

# Masterplan

August 2019



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## FOREWORD

By Richard Pace

I am delighted to publish our Masterplan, setting out our vision for the future development of Norwich Airport.

Our objective is to maximise the significant social and economic benefits the Airport brings to our region, while growing our business profitably and sustainably.



We will also continue to make a full contribution to the profile and image of Norwich, Norfolk, Suffolk and adjoining counties, by developing high quality facilities that reflect the aspirations of our region.

In this Masterplan we have set out the context for the growth and development of Norwich Airport to 2030 and 2045. We have identified the challenges, opportunities and actions that we need to take.

In the summer of 2016 the number of passengers exceeded 500,000 for the first time since 2008 and, by 2045, we expect 1.4 million passengers to be using Norwich Airport. Accommodating this level of demand with facilities that reflect the qualities and standards of service expected by the region will require significant capital investment.

Our success is enabling us to connect the region to many domestic, European and intercontinental destinations, providing those essential links that a thriving business community and leisure consumer demand. We are a major contributor to the regional economy, through job creation, inbound tourism and inward investment. Our GVA is expected to grow from £70m in 2015 to £170m in 2045. The majority of our customers are from Norwich, Norfolk and Suffolk, although increasingly we are seeing people coming from further afield to take advantage of the ease and convenience of a traveller-friendly regional airport.

The Airport will continue to provide a transport hub for the Southern North Sea Offshore industries in the oil and gas and windfarm technology sectors and be a centre of excellence for the Maintenance, Repair and Overhaul (MRO) sector. Critical to this is the supply of high quality property for aviation-related companies that want to locate to the Airport and skills provision.

That is why supporting education and training is a priority for Norwich Airport. This is key to the ongoing success of the regional MRO industry based at the Airport and we will continue to support the International Aviation Academy – Norwich in which we are a founding partner. The Masterplan explains how we plan to accommodate and deliver our vision whilst continuing to upgrade and enhance the facilities for our passengers and customers. The customer is the focal point of our decision-making and we wish to make Norwich Airport the Airport of choice in Norfolk, Suffolk and adjoining counties.

Our Masterplan addresses the implications of future growth, in particular, relating to road traffic and the impact of our activities on the environment and our neighbours and to maximise the opportunities from the completion of the Northern Distributor Road (NDR) in March 2018.

The overriding themes of our proposals are to minimise our land-take requirements, reuse existing developed land wherever possible and adopt a flexible phased approach to deliver capacity only when required. We believe this embraces the principles of sustainable development and ensures that we are mindful of our commitment to protecting the environment and supporting our neighbouring communities.

Our challenge is to continue the development of Norwich Airport as the principal gateway to Norfolk and Suffolk, providing regional connectivity for business and leisure passengers.

By continuing to engage with the community, we look forward to developing the Airport to support the social and economic fortunes of our region and developing our facilities so that everyone can be proud of their Airport.

A handwritten signature in black ink, appearing to read 'Richard Pace', written in a cursive style.

**Richard Pace**

Managing Director

## 1.0 Introduction

### Why Prepare a Masterplan?

- 1.1 The latest UK Government policy, set out in the 2013 Aviation Policy Framework<sup>1</sup>, established a Framework for its strategy for aviation in the UK, emphasising the Government's support for growth in aviation across the country. The Department for Transport (DfT) has advised airports to prepare Masterplans, addressing the core areas of: forecasts, infrastructure proposals, safeguarding and land / property take, impact on people and the natural environment and proposals to minimise and mitigate impacts. The Government has not set out specific targets for UK airports as it recognises that every airport has its own unique set of circumstances. Best practice suggests that Masterplans are updated once every five years, or when conditions or proposals at the airport deviate from those established in the plan.
- 1.2 This Masterplan sets out the development proposals for Norwich Airport to 2045 in accordance with advice from the DfT on the preparation of Masterplans. This Masterplan has been consulted upon widely within the community, and with the various authorities including Broadland District Council and Norwich City Council.

### The National Importance of Air Transport

- 1.3 The Aviation Policy Framework recognises that airports and air services play a key role in the UK's economy and that the country's airports should:
- Ensure that the UK's air links continue to make it one of the best-connected countries in the world;
  - Increase links to emerging markets so the UK can compete successfully for economic growth opportunities; and
  - Encourage the aviation industry and local stakeholders to strengthen and streamline the way in which they work;
- 1.4 Airports also play a vital role in indirect ways. In 2011, overseas residents made 31 million visits to the UK, with nearly 75% of them arriving by air. The overseas residents contributed £18 billion to the UK economy in 2011<sup>2</sup>.
- 1.5 The aviation sector also employs around 230,000 workers directly, and indirectly, supports

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<sup>1</sup> 2013 Aviation Policy Framework

<sup>2</sup> 2013 Aviation Policy Framework

many more<sup>3</sup>.

- 1.6 Government recognises that airports outside the South East play an important role in accommodating growth in aviation demand, which could take pressure off London's main airports. Airports outside the South East are vital to the local and national economy as they create jobs and connectivity.
- 1.7 The Airports Commission Report (an independent Commission) published in July 2015 found that, since 2005, the largest regional airports (outside the South East) have seen their passenger numbers increase by 9% on average. The Report also concluded that a number of the UK's regional airports will play an important role in enhancing or maintaining the country's connectivity in the coming decade.

### The Eastern Region

- 1.8 The Aviation Policy Framework highlights the future capacity challenge of the UK's main airports (around London). In the case of the Eastern region, this refers to London Stansted Airport in Essex.
- 1.9 The Aviation Policy Framework states that Stansted Airport will be at capacity by the early 2030s.
- 1.10 The total population of Norfolk, Suffolk and North Cambridgeshire is around 2.27 million. Many live within a 60-minute drive of Norwich Airport. The journey from Norwich Airport to London Stansted Airport is approximately an hour and a half drive and can be longer in busy periods.
- 1.11 Therefore, Norwich Airport's objective is to remain the principal airport for residents in Norfolk, Suffolk and adjoining counties and reduce East Anglian residents' reliance on London Stansted Airport.

### Draft Airports National Policy Statement<sup>4</sup>

- 1.12 In February 2017, the Government published its Draft Airports National Policy Statement, which sets out the Government's policy on the need for new airport capacity in the South East and the Government's reasons why a third runway at Heathrow was its preferred choice. In

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<sup>3</sup> 2013 Aviation Policy Framework

<sup>4</sup> 2017 Draft Airports National Policy Statement



it, the Government recognises the importance of the aviation sector to the UK economy but also highlights a capacity challenge. The document acknowledges that an increase in airport capacity has environmental implications and that expansion should occur in ways that can be mitigated and be deliverable within national targets and legal limits for air quality and greenhouse gases.

- 1.13 In the Draft Airports National Policy Statement, the Government lists the following reasons for its preferred choice of a third runway at Heathrow. It will:
- Provide the biggest increase in the UK's international connectivity;
  - Be the best solution for passengers by increasing availability of services and competition between airlines; and
  - Improve domestic connectivity.
- 1.14 This Draft Airports National Policy Statement underwent a sixteen-week consultation period from February to May 2017. Following the consultation period, the Secretary of State for Transport highlighted the need to update the evidence base and therefore, a need for further consultation. It is expected that the final version of the National Policy Statement will be put forward for a vote in Parliament in the first half of 2018.

### **Aviation Strategy replacing the Aviation Policy Framework**

- 1.15 When the Government published its Draft Airports National Policy Statement, it also announced that, in 2017, it would begin the process of developing a new strategy for UK aviation, updating the current Aviation Policy Framework, which would set out the Government's framework for aviation policy for the next 30 years. In July 2017, the Government announced a 'Call for Evidence', setting out the strategies that the Government wants discussed. Following the 'Call for Evidence', there will be a number of themed consultations. It is anticipated that the final Aviation Strategy will be published at the end of 2018.

### **Norwich Airport's Economic Opportunities**

- 1.16 Norwich Airport acts as a catalyst for the local and regional economy, not only by providing good airline connections across the UK, Europe and to an international hub, but also as a major employment centre in its own right.
- 1.17 It is estimated that the Airport supports 1,240 jobs in the local economy and contributes approximately £70 million to the regional economy. By 2045 it is estimated that the Airport

will contribute £160 million to regional GVA through direct, indirect and induced employment.

- 1.18 The Joint Core Strategy (adopted in 2011 by Norwich City, Broadland District and South Norfolk Councils) recognises the importance of Norwich Airport for creating growth in the region by increasing the amount of services for business and leisure travellers and providing for a new business park associated with the Airport and focused on uses benefitting from an airport location.

### Airport Governance

- 1.19 Norwich Airport's main owner is Regional & City Airports Holdings Ltd, a company owned by Rigby Group Plc which controls 80.1% of the Airport. The remaining 19.9% is owned by Norfolk County Council and Norwich City Council.
- 1.20 Regional & City Airports' vision is to help smaller regional airports to prosper through effective management and collaboration. The business serves 1.7 million passengers a year, facilitating more than 516 flights a day. It currently employs more than 624 people across its airport business, which includes the ownership of Norwich Airport, Exeter Airport and Coventry Airport, and via operation and the management under contract of Blackpool International Airport, Solent Airfield Daedalus and City of Derry Airport. In December 2017 Regional & City Airports acquired Bournemouth Airport, which will further increase the scale of operations under RCA's ownership and management.
- 1.21 Rigby Group Plc is the parent company for a portfolio of family-owned businesses operating across Europe and the Middle East. It has a revenue of £2.8 billion and employs over 7,500 people. It comprises six key divisions, which include Airports and Aviation. The target of the Rigby Group Plc is to have revenue of £4 billion by the end of the decade.

## The Masterplan and Planning Process

1.22 This document is structured in accordance with the Government's guidance on the content of Masterplans in its Aviation Policy Framework, 2013.

1.23 The Aviation Policy Framework states that Masterplans:

**"Do not have a statutory basis but the primary objective...is to provide a clear statement of intent on the part of an airport operator to enable future development of the airport to be given consideration in local planning processes."**

1.24 In consultation with Norwich City and Broadland District Councils' officers, it has been agreed that the target for the Masterplan is to achieve member 'endorsed' status.

1.25 Development at Norwich Airport will still be subject to the normal requirements for planning permission. In common with other airport operators, Norwich Airport is able to undertake certain types of development without the need for planning permission, following consultation with the local planning authority. These types of development are known as "permitted development". The scope of permitted development is set out in Part 8 of Schedule 2 to the Town & Country Planning (General Permitted Development) (England) Order, 2015 (GPD0). Such development must be on operational land and relate to the provision of airport services and facilities.

1.26 This Masterplan provides a framework for the Airport's longer-term aspirations within which proposals can be considered and planning applications made as and when necessary, including informing the emerging Local Plan process (see Chapter 5).

1.27 The Masterplan process has taken account of the Greater Norwich City Deal which recommends growth of Norwich Airport with a Business and Aviation Park and the need to develop Airport Surface Access Strategies to:

- Manage the environmental impacts of surface access; and
- Increase the number of passengers and staff using public transport.

## Stakeholder Engagement

- 1.28 As part of the Masterplan evolution, regular meetings have been held with Officers from Norwich City and Broadland District Councils, as well as with senior members of the Norwich Airport Board. The Airport Consultative Committee (ACC) and Norwich Airport Passenger Action Group (NAPAG) have been kept abreast of progress via periodic committee meetings held with the Airport.
- 1.29 The ACC consists of members from both District and Parish Councils, aerodrome users, associated businesses and representatives from the Airport. It meets quarterly and provides an opportunity for interested stakeholders to exchange information about the Airport and, if necessary, raise concerns.
- 1.30 NAPAG is an independent group who engage with passengers to understand and put forward queries to the airport management. Regular meetings between the airport management and NAPAG help improve and enhance the passenger experience of using Norwich Airport.
- 1.31 A ten-week consultation process where key stakeholders were invited to comment on the draft Masterplan formed an integral part of the Masterplanning process. The list below included those groups involved to comment on the draft Masterplan:
- Airport Businesses;
  - Airport Consultative Committee (ACC);
  - Broadland District Council;
  - Development companies promoting new settlements locally;
  - Local Businesses;
  - Norfolk County Council;
  - Norwich Airport Passenger Action Group (NAPAG);
  - Norwich City Council;
  - Parish Councils; and
  - The Local Public.



1.32 The Draft Masterplan stakeholder consultation process was widely published via the following channels:

- Distributing a hard copy of the draft Masterplan document to local communities (libraries, Parish Councils, Community Centres);
- Feedback forms provided online;
- Notification on the Airport's website with the ability to download an electronic copy;
- Presentations to business and community groups via the ACC and NAPAG; and
- Publicity in print and broadcast media.

### Availability

1.33 A copy of the draft Masterplan was placed on the Airport's website at [www.norwichairport.co.uk/masterplan](http://www.norwichairport.co.uk/masterplan).

1.34 Hard copies were provided at the following publicly accessible locations:

- Broadland District Council;
- Hellesdon Parish Council;
- Mile Cross Library;
- Norwich City Council;
- Old Catton Parish Council;
- Spixworth Parish Council; and
- The Black Swan Inn for Horsham St Faith Parish Council.

1.35 Following the ten-week consultation period over the Summer 2017, Norwich Airport analysed all responses and made a number of revisions to enable the adoption of this Masterplan.

## 2.0 Masterplan Scope and Consultation

- 2.1 This Chapter outlines the methodology and consultation process applied in the production of this Masterplan.

### Scoping of Masterplan

- 2.2 The Airport Masterplan has been prepared using technical data to establish a baseline position, from which forecasts, assessments and potential proposals have been developed.
- 2.3 The Masterplan was initially scoped in consultation with the two administering local authorities, Broadland District and Norwich City Councils.
- 2.4 A pre-submission meeting was held with officers where it was agreed that the key topics for the Masterplan relate to the policy position, sustainable transport, surface access and environmental considerations. The content of the Masterplan, therefore, comprises the following chapters:
- Foreword;
  - Introduction;
  - Masterplan Scope and Consultation;
  - Vision for Norwich Airport;
  - Norwich Airport Today;
  - Planning Policy and Regional Growth;
  - Airport Safeguarding;
  - Recent Trends in Passenger and Cargo Traffic;
  - Forecasts for Future Growth 2015 to 2045;
  - Phased Growth;
  - Sustainable Transport; and
  - Sustainability.
- 2.5 To inform these chapters, a project team was assembled to prepare the technical reports and advise on the project. In parallel, desktop research was undertaken to review all available information held by the Airport, including data available from recent planning applications and reports commissioned by the Airport for general operational purposes.

