Future Airspace Strategy Implementation South (FASI-S) Cardiff Airport

Gateway documentation:

Stage 2 Develop & Assess

2B (ii) Initial Options Appraisal



Sign-Off

Action	Role	Date
Produced	Airspace Change Specialist	28/01/2022
Reviewed Approved	NATS Cardiff General Manager	28/01/2022
Reviewed Approved	Cardiff Head of Airfield Operations	28/01/2022

Publication History

Issue	Date	Comments
Issue 1.0	28/01/2022	First issue submitted to the CAA
Issue 2.0	XX/06/2022	Updated following CAA feedback with further information on the baseline and impact on biodiversity and tranquillity included

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1. Introduction

This document forms part of the document set in accordance with the requirements of CAP1616 airspace change process. It aims to provide adequate evidence to satisfy *Stage 2 Develop and Assess Gateway, Step 2B Options Appraisal (Phase I Initial),* including a 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 2A Design Principle Evaluation. This 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 proposed in Cardiff Airport's ACP will impact flights below 7,000ft. Hence in accordance with the Levels as defined in CAP1616, it has 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 but is included here for comparative purposes.

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

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

- 8 options for Runway 12 SIDs
- 8 options for Runway 30 SIDs
- 5 options for a Hold

Biodiversity

From a biodiversity point of view and CAP1616, airspace changes at the altitudes proposed here are unlikely to have an impact on biodiversity because they do not involve ground infrastructure changes. Engagement with biodiversity legislation or guidance is unlikely to be required. Changes in greenhouse gas emissions and tranquillity, which may have a potential indirect impact on biodiversity, are described separately in this document.

Noise Modelling Methodology

As part of the Stage 2 Gateway, the CAA requires the change sponsor (here being Cardiff Airport) to justify the category its noise modelling methodology falls into. The noise modelling categories can be found in the CAA's CAP2091 document which describes the "minimum acceptable level of sophistication of noise modelling" that can be used for an airspace change, alongside other statutory duties.

CAP2091 describes five noise modelling categories A-E, with category A being the most sophisticated, reflecting the most accurate impact of noise experienced by local stakeholders, and Category E is the least and uses standard ICAO datasets.

As covered above, Cardiff Airport is conducting a qualitative Initial Options Appraisal and it is therefore not proportional to categorise this sort of assessment. We have provided high-level statements, based on stakeholder feedback and SME input, which indicates whether the noise impact is likely to change.

As our design options are refined in Stage 3 and beyond, we will update our options appraisal with quantitative evidence where appropriate, which will include the noise modelling. Based on the category descriptions contained within CAP2091, Cardiff Airport's noise modelling will fall under Category E, which will use a standard ICAO dataset.

Assessment Criteria

The evidence supplied here is qualitative and high level, the assessment criteria based on the opinions of subject matter experts, feedback derived from stakeholders and the evolving design work. Cardiff Airport do not have an accurate enough traffic forecast to build quantitative airspace change options appraisals. Therefore, the qualitative initial appraisals for each indicative design option do not consider the traffic forecast. A suitable forecast is required as part of the quantitative analysis at Stage 3 and this will be provided.

Group	Impact	
Communities	Noise impact on health and quality of life	
	nt of any changes to the noise impact to those affected on the ground. nt of any changes to the tranquillity impact, notably for Areas of Outstanding Natural Beauty or National Parks	
Communities	Air quality	
A qualitative assessme	nt of any changes to the air quality impact.	
Wider society	Greenhouse gas impact	
A qualitative assessment of any changes to the CO ₂ impact.		
Wider society	Capacity/ resilience	
A qualitative assessme	nt of any changes to the impact on overall UK airspace structure, specifically in relation to capacity and resilience.	
General Aviation	Access	

Each design option has been assessed based on the criteria contained within CAP1616. These criteria can be found below.

A qualitative assessment of any changes to the access to airspace for GA users.	
General Aviation/ commercial airlines	Economic impact from increased effective capacity
A qualitative assessment of any	changes to the forecast increase in air transport movements.
General Aviation/ commercial airlines	Fuel Burn
A qualitative assessment of any	changes to the fuel burn costs.
Commercial airlines	Training costs
A qualitative assessment of any	changes to the training costs.
Commercial airlines	Other costs
A qualitative assessment of any	changes to any other relevant costs.
Airport/ ANSP	Infrastructure costs
A qualitative assessment of any changes to infrastructure costs.	
Airport/ ANSP	Operational costs
A qualitative assessment of any changes to operational costs.	
Airport/ ANSP	Deployment costs
A qualitative assessment of any changes to deployment costs.	

2. Baseline (do nothing)

The design options in this document are compared to the baseline do-nothing option. As summarised in our Step 2Aii document, the baseline was rejected as it did not meet Design Principles relating to resilience and capacity criteria. It is included here for comparison purposes but is not an option to be progressed.

Group	Impact
Communities	Noise impact on health and quality of life
would be no opportunitie Some areas of the Brecc	nities would continue to be overflown below 7,000ft, resulting in concentration of overflight at low altitudes. There as to provide respite or to otherwise alter flightpaths. If this baseline was retained, the noise impact would not change. In Beacons National Park and AoNBs (Cotswolds, Mendip Hills and Wye Valley) are overflown in a dispersed manner y have an impact on tranquility. If this baseline system was retained, this impact on tranquility would not change.
Communities	Air quality
	ould be flown below 1,000ft . vas retained, arrivals would not change flightpath below 1,000ft, departures would not change flightpath below 1,000ft acts would not change.
Wider society	Greenhouse gas impact
	would be flown, and the same typical altitudes would be attained along the track. If this baseline system was retained be shortened, altitudes could not increase, and greenhouse gas impacts would not change.
Wider society	Capacity/ resilience
If this baseline system w	rtunity to improve airspace capacity or resilience. vas retained, the predominant swathes of traffic to/ from the east and south of the airport will remain the same; mpacts would not change.
General Aviation	Access
system was retained, GA	port's airspace would continue in the areas currently observed (generally this is at or below 4,000ft). If this baseline would continue to access the same areas in a similar manner and access impacts would not change. The current p-optimal for all airspace users.
General Aviation/ comm airlines	ercial Economic impact from increased effective capacity
	rtunity to improve airspace capacity. If this baseline system was retained, the predominant broad swathes of traffic to of the airport will remain the same. Capacity impacts would not change, and there would be no change in economic ommercial operators.
General Aviation/ comm airlines	ercial Fuel Burn
	would be flown, and the same typical altitudes would be attained along the track. If this baseline system was retained be shortened, altitudes could not increase, and fuel burn impacts would not change for either GA or commercial
Commercial airlines	Training costs
	e worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if required. If this ained, the same flight procedures would be used and training cost impacts would not change.
Commercial airlines	Other costs
We are not aware of othe those other costs would	er commercial airline costs that are appropriate for inclusion in this appraisal. If this baseline system was retained, not change.
Airport/ ANSP	Infrastructure costs
	ce is used daily. If this baseline system was retained, the same infrastructure would continue to be used in the same osts beyond typical maintenance.
Airport/ ANSP	Operational costs
	ily. If this baseline system was retained, the same operation would continue in the same way, with no additional
The operation is used da operational costs.	



