

Cardiff Airport Design Workshop

Aviation Representatives (08/09/21)

Attendees:

- ██████████ – Cardiff Heliport
- ██████████ – Wales Air Ambulance, heliport, Swansea alliance (airport)
- ██████████ – Cardiff Airport, Head of Airfield Operations
- ██████████ – NATS Airspace Change Specialist
- ██████████ – NATS Design Lead, Cardiff Airport ACP
- ██████████ – University of Wales Air Squadron
- ██████████ – GM Bristol Airport

Options Development Discussion

Question asked on whether the Cardiff ACP could introduce flexible timings or restrictions – confirmed that this could be an option and has been considered in other ACPs. Access to airspace is very important for all airspace users in the surrounding area. Confidence of GA pilots can also have an impact on adherence to differing agreements and airspace access.

Point Merge

A Point Merge procedure has been considered as a delay absorption mechanism however, it is agreed that it would not be appropriate for Cardiff Airport. A Point Merge procedure is typically used for busier traffic flows and it would require a huge amount of new controlled airspace (CAS). GA representatives confirmed that a Point Merge would hugely impact their operations, not preferable at all as an option from their perspective.

Changes to CAS/ GA impacts

An extension of the Cardiff Terminal Control Area (TMA) down to as low as 2,000ft would negatively impact helicopter operations (Cardiff Heliport).

It is likely that there will be changes to CAS north-west of Cardiff Airport e.g. a stepped piece of airspace. This could potentially be very problematic for St Athan and Cardiff Heliport operations.

Lower level CAS restrictions would greatly impact GA. This would be compounded by the local terrain (mountainous) restrictions which already limit GA activity. Similarly, any increase to CAS would be challenging for GA.

Class D would be a likely choice of classification. Class E could be a potential (similar to Farnborough) however there is an increased risk of unknown traffic.

GA community are very nervous around the potential of more Class D airspace and generally any increase in GA limitations around Cardiff Airport and St Athan. Hills to the north, often alongside low-lying cloud, are a key factor (natural limitation) which require more GA traffic to head east and closer to Cardiff Airport.

Aerodrome Traffic Zone (ATZ)

Cardiff Heliport is currently looking at the possibility of introducing an ATZ around it, due to an increased amount of traffic (not an airspace “grab” – increased protection). There is quite a lot of traffic routing above in the overhead which an ATZ would mitigate against. There is a particular

issue when pilots don't turn on heliport view which means they are not able to identify the Heliport at all.

MoD Operations

The MoD currently operate Monday – Friday, 0900 – 1700.

MoD spinning aerobatics operate north-west of Cardiff Airport. These are primarily conducted over the land and are not permitted over the water at all in the winter. These operations require ground - > FL100 (no lower than FL80).

The MoD encourage student flyers to talk to ATC frequently, for practice and training purposes. A lot of military training occurs to the north-west of Cardiff Airport, up to the Swansea region. Aerobatic flights occur, requiring airspace up to around FL100.

Spinning exercises are also affected by the terrain closer to Swansea therefore much of this occurs closer to Cardiff Airport, alongside Swansea Airport not always being able to offer MoD a traffic service.

Spinning/ aerobatic exercises should all take place above 3,000ft. More CAS could potentially benefit the MoD.

Review of Cardiff Airport Design Options

Hold and Transition Options

Cardiff Airport confirmed that all Hold options should be assumed to have a base level of 7,000ft.

The Hold locations are not a concern for Cardiff Heliport and generally very low impact for GA.