2.6 The following reports were commissioned to provide the evidence base behind the Masterplan:

- Initial Surface Access Strategy;
- Initial Sustainable Travel Plan;
- Noise Report; and
- User Forecast and Economic Report.

### Consultation

2.7 Alongside the technical project team, a planning officer Working Group was commissioned to meet periodically, comprising members from the following organisations:

- Broadland District Council;
- Norwich City Council;
- Greater Norwich Growth Board;
- Norwich Airport Ltd; and
- Barton Willmore LLP.

2.8 The officer Working Group was consulted on the approach to consultation of the draft Masterplan. It was agreed that the process would reach out to the following stakeholders:

- Business Users – Norwich Airport Consultative Committee (ACC);
- Airport Passenger Users – Norwich Airport Passenger Action Group (NAPAG);
- Promoters of major committed developments surrounding the Airport. (Chapter 5: Planning Policy and Regional Growth details the promoters of major committed developments);
- Parish Councils and the Wider Public – Six weeks' draft Masterplan consultation period; and
- Local Authority / Planning Officers – Working Group.

2.9 Presentations were given to the ACC and NAPAG and a Question and Answer session held at separate committee meetings to gain feedback from these user groups.

2.10 The public consultation period ran for ten weeks, from 6 July to 20 September 2017. Adverts were placed in the Eastern Daily Press and Norwich Evening News alerting stakeholders of the consultation process, where to view the draft Masterplan and how to comment.

2.11 The draft Masterplan was made available at the following locations:

- Broadland District Council – Thorpe Lodge, 1 Yarmouth Road, Norwich;
- Hellesdon Parish Council – Diamond Jubilee, Wood View Road, Norwich;
- Mile Cross Library – Aylsham Road, Norwich;
- Norwich City Council – St Peters Street, Norwich;
- Old Catton Parish Council – The Pavilion, Church Street, Old Catton;
- Spixworth Parish Council – Village Hall, Crostwick Lane, Spixworth; and
- The Black Swan Inn – 25 Norwich Road, Horsham St Faith.

2.12 In addition, a copy of the draft Masterplan was made available online with a feedback form at [www.norwichairport.co.uk/masterplan](http://www.norwichairport.co.uk/masterplan).

2.13 Norwich Airport analysed the feedback and has made alterations in order for this Masterplan to be 'endorsed' by Broadland District and Norwich City Councils and, consequently, adopted.

### Assessment and Phasing Years

2.14 The baseline year for the Masterplan is 2015/2016, when data was collected.

2.15 The Masterplan considers a 30-year period for forecasting, assessment and potential development proposals.

2.16 The 30-year period is considered in the following phases:

- Phase 1 – 2015-2030; and
- Phase 2 – 2030-2045.

2.17 Proposals for the Airport are based on current data and predictions, which can change over time with economic cycles and technological advancements. Proposals are, therefore, spatial in design and intended as a basis to inform future development and investment decisions, drive sustainability and engage with stakeholders. Its purpose is not to define detailed design measures or formally allocate land parcels for specific uses. Guidance suggests airport masterplans should be updated approximately every five years.



## Project Team

2.18 Table 2.1 below shows the core project team and what they contributed towards the Masterplan.

**Table 2.1: Name of companies that have compiled technical studies for the Masterplan**

Name of Company	Input
Norwich Airport Ltd	Foreword, Vision, Safeguarding and Risk Assessment
Barton Willmore LLP	Masterplan Preparation, Regulatory and Planning Policy, Environment and Sustainability
York Aviation LLP	Passenger and Economic Forecasts
Bickerdike Allen Partners LLP	Noise Consultants
Iceni Projects Ltd	Sustainable Transport

## 3.0 Vision for Norwich Airport

### Masterplan Vision

3.1 Norwich Airport's vision is to be:

**"The Passenger Airport of choice for Norfolk, Suffolk and adjoining counties; a leading provider of aircraft maintenance, repair and overhaul services; a supplier to the oil and gas industry and a location for business growth."**

3.2 This vision will position the Airport to remain the principal gateway to Norfolk and Suffolk, providing regional connectivity for business and leisure passengers for domestic and international air travel.

3.3 Significant investment in new roads has created opportunities for the Eastern region and Norwich in particular. In June 2015, planning permission was granted for the construction of the Norwich Northern Distributor Road (NDR). The NDR from the A1067 Fakenham Road to the A1151 Wroxham Road opened in 2017. The remaining section of the NDR from the A1151 Wroxham Road to Postwick is scheduled to open in March 2018. The Airport seeks to maximise opportunities arising from the completion of the NDR in March 2018. The Norwich Western Link will connect the new NDR from the A1067 to the A47 west of Norwich is expected to start construction in 2022.

3.4 The Airport will continue to provide a transport hub for the Southern North Sea Offshore industries in the oil and gas and windfarm technology sectors and be a centre of excellence for the Maintenance, Repair and Overhaul (MRO) sector. Critical to this is the supply of high-quality property for aviation-related companies, wishing to locate to the Airport.

3.5 Supporting education and training is a priority. This is key to the ongoing success of the regional MRO industry based at the Airport. As one of the founding partners, Norwich Airport will continue to support the International Aviation Academy – Norwich (IAA-N).

3.6 Environmental standards and community engagement are also a priority. The Airport will continue to operate and grow in accordance with the appropriate environmental standards and engage with the local community.

## Masterplan Objectives

3.7 To achieve the Vision above, the Masterplan defines 10 key objectives:

1. **Service Excellence:** Continue to put people first by meeting and exceeding the expectations of our customers, stakeholders and the community.
2. **Maintain the Highest Standards of Safety:** This applies to all passengers, staff and the community to ensure all activities are carried out safely and securely. Uphold the highest standards of Air Traffic Control (ATC) and airspace safety and develop the airfield to ensure continuous improvement in operational safety.
3. **Drive Economic Development:** Develop a vibrant, innovative and profitable business to ensure future investment and continued development of Norwich Airport. Maximise the contribution that Norwich Airport provides as an economic driver, creating employment and stimulating investment and growth both on site and in the wider regional economy.
4. **New Destinations:** Improve frequency for business and leisure travellers to and from the region and develop international routes through good connections to major European and UK destinations.
5. **Sustainability and Environmental Responsibility:** Maintain a sustainable airport by carefully managing our impact on the environment and reducing the need for passengers to travel long distance to other airports, principally in the East and South East.
6. **Support for Small and Medium Sized Enterprises (SME):** Enable the continued use of the Airport by general aviation and flying training and support the development of existing and additional aviation-related SMEs within the boundaries of the Airport. Norwich Airport is committed to using local suppliers and local produce where possible and will encourage our on-airport business partners to support the local supply chain.

7. **A Centre for Educational Excellence:** Continue our work as a founding partner of the International Aviation Academy – Norwich (IAA-N) to support the creation of an internationally recognised centre of excellence for education and skills training in aviation. This will develop a highly trained workforce for the Airport and related businesses and act as a catalyst for further inward investment.
  8. **Strategic Planning and Investment Infrastructure:** Set out the long-term growth plans of Norwich Airport so that these inform strategic planning and investment decisions by local authorities. Improve public access where practicable and increase opportunities for sustainable travel to Norwich Airport. Provide the right infrastructure, at the right time, that will serve the existing and future occupiers at the Airport.
  9. **Raise Regional Profile:** Ensure that Norwich Airport makes a full contribution to the profile and image of Norwich, Norfolk and Suffolk and the East by developing high quality facilities that reflect the aspirations of the region.
  10. **Corporate and Social Responsibility:** Community relations are central to our approach and we encourage communities to take an active interest in our operation. We aim to reach out and support local projects and initiatives whilst at the same time develop our business. As a responsible operator, Norwich Airport takes its impact on its neighbours seriously and will continue to engage with residents and businesses.
- 3.8 The Airport is focused on maximising the economic, social and environmental opportunities available. This Masterplan is a key part of that strategy, which will be reviewed on a periodic basis, being updated as and when required.



## 4.0 Norwich Airport Today

- 4.1 Norwich Airport provides the region with a network of routes to a wide range of domestic and European cities and is believed to be the second biggest heliport in the UK serving the North Sea oil and gas industry.
- 4.2 The Airport is located approximately 7km to the north of Norwich City Centre and is within the administrative boundaries of Norwich City Council (NCC) and Broadland District Council (BDC). It is 280 hectares in size and surrounding residential communities include Horsham St Faith, Spixworth, Hellesdon, Old Catton and Norwich City. Figure 4.1 shows the Study Area of Norwich Airport and its context to Norwich.
- 4.3 Norwich Airport has direct access to the A140, connecting the north Norfolk coast to Ipswich.
- 4.4 The NDR is due to be opened in March 2018, providing much improved strategic connectivity via the A47 and A11 to the south, east and west. The NDR will help the Airport to grow its business and fulfil its connectivity and employment potential within the region.
- 4.5 The Airport Park and Ride service, located to the south-west of the Airport, provides connections to Norwich City Centre. Other bus services, located within walking distance of the site (on the A140) provide connections to Norwich City Centre, the Bus Station and other neighbouring communities.
- 4.6 The Airport comprises largely freehold ownership and some elements of leasehold. Figure 4.2 details the land ownership of the Airport.

### Airport Revenue

- 4.7 The Airport revenue broadly comprises:
- £8.0m Scheduled and Charter flights
  - £1.0m Maintenance, Repair and Overhaul (MRO)
  - £2.5m Oil and Gas Industry
  - £1.0m Other

## The History of the Airport

- 4.8 In 1933, the Airport was officially opened on Mousehold Heath on a former First World War aerodrome. This fell into disuse at the start of the Second World War.
- 4.9 The current site was opened in 1939 as a Royal Air Force (RAF) bomber station (Station 123) but was officially opened in June 1940. In September 1942, the base was used by the United States Army Air Force until the end of the War when it was occupied by four RAF Gloster Meteor Squadrons. These squadrons participated in many post-war exercises.
- 4.10 Most of the Second World War buildings used by the United States Army Air Force are still being used for airport purposes including aircraft maintenance, with a number now on the adjacent industrial estate, having been converted for commercial uses.
- 4.11 In 1956, the RAF extended the runway eastwards to avoid take-offs and landings over built-up areas.
- 4.12 The RAF left Horsham on 24 March 1967 and over the following two years, most of the airfield and buildings were sold to Norwich City and Norfolk County Councils, with a small part being retained by the Ministry of Defence. The civil airport opened for passengers in 1968.
- 4.13 In 1969, the fuel supply service became operational and in the following year, the Customs Authority granted approval for the export and import of all types of freight.
- 4.14 In 1971, holiday charter flights started, and Customs allocated it to be an approved customs airfield.
- 4.15 The main terminal was opened in 1988 after the Airport became a limited company in 1987 and could invest in a better terminal. The corporate identity of "Norwich International" was established in 1999 and replaced by "Norwich Airport" in April 2017.
- 4.16 In 2004, the Airport was largely privatised with Omniport Plc (an investment and management company) becoming the majority shareholders by acquiring 80.1% of the operation. Norwich City and Norfolk County Councils retained the remaining interest.
- 4.17 In 2006, a new extension to the terminal building costing £4.5 million was completed, which comprised a new arrivals hall for both domestic and international passengers and the completion of an improved departure lounge with the provision of more retail and catering outlets.

- 4.18 In order to ensure the sustainability of the Airport and to contribute towards new airport facilities, an Airport Development Fee was established in 2007 (it is currently at £10 per person over the age of 16) and passenger numbers reached an all-time high of 772,666.
- 4.19 In 2010, KLM UK Engineering (KLMUKE) celebrated 40 years of aircraft maintenance at its base in Norwich.
- 4.20 In April 2013, BMI Regional celebrated 10 years of the flight from Norwich Airport to Aberdeen International Airport.
- 4.21 In 2014, Omniport's shares in Norwich Airport were acquired by Regional & City Airports Holdings Ltd, part of the Rigby Group Plc.
- 4.22 The growth of new routes and services reflects the UK and European trend of increased demand for air travel for social and business purposes, the increased capacity and demand in the low-cost airline sector and the gradual trend for increased direct services from the regions rather than via the London airport system.

### Scheduled Flights

- 4.23 The scheduled traffic passenger numbers were broadly flat between 2014 and 2015.
- 4.24 A list of destinations from Norwich Airport in 2016 is provided below, including scheduled flights from Norwich Airport to two European countries as well as the UK and Channel Islands.
- Aberdeen
  - Alicante
  - Amsterdam
  - Edinburgh
  - Exeter
  - Guernsey
  - Jersey
  - Malaga
  - Manchester
- 4.25 There are daily flights to Amsterdam (operated by KLM Cityhopper, which provide connections to over 600 worldwide destinations).
- 4.26 Flights to Aberdeen, Manchester, Edinburgh, Exeter and Spain are available all year round.

4.27 Flights to the Channel Islands are also operational over the summer.

### Charter Flights

4.28 In addition to the scheduled network, Norwich Airport has a strong inclusive tour and charter (package holiday) network. There was a modest increase in passengers who took charter flights between 2014 and 2015.

4.29 Norwich Airport has numerous seat-only charter and fully inclusive package holidays on offer throughout the year to the Channel Islands and European destinations. The majority of these flights are provided through major tour operators such as First Choice, TUI, Newmarket Holidays Premier Holidays and Balkan Holidays. The primary destinations for these charter flights are:

- Bulgaria,
- Corfu,
- Gran Canaria,
- Guernsey,
- Ibiza,
- Jersey,
- Majorca,
- Malaga,
- Menorca,
- Paphos,
- Rhodes,
- Tenerife.

4.30 In addition, a number of specialist charters operate to destinations including:

- Croatia,
- Friedrichshafen,
- Lapland,
- Naples,
- Venice,
- Verona.