3. Runway 12 SIDs

Runway 12 SID C1

Group	Impact
Communities	Noise impact on health and quality of life
Most of the intial climb up to	7,000ft is over water. This design option has the potential to reduce overall impacts of aircraft noise when o-nothing option. It should be noted that any re-alignment from the current NPR could overfly new
	tential to overfly the north edge of the Quantock Hills Area of Outstanding Natural Beauty (AoNB). This could be epartures are held down, and therefore potentially have an impact on tranquillity. This is very similar to what is ing option).
Communities	Air quality
Government guidance states	that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality.
	nb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the ange much from today however, there may be a slight re-alignment of the current Noise Preferential Route in work.
Wider society	Greenhouse gas impact
	Continuous Climb Operation) may not be achievable above 7,000ft, due to a potential location of Cardiff's Hold/ ore increase the greenhouse gas impact and contribution when compared with the baseline do-nothing option.
Wider society	Capacity/ resilience
	ticipated to be frequently used as a large percentage of traffic flies to/ from southern locations. d for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	positioned over the water at lower levels and within existing CAS (Controlled Airspace). This design option has d impact on GA access when compared with the baseline do-nothing option.
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
	hay not be possible which would increase fuel burn for airlines when compared with the baseline do-nothing ould have to take into account an increase in track miles.
Commercial airlines	Training costs
	s change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are fore	seen.
Airport/ ANSP	Infrastructure costs
	to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some ents (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
use of the NATS simulator fac	
to be recorded and reported e	run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs tc. Some staff may only require briefings. There may be occasions where the reduced availability of their conversion training could mean operational rostering becomes a factor when considering continuous





Croup	
Group	
Communities	Noise impact on health and quality of life
	up to 7,000ft is over water. This design option has the potential to reduce overall impacts of aircraft noise when eline do-nothing option. It should be noted that any re-alignment from the current NPR could overfly new
	d overfly the Exmoor National Park well above above 7,000ft and could therefore have a visual impact on tranquillity. is flown today (baseline do-nothing option).
Communities	Air quality
Departing aircraft will s	states that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Ill climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the to change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
-	ntly flown and CCOs above 7,000ft may not be achievable, due to a potential location of Cardiff's Hold/ transitions. rease the greenhouse gas impact and contribution of this design option when compared with the baseline do-nothing
Wider society	Capacity/ resilience
No capacity constraints	s – anticipated to be frequently used as a large percentage of traffic flies to/ from southern locations.
-	e network route structure. Also, should be suitable for lower performance aircraft types.
•	xplored for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
However, it may require	iniarily positioned over the water at lower levels and primarily contained within existing CAS (Controlled Airspace). a small amount of additional CAS to the west of the current Berry Head CTA which has the potential to have a ct on GA access when compared with the baseline do-nothing option.
General Aviation/ comr airlines	nercial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comr airlines	nercial Fuel Burn
	own and CCOs may not be possible which would increase fuel burn for airlines when compared with the baseline do- uel planning would have to take into account an increase in track miles.
Commercial airlines	Training costs
	edures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if is not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs a	re foreseen.
Airport/ ANSP	Infrastructure costs
	ected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some endments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not exp	ected to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	ed to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with tor facilities at both locations.
to be recorded and repo operational controllers service delivery.	ed to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs orted etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of during their conversion training could mean operational rostering becomes a factor when considering continuous
	will also require updating.



Group	Impact
Communities	Noise impact on health and quality of life
New route intended only for potential to reduce overall	or some early morning departures (low demand). Most of the intial climb up to 7,000ft. This design option has the impacts of aircraft noise when compared with the baseline do-nothing option. It should be noted that any re- t NPR could overfly new communities.
	overfly the Exmoor National Park well above above 7,000ft and could therefore have a visual impact on tranquillity. flown today (baseline do-nothing option).
Communities	Air quality
Departing aircraft will still	tes that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
Hold/ transitions. This des	today (cuts the corner) however, CCOs above 7,000ft may not be possible due to a potential location of Cardiff's ign option is anticipated to provide a reduction in greenhouse gas impact and combination when compared with tion. However, if CCOs are not possible, this could lessen a reduction in greenhouse gas impact and contribution.
Wider society	Capacity/ resilience
	as an early morning offload route for departures joining southerly Atlantic tracks or southern Europe destinations. destinations however, low demand initially anticipated.
	ith the network route structure, further work would be required.
	ored for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	mb outside of CAS for a short amount of time but this would only be early in the morning. This design option is ar impact on GA access when compared with the baseline do-nothing option.
General Aviation/ commer airlines	cial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commer airlines	cial Fuel Burn
	n for airlines as this option would cut the corner slightly when compared with the baseline do-nothing option. 20ft may not be achievable, due to a potential location of Cardiff's Hold/ transitions. Airline fuel planning would a reduction in track miles.
Commercial airlines	Training costs
	ures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are f	oreseen.
Airport/ ANSP	Infrastructure costs
	ted to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some dments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expec	ted to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with facilities at both locations.
to be recorded and reporte operational controllers due service delivery.	to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs ed etc. Some staff may only require briefings. There may be occasions where the reduced availability of ring their conversion training could mean operational rostering becomes a factor when considering continuous Ill also require updating.

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Group	Impact
Communities	Noise impact on health and quality of life
design option has the po	for some early morning departures (low demand). Most of the intial climb up to 7,000ft is also over water. This tential to reduce overall impacts of aircraft noise when compared with the baseline do-nothing option. It should be ent from the current NPR could overfly new communities.
	I not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to what is -nothing option) and therefore offers an improvement.
Communities	Air quality
Departing aircraft will sti	ates that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Il climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the o change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
	r not be possible due to a potential location of Cardiff's Hold/ transitions. This could therefore increase the and contribution when compared with the baseline do-nothing option.
Wider society	Capacity/ resilience
Supports growth for thes	d as an early morning offload route for departures joining southerly Atlantic tracks or southern Europe destinations. se destinations however, low demand initially anticipated. with the network route structure, further work would be required.
	plored for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	additional CAS would be required. However, as this would be over water there would be minimal impact on other ign option is anticipated to have a similar impact on GA access when compared with the baseline do-nothing option.
General Aviation/ comm airlines	ercial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comm airlines	ercial Fuel Burn
	le which fuel planning would have to take into account. It is anticipated that this design option could have a negative act when compared with the baseline do-nothing option. Airline fuel planning would have to take into account an
Commercial airlines	Training costs
	dures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if s not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are	e foreseen.
Airport/ ANSP	Infrastructure costs
	ected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some ndments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expe	ected to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	d to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with or facilities at both locations.
to be recorded and repor operational controllers d service delivery.	d to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs ted etc. Some staff may only require briefings. There may be occasions where the reduced availability of uring their conversion training could mean operational rostering becomes a factor when considering continuous
Internal documentation v	will also require updating.