Hold 1

Pros - no impact for Cardiff Heliport operations

- No change from today (as per current procedure)

Cons - Runway 12 transition from Hold 1 would impact GA operations in this area

Hold 2A

Pros - option over the high terrain in this area would be beneficial to GA operations which have to avoid this area anyway

- Existing CAS, already goes down to 4,500ft
- Lack of impact on MoD and GA.
GA operations around here typically operate around Nash – Minehead. The terrain over north Devon (west of Hold 2A) means GA traffic often avoids this area anyway.
- No impact for Cardiff Heliport operations
- Runway 12/ 30 transitions from Hold 2A would have no impact on GA operations
- Runway 12 transition from Hold 1 should be contained within CAS

Hold 2B

Pros - no impact for Cardiff Heliport operations

- Utilises existing CAS
- Lack of impact on MoD

- Runway 12/ 30 transitions from Hold 2B would have no impact on GA operations
- Runway 12 transition options – one flying higher and closer in order to allow outbounds underneath (other straight to the T Bar)

Cons - Runway 12 transition likely to impact on Bristol departures

Hold 3

Pros - no impact for Cardiff Heliport operations

- Runway 12/ 30 transitions from Hold 3 would have no impact on GA operations

Cons - impact on MoD operations (aerobatics/ spinning). Fast jets operate around here, from Valley.

- Impact on GA operations
- Runway 12/ 30 transitions would require new CAS for protection (north and east)
- Runway 12 transition would introduce additional track miles
- Runway 30 transition may impact upon MoD operations

Hold 4

Pros - no impact for Cardiff Heliport operations

- Runway 12/ 30 transitions from Hold 4 would have no impact on GA operations

Cons - impact on MoD operations (aerobatics/ spinning) – both the Hold location and Runway 12 transition

- Runway 12 transition would descend over populous
- Runway 12/ 30 may require additional CAS

Hold 5 - around BCN (RNAV point)

Pros - within existing CAS

- Above higher ground which GA users tend to avoid anyway. No foreseen issues from a GA perspective
- No impact for Cardiff Heliport operations
- Runway 12/ 30 transitions from Hold 5 would have no impact on GA operations
- Runway 12 transition is fairly similar to what is used today for excessive traffic e.g. Champions League
- Different options for Runway 12 transitions (overhead or joining a trombone to the north-west of Cardiff)
- No major MoD/ GA concerns

Hold 6

Pros - within existing CAS

- No impact for Cardiff Heliport operations
- Runway 12/ 30 transitions from Hold 6 would have no impact on GA operations
- No major MoD/ GA concerns

Cons - Transition to Cardiff may require additional CAS (lower bases)

- Impact from the transition would be a concern for GA users, rather than the Hold location



- Runway 12 transition may interact with Cardiff departures
- Runway 30 transition will likely have an impact on Bristol operations

Hold 7

Pros - no impact for Cardiff Heliport operations

- Lesser impact on MoD operations which cross the channel at around 6,000ft then descend (in existing CAS). Transitions from here also shouldn't be a concern. Less MoD impact than Holds 3 and 4.
- Low impact on GA
- Runway 12/ 30 transitions from Hold 7 would have no impact on GA operations

Cons - Runway 30 transition could impact on MoD operations (potentially could move transition further to the north-east although this could impact Cardiff departures)

- Runway 30 transition likely requires new CAS

Hold 8A

Pros - no concern for GA

- No impact for Cardiff Heliport operations
- Runway 12/ 30 transitions from Hold 8a would have no impact on GA operations

Cons - impact on MoD to the north-west

- Transition to the north may have a noise impact on ground-based stakeholders
- Transition to the south would impact GA traffic crossing the channel

Hold 8B

Pros - no concern for GA

- Contained with CAS
- Less concern for MoD than Hold 8A
- No impact for Cardiff Heliport operations
- Runway 12/ 30 transitions from Hold 8b would have no impact on GA operations

Cons - huge impact on Bristol Airport operations

- Transition may be directly over Cardiff city (noise)
- Transition may interact with Bristol traffic, particularly outbounds

Runway 12 Departure Options

Route C1

Pros - shouldn't be a concern for MoD or GA users

- Similar to current EXMOR departure

Route C2

Pros - shouldn't be a concern for MoD or GA users

- Similar to current EXMOR departure



Route C3

Pros - shouldn't be a concern for MoD or GA users

Cons - aircraft may be held down due to potential Hold location (Hold 2A); it is also dependent on aircraft performance (if this were the case, still shouldn't impact GA).