### Chartered Oil and Gas Services

- 4.31 The East of England is an established hub for the oil and gas industry. The region's industry comprises more than 500 companies who directly employ 2,100 people and a further 13,200 indirectly. Currently, 10 offshore fields and two interconnectors are located in the Southern North Sea.
- 4.32 Consequently, Norwich Airport is believed to be the busiest UK heliport serving the North Sea oil and gas industry after Aberdeen International Airport. In 2016, over 107,000 passengers travelled to and from offshore gas platforms from the Airport.
- 4.33 The following major offshore helicopter operators are based at the Airport:
- Bristow Helicopters Ltd (located to the south-east of the runway)
  - Babcock Mission Critical Services Onshore Limited (located to the south-west of the runway)
  - CHC Scotia Ltd (located to the south-west of the runway)
  - NHV Helicopter Ltd (located to the south-west of the runway)
- 4.34 Norwich Airport is working with the oil and gas companies to continuously improve productivity, reliability and service standards.

### Maintenance, Repair and Overhaul

- 4.35 Norwich Airport is home to two major Maintenance, Repair and Overhaul organisations (MROs):
- KLM UK Engineering (KLMUKE), a leading regional aircraft and narrow body MRO and subsidiary of Air France-KLM; and
  - Air Livery Ltd, an established aircraft repainting company.
- 4.36 KLMUKE has been providing aircraft maintenance at Norwich Airport for 46 years. Their service includes base maintenance, component sales, technical training and decommissioning of several types of aircraft, including:
- Embraer 170/190;
  - Boeing 737;
  - Airbus A320;

- Fokker 70/100;
- Bae146 Avro RJs.

4.37 KLMUKE's facilities include three hangars, five heavy maintenance bays, onsite workshops, disassembly and recycling centre and a technical training college. It has around 400 staff and a turnover of over £30 million.

4.38 KLMUKE have many customers which include:

- Air France;
- British Airways;
- KLM;
- Pegasus; and
- Swiss Air.

4.39 Air Livery Ltd is a subsidiary of Air Works, and its headquarters is at Norwich Airport. It has three aircraft painting bays and works in conjunction with other MROs. It also has plans to grow in the near future.

## **Business and General Aviation**

### **Cargo and Mail Handling**

4.40 Regional Freight Services Ltd (a company that specialises in international freight logistics) has their headquarters at Norwich Airport. It has a turnover of £5.5 million and there is potential for company to grow.

### **Military and Government Flights**

4.41 Norwich Airport caters for a variety of flights organised by the Military, Police, Coastguard and the Fisheries Protection Agency.

### **Private Air Travel**

4.42 Norwich Airport provides a service for private air charter, which includes helicopters as well as private planes.

- 4.43 The use of private air charter has become a more popular travel choice for both business and personal use. Hiring a private jet can take you from Norwich to virtually any European destination. This sector is predicted to grow over the subsequent years.
- 4.44 A private charter company, SaxonAir Chartered Ltd (owned by Klyne Aviation Group) has their Head Office at Norwich Airport. SaxonAir is Norwich Airport's preferred handler for GA aircraft and operates from the bespoke Business Aviation Centre (BAC) to the south of the runway.

#### Other

- 4.45 The East Anglia Air Ambulance also operates one of its helicopters from Norwich Airport.
- 4.46 A flying training school, Premier Flight Training, operates to the south of the runway.

#### Existing Airport Facilities

- 4.47 The operational area of the Airport is 280 hectares. It has mainly been developed on the south side of the runway. The southerly side of the runway contains KLM UK Engineering, Air Livery and SaxonAir Charter Limited as well as the terminal, as shown on Figure 4.3.
- 4.48 The Airport's Air Traffic Control service and Engineering workshops, together with the Fire Training Simulator and the Engine Test Facility are all located to the north of the runway.

#### Runway, Taxiways and Aprons

- 4.49 The airfield is the largest proportion of land within the Airport boundary and principally consists of the runway, taxiways and aircraft stands plus important ancillary facilities including the fire station, fire training ground and fuel farm.
- 4.50 The runway bearing 09/27 runs approximately east to west and is 1,841m in length. A taxiway system to the south of the runway provides for the distribution of aircraft from aircraft parking stands to the runway and a turning circle at the eastern and western ends of the runway enables departing or arriving aircraft to turn.
- 4.51 The Norwich Airport runway is EASA regulated and its reference code is 4C<sup>1</sup>, suitable for all current destinations and aircraft types operating from the Airport.

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<sup>1</sup> European Aviation Safety Agency Regulations

- 4.52 In common with many UK airports, Norwich Airport has a dispensation from the CAA for its Runway End Safety Area (RESA) following a change in regulation in 1999. The RESA exceeds the minimum requirement but does not meet the EASA recommended requirement. A runway end safety area should extend from the end of a runway strip to a distance of at least 90m and, as far as practicable, extend to a distance of 240m where the code number is 3 or 4.
- 4.53 Disused runway 04/22 is used as part of the taxiway system to the south of the runway and as a combined taxiway and aircraft parking area to the north of the runway.
- 4.54 There are seven aircraft stands for commercial operations to the south of the runway adjacent to the terminal. GA aircraft park at a number of designated sites to the south of the runway and extensive use is made of paved areas to the north of the runway for parking aircraft awaiting maintenance in the KLM maintenance hangars.
- 4.55 Stands 1 to 6 are located on the terminal, numbers four to six are Multiple Apron Ramp System stands (MARS) and can take up to Code D aircraft, such as a B757. Stand 7 is opposite the terminal.
- 4.56 Currently up to eight aircraft may occupy the apron at the same time. The limited type of aircraft that a stand can accommodate, together with overall apron space, restricts operations and emphasises the need to extend the apron to meet the demands of traffic growth.

### Passenger Facilities

- 4.57 Passenger facilities are located on the south side of the airfield accessed from the A140. The main terminal was opened in 1988 and has been progressively expanded over the past 25 years. The terminal is located nearly parallel to the runway for reasons of operational efficiency and ease of access to the airfield facilities.
- 4.58 The check-in hall contains 15 check-in desks (12 fixed wing and 3 rotary wing) linked to a hold baggage screening and handling system as well as ticket desks and a range of passenger facilities. Other facilities in the check-in hall are:
- A Café / Bar;
  - Bureau de Change;
  - Car Hire Desks;
  - Customer Services;
  - First Aid Room;



- National Car Parks (NCP) Desk;
- Passenger with Reduced Mobility Desk;
- Shop;
- Taxi Booking Office; and
- Travel Shop.

4.59 Following check-in, passengers pass through security to a departure lounge consisting of:

- A Bar
- A Business Suite
- A Café
- An Executive Lounge
- Departure Gates
- Lounge and Airside Retailing

4.60 The departure gate room is located towards the centre of the terminal building. Four Gates offer simultaneous boarding of the aircraft. A further gate is located to the west of the terminal. Passengers can walk to gates one to four. Arrivals is located at the eastern end of the terminal.

4.61 Gate five to the west of the terminal is used for staff, crew and offshore workers where full Department for Transport (DfT) security requirements are implemented. In addition, offshore workers are subject to further checks required by their companies.

4.62 The existing terminal has a number of constraints on both area and rate of processing through check-in security and aircraft boarding. The two-way busy hour rate is approximately 349 passengers per hour, and the current capacity of the terminal is 1,200 passengers.

4.63 The bus stop for the 501 Airport Park and Ride is located to the south-west of the terminal. In common with other UK airports and following the terrorist incident at Glasgow Airport in July 2007, Norwich Airport closed the terminal forecourt, requiring passengers to set down and pick up in the short-term car park.

4.64 Car hire facilities are located in the main terminal building next to the two entrances. There is also a dedicated taxi service to the south of the terminal, next to the car hire facilities. An upgrade to the car hire desks is planned for the end of 2017.

### Car Parking

- 4.65 Approximately 984 car parking spaces are provided in two car parks to the south and west of the Airport. Staff parking is in one of three dedicated locations. There are two small areas to the east of the terminal (approximately 40 spaces in each site), which are access controlled via card and / or key coded barriers.
- 4.66 Staff may park in the short stay car park in the less favourable areas to customers along the western margin or at the rear. This is not demarcated and is available only if not used by customers.
- 4.67 Fire service and technical services' staff park next to the fire station, where there are approximately 35 spaces, with access via the main gate, to the south-east of the airfield. Air Traffic Control (ATC), Engineering and other teams' staff park on the north side next to the control tower, accessed via Crash Gate 4 from Bullock Hill (which will ultimately form part of the NDR), comprising 35 spaces.
- 4.68 In addition, tenant companies, including KLM UK Engineering (KLMUKE) have dedicated car parking adjacent to their individual premises whether on or off the airfield.

### Administration and Support Facilities

- 4.69 Administration and airline office accommodation are located in the terminal building.

### Air Traffic Control

- 4.70 The Air Traffic Control Tower is situated adjacent to the northern boundary at the end of the Old Norwich Road but will soon be accessed via the NDR. This complies with CAA regulations that require Air Traffic Controllers to have clear and unobstructed views of the aircraft movement area and all parking areas. A range of navigational aids are controlled from the tower including airfield ground lighting, radar and instrument landing systems.

### Engine Testing Facilities

- 4.71 In September 2016, Norwich Airport opened a new engine testing centre, purpose built to reduce aircraft noise during high power ground runs for neighbouring communities. The aim of the centre is to support the Maintenance, Repair and Overhaul (MRO) companies at the Airport and maintain the safe operation of aircraft for scheduled and charter operators alike.

- 4.72 This engine testing centre cost £1.4 million and is suitable for all aircraft types currently operating at the Airport. The facility is available to any operator who may require it.

### **International Aviation Academy – Norwich (IAA-N)**

- 4.73 Norwich Airport and KLMUKE conceived the idea of an Aviation Academy to meet the future aircraft engineering needs of KLMUKE. The concept was then developed in partnership with Aviation Skills Partnership (ASP) to deliver the project. It was opened on 24 April 2017 and provides courses that meet the needs of the airline and airport industries.

- 4.74 The courses that the IAA-N provides include:

- A new BSc (Hons) professional Aviation Engineering Practice Degree;
- Aircraft technical and type courses;
- Airport operations training;
- Aviation engineering courses and apprenticeships;
- Cabin Crew integrated training;
- Human factors and safety management training; and
- Management and non-aviation courses.

- 4.75 Norwich has always had a long aviation heritage, especially with regards to engineering. Through the IAA-N, Norwich Airport has committed to enhancing and expanding the existing skills in the region, especially within the engineering sector.

- 4.76 Norwich Airport commits itself to supporting all its employees to develop their basic skills and work towards relevant and recognised qualifications. This will ensure that all the staff are skilled, competent and able to make a full contribution to the success of the company.

### **Ancillary Facilities**

#### *Fire station and training ground*

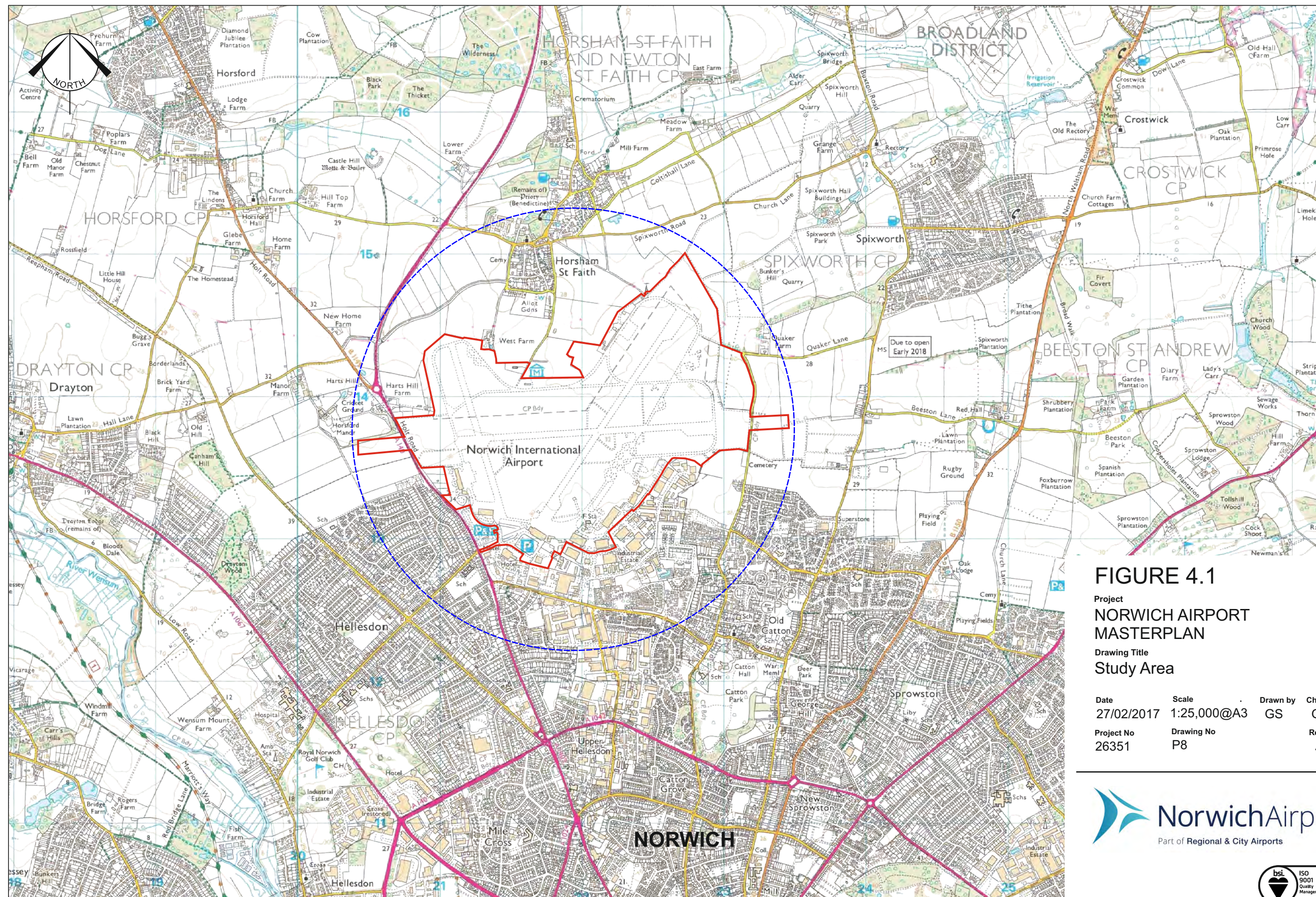
- 4.77 The fire station is located to the south-east of the airfield immediately to the east of the apron vehicle control post. The station has three bays for Rescue and Firefighting Service (RFFS) vehicles in addition to space for offices, training and equipment support and staff accommodation.