Group	Impact
Communities	Noise impact on health and quality of life
Potential to impact new cor	nmunities around Cardiff City. This design option has the potential to increase the overall imapcts of aircraft the baseline do-nothing option. It should be noted that any re-alignment from the current NPR could overfly new
	verfly the Brecon Beacons National Park and may have a minor impact on tranquillity if the departure climb rate is what is flown today (baseline do-nothing option).
Communities	Air quality
Departing aircraft will still cl	is that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Imb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the hange much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
More direct route than current nothing option.	ently flown therefore, reduced impact for greenhouse gas contribution when compared with the baseline do-
Wider society	Capacity/ resilience
Good alignment with the ne However, there may be an in	his would formalise a tactical procedure which is currently used in the operation. twork route structure. ncrease in operational complexity as this route would depart towards adjacent CAS. red for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	uire a small amount of additional CAS to the north-west of Cardiff Airport. This could impact GA access by operate within. Therefore, this design option is anticipated to have an increased impact on GA access when do-nothing option.
General Aviation/ commerc airlines	ial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commerc airlines	ial Fuel Burn
	ently flown therefore, a reduction in fuel burn for airlines when compared with the baseline do-nothing option. have to take into account a reduction in track miles.
Commercial airlines	Training costs
	es change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if ot anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are fo	reseen.
Airport/ ANSP	Infrastructure costs
	ed to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some ments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expected	ed to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
use of the NATS simulator f Support staff are required to to be recorded and reported	o run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs l etc. Some staff may only require briefings. There may be occasions where the reduced availability of ng their conversion training could mean operational rostering becomes a factor when considering continuous



Group	Impact
Communities	Noise impact on health and quality of life
Minimal impact - the intia track distance than what	al climb is over water then the route is specifically positioned to avoid communities (resulting in a slightly longer is currently flown). This design option has the potential to reduce overall impacts of aircraft noise when compared ning option. It should be noted that any re-alignment from the current NPR could overfly new communities.
	overfly the Brecon Beacons National Park well above above 7,000ft and could therefore have a visual impact on r to what is flown today (baseline do-nothing option).
Communities	Air quality
Departing aircraft will stil	ates that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. I climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the o change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
Slightly longer track dista the baseline do-nothing c	ance than currently flown which could increase the greenhouse gas impact and contribution when compared with option.
Wider society	Capacity/ resilience
	 similar to current route and good alignment with the network route structure.
	n increase in operational complexity as this route would depart towards adjacent CAS.
All SID options will be exp	plored for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
This design option is con baseline do-nothing optic	tained within existing CAS therefore it is anticipated to have a similar impact on GA access when compared with the on.
General Aviation/ comme airlines	ercial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comme airlines	ercial Fuel Burn
	ance than what is currently flown therefore, slight increase in fuel burn for airlines when compared with the baseline fuel planning would have to take into account an increase in track miles.
Commercial airlines	Training costs
	dures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if s not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are	foreseen.
Airport/ ANSP	Infrastructure costs
	cted to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some ndments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expe	cted to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	d to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with or facilities at both locations.
to be recorded and repor	d to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs ted etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of uring their conversion training could mean operational rostering becomes a factor when considering continuous
Internal documentation v	vill also require updating.



Group	Impact
Communities	Noise impact on health and quality of life
	fly water to minimise the impact for ground-based stakeholders. This design option has the potential to aft noise when compared with the baseline do-nothing option. It should be noted that any re-alignment from
This design option would not o flown today (baseline do-nothir	verfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is similar to what is ng option).
Communities	Air quality
-	nat aircraft flying above 1,000ft are unlikely to have a significant impact on local quality.
	o through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the nge much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
Shorter track distance than tod do-nothing option.	lay therefore this would reduce the greenhouse gas impact and contribution when compared with the baseline
Wider society	Capacity/ resilience
	uld support an expected increase in future traffic to eastern destinations alongside being suitable for lower vould also have good alignment with the network structure.
	ould require increased collaboration with Bristol Airport due to the potential impact on Bristol arrivals.
	for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	positioned over the water at lower levels and within existing CAS (Controlled Airspace). This design option has impact on GA access when compared with the baseline do-nothing option.
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
	rently flown therefore a reduction in fuel burn for airlines when compared with the baseline do-nothing option. e to take into account a reduction in track miles.
Commercial airlines	Training costs
	change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are fores	een.
Airport/ ANSP	Infrastructure costs
	o change airport or ANSP infrastructure, beyond the initial deployment phase which would require some nts (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expected t	o change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
This proposal is expected to re- use of the NATS simulator facil	quire air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with lities at both locations.
to be recorded and reported etc	In the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs c. Some staff may only require briefings. There may be occasions where the reduced availability of heir conversion training could mean operational rostering becomes a factor when considering continuous



Group	Impact
Communities	Noise impact on health and quality of life
	00ft is over water. This design option has the potential to reduce overall impacts of aircraft noise when nothing option. It should be noted that any re-alignment from the current NPR could overfly new
	erfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to what is option) and therefore offers an improvement.
Communities	Air quality
Departing aircraft will still climb	at aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the e much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
this could be reduced as CCOs n	duction in its greenhouse gas contribution when compared with the baseline do-nothing option. However, hay not be possible above 7,000ft due to a potential location of Cardiff's Hold/ transitions. This could be buld only be used during early morning hours.
Wider society	Capacity/ resilience
comply with network connectivit It is also anticipated that it would	d to reduce pre-departure delay during first rotation (a known high demand period). However, it would not y and further work would be required. d increase workload for sector controllers when compared with today. or suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
A significant amount of addition	al CAS would be required however this is unlikely to have an impact on GA access, particularly as this route rning hours. This design option is anticipated to have a similar impact on GA access when compared with
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
reduced as CCOs may not be po	duction in fuel burn for airlines when compared with the baseline do-nothing option. However, this could be ssible above 7,000ft due to a potential location of Cardiff's Hold/ transitions. Any potential saving could be buld only be used during early morning hours. Airline fuel planning would have to take into account a
Commercial airlines	Training costs
	nange worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if ticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are forese	en.
Airport/ ANSP	Infrastructure costs
	change airport or ANSP infrastructure, beyond the initial deployment phase which would require some s (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 requuse of the NATS simulator facilit	uire air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with ies at both locations.
to be recorded and reported etc.	the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs Some staff may only require briefings. There may be occasions where the reduced availabilty of eir conversion training could mean operational rostering becomes a factor when considering continuous