Preferable to hold aircraft down at the beginning at a flight (CCO) and prioritise CDO at the end.

Route C4

Pros - low impact for MoD

- Negligible impact on the GA community

Cons - a combination with route C14 would impact upon the MoD

Route C5

Cons - most impact of all the potential SIDs, on the MoD. This is due to the airspace to the south required for SID protection. If this was routed to the north of the city, this would have a much lesser impact on the MoD.

Route C6

Pros - no impact on GA/ MoD

Route C7

Pros - no impact on GA/ MoD

Route C8A/ 8B

Pros - negligible impact on GA

Route C9

Pros - no impact on GA/ MoD

Runway 30 Departure Options

Route C10

Pros - similar to current EXMOR departures

- Negligible impact on GA and MoD

Cons - possibility of aircraft being held down dependent on Hold location (Hold 2A could prove difficult)

Route C11

Pros - similar to current EXMOR departures

- Negligible impact on GA and MoD

Route C12

Pros - would allow MoD to continue with their operations as today (assuming they are able to communicate with an appropriate function)

- No major concern for GA

Cons - potentially require more CAS for protection purposes

Route C13

Pros - shouldn't be an issue for GA users

Cons - large impact on MoD operations in this area

- Potentially require more CAS for protection purposes

Route C14

Cons - huge impact on the MoD, this could effectively shut MoD operations down.
(However, if this were routed further to the north, this could reduce/ even remove MoD impact.)

- Combination with Hold 4 would create an even larger impact on the MoD.
- Potentially require more CAS for protection purposes
- May overfly the Cowbridge area

Route C15

Pros - no impact on GA/ Bristol Airport/ MoD operations

Route C16

Pros - high above GA operations in this region (above 8,000ft) so no impact

Route C17

Pros - should be able to route around or jump a potential Hold location in the north

- Within current CAS structure
- No GA concerns (within existing airspace)

Route C18

Pros - should be above Yeovilton military operations

STARs to the southerly Holds

Multiple options shown, based on known network routes.

STAR to Hold 3 could impact MoD operations (alongside STARs from the north-west to Holds 2 and 7). Potential impact on parachute operations too.

STARs to the northern Holds

Southern STARs to Holds 4, 5 and 6 would require excessive additional fuel.

The STAR into Hold 4 would be a concern for the MoD, interacting with their operations. Moving Hold 4 to the north-east could alleviate concerns.

STARs to Holds 8a and 8b

North-west STAR to Hold 8a would impact MoD operations. Could reduce this if routed further from the north (even as far as BCN).

STARs to Hold 8b would pose a concern for Bristol.

Further thoughts/ ideas

If aircraft are being held in one of the Holds over the Channel (7 and?), there still shouldn't be a huge problem for GA operations.

Suggestion for Cardiff to provide radar data on GA tracks. MoD operate around 5-6 squawks so should be relatively simple to filter out.

Summary

The Hold locations are not a concern for Heliport operations.

A small number of Holds (Hold 3) and Transitions (from Holds 1, 6 and 8A) could impact upon GA operations.

Holds 3 and 4, to the west of Cardiff Airport, would significantly impact upon MoD operations (aerobatics/ spinning); alongside transitions from Holds 3 and 7.

The majority of departure options had little/ no impact on GA or heliport operations. Routes C13 and C14, routing to the west, would have a detrimental impact on MoD operations.

A number of the STARs – serving Holds 2, 3, 4 and 7 and 8A – could potentially impact MoD operations. STAR into Hold 4 could also be problematic for the GA community. Concerns from the STARs could be alleviated by shifting them.

Any low-level geographical changes to CAS would negatively impact upon helicopter and GA operations; alongside changes to CAS classification.



