RNAV (GNSS) Instrument Approach Procedures at Sherburn-in-Elmet aerodrome

- Airspace change proposal

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Other Documents in support of this application

- Design report for Sherburn-in-Elmet RNAV (GNSS) approach procedures (11.12.2017);
- Draft Letters of agreement (Leeds Bradford, Doncaster Sheffield and Leeds East);
- Presentation and meeting minutes of Local Community Liaison meeting (17.01.2017);
- North Airspace User group hand out; and
- Record of simulated GNSS approaches flown.

Project Contact

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Part I – Airspace change proposal document

1 Executive Summary

Sherburn Aero Club (SAC), the operators of Sherburn-in-Elmet aerodrome, intend to introduce global navigation satellite system (GNSS) instrument approach procedures (IAPs) at the aerodrome. This is to provide increased safety and operational resilience during periods of poor weather.

Historically Sherburn has lacked any form of instrument approach procedure (IAP), meaning aircraft are reliant on visual references only for landing. However, improvements in technology and regulatory provision now mean that it is viable for Sherburn to consider introducing an IAP.

The purpose of introducing the procedures is not to significantly increase movements at Sherburn, but to provide a more reliable means of arriving at the aerodrome. This is primarily for aircraft already based at Sherburn. The procedure would only be used when weather conditions at Sherburn are poor and when there is no visual flying in the aerodrome traffic pattern.

The procedures would align aircraft for approximately eight nautical miles (NM) with either runway 10 or runway 28 (either direction of the runway that aligns roughly East-West) for landing. Aircraft commence the procedure at around 2000 ft and follow a progressive descent profile of around 350 feet per nautical mile.

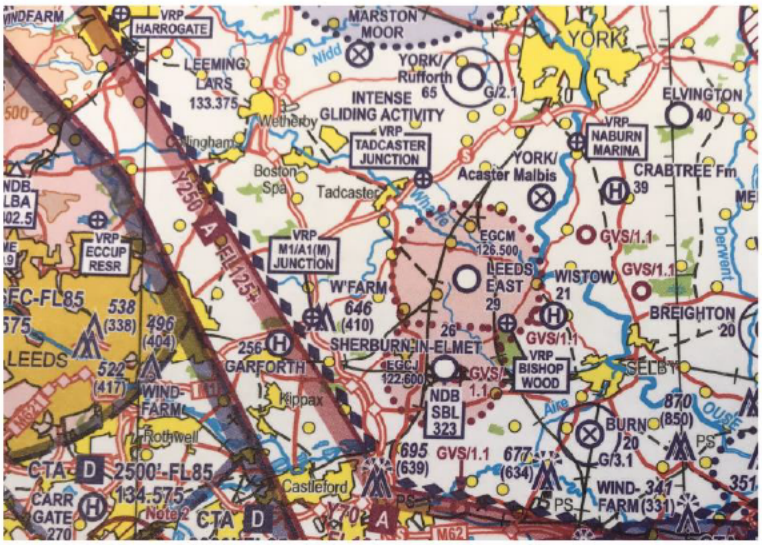
The purpose of this proposal document is to present Sherburn's plans for these procedures, describe the impacts they may have for both other airspace stakeholders and local communities on the ground.

Due to the low utilisation rate, estimated to be an average of around one per day, SAC estimate the environmental impact of the procedures to be very low. The plans are consistent with SAC's overall aim of minimising any negative impact operations may have on the local community.

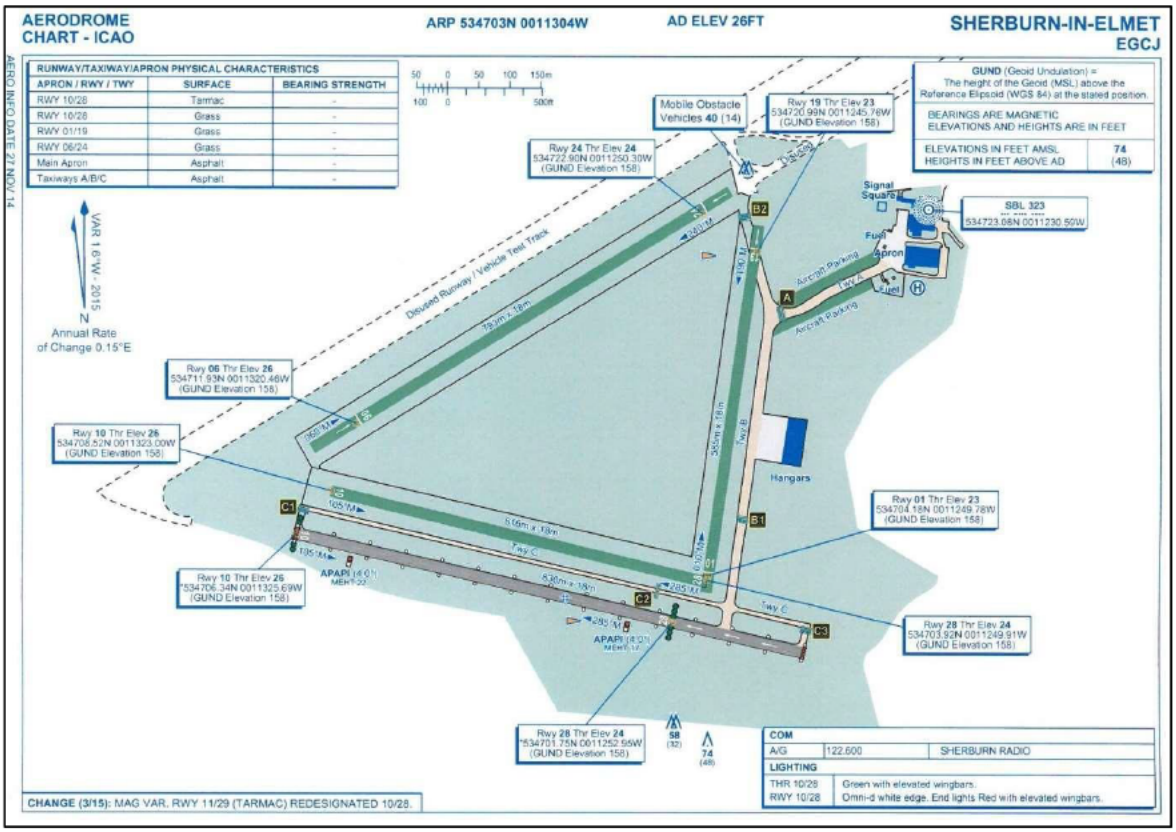
2 Background

SAC is a private members club. It operates Sherburn-in-Elmet, a general aviation (GA) aerodrome situated in North Yorkshire. The field is 16 NM south east of Leeds Bradford Airport, and 20 NM North West of Doncaster Sheffield Airport. It is situated in Class G airspace. The aerodrome has an air/ground communications service (AGCS) which passes information to aircraft joining or operating within the 2 NM aerodrome air traffic zone (ATZ).

