BournemouthAirport
Part of Regional & City Airports

Bournemouth International Airport Airspace Change Proposal

Consultation Document

ACP-2018-40

Prepared by:

HELIOS

Foreword

At Bournemouth International Airport, we are very proud of our relationship with the local community and stakeholders and we are committed to being a responsible neighbour. The purpose of this consultation is to provide you, as one of our stakeholders, with an opportunity to participate in this important consultation about proposed new instrument approach procedures to runways 08 and 26 at the Airport.

The Instrument Landing System serving Runway 08 has been in operation for over 30 years, an incredible lifetime for a complex electronic system, but the equipment has been increasingly difficult to maintain and has now reached the end of its economic life.

The proposed approach procedures will employ satellite navigation technology, that does not require navigation equipment to be installed at the airport and will allow the Instrument Landing System for Runway 08 to be decommissioned. The new procedures will also support satellite approaches to Runway 26, providing an alternative approach, increasing the resilience of operations for the most important runway at the Airport.

During the development of the proposal detailed in this document, Bournemouth Airport has engaged with the Airport Consultative Committee, commercial air transport operators and training organisations to meet the needs of all stakeholders.

Your opinions regarding the proposals set out within this document and your general feedback are very important to us, and we encourage you to respond, whether you have positive or negative views on the proposal.

The stakeholder consultation runs from 13th December 2019 through 27th March 2020 and details of how to respond have been outlined in Section 7 of this document.

Stephen Gill

Managing Director

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1 Introduction

1.1 General

This document presents the airspace change on which Bournemouth Airport is consulting its stakeholders. This document is prepared according to the regulatory requirements of the UK Civil Aviation Authority for changing airspace design (Civil Aviation Publication (CAP) 1616[1]) and represents the consultation document under Stage 3 of the Airspace Change Process. The aim of this consultation document is to provide all stakeholders with consistent information pertaining to the impact of the proposed airspace change. This document has been written in plain English, assuming the reader has no technical knowledge, to ensure that the information is accessible to all. As a result of reading this document, we are hoping for feedback and comments on our proposed airspace change. Bournemouth Airport have successfully completed Stage 1 and Stage 2 of the Airspace Change Process and are currently in Stage 3, the CONSULT stage.

1.2 Consultation scope

The scope of this consultation is limited to the proposed implementation of new instrument approach procedures which would replace existing instrument approach procedures that will be withdrawn from Bournemouth Airport due to equipment obsolescence. The proposed instrument approach procedures will also provide contingency and resilience to Bournemouth Airport and its airport users.

The document includes background information pertinent to the proposed airspace change to aid stakeholder understanding, a comprehensive assessment on the impacts of stakeholder groups and references to our Initial and Full Options Appraisal; however, these documents can be located within the Civil Aviation Authorities Airspace Change Portal.

The consultation concerns the implementation of Required Navigation Performance (RNP) Instrument Approach Procedures proposed to be implemented within the airspace of Bournemouth Airport – or as agreed under delegation with Southampton Airport – and cover the navigation guidance available to aircraft during the final stages of arrival to Bournemouth. Existing operational procedures and navigation instructions given by Air Traffic Control for arriving aircraft are not proposed to change. Therefore, the airspace in which flights may be impacted by the change, with potential for some variation of flight patterns, is highlighted in Figure 1 below.

[1] https://publicapps.caa.co.uk/docs/33/CAP1616E2interactive.pdf

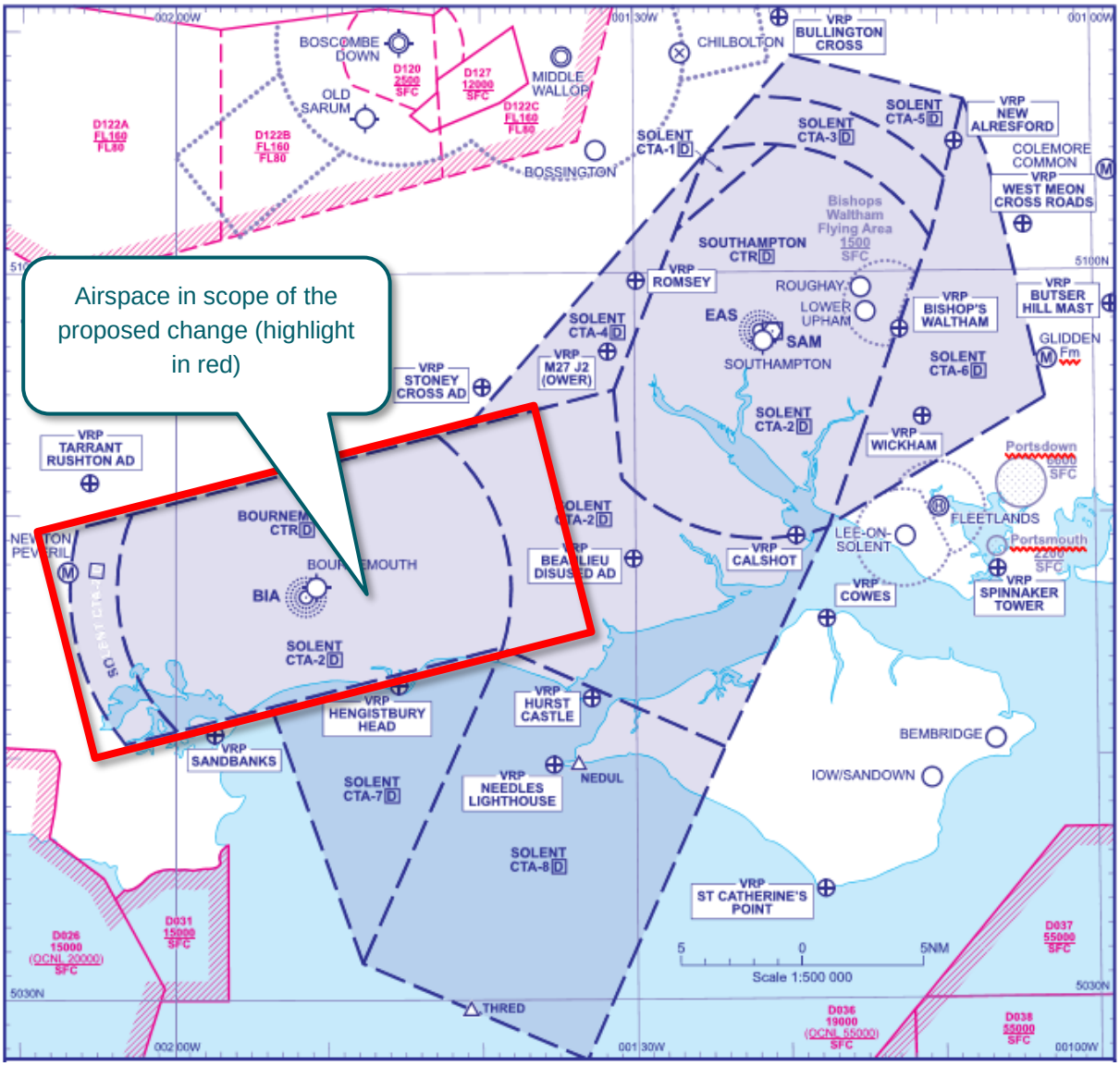

Figure 1: Airspace area and region containing the change on the AIP chart for Bournemouth and Southampton[2]

Bournemouth and Southampton airport operations are closely linked due to the proximity of the aerodromes and airspace. Figure 1 provides an overview of the Control Zones[3] for Bournemouth and Southampton Airports. The area highlighted by a red box is the portion or airspace around Bournemouth that is considered in scope of this airspace change proposal.

The Government and the Civil Aviation Authority believe that airspace modernisation is needed and is leading a programme to modernise and redesign UK airspace. The Civil Aviation Authorities Airspace Modernisation Strategy, published in December 2018, offers comprehensive non-technical guidance on the scope and objectives of the modernisation programme. The aviation industry is coming together to support the Government and the Civil Aviation Authority to deliver a coordinated airspace modernisation programme. There

[2] Source: UK AIP ENR 6-38

[3] A **control zone** is a volume of airspace, normally around an airport, which extends from the surface to a specified upper limit, established to protect air traffic operating to and from that airport.

are 17 airports working together with the Government to redesign UK airspace, including Bournemouth. Both Bournemouth and Southampton airports have initiated separate Airspace Change Proposals for arrival and departure operations as part of the United Kingdom Future Airspace System Implementation-South project (FASI-South). The airspace changes required by the FASI-South Project are in the design and development process and will be subject to separate Airspace Change Consultations at a future date. These changes are therefore not included within the scope of this airspace change proposal.

1.3 Document organisation

The remainder of the Consultation Document is structured as follows.

Section 1	(this chapter) introduces this airspace change proposal consultation document.
Section 2	provides a brief overview of Bournemouth Airport and its current operations.
Section 3	explains the current operations at Bournemouth Airport.
Section 4	presents the rationale and need for the proposed change at Bournemouth Airport.
Section 5	presents what the proposed change is.
Section 6	describes the impact that the proposed change will have on local communities, aviation stakeholders and the local environment.
Section 7	evaluates options for RWY 08 and RWY 26 and discuss the impacts of each option on stakeholder groups.
Annex A	provides a list with key technical terms and definitions used in this document.
Annex B	provides a feedback form which can be printed and returned if electronic feedback is not an option.
Annex C	provides a summary of the CAP 1616 Airspace Change Process.
Annex D	provides a summary of the Bournemouth Airport Consultative Committee.
Annex E	provides a list of invited consultees.
Annex F	provides a description of RNP approach and minima types.
Annex G	provides a description of the noise analyses supporting this proposal.
Annex H	provides details on the Need for Change.
Annex I	provides a detailed analysis of the expected impacts to local communities from the proposed change.

2 Bournemouth Airport

2.1 Overview

Bournemouth Airport is part of Regional & City Airports, a business within the Rigby Group[4] the UK's leading regional airport operator, led by a team with proven commercial and operational expertise in both the airport and airline sectors. Regional & City Airports owns Bournemouth Airport, Coventry Airport, Exeter Airport and Norwich Airport, and operates Blackpool Airport, City of Derry Airport and Solent Airport Daedalus on behalf of their owners. Regional& City Airport also operates XLR Executive Jet Centres, a Fixed Base Operator[5] having operation centres at Birmingham, Exeter and Liverpool airports.

A number of the commercial flights from Bournemouth Airport are seasonal operations providing travel to European holiday destinations. This means that operations tend to peak during the summer months compared to the winter. There are also a number of charter flights from Bournemouth to significant sporting events.

The map below shows the top 50 departure locations serviced by commercial operators to Bournemouth during 2018 derived from flight plan data for arrival traffic.

Figure 2: Map of the top 50 departure airports from commercial operators during 2018[6]

[4] http://www.rigbygroupplc.com/divisions/airports/

[5] A fixed-base operator is an organization granted the right by an airport to operate at the airport and provide aeronautical services such as fuel, hangar accommodation, aircraft tie-down and parking, aircraft rental, aircraft maintenance, flight instruction, and similar services. [Wikipedia]

[6] Map data derived from flight plans for Bournemouth during 2018.

Bournemouth Airport is well equipped, and able, to accommodate all types of aircraft and helicopters from single engine light aircraft used for initial pilot training, up to large air transport aircraft such as a Boeing 747 or Airbus A380.

In addition to operators who provide services to or from Bournemouth it is an important location for many aircraft operators who include Bournemouth airport in their flight planning and training as an Alternate, or Diversion airfield, due to its location, runway and aerodrome infrastructure.

The figure below provides a plan view of Bournemouth Airport showing the layout of the operational Airport.

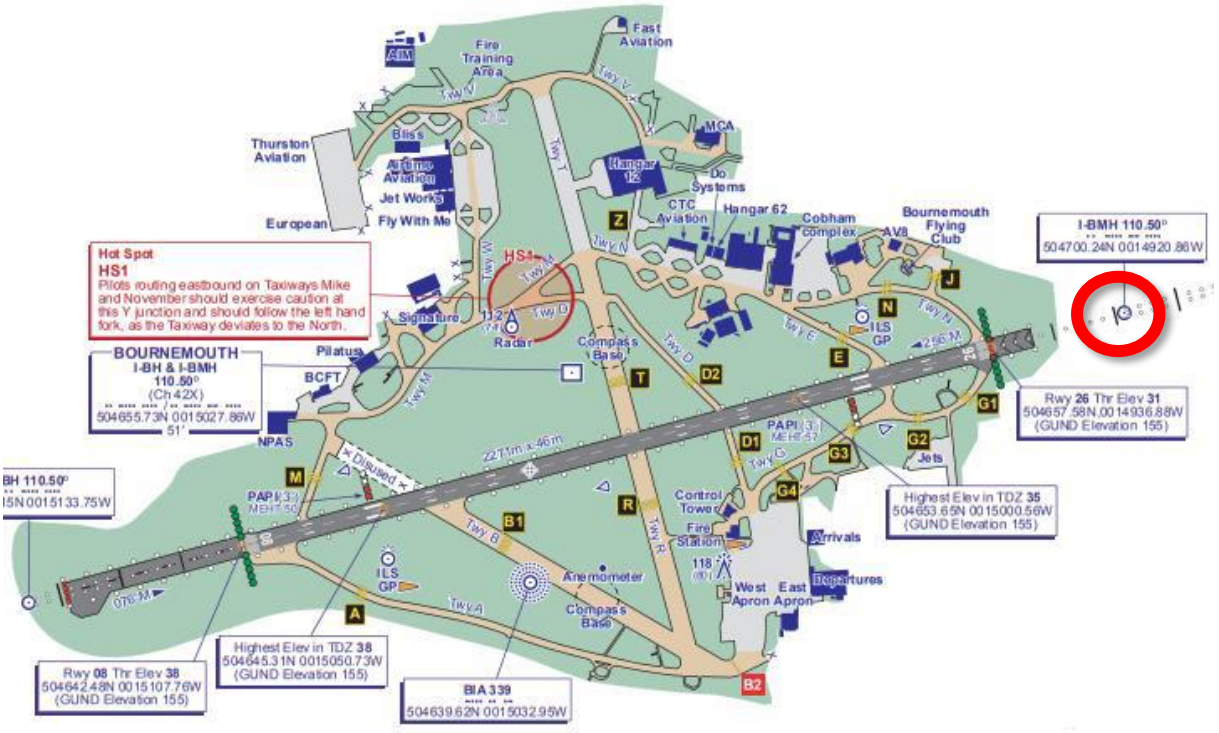

Figure 3: Bournemouth Airport Runway Configuration from the AIP[7]

It should be noted in Figure 3 (above) that the Instrument Landing System Localiser[8] (annotated I-BMH and circled) serving Runway 08[9] is outside of the Airport boundary and located in the Moors River System Site of Special Scientific Interest (SSSI). This is part of the landing system currently nearing end of life and proposed to be replaced by the new procedures.

[7] See UK AIP AD 2-EGHH-2-1

[8] The ILS Localiser transmitter is sited on the runway centreline and provides aircraft with 'Fly Left' or 'Fly Right' indications to align the aircraft with the runway.

[9] The convention for runway numbering is the compass bearing of the runway expressed to the nearest 10 degree increment (i.e Runway 08 =80°, Runway 26=260°)

2.2 The local context

2.2.1 Community engagement

Bournemouth Airport is determined to fulfil its responsibilities towards customers, employees, suppliers, communities and the global environment.

A Bournemouth Airport Consultative Committee has been established by the management of Bournemouth Airport to consider the views of interested parties when making decisions concerning the management, operation and development of the airport and keep those parties informed of matters affecting them. The Committee operates according to Government guidelines and representatives from local authorities, amenity and user groups meet three times a year. Further information on the Airport Consultative Committee and its constituent members is included at Annex D.

2.2.2 Local Councils

Aircraft conducting an Instrument Approach into Bournemouth Airport necessarily overfly communities below the aircraft tracks. The following figure highlights the local parishes and regions which are currently overflown by arriving aircraft. This is filtered to show only the typical aircraft types utilised by passenger airlines for the years 2017 and 2018, as otherwise, it would be impossible to identify typical flight paths due to training variability.

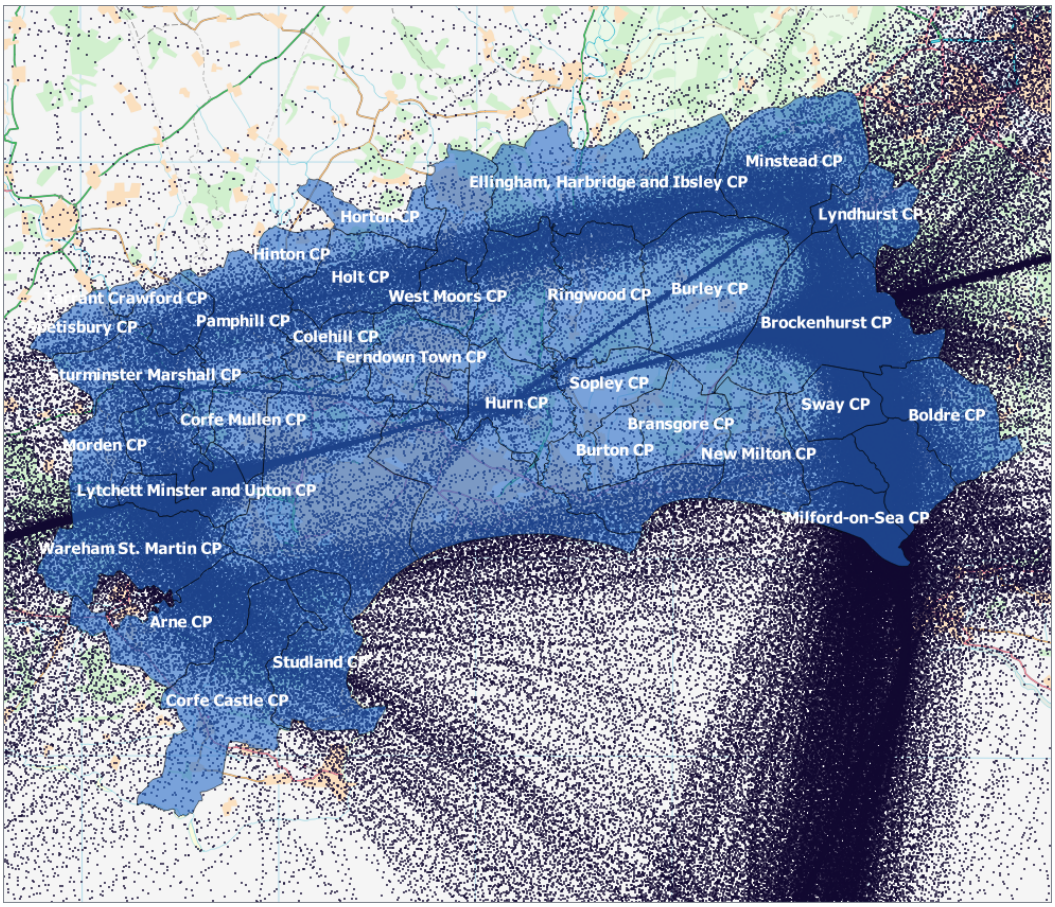

Figure 4: Local councils overflown by commercial aircraft within the area impacted by the proposed change[10]

[10] Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018 and local parish councils mapped from Ordnance Survey

Bournemouth Airport has engaged with the Airport Consultative Committee (and hence several of the parishes within the impacted area) since early 2018 in the update of the Bournemouth Airport Noise Action Plan[11] that considered the implementation of RNP[12] approach procedures.

2.2.3 Nearby Environmentally Sensitive Areas

The New Forest National Park is located to the East of Bournemouth Airport and is managed by the New Forest National Park Authority and Hampshire County Council who are represented on the Airport Consultative Committee.

The Dorset Area of Outstanding Natural Beauty (AONB) is managed by Dorset County Council who are represented on the Airport Consultative Committee.

The Cranborne Chase and West Wiltshire Downs AONB is managed by the Cranborne Chase AONB Team.

The ILS Localiser for Runway 08 is sited in the Moors River System Site of Special Scientific Interest that is located immediately to the East of the Airfield boundary is managed by Natural England.

