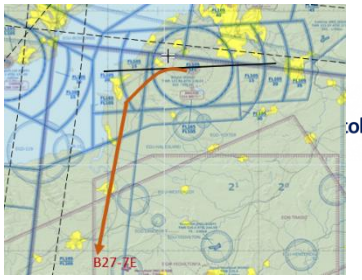
Runway 27 SID: B27-7C
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Low performance aircraft may overfly some of Weston-Super-Mare below 7000ft. Much of the remaining climb is situated over the Channel. Any re-alignment from the current NPR could over-fly new communities close to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
This route will provide some greenhouse gas/ fuel burn savings from reduced track mileage (more direct than today).	
Wider society	Capacity/ resilience
Well positioned for connectivity to the network and should support CCO. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
Design intention is to contain SID within existing CAS.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Shorter route than the current published route. Airline fuel planning would take into account this reduction in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 27 SID: B27-7D
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Low performance aircraft may overfly some of Weston-Super-Mare below 7000ft. Much of the remaining climb is situated over the Channel. Any re-alignment from the current NPR could over-fly new communities close to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Continuous climbs may not be possible (increase in greenhouse gas impact) due to not being separated from potential southern Hold.	
Wider society	Capacity/ resilience
Well positioned for connectivity to the network. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
SID will require change of airspace classification but only at higher levels so impact on GA access or military operations should be low.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Continuous climbs may not be possible (due to potential Hold location) which could increase fuel burn. Airline fuel planning would take into account this increase in track miles.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	



Runway 27 SID: B27-7E
(alternate southern departure)

Group	Impact
Communities	Noise impact on health and quality of life
Alignment should avoid overflying large population centres below 7,000ft. Any re-alignment from the current NPR could over-fly new communities close to the airport.	
Communities	Air quality
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local air quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the runway. However, there may be a slight re-alignment of the current NPR to achieve the requirement of reduced minimum departure intervals, subject to further design work.	
Wider society	Greenhouse gas impact
Continuous climbs may not be possible (increase in greenhouse gas impact) due to not being separated from potential southern Hold, although could be offset by the route alignment being shorter than today	
Wider society	Capacity/ resilience
Well positioned for connectivity to the network. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation	Access
SID will require change of airspace classification but only at higher levels so impact on GA access or military operations should be low.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
Continuous climbs may not be possible (potential transitions location) which could increase fuel burn (although route is shorter than today). Airline fuel planning would take into account this potential increase.	
Commercial airlines	Training costs
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. This proposal is not anticipated to require additional training costs for airlines.	
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
This proposal is not expected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some system engineering amendments (internal ATC system adaptation changes only).	
Airport/ ANSP	Operational costs
This proposal is not expected to change airport or ANSP operational costs.	
Airport/ ANSP	Deployment costs
This proposal is expected to require air traffic controller training for controllers and assistants at NATS Swanwick and Bristol Airport with use of the NATS simulator facilities at both locations. Training may also be required at Cardiff Airport if design changes impact upon their operation. Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuous service delivery. Internal documentation will also require updating.	

Safety Assessment

A qualitative safety assessment has been completed for each of the above design options and also includes those which were rejected as part of the *Stage 2 – Step 2A Design Principle Evaluation.*

This safety report documents the initial safety appraisal of the Bristol Airport design options by providing a summary of potential safety implications and a qualitative statement for each design option.

The safety assessment has been summarised in a separate report and uploaded to the portal (link) alongside this document.

Conclusion and Next Steps

This proposal has been developed following the submission of the linked Statement of Need to the CAA Airspace Regulation. This summarised Bristol Airport's requirement for an airspace change including a reduction of emissions through minimisation of additional track miles and better management of noise impact.

This document has described the design options which address the Statement of Need by the proposed introduction of new arrival and departure procedures. These options have been developed through engagement with Bristol Airport's stakeholders including representatives from airlines and the GA/ MoD communities. Bristol Airport thanks all of these stakeholders and looks forward to continuing the development of this proposal alongside them.

These design options have been qualitatively appraised and will be taken forward for further development and consultation. Subject to CAA approval at the *Stage 2 Develop and Assess* Gateway Assessment, this proposal will then move on to *Stage 3 Consult*.