

Rebekah Morgan  
Principal Planning Officer – Major Projects Planning Team  
Place and Growth Directorate  
Cherwell District Council

5th November 2020

Our Ref: EAS/P1225/C1

Dear Rebekah,

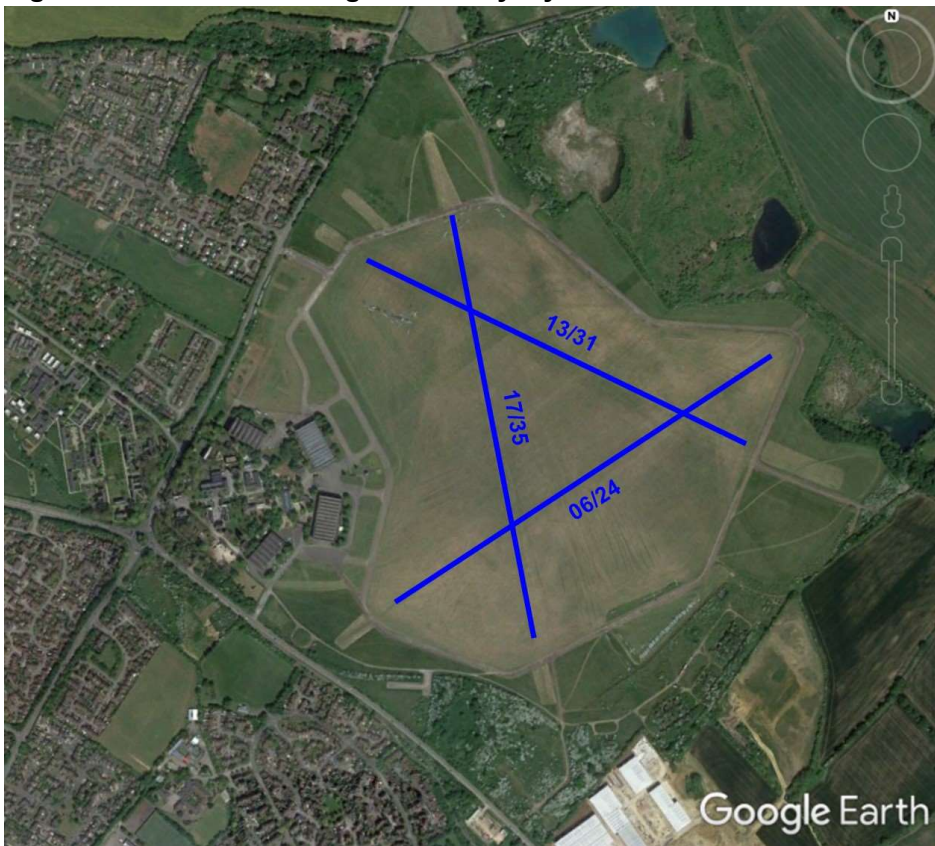
## **Proposed Experience Quarter Development, Bicester Airfield: Aviation Issues Pre-planning Support**

1. Further to your request for pre-planning support in respect of the proposed Experience Quarter development at Bicester Airfield and the meeting held recently with the applicant, I provide the following summary of the meeting and technical issues arising from it to support the next steps in the planning application process.
2. An informal pre-planning meeting was held at the offices of Bicester Motion on 1 October 2020 in respect of a proposal from Bicester Motion for a development known as the Experience Quarter. The focus of the meeting was on aviation issues relating to the proposal. Those attending the meeting were:
  - Rebekah Morgan, Cherwell District Council
  - Mark Eddowes, Eddowes Aviation Safety Limited, supporting CDC
  - Jonty Ashworth, Bicester Motion
  - Peter Douet, Air Motive, aviation consultant supporting BM
  - Nick Worlledge, Worlledge Associates (Heritage Consultant), supporting BM
  - Jon Westerman, Edgars Limited, Planning Consultant, supporting BM
3. The meeting provided an initial opportunity for Bicester Motion to outline the Experience Quarter proposal and more broadly outline their vision and aspirations for development at the Bicester Airfield site that place that proposal in context. Informal discussion between those present followed that initial outline. These notes reflect the understanding developed by ME from the meeting with a focus on the continued safe and efficient operation of Bicester Airfield. They are provided as guidance to CDC on what may be required from the applicant in submissions concerning the Experience Quarter to ensure that aviation matters can be appropriately considered during the determination of the application.
4. In broad terms, it is understood that Bicester Motion is seeking to release the development potential of the former RAF Bicester Airfield site whilst maintaining an operational airfield and other valued heritage features of the site. In an initial phase of development, existing historical buildings that served RAF operations have been restored and new buildings have been provided that support a landlord role for employment uses at the “Old Technical Site” located on the west side of the airfield.

