Noise Action Plan for Brisbane

Topic: Night-time over land departures – north

Purpose: To reduce the impact of concentrated night-time operations on communities

Current operations

Brisbane Airport operates 24 hours a day, seven days a week, so aircraft can arrive or depart at any time day or night, though the volume is generally much lower at night (defined as 10pm to 6am).

Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS) is the priority operating mode at night. This mode has both arrival and departure operations over water, noting many of these will cross land at some point, with aircraft arriving over Moreton Bay to the new runway (19R) and departing over Moreton Bay from the legacy runway (01R). When SODPROPS cannot be operated at night due to weather conditions, or traffic volume, operations over land may be necessary.

As a condition of project approval, the new runway cannot be used for over land operations during night-time hours (between 10pm and 6am), except for safety and operational reasons, for example, when the legacy runway is unavailable. As a result, all night-time movements over land are via the legacy runway.

When the wind is blowing from the south, departures occur over land. Departures travelling to destinations in the north use a Standard Instrument Departure (SID) that travels to waypoint WACKO to the north-west and waypoint BIXAD to the north-east.

In 2022 there were 1008 night-time departures on the BIXAD/WACKO SID. This equates to 50% of all overland night-time departures.

There were 172,158 total movements (arrivals and departure) at Brisbane Airport in 2022. Of these, 15,652 used these departure paths to the north, with 6.44% at night.

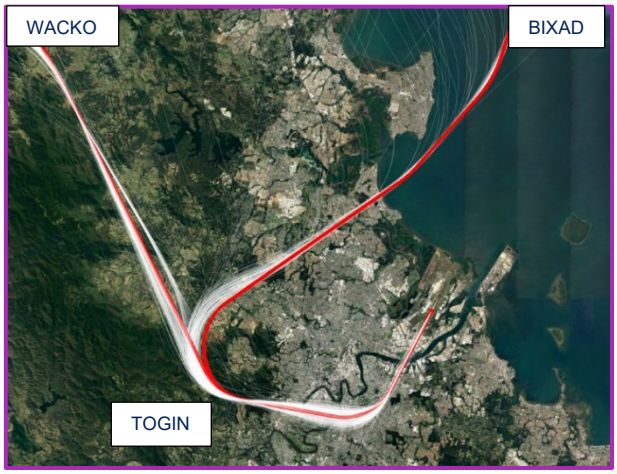

Figure 1 *Current flight path (red) of night-time over land departures to the north and actual aircraft tracking (white). Waypoints WACKO, BIXAD and TOGIN are explained further below.*

Noise Action Plan for Brisbane

Recommendation 2.4(a) of the *Noise Action Plan for Brisbane* focuses on reducing the impact of night-time operations on communities through developing alternative flight path options.

airservices australia

Phase one engagement

Airservices Australia engaged with communities in April and May 2023 to identify the options we should consider reducing the impact of this night-time departure on communities. As a result, we have focused on the following:

1. Adding new flight paths that could be used to share noise over different areas on different nights
2. Reinstating the flight path used before the opening of the new runway (pre-NPR) to remove night-time impact on currently affected communities, or to noise share
3. Adding a new waypoint to realign aircraft tracking with the published flight path away from more populated areas.

The option to introduce a steeper climb for aircraft to ensure they are higher when crossing outlying suburbs, will be revisited after preferred flight path options have been identified. Depending on the specific flight path, this may or may not be operationally feasible.

Current Standard Instrument Departure (SID)

The current night-time SID (shown in red in **Figure 2**) initially tracks in line with the legacy runway (19L), before turning to the west and then north. Aircraft pass over:

- Murarrie at 2700 feet
- Morningside at 2900 feet
- East Brisbane at 5200 feet
- Woolloongabba at 5300 feet
- West End at 6600 feet
- Toowong at 7100 feet.

The path then diverges to travel north-west or north-east. The path that travels north-west passes over:

- Mt Coot-tha at 7900 feet
- Gap Creek Reserve at 9800 feet
- Samford Valley at 12,500 feet.

The path that travels north-east passes over:

- Upper Kedron at 12,600 feet
- Ferny Grove at 13,400 feet
- Bridgeman Downs at 15,200 feet
- Fitzgibbon at 16,300 feet.