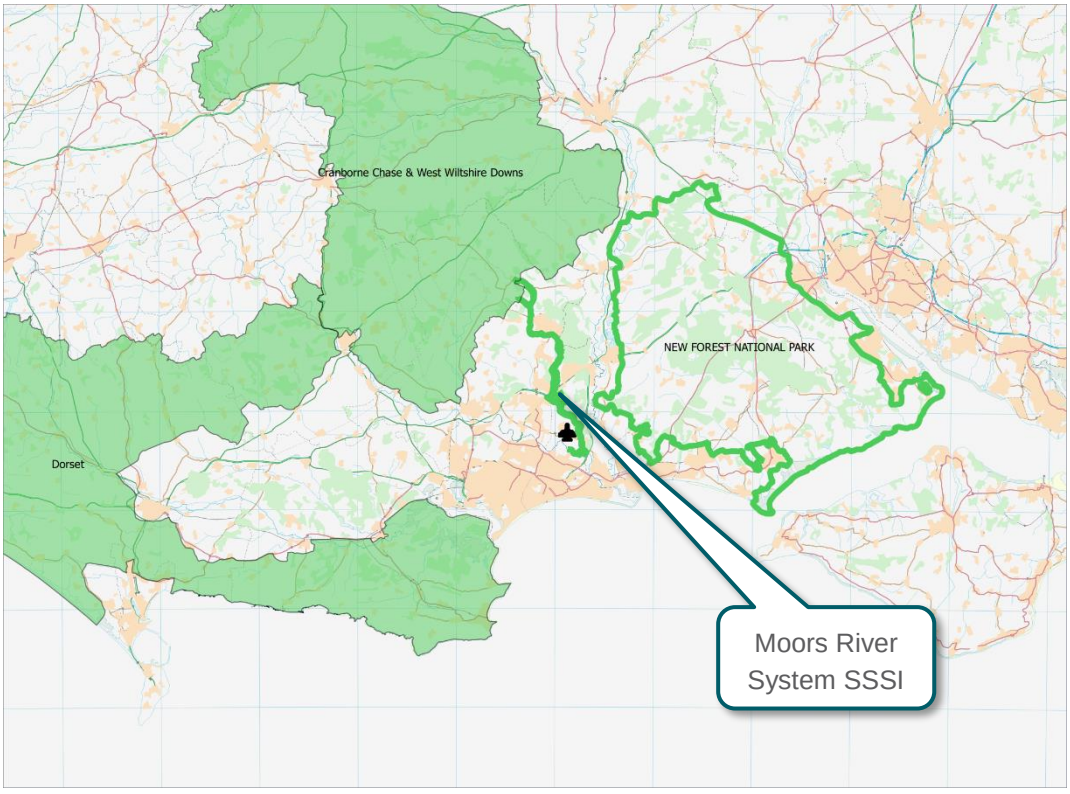

Figure 5 Identification of New Forest National Park and the Dorset and Cranborne Chase AONBs[13]

[11] https://www.bournemouthairport.com/content/uploads/Attachment-to-Minutes-Noise-Action-Plan-Review-2018.pdf

[12] The Noise Action Plan references RNAV approach procedures. ICAO has now renamed RNAV approach procedures to RNP approach procedures.

[13] Data source: DEFRA Data Services Platform http://environment.data.gov.uk.

3 Current Operations

3.1 Types of operations

Bournemouth Airport provides a service to the following;

- Commercial Air Transport operations providing scheduled and charter services; and,
- Non-Commercial operations, that include Business Aviation, Private and Commercial Pilot training and skill testing and private recreational flying.

Commercial Air Transport operations at Bournemouth are primarily conducted in Boeing 737 (Ryanair and TUI), Airbus A320 (EasyJet) and Embraer 135/145 (Loganair) aircraft types.

The table below provides data on aircraft movements for Bournemouth Airport for categories of operation that are defined by and required to be reported to, the Civil Aviation Authority for the calendar years 2017[14] and 2018[15] as the most recent years for which data is available.

Note: an aircraft movement is defined as either an aircraft landing or departing from either runway.

Type of operation		No of movements 2017	No of movements 2018
Commercial	Air Transport	4,240	4,081
	Air Taxi		2
	Positioning flights	206	254
	Local movements		0
Non-commercial	Test and training	12,629	18,562
	Other flights by Air Transport Operators	6,936	5,878
	Aero Club	2,080	2,362
	Private	6,265	6,648
	Military	316	397
	Business Aviation	1,969	1,704

Table 1: Bournemouth Airport aircraft movements by type of operation 2017-2018

The data shows that between 2017 and 2018, there was a small decline in the number of commercial flights, although an increase in total movements of approximately 7%.

The most significant movement category at Bournemouth is Non-Commercial, Test and Training operations. In part, this is due to the Approved Training Organisations that are based at Bournemouth. However, Bournemouth is also used by Approved Training Organisations based at other airfields, including, Oxford, Wycombe, and Blackbushe. Bournemouth is an important training airport as it offers full Air Traffic Control services (Radar Approach and Aerodrome Control services) and offers a wide range of instrument procedures. Bournemouth is also one of the few airports in the south of England that has

[14] https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/Airports/Datasets/UK-Airport-data/Airport-data-2017/

[15] https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/Airports/Datasets/UK-Airport-data/Airport-data-2018/

the capacity to accept training operations. Meeting the requirements of training organisations is therefore of high commercial importance.

The majority of the flights undertaken by training organisations are conducted under Visual Flight Rules (VFR), where the pilot navigates by looking at terrain features, rivers, roads buildings etc. Each VFR flight will be unique as flights may have different objectives and different pilots will have their own preferred routings and visual features. This individual preference on routings and destinations results in a random pattern of flights covering the entire area. This makes it impossible to distinguish individual flight profiles or types of flights without filtering the track data.

The figures below provide composite maps of all flights arriving to Runway 08 and Runway 26 at heights of between 1500 and 2500 feet[16] during the years 2017 and 2018. The figure below highlights some of the main flows to indicate the extent of the VFR operations compared to the 'straight line' tracks of aircraft operating under Instrument Flight Rules (IFR) shown in Section 3.4.

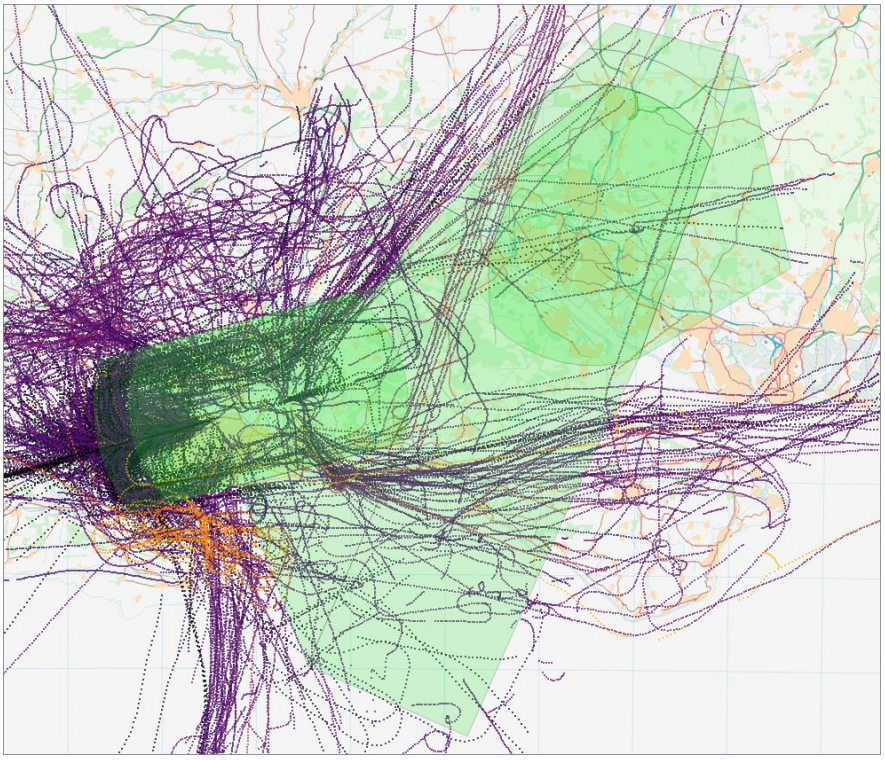

Figure 6: All aircraft movement types arriving to Runway 08 between 1500 and 2500 ft for 2017[17]

[16] 1500-2500' is the height range where the proposed RNP approach procedures will provide guidance.

[17] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

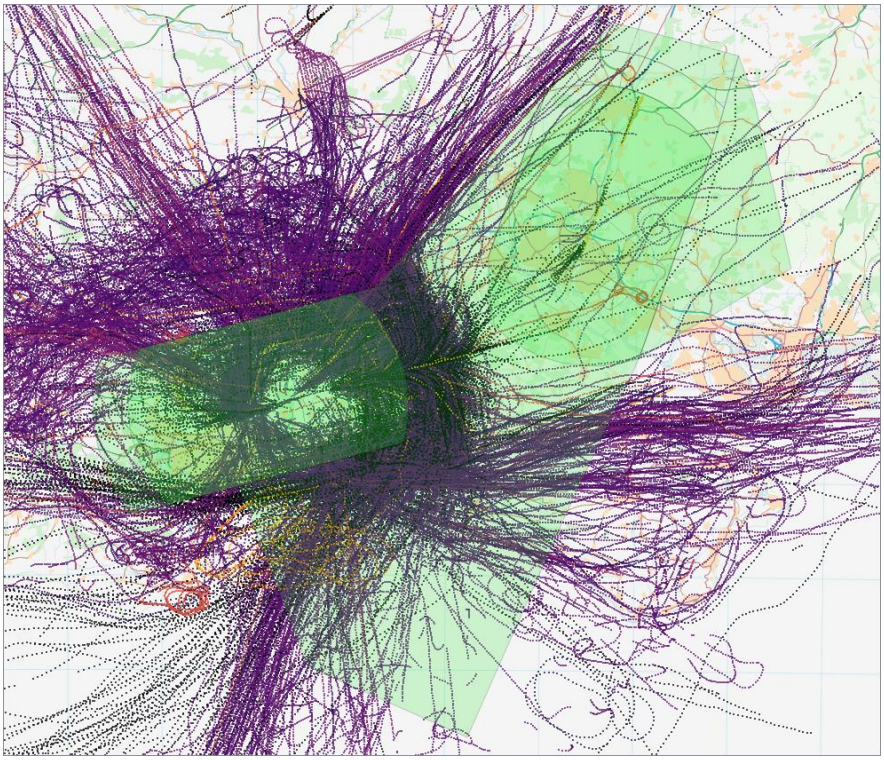

Figure 7: All aircraft movement types arriving to Runway 26 between 1500 and 2500 ft for 2017[18]

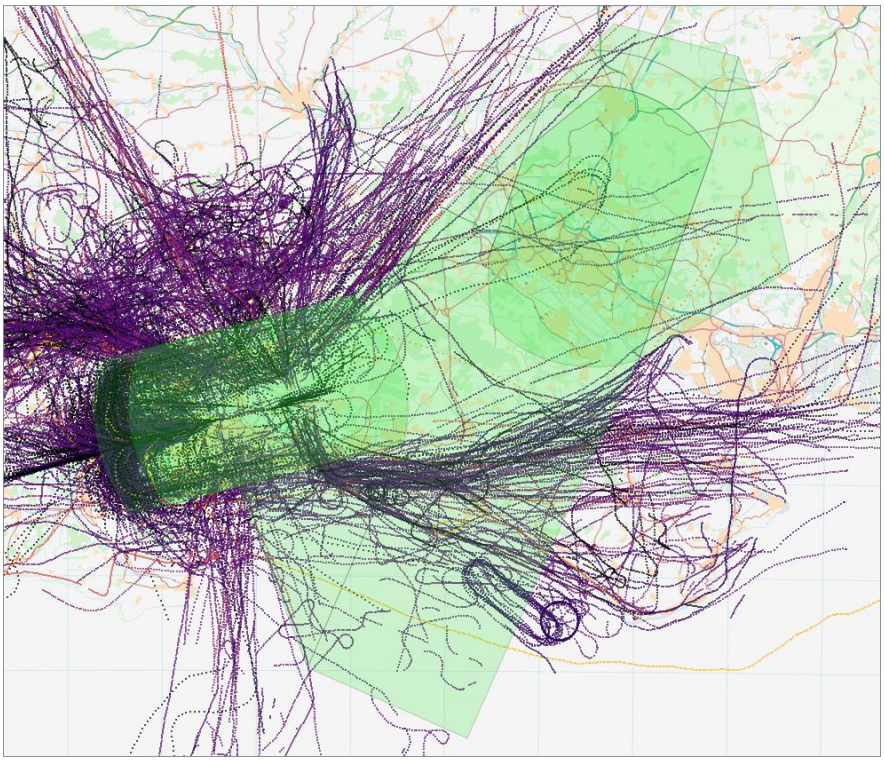

Figure 8: All aircraft movement types arriving to Runway 08 between 1500 and 2500 ft for 2018[19]

[18] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

[19] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

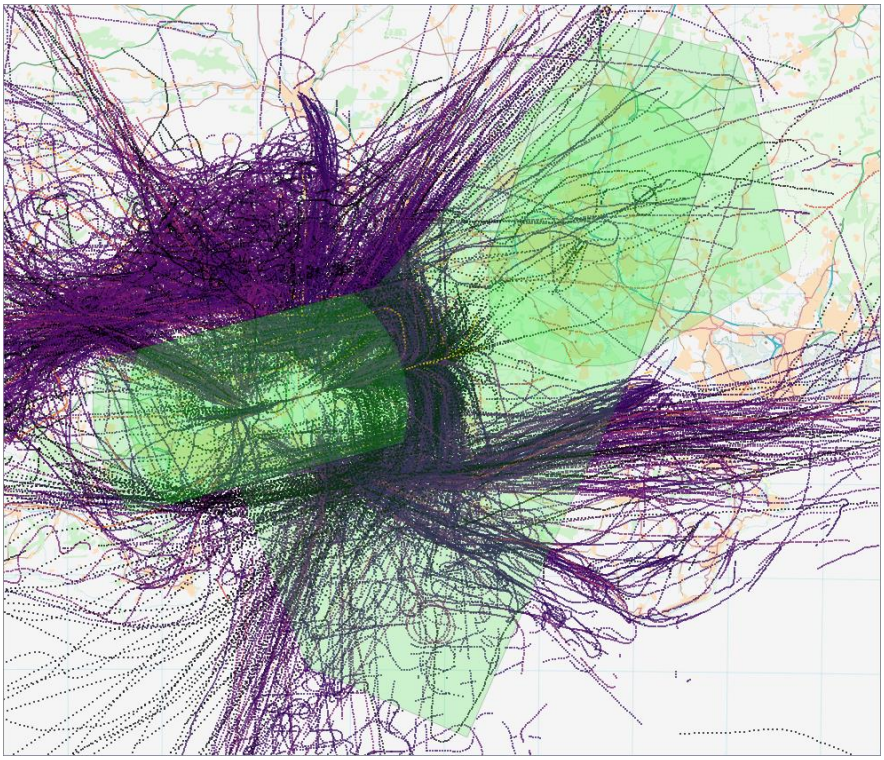

Figure 9: All aircraft movement types arriving to Runway 26 between 1500 and 2500 ft for 2018[20]

3.2 Operational hours

The published hours of operation of Bournemouth Airport are 0630-2130, outside of these hours, aircraft operations are permitted by prior arrangement.

From the data presented below, for the years 2017 and 2018, approximately 4% of the aircraft movements that will use the instrument approaches to Bournemouth Airport will be conducted outside of the airport's published hours.

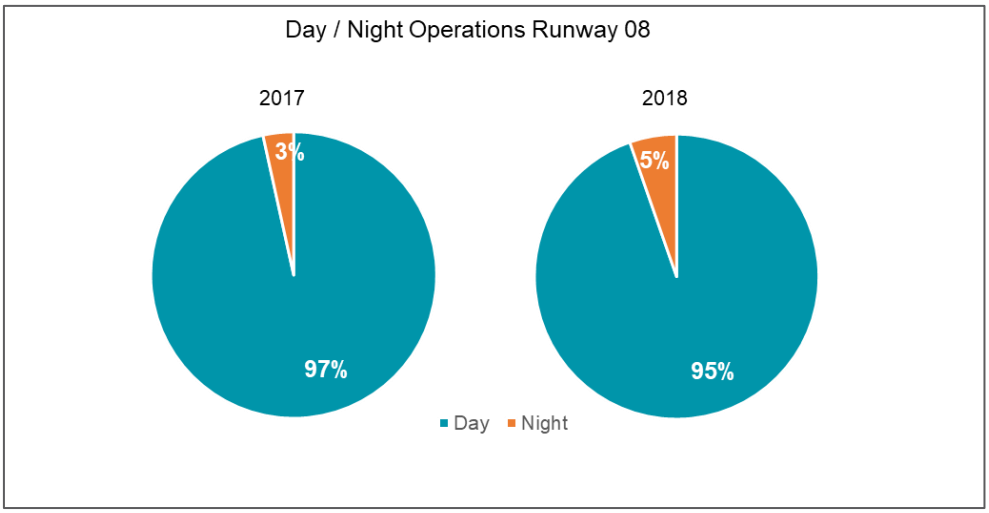

Figure 10: Day / Night Operations Runway 08 for 2017 and 2018[21]

[20] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

[21] Data source: Analysis of Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

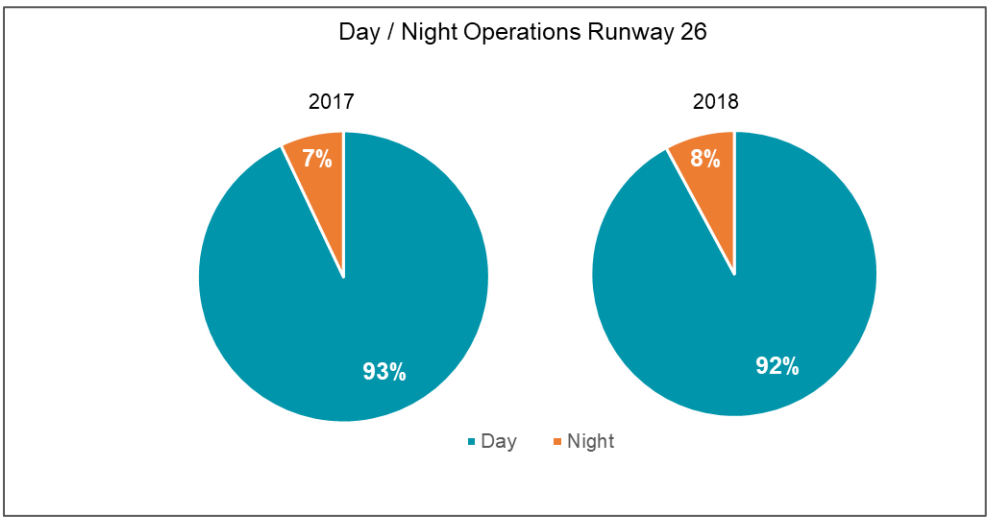

Figure 11: Day / Night Operations Runway 26 for 2017 and 2018[22]

3.3 Runway preference

Aircraft normally land and take off heading 'into the wind', the wind direction at the time of an aircraft approach or departure therefore determines which runway. The prevailing wind direction at Bournemouth is from the south west leading to Runway 26 being in use most frequently.

The figure below shows the proportion of aircraft arrivals to runways 08 and 26 during 2017 and 2018. The increased proportion of Runway 08 arrivals in 2018 results from variability of wind direction during the year, with a prolonged period of easterly winds during May and June 2018.

