

Report to Stronger Place Select Committee

Date of meeting: 07 March 2023

Portfolio: Finance (Cllr. J. Philip)

Subject: North Weald Airfield aviation development

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Recommendations/Decisions Required:

To consider and to comment on:

- (1) The recommendation that North Weald Airfield remains an unlicensed aerodrome whilst developing the aviation operation by improving facilities, security, safety and attracting new business opportunities through the use of developable land.

Reason for decision:

The reason for the recommendation is to allow the continuation of the aviation operation at North Weald Airfield, to maintain its heritage for future generations, to improve safety, security and to increase income generation potential.

Executive Summary

The North Weald Airfield Master Plan and the proposed development of the Eastern side of the aerodrome will dictate a change to how aviation operations are performed due to the requirement to relocate the Control Tower Building (CTB) function, the likelihood of the need for a new entrance and alternative locations for operational buildings such as the Gatehouse and Fire Station.

These changes have therefore presented an opportunity to examine the potential for the Airfield to achieve Civil Aviation Authority (CAA) licensing and to develop aviation further.

The Council have therefore engaged with RPS Group Ltd and their subcontractor, Osprey Consulting Services Ltd, to investigate the likelihood of the aerodrome achieving CAA licensed status and to investigate its future development potential.

A two phase approach was taken with Osprey Consulting conducting a review that looked at the current operation against the CAA Airfield Licencing Requirements defined within Civil Aviation Publication (CAP) 168 Licencing of Aerodromes.

The aim of the review was to provide EFDC with a realistic assessment of the issues relating to the licensing of North Weald Airfield.

Despite not recommending licensing, the report identified some safety obstacles and requirements that should be considered by NWA as being best practice.

There are safety issues around airside / landside interface and public vehicles that would prevent a CAA license but these are being addressed by NWA regardless of the intent not to pursue a license at this time

The second phase was conducted by RPS who investigated the development options whilst taking into account the conclusions of the Osprey report and the proposed development on the Eastern side of the Airfield.

The key elements being the relocation of the Control Tower Building (CTB) function that maximises the development land on the East of the aerodrome and the creation of an airside / landside boundary that would require operational and cultural changes to the way in which the Airfield is managed.

Options considered:

Incur major expenditure in upgrading the Airfield infrastructure and implementing fundamental changes to its business model and apply for a CAA license that would more than likely prove fruitless for various reasons.

Continue with on-going budget restricted improvements to safety and security.

Do nothing and accept the security and safety risks which may have insurance consequences.

Report

North Weald Airfield is currently an unlicensed aerodrome.

Licensing would allow the airfield to operate commercial passenger paying flights other than the pleasure flights that currently take place and would likely attract interest from Fixed Based Operators (FBO's) keen to take advantage of the Airfield's close proximity to the city thereby creating an attractive revenue stream.

To secure the Licensing Certificate an airfield operator must assure the CAA that the airfield infrastructure, procedures, processes, and airspace can be upgraded to meet the requirements of the relevant CAA Regulations.

Osprey's initial evaluation of North Weald Airfield identified that the current infrastructure and stakeholder mix to the west of the Runway would make licensing challenging.

CAA Licensing Requirements

Main Runway

The runway is exceptionally long at over 1800m for the current type of operations at North Weald. It would need some degree of rehabilitation (strengthening and resurfacing) to meet licensing standards. The runway could be brought up to licensing standard but would need considerable investment to achieve this aim.

Pavement Classification Number (PCN)

The PCN (Load Bearing Strength) of the runway is extremely low and would support only limited FBO operations. While the PCN is not a licensing issue, the runway would need to be rehabilitated and resurfaced to increase the PCN to a commercially viable strength (PCN Value).

Aircraft pavement bearing strength is generally represented by a PCN number. The PCN is a number expressing the bearing strength of a pavement for unrestricted operations by an aircraft with a classification (ACN) of the same number. The number is a component of the ICAO ACN-PCN method for evaluating pavement strength and commonly used in the aviation industry.

The PCN is an international standard measurement created by the International Civil Aviation Organisation (ICAO) and is used to indicate the strength of a runway. This helps to ensure that it is not subjected to excessive wear and tear, thus prolonging its usable life.

