FACT SHEET
November 2022

MELBOURNE CONTINUOUS DESCENT OPERATIONS (CDO) TRIAL

The opportunity

When sequencing aircraft for arrival to an airport, Air Traffic Control (ATC) rely on tactical intervention techniques such as speed control, vectoring and holding - which effectively absorbs delay but does not always provide a predictable descent for flight crew.

Continuous Descent Operations (CDO) is a step towards creating a Trajectory Based Operations (TBO) environment, that will optimise sequencing processes for ATC and provide flight crews with predictable descent into Australian airports.

Airservices initiative to introduce CDO is part of our transition to Civil Military Air Traffic Management System (CMATS).

Airservices' proposed CDO procedure, known as predictable sequencing, will be trialled at suitable capital city aerodromes starting Q4 2022. Predictable sequencing involves the use of pre-defined waypoints that have been specifically positioned to provide a certain time delay when ATC use them to re-route aircraft. The trials will test ATCs use of predictable sequencing via pre-defined waypoints to absorb delays prior to top of descent (TOD), providing a predictable descent for flight crew.

How should this benefit airspace users?

- Increased flight path predictability on descent as delays are absorbed prior to TOD
- Reduced pilot workload during the arrival phase of flight through minimised tactical intervention with ATC.

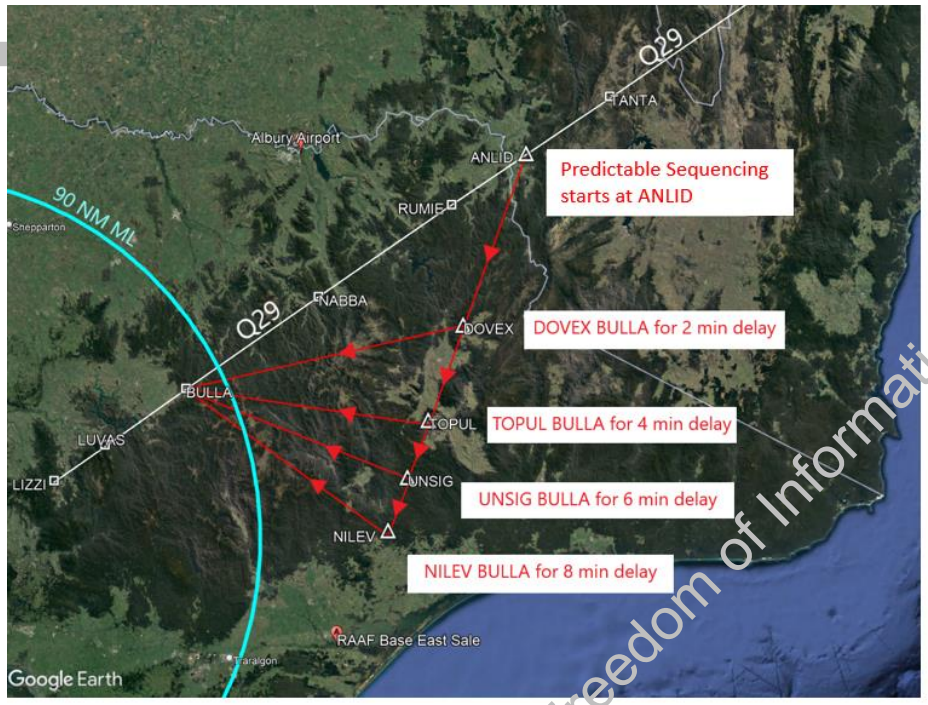
Melbourne CDO Trial

Arrivals to Melbourne via air route Q29 (from Canberra/Sydney) are the first to undergo a trial of predictable sequencing. Traffic on this route is ideal for the trial as the current airspace configuration and boundaries are such that changes are not required to facilitate the trial. Q29 is a single stream of traffic with no converging routes to complicate the process.

Five new waypoints have been created specifically for the Q29 trial. Although the waypoints were designed to be commenced through ANLID with a return to route Q29 at BULLA, aircraft may also be sequenced through the predictable sequencing waypoints for a return to Q29 at LUVAS or BULLA. The table below shows the delays that may be absorbed by returning the aircraft to the route at each waypoint.

Flight crew arriving at Melbourne via Q29 should continue to comply with all published STAR speed and height restrictions, unless explicitly cancelled by ATC.

FACT SHEET
November 2022



Waypoint	DCT BULLA (mins)	DCT LUVAS (mins)	DCT LIZZI (mins)
DOVEX	2	2	2
TOPUL	4	3-4	3
UNSIG	6	5	4-5
NILEV	8	7	6

How will we measure success?

In terms of ATC, the results of the trial will demonstrate if the use of predictable sequencing is effective in achieving the required delay and reducing workload as intended.

The results of the trial relating to flight crew will demonstrate if the use of predictable sequencing improves flight path predictability for descent and reduces workload during the arrival phase.

To ensure minimal ATC intervention through the descent, we request that flight crews are as accurate as possible on arrival to the feeder fix. This will ensure planned sequencing and separation can be maintained to help reduce pilot and ATC workload.

The Monaro trial is effective from November 2022with expansion to other routes after that. Airservices is requesting flight crew provide feedback to assist us in determining the results of the Monaro trial. Specifically, we would like to know:

- How easy is the procedure for example: accept a ‘track via XXXXX’ and enter in FMC?
- Could you remain in managed mode and fly an FMC-managed descent?
- How well was the required delay achieved after tracking via XXXXX?
- Does this procedure reduce cockpit workload over conventional ATC delay techniques?
- Any additional comments?

Want to know more?

FACT SHEET
November 2022

If you've got any questions or would like to know more, reach out to the team at s47E(d)

Melbourne Continuous Descent Operations (CDO) Grampians Trial

The opportunity

When sequencing aircraft for arrival, Air Traffic Control (ATC) rely on tactical intervention techniques such as speed control, vectoring, and holding - which effectively absorbs delay but does not always provide a predictable descent for flight crew.

Continuous Descent Operations (CDO) is a step towards creating a Trajectory Based Operations (TBO) environment, that will optimise sequencing processes for ATC and provide flight crews with predictable descent into Australian airports.

The Airservices initiative to expand CDO is part of our transition to a Civil Military Air Traffic Management System (CMATS).

A CDO procedure, known as predictable sequencing, has been trialled at suitable capital city aerodromes since Q4 2022.

Predictable sequencing involves the use of pre-defined waypoints that have been specifically positioned to provide a certain time delay when ATC use them to re-route aircraft. The trials will test ATC's use of predictable sequencing via pre-defined waypoints to absorb delays prior to top of descent (TOD), providing a predictable descent for flight crew.