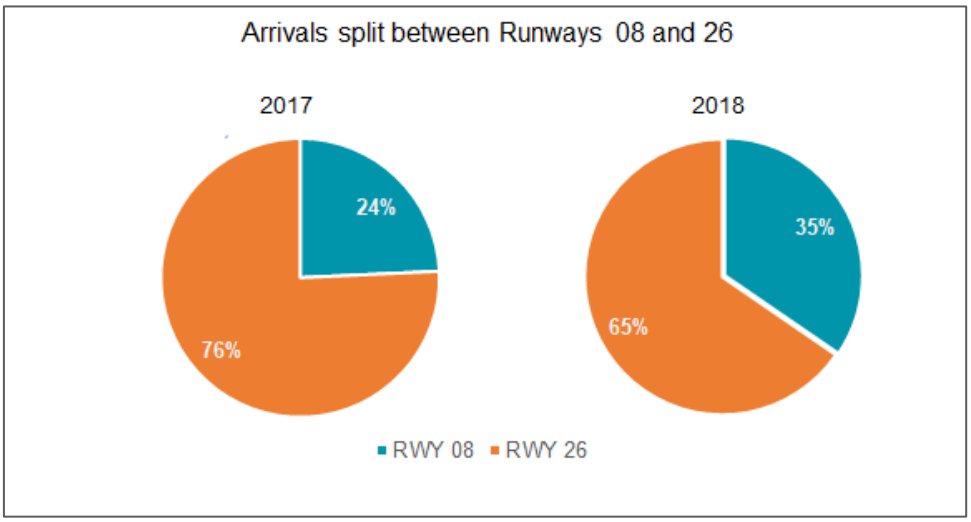

Figure 12: Arrivals split between RWY 08 and 26 for 2017 and 2018[23]

[22] Data source: Analysis of Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

[23] Data source: Analysis of Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

3.4 Current operational procedures

3.4.1 Airspace

The airspace around Bournemouth Airport is complex and due to the proximity of Bournemouth and Southampton airports, the airspace is shared Figure 13.

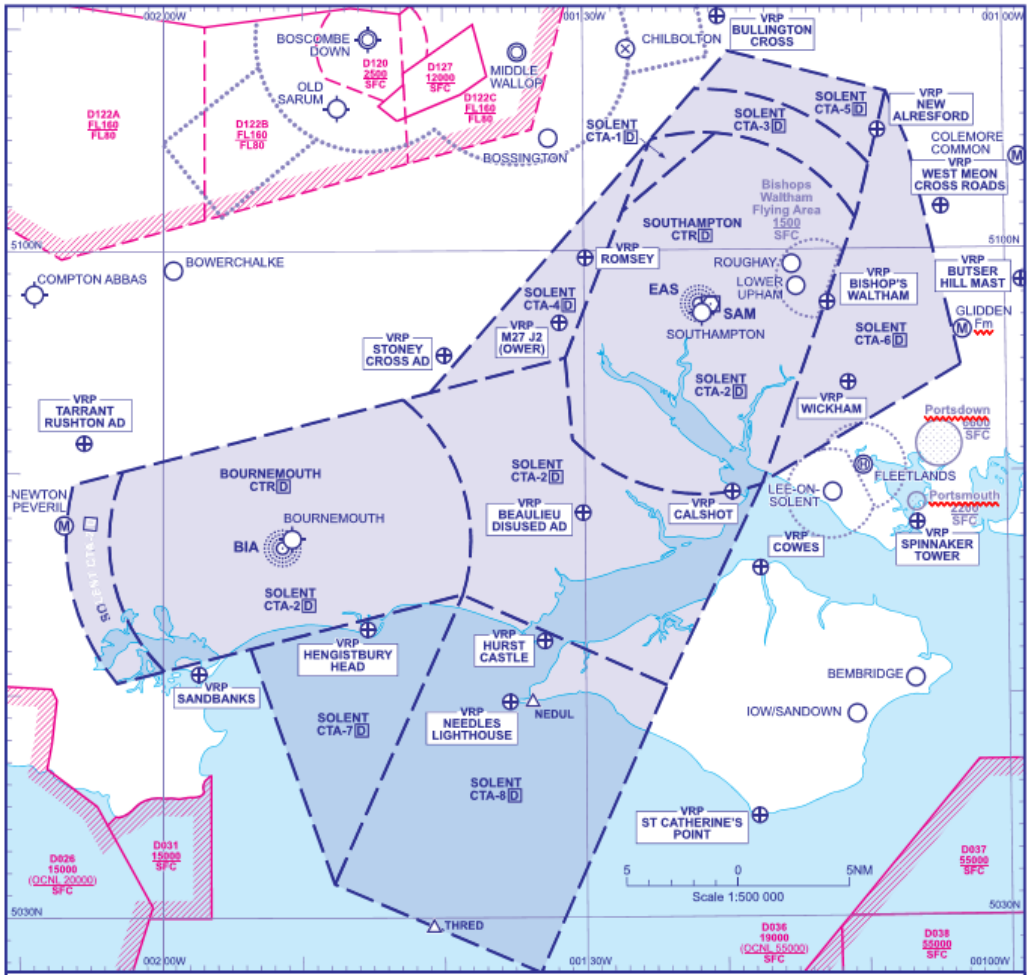

Figure 13: Controlled airspace surrounding Bournemouth Airport[24]

3.4.2 Arrival control

Aircraft arriving at Bournemouth and Southampton airports initially follow identical standard arrival procedures. During this phase of flight aircraft are descended from the high level airways system and their speed reduced and if required enter Holding patterns overhead Southampton Airport or to the west of the Isle of Wight. (At SAM and NEDUL in Figure 13)

Arrival routes to Bournemouth Airport are not defined by fixed 'lines on maps' but are radar vectored[25] by Air Traffic Control at Solent Radar[26] . In a radar vectored operation, individual aircraft do not follow identical paths, but over a period of time, aircraft occupy a broad 'swathe' that focuses into a single track along the extended runway centreline

[24] Source: UK AIP ENR 6-38

[25] Radar Vectors (steering instructions) are provided to aircraft to remain separated from other aircraft within the airspace and to navigate to their destination.

[26] Solent Radar is an Air Traffic Control Unit located at Southampton Airport.

defined by the final approach guidance system at the airport. This is demonstrated in the figures in the following sections.

3.4.3 Approach options

During the operational hours of Bournemouth Radar service, aircraft are radar vectored to the extended runway centrelines at approximately 8 miles to start the ILS or NDB approaches.

Outside of operational hours when Bournemouth Radar service is not available, aircraft will follow the published charted approach procedure which starts overhead the airfield. The aircraft then follows an outbound course before turning to line up with the runway.

The tracks of aircraft following the published initial approach procedure are highlighted in Figure 14.

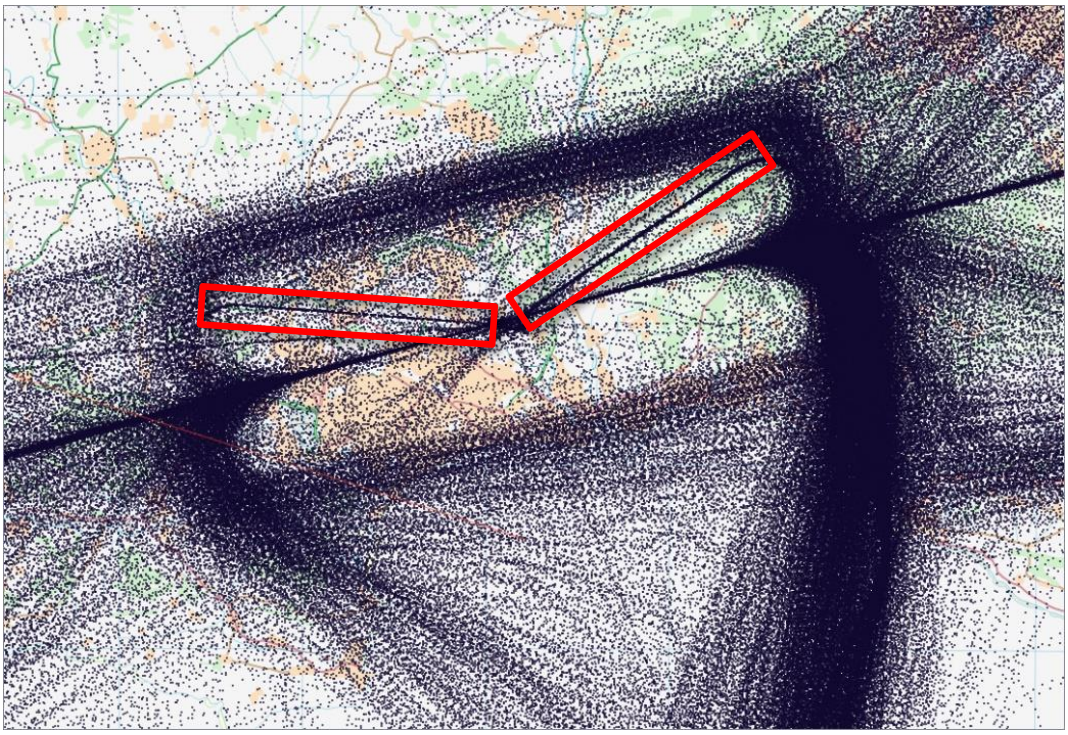

Figure 14: Commercial aircraft arrival tracks for 2017 / 2018[27] indicating those following the published procedure

3.4.3.1 3 Dimensional approach (formerly known as a Precision Approach)

3 Dimensional approach guidance is provided by Instrument Landing Systems that define both horizontal and vertical guidance to each runway assisting pilots to fly a stabilised approach[28].

- **Runway 08:** This has an ILS allowing aircraft to descend to a minimum height of 200 feet above the runway to complete the landing visually.
- **Runway 26:** This has an ILS allowing suitably equipped aircraft to complete an automatic landing.

[27] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

[28] Source US Federal Aviation Administration: A stabilized approach is one in which the pilot establishes and maintains a constant angle glidepath towards a predetermined point on the landing runway.

3.4.3.2 2 Dimensional approach (formerly known as a Non-Precision Approach)

2 Dimensional approach guidance provided by a Non Directional Beacon (NDB) and a Distance Measuring Equipment (DME) that only provides horizontal guidance and the Pilot manages the aircraft's vertical descent based on aircraft altimetry to a minimum height of 432 feet on Runway 08 and 379 feet on Runway 26.

An NDB approach may be adversely affected by wind which could lead to imprecise aircraft track keeping, high cockpit workload and unstable approaches. For these reasons, there is a global programme to replace NDB approaches with Required Navigation Performance (RNP) Approaches based on satellite navigation positioning.

At Bournemouth, the NDB approach is used if the ILS are unavailable, or for training purposes.

3.4.3.3 Missed Approach

The ILS and NDB approach procedures include a missed approach procedure that are required if the first approach is unsuccessful. The missed approach procedure is used to connect the aircraft back to hold, or, as directed by ATC to start a second approach.

The existing missed approach procedures for the ILS and the NDB approaches are based on the NDB located at Bournemouth airport and leads to a hold over the airport as demonstrated in Figure 15.

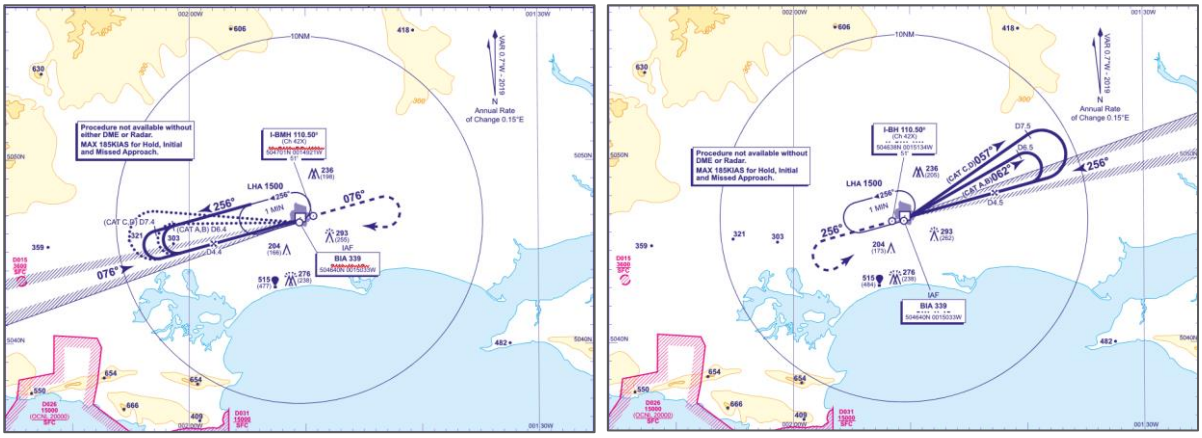

Figure 15: Existing hold and missed approach over/returning to the NDB extracted from the AIP as part of the existing ILS IAPs

3.4.3.4 Surveillance Radar Approach

In addition to the navigation systems described above, Bournemouth Radar controllers are able to offer a Surveillance Radar Approach by providing aircraft headings (radar vectors) using the surveillance monitor to provide an approach to 2 nautical miles from the runway. A Surveillance Radar Approach requires high levels of radio communication and is high workload for both Controller and Pilot.

4 Why Bournemouth Needs This Change

4.1 Drivers for change

New instrument approaches at Bournemouth Airport are necessary to meet the following operational needs:

- The ILS serving RWY 08 was installed second hand in 1984/85 and the equipment and maintenance support are beyond the end of the system's technical and economic life. An unrecoverable failure of the ILS on RWY 08 will have serious operational consequences by denying easterly 3-Dimensional approaches. A new instrument approach procedure is required to allow Bournemouth Airport to continue to provide 3-Dimensional approaches to Runway 08 and to avoid replacement of the ILS.
- To improve the resilience of instrument approaches to Runway 26 at Bournemouth International Airport by providing an alternate means of conducting a 3 Dimensional approach if the ILS is unavailable as required by the EU PBN Implementing Rule (IR) 2018/1048.

These needs are detailed in the formal 'Statement of Need' submitted to CAA to initiate this Airspace Change Proposal. Further detail on the need for change is contained at Annex H.

4.2 Development of solutions

The options to meet the need for continued provision of a 3D approach capability to Runway 08 have been developed in close co-operation with the Bournemouth Airport Consultative Committee, Airport Stakeholders (airlines, air training organisations) and selected members of the National Air Traffic Management Advisory Committee (NATMAC) as required by the CAP 1616 Airspace Change process.

4.2.1 Design Principles

In the initial stage of the Design Process, Bournemouth Airport identified ten 'Design Principles' addressing Environmental, Regulatory, Operational and Economic issues, against which all viable options would be assessed. Bournemouth Airport Consultative Committee, Airport Stakeholders and selected members of NATMAC were engaged to review the proposed design principles and suggest if any additional Design Principles were necessary. These were subsequently approved by the CAA.

The final Design Principles are:

- Environmental
  - The new procedures should not increase the number of people overflown by aircraft participating in the approach;
  - The new procedures should not increase the noise footprint of the existing airport operation, for similar aircraft types and traffic levels, as detailed in the LAeq 16 Hr map in the current Noise Action Plan[29];
  - Implementation should minimise disturbance to the Moors River System SSSI.
- Regulatory

[29] https://www.bournemouthairport.com/content/uploads/Attachment-to-Minutes-Noise-Action-Plan-Review-2018.pdf

- The new approaches shall be standardised by ICAO and acceptable to EASA and CAA and the implementation shall be in compliance with all applicable legislation and regulations;
- The design shall be fully compliant with the design criteria stated in ICAO Doc 8168 (PANS OPS) and be flyable by all aircraft types in approach Speed Categories A through D;

- Operational
  - The approach procedures shall be of a type for which the majority of Bournemouth aircraft operators are equipped and authorised to fly;
  - The designs shall seamlessly integrate with extant instrument approach procedures at Bournemouth International Airport;
  - The procedures should address the needs of flight training operators at Bournemouth;
  - The design shall support continued use of existing radar vectored arrival procedures provided by Solent Radar.
- Economic
  - The new procedures shall be implemented in a cost-effective manner.

4.2.2 Options Identified

Following successful completion of Gateway 1B, a number of options were identified in a workshop with subject matter experts and procedure designers that met the statement of need and design principles agreed. The options identified to meet the Statement of Need were:

- **Option 1:** Do Nothing – noting that Do Nothing would not be a continuation of 'business as usual' as the ILS serving Runway 08 is obsolete and cannot be sustained.
- **Option 2:** Replace the ILS serving Runway 08.
- **Option 3:** Implement Required Navigation Performance (RNP) approach procedures (further described in Section 4.3). This option included a number of sub-options with variations on how the approach would be connected to. Each sub-option was also assessed against its relative strengths to meet the statement of need and design principles.

4.2.3 Options Evaluation

Each option was evaluated against the agreed Design Principles, with the results summarised in the following table. This formed part of the Design Principle Evaluation (Gateway 2A) from which a comprehensive list of options was taken forward.

Design Principle	Do Nothing	Replace ILS	RNP APCH
The new procedures should not increase the number of people overflown by aircraft participating in the approach.	NOK	OK	OK
The new procedures should not increase the noise footprint of the existing airport operation, for similar aircraft types and traffic levels, as detailed in the LAeq 16 Hr map in the current Noise Action Plan.	NOK	OK	OK
Implementation should minimise disturbance to the Moors River System SSSI	OK	NOK	OK
The new approaches shall be standardised by ICAO and acceptable to EASA and CAA and the implementation shall be in compliance with all applicable legislation and regulations,	NOK	NOK	OK
The design shall be fully compliant with the design criteria stated in ICAO Doc 8168 (PANS OPS) and be flyable by all aircraft types in approach Speed Categories A through D.	OK	OK	OK
The approach procedures shall be of a type for which the majority of Bournemouth aircraft operators are equipped and authorised to fly.	OK	OK	OK
The designs shall seamlessly integrate with extant instrument approach procedures at Bournemouth International Airport	OK	OK	OK
The procedures should address the needs of flight training operators at Bournemouth.	Partial	Partial	OK
The design shall support continued use of existing radar vectored arrival procedures provided by Solent Radar	OK	OK	OK
The new procedures shall be implemented in a cost-effective manner.	OK	NOK	OK

Figure 16: Evaluation of options against the design principles

4.2.4 Preferred Option 3: RNP Approach for Runways 08 and 26

When evaluated against the Design Principles, only Option 3 satisfied all the Design Principles. Bournemouth Airport Consultative Committee, Airport Stakeholders and selected members of NATMAC agreed with Bournemouth Airport's proposal that Options 1 (Do Nothing) and 2 (Replace ILS) should be discounted as they did not meet the statement of need and Design Principles. They therefore would not be subject to further consideration. Option 3 (its sub-options) to implement RNP approach procedures, should be considered in this Airspace Consultation.

4.3 What is an RNP Approach?

An RNP approach uses accurate position information derived from navigation satellites to allow an aircraft to fly a pre-determined Instrument Approach Procedure that is defined by a sequence of Waypoints, in much the same manner as a Sat-Nav in a car, or mobile phone 'Navigation App'.

RNP approaches are relatively new operations that have been implemented in the UK over the past 10 years. Some older aircraft are not equipped to fly all types of RNP approach, although in the coming years, as new aircraft are introduced, RNP approach capability will increase and most aircraft operating into Bournemouth Airport will have this capability.

RNP Instrument Approach Procedures are designed to globally agreed criteria developed by ICAO. Aircraft equipment is standardised to ensure all aircraft navigate to common levels of performance. An RNP approach is constructed from straight line segments that are defined by a series of geographic Latitude and Longitude co-ordinates that are known as 'Waypoints', as shown in a generic RNP Approach illustrated in Figure 17.

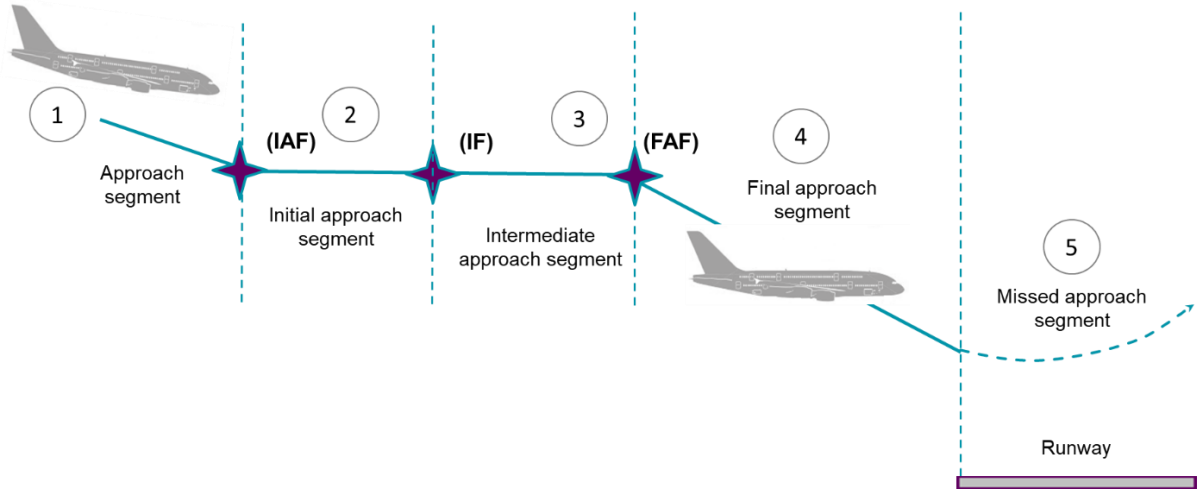

Figure 17: Illustration of a generic RNP Approach

4.4 Possible Bournemouth RNP Approach implementations

During the conceptual design of the RNP approach, four sub-options relating to the Initial Approach segments were considered:

- Sub-Option 3a Full T Bar with 3 Initial Approach Fixes
- Sub-Option 3b Limited T Bar with 1 initial Approach Fix
- Sub-Option 3c Straight in Approach with Combined Initial and Intermediate Fixes
- Sub-Option 3d Limited T Bar with 2 Initial Approach Fixes

During the Full Options Appraisal undertaken by Bournemouth Airport in accordance with CAA CAP 1616 Stage 3, each of these sub-options were evaluated, assessing the impacts on noise, fuel burn, emissions and impacts on the aviation community.