4. Runway 30 SIDs

Runway 30 SID C10

Group	Impact
Communities	Noise impact on health and quality of life
	over water then avoids overflying any large populations. This design option has the potential to reduce overall when compared with the baseline do-nothing option. It should be noted that any re-alignment from the current NPR
This design option would r flown today (baseline do-n	not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is similar to what is othing option).
Communities	Air quality
Departing aircraft will still of	tes that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
	oduced to best avoid St Athan operations and CCOs may not be possible due to a potential location of Cardiff's re, greenhouse gas emissions could slightly increase when compared with the baseline do-nothing option.
Wider society	Capacity/ resilience
	anticipated to be frequently used as a large percentage of traffic flies to/ from southern locations. network connectivity and similar to what is flown today.
	ored for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	arily positioned over the water at lower levels and within existing CAS (Controlled Airspace). This design option has uced impact on GA access when compared with the baseline do-nothing option.
General Aviation/ commer airlines	cial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commer airlines	cial Fuel Burn
Hold/ transitions. This des	oduced to best avoid St Athan operations and CCOs may not be possible due to a potential location of Cardiff's ign option would increase the fuel burn impact when compared with the baseline do-nothing option. Airline fuel we into account an increase in track miles.
Commercial airlines	Training costs
, , ,	ures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are f	oreseen.
Airport/ ANSP	Infrastructure costs
	ted to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some dments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expec	ted to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
use of the NATS simulator	to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with facilities at both locations.
to be recorded and reporte	to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs ad etc. Some staff may only require briefings. There may be occasions where the reduced availability of ing their conversion training could mean operational rostering becomes a factor when considering continuous





Group	Impact
Communities	Noise impact on health and quality of life
	s over water then avoids overflying any large populations. This design option has the potential to reduce overall when compared with the baseline do-nothing option. It should be noted that any re-alignment from the current NPR
This design option would	d not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to what is -nothing option) and therefore offers an improvement.
Communities	Air quality
Departing aircraft will sti	tates that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Il climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the to change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
	le due to a potential location of Cardiff's Hold/ transitions. Therefore, greenhouse gas emissions could slightly d with the baseline do-nothing option.
Wider society	Capacity/ resilience
No capacity constraints	- anticipated to be frequently used as a large percentage of traffic flies to/ from southern locations.
-	work required as it would currently align with an opposite aligned network route.
All SID options will be ex	plored for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	al CAS however this is unlikely to have an impact on GA operations. This design option is anticipated to have a cess when compared with the baseline do-nothing option.
General Aviation/ comm airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comm airlines	ercial Fuel Burn
	le due to a potential location of Cardiff's Hold/ transitions therefore, airline fuel burn could slightly increase when line do-nothing option. Airline fuel planning would have to take into account an increase in track miles.
Commercial airlines	Training costs
	edures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if is not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are	e foreseen.
Airport/ ANSP	Infrastructure costs
	ected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some endments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expe	ected to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	d to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with or facilities at both locations.
to be recorded and repor	ed to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs rted etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of luring their conversion training could mean operational rostering becomes a factor when considering continuous
Internal documentation	will also require updating.

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Group	Impact
Communities	Noise impact on health and quality of life
the potential to reduce o	for some early morning departures (low demand). Most of the intial climb is also over water. This design option has verall impacts of aircraft noise when compared with the baseline do-nothing option. It should be noted that any re- ent NPR could overfly new communities.
This design option would flown today (baseline do	d not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to what is -nothing option) and therefore offers an improvement.
Communities	Air quality
Departing aircraft will sti	ates that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. Il climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the o change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
option. However, CCOs a	house gas contribution as this option would cut the corner slightly when compared with the baseline do-nothing bove 7,000ft may not be achievable, due to a potential location of Cardiff's Hold/ transitions. en the reduction of greenhouse gas impact for this design option.
Wider society	Capacity/ resilience
This route would be used Supports growth for the	d as an early morning offload route for departures joining southerly Atlantic tracks or southern Europe destinations. se destinations however, low demand initially anticipated. with the network route structure, further work would be required.
General Aviation	Access
This design option may o	climb outside of CAS for a short amount of time but this would only be early in the morning and unlikely to have an nis design option is anticipated to have a similar impact on GA access when compared with the baseline do-nothing
General Aviation/ comm airlines	ercial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comm airlines	ercial Fuel Burn
However, CCOs above 7,	urn for airlines as this option would cut the corner slightly when compared with the baseline do-nothing option. 000ft may not be achievable, due to a potential location of Cardiff's Hold/ transitions. This could therefore impact ine fuel planning would have to take into account a reduction in track miles.
Commercial airlines	Training costs
, ,	dures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if is not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are	e foreseen.
Airport/ ANSP	Infrastructure costs
	ected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some endments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expe	ected to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	d to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with or facilities at both locations.
to be recorded and report operational controllers d service delivery.	d to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs ted etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of uring their conversion training could mean operational rostering becomes a factor when considering continuous
Internal documentation	will also require updating.
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Group	Impact
Communities	· · · ·
Overflies minmal land and no	Noise impact on health and quality of life populated areas to minimise the impact for ground-based stakeholders. This design option has the potential to graft noise when compared with the baseline do-nothing option. It should be noted that any re-alignment from upper communities.
This design option would not	overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to what is ning option) and therefore offers an improvement.
Communities	Air quality
Departing aircraft will still clin	that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. nb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the ange much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
Direct track to the west introd	lucing a small greenhouse gas impact and contribution when compared with the baseline do-nothing option.
Wider society	Capacity/ resilience
destinations however, low der Does not currently align with	the network route structure, further work would be required.
	d for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	ional CAS would be required for protection purposes and would likely impact upon GA access. Therefore, this o have an increased impact on GA access when compared with the baseline do-nothing option.
General Aviation/ commercia airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercia airlines	I Fuel Burn
Direct track to the west introd would have to take into account	lucing a small fuel burn for airlines when compared with the baseline do-nothing option. Airline fuel planning unt a reduction in track miles.
Commercial airlines	Training costs
	s change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if t anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are fore	rseen.
Airport/ ANSP	Infrastructure costs
	to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some ents (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 r use of the NATS simulator fac	require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with cilities at both locations.
to be recorded and reported e	run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of their conversion training could mean operational rostering becomes a factor when considering continuous
Internal documentation will al	iso require updating.