How can this benefit airspace users?

- Increased flight path predictability on descent as delays are absorbed prior to TOD.
- Reduced pilot workload during the arrival phase of flight, through minimised tactical intervention (vectoring/speed control) with ATC.
- Reduced pilot workload through the use of the Flight Management System to manage speed control and descent profile.
- Reduced fuel burn on descent, saving fuel costs and reducing carbon footprint.

Melbourne CDO Trial

Arrivals to Melbourne via air route Q29 (from Canberra/Sydney) were the first to undergo a trial of predictable sequencing.

We are now expanding the trial to include arrivals to Melbourne from the North via UQ346 and Q35, and from the South and East via H215, P753, L508, and M625.

Two sets of six new waypoints have been created to facilitate this trial.

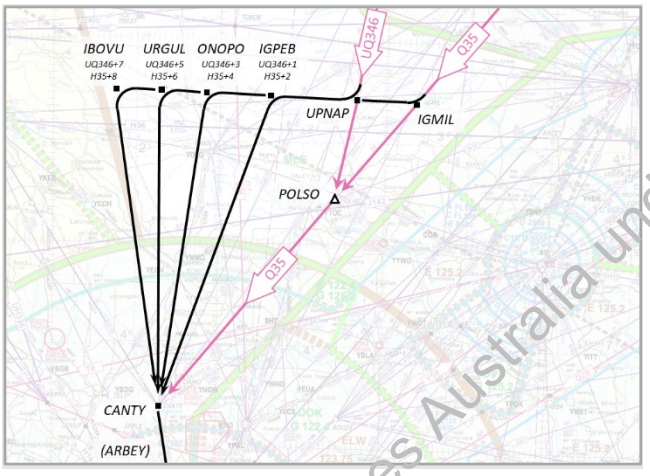
Network Performance and Analysis selected the position of these waypoints using regular vectoring patterns, average wind data (240/40), and assumed minimum speed of B737 (M70 into 250k).

These points have been tested by Airservices and in B737 simulators to check for accuracy. However, individual circumstances such as wind and aircraft performance will be considered when using the points for sequencing.

Flight crews arriving into Melbourne should continue to comply with all published STAR speed and height restrictions, unless explicitly cancelled by ATC.

How can this benefit ATC?

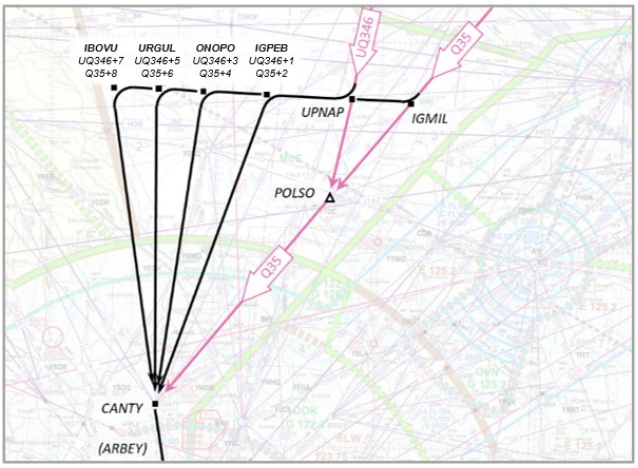
- Reduced ATC workload through minimised tactical intervention (vectoring/speed control).
- Predictability of aircraft tracking vs vectoring.
- Accuracy of system tools. e.g. TOP, RTE estimates, automatic Maestro updates.



Example process and suggested phraseology via Q35:

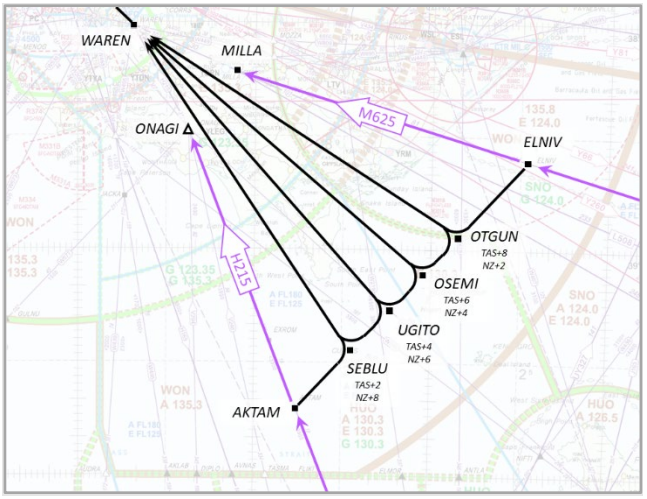
- QFA609 is tracking BN-ML via Q35 and showing a 10 min delay on Maestro.
- Assess QFA609's ETA_FF and enter accurate time to make stable in Maestro. QFA609's STA_FF is T44.
- Issue MIN to QFA609. Issue STAR as normal.
- Ascertain QFA609 estimate at ARBEY at MIN – use BRL or ask Pilot.
    - "QFA609, advise estimate ARBEY at MIN"
        - "QFA609, latest time at ARBEY T40"
- QFA609 requires four extra minutes delay to achieve STA_FF T44. ONOPO waypoint adds approximately 4 extra minutes delay.
    - "QFA609 from IGMIL, recleared ONOPO, CANTY, ARBEY. Cross ARBEY at 44 at 250k until published speeds apply.
        - "recleared IGMIL, ONOPO, CANTY, ARBEY. Cross ARBEY at 44. QFA609"

- Update FDR to reflect clearance.
- QFA609 tracks via cleared route to achieve delay.
- Monitor for compliance.



Example process and suggested phraseology via UQ346:

- JAL773 is tracking RJAA-ML via UQ346 and showing an 11 min delay on Maestro.
- Assess JAL773's ETA_FF and enter accurate time to make stable in Maestro. JAL773's STA_FF is T28.
- Issue MIN to JAL773. Issue STAR as normal.
- Ascertain JAL773 estimate at ARBEY at MIN – use ERL or ask Pilot.
    - "JAL773, advise estimate ARBEY at MIN"
        - "JAL773, latest time at ARBEY T22"
- JAL773 requires six extra minutes delay to achieve STA_FF T28. IBOVU waypoint adds approximately 7 extra minutes delay.
    - "JAL773 from UPNAP recleared IBOVU, CANTY, ARBEY. Cross ARBEY at 28 at 250k until published speeds apply.
        - "recleared UPNAP, IBOVU, CANTY, ARBEY. Cross ARBEY at 28. JAL773"
- Update FDR to reflect clearance.
- JAL773 tracks via cleared route to achieve delay.
- Monitor for compliance.