Runway De-Lethalisation

Aerodrome de-lethalisation is a process that ensures that any obstacles present on an aerodrome (above and below the surface) are either removed or re-designed in such a manner that the hazard they present to an aircraft in the event of a runway excursion is minimised.

Elements of the aerodrome infrastructure at North Weald do not meet CAA aerodrome licensing requirements and would need to be removed or de-leathalised. Osprey's experience at other former MOD sites which have undergone a de-lethalisation process indicate this work would take between six months and a year dependent on the time of day the work is completed.

Regardless of the decision to license or not the Airfield Management will be taking the appropriate steps to remove as many obstacles as practically possible.

Aerodrome Safeguarding

Civil aerodromes are safeguarded in order to ensure that their operation is not impacted upon by proposed developments. Osprey believe that there is no reason why EFDC could not set up a Safeguarding Process and which will be acceptable to the CAA for licensing of North Weald Airfield.

Runway / Taxiway Lighting

There is currently no runway or taxiway lighting. If the Airfield wished to operate to a licensed standard at night and in poor weather conditions, aerodrome lighting would need to be installed.

Taxiways / Access to the Runway (Runway incursion)

The current taxiway system is used by aircraft and vehicles including non-aviation vehicles.

To be licensed, the runway signage and markings would have to be upgraded and the risk of runway incursion considerably reduced. Osprey noted that they found it difficult to see how North Weald Airfield with its current mix of businesses and infrastructure could make this adjustment. They felt that most of the current businesses on the aerodrome could not, or would not be able to, tolerate the changes required. The Airfield would need to change its whole business model to become licensed.

Osprey did note that the Airfield Management were taking steps to reduce the risk of aircraft and vehicle conflict with improved briefings on entry, additional ground markings, signage and the planned implementation of additional taxiways that would remove the vast majority of aircraft movements from the shared perimeter road.

Site Access and Airside Security

There are considerable challenges for EFDC to gain active control of site access and airside security. These include the limits on the main entrance, the mixing of aviation and non-aviation traffic to the west of the main runway and the lack of segregation of vehicles and aircraft.

Osprey have therefore concluded that it is unlikely, without considerable investment, that the Airfield could satisfy the site security and safety requirements to support a CAA Licence.

Provision of Rescue and Fire Fighting Services (RFFS)

Osprey reported that the current RFFS team have good equipment are locally trained and professional in their outlook. The team can already meet CAA Licensing response times of three minutes to any part of the aerodrome. There is good interaction with the local Fire and Rescue Service and the Airfield RFFS, but no formal Emergency Response Plan between them in place.

Air Traffic Control Service (ATCS)

Current Service

North Weald Airfield currently provide an Air Ground Communication Service (AGCS), a specific form of Air Traffic Control (ATC) Service. This service provides only basic pilot information and no actual control services (no instructions are issued to pilots).

The current ATC Equipment is suitable for providing a AGCS service. However, If the aerodrome wished, or was directed by the CAA, to provide a more robust ATC service they would need considerable investment in ATC equipment.

Future Provision of Service

The current AGCS may be acceptable to the CAA if the aerodrome was to be licensed. However, with the considerable increase in traffic, of up to 175 CAA defined movements a day and the added complexity of airspace, (close proximity to London Stansted Airport), the CAA could direct North Weald to provide upgrade the service.

To do this the aerodrome would be required to become an Air Navigation Service Provider (ANSP) or bring in a specialist ANSP organisation on a contractual basis and at considerable cost.

Aerodrome Traffic Zone (ATZ)

The ATZ is intended to protect the aircraft traffic, i.e. the traffic on the manoeuvring area and the traffic in the immediate vicinity of an aerodrome. This includes, but is not limited to, the aircraft in the aerodrome traffic circuit.

Following a preliminary discussion between Osprey and the CAA the Head of the Aerodrome and ATC section it was clear that the CAA would have reservations about the establishment of this airspace so close to London Stansted Airport.

Documentation and Safety Management

North Weald Airfield currently operates to an Aerodrome Operating Manual and has a number of processes and procedures and including specified training processes. Each of the documents meets the needs of the current operation but they would not be acceptable for the licensing project.

