Norwich Western Link

Airport Safeguarding Assessment

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Foreword

Norfolk County Council, as Highway Authority (hereafter referred to as 'the Applicant'), is seeking to obtain planning permission for the proposed Norwich Western Link Road (hereafter referred to as the 'Proposed Scheme') located to the north-west of Norwich.

Ferrovial Construction UK Limited (hereafter referred to as 'FC') has been commissioned by the Applicant to produce this Aerodrome Safeguarding Assessment to support the planning application.

The work areas subject to the assessment as described in this document are shown in the Planning Application Drawings references 2.03.00 General Arrangement Plans, 2.06.01 to 2.06.09 Structures Drawings, 2.07.00 Landscape Design Plans, 2.08.00 Drainage Layout Plans and 2.08.01 Drainage basin details.

1 Glossary of Abbreviations

DfT – Department for Transport

ODPM – Office of the Deputy Prime Minister

CAP – Civil Aviation Publication

ICAO – International Civil Aviation Organisation

IFP – Instrument Flight Procedures

EUR DOC – European Document

AOA – Airport Operator Association

ARP – Aerodrome Reference Point

EU – European Union

CAA – Civil Aviation Authority

LPA – Local Planning Authority

OLS – Obstacle Limitation Surfaces

EASA – European Union Aviation Safety Agency

APDO – Approved Procedural Design Organisation

NDB (L) – Non-Directional Beacon (Localiser)

DME – Distance Measuring Equipment

RWY - Runway

OCA/H Obstacle Clearance Altitude/Height

ILS – Instrument Landing System

SARP – Standards and Recommended Practices

2 Legislation

2.1. The Applicant has completed an Aerodrome Safeguarding Assessment to comply with UK legislation set out in the DfT/ODPM Circular 1/2003 The Town and Country Planning (safeguarded aerodromes, technical sites and military explosives storage areas) Direction 2002, updated in December 2016. The principal reference documentation and design guidelines obtained and used in this safeguarding report include:

- UK Regulation (EU) No 139/2014 (The UK Aerodromes Regulation) /Law 139/2014.
- CAP 168 Licensing of Aerodromes.
- CAP 738 Safeguarding of Aerodromes.
- ICAO DOC 8168 Construction of Visual and Instrument Flight Procedures.
- ICAO DOC 8168 - Procedures for Air Navigation Services, Aircraft Operations, Vol II, 7th Ed, Amendment 9, Corrigendum 2, dated 21 March 2022.
- CAP785B Implementation and Safeguarding of Instrument Flight Procedures (IFPs) in the UK dated September 2022.
- CAP670 - Air Traffic Services Safety Requirements - Issue 3 - 1/2019.
- CAP 772 Wildlife Hazard Management at Aerodromes.
- CAP 1096 Guidance to crane users on the crane notification process and obstacle lighting and marking.
- ICAO, EUR DOC 015 European Guidance Material on Managing Building Restricted Areas.
- Third Edition, 2015.

2.2. The Airport Operator Association (AOA) does provide five Aerodrome Safeguarding Advice Notes which detail safeguarding matters that should be considered. However, even though the design of the Proposed Scheme has taken all of these into account, it must be noted that these are only guidelines, and it is the above legislation and regulations that establish the requirements of a safeguarding assessment.

3. Assessment objective

3.1. The design of the Proposed Scheme is approximately 6 kilometres in length, running in a northeast to south westerly direction. The closest point of the Proposed Scheme to Norwich Airport is the northeasterly part of the road at 7.24km distant with the south westerly part of the road being the furthest point from the Airport at 12.42km from the Aerodrome Reference Point (ARP). The safeguarding area for Norwich Airport extends out to 15km, therefore the whole of the dual carriageway sits within Norwich Airport safeguarding area.

3.2. The common aim of all Aerodrome Safeguarding is to assess the implications of any development being proposed within the vicinity of an established aerodrome to ensure, as far as reasonably practicable, that the aerodrome and its surrounding airspace is not adversely impacted by the proposal, thus ensuring the continued safety of aircraft operating at the location.

3.3. Aerodromes holding a certificate based on European Union (EU) regulation or a licence based on UK regulation are required by the UK Civil Aviation Authority (CAA) to ensure they have a system in place to safeguard their aerodrome against the growth of obstacles; or activities that may present a hazard to aircraft operations (e.g. encourage wildlife, glare, lighting, building induced turbulence, etc).