Proposed alternative options

Option 1: Additional flight paths for noise sharing

This proposal involves directing aircraft travelling north over land to one of several flight paths. This would provide respite to communities under the current flight path but would result in additional communities being subject to shared night-time operations. Most of these options are also longer routes that require more fuel, resulting in higher carbon emissions.

Alternative paths could be used on different nights (in a predictable pattern) or in rotation (more evenly distributed but less predictable).

Figure 2 shows all options being considered:

- Current flight path (red)
- Option 1.1 (blue) – slightly south of current path
- Option 1.2 (purple) – south over greenspace
- Option 1.3 (yellow) – left turn over Moreton Bay
- Option 2 (orange) – pre-new runway path
- Option 3 (green) – additional waypoint.

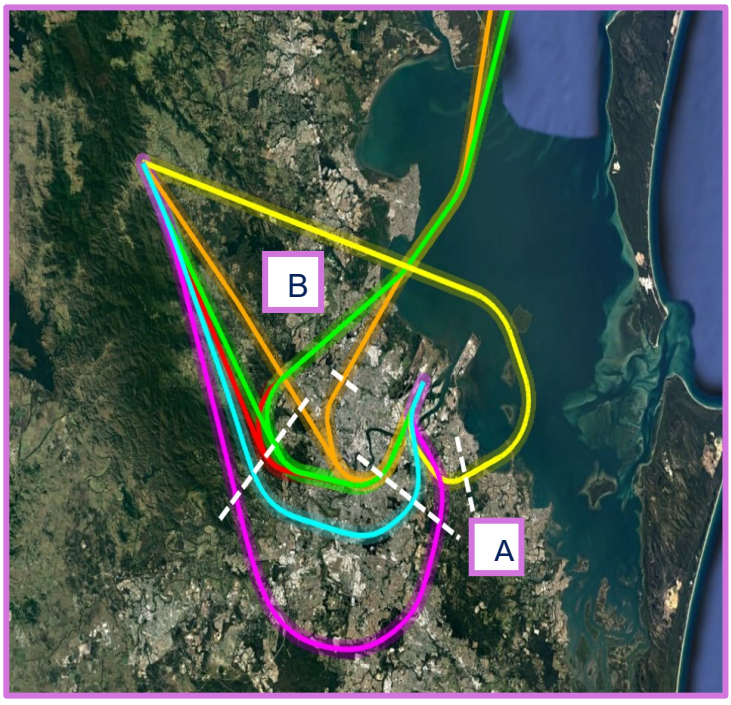

***Figure 2** Flight path options for consideration. Each flight path is shown separately alongside relevant data in the following pages.*

A and B markers are at points used for data shown in the Noise Level Comparison table further below.

Note: scalable images of flight path options are available on Engage Airservices

Option 1.1 (blue) tracks slightly south of the current path over suburbs including:

- Murarrie at 2300 feet
- Tingalpa at 3300 feet
- Carina at 4300 feet
- Mt Gravatt East at 5800 feet
- Salisbury at 7800 feet
- Fig Tree Pocket at 10,000 feet
- Kenmore at 10,700 feet
- Brookfield at 11,200 feet.

Figure 3 *Current flight path (red) and proposed option 1.1 (blue); and waypoints WACKO and TOGIN*

Note: scalable images of flight path options are available on Engage Airservices

Option 1.2 (purple) tracks further south of the current path and over green space where possible. On departure, it turns left to track over large bands of green space where possible. This option travels over suburbs including:

- Chandler at 5400 feet
- Burbank at 6200 feet
- Rochedale at 7000 feet
- Underwood at 9000 feet
- Karawatha at 9900 feet
- Parkinson at 11,500 feet
- Bellbowrie at 15,800 feet
- Upper Brookfield at 17,300 feet.