Cardiff Airport Design Workshop

Aviation Representatives (13/09/21)

Attendees:

- ██████████ – Exeter Airport, ATS Services
- ██████████ – NATS GM, Cardiff Airport
- ██████████ – Cardiff Airport, Head of Airfield Operations
- ██████████ – NATS, Airspace Change Specialist
- ██████████ – Chief Coach, Devon & Somerset Condors
- ██████████ – UK GA club representative, Hang-gliding & Paraglider Pilot
- ██████████ – ACOG
- ██████████ – NATS Design Lead, Cardiff Airport ACP
- ██████████ – North Devon Hang Gliding and Paragliding Club
- ██████████ – Osprey Consulting, Exeter Airport ACP
- ██████████ – Chief Coach, South West Wales Soaring Club

Options Development Discussion

Gliding Operations

Paragliders generally fly around 4,000ft – 4,500ft but it is wholly dependent on the cloud base which can drop down very low (they don't fly any higher than the cloud base). Paragliders do not operate over the sea. The main concern for paragliders is if Cardiff traffic drops below current airspace bases.

A FLARM device is currently used on paragliders as a traffic awareness and collision avoidance technology ("conspicuity"). It is small and light enough for paragliders; not many other options which are light/ small/ cheap enough.

The longest paragliding cross-country flight last year was over 300km. These cross-country flights are increasing in distance due to increased skills. An increase to CAS could create a huge impact on these flights. They are light flights which don't carry the typical sort of navigational equipment in larger aircraft (reduces the amount of monitoring a pilot has available).

Paragliding is very different to gliding; there are a lot of preconceptions about the amount of equipment available to paragliding (described as an "aircraft in a bag"). Specifically, any changes to the north-west of Cardiff Airport would be problematic for paragliding community (regularly fly from the hills to the coast).

GA Operations

Any increase to CAS below 4,000ft would create a large impact on the GA community.

CTA 7 (north Somerset coast) step-up is right on the coast – difficult for GA community.

Cardiff Airport made it clear that they are not specifically looking to gain more CAS, their priority is to better use CAS (albeit changes may be needed).

Review of Cardiff Airport Design Options

Hold and Transition Options

Hold 1



Pros – Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

Hold 2A

Pros - Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

- Transitions over water (also shouldn't impact paragliders)

Cons - possible impact on Exeter departures (Hold protection area). The Hold may also take up levels which Exeter traffic uses.

Holds 2a and 2b only potential Holds with an impact on Exeter operations.

- Disbenefit for holding northern inbounds (environmentally)

Hold 2B

Pros - Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

- Potential for use as a shared Hold with Bristol
 - Transitions over water shouldn't impact gliders
- There is a site in this area but holding aircraft should be high enough above.

Cons - possible impact on Exeter departures (Hold protection area). The Hold may also take up levels which Exeter traffic uses.

Holds 2a and 2b only potential Holds with an impact on Exeter operations.

- Cardiff departures would potentially have to be held underneath
- Disbenefit for holding northern inbounds (environmentally)

Hold 3

Pros - Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

- Transitions over water (also shouldn't impact paragliders)

Cons - more CAS likely needed for transitions

- Extra track miles for eastern arrivals (inefficient)

Hold 4

Suggestion that the south-east transition from Hold 4 could be tweaked to avoid requiring more CAS – potentially from starting the transition at the right bottom right of the Hold, rather than bottom left.

Pros - Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

- South-east transition could be tweaked to avoid required more CAS

Cons - Hold transitions could heavily impact upon hand gliding/ paragliding which operate around the hills at cloud base

- High ground in this area means GA are generally operating at higher levels (closer to Hold and transitions)

Hold 5



Pros - if the airspace base is not lowered, should not cause any problem for GA.
(More available height for GA in the north would be preferable.)

- Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

Cons - potentially increased track miles

- Transitions may be problematic for gliders

All of the airspace between the Hold location and Cardiff Airport is used by gliders, at around 4,000 – 5,000ft but they have been known to reach 6,000ft. There are a huge number of sites across the Welsh Valleys. The current airspace base is 5,500ft.

More airspace may not definitely be required as Cardiff Airport want to achieve CDAs.