Example process and suggested phraseology via M625:

- ANZ123 is tracking NZAA-ML via M625 and showing a 14 min delay on Maestro.
- SNO assess ANZ123's ETA_FF and enter accurate time to make stable in Maestro. ANZ123's STA_FF is T04.
- SNO issue STAR as normal. SNO issue MIN to ANZ123.
- SNO complete coordination and hand-off as normal. Early hand-off with nominated restrictions will be beneficial to facilitate amended route clearance.
- WON ascertain ANZ123 estimate at WAREN at MIN – use BRL or ask Pilot.
- "ANZ123, advise estimate WAREN at MIN"
    - "ANZ123, latest time at WAREN T56"
- ANZ123 requires eight extra minutes delay to achieve STA_FF T04. SEBLU waypoint adds approximately 8 extra minutes delay.
- "ANZ123 from ELNIV, recleared SEBLU, WAREN. Cross WAREN at 04 at 250k until published speeds apply.
    - "recleared ELNIV, SEBLU WAREN. Cross WAREN at 04. ANZ123"
- Update FDR to reflect clearance.
- ANZ123 tracks via cleared route to achieve delay.
- Monitor for compliance.

Aircraft inbound from New Zealand on P753, or L508, will need to be recleared via ELNIV to start the procedure, and an early hand-off from SNO will allow WON to facilitate this. Or coordinate as required.

No other change to the way SNO process their aircraft.

How will we measure success?

In terms of ATC, the results of the trial will demonstrate if the use of predictable sequencing is effective in achieving the required delay and reducing workload as intended.

The results of the trial relating to flight crews will demonstrate if the use of predictable sequencing improves flight path predictability for descent and reduces workload during the arrival phase.

To ensure minimal ATC intervention through the descent, we request that flight crews are as accurate as possible on arrival to the feeder fix. This will ensure planned sequencing and separation can be maintained to help reduce pilot and ATC workload.

The Grampians trial will be in effect from 21 March 2024 to 1 July 2024 with subsequent expansions to Perth, Sydney (Hastings - over the ocean), and Brisbane (Fraser - over the ocean).

Airservices will be requesting ATC and flight crews provide feedback to assist us in determining the results of the Melbourne trial.

Specifically, we would like to know:

- How easy is the procedure from an HMI and workload perspective?
- How well was the required delay achieved after tracking via XXXXX?
- Does this procedure reduce workload over conventional ATC delay techniques?
- Any additional comments?

Want to know more?

If you've got any questions or would like to know more, reach out to the team at

s47E(d)

Sydney Continuous Descent Operations (CDO) Hastings Trial

The opportunity

When sequencing aircraft for arrival, Air Traffic Control (ATC) rely on tactical intervention techniques such as speed control, vectoring, and holding - which effectively absorbs delay but does not always provide a predictable descent for flight crew.

Continuous Descent Operations (CDO) is a step towards creating a Trajectory Based Operations (TBO) environment, that will optimise sequencing processes for ATC and provide flight crews with predictable descent into Australian airports.

The Airservices initiative to expand CDO is part of our transition to a Civil Military Air Traffic Management System (CMATS).

A CDO procedure, known as predictable sequencing, has been trialled at suitable capital city aerodromes since Q4 2022.

Predictable sequencing involves the use of pre-defined waypoints that have been specifically positioned to provide a certain time delay when ATC use them to re-route aircraft. The trials will test ATC's use of predictable sequencing via pre-defined waypoints to absorb delays prior to top of descent (TOD), providing a predictable descent for flight crew.

How can this benefit airspace users?

- Increased flight path predictability on descent as delays are absorbed prior to TOD.
- Reduced pilot workload during the arrival phase of flight, through minimised tactical intervention (vectoring/speed control) with ATC.
- Reduced pilot workload through the use of the Flight Management System to manage speed control and descent profile.
- Reduced fuel burn on descent, saving fuel costs and reducing carbon footprint.

Sydney CDO Trial

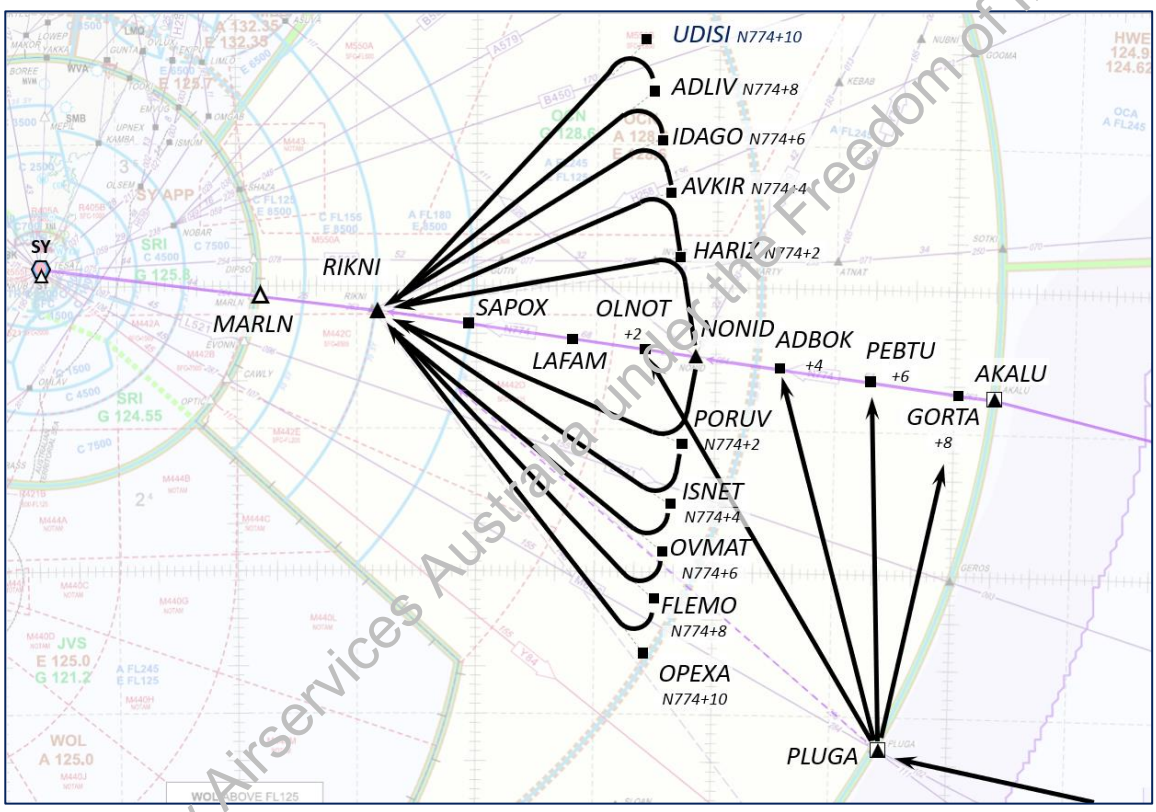
Arrivals to Melbourne via air route Q29 (from Canberra/Sydney) were the first to undergo a trial of predictable sequencing. In early 2024, the trial was expanded to include arrivals to Melbourne from the north via UQ346 and Q35, and from the South and East via H215, P753, L508, and M625.