Should EFDC wish to proceed with gaining a CAA licence, they would need to produce a full set of regulatory documents

Aviation Security

A full Aviation Security Programme would have to be developed should EFDC decide to pursue a CAA aerodrome licence. EFDC would need to reassess and radically change the security ethos and infrastructure on the aerodrome to meet the needs of the licensing process.

Potential For a Fixed Base Operator (FBO)

An FBO, is an organisation which provides services for private jets and other business/general aviation users that may be provided at an aerodrome. FBO services range in scale and offerings, and they may be a simple lounge or an entire facility that provides a variety of services for passengers and crew members.

North Weald Airfield has land and infrastructure available for the development of an FBO operation and has some operational advantages licensed or unlicensed. These advantages are:

- A long runway
- Close proximity to the M11 and the City

However, developing an FBO may have some unique disadvantages for North Weald Airfield. These disadvantages are:

- Competition from established FBOs at London Luton and London Stansted Airports.
- Limited operational hours reducing the level of flexibility available to FBO clients.
- Lack of an ATC Approach Radar service being very close to London Stanstead Airport.

In addition, North Weald Airfield operates very close to airspace operated and managed by London Stansted Airport and receives a very good ATC service from the controllers at London Stansted Airport. Osprey believed that if North Weald Airfield were to set up an FBO in competition to Stansted, they may jeopardise this relationship and could lose the co-operation they get from their ATC.

Osprey report conclusion

The Osprey report has offered a number of options for EFDC to license North Weald Airfield and in most cases the issues could be resolved with considerable investment.

However, the fundamental issue precluding licensing is the mix of airfield users, the need to segregate airside and landside traffic and the position of some of the new operators, such as the Air Ambulance and the National Police Air Service (NPAS).

Even if EFDC could find a solution to segregate airside and landside traffic, which would be very costly, the solution would be unacceptable to most of the current businesses on the aerodrome.

Osprey was asked to look at introducing an FBO to generate revenue for the aerodrome. Osprey believed the cost of making the changes to accommodate an FBO would far outweigh any potential income generated whilst the restricted opening hours would also be extremely unattractive.

Osprey strongly believed the most cost-effective solution for EFDC is to keep the airfield unlicensed but continue to develop the aviation business safely.

Airfield Development

Following on from Osprey's conclusion the RPS development report was prepared on the basis that the Airfield should remain unlicensed.

It centred on improvements in key areas such as the runway, the CTB function relocation, airside safety, navigational aids and the identification of developable areas.

Runway

The runway at North Weald is an unlicensed and equivalent in length and width to a Code 4 runway at 1881m long and 45m wide. The surface is a mix of concrete and asphalt.

RPS undertook a thorough visual inspection of the runway pavement in October 2021 as well as a geometrical survey in 2022.

The conclusion was that in order to maintain its safe serviceability in the short to medium term it should be resurfaced by means of a 250mm asphalt overlay which would improve surface condition, geometry, rideability and mitigate Foreign Object Debris (FOD).

An overlay should also reduce yearly maintenance costs and maintain a PCN of 9.

It is suggested that the runway be recoded to a Code 3 Runway. The length being from 1200m but not exceeding 1800m. It is further suggested that the width be reduced to 30m thereby reducing the overall cost of the overlay.

Recoding the runway and reducing the width would also allow the OLS to be adjusted, allowing for a 75m strip at which point the development of the east of the runway could commence, subject to height restrictions.

It should be expected that a 250mm overlay would cost in the region of £3-4m.

Alternatively, there is the option to continue with the current “patch & repair” approach although the budget to maintain an operational runway would no doubt have to be increased year on year.

Runway arrangement options

RPS provided a range of options regards the differing runway arrangement options:

Option 1 was to retain current distances whilst improving safety by declaring Runway End Safety Areas (RESA'S).

This option is basically a “do nothing” option although it would improve safety it would negatively effect the development on the eastern side of the runway.