- 4.78 The Airport's fire training ground is located on the northern part of the Airport and provides a full size, regulatory compliant simulator for the ongoing training of the Airport's Fire Fighting Service.

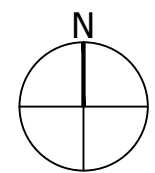
#### *Fuel Farm*

- 4.79 The fuel farm is located on the south-west side of the Airport and currently comprises 1950's underground tanks which are shortly to be replaced with modern, above ground facilities in the same location.


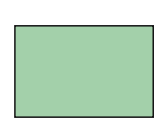
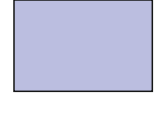


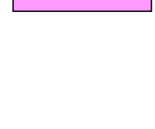








## LEGEND

-  Airport Operational Boundary
-  Areas of Freehold Ownership
-  Areas of Leasehold Ownership
-  Leasehold Legislator 1657 - No development aspiration airfield grassland
-  Land acquired by Norfolk County Council for NDR
-  Land managed by NAL under a temporary licence pending negotiation for a long term interest from the local authority

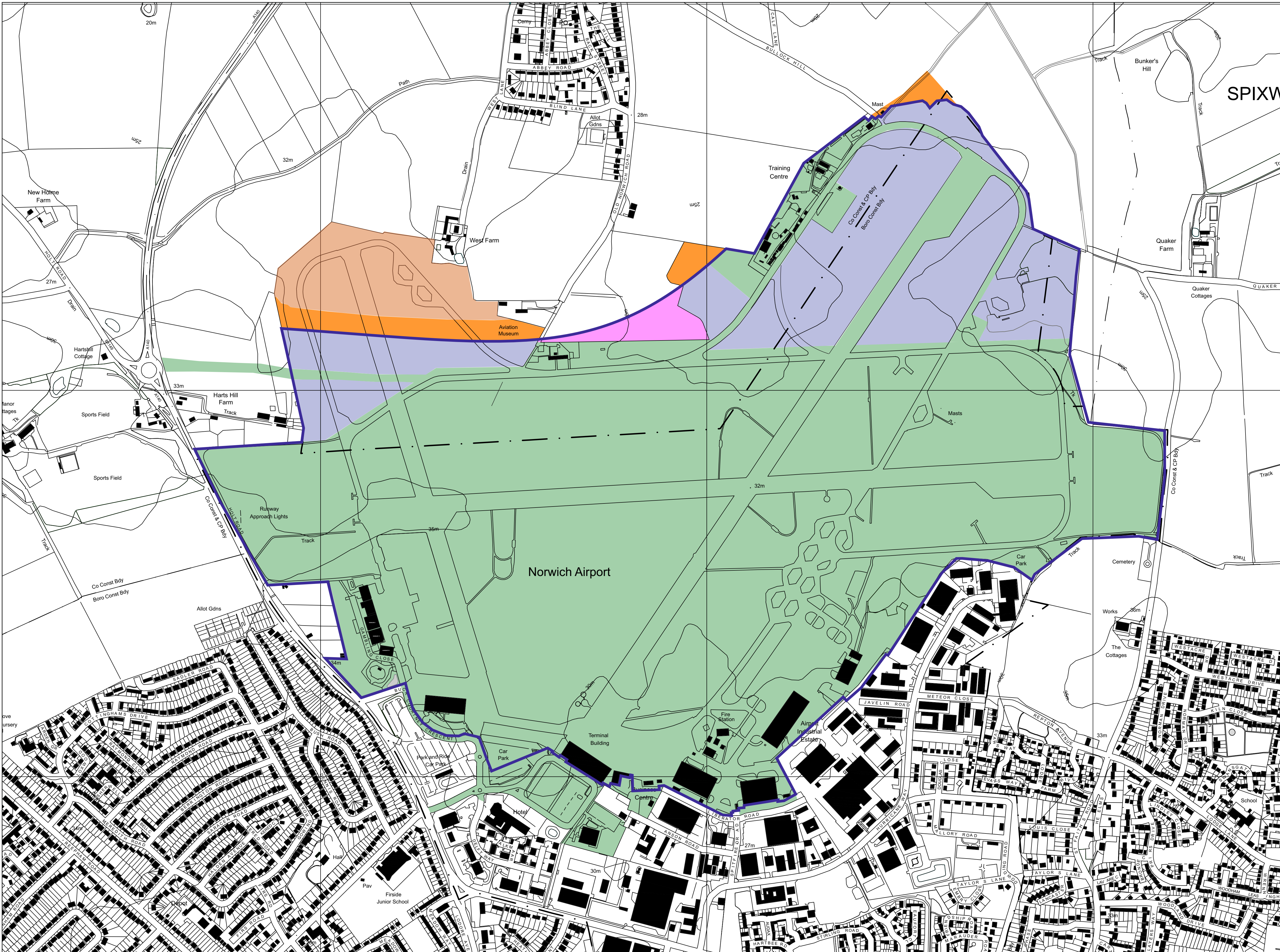


FIGURE 4.2

Project  
NORWICH AIRPORT  
MASTERPLAN  
Drawing Title  
Land Ownership Plan

Date  
08/02/2017

Scale  
1:5,000@A1  
1:10,000@A3  
Drawing No  
P4

Drawn by  
GS

Checked by  
GW

Project No  
26351

Revision  
E





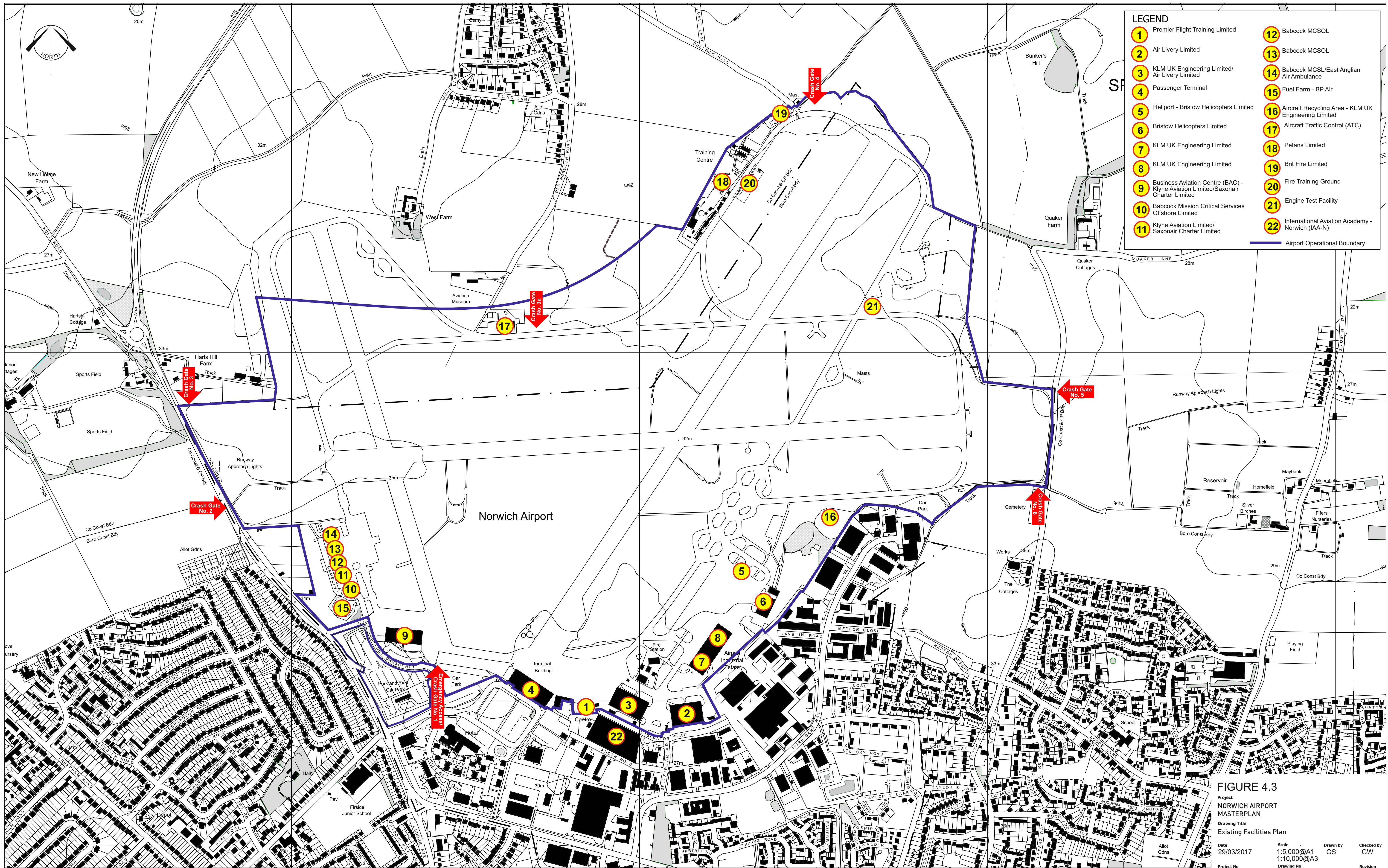


FIGURE 4.3

Project  
NORWICH AIRPORT  
MASTERPLAN  
Drawing Title  
Existing Facilities Plan

Date  
29/03/2017

Project No  
26351

Scale  
1:5,000@A1  
1:10,000@A3  
Drawing No  
P10

Drawn by  
GS  
Checked by  
GW  
Revision  
B



## 5.0 Planning Policy and Regional Growth

### Introduction

- 5.1 There are a range of external factors which influence the future growth and development of the Airport, in addition to the regulatory environment in which it already works. These include:
- National Policies, including the 2013 Aviation Policy Framework, which describe the guidelines for the long-term strategic development of airports across the UK; and
  - Local Policies which ensure that the social and economic benefits of the Airport's development are balanced with the needs of local communities and environment.
- 5.2 The following sections provide an overview of the legislation and policies, which have influenced the development of this Masterplan. It also sets out the key statutory and regulatory requirements within which development must comply.

### UK Aviation Policy

- 5.3 The most recent document laying out the Government's objectives and principles to guide plans and decisions at the local and regional level in the United Kingdom is the 'Aviation Policy Framework<sup>1</sup>', published in March 2013.
- 5.4 The Aviation Policy Framework recommends a balanced approach to aviation, recognising the benefits of aviation while managing its environmental impacts. The Government has set out a number of objectives. These are:
- To ensure that the UK's air links continue to make it one of the best-connected countries in the world;
  - To ensure that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions;
  - Limit, and where possible, reduce the number of people in the UK significantly affected by aircraft noise; and
  - Encourage the aviation industry and local stakeholders to strengthen and streamline the way in which they work together.

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<sup>1</sup> Aviation Policy Framework (March 2013)



- 5.5 The Framework recognises that regional airports have a role to play to support the local economy.
- 5.6 The Government also set up the independent Airports Commission in 2012 to determine what actions the UK needed to take to increase capacity and maintain its status as an international hub for aviation.
- 5.7 The Commission concluded in July 2015 that a third runway at Heathrow was the recommended solution to increase capacity. The Government agreed with the Commission's recommendation and proposed the third runway at Heathrow in October 2016, which is estimated to be in operation by 2025 (subject to any appeals lodged).
- 5.8 In light of this, early indications are that flights from Norwich Airport to Heathrow could be scheduled in the future, which could increase East Anglia's connectivity with the South East.
- 5.9 In February 2017, the Government published its draft National Policy Statement setting out the need additional airport capacity for the South East, the reasons as to why a third runway Heathrow was Government's preferred choice of meeting this demand and the specific requirements needed for the new runway to gain development consent.
- 5.10 The draft National Policy Statement underwent a period of consultation from February to May 2017. It is the Government's intention that the final version of the National Policy Statement will be put forward for a vote in Parliament in the first half of 2018.
- 5.11 The Government also announced that it will start preparing for an Aviation Strategy, which will eventually replace the Aviation Policy Framework. It is anticipated that this will be published at the end of 2018.

### Permitted Development Rights

- 5.12 Section 38 of the Airports Act 1986<sup>2</sup> and the Civil Aviation Authority (Economic Regulation of Airports) Regulations 1986 (SI 1986 No 1544)<sup>3</sup> is the legislation which covers the economic regulation of airports.
- 5.13 Part V of the Act confers on the Airport the status of statutory undertaker for the purposes of various pieces of legislation. One piece of legislation this applies to is the Town & Country

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<sup>2</sup> Airports Act 1986

<sup>3</sup> The CAA (Economic Designation of Airports) Regulations 1986 (SI 1986/1544)

Planning Acts and the Town & Country (General Permitted Development) Order 2015 (as amended) within which Airports are granted a number of permitted development rights (i.e. rights available to them for various development without the need for formal planning consents which would otherwise require planning permission).

- 5.14 The principal rights available to private Airports under this Act include the right to carry out on operational land development (including the erection or alteration of an operational building) in connection with the provision of services and facilities at the Airport.
- 5.15 Development permitted is subject to prior notification and consultation with the local planning authority and includes:
- The construction of a passenger terminal less than 500 square metres in floorspace;
  - Development in connection with the provision of air traffic control services;
  - Development in connection with the navigation of aircraft using the airport or the monitoring of the movement of aircraft using the airport;
  - Use of buildings within the airport for purposes connected with air transport or other flying activities at the airport;
  - The construction of an operational building which is a building required in connection with the movement or maintenance of aircraft or with the embarking, disembarking, loading, discharge or transport of passengers, livestock or goods.