The former RAF Church Fenton, now known as Leeds East Airport (LEA), has recently re-established an ATZ just to the north of Sherburn. The proximity of the two aerodromes required a letter of agreement (LoA) to agree procedures for deconfliction of visual traffic operating an either location. This was produced in 2016 and has proved effective.



Sherburn has three runway orientations, as depicted below on the aerodrome chart. The most commonly used runway is the hard runway that is aligned 28/10 (roughly east/west). It is to each end of this runway that the IAPs are intended to be established.



Sherburn aerodrome summer 2016

There are approximately 35,000 movements annually and a total of 54 aircraft based at the aerodrome. The aircraft and operations are characterised by the following:

- Light two or four seat models of around one and a half tonnes maximum take-off weight (MTOW). The largest based aircraft is four tonnes;
- Visual flight rules (VFR) flights. Although some occasional IFR traffic arrives from either the airways or from outside of controlled airspace, before obtaining visual references for landing. It is estimated that 95% of movements are VFR; and
- Recreational and flight training, with occasional business use.

SAC itself operates a fleet of twelve aircraft light aircraft consisting of seven Piper PA28s, one Robin 2160 and four Aero AT-3s. These are used for private hire by members and training towards the private pilot licence (PPL) and associated qualifications. There is also a separate flying school based at Sherburn, Advanced Flight Training, which specialises in more advanced flying courses.

The flying activity at the aerodrome in recent times has been declining for several years, with SAC membership also declining. While this has presented challenges to the club, it is financially stable, and in the last year activity has improved, membership and flying hours are increasing.

SAC Piper PA28s

3 Justification and objectives

In 2014 SAC assessed the viability of introducing RNAV (GNSS) procedures. This was motivated by the following factors:

- It is a historic difficulty that in the absence of a published IAP, IFR operations into Sherburn have always been vulnerable to disruption by weather conditions (sometimes difficult to predict);
- Changes in technology have now made published IAPs a possibility for aerodromes like Sherburn, since the costs have been brought down to more manageable levels;
- There was European funding available for aerodromes wishing to publish IAPs to LPV minima (which make use of the European EGNOS service[1]) from the European GNSS Agency (GSA). This money was targeted at environments where conventional approach technology (ILS, VOR, NDB) was not viable; and
- Regulatory provision from the UK CAA in the form of CAP 1122 meant that an alternative (and more cost effective) means of regulatory approval was possible (although not without its challenges).

It was agreed that there would be operational advantages of an RNAV approach and introducing them (compared to 'doing nothing') was essentially a matter of reducing the cost to a level that SAC could afford. A small grant from the GSA facilitated this.

The use of LPV and provision of a 'glidepath' indication on the final approach reduces the risk of controlled flight into terrain (CFIT) and loss of control (LOC), which remain significant risks in general aviation (GA) activities worldwide.

Runway 10/28 (tarmac) was chosen since it is the longest runway at Sherburn and gives the maximum operational benefit of the procedure. Alignment with 06/24 (grass) was considered in order to deconflict with possible future procedures at Leeds East Airport, but the disadvantage of this would have been winter operations on grass, and the potential need to 'circle to land' during some wind conditions to align with 10/28 (which is more frequently aligned with the wind direction). Circle to land manoeuvres are also known to carry higher risk during poor weather and would reduce the utility of the IAPs.

It is not the intention of SAC to change the core (VFR) flying activities currently taking place. The IAP is simply there to provide operational resilience and safety to the limited recreational and business users of the aerodrome who sometimes operate under IFR in and out of the aerodrome, often to destinations outside the UK.

4 Description of Airspace Change

The IAPs to runways 10 and 28 will be standard RNAV (GNSS) procedures with 2D (LNAV) and 3D (LPV) minima. They will have obstacle clearance heights (OCH) of around 500 ft AGL and limited to category A & B approach speeds. This means a maximum runway threshold speed of 120 kts.

[1] EGNOS is the European Geostationary Navigation Overlay Service, it essentially augments the accuracy of a standard GPS signal, allowing it be used for more applications that require high degrees of positional accuracy in three dimensions.

The IAPs will be established in class G airspace and follow the normal conventions for the design and publication of RNAV (GNSS) procedures. There are no plans to introduce holding procedures; mainly due to the low intensity utilisation of the procedure making it very unlikely (and unintended) that aircraft would need to hold for either arrival sequencing or weather conditions. In the event of weather preventing (even with the IAP) a successful landing, it is intended that aircraft to divert to another aerodrome with more extensive facilities rather than attempt multiple approaches into Sherburn.

Prior to publication the IAPs will be approved by the Civil Aviation Authority in accordance with:

- ICAO PANS-OPS (volume II) – Construction of Visual and Instrument Flight Procedures; and
- CAA CAP 785 – Approval Requirements for Instrument Flight Procedures for Use in UK Airspace.

Runways 10 and 28 do not meet the instrument runway obstacle clearance standards and there will not be an approach control service provided for aircraft flying the IAPs. Sherburn has therefore applied to the CAA to be approved in accordance with CAP 1122 – Application for instrument approach procedures to aerodromes without an instrument runway and/or approach control. CAP 1122 sets down the framework of approval for such IAPs, including guidance on safety procedures and mitigations required to ensure the IAPs can be operated to an acceptable level of safety. This will be more extensively described in the section on safety management.

The basic operational concept is that the procedure is only for use when required due to the weather. When conditions permit, aircraft shall discontinue the approach and join under normal visual joining procedures prior to entering the ATZ. Overall it is envisaged the use of the procedure will average one per day, with around 75 % of approaches being made to runway 28. After initial introduction, there may be a slight increase above this average as SAC members fly the procedures to become familiar with them.