Group Impact Communities Noise impact on health and quality of life Small increase in noise impact for new communities around Cowbridge. Therefore, this design option has the potential to increase the overall impacts of aircraft noise when compared with the baseline do-nothing option. It should be noted that any re-alignment from the current NPR could overfly new communities. This design option would not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to wha flown today (baseline do-nothing option) and therefore offers an improvement. Communities Air quality Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local 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 th runway. This is unlikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further or work. Wider society Greenhouse gas impact Wider society Greenhouse gas impact Wider society Capacity/ resilience No capacity constraints – this support growth for more western and transatlantic flights in the future. Good alignment with the networ route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	t is ne design o-
Small increase in noise impact for new communities around Cowbridge. Therefore, this design option has the potential to increase the overall impacts of aircraft noise when compared with the baseline do-nothing option. It should be noted that any re-alignment from the current NPR could overfly new communities. This design option would not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to wha flown today (baseline do-nothing option) and therefore offers an improvement. Communities Air quality Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local 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 th runway. This is unlikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further of work. Wider society Greenhouse gas impact More direct route than currently flown therefore, reduced impact for greenhouse gas contribution when compared with the baseline do nothing option. Wider society Capacity/ resilience No capacity constraints – this support growth for more western and transatlantic flights in the future. Good alignment with the networ route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	t is ne design o-
flown today (baseline do-nothing option) and therefore offers an improvement. Communities Air quality Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local 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 th runway. This is unlikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further or work. Wider society Greenhouse gas impact Mider society Capacity/ resilience Wider society Capacity/ resilience No capacity constraints – this support growth for more western and transatlantic flights in the future. Good alignment with the networ route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	ne design)-
Government guidance states that aircraft flying above 1,000ft are unlikely to have a significant impact on local 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 th runway. This is unlikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further or work. Wider society Greenhouse gas impact More direct route than currently flown therefore, reduced impact for greenhouse gas contribution when compared with the baseline do nothing option. Wider society Capacity/ resilience No capacity constraints – this support growth for more western and transatlantic flights in the future. Good alignment with the networ route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	design)-
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. This is unlikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further or work. Wider society Greenhouse gas impact More direct route than currently flown therefore, reduced impact for greenhouse gas contribution when compared with the baseline do nothing option. Wider society Capacity/ resilience No capacity constraints – this support growth for more western and transatlantic flights in the future. Good alignment with the networ route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	design)-
More direct route than currently flown therefore, reduced impact for greenhouse gas contribution when compared with the baseline do nothing option. Wider society Capacity/ resilience No capacity constraints – this support growth for more western and transatlantic flights in the future. Good alignment with the networr route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	
Wider society Capacity/ resilience No capacity constraints - this support growth for more western and transatlantic flights in the future. Good alignment with the networr route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	
No capacity constraints – this support growth for more western and transatlantic flights in the future. Good alignment with the networ route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	·k
route structure. However, potential to conflict with en route traffic in a known busy region of airspace.	·k
All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay.	
General Aviation Access	
This route option would likely require additional CAS for protection purposes. The positioning of the route would have a significant imp specifically on gliding operations around Brecon and potentially other GA users too. Therefore, this design option is anticipated to have increased impact on GA access when compared with the baseline do-nothing option.	
General Aviation/ commercial Economic impact from increased effective capacity airlines Economic impact from increased effective capacity	
No effect on capacity.	
General Aviation/ commercial Fuel Burn airlines	
More direct route than currently flown therefore, reduced fuel burn for airlines when compared with the baseline do-nothing option. Airl fuel planning would have to take into account a reduction in track miles.	ine
Commercial airlines Training costs	
Qualitatively, flight procedures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, trainin required. This proposal is not anticipated to require additional training costs for airlines.	ng if
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 Cardiff Airport and NATS Swanwick w use of the NATS simulator facilities at both locations.	vith
Support staff are required to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, or to be recorded and reported etc. Some staff may only require briefings. There may be occasions where the reduced availability of operational controllers during their conversion training could mean operational rostering becomes a factor when considering continuo service delivery.	
Internal documentation will also require updating.	





Group	Impact
Communities	Noise impact on health and quality of life
Most of the intial climb is o distance than what is curre	ver water then the route is specifically positioned to avoid communities (resulting in a slightly longer track ntly flown). This design option has the potential to reduce overall impacts of aircraft noise when compared with ion. It should be noted that any re-alignment from the current NPR could overfly new communities.
This design option would ov	verfly the Brecon Beacons National Park and therefore has the potential to have an impact on tranquillity. This is ay (baseline do-nothing option).
Communities	Air quality
Departing aircraft will still c	es that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. limb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
Slightly longer track distand the baseline do-nothing opt	ce than currently flown which could increase the greenhouse gas impact and contribution when compared with ion.
Wider society	Capacity/ resilience
Also, possible further capac	etwork route structure however may interact with LTMA arrivals within this known busy region of airspace. Sity constraints from conflict with other Cardiff traffic such as slow departures.
All SID options will be explo	red for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	Access
	at the CAS base would require lowering but otherwise, contained within existing CAS. Therefore, this design option n increased impact on GA access when compared with the baseline do-nothing option.
General Aviation/ commerc airlines	ial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commerc airlines	ial Fuel Burn
	ce than what is currently flown therefore, slight increase in fuel burn for airlines when compared with the baseline uel planning would have to take into account an increase in track miles.
Commercial airlines	Training costs
	res change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are fo	preseen.
Airport/ ANSP	Infrastructure costs
	ed to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some ments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expected	ed to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
use of the NATS simulator to Support staff are required to	o require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with facilities at both locations. o run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs d etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of
	ng their conversion training could mean operational rostering becomes a factor when considering continuous