### **National Planning Policy**

- 5.16 Planning policies for England are set out at national level in the National Planning Policy Framework (NPPF), published by the Coalition Government in March 2012. The NPPF sets out the Government's planning policies for England and how these are expected to be applied.
- 5.17 In 2014, the Department for Communities and Local Government (DCLG) launched the new Planning Practice Guidance (PPG) resource, seeking to make the new planning guidance easier and simpler, to be read in conjunction with the NPPF.
- 5.18 The aim of the NPPF is to help achieve sustainable development, which incorporates all three elements of sustainability, economic, social and environmental. The NPPF also includes a section on 'Promoting Sustainable Transport'.

5.19 Paragraph 33 of the NPPF states:

**“When planning for ports, airports and airfields that are not subject to a separate national policy statement, plans should take account of their growth and role in serving business, leisure, training and emergency service needs. Plans should take account of this Framework as well as the principles set out in the relevant national policy statements and the Government Framework for UK Aviation”.**

5.20 The Transport evidence bases in plan making and decision taking section in the Planning Practice Guidance (paragraph 012) states:

**“Aviation makes a significant contribution to economic growth across the country, including in relation to small and medium sized airports and airfields...Local planning authorities should have regard to the extent to which an aerodrome contributes to connectivity outside the authority’s own boundaries, working together with other authorities and Local Enterprise Partnerships”.**

5.21 With regards to noise mitigation, PPG (Noise chapter: paragraph 010) states that the information, which is provided in the Aviation Policy Framework concerns the management of the noise associated with particular development types.

5.22 For more information on Noise Control Measures, see Chapter 11.

### Local Plan

5.23 The NPPF requires Local Authorities to work with neighbouring authorities and transport providers to develop strategies for the provision of viable infrastructure necessary to support sustainable development, including large scale facilities.

5.24 As a response to this and the NPPF’s policies on airports, local authorities in and around Norwich (Norwich City, Broadland District and South Norfolk councils) along with Norfolk County Council and the New Anglia Local Enterprise Partnership have created the Greater Norwich Development Partnership.

- 5.25 This collaboration developed the now adopted development plan known as The Joint Core Strategy which sets out the broad vision for the growth of the area during the period 2008-2026.
- 5.26 Policy 6 concerns Access and Transportation and it states that the authorities will support the growth and regional significance of Norwich Airport for both leisure and business travel to destinations across the UK and beyond.
- 5.27 Policy 9 (Strategy for Growth in the Norwich Policy Area) also states that there will be a new business park of around 30 hectares associated with the Airport and focused on uses benefitting from an airport location.
- 5.28 NCC's<sup>4</sup> Development Management Policies Local Plan was adopted in December 2014. The objective of this document is to provide the City of Norwich with general policies applying to all new development and it covers the period between 2014 and 2026. These policies support the Joint Core Strategy.
- 5.29 Policy DM27 states the following:

**"Within the airport boundary falling within Norwich city, as defined on the Policies map, development will be permitted where it is for:**

- a) Airport operational purposes;**
- b) Uses ancillary to the function of the airport; and**
- c) Facilities providing improved transport links**

**And where proposals would not conflict with the overall sustainable development criteria set out in Policy DM1 (Sustainable Development) of this plan or the requirements of Policy DM28 in relation to sustainable travel.**

**Where necessary, development must include mitigation to reduce impacts on neighbouring uses.**

**Development for alternative uses will not generally be supported in advance of the endorsement of an agreed Masterplan for the airport, including a Travel Plan and**

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<sup>4</sup> Norwich City Council

**Sustainable Access Strategy, or it is otherwise demonstrated by objective evidence that land is not required for operational Airport use.”**

5.30 BDC’s<sup>5</sup> Development Management Plan was adopted in August 2015. Policy TS5 states:

**“Development related to Norwich Airport will be assessed against long-term operational needs of the airport, taking into account national aviation policy and guidance.”**

5.31 Supplementary information relating to Policy TS5 states that any new proposals which concern the Airport and noise impact will be assessed against the guiding principles in Policy GC4, which concerns the impact of new development on existing dwellings in the area.

#### *Emerging Policy*

5.32 The Greater Norwich Development Partnership is in the process of preparing a Local Plan for the sub-region (the Greater Norwich Local Plan), which is estimated to be adopted in December 2020. Once adopted, it will supersede the Joint Core Strategy.

5.33 The Greater Norwich Local Plan will include strategic policies to guide future development in and around Norwich until 2036, including plans to protect the environment.

5.34 The Regulation 18 consultation on the Greater Norwich Local Plan is expected to take place at the beginning of 2018.

#### **Minerals and Waste Policy**

5.35 There is a safeguarded existing mineral site to the north-east of the Airport, (Policy MIN 96, Land at Grange Farm in Norfolk County Council’s Site Specific Allocations Development Plan Document). The total area of the Site is 48 hectares and the gravel resource is 1,000,000 tonnes. Most of the Airport is situated some distance away from Grange Farm. In addition, the proposed route of the Northern Distributor Road will effectively separate the Airport from the safeguarded area at Grange Farm, meaning the area will have little impact on the Airport.

5.36 Norwich Airport is located near to other safeguarded minerals and waste resources. There are sand and gravel mineral resources that have been safeguarded by Norfolk County Council.

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<sup>5</sup> Broadland District Council

The policies concerning mineral and waste extraction are in Norfolk County Council's Core Strategy and Minerals and Waste Development Management Policies, adopted in September 2011 and covering the period to 2026.

- 5.37 Policy DM7 concerns safeguarding aerodromes and it states that if proposed developments within 13km of the Airport have the potential to attract birds (such as minerals and waste extraction), then a bird hazard assessment must be submitted. If the risk cannot be mitigated, then permission will be refused. For more information on safeguarding aerodromes, see Chapter 6.
- 5.38 This policy must be taken into account when examining the potential for development in and around the Airport.

### Committed Development

- 5.39 Norwich Airport recognises the following committed major developments:
- 20141955 – Land at St Faiths Road, Old Catton, which was approved in May 2016.
    - Outline application – Development of 340 residential dwellings and Small Business Units. The Site was allocated in BDC's Growth Triangle Area Action Plan (AAP), Policy GT15 and includes a western extension of the Old Catton Cemetery.
  - 20121516 – Land to the North of Sprowston and Old Catton, Btn Wroxham Road and St Faiths Road, which was approved in February 2016.
    - Outline application – 3,520 dwellings; employment space; retail space; hotel accommodation; two primary schools; a health centre, library and community halls; an energy centre; cycle and vehicle parking for residents, visitors and staff; landscaping and public open; and pedestrian, cycle and vehicular access. The site was originally allocated in BDC's Growth Triangle AAP, Policy GT12 and is named 'Beyond Green).
  - 20141725 – Land east of Buxton Road, Spixworth, which was approved in May 2015.
    - Outline application – Development of a minimum of 225 new homes with associated car parking, open spaces and landscaping. The site was originally allocated in BDC's Growth Triangle AAP.

- 20130885 – Land adjacent Hall Lane, Drayton, which was approved in August 2014.
  - Outline application – Up to 200 homes, allotments, access, and public open space. This is also in BDC's Development Plan Document (DPD), 2016 as Policy DRA1.

## Site Allocations

5.40 Norwich Airport also recognises the following allocations that have been identified in NCC's Site Allocations and Site Specific Policies Local Plan (2014), BDC's DPD (2016) and BDC's Growth Triangle AAP (2016), areas around Rackheath, Old Catton, Sprowston and Thorpe St Andrew, which were identified in the Joint Core Strategy as areas for major urban development.

- Policy R29: Two sites at Hurricane Way, Airport Industrial Estate.
  - Policy R29 states that the two parts of the site have been allocated for employment use. However, a part of Site B can also be allocated as housing development. Development will be considered as part of the Airport Industrial Estate.
- Policy R30: The Paddocks, Holt Road.
  - Policy R30 states that the site, located between the western operational area of the Airport and the A140, will be for aviation operational-related uses where a masterplan submitted within two years from the adoption of this Plan demonstrates that the land is required for airport operational uses. However, since no masterplan has been submitted within that timeframe, it has now been allocated for general employment uses.
- HNF2: Land east of the A140 and north of Norwich Airport, Horsham St Faiths.
  - Policy HNF2 (Site 3) states that the allocated site, located on land to the east of the A140 and north of the Airport will be for employment use, which will benefit from an airport location, with potential access onto the proposed NDR. This Policy relates to Policy 9 in the Joint Core Strategy, 2011 (see Local Plan in this Chapter).
  - In the latest 'Call for Sites' for the Greater Norwich Local Plan, this Site has been reduced to 9 hectares with the NDR separating the site from the Airport.

- GT 13: Norwich Rugby Football Club, west of North Walsham Road.
  - The site is allocated for housing, subject to the relocation of Norwich Rugby Football Club. The layout of the site needs to be consistent with the development proposed in 20121516, (GT 12).
- GT 16: North Rackheath
  - 160ha of the site shall be developed as a mixed-use development, including at least 25ha of land for employment and provision for necessary services, facilities and infrastructure (of which 12ha is for B2/B8 uses). 75ha is safeguarded as the north Rackheath buffer zone, of which at least 30ha should be provided as a new public park. The remaining 58ha is safeguarded for the potential future expansion of the planned settlement north of Rackheath village.

### Current Planning Applications

5.41 Norwich Airport acknowledges these applications that are currently being considered by Norwich City and Broadland District Councils but it recognises that these are not committed major developments. Norwich Airport will continue to monitor these applications. This section was last updated on 21<sup>st</sup> September 2017.

- 20171154 – Manor Park, Holt Road, Horsford.
  - Hybrid planning application comprising a full planning application for 7 no. modular bunk boxes, a spectator stand, soccer boxes, 3G pitch and associated parking and outline application (including matters of access only) for the construction of an indoor sports facility and associated new access, car parking, external works and landscaping.
- 20161058 - Land to the north of Sprowston and Old Catton, Btn Wroxham Road and St Faiths Road.
  - S73 Application – This application seeks to revise the phasing strategy agreed in the outline planning permission 20121516.
- 20161066 – Land adjacent Hall Lane / School Road, Drayton.
  - Outline Application – This application follows on from the application 20130885 and increases the number of dwellings from 200 to 250.



- 17/00016/F – Land and buildings north-east of Spitfire Road, Norwich.
  - Full Application – Construction of 125-bedroom hotel.

### Airport Safety and Design

- 5.42 Norwich Airport operates within the terms of a European Aviation Safety Agency (EASA) Aerodrome certificate issued by the Civil Aviation Authority (CAA). The CAA is the UK body charged with ensuring that UK airports operate in accordance with EASA regulations. Norwich Airport satisfies and continually adheres to the International Civil Aviation Organisation (ICAO's) exacting safety related standards.
- 5.43 All development work at Norwich Airport will be undertaken in accordance with EASA requirements that are laid out in CS-ADR-DSN:
- The layout, separation and widths of runways and taxiways;
  - Aircraft stand sizes and apron layouts;
  - The height and design of buildings and structures; and
  - The Airport fire service facilities.
- 5.44 Future development of Norwich Airport will be designed to ensure that risks are minimised. For example, the location of future facilities will be determined to reduce runway crossings to a minimum in order to reduce the unnecessary risk of runway incursions.

### Airport Security

- 5.45 The Department of Transport (DfT) regulates the security standards and anti-terrorism measures at the UK's airports. In 2014, the CAA became responsible for advising the DfT on aviation security regulation. These regulations control both the operational running of the Airport and the form and design of new and existing facilities. Security directions from the DfT relate to such key matters as the segregation of departing and arriving passengers, the screening of baggage and the access to secure airside areas. In 2014, the CAA also became responsible for the implementation of that regulation.

### Environmental Regulations

- 5.46 Norwich Airport operates within a number of nationally applicable policies and standards and has established key environmental targets that are described in Chapter 11. The commitment to developing in a managed sustainable manner underpins Norwich Airport's approach.

## Regional Growth in and around Norwich

### Population Growth

- 5.47 There was a 7.6% increase in population in Norwich between 2004 and 2014<sup>6</sup>. Currently, the Norwich urban area has a population of 230,000 and by 2023, the population of Greater Norwich is expected to rise to 444,300<sup>7</sup>. Norwich also has a catchment area population of approximately 1 million which is set to increase.

### Economic Growth

- 5.48 Norwich has been named among the top five places predicted to grow the fastest in the UK. City Growth Tracker has estimated that Norwich will have a GVA of £6.183 billion by the end of 2017, which equates to a 1% growth<sup>8</sup>.

### *Cambridge to Norwich Technology Corridor*

- 5.49 The Cambridge to Norwich Technology Corridor was established in November 2016. The partnership driving the Cambridge to Norwich Corridor comprises the County Councils, the majority of District Councils in Cambridgeshire, Norfolk and Suffolk and the Local Enterprise Partnerships in the region (New Anglia and Greater Cambridge Greater Peterborough). The partnership will collaborate with private businesses and stakeholders, such as Group Lotus.
- 5.50 The Corridor was established to:
- Encourage collaboration between existing communities of expertise within the corridor: digital, agricultural technology, bio-technology and advanced engineering;
  - Create greater awareness of the concentration of affordable growth space within close proximity of Cambridge and Norwich; and
  - Attract government funding to further enhance and consolidate the corridor.
- 5.51 The 2031 vision for the Cambridge to Norwich Technology Corridor is to be a destination of choice for global technology.

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6 (Annualised, constant 2012 prices) Centre for Cities – Fast Growth Cities Report 2016

7 Norfolk County Council: Norfolk demographic update 2011 (2012)

8 City Growth Tracker compiled by UK Powerhouse January 2017

- 5.52 It is estimated that it will facilitate the delivery of 20,000 new homes along the Corridor and investors predict that an additional 9,000 well-paid jobs will be created, which will add £558 million to the regional economy<sup>9</sup>.

### Housing Growth

- 5.53 The Joint Core Strategy's spatial vision states that around 33,000 new houses will be built in the Norwich Policy Area between 2008 and 2026. Policy 9 (Strategy for growth in the Norwich Policy Area) states that most of the housing need will be addressed by the identification of new allocations, which will deliver a minimum of 21,000 dwellings. This equates to the construction of 2,046 new homes a year over the plan period.
- 5.54 However, in 2016, the Greater Norwich area was calculated to have an objectively assessed housing need of 52,170 dwellings between 2012 and 2036, which equates to 2,174 new dwellings a year<sup>10</sup>.
- 5.55 The Greater Norwich City Deal was signed with central Government in December 2013 and one of its aims is to bring forward 3,000 additional houses in the North-East Norwich Growth Triangle<sup>11</sup>.
- 5.56 Infrastructure projects such as the construction of the NDR will also facilitate the delivery of 10,000 new homes.