Now the trial is being extended to include arrivals into Sydney from the east. A set of sixteen new waypoints have been created to facilitate this trial (below) with delays of up to 10 minutes. These waypoints have been added to to a Eurocat map display called CDO_MAP which will be available for selection by controllers to display all CDO waypoints. An “Aircraft subject to CDO” message has also been added to the Maestro Manual Coordination with Callsign list for controllers to indicate when an aircraft has received CDO instructions.

Network Performance and Analysis selected the position of these waypoints using regular vectoring patterns, average wind data (240/40), and assumed minimum speed of B737 (M70 into 250k).

These points have been tested by Airservices and in B737 simulators to check for accuracy. However, individual circumstances such as wind and aircraft performance will be considered when using the points for sequencing.

Flight crews arriving into Sydney should continue to comply with all published STAR speed and height restrictions, unless explicitly cancelled by ATC.



How can this benefit ATC?

- Reduced ATC workload through minimised tactical intervention (vectoring/speed control).
- Predictability of aircraft tracking vs vectoring.
- Accuracy of system tools. e.g. TOP, RTE estimates, automatic Maestro updates.

Example process and suggested phraseology via N774:

- ANZ101 is tracking NZAA-YSSY via N774 and showing a 10 min delay on Maestro.
- Assess ANZ101’s ETA_FF and enter accurate time to make stable in Maestro. ANZ101’s STA_FF is T44.

- Issue MIN to ANZ101. Issue STAR as normal.
- Ascertain ANZ101 estimate at MARLN at MIN – use BRL or ask Pilot.
    - “ANZ101, advise estimate MARLN at MIN”
        - “ANZ101, latest time at MARLN T38”
- If using BRL and the aircraft requires a delay, advise Pilot that an amended route will be issued.
    - “To facilitate continuous descent, amended route when ready”
- ANZ101 requires six extra minutes delay to achieve STA_FF T44. OVMAT and IDAGO waypoints add approximately six extra minutes delay, and either can be used when restricted airspace is not active.
    - “ANZ101 from NONID, recleared OVMAT, RIKNI, MARLN, FL320. Cross MARLN at 44 at 250k until published speeds apply.”
        - “Recleared OVMAT, RIKNI, MARLN, FL320. Cross MARLN at 44. ANZ101”
- Update FDR to reflect clearance.
- Using the Maestro Manual Coordination With Callsign list, select the option “Aircraft subject to CDO”. This will inform SY FLOW that the aircraft has been re-routed via CDO waypoints to absorb delay.
- ANZ101 tracks via cleared route to achieve delay.
- Monitor for compliance.

How will we measure success?

In terms of ATC, the results of the trial will demonstrate if the use of predictable sequencing is effective in achieving the required delay and reducing workload as intended.

The results of the trial relating to flight crews will demonstrate if the use of predictable sequencing improves flight path predictability for descent and reduces workload during the arrival phase.

To ensure minimal ATC intervention through the descent, we request that flight crews are as accurate as possible on arrival to the feeder fix. This will ensure planned sequencing and separation can be maintained to help reduce pilot and ATC workload.

The Hastings trial will be in effect from 28 November 2024 to 20 March 2024, in parallel with a Perth trial (through Southwest group). Subsequent expansions will occur within Perth (with waypoints to the east for arrivals from Brisbane, Sydney, Melbourne, and Adelaide, and in Brisbane (Byron – south of Brisbane).

Airservices will be requesting ATC and flight crews provide feedback to assist us in determining the results of the Sydney trial.

Specifically, we would like to know:

- How easy is the procedure from an HMI and workload perspective?
- How well was the required delay achieved after tracking via CDO waypoints?
- Does this procedure reduce workload over conventional ATC delay techniques?
- Any additional comments?

Want to know more?

If you’ve got any questions or would like to know more, reach out to the team at

s47E(d)

Perth Continuous Descent Operations (CDO) Southwest Trial

The opportunity

When sequencing aircraft for arrival, Air Traffic Control (ATC) rely on tactical intervention techniques such as speed control, vectoring, and holding - which effectively absorbs delay but does not always provide a predictable descent for flight crew.

Continuous Descent Operations (CDO) is a step towards creating a Trajectory Based Operations (TBO) environment, that will optimise sequencing processes for ATC and provide flight crews with predictable descent into Australian airports.

The Airservices initiative to expand CDO is part of our transition to a Civil Military Air Traffic Management System (CMATS).

A CDO procedure, known as predictable sequencing, has been trialled at suitable capital city aerodromes since Q4 2022.

Predictable sequencing involves the use of pre-defined waypoints that have been specifically positioned to provide a certain time delay when ATC use them to re-route aircraft. The trials will test ATC's use of predictable sequencing via pre-defined waypoints to absorb delays prior to top of descent (TOD), providing a predictable descent for flight crew.

How can this benefit airspace users?

- Increased flight path predictability on descent as delays are absorbed prior to TOD.
- Reduced pilot workload during the arrival phase of flight, through minimised tactical intervention (vectoring/speed control) with ATC.
- Reduced pilot workload through the use of the Flight Management System to manage speed control and descent profile.
- Reduced fuel burn on descent, saving fuel costs and reducing carbon footprint.

Perth CDO Trial

Arrivals to Melbourne via air route Q29 (from Canberra/Sydney) were the first to undergo a trial of predictable sequencing. In early 2024, the trial was expanded to include arrivals to Melbourne from the north via UQ346 and Q35, and from the South and East via routes H215, P753, L508, and M625.