Outline planning permission has subsequently been granted for a new development, the Future Automotive, and Speed Technology (F.A.S.T.) Cluster, to the south of the airfield.

5. The Experience Quarter proposal is for new development to the north of the airfield. It is understood that other development around the periphery of the airfield is planned as part of the wider master plan for the site.
6. Development around an airfield may potentially be in conflict with aircraft operations, in particular development along flight paths. Some areas may be developed without any operational conflict. For example, the “Old Technical Site” which is located away from flight paths to and from the designated runway directions at RAF Bicester presents no significant threat to operational safety and efficiency. It is to be expected that this area will have been chosen for buildings supporting the airfield with that in mind when the airfield was first established.
7. The original runway layout at Bicester Airfield provided for three physical runways and hence operations in six different directions in an “A frame” layout, as shown in Figure 1. This sort of configuration was common in early airfields and facilitated operation into the wind with minimised cross wind operations which was more particularly important for earlier types of aircraft. Several airports in the UK which now provide for operation in two directions along a single runway axis originally had a military function served by an equivalent layout. With the improved cross wind capability of modern commercial air transport aircraft the use of two of the three physical runways has been discontinued at these airports in favour of the third, according to the prevailing local wind conditions.

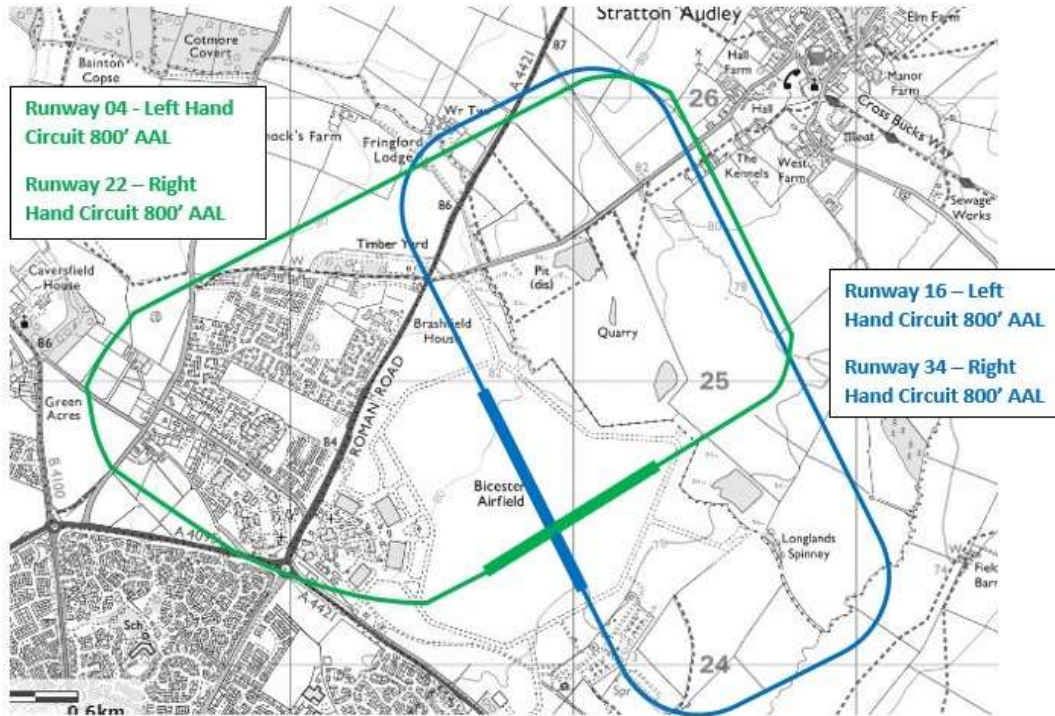
**Figure 1: RAF Bicester original runway layout**