The results of these further evaluations resulted in the elimination of sub-options 3a and 3b due to extension of the options to uncontrolled airspace west of the Bournemouth CTR and Solent CTA, the proximity to Southampton CTR and difficulties of mixing Commercial Air Transport and training operations that would require potential changes to operations.

The remaining sub-options 3c and 3d are presented in this consultation document and are described further in Section 5.

5 Proposed Sub-Options for Consultation

5.1 Overview

This section provides the context of the proposed changes relating to sub-options 3c and 3d (as outlined in Section 4.1). The potential impacts of each sub-option are subsequently described in Section 6.

The location of the Intermediate and Final Approach Fixes in both sub-options are common and define approach paths that are identical to the paths defined by the existing Instrument Landing systems. Therefore, an observer on the ground, would not be expected to be able detect the difference in aircraft tracks along the final approach and intermediate approach segments for either RNP sub-option compared to the existing ILS approach.

Both of the sub-options are contained horizontally and vertically within airspace[30] under the control of Bournemouth Airport and there is no intention to change aircraft routings to and from Bournemouth airport.

The changes being proposed:

- Do not result in changes of aircraft flows to and from Bournemouth Airport;
- Do not result in an increase in movements over what is already within the agreed Bournemouth masterplan;
- Only impact aircraft arrivals;
- Do not result in aircraft arriving at lower altitudes;
- Do not make any changes to visual training flights that are the vast majority of operations at Bournemouth Airport.

5.2 Sub-Option 3c: Straight in Approach with Combined Initial and Intermediate Fixes

Under this sub-option, the RNP approach is flown as a direct arrival approach. During normal operational hours, Air Traffic Control provide the guidance to the aircraft (radar vectored) to position the aircraft on a straight in approach, in line with the runway, so that the aircraft can complete the final approach. The implementation of sub-option 3c waypoints defining the approach is illustrated in Figure 18 and Figure 19 overlaid with the traffic patterns for typical passenger airline aircraft ILS arrivals in 2017 and 2018.

[30] The Bournemouth Airspace is formally the Bournemouth Control Zone (or Controlled Traffic Region CTR) and Bournemouth Control Area (CTA).

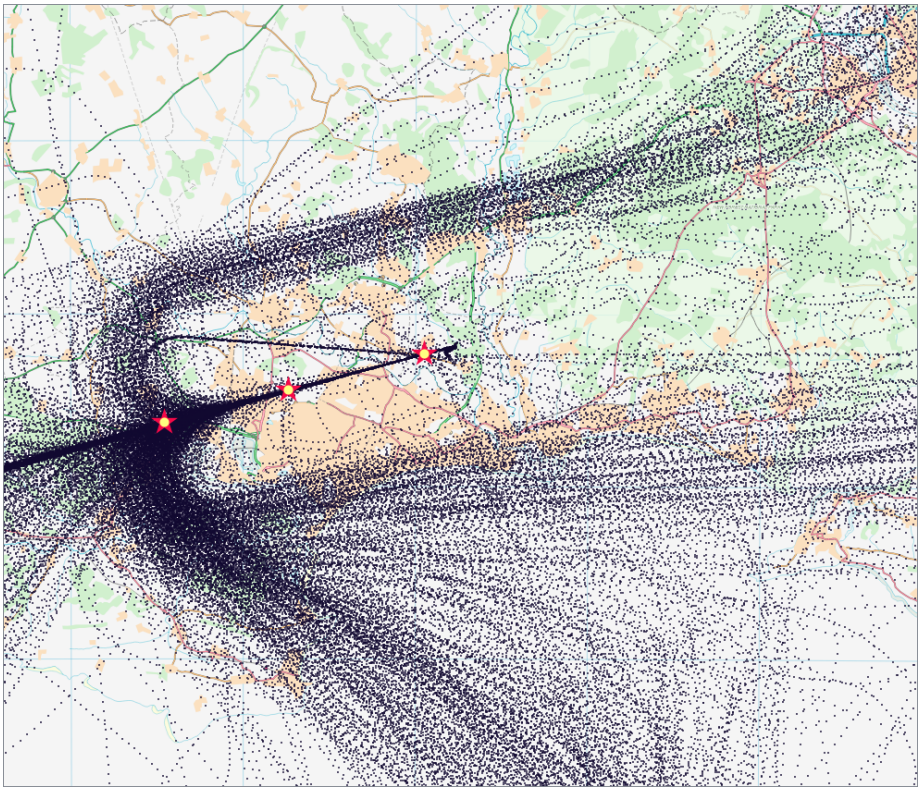

Figure 18: Sub-option 3c for Runway 08[31] aligned with radar tracks

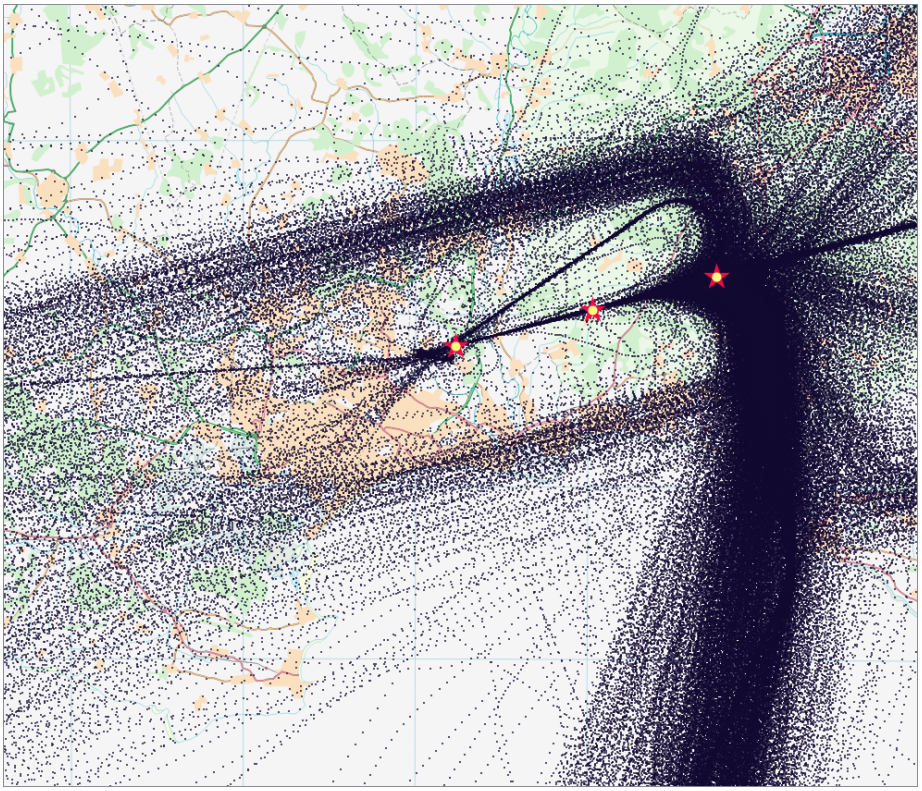

Figure 19: Sub-option 3c for Runway 26[32] aligned with radar tracks

[31] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

[32] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

The provision of an aircraft heading by the Radar Controller, together with the accuracy that the heading can be flown, will result in variability of the point the aircraft intercepts the runway centre line leading to dispersion of tracks around the Initial Approach Fix, as is the case today.

With the RNP approach, the Initial/Intermediate Approach fix waypoint defines the point at which aircraft will turn onto the runway centreline. The increased level of automation on the aircraft, may 'smooth' the turn to join the runway centreline close to the intermediate fix leading to lower levels of dispersion in the vicinity of the Initial Approach Fix than a comparable ILS approach.

For Runway 26, where it is expected that the ILS will remain the approach of choice for the majority of aircraft and the concentration of RNP tracks at the Initial Approach Fix will not be noticeable. This is the procedure today and so this sub-option results in the same distribution of aircraft undertaking commercial air transport operations as today. This is the primary advantage of this approach.

During out of hours operations when radar is not available, aircraft would join the procedure by self-positioning whilst maintaining altitude above the minimum levels as is done today for the existing ILS. It is expected that as part of this procedure, some aircraft may continue to utilise the NDB, overflying the airfield to then intercept the approach. It would be expected that eventually all aircraft would route directly to the combined initial and intermediate approach fix under this sub-option.

For training flights, this procedure provides lower benefit since the approach consists only of an intermediate and final approach segment. Without the initial approach segment, this configuration limits the training options that are available to the training organisations resident at Bournemouth, and those that utilise the published approach procedures from other airfields.

5.3 Sub-Option 3d: Limited T Bar with 2 Initial Approach Fixes

Under this sub-option, the RNP approach would be provided with initial approach segments that would enable aircraft to join the approach in a similar position to that which they would do if being vectored by ATC. The implementation of sub-option 3d waypoints defining the approach is illustrated in Figure 18 and Figure 19 overlaid with traffic patterns for all commercial aircraft arrivals in 2017 and 2018.

Highlighted in red on each figure is an illustration of the anticipated alteration in traffic patterns which could be expected to occur for each runway if the implemented solution under this sub-option was selected. The net effect would be a general movement of aircraft to the west as a result of the aircraft navigation systems anticipating turns more linked to the IAF. The illustration focuses on the southern join as this is likely to be the most impacted. Joins from the North Runway 08 and Runway 26 would be expected to lead to some concentration of tracks in the centre of the existing bands whilst direct arrivals as seen from the West to Runway 08 and East to Runway 26 would be unaltered due to their existing concentration on the central IAF.

Highlighted in yellow is the illustration of the northern shift to the IFR training joins from overhead the airport when the RNP approach is flown.

For all hours of operation, the change to Runway 08 is expected to be realised due to the eventual removal of the existing ILS – even with ATC vectoring – due to aircraft turn anticipation.

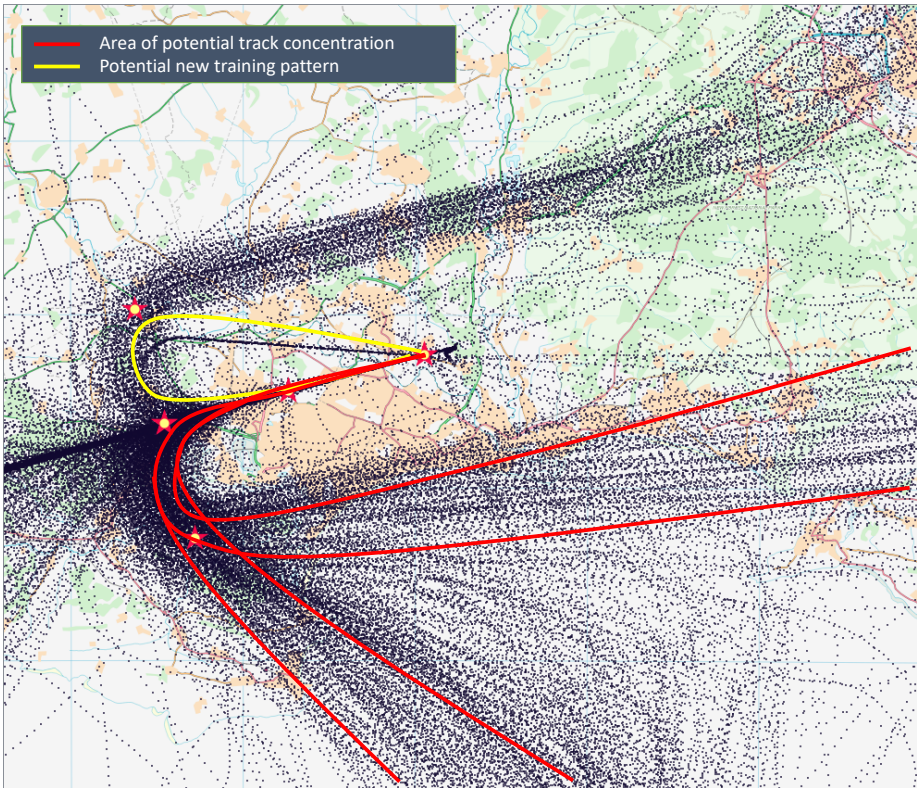

Figure 20: Sub-option 3d for Runway 08[33] aligned with radar tracks

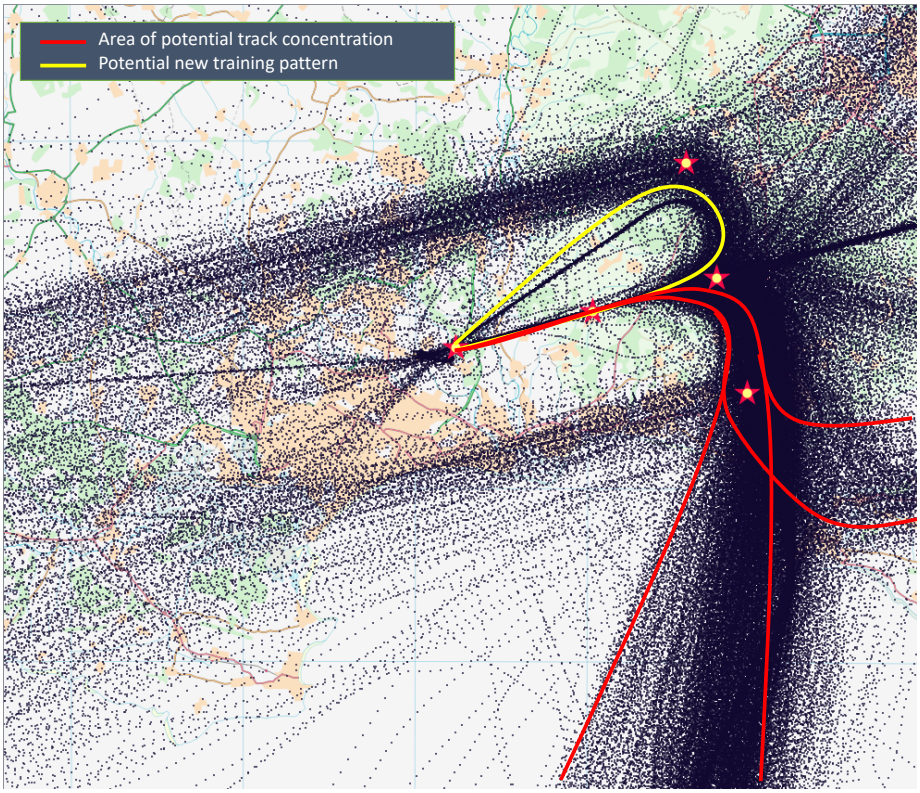

Figure 21: Sub-option 3d for Runway 26[34] aligned with radar tracks

[33] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

[34] Data source: Bournemouth WebTrak arrivals data sourced from radar for 2017 and 2018.

For Runway 26, during normal operational hours, standard ATC vectoring control will continue to apply, and the ILS approach will continue to be the main approach solution for all IFR operations. The illustrated tightening of the flight distribution would be expected if the new procedure were the default for all aircraft. This is not the intention.

The primary benefit of this sub-option is that training operators will be able, on ATC clearance, to fly the whole procedure from the initial approach fixes as is required during training. It provides in the case of Runway 26, an additional approach type for training operations. To replicate existing training which occurs today with joins from the North, only the northern IAFs would be approved for instrument flight training for aircraft based at Bournemouth.

Out of hours, this sub-option provides a full approach procedure which allows aircraft to join from the north or the south at optimal heights for noise dispersion and to increase flight efficiency (reduced fuel burn).

Due to the increased flexibility of this sub-option to support all of Bournemouth's aviation stakeholders' needs, this is the sub-option 3d is the preferred solution.

6 Impact of Proposed Sub-Options

6.1 Overview

This section provides a description of what the impact of the proposed change is from the perspectives of the different stakeholders involved. The Aerodrome carefully assessed the proposed change and its positive and negative impact to all stakeholders and does not believe that there will be any significant positive or negative impact as a result of the proposal.

6.2 Impact on local Communities

The proposed sub-options detailed within this consultation document will potentially define aircraft tracks over the areas of responsibility of the Parish Councils that are not represented on the Airport Consultative Committee. Although there are no prescribed aircraft tracks, these Parishes are currently overflown by aircraft being radar vectored into Bournemouth Airport. The proposed RNP approaches have been developed to replicate as closely as possible existing aircraft tracks flying the current ILS and NDB procedures.

In assessing the impact of the proposed RNP approaches, Stakeholders should consider the following operational points:

- During daytime operations (0630-2130) that account for more than 95% of aircraft arrivals to Runways 08 and 26 will be radar vectored by Solent and Bournemouth Radar Controllers, thereby maintaining the current arrival approach tracks.
- During night-time operations (2130-0630) that account for less than 5% of aircraft arrivals to Runways 08 and 26, aircraft will self-position to one of the defined Initial Approach Fixes following a ground track comparable to an aircraft being radar vectored onto the ILS.
- When an RNP approach to Runway 08 is implemented, the existing obsolete ILS serving Runway 08 will be withdrawn from service. It is therefore anticipated that the RNP approach will become the preferred instrument approach to Runway 08 as it will provide 3-Dimensional guidance, offering the lowest pilot and controller workloads and also the lowest runway approach minima.
- When an RNP approach is implemented to Runway 26, it is anticipated that the instrument Landing System will remain the preferred instrument approach for Air Transport aircraft to Runway 26 as all aircraft have ILS capability and it offers the lowest operating minima. Commercial Air Transport aircraft are most likely to use the RNP approach during night-time operations, except in Low Visibility conditions, as the Initial Approach Fixes assist self-positioning through the aircraft Flight Management system to commence an approach.

Current operations result in approximately 11 Commercial Air Transport flights per day. If the airport were to return to 2008 traffic and passenger levels, this would eventually lead to approximately 33 Commercial Air Transport flights per day. This growth, whilst not enabled by the proposed implementation, would mean concentration of tracks over what is seen today. The distribution would be roughly split 23 arrivals per day to Runway 26 and 10 per day to Runway 08. Aircraft heights would be unchanged compared to today but could be anticipated to be higher for aircraft flying sub-Option 3d.

The images below indicate the Parish councils overflown by aircraft operating into runways 08 and 26 Bournemouth Airport.