3.4. Safeguarding is the process by which the Aerodrome Operator can, in consultation with the Local Planning Authority (LPA) and within their capability, protect the environment surrounding the Aerodrome from developments and activities that have the potential to impact on the aerodrome's safe operation. Aerodrome safeguarding covers several aspects. Its purpose is to protect:

a) the airspace around an aerodrome to ensure no buildings or structures may cause danger to aircraft either in the air or on the ground. This is achieved through both the 'Obstacle Limitation Surfaces' (OLS) and the 'Instrument Flight Procedure' (IFP).

b) the integrity of radar and other electronic aids to navigation by preventing reflections and diffractions of the radio signals.

c) aeronautical lighting, such as approach and runway lighting, by ensuring that they are not obscured by any proposed development and that any proposed lighting, either temporary or permanent, could not be confused for aeronautical ground lighting.

d) the aerodrome from any increased wildlife strike risk, in particular bird strikes, which pose a serious threat to flight safety.

e) aerodrome operations from interference by any construction processes through the production of dust/smoke, temporary lighting or construction equipment impacting on radar and other navigational aids.

f) aircraft from the risk of collision with obstacles through appropriate lighting.

g) aircraft from the risk of building induced turbulence.

h) aircraft from the risk from glint and glare, e.g. solar panels.

3.5. Norwich airport is an EASA certified aerodrome and has its own safeguarding team which as a statutory consultee will have a chance to review and comment on the Applicant's planning application for the Proposed Scheme.

3.6. This Safeguarding Report therefore sets out to provide reassurance to the airport and the LPA that all the above safeguarding matters have been considered to ensure minimal impact to Norwich Airport.

4. Protection of Airspace (OLS and IFPs)

4.1. The Applicant engaged a CAA Approved Procedural Design Organisation (APDO) specialising in obstacle analysis and designing Instrument Flight Procedures. This APDO reviewed the planning proposal and have carried out an independent obstacle analysis against the Obstacle Limitation Surfaces (OLS) and Instrument Flight Procedures (IFPs) associated with Norwich

Airport. The 'Obstacle Limitation Surfaces Analysis' document reference 4.05.03 has been completed and concluded that there would be no impacts to the OLS. The 'Instruments Flight Procedures Analysis' document reference 4.05.02 has been completed , and the analysis showed that no parts of the completed development will impact the IFPs, but two of the proposed cranes located at the Broadway Green Bridge and Foxburrow Plantation Green Bridge will impact the Non-Directional Beacon Localiser (NDB) (L) Distance Measuring Equipment (DME) Runway (RWY) 09 Final Approach, increasing the published Obstacle Clearance Altitude / Height (OCA/H) as indicated in the table below.

Category	Currently Published OCA/H (ft)	Resultant OCA/H (ft)	Increase
CAT A – D (WITH DME)	560 (443) ft	610 (493)	50 ft

Table 1: NDB(L)/DME RWY 09 Minima

Figure 4-1 Proposed Increased OCA/H

4.2. Initial discussions with respect to the temporary accommodation of the cranes were held with the Airport and an outline approach agreed in principle in May 2023. Further engagement with the Airport will be undertaken once there is clarity on the precise timing of the crane operations to ensure appropriate notice periods for notification are adhered to. Formal applications for temporarily raising the OCA will be submitted to the Airport in accordance with their procedures and CAA Guidance for Operators on the notification process.

5. Navigational Aids

5.1. The Applicant engaged the APDO to complete a technical safeguarding assessment to determine whether the Proposed Scheme could have any potential impacts on the Airport's Air Navigation Equipment and Radar. This report, 'Obstacle Limitation Surfaces Analysis' document reference 4.05.03 concluded the following:

a) The Proposed Scheme will not infringe the safeguarded areas of the Instrument Landing System (ILS) Localiser, ILS Glidepath, Distance

Measuring Equipment or Non-Directional Beacon facilities at Norwich Airport.

b) The proposed development lies outside the safeguarded areas of the Radar Safeguarding Map for Norwich Airport. Therefore, there will be no operational impact to the Airport's Primary Surveillance Radar.

5.2. The Applicant therefore believes that the Proposed Scheme will have no detrimental impacts on the Navigational Aids and Radar utilised by Norwich Airport.

6. Wildlife Strike Risks

6.1. The Applicant engaged experts to determine the potential for bird strike risks throughout the construction and operation phases of the Proposed Scheme. They have produced two reports and a statement to support this development. The first report is a 'Wildlife Hazard Management Design Risk Assessment' document reference 4.05.04. The second report is a 'Wildlife Hazard Management Plan for Airport Safeguarding' document reference 4.05.05. The statement is Suitability Statement document reference 4.05.06. These documents assess and propose mitigation plans in relation to potential bird strikes to ensure that the Proposed Scheme does not represent a hazard to these type of incidents.