Hold 6

Pros - potential to be a shared Hold with Bristol Airport

- Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

Cons - lot of cross-country flights operate in this region (Cotswolds) and often quite high up to 7,000ft – transitions from Hold could also impact upon these flights

Hold 7

Pros - transitions over water

- No impact on paragliding or fixed wing (unlikely to ever be more than 1 mile from the coast)
- Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

Cons - more CAS likely needed for transitions

- Extra track miles for eastern arrivals (inefficient)

Hold 8a

Pros - hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

- No impact on Exeter operations

Cons

- Large impact on GA operations

Hold 8b

Pros - minimal impact on GA (no operations over water)

- No impact on Exeter operations
- Hold location has no impact on paragliders (operate at cloud base, around 4,000ft)

Runway 12 Departure Options

Route C1

Pros - departures should be high enough to avoid any impact on Exeter operations (similar to today – no current issues). Generally, this is jet traffic which easily makes height.



- Minimal impact on GA operations (potential that gliders are around 3,000ft by the coast but not typical)

Cons – possible impact on Exeter departures (curve in route may be required)

Route C2

Pros - minimal impact on GA operations

- Departures should be high enough to avoid impact on Exeter operations

Route C3

Pros - departures should be high enough to avoid impact on Exeter operations (Western Radar sometimes operate westerly traffic around here but very likely that Cardiff departures are significantly higher).

- Departures high enough to avoid lower level cross-country flights (down to the south coast)

Route C4

Pros - minimal impact on GA

Cons - potential impact on western radar flights (possible Exeter departures but well out of their airspace)

Route C5

Pros - minimal impact on GA (Cardiff departures likely to be high enough)

Route C6

Pros - contained within current CAS

However, GA have raised that it would impact upon their operations if the 4,000ft base was lowered

Route C7

Pros - minimal impact on GA, particularly by the time aircraft reach land

Route C8a

There is an LoA in place for paragliders in the region around Bath racecourse, allowing them access to an additional 500ft. It is rarely used so should be minimal impact. Relates to Routes C8a and C8b.

Pros – within existing CAS

Cons - operational complexity from potential radar clutter above and around Bristol Airport

- If lower levels of CAS are required, this could impact upon GA operations
- Possible noise impact for ground-based stakeholders around Bristol

Route C8b

Pros - avoids Bristol centre (when compared to Route 8b)

- Within existing CAS

Cons - Operational complexity from potential radar clutter above and around Bristol Airport



Route C9

Pros - minimal impact on GA operations

Runway 30 Departure Options

Route C11

Pros - departures should be high enough to avoid impact on Exeter operations

- Minimal impact on GA/ gliding

Route C12

Pros - minimal impact on GA/ gliding

Route C14

Cons - potential impact on gliding operations (lots of gliding sites around Brecon)

Launch sites around Port Talbot – operate around cloud base (~4,000ft)

Route C15

Pros – utilises existing airspace, base around 7,500ft

Cons - potential impact on gliders around 5,000ft

Route C16

Pros - utilises existing airspace

- Minimal GA impact

Route C17

Pros – could be used to avoid potential Hold location

Cons - additional track miles for airlines

Route C18

Pros - no impact on paragliding

STAR Options

No impact on GA operations from any of the STAR placements, due to height.

Hold 2a

Pros - aligned with LD1 potential designs

Cons - potential impact with Exeter inbounds (although Cardiff often manages these)

- Extra track miles for any inbounds not from the south.
- Potential for a pinch-point – mixing traffic from multiple directions

Hold 2b

Pros - aligned with LD1 potential designs

Cons - potential impact with Exeter inbounds (although Cardiff often manages these)



- Extra track miles for any inbounds not from the south.
- Potential for a pinch-point – mixing traffic from multiple directions

Hold 4

Cons - additional track miles for southern arrivals

Hold 5

Cons - additional track miles for southern arrivals

Hold 6

Cons - additional track miles for southern arrivals

Summary

Holds 2A and 2B, to the south of Cardiff Airport, are the only locations that could potentially interact with Exeter traffic.