### Employment Growth

- 5.57 Policy 5 (the Economy) of the Joint Core Strategy states that the local economy will be developed in a sustainable way and the policy targets the creation of at least 27,000 additional jobs.
- 5.58 Between 2001 and 2010 there was a 6% increase in the number of employees in the Greater Norwich Area and the number of jobs in the Area is expected to increase by 31,100 between 2010 and 2020<sup>12</sup>.

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<sup>9</sup> Business Weekly November 2016

<sup>10</sup> Central Norfolk Strategic Housing Market Area Assessment 2016

<sup>11</sup> Greater Norwich City Deal 2013

<sup>12</sup> National statistics for the Greater Norwich Area

- 5.59 The Greater Norwich City Deal targeted three enterprise sectors to help existing businesses expand:
- Life sciences and biotechnology around Norwich Research Park;
  - Digital creative cluster in Norwich City Centre; and
  - Aviation cluster around Norwich Airport
- 5.60 Local Partners of the City Deal predict that this will deliver 13,000 jobs in addition to the existing commitment of 27,000 jobs<sup>13</sup> (as set out in Policy 5 of the Joint Core Strategy). They estimate that there will be a significant growth of approximately 2,000 jobs in aviation-related industry, based in and around Norwich Airport, due to the expansion of companies such as KLM UK Engineering and Air Livery as well as the opening of the International Aviation Academy – Norwich (IAA-N).

#### *Biotechnology and Food Science Industry*

- 5.61 There are approximately 75 businesses in the biotechnology and life sciences industries at Norwich Research Park, which employ around 12,000 people, including 3,000 scientists, researchers and clinicians). Between 2013 and 2016, the number of people working at the Research Park more than trebled.
- 5.62 In 2018, the new Quadram Institute (costing £81 million) will be opened with the potential for 400 new jobs. The John Innes Centre (another independent research centre for biotechnology) has recently been awarded £78 million by the UK Biotechnology and Biological Research Council, highlighting the growth of these industries in Norwich.

#### *Digital and Creative Industry*

- 5.63 The Greater Norwich City Deal also predicts that 1,000 new jobs will be created in the digital creative industry, based around the University of the Arts, which is situated in the centre of Norwich. There are already several global technology firms with offices in and around Norwich which include Axon Vibe and Proxama.
- 5.64 The Greater Norwich City Deal also forecasts that 6,000 construction jobs will be created to support the Norwich economy. Jobs in the construction industry include building the NDR.

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<sup>13</sup> Greater Norwich City Deal, December 2013

### Norwich as a 'Learning City'

- 5.65 Policy 7 (Supporting Communities) of the Joint Core Strategy concerns the social sustainability of the region. Policy 7 states that Norwich will be promoted as a 'learning city' by facilitating the continuing enhancement of tertiary education, which includes the University of East Anglia, the Norwich University College of the Arts, City College and Easton College.
- 5.66 Tertiary education has become an important part of the Norwich economy. In 2016, the University of East Anglia (UEA) contributed around £346.4 million to Norwich's economy. Currently, Norwich students are responsible for supporting 3,896 FTE jobs in Norwich. The University also plans to increase the number of students from 15,000 to 18,000.

### Meeting Tourism Aspirations

- 5.67 Using the 2015 CAA survey<sup>14</sup>, it is estimated that 35,000 overseas and 18,000 UK resident tourism trips used Norwich Airport, spending £11 million in the East. This spend has helped support many jobs, particularly in poorer, more peripheral areas of the East. The current GVA impact from inbound tourism is estimated to be around £5 million. Norwich Airport recognises its important role as a major local and regional gateway for tourism.
- 5.68 Culture and tourism play an important role in Norwich's economy. In Norwich City Council's Norwich Economic Strategy<sup>15</sup>, it is acknowledged that even though Norwich has 17.7 million day visitors a year, it needs to increase the amount they spend. Norwich Airport recognises that it has an important role to play in increasing the amount of revenue in Norwich and the surrounding region.
- 5.69 VisitNorwich's mission is "to make Norwich one of the UK's leading city area destinations with a thriving visitor economy that brings great benefits to all who visit, live, work or invest in Norwich." East Anglia Local Enterprise Partnership's priority is "to create growth in the visitor economy, establishing East Anglia as a significant cultural tourism destination."

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<sup>14</sup> Civil Aviation Authority Passenger Survey Report 2015

<sup>15</sup> Norwich City Council Norwich Economic Strategy 2013-2018

5.70 Norwich: A City Destination Strategy<sup>16</sup> also identifies these priorities for the development of tourism:

- Enhance Norwich and the surrounding area for people living here;
- Attract new visitors from the UK and Europe;
- Get the image right and promote it;
- Get the destination marketing right;
- Address the constraints on growth; and
- Get the delivery of tourism right.

5.71 These priorities aim to reduce the seasonality of tourism, achieve higher visitor satisfaction rates and engender sustainable income to the local economy.

5.72 Other tourist organisations, such as Visit Norfolk and VisitNorwich, focus on raising Norwich's profile nationally and internationally. The Norwich Business Improvement District (BID) is an organisation that was set up in 2012 and is run for local businesses by local businesses. The vision of Norwich BID is to improve the vitality of Norwich City Centre and the companies that operate within it. In the 'State of Norwich Business Survey', which was completed by over 300 companies, 95% of respondents acknowledged that transport and accessibility were important issues for the city<sup>17</sup>.

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<sup>16</sup> Norwich City Destination Strategy 2004

<sup>17</sup> Norwich Business Improvement District (BID): Results from "The State of Norwich Business Survey" April 2017

## 6.0 Airport Safeguarding

### Introduction

- 6.1 This chapter sets out the aerodrome safeguarding requirements, opportunities and constraints.

### Aerodrome Safeguarding

- 6.2 Norwich Airport, in line with other major UK airports, is situated at the centre of a series of 'obstacle limitation surfaces'. These are effectively lines in the sky, which define, relative to the runway, maximum heights for buildings and other structures. The protection of these surfaces is undertaken as part of the Aerodrome Safeguarding process.
- 6.3 Aerodrome Safeguarding is defined as a process of statutory consultation between local authorities and airport operators, which is set out in the Town and County Planning (Safeguarded Aerodromes, Technical Sites and Military Explosive Storage Areas) Direction 2002<sup>1</sup>.
- 6.4 The process of consultation is intended to:
- Ensure that an airport's operation is not negatively affected by developments, buildings or structures, which might infringe the aerodrome's obstacle limitation surfaces;
  - Protect visual flight paths, for example, by ensuring that runway approach lighting is not obscured by development, and that lights elsewhere cannot cause confusion;
  - Protect the instrument approach procedures to the airport;
  - Protect the accuracy of radar and other electronic aids to air navigation; and
  - Reduce the hazard from bird strikes to aircraft, associated with land uses, such as waste disposal and sewage treatment sites.
- 6.5 Local planning authorities are issued with Safeguarding Maps for airports, which enable them to identify planning applications and proposed development on which airport operators should be consulted. The safeguarded area extends for a radius of 15km from the centre point of the aerodrome. Any development which falls into the safeguarded area must be notified to the Airport Authority. Norwich Airport then has the power to accept, reject or request modifications to any such application.

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<sup>1</sup> The Town and Country planning (safeguarded aerodromes, technical sites and military explosives storage areas) Direction 2002

- 6.6 Figure 6.1 details the Radar Safeguarding Map for Norwich Airport.
- 6.7 The safeguarded area of Norwich Airport takes in the main conurbation of the City of Norwich and smaller surrounding villages.
- 6.8 An extended safeguarding area has also been established for wind turbine development. This area extends for a radius of 42.5Nm from the aerodrome.

### Public Safety Zones

- 6.9 Norwich Airport enforces a Public Safety Zone (PSZ), which extends out from the runway's landing threshold.
- 6.10 The current PSZs for Norwich Airport are defined by the Department for Transport Circular 01/2010, Control of Development in Airport Public Safety Zones<sup>2</sup>.
- 6.11 The basic policy objective of the circular is that there should be no increase in the number of people living, working or congregating in the PSZ, based on the 1 in 100,000 individual risk contours of death or injury to people on the ground, in case of an aircraft accident on take-off or landing. Currently there is one planning application (20162163 – see Chapter 5 for more information) seeking to build new houses within the current PSZ. The Airport has reminded the Local Planning Authority of their responsibilities with respect to the PSZ.
- 6.12 Figure 6.2 shows the PSZs that are currently in operation at Norwich Airport.

### Other Airport Constraints

- 6.13 There are a number of constraints within the 'Airport Operational Boundary'. This is defined as being the area of land providing facilities for the take-off and landing of aircraft, both airside and landside operational, commercial and airport-related activities, which support Air Transport Movements, passenger and cargo activity and maintenance of aircraft and modes of surface transport providing airport access.
- 6.14 Figure 6.3 details parts of Norwich Airport that are subject to constraints under Civil Aviation Authority (CAA) and European Aviation Safety Agency (EASA) regulations.

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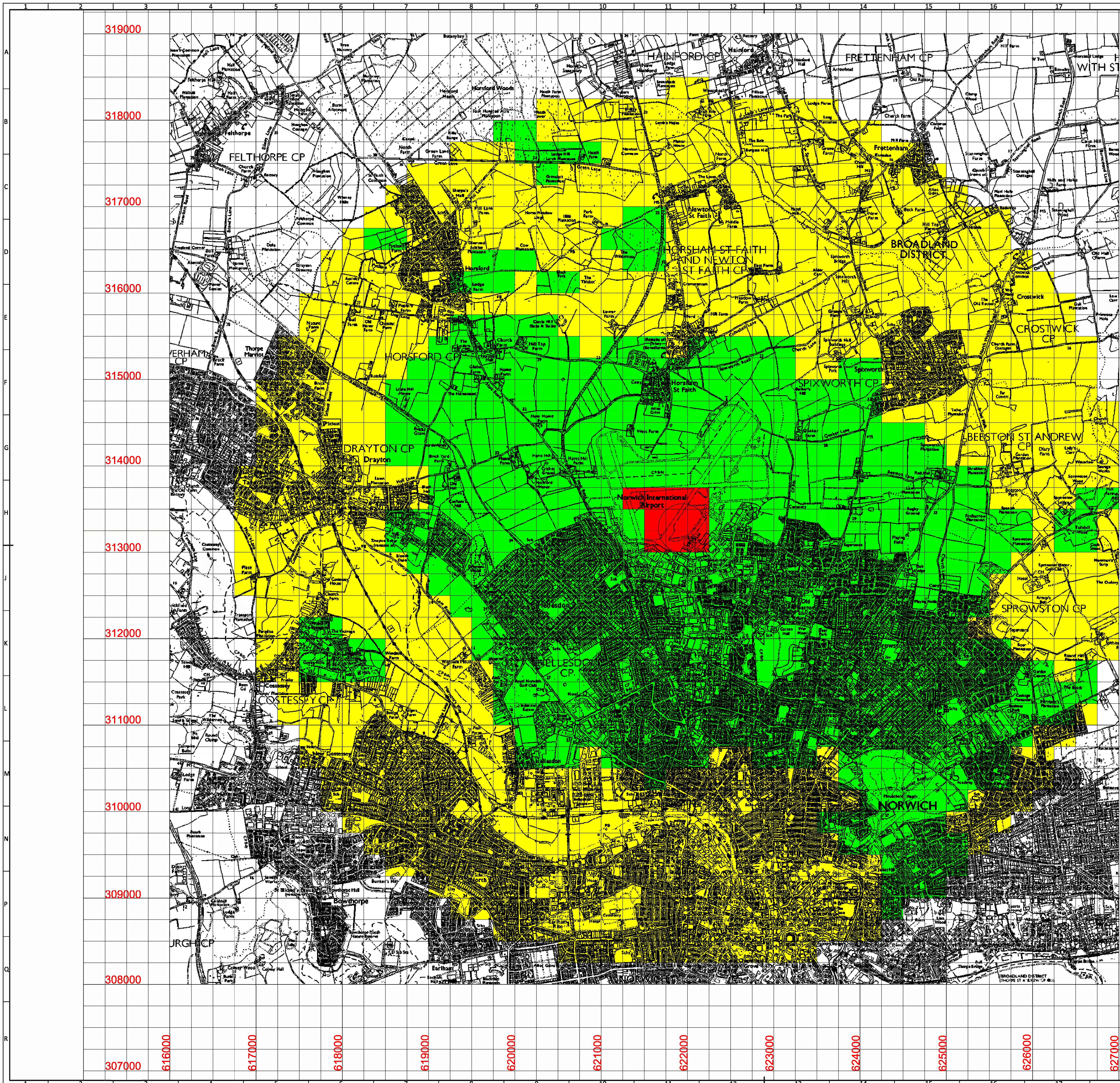
<sup>2</sup> Control of development in airport Public Safety Zones, Department for Transport Circular 01/2010



### Airport Opportunities

- 6.15 Figure 6.3 also details the areas of the Airport that benefit from certain opportunities. These include:
- A new Site 4 development for aviation-related employment, subject to the planning consents 16/00965/VC and 20161133;
  - The construction of the NDR that will have a junction with access to the Airport, due to be completed in March 2018.
- 6.16 Norwich Airport has taken into account these opportunities and constraints when considering its proposals for potential development over the next 30 years.





Legend:

## NORWICH AIRPORT RADAR SAFEGUARDING MAP

FOR THE PURPOSE OF THE ABOVE, NORWICH INTERNATIONAL AIRPORT  
HEREBY CERTIFIES THIS MAP TO BE THE RADAR SAFEGUARDING MAP FOR  
THE SITE KNOWN AS:-

NORWICH AIRPORT RADAR

SIGNED BY ..... for NORWICH AIRPORT  
DATE .....