Communitie Noise impact on health and quality of life All of the climb is over land with the potential to impact new stakeholders north of Cardiff City. Therefore, this design option has the potential for no compared with the baseline do nothing option. It should be noted that any re alignment from the current NPH could overfy new communities. This design option has the potential to overfy a small region of the Brecon Beacons National Park and therefore could have an impact on tranquility. This is similar to what is flown today (baseline do nothing option). Communitie Air quelty Community quidance states that at arcard flying above 1.000ff are unilkely to have a significant impact on local quality. Departing aircaff will still durb through 1.000ff on initial departure, between 2 and 4 natical miles (about 4.7km) from either end of the nurvey. This is unikely to change much from today however, there may be a slight re alignment of the current NPR subject to further design work. Wider society Creenhouse gas impact Shorter track distance than today therefore this would reduce the greenhouse gas impact and contribution when compared with the baseline do-nothing option. No capacity constraints – should support an expected increase in future traffic to astern destinations alongside being more direct and simpler than the current desture outer. No differ to capacity resilience Capacity (resilience than compared with existing CAS. This design option is anticipated to have a similar impact on GA access when compared with the baseline do-nothing option. Rearal Avation	Group	Impact
All of the climb is over land with the potential to impact new stakeholders north of Cardiff City. Therefore, this design option has the potential to increase the overall impacts of aircraft noise when compared with the baseline do-nothing option. It should be noted that any realignment from the current NPR could overfy new communities. This design option has the potential to overfy a small region of the Brecon Beacons National Park and therefore could have an impact on translullity. This is similar to what is thewn today, (baseline do-nothing option). Communities Air quality Communities Air quality Communities (bit NPR option). Communities (bit NPR option). Communities (bit NPR option). Not the outparting aircraft will all lib in brough 1.000 to naitil departure, between 2 and 4 natical miles (about 47km) from either end of the parting aircraft will all lib in brough 1.000 to naitil departure, between 2 and 4 natical miles (about 47km) from either end of the nurwey. This is unlikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further design work. Wide society Greenhouse gas impact the potential for a continuous climb. Wide society Greenhouse gas impact and contribution when compared with the baseline do-nothing option. No capacity constraints – should support an expected increase in future traffic to eastern destinations alongside being more direct and simpler than the current departure note. It would also have good alignment with the network structure. All SIO options will be explored for subbibly of applying reduced departure separations, thus reducing pre-departure delay. General Aviation Access When compared with the societing GAS. This design option is anticipated to have a similar impact on GA access when compared with the baseline do-nothing option. General Aviation / oronmerial Fuel Burn and there obtained within existing GAS. This design option is anticipated to nate a capacity resinform increases of flective capacity and all simple their procedu		Noise impact on health and quality of life
tranquility. This is similar to what is flown today (baseline do nothing option). Commuties Air quality Commuties Air quality Government guidance states that actircaft flying abov 1,000ft an initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the rurway. This is unlikely to change much from today however, there may be a slight realignment of the current NPH subject to further design work. Wider society Greenhouse gas impact Shorter track distance than today therefore this would reduce the greenhouse gas impact and contribution when compared with the baseline do-nothing option. However, London Airport trainvels could impact the potential for a continuous climb. Wider society Capacity/ resilience No capacity constraints – should support an expected increase in future traffic to eastern destinations alongside being more direct and simpler than the current departure route. It would also have good alignment with the network structure. AISO options will be explored for subability of applying reduced departure separations, thus reducing pre departure delay. General Aviation Access No effect on capacity. General Aviation General Aviation Access Shorter track distance than today therefore a reduction in fuel burn for aritines when compared with the baseline do nothing option. However, London Airpot arrwals could impact the potential for a continuous climb. Airline fuel planning would have to take into accoun	All of the climb is over land with to increase the overall impacts from the current NPR could over	n the potential to impact new stakeholders north of Cardiff City. Therefore, this design option has the potential of aircraft noise when compared with the baseline do-nothing option. It should be noted that any re-alignment erfly new communities.
Government guidance states that aircraft flying above 1,000ft are unikely to have a significant impact on local quality. Departing aircraft will still climb through 1,000ft on initial departure, between 2 and 4 nautual miles (about 4 7km) from either end of the turnway. This is unikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further design work. Wider society Creenhouse gas impact Shorter track distance than today therefore this would reduce the greenhouse gas impact and contribution when compared with the baseline do nothing option. However, London Airpart anivals could impact the potential for a continuous climb. Wider society Capacity/ resolution of a polying reduced departure raffic to eastern destinations alongside being more direct and simpler than the current toparture route. It would also have good alignment with the network structure. All Sto potrions with the baseline do-nothing option. Access Meen compared with the baseline do-nothing option. Access However, London Airport arrivals could impact from increased effective capaci		
Degating aircraft will still climb through 1,000°t on initial degature, between 2 and 4 natulaal miles (about 4 7km) from either end of the runway. This is unlikely to change much from today however, there may be a slight re-alignment of the current NPR subject to further design work. Wider society Oreenhouse gas impact Shorter track distance than today therefore this would reduce the greenhouse gas impact and contribution when compared with the baseline do-nothing option. However, London Airport arrivals could impact the potential for a continuous climb. Wider society Capacity / resilience No capacity constraints – should support an expected increase in future traffic to eastern destinations alongside being more direct and simpler than the current departure route. It would also have good alignment with the network structure. All StO capacity constraints – should support an expected increase in future traffic to eastern destinations alongside being more direct and simpler than the current departure route. It would also have good alignment with the network structure. All StO capacity constraints – should support an expected increase all for a strability of applying reduced departure separations, thus reducing pre-departure delay. General Aviation Commercial Shorter track distance than today therefore a reduction in fuel burn for airlines when compared with the baseline do-nothing option. General Aviation Commercial Shorter track distance than today therefore a reduction in fuel burn for airlines when compared with the baseline do-nothing option. However, London Airport arrivals could impact the potential for a continuous climb. Airline fuel planning would have to take into account a reduction in track miles. Commercial airlines Other capacity In procedures change worldwide with aedh AIRAC cycle and airlines would update their procedures accordingly, training frequired. This proposal is not arricipated to require additional training costs for airlines. Commercial airlines Other capacity and AIRAC cycle and airlin	Communities	Air quality
Shorter track distance than today therefore this would reduce the greenhouse gas impact and contribution when compared with the baseline do-nothing option. However, London Airport arrivals could impact the potential for a continuous climb. Wide society Capacity/ resilience No capacity constraints – should support an expected increase in future traffic to eastern destinations alongside being more direct and simpler than the current departure route. It would also have good alignment with the network structure. BISD options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay. General Aviation Access This design option is designed to be contained within existing CAS. This design option is anticipated to have a similar impact on GA access when compared with the baseline do-nothing option. General Aviation / commercial Economic impact from increased effective capacity airlines No effect on capacity. General Aviation / commercial aviation arrivals could impact the potential for a continuous climb. Airline fuel planning would have to take into account a reduction in track miles. Commercial airlines Training costs Commercial airlines Training costs Commercial airlines Other costs No other airline costs are foreseen. Airport ANSP Operational costs Commercial airline costs are foreseen. Airport ANSP Operational costs Commercial airline costs are foreseen. Airport ANSP Operational costs Commercial airline costs are foreseen. Airport ANSP Operational costs Commercial 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 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 Deployment costs Change are required for the origine airport or ANSP prinfrastructure, beyon	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
de nothing option. However, London Airport arrivals could impact the potential for a continuous climb. Wider society Capacity/ resilience No capacity constraints – should support an expected increase in future traffic to eastern destinations alongside being more direct and simpler than the current departure route. It would also have good alignment with the network structure. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay. General Aviation Access General Aviation/ commercial arringe option. General Aviation/ commercial arringe option. General Aviation/ commercial arringe option. Economic impact from increased effective capacity arrivals could impact the potential for a continuous climb. Airline fuel planning would have to take into account a reduction in track miles. Commercial airlines Training costs Commercial airlines Training costs Commercial airlines Training costs Commercial airline Other costs Commercial airline Other costs No other airline costs are foreseen. Aiport ANSP Aiport 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). Aiport ANS	Wider society	Greenhouse gas impact
Wider society Capacity/ resilience No capacity constraints - should support an expected increase in future traffic to eastern destinations alongside being more direct and simpler than the current departure route. It would also have good alignment with the network structure. All SID options will be explored for suitability of applying reduced departure separations, thus reducing pre-departure delay. General Aviation Acces This design option is designed to be contained within existing CAS. This design option is anticipated to have a similar impact on GA access when compared with the baseline do-nothing option. General Aviation/ commercial airlines Economic impact from increased effective capacity General Aviation/ commercial airlines Fuel Burn airlines No effect on capacity. General Aviation/ commercial airlines Shorter track distance than today therefore a reduction in fuel burn for airlines when compared with the baseline do-nothing option. However, London Airport arrivals could impact the potential for a continuous climb. Airline fuel planning would have to 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 ther airlin	do-nothing option.	
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	Support staff are required to ru to be recorded and reported etc	n the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs c. Some staff may only require briefings. There may be occasions where the reduced availabilty of
		o require updating.