Option 2 was to relocate the runway thresholds to maximise the runway length which would increase the range of aircraft types that could utilise the runway. However, it is not a viable option given that EFDC would need to purchase adjoining land and the constraint of external infrastructure such as overhead power cables.

Option 3 was to consider approach lighting that would enable some night time flying whilst improving safety during low visibility conditions.

There are two configurations of approach lighting;

- Simple approach (420m approach)
- Full approach (900m approach)

Due to the fact that Runway 20 is aligned with the prevailing wind, is the more commonly used approach and is not subject to landownership issues the recommendation provided by RPS was that approach lighting should be considered for Runway 20 rather than 02.

Furthermore the 900m approach required for the full approach set up was discounted due to the fact that the lighting would have to be sited outside of the Airfield boundary.

Therefore, a simple approach system inside the airfield boundary would appear to be the most suitable option, maximising the runway length whilst attaining Code 3C status.

Installing a simple approach could generate additional income by allowing some limited night time movements that would be chargeable.

A simple approach system would cost in the region of £250k.

Aeronautical Ground Lighting (AGL)

Expanding the approach lighting arrangement would offer increased benefits such as providing at least one fully compliant approach for training.

RPS have provided 2 options for AGL. These being AGL using the traditional power supply via cables etc and the utilisation of solar powered units.

Solar AGL lights are not powered from the grid which would mean no primary cables, transformers or ducting would be required.

Each solar AGL light is a stand-alone system which include a photovoltaic panel and a battery Back up that supply the LED light.

Solar AGL is currently in operation at North Weald and is being utilised by both the Air Ambulance and Police helicopters.

It is assumed that the solar AGL would offer the most economical option when high intensity lights are not required which means the airfield is not operating Low Visibility Procedure (LVP) during the day.

The estimated cost would be £100k - £120k.

Control Tower Building (CTB)

Currently the CTB is located to the east of the runway and it sits within the North Weald Master Plan area designated as employment land.

This will mean that the CTB function would need to be relocated.

Initially, the intention was to build a combined CTB and Fire station closer to the runway whilst taking into consideration the Obstacle limitation Surfaces (OLS).

The OLS dictates the proximity and heights adjacent to a runway depending on its coding.

3 potential locations were identified each of which was located to the east of the runway, however, due to the requirement to increase the scale of the employment land Osprey have been re-engaged to look at suitable alternative locations to the south and west of the runway.

Initial feedback from Osprey is that there would be a suitable alternative position, however, costings have yet to be formulated.

The result of moving the CTB function would be the creation of additional employment land.

RPS have also examined the concept of a Digital (Remote) Tower.

A Remote Tower can be thought of the same as a conventional CTB; it still requires the same staff, equipment, and data. But whereas the conventional CTB requires a Visual Control Room (VCR) with unrestricted view through the glass, the Remote Tower provides an out-of-the-window view using a series of high-definition cameras and screens.

A Remote Tower can create the CTB's VCR anywhere on an airfield, removing the need for restricted prime real estate next to the runway, and could be installed off the aerodrome grounds completely, providing sufficient thought is given to communication infrastructure and resilience.

The Remote Tower would obviously remove the need for a CTB at North Weald, however, after having further discussion with Osprey regards its suitability for the type of operation at North Weald it was deemed that the physical CTB would be the preferred option.

Separation of public and aircraft operations

North Weald Airfields current operations results in private / company vehicles and members of the public sharing the use of airfield pavements, including taxiways, with live airfield traffic.

It should be noted that this has been the case for many years and that lease holders have access rights to said taxiways.

However, this situation has been raised as a safety concern by EFDC's Insurance Officer, Osprey, RPS, and a security and threat assessment of the Airfield carried out in February 2022.

The development plan provided by RPS sought to resolve the interface between members of the public and airfield operations through the designation of a clear airside / landside boundary.

Implementation of such a boundary would require operational and cultural changes to the management of the aerodrome and would remove airside / public access to certain facilities.

It may be considered that the current situation represents an unsustainable safety risk and therefore some resolution should be proposed.

The aim of the development plan was to provide an achievable vision of how such a scheme may be realised.

A physical airside / landside boundary is a key feature of most licensed aerodromes and works to separate members of the public and airside operations.