Now the trial is being extended to include arrivals into Perth from the north. A set of eight new waypoints have been created across routes Q9, Q31, Q181, Q38 and Q73 to facilitate this trial.

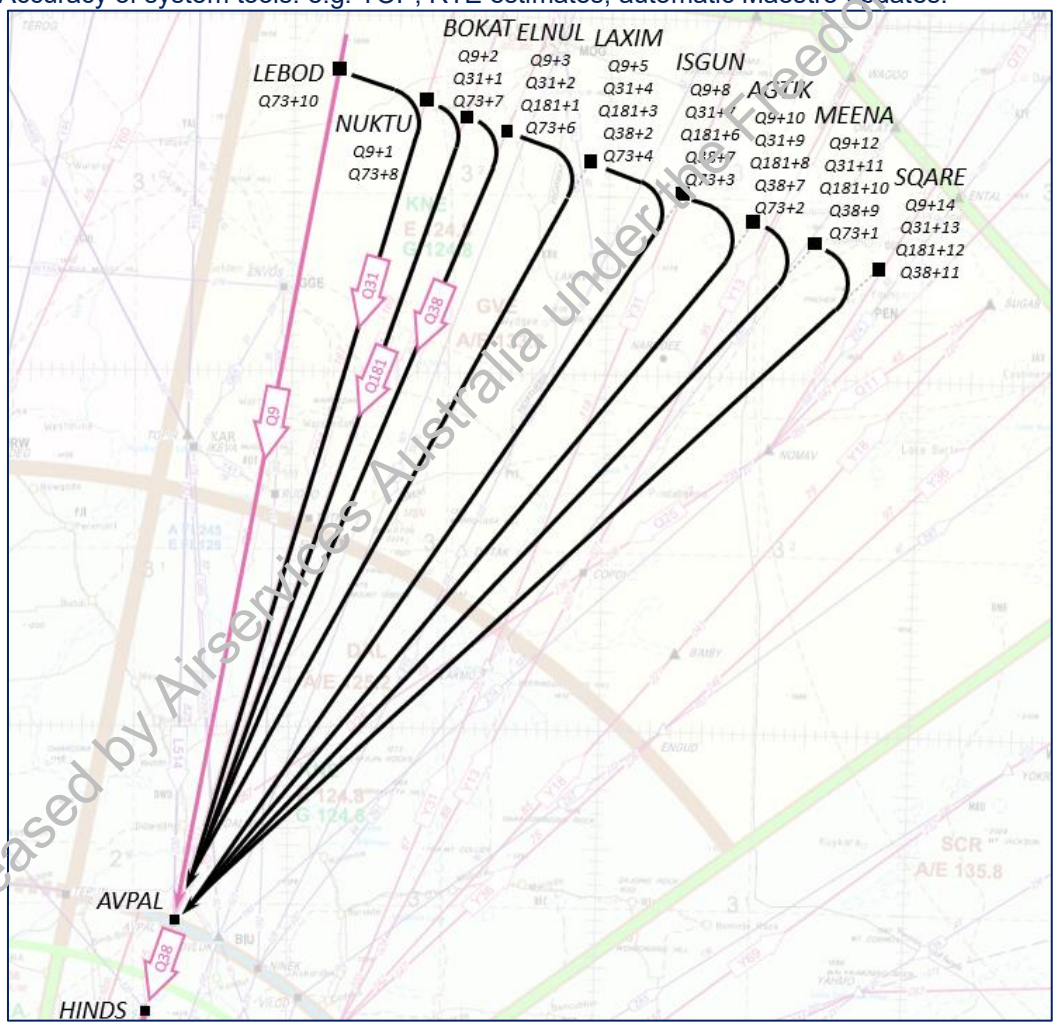
Network Performance and Analysis selected the position of these waypoints using regular vectoring patterns and assumed minimum speed of B737 (M70 into 250k).

These points have been tested by Airservices and in B737 simulators to check for accuracy. However, individual circumstances such as wind and aircraft performance will be considered when using the points for sequencing.

Flight crews arriving into Perth should continue to comply with all published STAR speed and height restrictions, unless explicitly cancelled by ATC.

How can this benefit ATC?

- Reduced ATC workload through minimised tactical intervention (vectoring/speed control).
- Predictability of aircraft tracking vs vectoring.
- Accuracy of system tools. e.g. TOP, RTE estimates, automatic Maestro updates.



Example process and suggested phraseology via Q9:

- NWK1623 is tracking YPBO-YPPH via Q9 and showing a 10 min delay on Maestro.

- Assess NWK1623's ETA_FF and enter accurate time to make stable in Maestro. NWK1623's STA_FF is T44.
- Issue MIN to NWK1623. Issue STAR as normal.
- Ascertain NWK1623 estimate at JULIM at MIN – use BRL or ask Pilot.
    - "NWK1623, advise estimate JULIM at MIN"
        - "NWK1623, latest time at JULIM T39"
- If using BRL and the aircraft requires a delay, advise Pilot that an amended route will be issued.
    - "To facilitate continuous descent, amended route when ready"
- NWK1623 requires five extra minutes delay to achieve STA_FF T44. LAXIM waypoint adds approximately five extra minutes delay.
    - "NWK1623 from LEBOD, recleared LAXIM, AVPAL, FL320. Cross JULIM at 44 at 250k until published speeds."
        - "From LEBOD, recleared LAXIM, AVPAL, FL320. Cross JULIM at 44 at 250k until published speeds. NWK1623"
- Update FDR to reflect clearance.
- NWK1623 tracks via cleared route to achieve delay.
- Monitor for compliance.

How will we measure success?

In terms of ATC, the results of the trial will demonstrate if the use of predictable sequencing is effective in achieving the required delay and reducing workload as intended.

The results of the trial relating to flight crews will demonstrate if the use of predictable sequencing improves flight path predictability for descent and reduces workload during the arrival phase.

To ensure minimal ATC intervention through the descent, we request that flight crews are as accurate as possible on arrival to the feeder fix. This will ensure planned sequencing and separation can be maintained to help reduce pilot and ATC workload.

The Southwest trial will be in effect from 28 November 2024 to 20 March 2024, in parallel with a Sydney trial (through Hastings – over the ocean). Subsequent expansions will occur within Perth (with waypoints to the east for arrivals via KABLI), and in Brisbane (Byron – south of Brisbane).

Airservices will be requesting ATC and flight crews provide feedback to assist us in determining the results of the Melbourne trial.

Specifically, we would like to know:

- How easy is the procedure from an HMI and workload perspective?
- How well was the required delay achieved after tracking via CDO waypoints?
- Does this procedure reduce workload over conventional ATC delay techniques?
- Any additional comments?