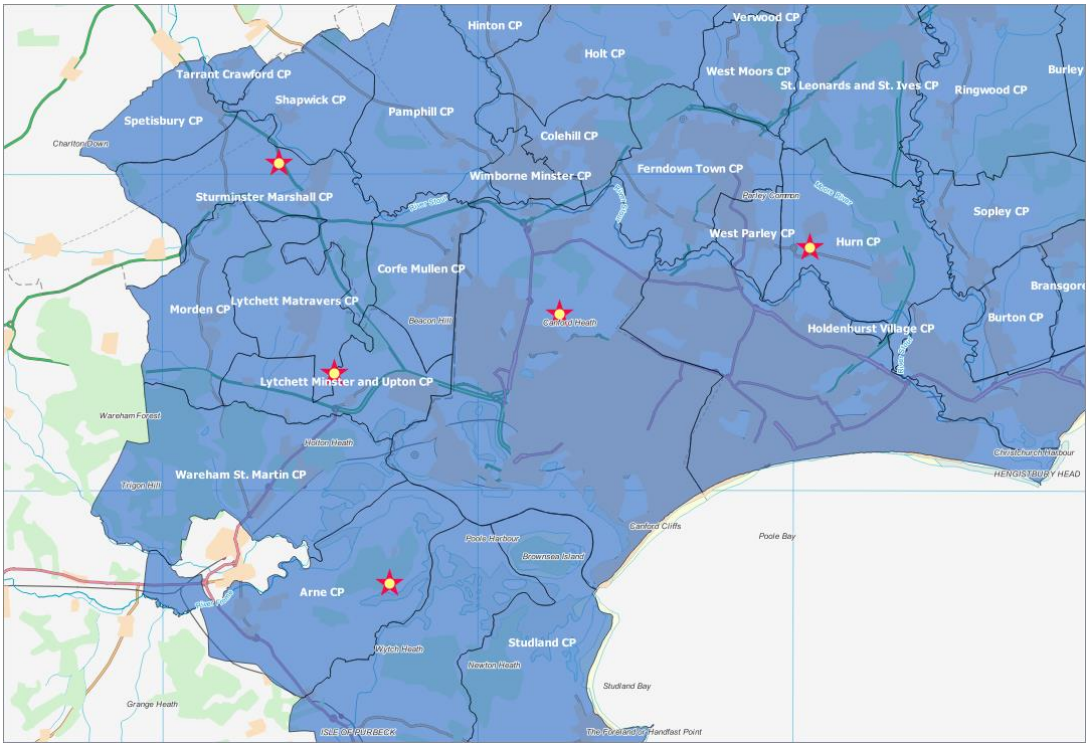

Figure 22: Parish Boundaries under the RNP Approach to Runway 08[35]

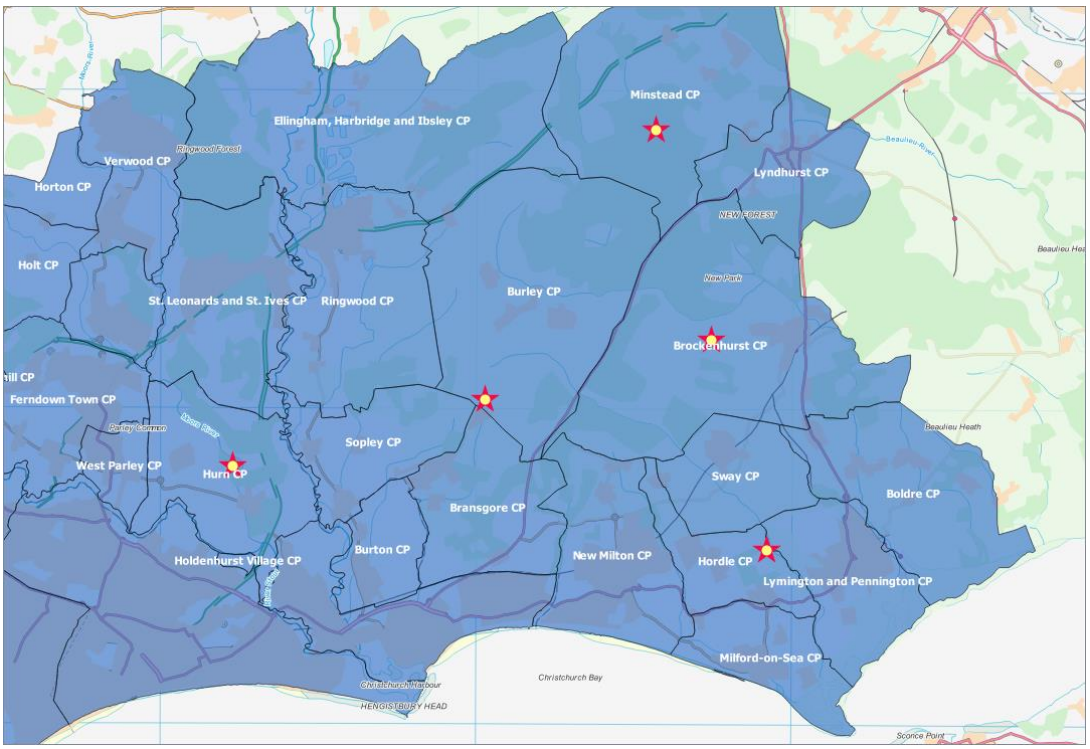

Figure 23: Parish Boundaries under the RNP Approach to Runway 26[36]

An assessment has also been undertaken of the noise impacts on the local community updated to the most recent data from 2018. The following charts overlay these noise

[35] Parish boundaries extracted from Ordnance Survey

[36] Parish boundaries extracted from Ordnance Survey

contours for the day and night periods onto the Parish Boundaries considered in area of impact. These show that there are no measurable noise impacts in the areas in which a change may be noted.

More detailed charts illustrating the noise levels are shown in Annex G including for the scenario in 10-years' time assuming a return to 2008 traffic levels.

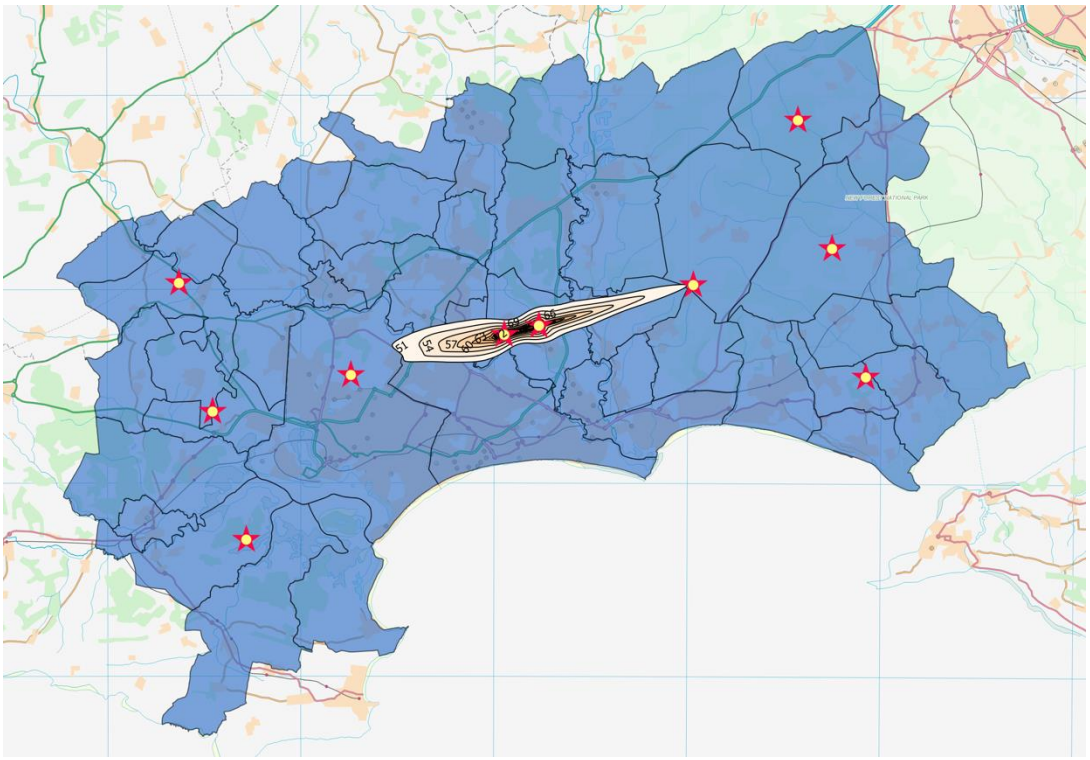

Figure 24: Day time noise levels (LAeq, 16hr) as calculated fitted to the traffic area

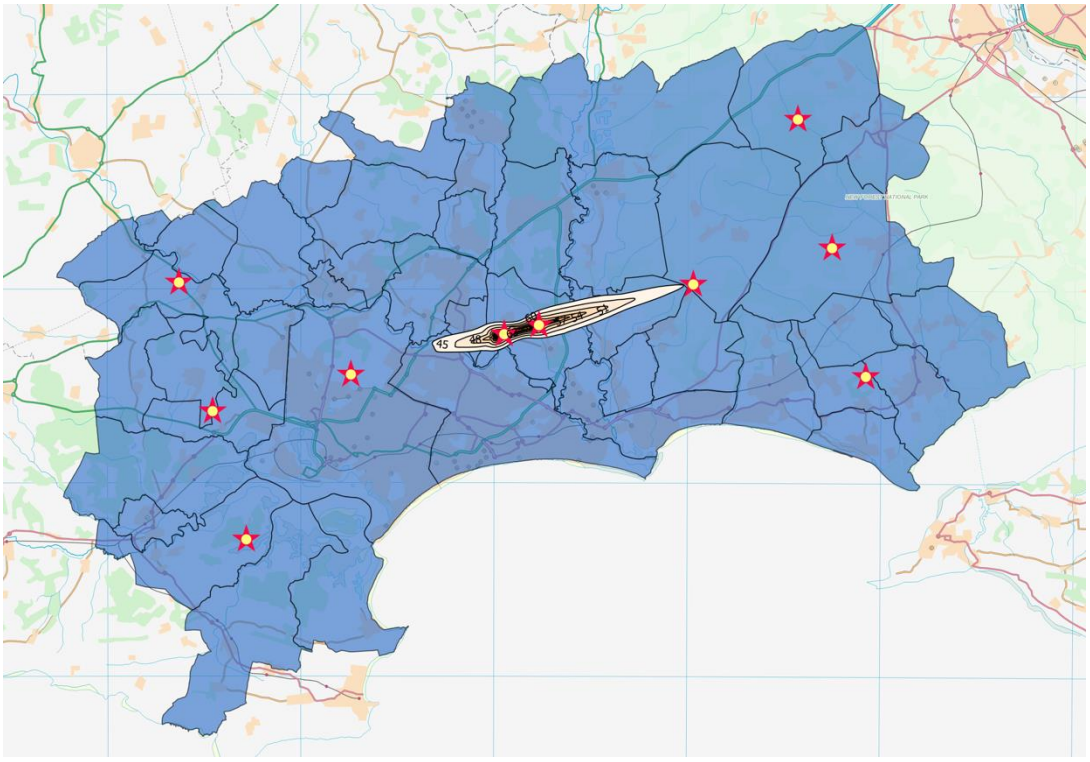

Figure 25: Night time noise levels (LAeq, 8hr) as calculated fitted to the traffic area

6.2.1 How does this proposal affect me?

This sub-section provides a qualitative assessment of the noise and number of aircraft which may have an impact to areas overflown by the proposed RNP Approach Procedures. Figure 26 highlights the proposed RNP Approach Procedures to Runway 26 and 08 and the shaded areas show the underlying areas that may be impacted. This section presents a qualitative summary of how the local communities in these areas will be impacted in terms of noise and number of aircraft. The qualitative indicators used are defined in Table 2.

Indicator	Impact
	We estimate a net reduction of noise or aircraft numbers.
	We estimate a net increase of noise or aircraft numbers.
	We estimate no change of noise or aircraft numbers.

Table 2: Terms, definitions and key used in qualitative assessment

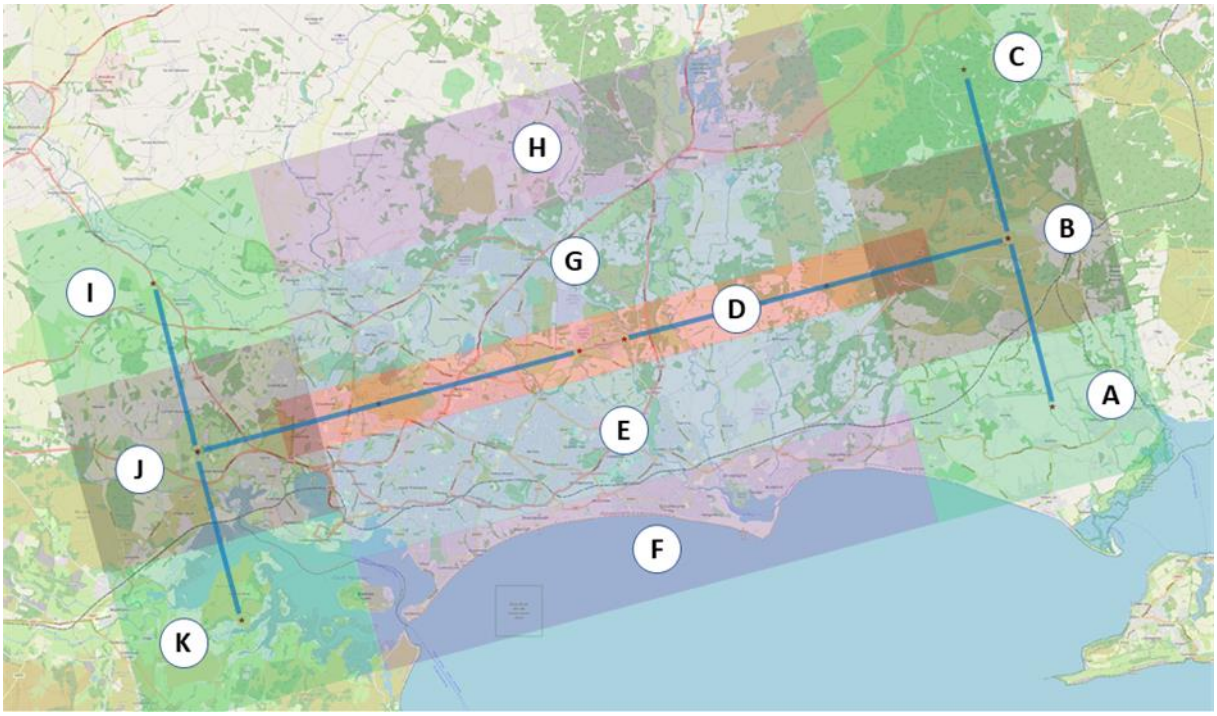

Figure 26: Map of areas impacted by RNP Approach Procedures

Sub-Option 3c impacted areas

Section 5.2 notes that the RNP approach will be flown as a direct arrival approach. During normal operational hours, standard ATC vectoring will continue to apply. During out of hours operation aircraft would join the procedure by self-positioning whilst maintaining altitude above the minimum levels as is done today for the existing ILS.

Aircraft will start the RNP Approach Procedure by joining at B or J and terminate within the D area at the aerodrome. Area E will be used by aircraft joining the aerodrome during the night. Area G will be used by aircraft joining the aerodrome during the night and also for the RNAV training flights during the day (shift to the north compared to current procedure

– see Figure 20 and Figure 21). Areas F and H will be used by some flights during the night.

Sub-Option 3d (preferred solution) impacted areas

As it is stated in section 5.3, this sub-option would be provided with initial approach segments. During normal operational hours, standard ATC vectoring will continue to apply. During out of hours operation, aircraft will join the procedure from the north and south via initial approach segments.

For the sub-option 3d, for Runway 26 aircraft will start the RNP Approach Procedure by joining from A or C and funnel via B into D and for Runway 08 by joining I or K and funnelling via J into D.

All approaches terminate within area D at the aerodrome. Area E will be used by aircraft joining the aerodrome during the night. Area G will be used by aircraft joining the aerodrome during the night and also for the RNAV training flights during the day (shift to the north opposite to current procedure). Areas F and H will be used by some flights during the night.

Summary of local impact assessment

The table below provides a high level summary of the expected impacts of Options 3c and 3d in the areas identified in Figure 26. A more comprehensive analysis is provided for reference in Annex I.

Area	Parishes	Category	Impact Option 3c	Impact Option 3d (preference)	R/W	Rationale (Change to current operations)
A	Sway CP, Hordle CP, Lymington & Pennington CP, Boldre CP.	Noise	⇨	⇨	26	Concentration of RNP tracks towards the Intermediate Fix. Majority of aircraft will continue to fly the ILS approach to Runway 26, leading to no discernible change in the noise distribution in this area
		Number of aircraft	⇨	⇨	26	No significant change to aircraft numbers flying through this area.
B	Brockenhurst CP	Noise	⇨	⇨	26	The defined turn will increase concentration of RNP approach traffic at the Intermediate Fix. Majority of aircraft will continue to fly the ILS approach to Runway 26, leading to no discernible change in the noise distribution in this area.
		Number of aircraft	⇨	⇨	26	No significant change to aircraft numbers flying through this area.
C	Minstead CP, Lyndhurst CP, Brockenhurst CP, Burley CP.	Noise	⇨	⇨	26	Concentration of RNP tracks towards the Intermediate Fix as aircraft transition from the vector heading to the RNP guidance. Majority of aircraft will continue to fly the ILS approach to Runway 26, leading to no discernible change in the noise distribution in this area
		Number of aircraft	⇨	⇨	26	No significant change to aircraft numbers flying through this area, other than a small % of day time RNP training flights.

Area	Parishes	Category	Impact Option 3c	Impact Option 3d (preference)	R/W	Rationale (Change to current operations)
D	Brockenhurst, Burley CP, Sopley CP, Hurn CP, West Parley CP, Bournemouth, Corfe Mullen CP, Lytchett Minster & Upton CP.	Noise			08 26	Aircraft follow tracks that are aligned with the runway and are identical to the current ILS* operation. No change to aircraft noise or distribution.
		Number of aircraft			08 26	No expected change to aircraft numbers flying through this area
E	Brockenhurst, Sopley CP, Bransgore CP, New Milton CP, Burton CP, Holdenhurst Village CP, Bournemouth,	Noise			08 26	**Option 3c** During night time, aircraft continue to transit this area towards the NDB to start the ILS or NDB Initial approach. **Option 3d** RNP aircraft will start the RNP procedure at the Initial Approach Fixes. This will reduce night time noise with lower numbers of larger aircraft flying towards the NDB.
		Number of aircraft			08 26	Fewer aircraft at night with Option 3d.
F	Bournemouth, Christchurch,	Noise			08 26	**Option 3c** During night time, aircraft transit this area towards the NDB to start the ILS or NDB Initial approach. **Option 3d** Fewer aircraft transits over Bournemouth and Christchurch as aircraft will route offshore along the coastline towards the Initial Approach Fixes.
		Number of aircraft			08 26	Fewer aircraft at night with Option 3d.
G	Burley CP, Ringwood CP, St Leonards & St Ives CP, Ferndown Town CP, Wimborne Minster CP, Colehill CP, Corfe Mullen CP, Sturminster Marshall CP	Noise			08 26	**Option 3c and 3d** Daytime RNP approach training activity will increase in this area with aircraft flying similar headings to the current ILS and NDB Initial approaches to commence RNP approaches to Runway 08 or 26. RNP training operations will be smaller aircraft having a minimal impact on noise. **Option 3d** reduces night time noise with fewer large aircraft.
		Number of aircraft			08 26	**Options 3c and 3d** A small % increase is expected from aircraft engaged in daytime RNP training. **Option 3d** will offset training traffic increase with fewer night time large aircraft.
H	Pamphill CP, Hinton CP, Holt CP, Colehill CP West Moors CP, Verwood CP, St Leonards & St Ives CP, Ringwood CP, Burley CP, Billingham,	Noise			08 26	During the hours of Bournemouth Radar, ATC will provide 'vectors' in this area. Night time RNP aircraft will fly direct to the northern Initial Approach Fixes.
		Number of aircraft			08 26	No expected change to aircraft numbers flying through this area.

Area	Parishes	Category	Impact Option 3c	Impact Option 3d (preference)	R/W	Rationale (Change to current operations)
	Hartrige & Ibsley CP.					
I	Spetisbury CP, Tarrant Crawford CP, Shapwick CP, Sturminster Marshall CP, Morden CP, Lytchett Matravers CP	Noise			08	The increased concentration of RNP tracks will increase noise close to the Initial approach segment, although noise will reduce further from the defined track
		Number of aircraft			08	No significant change to aircraft numbers flying through this area, other than a small % of day time RNP training flights.
J	Morden CP, Lytchett Matravers CP, Lytchett Matravers & Upton CP, Wareham St Martin CP.	Noise			08	The defined turn will increase the concentration of aircraft with an increase in noise close to the Intermediate Fix, although will reduce noise further from the defined tracks.
		Number of aircraft			08	No expected change to aircraft numbers
K	Wareham St Martin CP, Arne CP, Studland CP.	Noise			08	The increased concentration of RNP tracks will increase noise close to the Initial approach segment, although noise will reduce further from the defined track.
		Number of aircraft			08	No expected change to aircraft numbers.

Table 3: Qualitative assessment of areas impacted by the instrument approach procedure

6.3 Impact on aviation stakeholders

The most significant issue relating to the change proposed within this consultation is that when the RNP approaches are introduced into service, the ILS serving Runway 08 will be withdrawn from service. If there is no introduction, the ILS will be retained as long as economically viable noting that it is at end of life.