As part of the safety management procedures the utilisation rate of the IAP will be kept to one approach per hour. Given Sherburn's normal hours of operation and the shard slots times with Leeds East, this will likely limit movements on the IAP to not more ten per day- shared between both facilities. It is considered very unlikely that anything like that number will transpire in practice.

Runway 28

The initial approach leg from the north is positioned such that aircraft will minimise any environmental impact on local villages and avoid Breighton aerodrome. The terminal arrival altitude (TAA) is 2000 ft, the intermediate fix (IF) at 1900 ft and the final approach fix (FAF) at 1600 ft. This presented no challenges in terms of descent profile and a 4 NM inbound leg for the northern IAF (IBUGI) was considered appropriate.

For aircraft from the south, airspace was a constraint. Within 15 NM of the southern IAF (RUDUD) the terrain allows a 1900 ft TAA, keeping the IAF below the 2000 ft base of the Doncaster control area (CTA). The IAF leg has also been shortened to 3.5 NM which will minimise the time spent below the 2000 ft base of the CTA. The possibility of the joining altitude being within the CTA (for example at 2,500 ft) was considered, but after discussion with Doncaster ATC it was felt too complex to

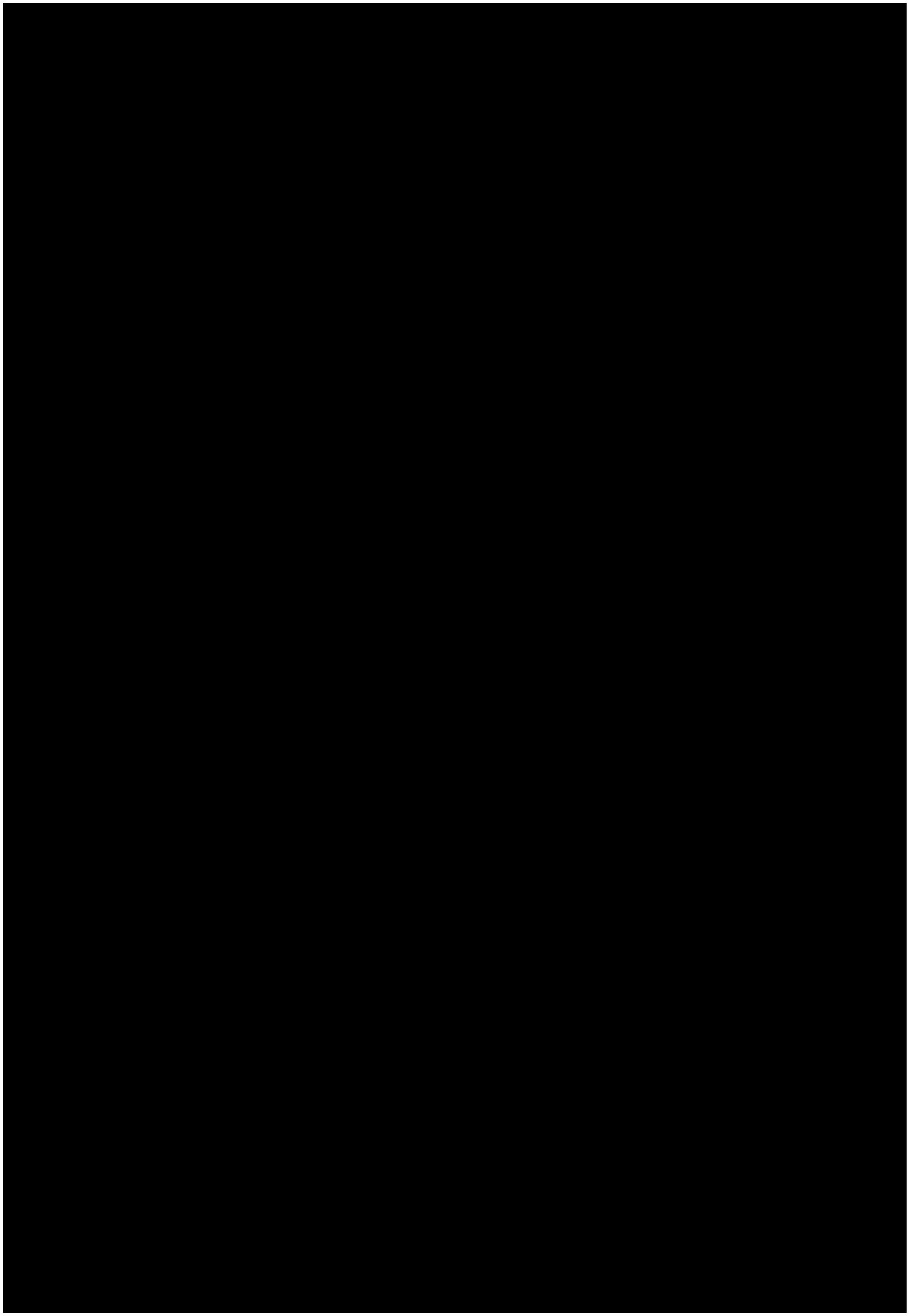
integrate this arrangement into all the possible traffic situations that Doncaster may have within their airspace.

Nonetheless, pilots will be briefed that it is desirable to contact Doncaster ATC and request a clearance through to the IAF at around 2500 ft. This avoids the situation of aircraft joining at 1900 ft with the CTA only being 100 ft above them, reducing the risk of infringement. It is also more environmentally desirable since aircraft will be higher for longer. This arrangement is subject to the traffic situation within Doncaster airspace.

The location of glider site at Burn, to the south of the final approach track, was considered – under VMC it will be necessary for pilots to exercise caution when passing to the north, but in IMC it is unlikely there would be glider activity. There will be a LOA with Burn to cover any communication and co-ordination when appropriate.

The missed approach path turns to the south, primarily to avoid Leeds East and is optimised for clearance of obstacles, local villages, and congested areas. Use of the missed approach path is envisaged to be very limited.

Draft Approach Chart Redacted



28 Initial approach fix (north)

28 Intermediate fix – aircraft may join here provided they observe the published TAA, and establish on the on the final approach track no later than 2NM before the FAF.