FOR ENGLAND

THE TOWN AND COUNTRY PLANNING ACT 1990

THE TOWN AND COUNTRY PLANNING (SAFEGUARDED AERODROMES, TECHNICAL  
SITES AND MILITARY EXPLOSIVES STORAGE AREAS) DIRECTION 2002

DEPARTMENT FOR TRANSPORT CIRCULAR 1/2003

All enquiries should be addressed to:  
The Operations Director  
Norwich International Airport  
Amsterdam Way,  
Norwich  
NR6 6JA.

**NOTE:**  
All proposed wind turbine developments within a 30km radius of the  
radar must be notified to the airport.

Key: Notifiable Development Heights

ALL DEVELOPMENT AGL

ALL BUILDINGS, STRUCTURES, ERECTIONS AND WORKS EXCEEDING  
10 METRES IN HEIGHT (32.8 FEET) AGL

ALL BUILDINGS, STRUCTURES, ERECTIONS AND WORKS EXCEEDING  
15 METRES IN HEIGHT (49.2 FEET) AGL

ALL BUILDINGS, STRUCTURES, ERECTIONS AND WORKS EXCEEDING  
45 METRES IN HEIGHT (147.6 FEET) AGL

ALL BUILDINGS, STRUCTURES, ERECTIONS AND WORKS EXCEEDING  
90 METRES IN HEIGHT (295.3 FEET) AGL

NATIONAL GRID REFERENCE  
EACH SQUARE REPRESENTS AN AREA 250m X250m

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1	Initial issue	30 Sept 15	MW	SM
Rev	Description	Date	Dwg by	App by



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**FIGURE 6.1**  
**Radar Safeguarding Map**


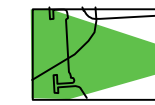
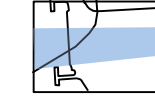

**Site:** Norwich International Airport

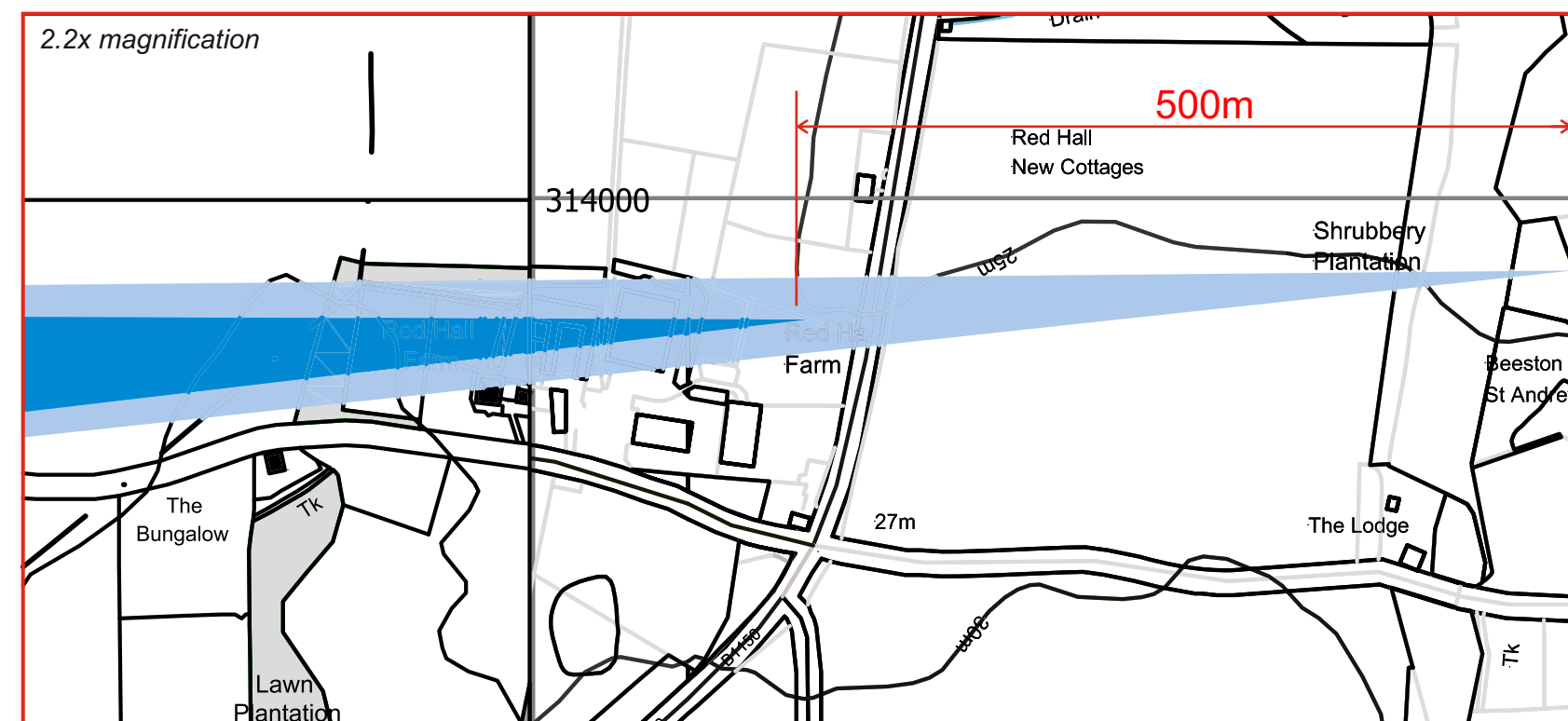
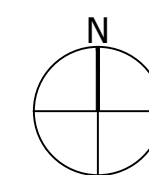
Dimension in metres (m) Sheet 1 of 1

Scale: DWG No: CL-5147-DRW-004



## LEGEND

-  Current Public Safety Zone
-  Current 10' Risk Contour
-  Proposed 500m Extension to Eastern Approach
-  Airport Operational Boundary



Revised Public Safety Zone - March 2017

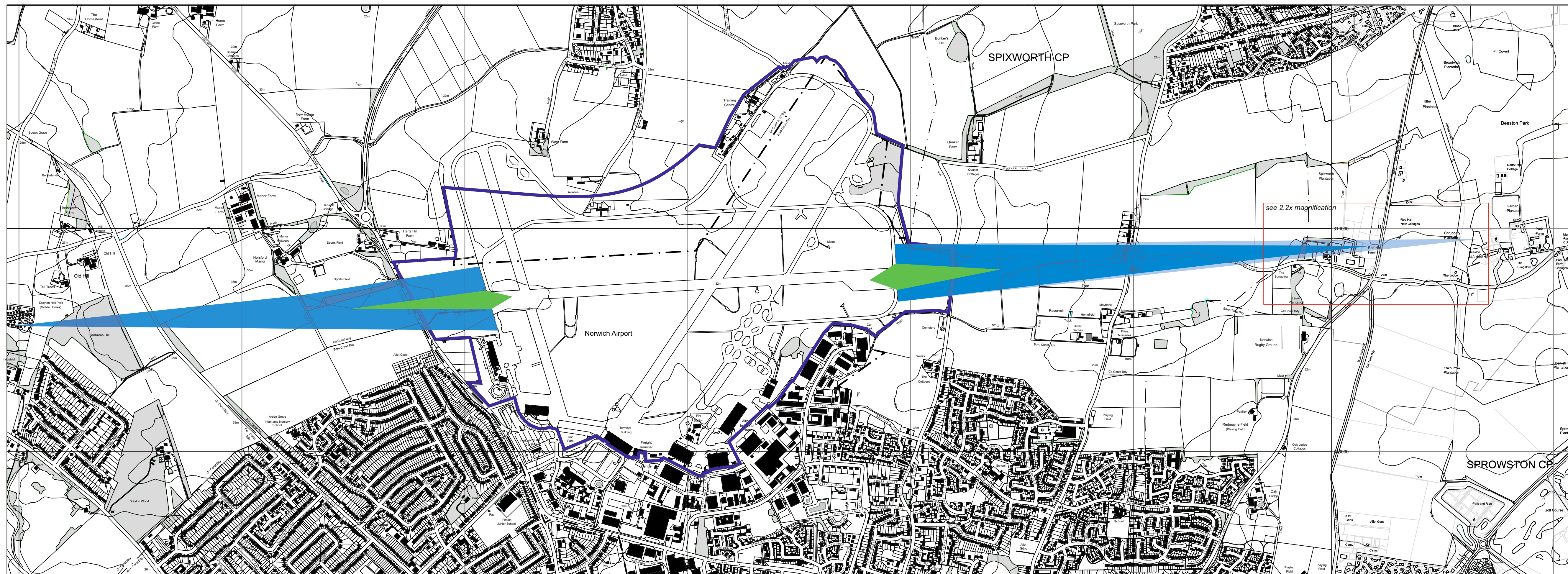


FIGURE 6.2

Project  
**NORWICH AIRPORT  
MASTERPLAN**  
Drawing Title  
**Public Safety Zones**

Date	Scale	Drawn by	Check by
30.09.2016	1:10,000 @A1	GS	GW
Project No	1:20,000 @A3		Revision
26351	P5		F





## LEGEND

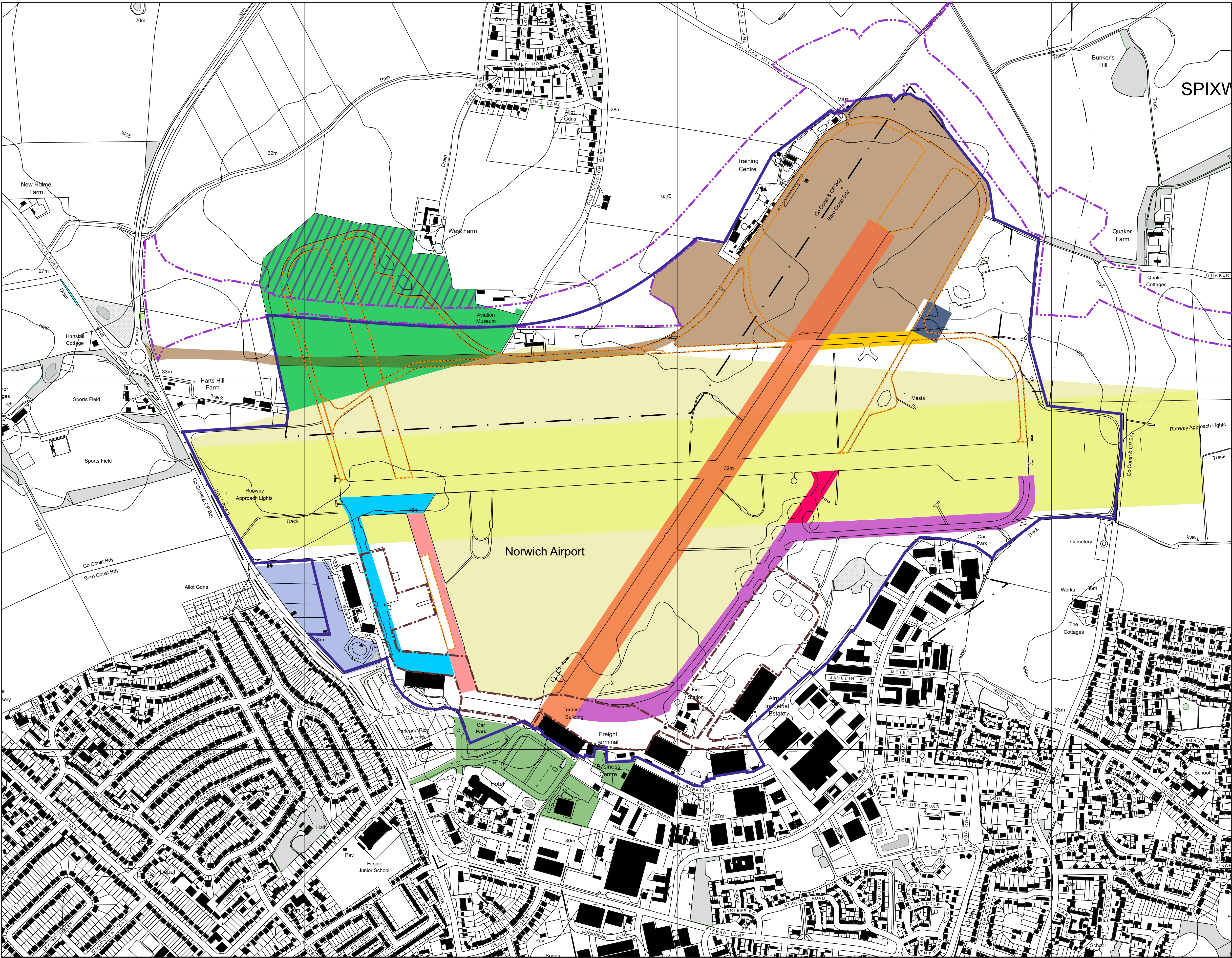
- Subject to Planning Consent for Aviation Related Employment (Planning App. 2016/1133 & 16/00965/VC)
- Airport Operational Boundary
- Aircraft Operational Zone
- Disused Runway/Taxiway
- Local Authority administrative boundary (BDC North/NCC South)
- Runway Protection (EASA HC 150m either side of centre line)
- Taxiway Protection (DELTA Taxiway Code A - 15.5m either side of centre line)
- Taxiway Protection (ECHO Taxiway Code A - 15m either side of centre line)
- Taxiway Protection (CHARLIE Taxiway Code D - 37m either side of centre line)
- Taxiway Protection (ALPHA Taxiway Code C - 26m either side of centre line)
- Taxiway Protection (NOVEMBER Taxiway Code C - 26m either side of centre line)
- Taxiway Protection (BRAVO Taxiway Code C - 26m either side of centre line)
- Air Traffic Control Line of Sight
- Policy R30 The Paddocks, Holt Road - Airport Extension or Development for General Employment
- Leasehold Legislator 1657 Proposed site compound for NDR
- Land Ownership Restrictions
- Ground Run Enclosure
- Business Park
- Committed development NDR due to be completed 2018

Note: All taxiway protection under Regulation EASA CS ADR - DSN.D.260

## FIGURE 6.3

Project  
**NORWICH AIRPORT**  
**MASTERPLAN**  
Drawing Title  
**Site Constraints and Opportunities**