8. Up to the present time, it is understood that use of each of the six different runway directions at Bicester Airfield has continued and, indeed, some operations into the wind not aligned exactly with any of the designated runways have taken place, for example for landing by gliders. However, new development outside the airfield boundary, in particular to the west on the outskirts of Bicester, places some constraints on operations. Flight over these areas is preferably avoided, for aircraft operational safety reasons and for noise minimisation. Given the new operational constraints associated with developments, the use of some runway directions is understood now to be very limited.
9. Against that background, Bicester Motion have reviewed operational requirements at Bicester Airfield with the support of PD and a revised runway layout is now proposed for future operations, as shown in Figure 2. Essentially, Runways 13/31 and 17/35 will be replaced with a single Runway 16/34 alignment. Such a re-alignment would appear to make some operational sense as follows. Use of the previous Runway 13/31 to the north-west of the airfield (north-westerly take-off and south-easterly landing) will preferably be avoided due to extensive housing development in that area. Use of the previous Runway 17/35 to the south of the airfield (southerly take-off and northerly landing) will be preferably avoided due to the light industrial development in that area. Effectively, under the previous alignments, existing development leads to a preference for avoiding flight to and from one runway end of both those runways. The location and intermediate alignment of Runway 16/34 provides for operation at both runway ends that avoids flight over developed areas, as shown according to the Runway 16/34 circuit pattern illustrated by the blue line in Figure 2.

**Figure 2: Proposed revised runway layout**

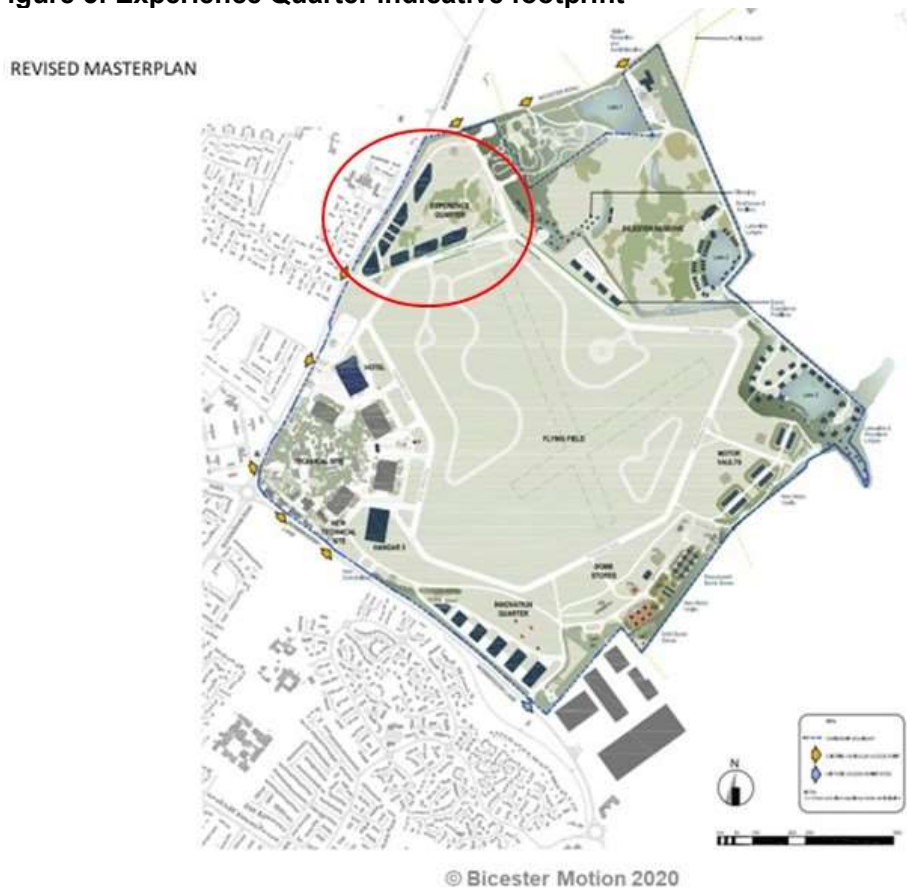
**Bicester Aerodrome - Circuit Traffic Pattern Recommendation**