Through organic growth of the airfield several businesses have arisen which cater to members of the public, access to these developments is only achievable via travelling along designated taxiways.

Due to the longstanding cultural and operational situation at North Weald of sharing airfield pavements between aircraft and members of the public, RPS recommended that any new airside / landside boundary is physically represented on site through use of fencing, gates, and signage.

By its very nature, installing a physical airside / landside boundary would restrict public movements on the Airfield.

As a result certain facilities would lose direct public access, however, tailoring of the boundary would minimise the businesses which are disrupted but the very act of installing a boundary would result in some restrictions on the Airfield. A balance needs to be achieved between safety and convenience.

It should also be recognised that the creation of a physical / landside boundary could create challenge from some airside based tenants on the basis that their leases have clear access rights.

The estimated cost of installation would be £100-120k.

Accepting that some businesses would lose public access, RPS have identified several areas of potential development. They strongly recommend that to maintain public and business relationships, some form of development is undertaken to relocate or improve facilities on the airfield to minimise the impact of any airside / landside boundary.

An alternative means of removing the conflict between aircraft and vehicles on the taxiways without the need for a physical barrier would be to continue with the current programme of mitigation measures such as improved supervision and signage, the installation of warning lights and the creation of new runway access routes whereby aircraft are taken off the shared pavements as much as practically possible. However, this would not remove the risk completely.

Developable Zones

RPS identified four key areas in which future development may be beneficial.

Some of the below development areas may offset the problems associated with removing public access to parts of the airfield. Therefore, these development areas may form a crucial part of the development strategy.

Of the 4 areas identified for potential development 2 have been discounted due to that one has been identified as a potential EFDC depot site whilst the other is within demise of a current Airfield tenant who would unlikely agree to being relocated.

However, the 2 remaining zones do have potential.

Zone A is a triangular area of approximately 12 Acres and is located on the Airfield's Western boundary. This area borders a number of hangars and the site boundary adjacent to the M11.



In conjunction with implementation of the airside / landside boundary Development Zone A would be an ideal location for new or possibly relocated businesses which serve members of the public, but which do not require immediate airside access.

Other businesses which could be developed in this area include expanded freight shipping and mechanical services as well as offering a location for an outdoor events venue.

Zone C lies on the site's western boundary at the end of the disused cross runway.

This area has great connectivity to the airfield pavements with the disused runway pavement providing a direct link to the runway. Maximising the potential of this access, the area would be ideal for either hangar or aircraft parking. It should be noted that there have already been small scale developments in this area with a number of new hangars already insitu and others planned.

Existing emergency gate H is at the northern end of the developable area and could be upgraded to provide direct access to the development area.



Communications, Navigation and Surveillance

As an AGCS unit, North Weald is an Aeronautical Radio Station that requires only VHF radios and a Voice Recording and Replay system.

RPS have investigated the potential to increase the CNS equipment at North Weald Airfield.

Despite the status of AGCS, the full range of CNS equipment was considered for suitability, identifying constraints from both an operational and cost-effective perspective.

This included Primary Surveillance Radar (PSR) and Secondary Surveillance Radar (SSR), Onward Routed Radar Data (ORRD), Flight Information Display (FID), Instrument Landing System (ILS), Very High Frequency Omni-Directional Range (VOR), Non-Directional Beacon (NDB).

However, due to the proposed developments on the Airfield RPS have recommended that surveillance radar, ORRD and ILS are not feasible options.

Therefore to enhance the safety of traffic using the airfield as an Aeronautical Radio Station, RPS have suggested that EFDC may wish to consider installing navigational aids such as NDB or VOR plus FID.

There are advantages and disadvantages to these systems which offer different services to pilots wishing to navigate to the airfield but deciding to proceed with procurement of either would be to the benefit of airfield users.

The ability to conduct Non-Precision Approaches to North Weald offers an enhanced level of flight safety, particularly if there is an increase in aerodrome traffic.

The implementation of an FID system would improve the situational awareness for staff and pilots and RPS were of the opinion that it should be considered as an option.

The safety related and operational benefits to North Weald and EFDC would be the same irrespective of AGCS or FIS status, therefore an FID system could be seen as a long term investment.