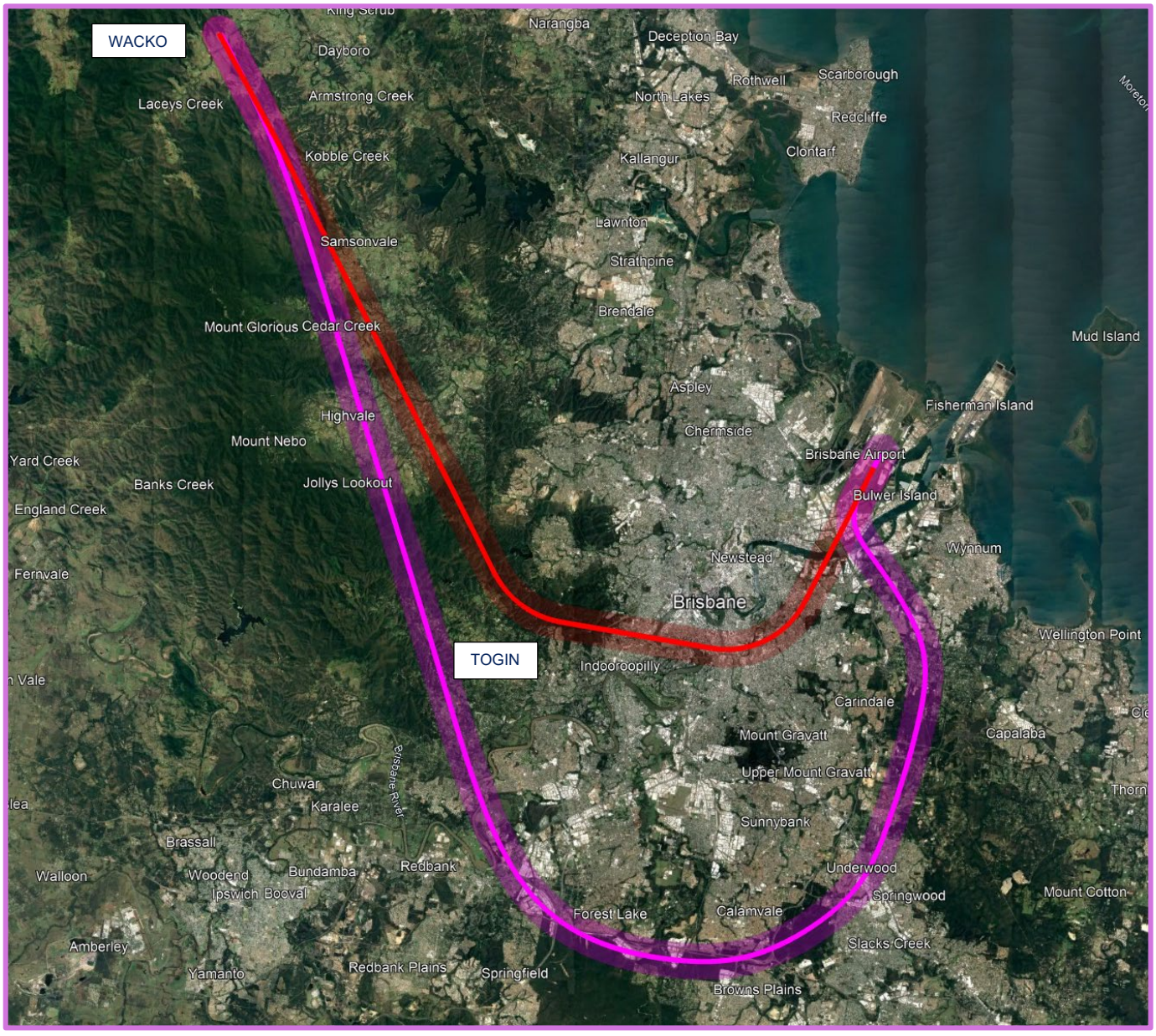

Figure 4 *Current flight path (red) and proposed option 1.2 (purple); and waypoints WACKO and TOGIN*

Note: scalable images of flight path options are available on Engage Airservices

Option 1.3 (yellow) uses a wide left turn immediately after take-off to track aircraft over Moreton Bay to complete their initial climb, before crossing the coastline to the north of the airport. Aircraft will track over:

- Murarrie at 2500 feet
- Tingalpa at 3400 feet
- Wakerley at 4300 feet
- Thorneside at 6100 feet
- Mud Island at 11,700 feet.

It is noted the previous proposal for an early turn of jet aircraft from this runway, which saw aircraft track directly over the Wynnum community, was not positively received by this community.

In developing this option, we have attempted to avoid direct overflight of highly populated areas to reduce the impact on new communities.

Investigation of a wider turn from the legacy runway was requested by some community members during Phase 1 engagement on this night-time operation.