Runway 28 Missed approach path

28 Initial approach fix (south)

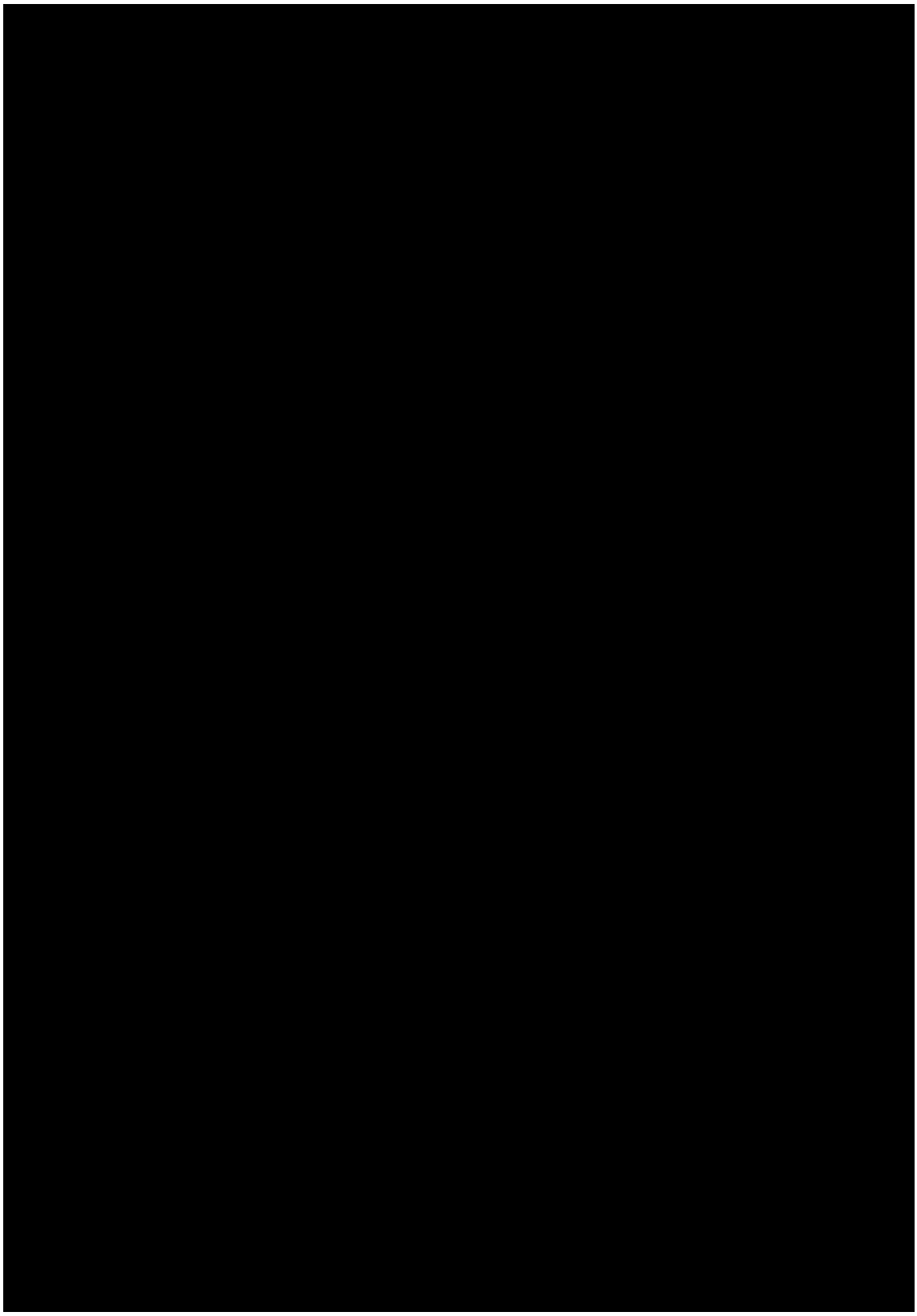
Runway 10

The tracks minimise environmental impact on the local communities. Leeds Bradford's controlled airspace to the west of the aerodrome is a restricting factor. Initially a calculated TAA of 3000 ft meant aircraft routing from the south and south west towards the southern IAF would need to transit controlled airspace. A revised TAA to allow a join below controlled airspace subsequently calculated. The northern IAF is clear of airspace and minimises environmental impact on local villages.

Environmental issues and TAA limitations preclude joins at the 'centre fix', so this will be noted on the chart as being prohibited. A central IAF prior to the IF would have been over the congested area of Leeds and well inside Leeds CTR, so this was discounted. All aircraft therefore must start the procedure at either the northern or southern IAF. The inbound legs from the IAFs are set at 3.5 NM, considered acceptable for the types of aircraft intended to use the procedure.