The pro's and cons of the various items plus approximate costings for the CNS systems are contained within appendix 1.

Consultation undertaken:

RPS Group Ltd
Osprey Consulting Services Ltd

Resource implications:

Budgets to be considered at the time of any planned works.

Legal and Governance Implications:

No legal implications at this stage.

Safer, Cleaner, Greener Implications:

To understand how the airfield can contribute to decarbonising aviation RPS have recommended developing a decarbonisation strategy. This will involve an audit of the airfield assets, energy requirements and usage and discussions with management/stakeholders. The strategy will develop short-, medium- and long-term targets, identify any risks and provide a road map to get to net zero. It is suggested that the Airfield Accountable Manager and the Climate Change Officer consider such a strategy in due course.

Background Papers:

RPS Development Plan
Osprey Licensing Report
North Weald Airfield Master Plan
Local Plan

Impact Assessments:

n/a

Risk Management

n/a

Equality:

n/a

Appendix 1

Communications, Navigation and Surveillance

Flight Information Display (FID)

An FID provides a level of situational awareness not available through visual means only. It can be thought of as an electronic form of binoculars, and has been progressed as a low-cost, efficient delivery of situational awareness for the aerodrome without a conventional surveillance (PSR/SSR) system.

It operates by displaying received Automatic Dependant Surveillance – Broadcast (ADS-B) information from transmitting aircraft in the vicinity.

An FID is not a decision-making tool but can enhance the safety of an aerodrome's operation.

FID Advantages

- Provides situational awareness beyond the visual and enhances safety.
- Low installation and maintenance costs.
- Flight data could be derived from on-site antenna systems or a feed from an external source.
- Recent regulatory change delivers a clear operational implementation.

FID Disadvantages

- Situational Awareness only tool.
- Requires participating aircraft.

FID Constraints

Albeit in minimal, real estate, power and communication links are required for the ADS-B receiver.

Technical Safeguarding of receiver antenna required (no more than current radio antennas). Adequate space within the CTB for FID screen and minimal processing equipment.

Potential costs - £80,000

Very High Frequency Omni-Directional (VOR)

A VOR is a ground-based navigational system that provides bearing information to the aerodrome it is situated at and can be used for non-precision approaches. A series of dispersed VORs provide cross country area navigation. If the VOR is collocated with a Distance Measuring Equipment (DME) it can also provide range information.

VOR Advantages

- A VOR would provide North Weald with better navigational services to its users and enable area navigation to enhance the current Visual Flight Rules (VFR) approach service.
- Due to the nature of its operation, it is less susceptible to external factors such as meteorological conditions and therefore can deliver more reliable service than other navigational systems.
- A VOR is inexpensive compared to surveillance radar and ILS.
- Technical safeguarding is less onerous allowing for more flexibility in siting.

VOR Disadvantages

- It is a non-precision navigational aid.
- It is limited to line-of-sight and therefore range varies in relation to altitude.
- Increases maintenance and training for North Weald engineering personnel.
- 'Legacy' technology, as the domain moves to more satellite-based provision.

VOR Constraints

As with all CNS equipment, the availability of real estate to correctly site the system is paramount.

Depending on site location additional infrastructure works may be required including power and communication provision.

Potential costs - £250,000

Non-Directional Beacon (NDB)

An NDB provides basic bearing information to a suitably equipped aircraft, enabling routing to the aerodrome for Visual Flight Rules (VFR) approaches. As with a VOR, it can be associated to a DME to provide range information.

NDB Advantages

- It is a low-cost option that can provide non-precision approaches.
- Reliable alternative to Performance Based Navigation if an aircraft is not GNSS equipped.
- Minimal maintenance requirements.
- Technical safeguarding and siting criteria are more straightforward than other CNS equipment.

NDB Disadvantages

- Aircraft require an Automatic Direction Finder (ADF) to receive the NDB signal.
- Due to its low frequency operation coverage is susceptible to atmospheric conditions and terrain which may impact range performance.

NDB Constraints

The availability of a suitable location on the airfield is required including potential for additional infrastructure.

Potential costs - £150,000