Figure 5 *Current flight path (red) and proposed option 1.3 (yellow); and waypoints WACKO and TOGIN*

Note: scalable images of flight path options are available on Engage Airservices

Option 2: Reinstatement of previous departure flight paths (orange)

This option reinstates the pre-NPR flight paths to the north during night-time periods. This could be operated as a noise sharing alternative or as a change of operation, whereby the current flight path is replaced with this one.

This option tracks over:

- Murarrie at 2700 feet
- Morningside at 2900 feet
- East Brisbane at 5200 feet
- Woolloongabba at 5300 feet
- West End at 6500 feet
- Bardon at 7900 feet.

At the point where the path diverges to continue north-west to the waypoint WACKO, it continues over:

- Ferny Hills at 9900 feet
- Draper at 11,400 feet.

At the point where the path diverges to continue north-east to waypoint BIXAD, it continues over:

- Stafford Heights at 9400 feet
- Zillmere at 11,000 feet.

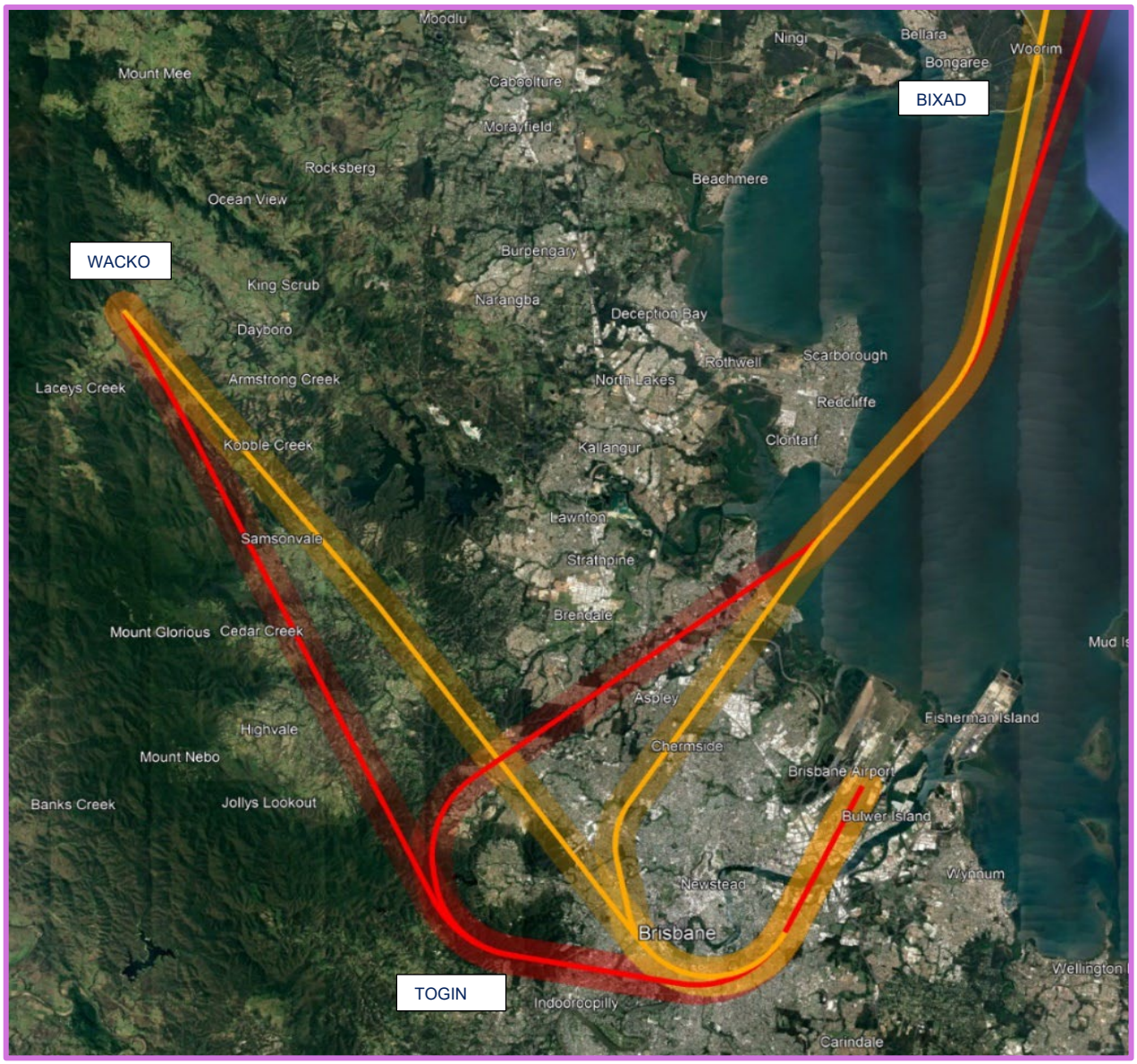

Figure 6 *Current flight path (red) and proposed option 2 Pre-NPR (orange); and waypoints WACKO, TOGIN and BIXAD*

Note: scalable images of flight path options are available on Engage Airservices

Option 3: Additional waypoint (green)

A waypoint is a geographical location used to define a flight path route.

Current operations require aircraft to pass over waypoint TOGIN near Mt Coot-tha. From here aircraft veer slightly north-east prior to the point at which the WACKO (north-west) and BIXAD (north-east) paths separate. The published flight path was designed to pass over green space between the communities of Upper Brookfield and The Gap, thus avoiding direct overflight of both.

Currently, however, aircraft are not able to track exactly on the flight path as they turn. As a result, they are tracking further west of the published path and over a more populated area of Upper Brookfield.

The existing waypoint TOGIN could be replaced with an additional waypoint approximately 2km to the east. This would shift the flight path further east, noting aircraft would continue to track slightly off the flight path as they complete the turn. It is expected this would result in actual operations being more closely aligned to the original design intent, with aircraft tracking between the two communities.

The proposed flight path would travel over:

- Murarrie at 2700 feet
- Morningside at 2900 feet