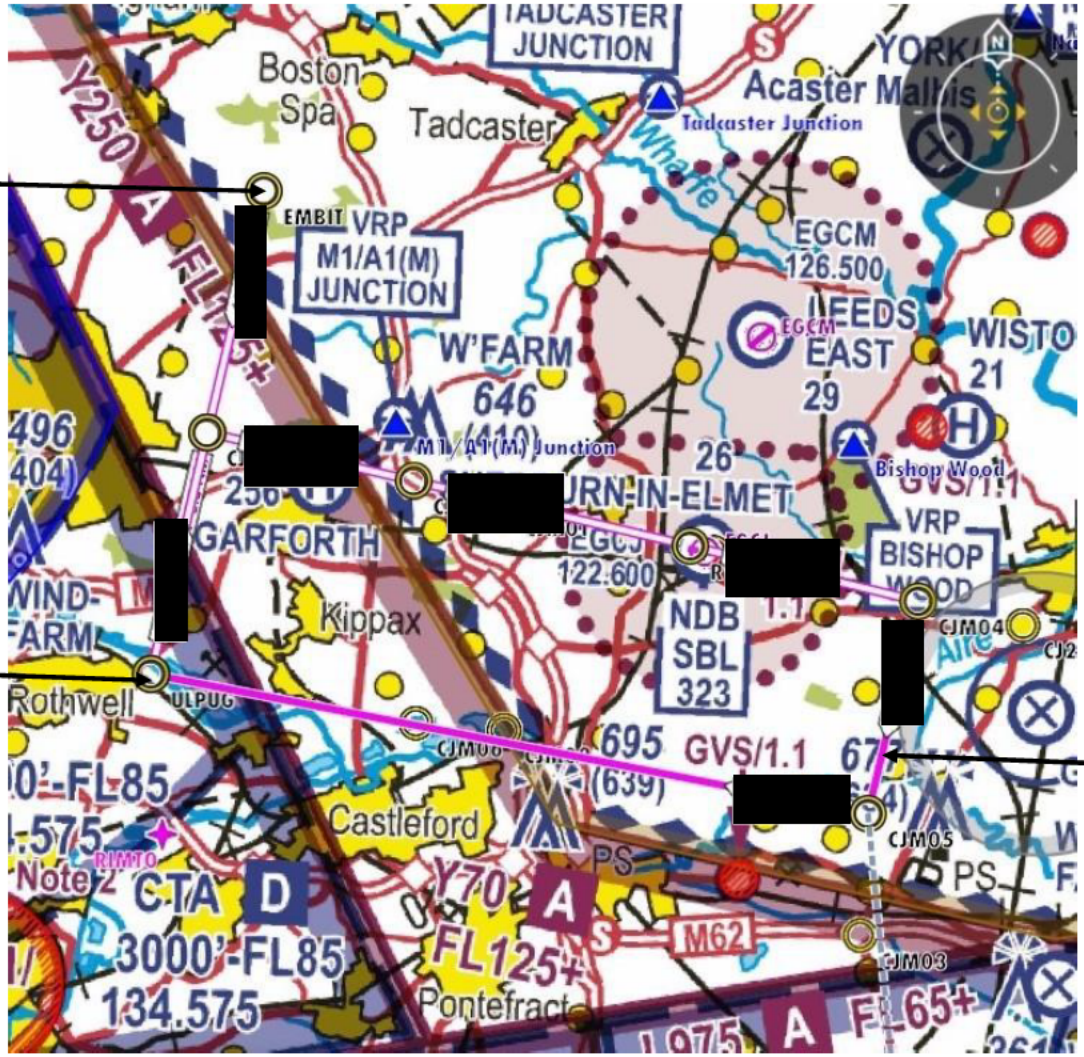
In order to avoid Leeds East, the missed approach path turns to the south initially. Aircraft can then restart the procedure at the southern IAF (ULPUG) or depart to minimum safe altitude (MSA) via the northern IAF (EMBIT). Use of the missed approach path is envisaged to be very limited.

Draft Approach Chart Redacted



10 Initial approach fix (north)

10 Initial approach fix (south)



Runway 10 Missed approach path

5 Operational impacts

The design of the IAPs is entirely within class G airspace. There were a number of potentially affected local airspace stakeholders, who were engaged during the development of the IAPs to ensure any conflicts or other airspace considerations were appropriately addressed. These stakeholders included:

- Leeds Bradford Airport (LBA). Discussions involved layout of the procedures and the likely trajectory of arriving aircraft that may wish to receive an air traffic service. During the development of the IAP safety case it was agreed that a letter of agreement (LOA) would be established between Sherburn and LBA to provide mitigation against the risk of mid-air collision (MAC) when approaching to fly the IAP.
- Doncaster Sheffield Airport (DSA). These were similar discussions to that with LBA, with the circumstances (for example depending on direction of arrival and runway in use) in which an aircraft should contact DSA (rather than LBA) to be set out by LOA and confirmed prior to approval of the safety case.
- Leeds East Airport (LEA). The interaction of possible future IAPs at LEA with those planned at Sherburn was a major consideration. While they are not yet published, the planned IAPs at LEA overlap with Sherburn's. Procedures to avoid concurrent use of the IAPs will be established prior to a situation in which IAPs are operational at both Sherburn and LEA.
- Breighton aerodrome. While not directly affected by the IAPs, the northern IAF to runway 28 does come within a few miles of Breighton, so awareness and assessment of impact was discussed; and
- Burn gliding club. The site lies just to the south of the final approach track for runway 28. A LOA is under discussion to ensure any conflicts can be managed. The impact on gliding operations is envisaged to be limited, since in most conditions under which gliding would take place, an aircraft flying the procedure to runway 28 would be in VMC (and therefore should be maintaining a good look out) by the time it passes Burn.

The key LOAs to support the safety of the approach will be those with LBA and DSA, with the LEA LOA becoming necessary once their IAP is ready for publication.

6 Environmental impacts

A community liaison group consisting of local councillors and community representatives meets on a biannual basis to discuss any issues regarding relations between Sherburn and the local community. This is normally attended by the SAC Chairman and the Director of Operations and Training. The group was briefed on the proposals on 17th January 2017 and no objections were raised.

6.1 Noise

Like most aerodromes of any significant activity, Sherburn does attract noise complaints. Currently these are almost exclusively generated by traffic (mostly training) repeatedly flying around the aerodrome traffic circuit. This is a long-standing issue that SAC attempts to manage as far as possible and is not considered relevant to the proposed IAPs. Occasionally aircraft conducting aerobatics in the surrounding areas (which may not originate from Sherburn) attract complaints, but other than that it is very rare for aircraft outside the ATZ to attract any noise complaints.

Of the 35,000 annual movements at Sherburn, approximately 95% is VFR traffic. It is estimated that the environmental impact of the IAPs will be very low, and not significantly increase the overall number of aircraft operating into Sherburn. It may on occasion allow arrivals that would otherwise use/divert to other aerodromes, although this is not envisaged to be significant. It is impossible to estimate the exact demand for use of the IAP, largely because IAPs to aerodromes like Sherburn are uncommon in the UK, so there is little practical experience of how much they will be used. SAC estimates likely demand to be an average of around one per day.

There is not likely to be any significant change in the types of aircraft operating at Sherburn as a result of in the IAPs. The relatively short length of runway 10/28 (around 830 m) limits the types that can safely use Sherburn to typical light aircraft models.

For reference, noise values for the approach phase (taken from the FAA Advisory Circular April 2002 AC No 36-3H) of typical aircraft that use Sherburn are listed below. They are approximate and derived from when the aircraft is around 1 NM from landing (therefore at around 350 ft). At this distance/height, there would be no difference in noise levels from the IAP compared to a visual approach. When flying the track of the IAP, aircraft would be much higher than this – above 1500 ft AGL until approximately 4 NM prior to the runway and therefore a lot quieter from the ground. One advantage of the LPV procedure is that it allows an accurate 'constant descent' final approach, meaning aircraft are not lower than necessary when coming into land.