Transitions from Holds 4, 5, 6 and 8A could impact GA and gliders.

Routes C1 and C4, to the south/ west, may interact with Exeter traffic.

Routes C14 and C15, routeing to the north/ west, could interact with gliding operations, lots of sites around Brecon & Port Talbot.

The STARs would have no impact on GA operations, due to height.

STARs into Holds 2A and 2B could potentially interact with Exeter traffic.

Several of the STARs would increase track miles for arrivals from the opposite direction.



Cardiff Airport Design Workshop

Aviation Representatives (14/09/21)

Attendees:

- ██████████ – Welsh Government, Aviation Authority and Policy
- ██████████ – NATS GM, Cardiff Airport
- ██████████ – Cardiff Airport, Head of Airfield Operations
- ██████████ – NATS, Airspace Change Specialist
- ██████████ – NATS Design Lead, Cardiff Airport ACP
- ██████████ – NERL Airspace Engagement Manager
- ██████████ – Cardiff Heliport, Air Ambulance

Options Development Discussion

Cardiff Heliport (Air Ambulance)

Cardiff Heliport operations are typically at low altitudes, around 1,000ft – 1,500ft, weather dependent. A potential extension to the north-west of Cardiff Airport shouldn't cause a concern to the Heliport. The rationalisation of airspace to the north-west of Cardiff Airspace generally seen as a positive change.

Heliport operations sometimes use the Cardiff ILS procedures during bad weather situations, which puts them at higher levels. Cardiff Airport assist these operations as a priority if needed (Cat A flights) i.e. vector them. A key requirement for the heliport is to maintain the current procedures for these operations. The helicopters carry less fuel than most aircraft into Cardiff which restricts them from being able to hold for a long duration.

Other Points

The impact on GA operations is expected to be much greater than on heliport operations (negligible impact).

Discussion on overlapping changes with Bristol Airport. Confirmed that both change sponsors are heavily involved in each other's design work.

Discussion on the purpose and frequency of a Hold at Cardiff – typically, more than 3 arrivals in about a 15 min period would necessitate holding. Fairly regularly used for weather difficulties at Cardiff too.

Discussion on whether there could be an RMA option to allow tactical vectoring (Cardiff confirmed).

Question on Missed Approach Procedures, will these be changed too if the Hold moves? Likely to remain very similar to today, CDF may be used as a future RNAV point.

Any changes to the north-west of Cardiff Airport to CAS, below 4,000ft, could potentially impact heliport operations. They mainly operate VFR flights so wouldn't make use of the new future IFR procedures. However, in summary, potential implications are still minimal to these operations.

St Athan confirmed that they are not part of this ACP. St Athan procedures are given on a tactical basis. The approach is made within existing Cardiff CAS.

Review of Cardiff Airport Design Options

Hold and Transition Options

The Hold and transition options pose no major concerns for heliport operations – however, if the airspace were drastically reduced, then this could create an issue.

Hold 1

Pros

- Works well for heliport operations which don't carry a lot of fuel (close proximity to base)
- Runway 12 transition over water

Hold 2A

Pros

- Works well for heliport operations which don't carry a lot of fuel (close to base)
- Transitions over water
- Transition to Runway 30 could be deconflicted from departures

Cons - possibly requires extra CAS to the west, for Hold protection

Hold 2B

Pros

- Shared Hold with Bristol
- Works well for heliport/ air ambulance ops which don't carry a lot of fuel (close proximity)
- Transitions over water
- Makes use of existing CAS
- Transition to Runway 30 could be deconflicted from departures

Cons

- If aircraft are held down on Runway 12 transition, they may impact Cardiff departures

Hold 3

Pros

- No impact on heliport operations
- Transitions over water

Cons

- New CAS likely required
- Runway 12 transition requires new CAS
- Impact on GA

Hold 4

Pros

- No impact on heliport operations (max 5,000ft/ 6,000ft over land)
- Runway 12 transition partly over water

Cons

- Severe MoD impact from the Hold and transitions
- Runway 12 transition requires new CAS
- Impact on GA

Hold 5

Pros

- No impact on heliport operations (max 5,000ft/ 6,000ft over land)

Cons

- In an area of known network routes – may be difficulty in obtaining free levels

Hold 6 – on network route D

Suggestion to move this further west for Cardiff (around Severn Bridge) with a separate Bristol Hold in this place – both sat on network route D. Similarly, shared Hold.