Want to know more?

If you've got any questions or would like to know more, reach out to the team at

s47E(d)

East Perth Predictable Sequencing

Southwest Trial (East Perth)

The opportunity

When sequencing aircraft for arrival, Air Traffic Control (ATC) rely on tactical intervention techniques such as speed control, vectoring, and holding - which effectively absorbs delay but does not always provide a predictable descent for flight crew.

Predictable sequencing is a step towards creating a Trajectory Based Operations (TBO) environment, that will optimise sequencing processes for ATC and provide flight crews with predictable descent into Australian airports.

The Airservices initiative to expand predictable sequencing trials is part of our transition to a Civil Military Air Traffic Management System (CMATS).

Predictable sequencing has been trialled at suitable capital city aerodromes since Q4 2022. This involves the use of pre-defined waypoints that have been specifically positioned to provide a certain time delay when ATC use them to re-route aircraft. It facilitates the continuous descent of aircraft from Top of Descent (TOD) to the Feeder Fix (FF). The trials will test ATC's use of predictable sequencing via pre-defined waypoints to absorb delays prior to TOD, providing a predictable descent for flight crews.

How can this benefit airspace users?

- Increased flight path predictability on descent as delays are absorbed prior to TOD.
- Reduced pilot workload during the arrival phase of flight, through minimised tactical intervention (vectoring/speed control) with ATC.
- Reduced pilot workload through the use of the Flight Management System to manage speed control and descent profile.
- Reduced fuel burn on descent, saving fuel costs and reducing carbon footprint.

Perth Predictable Sequencing Trials

Arrivals to Melbourne via air route Q29 (from Canberra/Sydney) were the first to undergo a trial of predictable sequencing. In 2024, the trial was expanded to include arrivals to Melbourne from the north, south and east via various ATS routes, into Sydney from the east, and into Perth from the north.

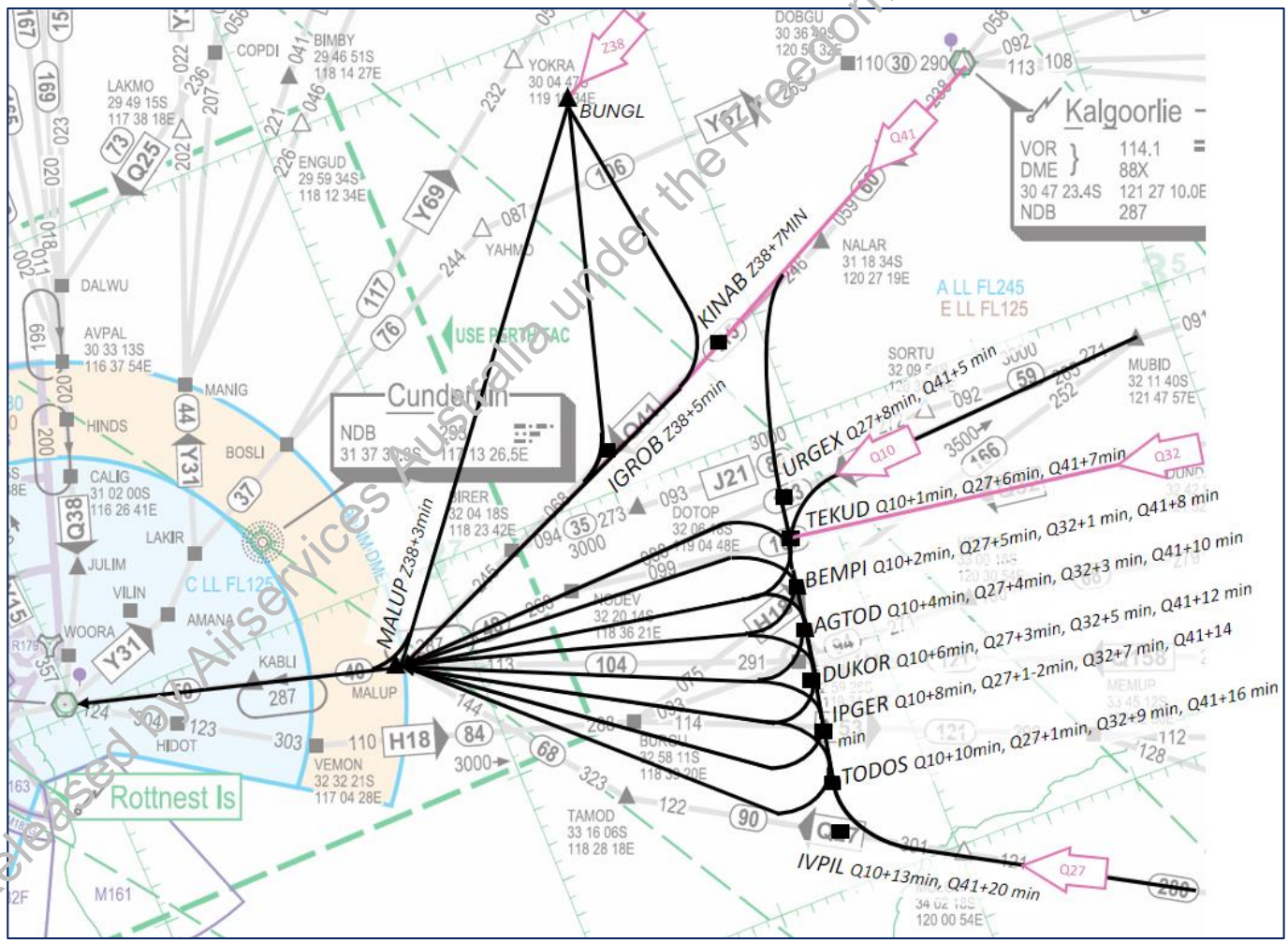
Now the trial is being extended to include arrivals into Perth from the east. A set of ten new waypoints have been created to facilitate this trial.

Network Performance and Analysis selected the position of these waypoints using regular vectoring patterns and assumed minimum speed of B737 (M70 into 250k). Individual circumstances such as wind and aircraft performance will be considered when using the points for sequencing.

Flight crews arriving into Perth should continue to comply with all published STAR speed and height restrictions, unless explicitly cancelled by ATC.

How can this benefit ATC?

- Reduced ATC workload through minimised tactical intervention (vectoring/speed control).
- Predictability of aircraft tracking vs vectoring.
- Accuracy of system tools. e.g. TOP, RTE estimates, automatic Maestro updates.