Aircraft		Noise
Piper PA28		61 dB
Cessna 425		75 dB

Currently aircraft approach from all directions with a concentration over the ATZ and around 1 mile around the ATZ. The main difference between IAPs and visual approaches into Sherburn is that aircraft will be established on the final approach track further away from the runway, rather than flying directly to the immediate vicinity of the aerodrome before descending more rapidly for landing.

While this could expose new communities to noise, the low utilisation rate and the general lack of residential areas beneath the approach tracks will limit this. Those currently most affected by Sherburn's flying will not experience any increase in impact since within 2 NM or so of the runway

(when aircraft are at 1000 ft AGL or less) the tracks followed by existing visual arrivals and that on the IAP will be similar.

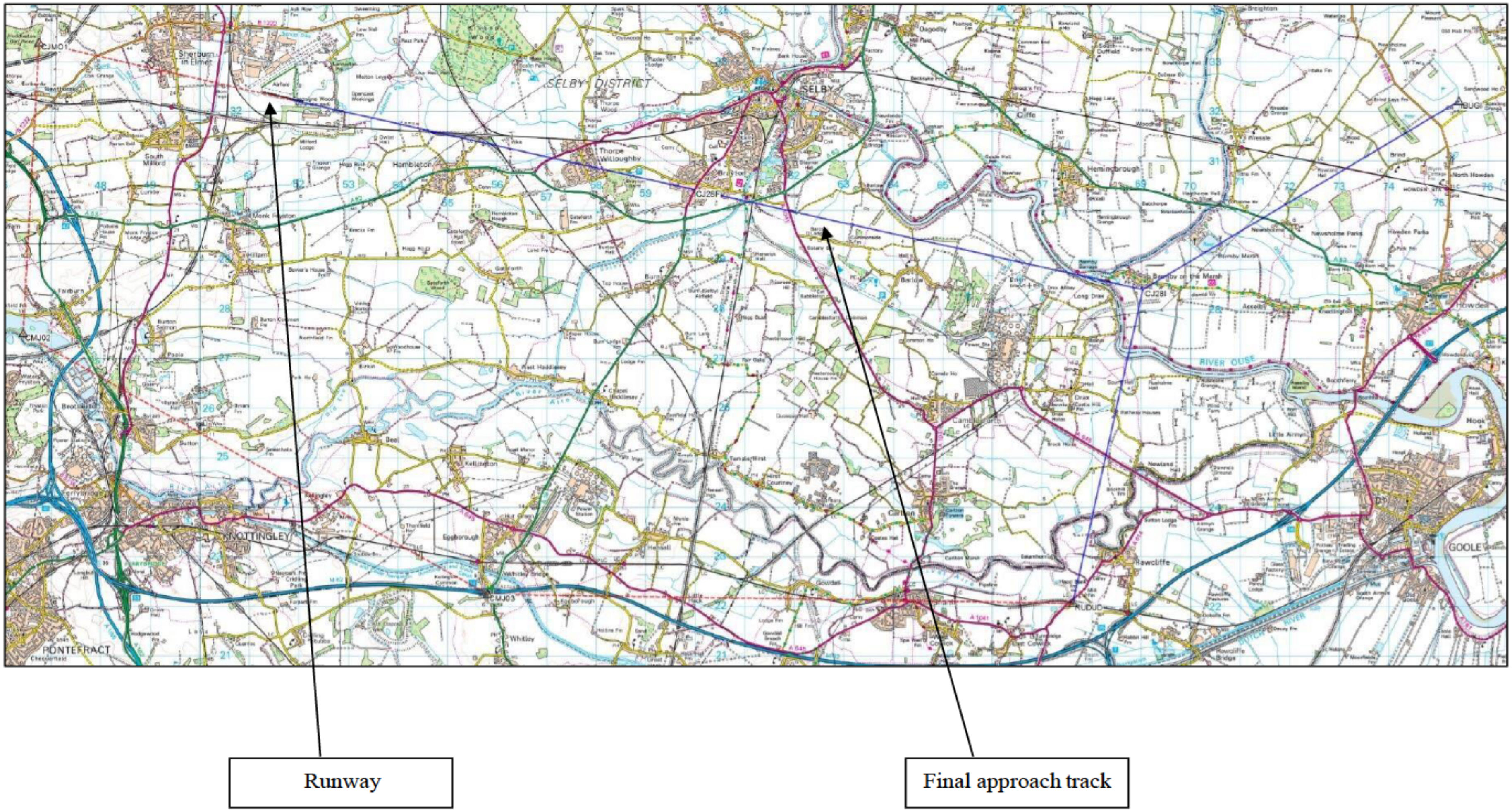
Runway 28

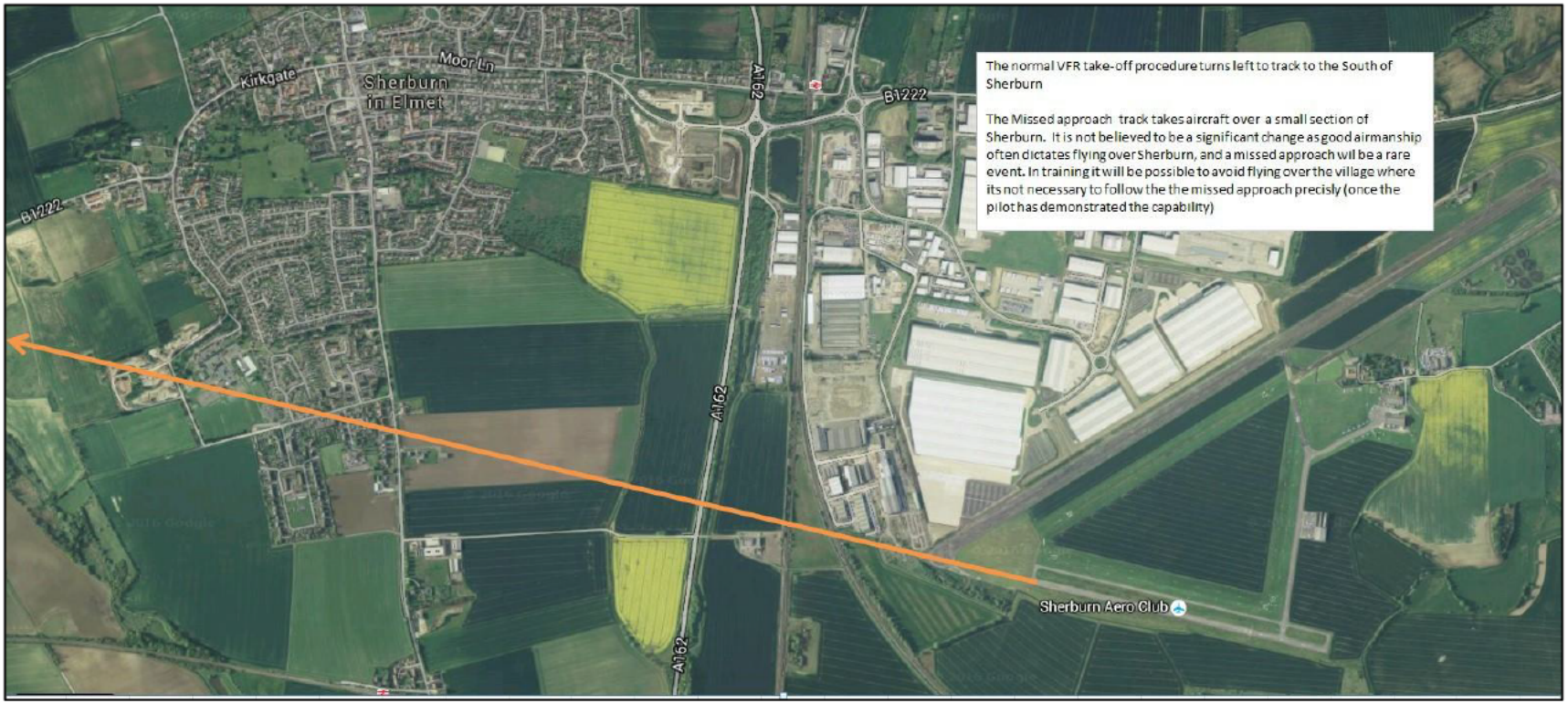
Due to the prevailing wind, around 75% of the approaches flown will be to runway 28.