- East Brisbane at 5200 feet
- Woolloongabba at 5300 feet
- West End at 6600 feet
- Toowong at 7100 feet
- Mt Coot-tha at 7900 feet
- The Gap (forest reserve) at 9800 feet.

From the diverging point, the WACKO path would travel north-west over:

- Samford Village at 12,500 feet.

The BIXAD path would travel north-east over:

- Upper Kedron at 11,500 feet.

Figure 7 *Current flight path and waypoint TOGIN (red), proposed new waypoint and flight path (green)*

Note: scalable images of flight path options are available on Engage Airservices

Population comparison

The total population overflown by the current and proposed options has been assessed from runway end to the waypoints (WACKO and BIXAD). A flight path width of 2km has been used for comparison, noting aircraft noise will extend beyond this boundary. Noise modelling is based on a typical domestic jet (e.g., a B738).

Population count methodology is based on Census 2021 data for Statistical Area Level 1s inside the noise contours for each option.

The total population number within the 2km corridor will be lower than the 60 and 70 decibel noise contours in some cases, as noise will extend beyond the 2km flight path width where aircraft are at a lower altitude. The 2km flight path corridor is provided purely for direct overflight population comparison purposes, based on the fact that aircraft will generally operate within 1km either side of the notional flight path centreline. This corridor does not suggest noise or other operational impacts are contained to this area.

LAMax is the maximum noise level experienced during a single noise event.

	Current SID	Option 1.1 slightly south	Option 1.2 south over green space	Option 1.3 over Moreton Bay	Option 2 pre-new runway	Option 3 additional waypoint
Total flight path:						
to WACKO	125,444	94,762	89,325	65,515	163,507	126,871
to BIXAD	199,820	na	na	na	217,570	203,334
Within 60dB LAMax contour:						
to WACKO	212,957	162,531	106,103	58,649	239,333	212,127
to BIXAD	212,356	na	na	na	253,174	210,973
Within 70dB LAMax contour:						
to WACKO	15,073	28,194	12,632	4,321	15,110	15,168
to BIXAD	15,168	na	na	na	15,487	15,276

Noise level comparison

For noise level comparison at identified marker points (**Figure 2**), a typical domestic jet has been selected, as well as a typical international jet. The noise level represented is the maximum noise level (LAMax) expected from each aircraft.