Example process and suggested phraseology via Q10:

- JST986 is tracking SY-PH via Q10 and showing a 10 min delay on Maestro.
- Assess JST986's ETA_FF and enter accurate time to make stable in Maestro. JST986's STA_FF is T45.

- Issue MIN to JST986. Issue STAR as normal.
- Ascertain JST986 estimate at KABLI at MIN – use BRL or ask Pilot.
    - "JST986, advise estimate KABLI at MIN"
        - "JST986, latest time at KABLI T39"
- If the aircraft needs further delay, advise Pilot that an amended route will be issued.
    - "To facilitate continuous descent, amended route when ready"
- JST986 requires six extra minutes delay to achieve STA_FF T45. DUKOR waypoint adds approximately six extra minutes delay.
    - "JST986 from URGEX, recleared DUKOR, MALUP, KABLI, FL320. Cross KABLI at 45 at 250k until published speeds apply."
        - "From URGEX, recleared DUKOR, MALUP, KABLI, FL320. Cross KABLI at 45. JST986"
- Update FDR to reflect clearance.
- JST986 tracks via cleared route to achieve delay.
- Monitor for compliance.

How will we measure success?

In terms of ATC, the results of the trial will demonstrate if the use of predictable sequencing is effective in achieving the required delay and reducing workload as intended.

The results of the trial relating to flight crews will demonstrate if the use of predictable sequencing improves flight path predictability for descent and reduces workload during the arrival phase.

To ensure minimal ATC intervention through the descent, we request that flight crews are as accurate as possible on arrival to the FF. This will ensure planned sequencing and separation can be maintained to help reduce pilot and ATC workload.

The Southwest trial (east Perth) will be in effect from 20 March 2025. Additional opportunities for expansion will be assessed for implementation in 2025.

Airservices will be requesting ATC and flight crews provide feedback to assist us in determining the results of the Perth trial.

Specifically, we would like to know:

- How easy is the procedure from an HMI and workload perspective?
- How well was the required delay achieved after tracking via CDO waypoints?
- Does this procedure reduce workload over conventional ATC delay techniques?
- Any additional comments?

Want to know more?

If you've got any questions or would like to know more, reach out to the team at

s47E(d)

airservices australia

ATS Group Circular
CIR_25_XXXX

Byron Predictable Sequencing CIR

Function:	Operational	**Replaces:**	Nil
Effective from:	12 June 2025	**Effective to:**	24 July 2025
Authorised:			
Contact:	s47F s47F	CRC ID:	s47E(d)

Affected units/staff	Byron			

Context

When sequencing aircraft for arrival, Air Traffic Control (ATC) rely on tactical intervention techniques such as speed control, vectoring, and holding - which effectively absorbs delay but does not always provide a predictable descent for flight crew.

We're introducing continuous descent operations (CDO) predictable sequencing procedures to provide flight crew with a predictable, managed descent into the airport. This is a step towards creating a Trajectory Based Operations (TBO) environment as part of our transition to the Civil Military Air Traffic Management System (CMATS).

CDO predictable sequencing involves the use of pre-defined waypoints that have been specifically positioned to provide a certain time delay when ATC use them to re-route aircraft.

Our trials will assess how ATC use of predictable sequencing can absorb delays prior to top of descent (TOD), providing a predictable descent for flight crew.

Anticipated benefits include:

- Increased flight path predictability on descent as delays are absorbed prior to TOD.
- Reduced pilot and controller workload during the arrival phase of flight, through minimised tactical intervention (vectoring/speed control). The use of predictable sequencing or current techniques (e.g. speed control and vectoring) for tactical management for arrivals sequencing is at the discretion of the controller.
- Reduced pilot and controller workload, using the Flight Management System to manage speed control and descent profile.
- Reduced fuel burn on descent, saving fuel costs and reducing carbon footprint.

Content

CDO predictable sequencing has been used for arrivals into Melbourne from the north, northeast and southeast, into Perth from the north and east and into Sydney from the east. The predictable sequencing trials are now being extended to include arrivals into Brisbane from the south. A set of nine new waypoints have been created to facilitate this expansion. Airservices selected the position of these waypoints using regular vectoring patterns, average wind data (240/40) and assumed minimum speed of B737 (M70 into 250k).

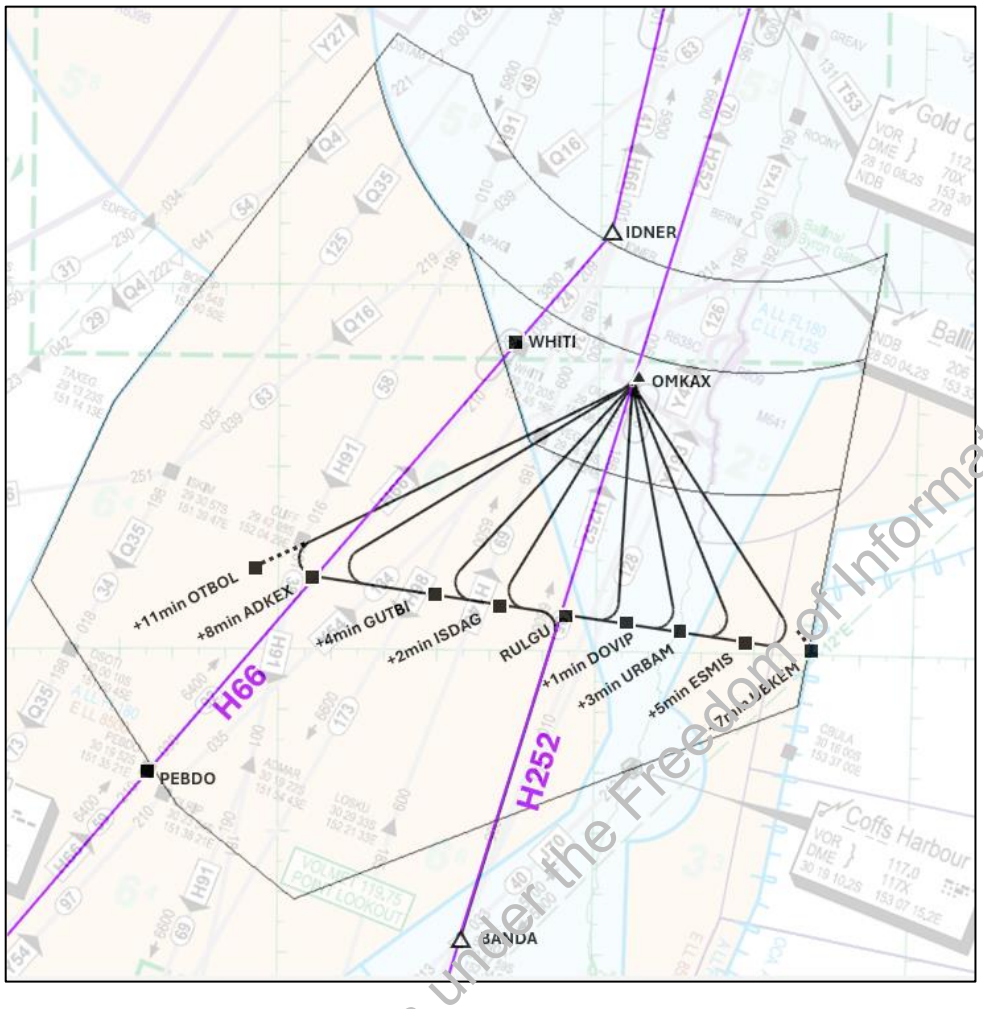
These points have been tested by Airservices and in B737 simulators to check for accuracy. However, individual circumstances, such as wind and aircraft performance, will be considered by ATC when using the points for sequencing.