Efforts were made to ensure the IAP tracks to 28 did not unnecessarily overfly residential areas. The potential impacts below 1500 ft AGL were considered most significant, although much below 1000 ft AGL the difference between the tracks adopted by existing visual and instrument traffic is not significant.

The overflight of Brayton (just to the south of Selby) and Thorpe Willoughby on the final approach track was considered undesirable during the design phase, however avoiding them would have led to a 4^{o} offset to the south, thereby raising a conflict with the glider site at Burn. PANS-OPS also advises against runway alignment offsets purely for noise abatement reasons.

It was identified that the initial missed approach leg will pass over the southern tip of the village beyond runway 28, although missed approaches in conditions in which visual avoidance would not be possible are likely to be very rare indeed.


SELBY
SELBY DISTRICT
GOOLE
PONTEFRACT
KNOTTINGLEY
RIVER OUSE
CJ28F
CJ28I
Runway
Final approach track


Kirkgate
Sherburn in Elmet
Moor Ln
A162
B1222
B1222
A162
A162
Sherburn Aero Club
The normal VFR take-off procedure turns left to track to the South of Sherburn
The Missed approach track takes aircraft over a small section of Sherburn. It is not believed to be a significant change as good airmanship often dictates flying over Sherburn, and a missed approach wil be a rare event. In training it will be possible to avoid flying over the village where its not necessary to follow the the missed approach precisly (once the pilot has demonstrated the capability)

Runway 10


GARFORTH
GASTLEFORD
SELBY DISTRICT
Final approach track
Runway

Efforts were made to ensure the IAP tracks to runway 10 did not unnecessarily overfly residential areas. The potential impacts below 1500 ft AGL were considered most significant, although much below 1000 ft AGL the difference between the tracks adopted by existing visual and instrument traffic is not significant. As it happens the final approach track tends not to overfly any significant areas anyway, the only exception to this being the southern tip of the village just prior to the runway. This was unavoidable so close to the runway. Even if noise abatement could have been used as a reason to offset to the south, this would have placed the track over other areas further out from the runway.

Despite the likelihood of very low utilisation, the missed approach tracks were adjusted for the best possible compromise between airspace, obstacle constraints and minimising over flight of residential areas.

6.2 Other impacts

CAA guidance also requires any impacts on National Parks, Areas of Outstanding National Beauty (AoONB), fuel burn/CO_2, local air quality, tranquillity or visual intrusion are considered.

Sherburn does not reside in an AoONB or National Park. Impacts on local air quality or CO_2 emissions are likely to be negligible due to the low utilisation rate and that for the most part aircraft will be encouraged to operate using the normal visual joining procedures when conditions allow.

However, on the basis that:

- The IAP may allow some aircraft to land that otherwise would not; and
- That the overall distance flown by an aircraft on an IAP tends to be slightly greater compared to a visual approach;

a modest increase in CO_2 emissions and fuel burn could be anticipated, although this should be considered against the fact that many of these flights would otherwise have landed elsewhere (potentially further away from origin) rather than not taken place at all.

It is difficult to predict the exact impact, but the taking the:

- Estimated additional distance that an aircraft might fly on an IAP compared to a visual approach as around 7 NM (based on the increased distance the aircraft will be aligned on the final approach and having to fly the T-bar shape from the initial approach fix); and
- Using typical speed and fuel burn figures;

some approximate comparisons have been generated. The CO_2 burn figures are based on 2.7 kgs per litre of fuel consumed.

Aircraft	Fuel burn (VFR)	Fuel burn (IAP)	CO_2 (visual)	CO_2 (IAP)
Piper PA28	2.5 ltrs	3.2 ltrs	6.8 kgs	8.6 kgs
Cessna 425	25 ltrs	36 ltrs	9.3 kgs	13.3 kgs

It is emphasised that these figures are for comparison purposes – it is not the intention that aircraft currently flying shorter visual approaches will instead use the IAP with the associated potential for greater fuel burn.

There is not considered to be any tranquillity or visual intrusion impact over and above that currently present as such associated with the procedure.

7 Safety management

Since the application for the IAPs is being made in accordance with CAP 1122, the safety management of the procedure will focus on the lack of approach control and an instrument compliant runway. The detail of this is subject to a separate and detailed safety case that is currently under review with the CAA. Supporting the safety case will be detailed LoAs and standard operating procedures which will be provided to crews wishing to fly the procedure.

Lack of instrument runway

ICAO sets down international standards for the areas around runways which must be free from obstacles or objects that might pose a hazard to aircraft. For runways to which an IAP is established these are more stringent and are known as the 'instrument runway' standards. Runways without an IAP are normally designed to lesser 'non-instrument' (formally 'visual') standards.