During the development of the Options for this airspace change, Bournemouth Airport engaged with air transport and training aircraft operators who have aircraft based at Bournemouth, who accepted the limitations of the withdrawal of the ILS to Runway 08 but agreed that the operational limitations were preferable to the significant cost of installing a new ILS to serve Runway 08.

The withdrawal of the ILS will have the following impacts:

- **Operators without any RNP Approach capability.** These will be the most significantly impacted operators and will need to perform the conventional NDB or Surveillance Radar approaches. Alternatively, an aircraft may perform an ILS approach to Runway 26 and then perform a circling visual manoeuvre to land with a headwind on Runway 08. The major disadvantage of a 'Circling Approach' to Runway 08 is the high minima which limits an approach to 962 feet for a commercial aircraft. This is the same situation at the current time if the Runway 08 ILS is not available.
- **Operators with only LNAV capability.** These operators will be unable to perform a 3-Dimensional approach and will be required to perform a 2-Dimensional LNAV approach to Runway 08. The LNAV approach Decision Height will be comparable to

that of an NDB approach, although the defined track will ensure the approach is aligned to the runway leading to a higher probability of a successful landing in adverse wind conditions.

- **Operators with LNAV/VNAV capability.** These operators will be able to perform a 3-Dimensional Approach to Runway 08, although the approach will be restricted to a Decision Height of the order of 350 feet.
- **Operators with LPV capability.** These operators will be able to perform a 3-Dimensional Approach to a minimum Decision Height of 200 feet that is comparable to the existing Instrument Landing System.

6.4 Environmental Impact on Site of Special Scientific Interest

The Instrument Landing System Localiser equipment cabin and antenna system is located outside of the Airport boundary and is within the Moors River System Site of Special Scientific Interest (SSSI).

Regardless of the sub-option selected, the ILS serving Runway 08 will be withdrawn from service. This will necessitate works to be undertaken within the SSSI to decommission the Localiser installation. The level of decommissioning to be undertaken particularly to the removal of concrete plinths and underground cable ducts will be agreed between Bournemouth Airport and Natural England. One option may be to leave the infrastructure in place.

It is noted that if the option of installing a replacement ILS had been proposed, the groundworks to install a modern antenna system would create far greater disturbance to the SSSI than the implementation of an RNP approach.

6.5 Post Implementation and Reversion Capability

6.5.1 Post Implementation Review

One year after the implementation of the change, CAA will commence a post-implementation review i.e. in March 2022. The purpose of the review is for Bournemouth airport to carry out a rigorous assessment and the CAA to evaluate if there are any differences from the implementation than were foreseen. If there are differences, then the CAA will stipulate what action is to be taken.

6.5.2 Reversion Statement

RNP instrument approaches use satellite navigation technology and are internationally standardised to provide comparable guidance to an instrument Landing System. These approaches are widely implemented on a global basis and it is therefore unlikely that the RNP approach procedures will fail to meet their intended purpose.

During the first year of operation, Bournemouth Airport will take a proactive position and will closely monitor the performance of aircraft conducting RNP approaches to ensure that the procedures are meeting their planned objectives and will provide post implementation information to the Airport Consultative Committee meetings.

If issues with aircraft tracks are observed or reported, for example in turn performance or track concentration, Bournemouth Airport will analyse the cause of the deviations, and will propose corrective actions such as design refinements or minor changes to the manner in which the procedures are flown.

Any proposed actions resulting from the analyses conducted by Bournemouth Airport will be agreed with CAA.

In respect of reversionary procedures:

- **Runway 08**
  - The ILS serving Runway 08 is at the end of its' economic and supportable lifetime and when the RNP approaches are introduced into operation, the ILS will be decommissioned.
  - Reversion to an ILS approach on Runway 08 will not be possible and aircraft will revert to using the existing 2 dimensional Non Directional Beacon or Surveillance radar approaches.
- **Runway 26**
  - The ILS serving Runway 26 will remain in operation and the ILS is expected to remain the approach of choice by the majority of aircraft with the RNP approach being for training or when the ILS is unavailable.

7 Consultation Process

7.1 Overview

The purpose of this consultation is to provide aviation organisations, non-aviation organisations and members of the public, all those affected by this proposed change, the opportunity to express their opinion, comment on the Airspace Change Proposal and for Bournemouth Airport to take stakeholder's views in the formulation of the final proposal to be submitted to CAA for Determination.

7.2 Consultation Duration

The proposal will be subject to 15 weeks of consultation, commencing on 13th December 2019 and finishing on 27th March 2020.

The CAA CAP 1616 requires duration of consultation no less than 12 weeks. Due to the proximity to the Christmas and New Year holidays and post-election period, we propose to extend the consultation to 15 weeks to allow extra time for stakeholders to express their opinions and comments on the Airspace Change Proposal. The consultation will remain open during the Christmas and New Year period.

7.3 How to respond to this consultation

As it is stated in CAP 1616, consultation is undertaken through Electronic Communication and it is requested that all responses be entered directly through Citizen Space through the links available under the Bournemouth ACP on the CAA Airspace Change Portal to provide visibility to all stakeholders of all responses.

The consultation closes at Midnight on 27th March 2020.

All stakeholders are invited to submit their feedback during the consultation period through the following channels:

- CAA Portal; and
- Post.

If any stakeholder has any difficulty in responding via either of these two means, please do not hesitate to contact the consultation team via email at BOH.ACP@askhelios.com.

7.3.1 CAA Portal

You are invited to respond using the online Citizen Space response form available at the CAA Portal – see https://airspacechange.caa.co.uk/PublicProposalArea?pID=79.

7.3.2 Post

It is requested that users with internet access submit their responses through the CAA Portal. By exception, if you do not have access to the Internet, you may send your responses by letter to the following address using the form available in Annex B:

Bournemouth Airport Airspace Consultation
Helios
29 Hercules Way
Aerospace Boulevard
AeroPark
Farnborough
Hampshire
GU14 6UU

To ensure that a transparent consultation process is maintained, all responses submitted by post will be uploaded to the CAA Portal.

7.4 Proposed Consultation meetings

7.4.1 Consultation drop-in sessions

All stakeholders are invited to attend a drop-in session at Bournemouth Airport to be held at the airport on following dates where airport and external support staff will be available to discuss the proposed RNP approach procedures and any concerns or issues that may be raised:

- 17 January 2020 between 15:00 and 22:00
- 21 February 2020 between 15:00 and 22:00.

7.5 What happens next?

After the consultation period closes, the Bournemouth Airport will collect, analyse and categorise all responses that have been received during the consultation and CAA will approve categorisation of responses. Bournemouth Airport will then assess the collated, reviewed and categorised responses to confirm the Option to be implemented and to determine if it is necessary to update the design of the preferred option in the light of the information in the responses that have been received.

Bournemouth Airport will prepare:

- A Consultation Response Document setting out transparently the approach to categorisation, the preferred option to be taken forward and any design changes resulting from consultation responses.
- The final design documentation for the RNP Approaches
- A Final Options Appraisal, including the Safety Assessment for the preferred option.

As there are International Standards on the design of RNP Instrument Approaches, Bournemouth Airport, any change to the preferred option resulting from consultation feedback will be minor and that the likelihood of requiring re-consultation will be extremely low. If, however, the Options Appraisal reveals that the impact of the design has fundamentally changed, Bournemouth Airport will discuss the need for further consultation with CAA.

When the three documents above are completed and CAA confirms the assessment of Bournemouth Airport that there is no requirement for further consultation, the documents will be uploaded onto the On-Line Portal.

Bournemouth Airport will prepare and submit the formal Airspace Change Proposal to the CAA by providing:

- A Full version of the ACP for Approval by CAA;
- A Redacted ACP version for publication on the portal. (if the ACP contains sensitive or commercial information);
- An Executive Summary for publication on the portal.

When the formal submission has been submitted, CAA will notify The Department of Transport.

Current planning envisages that CAA will determine the acceptability of the Airspace Change Proposal to be completed at the DECIDE Gateway Review in December 2020 and this may allow the RNP Approach Procedures to be introduced into operation in April 2021.

A Glossary

Abbreviation	Definition	Explanation
2-Dimensional	Two-dimensional instrument approach	Instrument approach operation using lateral navigation guidance only.
3-Dimensional	Three-dimensional instrument approach	Instrument approach operation using both lateral and vertical navigation guidance
ACP	Airspace Change Proposal	A proposal presented to the Civil Aviation Authority by an airport or an air traffic service provider to change/introduce controlled airspace or (published) aircraft procedures.
ADF	Automatic Direction Finder	An equipment on the aircraft that indicates the direction of an NDB relative to the aircraft heading
AONB	Area of Outstanding Natural Beauty	An Area of Outstanding Natural Beauty is an area of countryside in England, Wales or Northern Ireland which has been designated for conservation due to its significant landscape value.
ATC	Air Traffic Control	
ATM	Air Traffic Management	
CAA	Civil Aviation Authority	The governing body of Aviation in the UK
CAP	Civil Aviation Publication	Publications produced by the Civil Aviation Authority
DME	Distance Measuring Equipment	A Navigation Aid that provides the distance between an aircraft and the ground equipment
FAF	Final Approach Fix	The point at which an aircraft will commence its final descent towards the runway
FASI	Future Airspace Strategy Implementation	A National programme to modernise airspace within the United Kingdom.

Abbreviation	Definition	Explanation
GNSS	Global Navigation Satellite System	Aircraft can navigate by the use of satellites (much the same as a satnav on your phone or car)
IAF	Initial Approach Fix	The position in the sky that an aircraft will start its approach to land
ICAO	International Civil Aviation Organisation	The Specialist Aviation Agency of the United Nations
IF	Intermediate Fix	The position in the sky that an aircraft aligns with the runway
IFR	Instrument Flight Rules	The rules associated with flights conducted with guidance from electronic instruments.
ILS	Instrument Landing System	Equipment on the ground used to help provide lateral and vertical guidance to the pilots when landing an aircraft.
NATMAC	National Air Traffic Management Advisory Committee	A committee sponsored by CAA that is consulted for advice and views on matters concerned with airspace management,
NDB	Non-Directional Beacon	A simple Navigation Aid that provides a 2-Dimensional Instrument Approach
PBN	Performance Based Navigation	Navigation of aircraft using navigation satellites and computerised on-board systems
RNP	Required Navigation Performance	
SRA	Surveillance Radar Approach	A simple form of approach based on Heading information provided by ATC
SSSI	Site of Special Scientific Interest	A conservation designation, usually describing an area of particular interest to science due to rare species, geological or physiological features that may lie in its boundaries

Abbreviation	Definition	Explanation
VFR	Visual Flight Rules	The rules associated with flights conducted when navigating from visual reference to terrain features.

B Consultation Feedback Form

Bournemouth Airport RNP Approach Airspace Consultation

This consultation feedback form concerns the airspace change on which Bournemouth Airport is consulting its stakeholders. The change proposed concerns the implementation of new instrument approach procedures to replace procedures which are shortly to be withdrawn due to equipment obsolescence and to provide contingency for other procedures.

The airport proposes to introduce Required Navigation Performance (RNP) Instrument Approach Procedures to runways 08 and 26. The change induced by these procedures will be fully contained within the airspace of Bournemouth Airport – or as agreed under delegation with Southampton Airport – and cover the navigation guidance available to aircraft during the final stages of arriving to Bournemouth.

Existing operational procedures and navigation instructions given by Air Traffic Control for arriving aircraft are not proposed to change.

The options on which Bournemouth Airport is consulting are fully described within the consultation document available for download from https://airspacechange.caa.co.uk/umbraco/Surface/SponsorSurface/DownloadDocument/1338.

The airport would be grateful for your feedback – even if you have no preference – on reading the consultation document.

Please respond to this consultation using the feedback form published on Citizen Space via the CAA website at the following link: https://consultations.airspacechange.co.uk/bournemouth-international-airport-ltd/bournemouth-international-airport-rnav-airspace-ch.

However, if you would prefer to respond via paper, please print and return the following form. It would be helpful to include in your comments specific place(s) where you think there would be changes of impact due to this proposal. Comments are also welcome if you think there would be no change of impact.

In accordance with the UK Civil Aviation Authority's CAP 1616 airspace change process, consultation responses will be published on Citizen Space via the Airspace Change Portal. Responses will be subject to moderation by the Civil Aviation Authority. If you wish your response to be published anonymously your personal details (Name, Address & Position) will be redacted and only be seen by the Civil Aviation Authority.

☐ **: YES, I want my response to be published with my details (please fill in below)**

☐ **: NO, I want my response to be published anonymously**

Name:

Representing (self or organisation):

Postcode:

Email:

Country:

Consultation Options – Please tick the option for each Runway which you would like to support

	Runway 08	Runway 26
Do not support either proposal	☐	☐
Support Sub-Option 3c	☐	☐
Support Sub-Option 3d	☐	☐
No preference	☐	☐

Response Rationale: (Please provide any additional comments to allow us to understand why you have responded as above)

Runway 08	
Runway 26	

Additional Comments: (Please include any comments that you feel should be considered if either option is taken forward for implementation that would have an impact on either your personal or professional activities. Please add additional pages as required if submitting hard copy responses)

C CAP 1616 process

C.1 General

The Aviation Regulator, the Civil Aviation Authority (CAA) requires an Airspace Change Proposal to be carried out whenever there is a permanent or temporary change to the airspace status or change to procedures. This process is described in CAP 1616 process and it depicts on the Figure 27.

C.2 Roles and responsibilities

The roles and responsibilities of the key organisations central to facilitating, ensuring adherence to the consultation process and approval (if successful) of the proposal have been provided below.

C.2.1 Bournemouth Airport

Bournemouth Airport is the 'change sponsor' for this proposal and is responsible for the content of the proposal and for managing the consultation process.

C.2.2 Civil Aviation Authority

The ultimate decision on the implementation of the proposed approach procedure will be taken by the UK CAA, the national regulatory body.

CAA is also responsible for administering the airspace change process and providing guidance on the process to stakeholders. The CAA is bound by statutory duties and must adhere to directions and environmental guidance provided by the Secretary of State.

C.2.3 Stakeholders

Aviation and non-aviation organisations and members of the public who may be impacted by airspace change.

C.3 Overview of the process

The ACP process contains the following Stages:

- Stage 1: Define; Gateway passed 26 April 2019
- Stage 2: Develop and assess; Gateway passed 28 June 2019
- Stage 3: Consult; In progress
- Stage 4: Update and submit; Proposed 26 June 2020
- Stage 5: Decide; Proposed 18 December 2020
- Stage 6: Implement; Proposed April 2021
- Stage 7: Post Implementation Review. Proposed February 2022

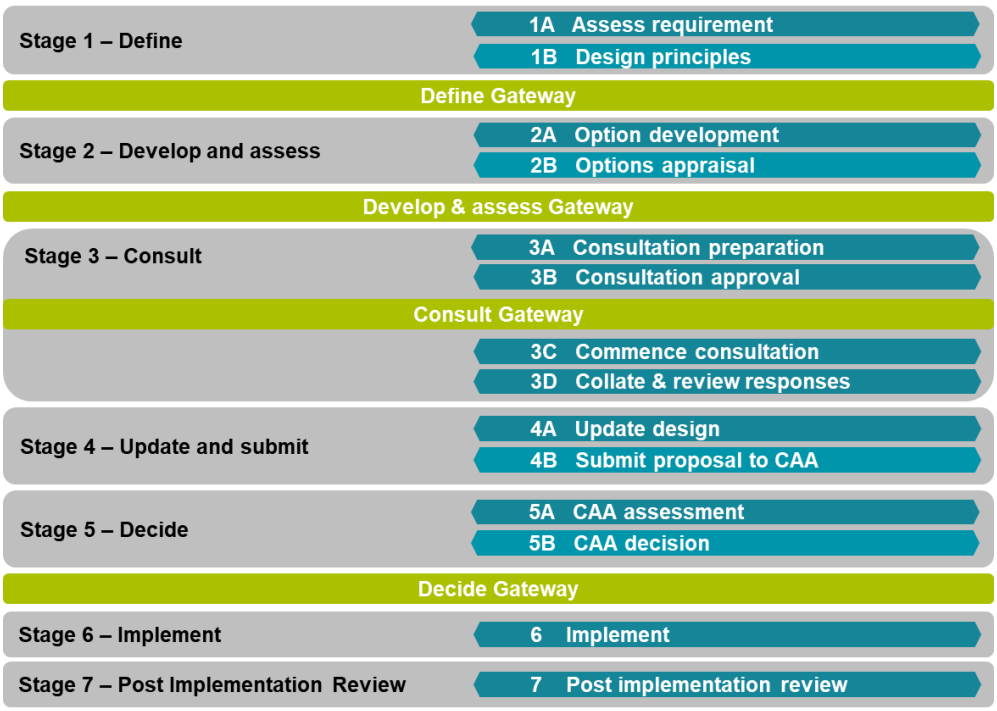

Figure 27: CAP 1616 Stages of Airspace Change Proposal

D Bournemouth Airport Consultative Committee

D.1 Airport Consultative Committee. (Extract from Charter)

The Consultative Committee is established in order that the management of Bournemouth International Airport Ltd (the Airport Company) can take into account the views of interested parties when making decisions concerning the management, operation and development of the Bournemouth International Airport (the Airport), and keep those parties informed of matters affecting them. The Committee fulfils the requirements of Section 35 of the Civil Aviation Act 1982 (as amended) for the Airport management to provide adequate facilities for consultation.

D.2 Consultative Committee Terms of Reference

The terms of reference of the Committee are to provide facilities for consultation at the Airport. Consultation is not intended to detract from the responsibility of management to manage the Airport. The aim is to provide an effective forum for the discussion of all matters concerning the development or operation of the Airport, which have an impact on the users of the Airport and on people living and working in the surrounding area

Consultation is a positive and interactive process through which the concerns of interested parties can be taken into account, aiming to allow the efficient operation of the Airport, whilst moderating its impact on local communities. It is a means of keeping all interested parties adequately informed of matters affecting them, of providing an opportunity to reconcile any differences of views that may arise, and an opportunity for resolving difficulties through agreed voluntary action

The Consultative Committee is made up of the following organisations.