Group	Impact
Communities	Noise impact on health and quality of life
design option has the p noted that any re-alignn This design option woul	is over water and avoids overflying any large populations to minimise the impact for ground-based stakeholders. This otential to reduce overall impacts of aircraft noise when compared with the baseline do-nothing option. It should be nent from the current NPR could overfly new communities. d not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is different to what is
	p-nothing option) and therefore offers an improvement.
Communities	Air quality
Departing aircraft will st	tates that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. ill climb through 1,000ft on initial departure, between 2 and 4 nautical miles (about 4-7km) from either end of the to change much from today however, there may be a slight re-alignment of the current NPR subject to further design
Wider society	Greenhouse gas impact
	ficant reduction in its greenhouse gas contribution when compared with the baseline do-nothing option. However, Is this route would only be used during early morning hours.
Wider society	Capacity/ resilience
comply with network co It is also anticipated tha	d be used to reduce pre-departure delay during first rotation (a known high demand period). However, it would not nnectivity and further work would be required. t it would increase workload for sector controllers when compared with today.
-	plored for suitability of applying reduced departure separations, thus reducing pre-departure delay.
General Aviation	
a small impact on GA a	require some additional CAS although the initial climb would occur within existing CAS. It is anticipated to only have ccess, particularly as this route will only be used during early morning hours. Therefore, this design option has the reased impact on GA access when compared with the baseline do-nothing option.
General Aviation/ comn airlines	nercial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comn airlines	nercial Fuel Burn
	ficant reduction in fuel burn for airlines, when compared with the baseline do-nothing option. However, this could be yould only be used during early morning hours. Airline fuel planning would have to take into account a reduction in
Commercial airlines	Training costs
	edures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if is not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs ai	e foreseen.
Airport/ ANSP	Infrastructure costs
	ected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some endments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not exp	ected to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	ed to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with tor facilities at both locations.
to be recorded and repo	ed to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs rted etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of during their conversion training could mean operational rostering becomes a factor when considering continuous
Internal documentation	will also require updating.
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5. Cardiff Airport Hold Options



Hold 2A

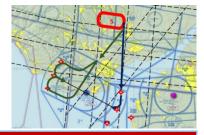
Group	Impact
Communities	Noise impact on health and quality of life
	rily be positioned over water and not overfly any large populations. This design option has the potential to reduce ft noise when compared with the baseline do-nothing option. PBN routing will be used to minimise overflying
This Hold is positioned c	iver the Exmoor National Park (above 7,000ft) and could therefore have a visual impact on tranquillity. This is a y's holding procedure (baseline do-nothing option).
Communities	Air quality
Arriving aircraft will still o	ates that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. descend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either s close to landing, in the very final stages of the approach, and is no change from today.
Vider society	Greenhouse gas impact
o take into account add	his Hold is close to the airport and the majority of arrivals are from the south and east. Fuel planning does not have itional track miles due to the location therefore no superfluous environmental impact. Net increase in CO ₂ emission ig will not be employed for most arrivals (only when required for reasons such as delay absorption, or technical
Vider society	Capacity/ resilience
-	network route structure and appropriate location for the majority of arrivals from the south and east.
	overhead thus enabling more use of continuous climb operations (CCO) for departures.
-	some climb restriction on departures to the south due to the location of the transitions from the hold to the runway.
General Aviation	Access
	erally avoid this region due to high terrain, the Runway 12 transition may have a small impact on GA flights. Ition has the potential to have an increased impact on GA access when compared with the baseline do-nothing
General Aviation/ comm airlines	ercial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comm airlines	ercial Fuel Burn
	his Hold is close to the airport and the majority of arrivals are from the south and east. Fuel planning therefore does yount additional track miles due to Hold location.
Commercial airlines	Training costs
	dures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if is not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are	e foreseen.
Airport/ ANSP	Infrastructure costs
	ected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some endments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
his proposal is not expe	ected to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	d to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with or facilities at both locations.
o be recorded and repor operational controllers d	d to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, output ted etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of uring their conversion training could mean operational rostering becomes a factor when considering continuous
ervice delivery.	will also require updating.





Hold 2B

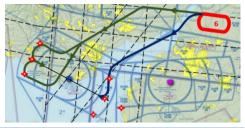
Group	Impact
Communities	Noise impact on health and quality of life
	tioned over water and not overfly any large populations. This design option has the potential to reduce then compared with the baseline do-nothing option. PBN routing will be used to minimise overflying
	overfly the western edge of the Quantock AoNB and could therefore have an impact on tranquillity. This is ng procedure (baseline do-nothing option).
Communities	Air quality
Arriving aircraft will still descend th	aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. rough 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either landing, in the very final stages of the approach, and is no change from today.
Wider society	Greenhouse gas impact
to take into account additional trac	close to the airport and the majority of arrivals are from the south and east. Fuel planning does not have k miles due to the location therefore no superfluous environmental impact. Net increase in CO ₂ emissions be employed for most arrivals (only when required for reasons such as delay absorption, or technical
Wider society	Capacity/ resilience
-	oute structure and appropriate location for the majority of arrivals from the south and east.
	hus enabling more use of continuous climb operations (CCO) for departures.
	apacity if departures have to be held beneath the Hold. Access
	contained within existing CAS alongside the transitions primarily overflying water. GA flights also
	igh terrain Therefore, this design option has the potential to have a reduced impact on GA access when
General Aviation/ commercial airlines	Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commercial airlines	Fuel Burn
	close to the airport and the majority of arrivals are from the south and east. Fuel planning therefore does ional track miles due to Hold location.
Commercial airlines	Training costs
	nge worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if ipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are foreseen.	
Airport/ ANSP	Infrastructure costs
	ange airport or ANSP infrastructure, beyond the initial deployment phase which would require some internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expected to ch	ange airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
This proposal is expected to require use of the NATS simulator facilities	e air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with s at both locations.
to be recorded and reported etc. So	e simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs ome staff may only require briefings. There may be occasions where the reduced availabilty of conversion training could mean operational rostering becomes a factor when considering continuous
Internal documentation will also rea	quire updating.



Hold 5

Group	Impact
Communities	Noise impact on health and quality of life
will investigate whether this detrimental environmental ir	e would descend over and significantly impact upon new populations (not impacted today). Further design work could be mitigated by extending the transition further to the south. However it is likely that this would have a mpact from increased track miles. Thereof, re this design option has the potential to increase overall impacts of ed with the baseline do-nothing option. PBN routing will be used to minimise overflying population centres where
	the Brecon Beacons National Park (above 7,000ft) and could therefore have a visual impact on tranquillity. This ay's holding procedure (baseline do-nothing option).
Communities	Air quality
Arriving aircraft will still desc	s that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. cend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either ose to landing, in the very final stages of the approach, and is no change from today.
Wider society	Greenhouse gas impact
other Hold design options. N required for reasons such as	arrivals from the south. This would have a negative impact on greenhouse gas emissions when compared with let increase in CO ₂ emissions would be small as holding will not be employed for most arrivals (only when s delay absorption, or technical troubleshooting). Flights will however have to plan fuel loading to take into ng facility; for flights from the south, this would require higher fuel load planning compared with a hold to the gher fuel burn.
Wider society	Capacity/ resilience
	n a large percentage of arrivals, particularly from the south. pact on Bristol operations requiring tactical intervention to deconflict, or a restriction on movements in order to
General Aviation	Access
	flict with gliders which operate in this Class D region of airspace. Minimal impact otherwise – Hold and ned within existing CAS. Therefore, this design option has the potential to have an increased impact on GA access seline do-nothing option.
General Aviation/ commerci airlines	al Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commerci airlines	al Fuel Burn
Not an optimal location for a to account for the location of	a significant percentage of arrivals, particularly those from the south. Airlines would have to carry excessive fuel If the Hold.
Commercial airlines	Training costs
	es change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if ot anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are for	reseen.
Airport/ ANSP	Infrastructure costs
	d to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some nents (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expecte	d to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
use of the NATS simulator fa	
to be recorded and reported	o run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs etc. Some staff may only require briefings. There may be occasions where the reduced availability of g their conversion training could mean operational rostering becomes a factor when considering continuous