		A	B
Typical domestic jet (LAmax)	**Current WACKO SID**	65-70	55 - 60
	Current BIXAD SID	65-70	55 - 60
	Option 1.1 – slightly south	65-70	< 50
	Option 1.2 – south over green space	65-70	< 50
	Option 1.3 – turn over Moreton Bay	65-70	N/A
	Option 2 – pre-new runway	65-70	55 - 60
	Option 2 – to BIXAD	65-70	55 - 60
	Option 3 – additional waypoint	65-70	55 - 60
	Option 3 – to BIXAD	65-70	55 - 60

Note: scalable images of flight path options are available on Engage Airservices

Noise levels are measured in decibels at each point, as referenced in **Figure 2**. For comparison, 50 decibels is a similar level of noise to a refrigerator, 60 decibels is similar to a conversation in a busy office, and 70 decibels is similar to a vacuum cleaner.

		A	B
Typical international jet (LAmax)	**Current WACKO SID**	> 70	60 - 65
	Current BIXAD SID	> 70	60 - 65
	Option 1.1 – slightly south	> 70	60 - 65
	Option 1.2 – south over green space	> 70	< 50
	Option 1.3 – turn over Moreton Bay	> 70	N/A
	Option 2 – pre-new runway	> 70	60 - 65
	Option 2 – to BIXAD	> 70	60 - 65
	Option 3 – additional waypoint	> 70	60 - 65
	Option 3 – to BIXAD	> 70	60 - 65

Track miles and emissions

To consider the operational implications of the current and proposed option, track miles and associated emissions based on a typical domestic jet have been calculated. Distances are measured by anticipated track length and are not measured waypoint-to-waypoint.

		Track miles (NM)	CO_2 emissions (tonnes)
Typical domestic jet	**Current WACKO SID**	32.71	6.1
	Current BIXAD SID	35.9	6.1
	Option 1.1 – slightly south	38.61	6.2
	Option 1.2 – south over green space	51.64	6.4
	Option 1.3 – turn over Moreton Bay	46.14	6.3
	Option 2 – pre-new runway	30.91	6
	Option 2 – to BIXAD	34.75	6.1
	Option 3 – additional waypoint	32.41	6.1
	Option 3 – to BIXAD	27.89	6

Note: scalable images of flight path options are available on Engage Airservices

Noise contours

Single event, maximum noise level (LAMax) contours, below, have been developed for the current flight path and the proposed option based on the loudest international jet. The inner shaded shape represents the 70 decibel area and the outer shaded shape the 60 decibel area.

Current SIDS

Option 1.3 - Over Bay

Option 1.1 - Slightly south-west

Option 2 - Pre-new runway

Option 1.2 - South over green space

Option 3 - Additional waypoint

Note: scalable images of flight path options are available on Engage Airservices

Communities overflown

The following communities are within the 2km nominal flight path corridor (1km either side of centreline) for the current SID and each of the options. This covers the entire flight path between runway end and the waypoint connecting it to the higher-level network, noting not all communities will experience noise equally. Communities nearby those identified below may also notice the operations.