		MEMBERS (in no particular order)
LOCAL	1	Bournemouth, Christchurch & Poole (BCP)
	2	Hampshire County Council
	3	Dorset Council
	4	New Forest District
	5	Ferndown TC
	6	Verwood TC
	7	Hurn Parish
	8	Bransgore Parish
AIRPORT USERS	1	Hope Aviation Ltd
	2	Prestige Holidays
LOCAL INTEREST GROUPS	1	Dorset Federation of Residents' Associations
	2	Broadstone Neighbourhood Forum
	3	Bransgore & District Residents' Association
	4	Jumpers & St Catherine's Hill Residents Association
	5	Crowhill Res' Association / Burley Parish Council
	6	New Forest National Park Authority
	7	Dorset Chamber of Commerce & Industry
	8	Bournemouth Chamber of Trade & Commerce
	9	Christchurch & District Chamber of Trade

E Stakeholders Directly Invited to Participate in the Consultation

Parliamentary Constituencies	
North Dorset County Constituency	Bournemouth East Borough Constituency
Mid Dorset and North Poole County Constituency	Christchurch County Constituency
South Dorset County	New Forest East County Constituency
Poole Borough Constituency	New Forest West County Constituency
Bournemouth West Borough Constituency	

National Organisations	
Natural England	National Trust

Bournemouth Airport Consultative Committee	
Bournemouth, Christchurch & Poole (BCP)	Dorset Federation of Residents' Associations
Hampshire County Council	Broadstone Neighbourhood Forum
Dorset County Council	Bransgore & District Residents' Assoc
New Forest District	Jumpers & St Catherine's Hill Residents Assoc
Ferndown TC	Crowhill Res' Association / Burley Parish Council
Verwood TC	New Forest National Park Authority
Hurn Parish	Dorset Chamber of Commerce & Industry
Bransgore Parish	Bournemouth Chamber of Trade & Commerce
Hope Aviation Ltd	Christchurch & District Chamber of Trade & Commerce
Prestige Holidays	

Parish Councils (Not Represented on Airport Consultative Committee)	
Arne CP	Minstead CP
Boldre CP	Morden CP
Brockenhurst CP	New Milton CP
Burton CP	Pamphill CP
Colehill CP	Ringwood CP
Corfe Castle CP	Shapwick CP
Corfe Mullen CP	Sopley CP
Ellingham, Harbridge and Ibsley CP	Spetisbury CP
Ferndown Town CP	St. Leonards and St. Ives CP
Hinton CP	Studland CP
Holdenhurst Village CP	Sturminster Marshall CP
Holt CP	Sway CP
Hordle CP	Tarrant Crawford CP
Horton CP	Verwood CP
Lymington and Pennington CP	Wareham St. Martin CP
Lyndhurst CP	West Moors CP
Lytchett Matravers CP	West Parley CP
Lytchett Minster and Upton CP	Wimborne Minster CP
Milford-on-Sea CP	

National Air Traffic Management Advisory Committee	
Airlines UK	British Parachute Association (BPA)
Airspace4All	General Aviation Alliance (GAA)
Airfield Operators Group (AOG)	Honourable Company of Air Pilots (HCAP)
Aircraft Owners and Pilots Association (AOPA)	Helicopter Club of Great Britain (HCGB)
Aviation Environment Federation (AEF)	Isle of Man CAA
British Airways (BA)	Light Aircraft Association (LAA)
BAe Systems	Low Fare Airlines
British Airline Pilots Association (BALPA)	Military Aviation Authority (MAA)
British Balloon and Airship Club	Ministry of Defence - Defence Airspace and Air Traffic Management (MoD DAATM)
British Gliding Association (BGA)	NATS
British Helicopter Association (BHA)	PPL/IR (Europe)
British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo)	UK Airprox Board (UKAB)
British Model Flying Association (BMFA)	United States Air Force Europe (3rd Air Force-Directorate of Flying (USAFE (3rd AF-DOF))

Aircraft Operators	
Cobham	Jota Aviation
Eastern Airways	Loganair
Easy Jet	Ryanair
Flybe	TUI
Gama Aviation	

Training Organisations	
Bournemouth Commercial Flight Training	CAE Oxford
Booker Aviation (Wycombe Air Park)	L3Harris
Blackbushe Aviation	

Adjacent Airports	
Compton Abbas Airport	Southampton Airport
Solent Radar	

F RNP Approach

F.1 How an RNP approach works

In the Arrival Segment an aircraft may position to join the approach directly at an Initial Approach Fix (IAF) or may be 'vectored' by a Radar Air Traffic Controller to join the approach at a shallow angle in the region of the Intermediate Fix (IF). During the arrival phase, an aircraft will be descending and decelerating, requiring low engine power settings, before commencing the approach.

One of the 'Design Principles' established in the early stage of the Airspace Change activity was to maintain the current operational interface with Solent Radar based at Southampton. Maintaining the operational interface means that during daytime aircraft will be radar vectored to join the approach near the Intermediate Fix.

During the night when traffic levels are low (see Figure 10 and Figure 11), Solent and Bournemouth Radar services are not in operation and aircraft will self-position to join the approach at an Initial Approach Fix.

F.1.1 Initial Approach

An RNP Approach may include one or more Initial Approach Fixes to allow aircraft to efficiently commence the approach from different directions

Within an RNP approach, the Initial Segments may be designed with a vertical descent profile to assist an aircraft to arrive at the intermediate fix at the required height. The inclusion of a descent within the Initial segment of the Bournemouth approach will be considered during the detailed design of the approach following this consultation.

F.1.2 Intermediate Approach

An RNP approach includes a single Intermediate Fix, located on the extended runway centreline to align the aircraft with the runway. As an aircraft following the Initial approach segment nears the Intermediate Fix, the navigation system will anticipate the turn at the Intermediate fix and provide guidance to allow the pilot or automatic flight control system to turn the aircraft smoothly onto the Intermediate Segment without overshooting the runway centreline.

The Initial and Intermediate Fixes at Bournemouth have been positioned in locations that allow the RNP approach to replicate the current flight paths of aircraft being Radar Vectored to join the existing ILS and NDB approach procedures.

Furthermore, the positions of the Intermediate and Final Approach fixes in relation to the Runway threshold, ensures that the RNP approaches define an approach path that is identical to the guidance provided by the existing Instrument Landing Systems.

F.1.3 Final Approach

Once on the final approach, aircraft descend at a 3-degree angle towards the runway.

The final approach at Bournemouth commences at the same position as the current ILS and NDB approach procedures – the Final Approach Fix. This will ensure that aircraft on final approach will be at the same height at any location as aircraft approaching today.

F.1.4 Missed Approach

The RNP approach can be combined with either the conventional missed approach procedure or a new RNP missed approach procedure that would need to overlay the existing hold and follow similar missed approach due to traffic complexity.

It is proposed that the existing ILS missed approach procedures will be used for the proposed RNP approaches, noting that the ILS serving Runway 26 will be retained and the ILS and the RNP approaches will have a common missed approach procedure.

F.2 RNP Approach Minima

The Bournemouth RNP approaches will support the following types of approach minima:

F.2.1 LNAV (Lateral NAVigation)

This is a 2-Dimensional Approach that only provides Lateral navigation guidance provided by GNSS in the form of 'Fly Left or Fly Right' indications. The vertical guidance is managed by the pilot by ensuring the required rate of descent is maintained and height is cross checked against distance from the runway.

The LNAV approaches are expected (Subject to detailed design) to provide guidance to a height of approximately 400 feet above the runway.

All aircraft that have an RNP approach capability will be able conduct an LNAV Approach.

F.2.2 LNAV/VNAV (Lateral NAVigation / Vertical NAVigation)

This is a 3-Dimensional Approach with Vertical Guidance. The lateral navigation guidance is provided by GNSS in the same manner as for LNAV. The vertical guidance is provided by data from the aircraft barometric altimeter and processed by the aircraft Flight Management System to provide 'Fly Up or Fly Down' indications. This type of approach is commonly known as a Baro VNAV approach.

The LNAV/VNAV approaches are expected (Subject to detailed design) to provide guidance to a height of approximately 350 feet above the runway.

LNAV/VNAV approaches will normally be flown by Air Transport and larger business aircraft.

F.2.3 LPV (Localiser Provision Vertical)

This is a 3-Dimensional Approach with Vertical Guidance. The lateral and vertical guidance is provided by GNSS that is augmented by the European Geostationary Navigation Overlay Service (EGNOS) that provide increased accuracy and integrity to provide warnings if the navigation performance degrades.

The performance of the LPV procedures at Bournemouth will be comparable to Category I ILS, capable of providing guidance down to 200 feet above the runway.

LPV approaches will normally be flown by Business and training aircraft.

G Noise profile at Bournemouth

G.1 Noise Assessment

This Annex presents the noise contours for aircraft arrivals at Bournemouth Airport as required by the Environmental technical annex CAP 1616a using 2018 traffic as the baseline for the assessment. The data for the 2018 operations was provided in the form of radar track data for aircraft arrivals at Bournemouth obtained from WebTrak. In compliance with CAP 1616a the radar data used for the noise analysis covered the busy summer period from 16 June to 15 September 2018 inclusive.

The Airspace Change Process requires that noise assessments are provided as a baseline for the current level and mix of traffic at Bournemouth Airport and for projected traffic growth at the end of a 10-year period. The ambition of Bournemouth airport is to return to 2008 traffic levels within the next 10-year period and so the 2018 dataset was given a weighting to replicate a growth to 2008 traffic levels.

G.2 Noise Model

The noise assessment was undertaken using the Aviation Environmental Design Tool (AEDT) that was developed by the US Federal Aviation Administration. AEDT is a software system that models aircraft performance in space and time to estimate fuel consumption, emissions, noise, and air quality consequences. AEDT is a comprehensive tool to provide information to FAA stakeholders on each of these specific environmental impacts.

G.3 Results

The following figures present the results of the noise assessments for current operations and for projected 10-year growth.

Results of the noise assessment are presented for:

- traffic in the busiest 16 hours of the day, between 0700 and 2300 local time. These are known as ‘LAeq, 16 hours’ contours.
- traffic in the busiest 8 hours of the night, between 2300 and 0700 local time. These are known as ‘LAeq, 8 hours’ contours.

G.3.1 Baseline 2018 traffic assessment

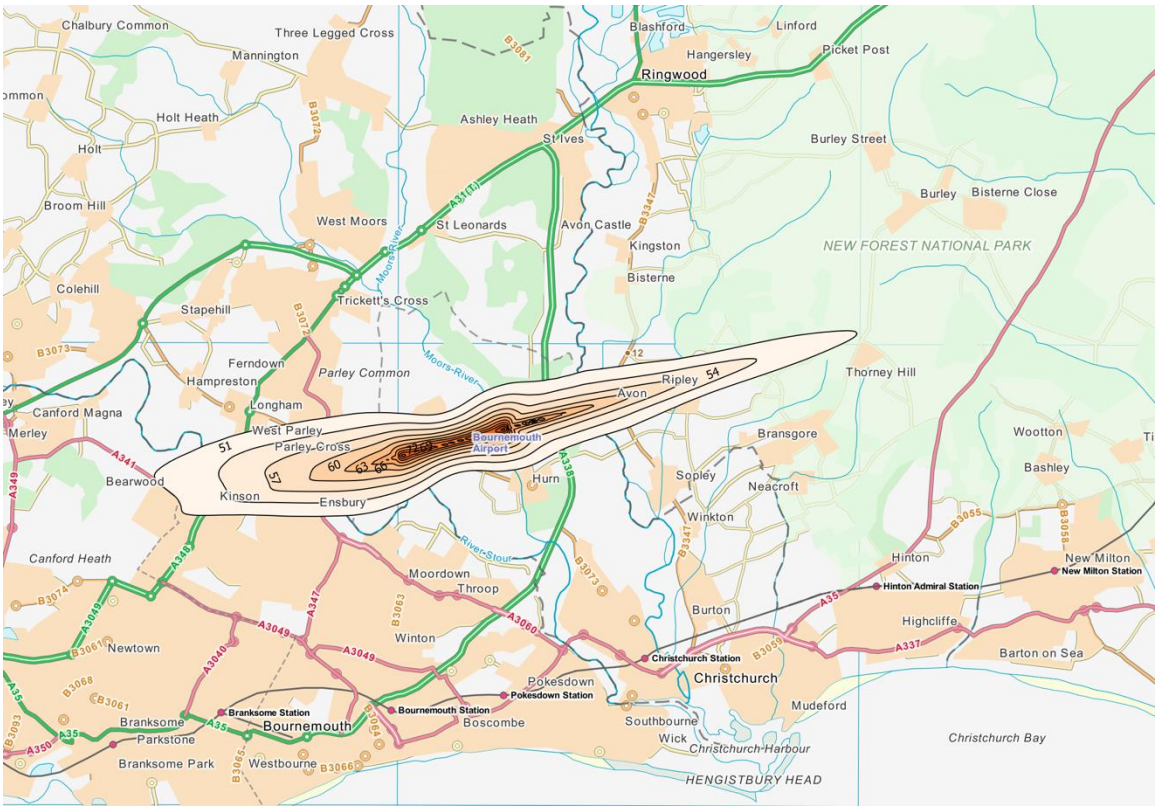

Figure 28: Baseline day LAeq 16hr dB levels

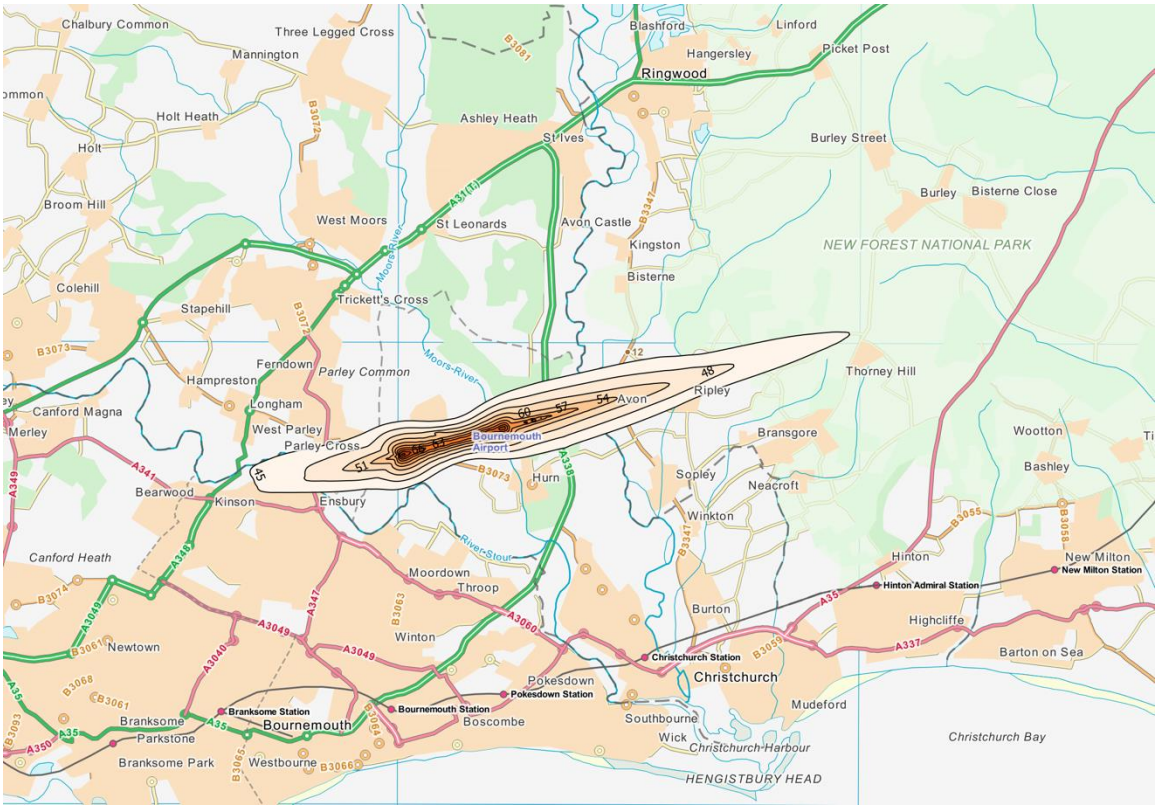

Figure 29: Baseline night LAeq 8hr dB levels

G.3.2 Growth 2028 traffic assessment (2008 levels)

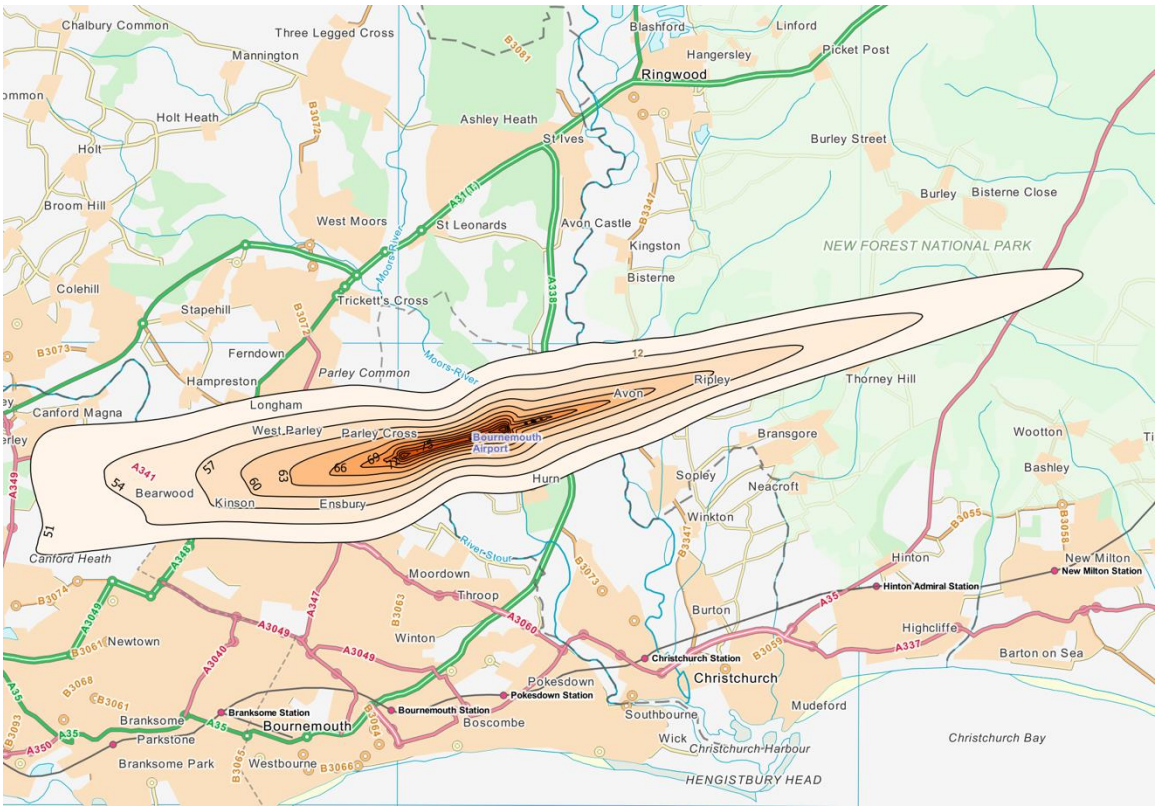

Figure 30: 10-year growth day LAeq 16hr dB levels

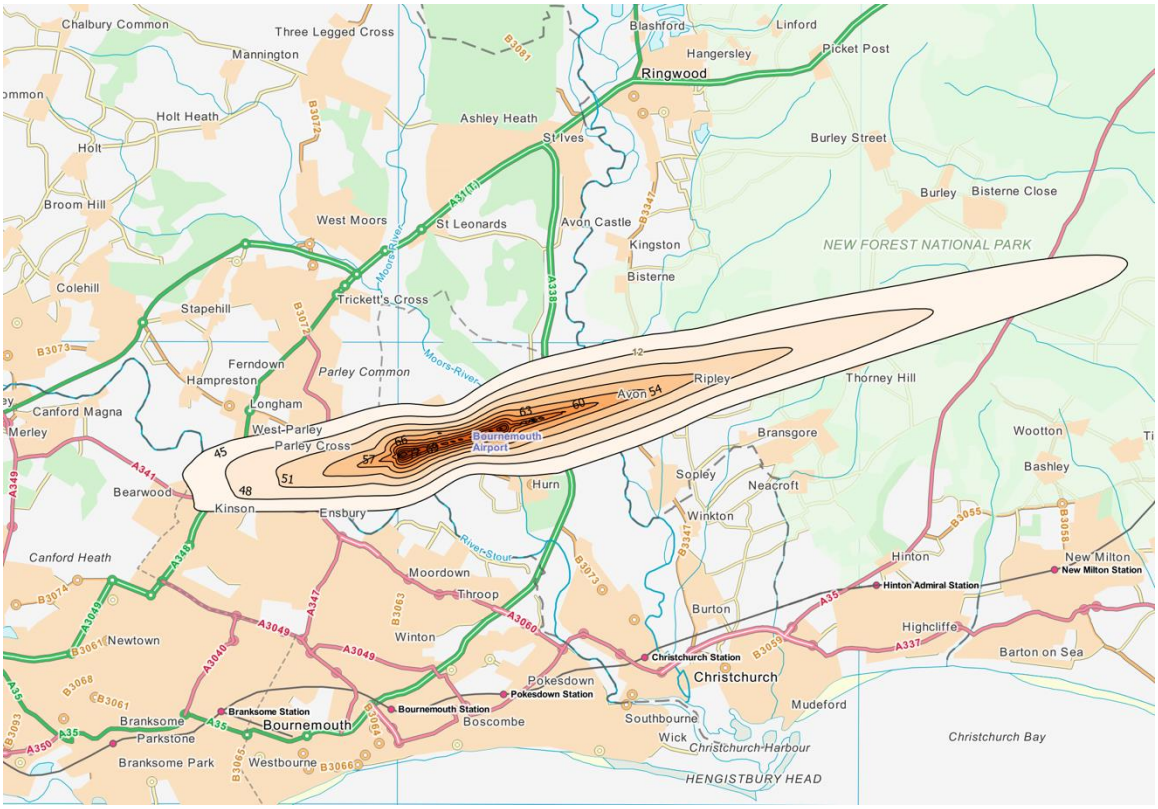

Figure 31: 10-year growth night LAeq 8hr dB levels

H Need for Change

The primary objectives for the implementation of the new instrument approaches at Bournemouth Airport are:

- The ILS serving RWY 08 was installed second hand in 1984/85 and the equipment and maintenance support are beyond the end of the system's technical and economic life. An unrecoverable failure of the ILS on RWY 08 will have serious operational consequences by denying easterly 3-Dimensional approaches. A new instrument approach is required to allow Bournemouth Airport to continue to provide 3-Dmensional approaches to Runway 08 and to avoid replacement of the ILS serving Runway 08.
- To improve the resilience of instrument approaches to Runway 26 Bournemouth International Airport by providing an alternate means of conducting an approach if the ILS is unavailable as required by the EU PBN Implementing Rule (IR) 2018/1048.