Pros

- No impact on heliport operations
- Wholly within CAS
- An en-route Hold in this region has been considered by the network design team
- Could support diversion to other airports more so than other options

Hold 7

Pros

- No impact on heliport operations
- Potential to move this around over the sea – benefit from being over the water but lesser impact on GA

Cons

- New CAS likely required
- Runway 12 transition potentially requires new CAS
- Impact on GA

Bristol overhead Hold discussed e.g. issues with radar label jumping. Question posed on whether Cardiff could position a Hold over the BRI. Suggestion to explore further as potential useable airspace.

Holds 8A (arrivals to 12) and 8B (arrivals to 30) are dependent on the Runway in use.

Hold 8A

Pros

- Vectoring currently occurs around here

Cons

- Potential small impact on heli/ air ambulance if the Hold base was significantly lowered down to around 2,000/ 3,000ft
- Stack swap procedure needed if runway changes (increased complexity)
- New protection area required for the Hold and CAS for the transitions
- Lower levels than other Holds – around 4,000ft – to allow for height loss prior to landing

Hold 8B

Pros

- Within CAS
- Makes use of overflying water more than Hold 8A

Cons

- Potential small impact on heli/ air ambulance if the Hold base was significantly lowered down to around 2,000/ 3,000ft
- Stack swap procedure needed if runway changes (increased complexity)
- Close to populated areas
- Lower levels than other Holds – around 4,000ft – to allow for height loss prior to landing

Runway 12 Departure Options

The following options are very unlikely to impact upon heliport operations which will be much lower.

Route C1

Pros

- Initial climb over water
- Should be simple to integrate with the network

Route C2

Pros

- Initial climb over water
- Should be simple to integrate with network
- Routed around to avoid transitions from potential Hold location

Route C3

Pros - initial climb over water

Route C5

Pros - should be simple to integrate with network

Cons - potential noise impact for Cardiff City Centre

Route C6

Pros - should be simple to integrate with network



Route C7

Pros

- Should be simple to integrate with network
- Makes use of the channel
- Follows current departure route used today

Route C8

Pros - this would likely work with eastbound network routes

Route C9

Cons

- Large military impact
- Potential difficulty with integrating into the network

Runway 30 Departure Options

The following options are very unlikely to impact upon heliport operations which will be much lower.

Route C10

Cons

- Likely to require new CAS
- Impact on GA flights

Route C14

Cons - departures not flown in this direction much today

Route C17

Cons - wrap-around procedure is operationally complex

Route C18

Cons

- Large military impact
- Potential difficulty integrating into the network

Arrival STARs to the southern Holds

Arrivals from the north/ east would have increased track miles to southern Holds, particularly Holds 2A and 2B.

STARs utilise the preferred network routes for Cardiff arrivals, following engagement with the LD1 design team.

Arrival STARs to the northern Holds

Less track miles for arrivals from the north/ east.

Southern arrivals to northern Holds, particularly Hold 6, will fly a very non-optimal route (excessive fuel burn).

Summary

The Hold and transition options pose no major concerns for the heliport operations however, if the airspace were drastically reduced, then this could create an issue.

Holds 3, 4 and 7 could impact upon GA operations.

Hold 5 may be difficult to integrate into the network as this is a known busy region (possible lack of free levels).

Route C10, routeing south, is likely to require new CAS and could impact upon GA flights.

The wrap-around element of route C17 could be operationally complex and workload intensive.