The ICAO definition of a 'non-instrument runway' also includes runways to which an 'instrument approach procedure to a point beyond which the approach may continue in visual meteorological conditions' is established. The IAPs intended for Sherburn will be published under this definition. The CAA's CAP 1122 sets out the framework for approval, most notably that the minimum height to which aircraft may descend without being visual with the runway is 500 ft above the ground. This is 250 ft higher than permitted with LPV technology to an 'instrument' runway. This is intended to mitigate the risk of striking any obstacles or failing to touch down in the correct place/at the correct speed when landing.

Air traffic management

Introduction of the IAP requires an overall assessment of the impact on the surrounding airspace and how aircraft flying the procedure would integrate with it. The following is a summary based on the safety case.

The primary challenge was operating without approach control, which Sherburn argued could be achieved with an acceptable level of safety with PPR (prior permission required) and arrival slot allocation arrangements. Since Sherburn requires PPR for all aircraft anyway, this formed the basis of the argument that utilisation could be controlled. Discussions with the CAA concluded that there may still be a risk of multiple aircraft wishing to fly the procedure arriving at the same time, so engagement with nearby ATS units equipped with radar surveillance explored options to mitigate that risk. Letters of Agreement will provide that:

- Within particular arrival directions/runways in use, aircraft will contact either Leeds Bradford or Doncaster Sheffield ATC and to request an air traffic service outside of controlled airspace. The provision of this service will be subject to ATC capacity;

- When ATC workload permits, provision of a traffic or deconfliction service will also provide mitigation against conflict with non-participating traffic that may be passing in the vicinity of the IAP.

Conflict between visual circuit traffic at Sherburn and that approaching on the IAP was also considered as an issue since only an A/GCS is provided within the ATZ. This will primarily be managed by:

- Ensuring that if traffic on the IAP is in VMC prior to entering the ATZ they follow normal visual joining procedures and integrate with any visual traffic; and
- Ensuring that if the cloud base is 1200 ft AGL or less (and therefore approach traffic may enter the ATZ in IMC), there is no visual traffic in the circuit.

8 Ongoing review

The utilisation rate will be monitored. Safety issues identified will be assessed as soon as possible by SAC management. The operational experience of using the IAP will be formally reviewed after six months of publication and annually thereafter. The Chairman of SAC will be responsible for ensuring this takes place and presenting the findings to the Board of Directors and the Head of Training. The Board will sanction any changes in response to any safety or environmental issues identified.

The review will include:

1) Review the log of LPV movements (the issue of PPR numbers);
2) Study any pilot reports;
3) Study any incident reports;
4) Study the number, type, and location of noise complaints;
5) Evaluate any changes in the approach and missed approach paths;
6) Review the overall environmental impact; and
7) Produce a review document for consideration.

Any noise or impacts that do transpire can be discussed with local communities via the existing channels and any relevant changes to procedures considered.

9 Consultation and feedback

Due to the small scale of the envisaged operations, it was agreed with the CAA in November 2016 that full public consultation on the proposals would not be proportionate. SAC nonetheless consulted with all relevant local stakeholders. In some cases (such as Doncaster and Leeds Bradford airports) this involved multiple meetings to discuss local airspace arrangements and considerations. Some concerns were raised by airspace stakeholders about the proximity of the procedures to nearby controlled airspace, but this was eventually resolved to the satisfaction of all parties. All applicable arrangements will be subject to appropriate LOAs.

The proposal was raised with the local community airfield liaison group at a regular meeting – no objections were received. For the purposes of environmental consultation, it was not considered proportionate to consult beyond the airfield liaison group. A specific meeting was held on 17th

January 2017 in which SAC made a short presentation to representatives of local authorities included in the normal liaison group. All members of the group who were not present were sent the presentation.

The presentation and minutes of the meeting (with attendees and apologies) are included in a separate document with the submission.

As well as local aviation and airspace stakeholders, a hand-out (also included separately) was also distributed at the Norther Airspace User Group in the autumn of 2016. No negative feedback was received.

Aviation consultees
Leeds Bradford Airport
Doncaster Sheffield Airport
Burn Gliding Club
Breighton Airfield
Leeds East Airport
Northern Airspace User Group

Local community consultees
Sherburn Parish Council (attended presentation)
South Milford Parish Council (attended presentation)
Monk Frystone Parish Council
Selby District Council
Biggin Parish Council
East Yorkshire County Council
North Yorkshire County Council

10 Abbreviations and Acronyms

1. A/GCS – Air Ground Communication Service (often seen at A/G)
2. ACP – Airspace Change Proposal
3. AGL – Above Ground Level
4. AIP –Aeronautical Information Publication
5. AoONB – Area of Outstanding Natural Beauty
6. ATC – Air traffic control
7. ATS – Air Traffic Service
8. ATZ –Air Traffic Zone
9. CAA – Civil Aviation Authority
10. CAP1122 – CAA Publication 1122
11. CFI – Chief Flying Instructor
12. CFIT – Controlled Flight Into Terrain
13. CO2 – Carbon Dioxide
14. dB – decibels (level of sound measurement)
15. DSA – Doncaster Sheffield Airport
16. EGNOS – European Geostationary Navigation Overlay Service

17. FAF – Final Approach Fix
18. GA -- General Aviation
19. GNSS –Global Navigation Satellite System
20. IAF – Initial Approach Fix
21. IAP – Instrument Approach Procedure
22. ICAO – International Civil Aviation Organisation
23. IF – Intermediate Fix
24. IFR – Instrument Flight Rules
25. IMC – Instrument Meteorological Conditions
26. LBA – Leeds Bradford Airport
27. LNAV – Localiser performance without vertical guidance
28. LOC loss of control
29. LPV – Localiser Performance with Vertical Guidance
30. MAC Mid-Air collision
31. MAP – Missed Approach Proceedure
32. MTOW – Maximum Take Off Weight
33. NATMAC - National Air Traffic Advisory Committee
34. NM – nautical mile
35. PANS-OPS – Proceedures for Air Navigation Services - Operations
36. PPR – Prior Permission Required
37. RNAV – aRea NAVigation
38. SAC – Sherburn Aero Club
39. TAA – terminal arrival altitude
40. VFR – Visual Flight Rules