This Annex provides further detail on why Bournemouth Airport wishes to introduce these new approaches.

H.1 Drivers for change

H.1.1 Obsolete ILS on Runway 08

Bournemouth Airport is equipped with Instrument Landing Systems serving Runways 08 and 26 providing 3-Dimensional precision approach capabilities.

Runway 26 is the most frequently used runway due to the prevailing south westerly airflow and is also the direction from which weather systems associated with low cloud and poor visibility originate. For this reason, the ILS serving Runway 26 is a Category III system that allows aircraft operations to continue in conditions with low visibility and cloud-base. The Runway 26 ILS was recently replaced due to its greater importance to the operation of the airport.

The Category I ILS serving Runway 08 was installed second hand in 1984/85 and the equipment and maintenance support is now beyond the end of its technical and economic life. An unrecoverable failure of the ILS on Runway 08 would have serious operational impact on the operation of the Airport by removing the 3-Dimensional approach capability from Runway 08 that is used approximately 30 % of the time.

It is therefore essential that Bournemouth Airport considers how to continue to provide a 3-Dimensional approach capability to Runway 08 in the future in a cost-effective manner.

H.1.2 New Navigation Technologies

Satellite navigation technology has the capability to provide aircraft with Instrument Approach performance capabilities that are comparable to those of a Category I ILS.

In aviation terms 'satellite navigation' is known as the Global Navigation Satellite System (GNSS) and runway approach applications based on GNSS are classified as RNP Approach Procedures in accordance with the Performance Based Navigation (PBN) Concept defined by the International Civil Aviation Organisation (ICAO), the specialised aviation agency of the United Nations.

There is now a high level of aircraft equipage for GNSS operations, particularly in the business aviation sector where most aircraft have the capability to undertake an RNP approach.

Some older aircraft do not have RNP approach capability, although in many instances, upgrades or retrofit solutions are available, or the aircraft will be replaced by RNP capable aircraft in the coming years.

For an airport operator, RNP approaches are attractive as there is no requirement for navigation equipment to be provided at an airport and therefore the implementation costs are low.

H.1.3 International Implementation of PBN

It has been recognised by standardisation and regulatory bodies that the provision of approaches with vertical guidance facilitating stabilised approaches offer the potential for increased aviation safety compared to 2-Dimensional approaches.

There are established Global, Regional and National objectives and programmes for the implementation of PBN and RNP, including for 3-Dimensional final approach operations.

- At the global level, this is detailed in the ICAO Global Air Navigation Plan[37] where PBN is a key component of the upgrade to the operation of the global aviation system.
- Within the European Region, the implementation of PBN is contained within the SESAR Air Traffic Management (ATM) Master Plan[38].
- Within the UK, the implementation of PBN is contained within the Department of Transport's 2017 Air Navigation Guidance[39] document. The implementation of PBN is a fundamental element of the UK National Future Airspace System.

H.1.4 PBN Implementing Rule

The European Aviation Safety Agency (EASA) has worked with State and aviation Stakeholders to develop the European Implementing Rule (IR) 2018/104840 Airspace usage requirements & operating procedures concerning Performance Base Navigation (PBN).

The Implementing Rule requires the implementation of PBN approach procedures with vertical guidance at all instrument runways:

- By December 2020 for runways that are currently only served by 2Densional approaches;
- By January 2024 for runways that are currently served by ILS.

By 2030 the IR emphasises the preference for PBN approaches over conventional ILS CAT I.

The United Kingdom is expected to adopt the requirements and timescales for the implementation of PBN approaches as detailed in the PBN Implementing Rule.

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[37] https://www.icao.int/airnavigation/Documents/GANP-2016-interactive.pdf

[38] https://www.atmmasterplan.eu/

[39] https://www.gov.uk/government/publications/uk-air-navigation-guidance-2017

[40] https://www.easa.europa.eu/document-library/regulations/commission-regulation-eu-no-20181048

I What does it mean for Me?

I.1 Sub-Option 3c

Area	Impact	Category	Runway 08	Runway 26
A		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area.	RNP approach (option 3c) does not provide guidance for runway 26 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 26. There will be concentration of tracks towards the Initial Approach Fix as aircraft transition from the vector to the RNP guidance. It is expected that the majority of aircraft will continue to fly the ILS approach to runway 26, leading to no discernible change in the noise distribution.
		Number of aircraft	This area is not overflown by the RNP approach to runway 08	No expected change to aircraft numbers flying through this area.
B		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area.	RNP approach (option 3c) does not provide guidance for runway 26 in this area. Minor increased concentration at Initial Approach Fix. No significant change to noise from current ILS operation as radar vectoring currently concentrates traffic at the location of the Initial Approach Fix.
		Number of aircraft	This area is not overflown by the RNP approach to runway 08.	No expected change to aircraft numbers flying through this area.
C		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area.	RNP approach (option 3c) does not provide guidance for runway 26 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 26. There will be some concentration of tracks towards the Initial Approach Fix. Outside of Bournemouth Radar hours, aircraft will continue to fly the current ILS Initial approach procedure. It is expected that the majority of aircraft will continue to fly the ILS approach, leading to no discernible change in the noise distribution.
		Number of aircraft	RNP approach (option 3c) does not provide guidance for runway 08 in this area.	No significant change to aircraft numbers flying through this area, other than a small % of RNP training flights.

Area	Impact	Category	Runway 08	Runway 26
D		Noise	Aircraft follow tracks that are aligned with the runway and are identical to the current ILS* operation. No change to aircraft noise or distribution. * The 08 ILS will be withdrawn	Aircraft follow tracks that are aligned with the runway and are identical to the current ILS operation. No change to aircraft noise or distribution.
		Number of aircraft	No expected change to aircraft numbers flying through this area	No expected change to aircraft numbers flying through this area
E		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area. Outside of Bournemouth Radar hours, aircraft will continue to transit this area towards the NDB to start the NDB* Initial approach procedure. * The 08 ILS will be withdrawn	RNP approach (option 3c) does not provide guidance for runway 26 in this area. Outside of Bournemouth Radar hours, aircraft will continue to transit this area towards the NDB to start the ILS Initial approach procedure.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	No expected change to aircraft numbers flying through this area.
F		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft arriving from the east to join the RNP approach to runway 08. These aircraft will follow the same tracks as currently flown to start an ILS* or NDB approach. Outside of Bournemouth Radar hours, aircraft will continue to transit this area towards the NDB to start the NDB Initial approach procedure. * The 08 ILS will be withdrawn	RNP approach (option 3c) does not provide guidance for runway 26 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft arriving from the west to join the RNP approach to runway 26. These aircraft will follow the same tracks as currently flown to start an ILS or NDB approach. Outside of Bournemouth Radar hours, aircraft will continue to transit this area towards the NDB to start the ILS Initial approach procedure.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	No expected change to aircraft numbers flying through this area.
G		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area. Outside of Bournemouth Radar hours, aircraft will continue to fly the current ILS* and NDB Initial approach procedure. It is expected that daytime RNP approach training activity will increase in this area with aircraft flying similar headings to the current ILS* and NDB Initial approaches to commence an RNP approach to runway 08. * The 08 ILS will be withdrawn	RNP approach (option 3c) does not provide guidance for runway 26 in this area. Outside of Bournemouth Radar hours, aircraft will continue to fly the current ILS Initial approach procedure. It is expected that daytime RNP approach training activity will increase in this area with aircraft flying similar headings to the current ILS and NDB Initial approaches to commence an RNP approach to runway 26.
		Number of aircraft	A small % increase in aircraft in this area is expected from aircraft engaged in RNP training to runway 08. These RNP training operations	A small % increase in aircraft in this area is expected from aircraft engaged in RNP training to runway 26. These RNP training

Area	Impact	Category	Runway 08	Runway 26
			will be smaller aircraft having a minimal impact on noise.	operations will be smaller aircraft having a minimal impact on noise.
H		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft arriving from the east to join the RNP approach to runway 08. These aircraft will follow the same tracks as currently flown to start an ILS* or NDB approach. Outside of Bournemouth Radar hours, aircraft will continue to transit this area towards the NDB to start the NDB Initial approach procedure. * The 08 ILS will be withdrawn	RNP approach (option 3c) does not provide guidance for runway 26 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft arriving from the west to join the RNP approach to runway 26. These aircraft will follow the same tracks as currently flown to start an ILS approach. Outside of Bournemouth Radar hours, aircraft will continue to fly the current ILS Initial approach procedure that are not within this area.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	No expected change to aircraft numbers flying through this area.
I		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 08. There will be some concentration of tracks towards the Initial Approach Fix.	RNP approach (option 3c) does not provide guidance for runway 26 in this area.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	RNP approach (option 3c) does not provide guidance in this area.
J		Noise	Minor increased concentration at Initial Approach Fix. No significant change to noise from current ILS* operation as radar vectoring currently concentrates traffic at the location of the Initial Approach Fix. * The 08 ILS will be withdrawn	RNP approach (option 3c) does not provide guidance in this area.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	RNP approach (option 3c) does not provide guidance in this area.
K		Noise	RNP approach (option 3c) does not provide guidance for runway 08 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 08. There will be some concentration of tracks towards the Initial Approach Fix.	RNP approach (option 3c) does not provide guidance in this area This area is not overflown by the RNP approach to runway 26
		Number of aircraft	No expected change to aircraft numbers flying through this area.	RNP approach (option 3c) does not provide guidance in this area This area is not overflown by the RNP approach to runway 26

Table 4: Detailed rationale for expected local impacts from Sub-Option 3c

I.2 Option 3d

Area	Impact	Category	Runway 08	Runway 26
A		Noise	RNP approach (option 3d) does not provide guidance for runway 08 in this area.	The RNP approach (option 3d) provides guidance from the southern Initial Approach Fix to the Intermediate Fix for runway 26 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 26. There will be concentration of tracks towards the Intermediate Fix as aircraft transition from the vector heading to the RNP guidance. The inclusion of the southern Initial Approach Fix, enables aircraft arriving from the west when Bournemouth Radar is not available to fly the RNP approach without overflying the NDB located at the airport. It is expected however that the majority of aircraft will continue to fly the ILS approach to runway 26, leading to no discernible change in the noise distribution in this area
		Number of aircraft	This area is not overflown by the RNP approach to runway 08	No significant change to aircraft numbers flying through this area, other than the addition of a low number of arrivals that will start the RNP approach at the south rather than from the north. This results in lower mileage, fuel burn and emissions.
B		Noise	RNP approach (option 3d) does not provide guidance for runway 08 in this area.	RNP approach (option 3d) provides guidance to transition from the Initial to Intermediate segments at the Intermediate Fix for runway 26 in this area. The defined turn will increase the concentration of RNP approach traffic at the Initial Approach Fix. It is expected that the majority of aircraft will continue to fly the ILS approach to runway 26, leading to no discernible change in the noise distribution that will be defined by the ILS approach traffic.
		Number of aircraft	This area is not overflown by the RNP approach to runway 08.	No significant change to aircraft numbers flying through this area, other than a small % of RNP training flights.
C		Noise	RNP approach (option 3d) does not provide guidance for runway 08 in this area.	The RNP approach (option 3d) provides guidance from the northern Initial Approach Fix to the intermediate Fix for runway 26 in this area. During the hours of Bournemouth

				Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 26. There will be concentration of tracks towards the Intermediate Fix as aircraft transition from the heading vector to the RNP guidance. It is expected that the majority of aircraft will continue to fly the ILS approach, leading to no discernible change in noise distribution.
		Number of aircraft	RNP approach (option 3d) does not provide guidance for runway 08 in this area.	It is expected that at night when Bournemouth Radar is not available, there will be a reduced number of flights as RNP capable aircraft will not fly the ILS Initial approach. It is also expected that there will be small % increase in numbers of aircraft in this area engaged in RNP training to runway 26. These RNP training operations will be smaller aircraft having a minimal impact on noise.
D		Noise	Aircraft follow tracks that are aligned with the runway and are identical to the current ILS* operation. No change to aircraft noise or distribution. * The 08 ILS will be withdrawn	Aircraft follow tracks that are aligned with the runway and are identical to the current ILS operation. No change to aircraft noise or distribution.
		Number of aircraft	No expected change to aircraft numbers flying through this area	No expected change to aircraft numbers flying through this area
E		Noise	RNP approach (option 3d) does not provide guidance for runway 08 in this area. Outside of Bournemouth Radar hours, RNP capable aircraft will not need to fly overhead the Airport NDB to commence an NDB approach and will fly the 08 RNP approach from the southern Initial Approach Fix. Some aircraft that are not RNP capable, will continue to transit this area towards the NDB to start the NDB Initial approach procedure. * The 08 ILS will be withdrawn	RNP approach (option 3d) does not provide guidance for runway 26 in this area. Outside of Bournemouth Radar hours, RNP capable aircraft will not need to fly overhead the Airport NDB to commence an NDB approach and will fly the 08 RNP approach from the southern Initial Approach Fix. Some aircraft that are not RNP capable, will continue to transit this area towards the NDB to start the ILS Initial approach procedure.
		Number of aircraft	It is expected that numbers of aircraft in this area will be reduced by RNP aircraft not flying the NDB Initial approach. This will be particularly beneficial during night operations when Bournemouth Radar is not available.	It is expected that numbers of aircraft in this area will be reduced by RNP aircraft not flying the ILS Initial approach. This will be particularly beneficial during night operations when Bournemouth Radar is not available.
F		Noise	RNP approach (option 3d) does not provide guidance for runway 08 in this area. During the hours of Bournemouth	RNP approach (option 3d) does not provide guidance for runway 26 in this area. During the hours of Bournemouth

			Radar, ATC will provide 'vectors' to aircraft arriving from the east to join the RNP approach to runway 08. These aircraft will follow the same tracks as currently flown to start an ILS* or NDB approach. * The 08 ILS will be withdrawn Outside of Bournemouth Radar hours, RNP capable aircraft will not need to fly overhead the Airport NDB to commence an NDB approach and will fly the 08 RNP approach from the southern Initial Approach Fix. Some aircraft that are not RNP capable, will continue to transit this area towards the NDB to start the NDB Initial approach procedure.	Radar, ATC will provide 'vectors' to aircraft arriving from the west to join the RNP approach to runway 26. These aircraft will follow the same tracks as currently flown to start an ILS or NDB approach. Outside of Bournemouth Radar hours, RNP capable aircraft will not need to fly overhead the Airport NDB to commence an NDB approach and will fly the 08 RNP approach from the southern Initial Approach Fix. Some aircraft that are not RNP capable, will continue to transit this area towards the NDB to start the ILS Initial approach procedure.
		Number of aircraft	It is expected that numbers of aircraft in this area will be reduced by RNP aircraft not flying the NDB Initial approach. This will be particularly beneficial during night operations when Bournemouth Radar is not available.	It is expected that numbers of aircraft in this area will be reduced by RNP aircraft not flying the ILS Initial approach. This will be particularly beneficial during night operations when Bournemouth Radar is not available.
G		Noise	RNP approach (option 3d) does not provide guidance for runway 08 in this area. Outside of Bournemouth Radar hours, RNP capable aircraft will not need to fly overhead the Airport NDB to commence an NDB approach and will fly the 08 RNP approach from the southern Initial Approach Fix. Some aircraft that are not RNP capable, will continue to transit this area towards the NDB to start the NDB Initial approach procedure. It is expected that daytime RNP approach training activity will increase in this area with aircraft flying from the airport NDB direct to the northern Initial Approach Fix to commence an approach. (This heading is a similar, but not identical to the current ILS* and NDB Initial approaches) to commence an RNP approach to runway 08. These RNP training operations will be smaller aircraft having a minimal impact on noise.	RNP approach (option 3d) does not provide guidance for runway 26 in this area. Outside of Bournemouth Radar hours, RNP capable aircraft will not need to fly overhead the Airport NDB to commence an NDB approach and will fly the 26 RNP approach from the southern Initial Approach Fix. Some aircraft that are not RNP capable, will continue to transit this area towards the NDB to start the ILS Initial approach procedure. It is expected that daytime RNP approach training activity will increase in this area with aircraft flying from the airport NDB direct to the northern Initial Approach Fix to commence an approach. (This heading is a similar, but not identical to the current ILS* and NDB Initial approaches) to commence an RNP approach to runway 26. These RNP training operations will be smaller aircraft having a minimal impact on noise.
		Number of aircraft	It is expected that at night when Bournemouth Radar is not available, there will be a reduced number of flights as RNP capable aircraft will not fly the NDB Initial approach. It is also expected that there will be small % increase in numbers of aircraft in this area engaged in RNP training to runway 08. These RNP	It is expected that at night when Bournemouth Radar is not available, there will be a reduced number of flights as RNP capable aircraft will not fly the ILS Initial approach. It is also expected that there will be small % increase in numbers of aircraft in this area engaged in RNP training to runway 26. These

			training operations will be smaller aircraft having a minimal impact on noise.	RNP training operations will be smaller aircraft having a minimal impact on noise.
H		Noise	RNP approach (option 3d) does not provide guidance for runway 08 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft arriving from the east to join the RNP approach to runway 08. These aircraft will follow the same tracks as currently flown to start an ILS* or NDB approach. Outside of Bournemouth Radar hours, aircraft will continue to transit this area towards the NDB to start the NDB Initial approach procedure. * The 08 ILS will be withdrawn	RNP approach (option 3d) does not provide guidance for runway 26 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft arriving from the west to join the RNP approach to runway 26. These aircraft will follow the same tracks as currently flown to start an ILS approach. Outside of Bournemouth Radar hours, aircraft will continue to fly the current ILS Initial approach procedure that are not within this area.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	No expected change to aircraft numbers flying through this area.
I		Noise	The RNP approach (option 3d) provides guidance from the Initial Approach Fix to the intermediate Fix for runway 08 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 08. There will be concentration of tracks towards the Initial Approach Fix as aircraft transition from the vector to the RNP guidance. It is expected that the increased concentration of aircraft will lead to an increase in noise close to the Initial approach segment, although will reduce noise further from the defined track.	RNP approach (option 3d) does not provide guidance for runway 26 in this area.
		Number of aircraft	It is expected that numbers of aircraft will not significantly change; It is expected that at night when Bournemouth Radar is not available, there will be a reduced number of flights as RNP capable aircraft will not fly the NDB Initial approach. It is also expected that there will be small % increase in numbers of aircraft in this area engaged in RNP training to runway 08. These RNP training operations will be smaller aircraft having a minimal impact on noise.	RNP approach (option 3d) does not provide guidance for runway 26 in this area.
J		Noise	RNP approach (option 3d) provides guidance to transition from the Initial to Intermediate segments at	RNP approach (option 3d) does not provide guidance for runway

			the Intermediate Fix for runway 08 in this area. The defined turn will increase the concentration of RNP approach traffic at the Initial Approach Fix. It is expected that the increased concentration of aircraft will lead to an increase in noise close to the Intermediate fix, although will reduce noise further from the defined tracks.	26 in this area.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	RNP approach (option 3d) does not provide guidance for runway 26 in this area.
K		Noise	The RNP approach (option 3d) provides guidance from the Initial Approach Fix to the intermediate Fix for runway 08 in this area. During the hours of Bournemouth Radar, ATC will provide 'vectors' to aircraft to join the RNP approach to runway 08. There will be concentration of tracks towards the Initial Approach Fix as aircraft transition from the vector to the RNP guidance. It is expected that the increased concentration of aircraft will lead to an increase in noise close to the Initial approach segment, although will reduce noise further from the defined track.	RNP approach (option 3d) does not provide guidance for runway 26 in this area.
		Number of aircraft	No expected change to aircraft numbers flying through this area.	RNP approach (option 3d) does not provide guidance for runway 26 in this area.