WACKO SID

Current WACKO SID	Option 1.1 slightly south	Option 1.2 south over greenspace	Option 1.3 over Moreton Bay	Option 2 pre-new runway to WACKO	Option 3 additional waypoint to WACKO
Auchenflower	Armstrong Creek	Anstead	Armstrong Creek	Auchenflower	Auchenflower
Annerley	Belmont	Armstrong Creek	Bald Hills	Arana Hills	Annerley
Armstrong Creek	Brookfield	Bellbowrie	Birkdale	Armstrong Creek	Armstrong Creek
Balmoral	Cannon Hill	Belmont	Belmont	Ashgrove	Balmoral
Brookfield	Carina Heights	Brookfield	Brighton	Bardon	Brookfield
Cannon Hill	Carina	Browns Plains	Dayboro	Balmoral	Cannon Hill
Carina	Carindale	Calamvale	Eagle Farm	Brisbane City	Carina
Camp Hill	Camp Mountain	Burbank	Gumdale	Bunya	Camp Hill
Camp Mountain	Chapel Hill	Camira	Hemmant	Cannon Hill	Camp Mountain
Chapel Hill	Chelmer	Camp Mountain	Griffin	Carina	Chapel Hill
Cedar Creek	Cedar Creek	Chandler	Kallangur	Camp Hill	Cedar Creek
Closeburn	Corinda	Carole Park	Laceys Creek	Clear Mountain	Closeburn
Coorparoo	Enoggera Reservoir	Cedar Creek	Kurwongbah	Closeburn	Coorparoo
Enoggera Reservoir	Eagle Farm	Goodna	Murarrie	Coorparoo	Enoggera Reservoir
Eagle Farm	Fig Tree Pocket	Drewvale	Lota	Draper	Eagle Farm
East Brisbane	Indooroopilly	Eight Mile Plains	Murrumba Downs	Dayboro	East Brisbane
Mt Coot-tha	Holland Park West	Enoggera Reservoir	Wellington Point	Mitchelton	Mt Coot-tha
Fairfield	Holland Park	Eagle Farm	Petrie	Enoggera	Ferny Hills
Dutton Park	Hemmant	Ellen Grove	Ransome	Eagle Farm	Fairfield
Highgate Hill	Highvale	Forest Lake	Samsonvale	East Brisbane	Dutton Park
Indooroopilly	Graceville	Gumdale	Whiteside	Ferny Grove	Highgate Hill
Greenslopes	Jindalee	Greenbank	Wakerley	Ferny Hills	Indooroopilly
Hamilton	Tennyson	Heathwood	Tingalpa	Milton	Greenslopes
The Gap	Jollys Lookout	Hemmant	Rush Creek	Dutton Park	Hamilton
South Brisbane	Laceys Creek	Highvale	Pinkenba	Highgate Hill	The Gap
Stones Corner	Mount Glorious	Forestdale	Thorneside	Gaythorne	South Brisbane
Kangaroo Point	Mount Gravatt East	Gailes		Hamilton	Stones Corner
Laceys Creek	Mount Gravatt	Mackenzie		Stones Corner	Kangaroo Point
Mount Glorious	Moorooka	Larapinta		Kangaroo Point	Laceys Creek
Kenmore Hills	Kenmore Hills	Stretton		Keperra	Kobble Creek
Kobble Creek	Kenmore	Jollys Lookout		Laceys Creek	Murarrie
Murarrie	Kobble Creek	Laceys Creek		Kobble Creek	Morningside
Morningside	Murarrie	Mount Glorious		Murarrie	Norman Park
Norman Park	Nathan	Kobble Creek		Morningside	Mount Samson
Mount Samson	Mansfield	Kuraby		Norman Park	West End
West End	Mount Samson	Murarrie		Mount Samson	Samford Village
Samsonvale	Samsonvale	Karawatha		West End	Samsonvale
Seven Hills	Pullenvale	Moggill		Petrie Terrace	Seven Hills
Wights Mountain	Yeerongpilly	Manly West		Paddington	Yugar
Yugar	Wights Mountain	Mount Samson		Samsonvale	Samford Valley
Samford Valley	Salisbury	Samsonvale		Seven Hills	Taringa

Note: scalable images of flight path options are available on Engage Airservices

Taringa	Samford Valley	Pullenvale		Yugar	Toowong
Toowong	Rocklea	Wights Mountain		Samford Valley	Upper Kedron
St Lucia	Upper Brookfield	Wakerley		St Lucia	St Lucia
Pinkenba	Tingalpa	Wynnum West		Pinkenba	Pinkenba
Woolloongabba	Sherwood	Samford Valley		Red Hill	Woolloongabba
	Tarragindi	Underwood		Woolloongabba	
	Sinnamon Park	Upper Brookfield			
	Pinjarra Hills	Tingalpa			
	Pinkenba	Pinjarra Hills			
	Upper Mount Gravatt	Pinkenba			
		Riverhills			
		Parkinson			
		Rochedale South			
		Rochedale			
		Wacol			
		Woodridge			