10. The north-east/south-westerly runway alignment appears not to have changed but the runway designation indicated in the proposed revised runway layout illustrated in Figure 2 by the plan provided by JW indicates an 04/22 orientation compared with the current 06/24 orientation previously in use. It seems that the runway orientation has been incorrectly labelled or that the runway has been slightly re-aligned and differs from that shown in the figure which appears more consistent with an 06/24 than 04/22 orientation. In practice, for the purposes of the current note, the precise orientation of this runway is not material given its relation to the proposed Experience Quarter development. The key point to recognise is that a second runway orientation at approximately 90° to the other proposed orientation will be available, a relative orientation that will support the minimisation of cross-wind operations for a two runway layout. Options for a circuit path to the west of the airfield that avoids flight over development are limited but a corridor that essentially achieves that has been identified. Given the expected frequency of south-westerly winds, the provision of a runway with a south-westerly orientation will be important for optimising operational efficiency by minimising cross wind operations. The south-west/north-east runway and associated circuit layout identified appears to represent a pragmatic solution within the constraints arising from the environment in the vicinity of the airfield.
11. Overall, it appears from discussions at the meeting that the relevant operational issues have been taken into account in the development of the proposed revised two runway layout. As has been noted earlier, rationalisation of the old A-frame runway layout and reduction in useable runway directions is a common feature of a number of airfields. The new layout at Bicester Airfield would seem to be an appropriate one providing for similar operational efficiency as that previously provided by the three runway layout when proper account is taken of the operational limitations now arising from surrounding development. The operational details relating to the proposed revised layout and its suitability for supporting future operations are considered to be a matter for the airfield operator and have not been investigated in any detail in the formulation of the view presented here. Clearly, however, on the basis of the information that is available, the proposed revised layout makes sense from an operational perspective.
12. The revised runway layout also makes sense from the perspective of potential future development around the periphery of the airfield. It provides clarity about the flight paths in use and where new development might be located and where development should be avoided in the interests of operational safety and efficiency. A preliminary review by ME prior to the meeting, based on an earlier outline location for the Experience Quarter development and the historical runway layout, indicated that there might be some conflict between the proposal and airfield operations. That apparent potential concern is eliminated by the current proposal for the footprint of the Experience Quarter, together with the revised runway layout.
13. The development footprint in relation to the revised runway layout is shown in Figure 3. This figure shows the location of the proposed development to the west of an undeveloped corridor to the north of the northern end of Runway 16/34. Precise building locations are not currently available but estimates can be made by measurements made using satellite images and scaled measurements from the plan. On that basis, the southern boundary of the Experience Quarter footprint, extended to the eastern edge of the flight corridor, as marked by the track in the plan, is estimated to be approximately 420 m in length. The flight corridor represents approximately 25% of that length (i.e. approximately 105 m) and the Experience Quarter footprint covers the remaining 75%.

14. Ultimately, it will be the responsibility of the airfield operator and users of the airfield to determine whether they consider that width of corridor to provide adequately for the safety and efficiency of operations. Given the size of aircraft concerned, the preliminary assessment undertaken as part of this exercise indicates that this width of corridor should be sufficient for the majority of reasonably foreseeable operations at least. The corridor needs to provide for safe normal flight during take-off and landing when operations can be expected to be well-aligned with the runway such that they will pass the development to its east and maintain a safe lateral margin with respect to it. In addition, the corridor needs to provide a safe area for forced landing in the event of engine failure immediately after take-off and in the event of aircraft landing short of the runway during landing, both of which can be identified on the basis of the historical accident record to be reasonable foreseeable scenarios that merit mitigation wherever possible. The most demanding scenario in respect of corridor width within these categories is perhaps expected to be engine failure after take-off during a glider tow launch requiring space for two aircraft to achieve a forced landing. Given the wingspan of the aircraft concerned the indication is again that the corridor width should be sufficient to accommodate both aircraft under this scenario but individual operators would need to make their own judgement on this matter.

**Figure 3: Experience Quarter indicative footprint**



15. New development close to flight paths may sometimes be identified as a potential concern due to building wake turbulence impacts. In the case of the proposed Experience Quarter development, wake turbulence impacts along the flight corridor would be expected only under conditions of relatively strong westerly winds. Under

those conditions, it is to be expected that Runway 24 would be in use such that building no wake turbulence effects on flight operations would arise from the proposed development.

16. In summary, the conclusion drawn from the meeting and material presented at it is that a development of the nature of that proposed for the Experience Quarter, with an appropriate footprint that avoids areas along flight paths, should be able to sit comfortably alongside continued safe and efficient operation of Bicester Airfield in accordance with the proposed revised runway layout. Some formal demonstration that an appropriate balance has been struck may be appropriate in support of the application.

Yours sincerely



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