Hold 6

Group	Impact
Communities	Noise impact on health and quality of life
The transition to Runway 12 will investigate whether this detrimental environmental in	2 would descend over and significantly impact upon new populations (not impacted today). Further design work could be mitigated by extending the transition further to the south. However it is likely that this would have a mpact from increased track miles. Therefore, this design option has the potential to increase overall impacts of ed with the baseline do-nothing option. PBN routing will be used to minimise overflying population centres where
This Hold is also positioned	over the Cotswolds AoNB (above 7,000ft) and could therefore have a visual impact on tranquillity. This is a holding procedure (baseline do-nothing option).
Communities	Air quality
Arriving aircraft will still des	s that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. cend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either ose to landing, in the very final stages of the approach, and is no change from today.
Wider society	Greenhouse gas impact
greenhouse gas emissions be employed for most arriva have to plan fuel loading to	a significant percentage of arrivals, particularly those from the south. This would have a negative impact on when compared with other Hold design options. Net increase in CO ₂ emissions would be small as holding will not als (only when required for reasons such as delay absorption, or technical troubleshooting). Flights will however take into account routing to the holding facility; for flights from the south, this would require higher fuel load old to the south and corresponding higher fuel burn.
Wider society	Capacity/ resilience
	twork route structure. ation from a large percentage of arrivals, particularly from the south. The location could also potentially constrain e runway changes being difficult to accommodate.
General Aviation	Access
D airspace. This could be fu	conflict with GA flights such as frequent cross-country flights which operate around the Cotswolds within Class rther exasperated if transitions require additional CAS. Therefore, this design option has the potential to have an sess when compared with the baseline do-nothing option.
General Aviation/ commerci airlines	al Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ commerci airlines	ial Fuel Burn
Flights will have to plan fuel	a significant percentage of arrivals, particularly those from the south. Transitions are also excessively long. loading to take into account routing to the holding facility; for flights from the south, this would require higher d with a hold to the south and corresponding higher fuel burn.
Commercial airlines	Training costs
	es change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if ot anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are fo	reseen.
Airport/ ANSP	Infrastructure costs
	ed to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some nents (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expected	d to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
use of the NATS simulator f Support staff are required to to be recorded and reported operational controllers durin	o require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with acilities at both locations. o run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs etc. Some staff may only require briefings. There may be occasions where the reduced availabilty of ig their conversion training could mean operational rostering becomes a factor when considering continuous
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Hold 7

Group	Impact
Communities	Noise impact on health and quality of life
potential to reduce overa	imarily be over water which would minimise the impact on ground-based stakeholders. This design option has the all impacts of aircraft noise when compared with the baseline do-nothing option. PBN routing will be used to ulation centres where possible.
	d not overfly any AoNBs or National Parks and therefore have no impact on tranquillity. This is a different location to re (baseline do-nothing option).
Communities	Air quality
Arriving aircraft will still o	tates that aircraft flying above 1,000ft are unlikely to have a significant impact on local quality. descend through 1,000ft on final approach, between 2 and 4 nautical miles (about 4-7km) from touchdown at either is close to landing, in the very final stages of the approach, and is no change from today.
Wider society	Greenhouse gas impact
arrivals from the east wh	a significant percentage of arrivals, particularly those from the south. However, slight increase in emissions for nen compared with other Hold locations. Net increase in CO2 emissions would be small as holding will not be als (only when required for reasons such as delay absorption, or technical troubleshooting).
Wider society	Capacity/ resilience
Good alignment with the	e network route structure. Appropriate location for a large number of arrivals.
However, there may be a runway 30.	an impact on continuous climb operations for southerly departures from Cardiff runway 30 created by transitions to
General Aviation	Access
	⁷ 30 is likely to require additional CAS. Otherwise this design option would utilise a relatively quiet region of current GA flights. Therefore, this design option has the potential to have an increased impact on GA access when compared hing option.
General Aviation/ comm airlines	ercial Economic impact from increased effective capacity
No effect on capacity.	
General Aviation/ comm airlines	ercial Fuel Burn
	a significant percentage of arrivals, particularly those from the south. However, slight increase in fuel planning for nen compared with other Hold locations.
Commercial airlines	Training costs
	edures change worldwide with each AIRAC cycle and airlines would update their procedures accordingly, training if is not anticipated to require additional training costs for airlines.
Commercial airlines	Other costs
No other airline costs are	e foreseen.
Airport/ ANSP	Infrastructure costs
	ected to change airport or ANSP infrastructure, beyond the initial deployment phase which would require some endments (internal ATC system adaptation changes only).
Airport/ ANSP	Operational costs
This proposal is not expe	ected to change airport or ANSP operational costs.
Airport/ ANSP	Deployment costs
	d to require air traffic controller training for controllers and assistants at Cardiff Airport and NATS Swanwick with or facilities at both locations.
to be recorded and report operational controllers d service delivery.	ed to run the simulator – planning, training staff, data preparation and testing, pseudo pilots, safety analysts, outputs rted etc. Some staff may only require briefings. There may be occasions where the reduced availability of luring their conversion training could mean operational rostering becomes a factor when considering continuous

6. 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 *Step 2 - Stage 2A Design Principle Evaluation*.

This safety report documents the initial safety appraisal of the Cardiff 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.

7. Conclusion and Next Steps

This proposal has been developed following the submission of the <u>linked</u> Statement of Need to the CAA Airspace Regulation. This summarised Cardiff Airport's requirement for an airspace change including and limiting the environmental impact of flights and better management of noise impact for ground-based stakeholders.

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 Cardiff Airport's stakeholders including representatives from airlines and the GA/ MoD communities. Cardiff 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*.

At this point in the process, we have not rejected any of the design options based on the outcome of this Initial Options Appraisal. Where negative impacts have been identified, such as an increased noise impact, there is ample opportunity for the options to be further refined and impacts reduced later in the process. Similarly, there is not currently enough quantitative information required for us to identify a "preferred" option(s) at this point in the process.

Each of the design options featured herein passed the Step 2Aii Design Principle Evaluation and are in support of Cardiff Airport's Statement of Need. By progressing each of these remaining indicative design options, it provides an opportunity for the maximum number of options to glean further benefit through combination with each other – or other airspace change proposals. Our Stage 3 work will include a cumulative impact assessment of our proposed design options alongside other changes in the West Terminal Airspace cluster (Bristol, Exeter and NERL) which will provide this detail.