BIXAD SID

Current BIXAD SID		Option 2 pre-new runway to BIXAD		Option 3 additional waypoint to BIXAD	
Albany Creek	Fairfield	Alderley	South Brisbane	Albany Creek	Ferny Hills
Aspley	Dutton Park	Aspley	Stones Corner	Aspley	Fairfield
Auchenflower	Highgate Hill	Auchenflower	Kangaroo Point	Auchenflower	Dutton Park
Annerley	Indooroopilly	Ashgrove	Murarrie	Annerley	Highgate Hill
Arana Hills	Greenslopes	Bardon	Newmarket	Arana Hills	Indooroopilly
Bald Hills	Everton Hills	Balmoral	Morningside	Bald Hills	Greenslopes
Balmoral	Hamilton	Brisbane City	Norman Park	Balmoral	Everton Hills
Brookfield	The Gap	Boondall	Kedron	Brookfield	Hamilton
Bracken Ridge	South Brisbane	Cannon Hill	Kelvin Grove	Bracken Ridge	The Gap
Bridgeman Downs	McDowall	Carina	Zillmere	Bridgeman Downs	South Brisbane
Brighton	Stones Corner	Camp Hill	West End	Brighton	McDowall
Bunya	Kangaroo Point	Chermside West	Petrie Terrace	Bunya	Stones Corner
Cannon Hill	Kenmore Hills	Chermside	Paddington	Cannon Hill	Kangaroo Point
Carina	Murarrie	Coorparoo	Sandgate	Carina	Murarrie
Camp Hill	Morningside	Deagon	Seven Hills	Camp Hill	Morningside
Chapel Hill	Norman Park	Enoggera	Woorim	Chapel Hill	West End
Carseldine	West End	Eagle Farm	Taigum	Carseldine	Sandgate
Coorparoo	Sandgate	East Brisbane	St Lucia	Coorparoo	Seven Hills
Fitzgibbon	Seven Hills	Milton	Pinkenba	Fitzgibbon	Taringa
Deagon	Taringa	Dutton Park	Shorncliffe	Deagon	Toowong
Enoggera Reservoir	Toowong	Highgate Hill	Stafford Heights	Enoggera Reservoir	Taigum
Eagle Farm	Taigum	Everton Park	Stafford	Eagle Farm	Upper Kedron
East Brisbane	Upper Kedron	Grange	Red Hill	East Brisbane	St Lucia
Mt Coot-tha	St Lucia	Geebung	Woolloongabba	Mt Coot-tha	Pinkenba
Ferny Grove	Pinkenba	Hamilton		Ferny Grove	Woolloongabba
Ferny Hills	Woolloongabba				

Note: scalable images of flight path options are available on Engage Airservices

Next steps

Airservices Australia is seeking community feedback on the proposed option, to identify if it should be progressed as a preferred option to formal design and full environmental assessment. Changes of this nature generally take a minimum of 12 months to implement.

No decision has yet been made by Airservices to implement this proposal.

Provide your feedback

You can provide feedback online via the *Engage Airservices Noise Action Plan for Brisbane* page. We would like to know:

1. Do you support Options:
    a. 1.1 – slightly south?
    b. 1.2 – south over green space?
    c. 1.3 – turn over Moreton Bay?
2. Do you support Option 2 – pre-NPR?
3. Do you support Option 3 – additional waypoint?
4. If additional paths are added for noise sharing, do you support them being nominated in a predictable pattern (e.g., pre-published days of the week)?
5. If you support the return of the pre-new runway flight path, would you prefer it as a noise sharing option or as an option to replace the current operation at night?

You are also welcome to provide any other feedback you have on this option.

Terminology explained

SID - A Standard Instrument Departure (SID) is a published route aircraft use to safely guide them through the busy airspace surrounding airports, from departure to where they transition to the enroute (high level airspace) phase of flight.

Enroute network - The enroute network is the higher level airspace flight paths that connect departure and arrival procedures between airports.

Waypoint - A waypoint is a geographical location used to define a flight path route. They are defined by geographic coordinates and typically take the form of a five letter capitalised word – SANEG, WACKO, SCOTT – so they are pronounceable and distinct to air traffic controllers or pilots whose first language may not be English.

Mode – Different arrival and departure operation options usually linked to time of day, air traffic volume, wind direction and runway availability.

LAMax – LAMax is the maximum noise level during a single noise event. This has been used in information materials to present the loudest aircraft movement likely to be experienced, based on the loudest aircraft type. It does not represent the likely noise level of all aircraft movements.

1 foot = 0.3048 metres.

Please note: All altitude figures presented are based on a typical domestic jet using an average of movements over a three-month period.

Join the discussion!

For more information and to join the discussion on the *Noise Action Plan for Brisbane*, register your details to receive updates, or join us at upcoming community engagement sessions, please scan this QR code or visit https://engage.airservicesaustralia.com/nap4b

You can also contact us at: communityengagement@airservicesaustralia.com

If you have specific questions or complaints about aircraft operations, please contact our Noise Complaints and Information Service (NCIS).

Note: scalable images of flight path options are available on Engage Airservices