Flight crews arriving into Brisbane must continue to comply with all published STAR speed and height restrictions, unless explicitly cancelled by ATC.

Example process and suggested phraseology via H66:

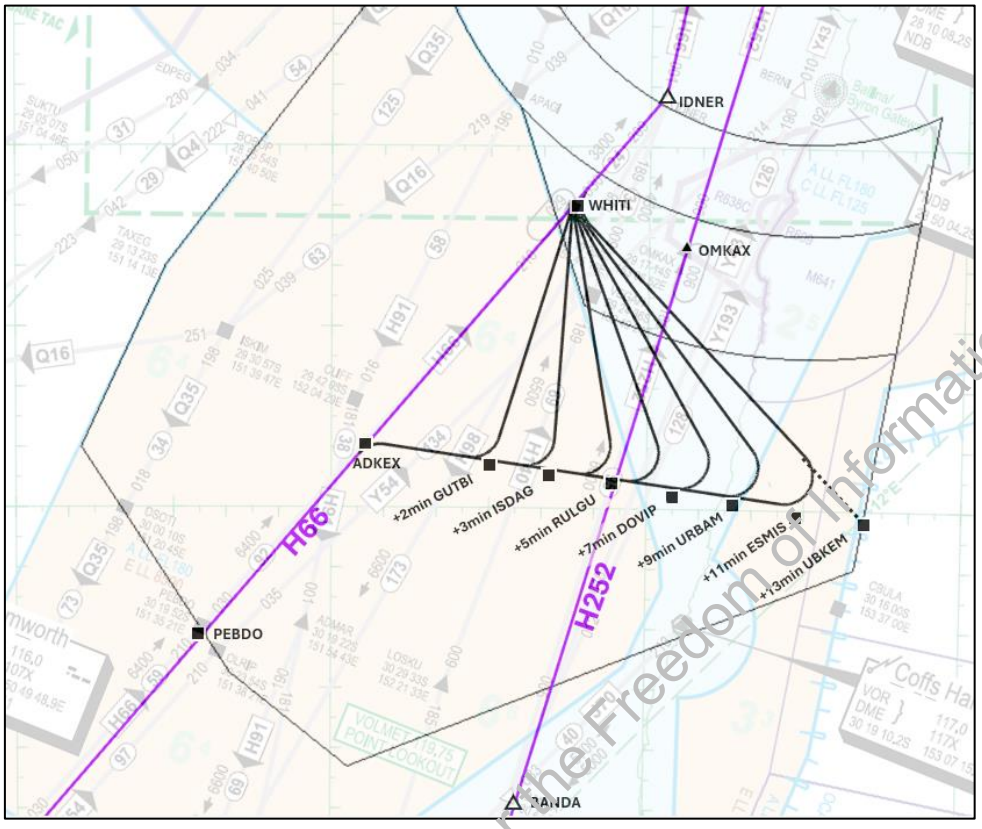
- QFA608 ML-BN via H66 is estimating position BLAKA at time (T) 32, however for sequencing into Brisbane, QFA608 must cross BLAKA at T43 (i.e. QFA608 requires an eleven minute delay for sequencing).
- ATC may issue 'MINIMUM SPEED' to QFA608 with STAR clearance.
- If the flight crew have previously provided their BLAKA time estimate, ATC may advise that an amended route will be issued:
  - *"To facilitate continuous descent, amended route when ready"*
- Otherwise, ATC may then ask the flight crew to advise their BLAKA time estimate:
  - *"QFA608, advise estimate BLAKA at MIN"*
    - *"QFA608, latest time at BLAKA T37"*
- In this example, minimum speed will achieve a five minute delay but QFA608 will still require a further six minutes.
- Waypoint DOVIP has been designed to approximate a seven minute delay, so ATC will issue QFA608 with amended tracking via DOVIP, and the aircraft's Flight Management System will achieve the rest of the delay
  - *"QFA608 from ADKEX, recleared DOVIP, WHITI, [rest of clearance unchanged,] FL320. Cross BLAKA at 43 at 250k until published speeds."*
    - *"From ADKEX, recleared DOVIP, WHITI, [rest of clearance unchanged,] FL320. Cross BLAKA at 43 at 250k until published speeds. QFA608"*

- QFA608 crew complete the amended clearance to cross BLAKA at T43.



Example process and suggested phraseology via H252:

- Same process and phraseology, with the amended tracking starting from RULGU (on H252), with the flexibility of being able to go left or right, as dictated by traffic disposition and/or restricted airspace.



We are assessing if the trials demonstrate that the use of predictable sequencing improves flight path predictability for descent and reduces flight crew workload during the arrival phase.

To ensure minimal ATC intervention through the descent, we request that flight crews are as accurate as possible on arrival to the feeder fix. This will ensure planned sequencing and separation can be maintained to help reduce pilot and ATC workload.

Airservices will be requesting ATC and flight crews provide feedback to assist us in determining the results of the Inverell trial.

Specifically, we would like to know:

- How easy is the procedure from an HMI and workload perspective?
- How well was the required delay achieved after tracking via CDO waypoints?
- Does this procedure reduce workload over conventional ATC delay techniques?
- How well do the suggested delay times for the tracking points reflect reality?
- Any additional comments?

If you've got any questions or would like to know more, please reach out to the team at s47E(d)