6.2. The Applicant will ensure that the management of the Proposed Scheme will be fully committed in all three phases to supporting the aims and goals set out in the above reports, and as far as reasonably and practicably possible in proportion to the scale of formally assessed wildlife strike risks. These aims and goals are summarised below:

a) to support good practice in aviation wildlife hazard management on the Proposed Scheme under statutory obligations to safeguard aircraft using "subject aerodromes".

b) to mitigate on the Project site against:

a. An elevation in onsite populations for the wildlife species of aviation concern; and

b. A contribution towards an elevation in wildlife strike risks for aircraft using the Airport and in its surrounding critical airspace.

c) to protect aircraft passengers, flight crews, aircraft, the operational capability of the Airport, all persons on the "subject aerodromes" and in their surrounding local communities

6.3. The management for the Proposed Scheme will adopt a risk-based approach, which in this context means:

a) identifying risks,

b) completing an initial risk rating,

c) analyse what recommended actions could be implemented,

d) and finally outlining the residual risk ratings if all recommended actions are implemented,

6.4. The above points aim to support this commitment and they will ensure risk reduction is implemented promptly in accordance with recommendations in the 'Wildlife Hazard Management Plan for Airport Safeguarding' document reference 4.05.05, relevant UK legislation, regulatory and industry Standards and Recommended Practices (SARP).

6.5. Management for the Proposed Scheme will also ensure that all required measures are implemented, and efforts made to minimise the increase in wildlife hazard risks are maintained. A summary of the required measures is detailed in the different Codes of Practice included in the 'Wildlife Hazard Management Plan for Airport Safeguarding' document reference 4.05.05.

7. External Lighting

7.1. Aerodrome safeguarding aims to ensure the safety of all aircraft in the vicinity of an aerodrome by controlling potentially hazardous developments and

activities around it. This consists of the control of the location, heights, brightness, type, and pattern of lights around the aerodrome, with an overall caveat that “no light” should be directed or pointed towards any aircraft.

7.2. At night and in periods of poor visibility during the day, pilots rely on the pattern of aeronautical ground lights, principally the approach and runway lights, to assist in aligning themselves with the runway and to land at the correct point.

7.3. As an officially safeguarded aerodrome, Norwich airport has a Lighting box which extends 750m either side of the runway centreline and 4.5km into the aircraft approach. All external lighting proposals within this box could be subject to further airport restrictions depending on the lighting design specifications. The Applicant can confirm that no part of the Proposed Scheme sits within this Lighting box and therefore it is not anticipated that any further lighting restrictions will be required.

7.4. Additionally, although outside of the Lighting box for Norwich Airport, the Applicant can confirm that only 15 new lighting columns will be installed and shall be of a flat glass, full cut off design, mounted horizontally, and shall ensure that there is no light spill above the horizontal by selecting adequate products whose specifications fulfil this particular requirement.

8. Building Induced Turbulence

8.1. Wind shear has a negative impact on aircraft safety, particularly during take-off and landing processes. The buildings inside or around the airport can induce wind shear by disturbing the airflow along the glide path. The Applicant can confirm that there are no buildings being proposed with this development and given its distance from Norwich airport, there is no need for an independent Building Induced Turbulence assessment, nor does it anticipate that the safeguarding team at Norwich airport will request one.

9. Renewable Technologies

9.1. The forms of renewable energy that are known to have an impact on aviation are: wind energy, solar photovoltaic energy, and biogas energy. The Applicant can confirm that no such technologies are proposed as part of the Proposed Scheme. The Applicant therefore anticipates no further concerns from the safeguarding team at Norwich airport.

10. Aeronautical Ground Lighting

10.1. A variety of approach lighting systems, based on the centre line and cross bar concept, are in use at aerodromes throughout the UK. These systems range from the simple low intensity centre line and cross bar intended to serve visual runways at night only, to the more complex Calvert System comprising centreline and 5 cross bars for day and night use on ILS equipped runways.

10.2. Proposed structures and landscaping must not obscure any aeronautical ground lighting including runway approach lights. A clear view of all lighting patterns must be always maintained. In the case of approach lights an area 120m wide extending up to 1,350m from the runway threshold should be free of objects which might obscure or distort the lighting pattern. The pilot sees the aerodrome lighting in perspective, never in plan and has to interpret the guidance provided, while travelling at high speed.

10.3. Norwich airport's main runway 09/27 consists of the following approach lighting systems:

- Runway 09 = Lighting configuration consisting of 1 bar with a total length 427m
- Runway 27 = Lighting configuration consisting of 5 bars with a total length 953m

10.4. Therefore, given the distance and orientation from the airport the Applicant doesn't envisage that any part of the Proposed Scheme will obscure any of the approach light systems at Norwich Airport.

11. Aerodrome Safeguarding Conclusion

11.1. The Applicant believes that it has met all the aerodrome safeguarding requirements set out in UK legislation and that the technical assessments show that the Proposed Scheme will have no adverse impact on operations at Norwich Airport. Any mitigation for temporary obstacles, such as cranes will be managed using the CAA notification system and by obtaining a crane permit from the airport's safeguarding team.