Date	Scale	Drawn by	Check by
07.11.2016	1:5,000 @A1	GS	GW
Project No	Drawing No	Revision	
26351	P6	K	





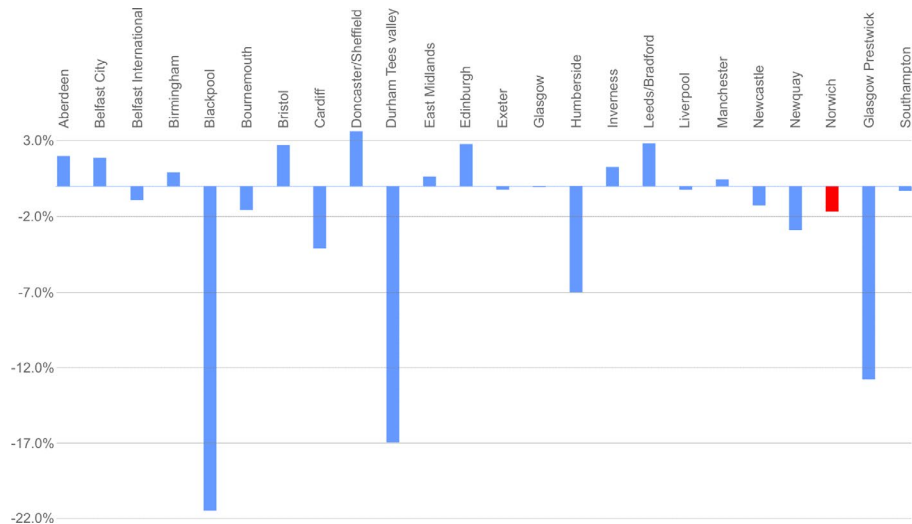
## 7.0 Recent Trends in Passenger and Cargo Traffic

### Introduction

- 7.1 At Norwich Airport, passengers are split between conventional scheduled and charter passenger flights and offshore helicopter services. Whilst the former remained relatively stable between 2010 and 2015, it is the offshore sector, which has underpinned much of the recent growth.
- 7.2 Since 2005, Norwich Airport has experienced an overall decline in passenger numbers, falling from around 545,000 in 2005 to 460,000 in 2015, representing an average decline of 3.7% per annum over 10 years.



*Figure 7.1 – Norwich Airport Terminal Passengers 2005-2015*



*Figure 7.2 – Average growth at UK regional airports from 2005-2015*

- 7.3 In the period 2005-2007, Norwich Airport experienced rapid growth, driven by Flybe setting up a base at the Airport, which expanded the range of scheduled destinations. However, since that time, the airline has reduced capacity to a low of 100,000 seats in 2014 and over this period, the airline's core routes of Edinburgh and Manchester were taken over by franchisee, Loganair, with lower capacity aircraft. In 2016, the carrier started to expand the network again and this has driven the levels of growth seen recently.

## Passenger Mix

- 7.4 The chart below shows the breakdown by domestic and international scheduled, charter, offshore oil and gas and other (executive charter etc.) of the 450,000 passengers who passed through Norwich Airport in 2015.

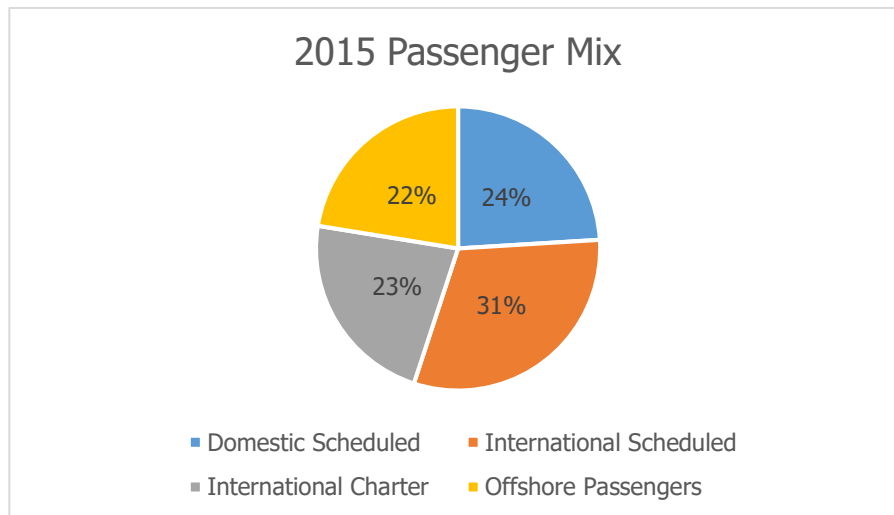


Figure 7.3 – Passenger Mix in 2015

- 7.5 The majority of non-offshore passengers are carried on international services, with the scheduled link to Amsterdam carrying the single largest proportion of traffic. In 2015, domestic scheduled services made up the second largest element of the traffic mix, although the launch of sun routes by Flybe in 2016 has seen the pattern shift further in favour of international scheduled flights. Considering the typical pattern of development at smaller regional airports, there remain clear gaps in the current network, which the Airport believes are likely to be served by 2030, such as the probable return of routes to Dublin and Paris.
- 7.6 There has been a long-term decline in the charter market nationally, due mainly to the emergence of low cost carriers. However, the market has mostly stabilised more recently, and charter still remains a very important market at Norwich Airport.
- 7.7 With the continued development of Norwich Airport in the past decade and a more extensive route network, an increasing number of business travellers are using Norwich. Business travel is projected to grow overall, aided by a greater array of domestic and city destinations.
- 7.8 Compared with other UK regional airports, Norwich Airport has a very high proportion of business passengers. When excluding the offshore helicopter passengers, around 40% of passengers are travelling on business, well above figures of 5-10% at other airports. A key

driver for this is the Oil and Gas sector within the region, generating high frequency business trips to Aberdeen and Amsterdam. The majority of leisure passengers are carried on scheduled services, particularly the Amsterdam route at present and around 45% of leisure passengers were carried on charter services in 2015.

### Air Traffic Movement (ATMs)

- 7.9 ATMs are defined as commercial, scheduled or chartered aircraft movements, including air taxi, but exclude military, general aviation and some business flights.
- 7.10 ATMs at the Airport have fluctuated over the past 10 years. From 2005 to 2007, driven by growth of the Flybe base and increases in air taxi usage, the number of ATMs grew rapidly, climbing as Flybe increased operations up to 2007 and then falling back through the subsequent economic downturn. Recent growth can partly be attributed to growth in offshore helicopter operations, which are included in the ATM figures.
- 7.11 In 2015, there were around 9,000 ATMs associated with scheduled and charter passenger flights, with a further 13,700 rotary wing movements related to offshore operations. In addition to these, there were a number of air taxi movements, bringing the total to around 25,000 ATMs.

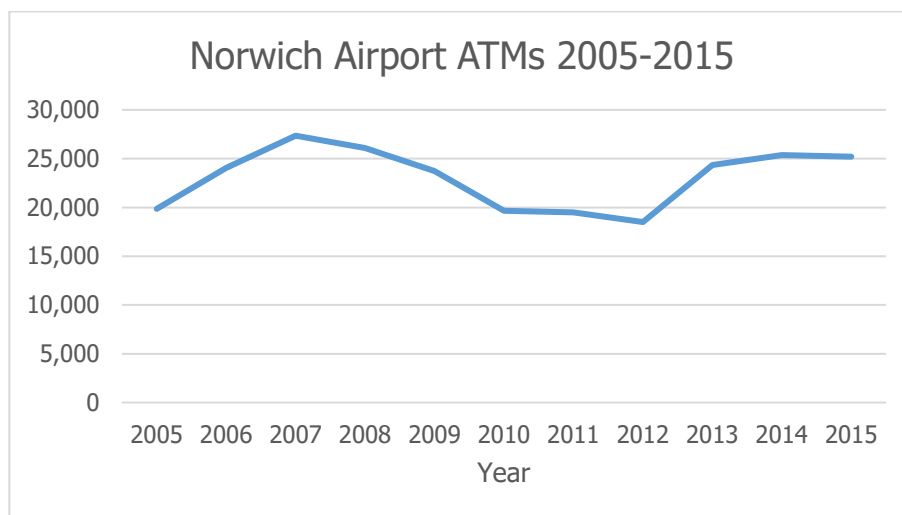


Figure 7.4 – Norwich Airport ATMs 2005-2015



## Alternative Airports

7.12 The alternative airports to Norwich Airport serving the Eastern region are:

- London Stansted;
- London Heathrow;
- London Luton;
- London Gatwick; and
- London Southend.

7.13 London Stansted Airport is 88 miles from Norwich Airport. In 2015, it captured around 41% of the market around Norwich, making this the dominant airport in the region. Norwich Airport drew the second largest proportion of passengers with just over 18% of the market. However, both London Gatwick and London Heathrow, despite their distance from the Norwich catchment area, attracted a combined figure of around 33% of the market, driven by their air service offer, which is not replicated by Norwich and the north London airports, particularly in the charter sector and long haul market respectively.

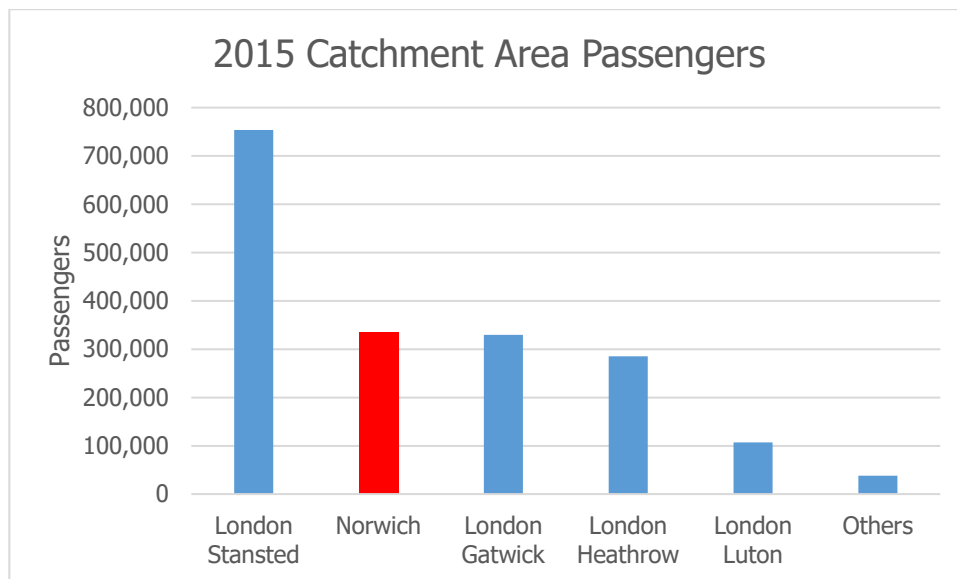


Figure 7.5 – 2015 Norwich Airport Passenger Catchment Area<sup>1</sup>

<sup>1</sup> This does not include any leakage to Southend from the southern areas of the catchment area as Southend has not been surveyed by the CAA. It is expected that any leakage is low.

- 7.14 Despite recent attempts by Cambridge Airport to enter the scheduled passenger market, in the southern area of the catchment area, these have not proved sustainable and the Airport has removed itself from this market.
- 7.15 The significant leakage from the core catchment area highlights the scale of opportunity for growth at Norwich Airport over time and provides the context for recent growth by Flybe in the leisure markets. Ultimately Norwich Airport will be unable to replicate the full range of destinations and services offered by alternative airports, due to its catchment size and economies of scale, but will be able to grow through market share growth on core routes as they reach critical mass levels within the catchment area.

### Maintenance Repair and Overhaul (MRO)

- 7.16 Norwich Airport is a recognised UK location for the MRO Sector with significant companies operating including KLM UK Engineering Limited and Air Livery Limited benefitting from unrestricted slot availability and both engine testing and aircraft dismantling facilities, essential in the provision of a full-service offering.
- 7.17 MRO movements have been recorded since April 2011 and have fluctuated over the past few years. The MRO movement numbers can be seen below.

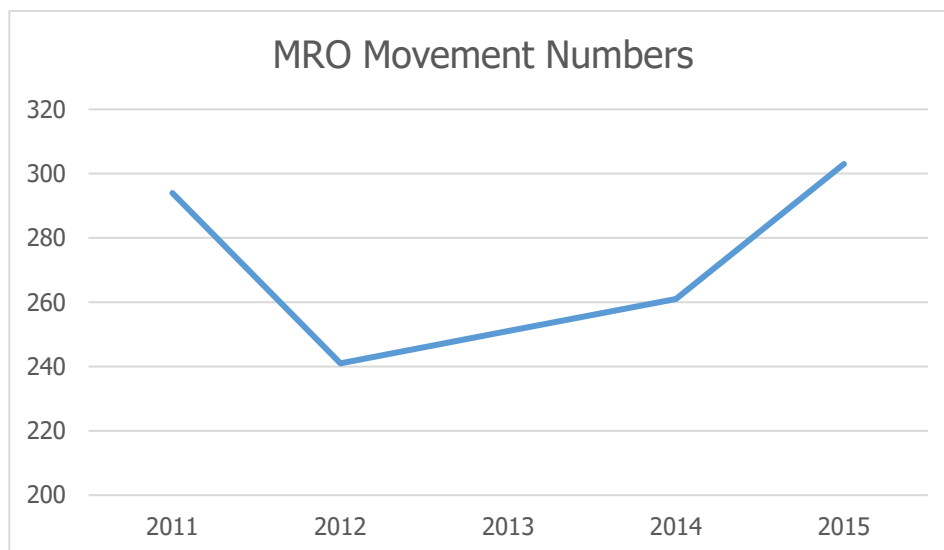


Figure 7.6 – Norwich Airport MRO Movement Numbers (April 2011 to March 2016)

7.18 Figure 7.6 shows that there has been a slight increase in the number of MRO movements over the last few years (despite a small dip in 2012). It is predicted that these MRO movements will increase over the next few years.

### Other Aviation

7.19 In addition to Air Transport Movements for passenger flights, there are numerous other aircraft movements including:

- General Aviation (Private and Aero Club);
- Business Aviation;
- Military;
- Test and Training;
- Positioning Empty; and
- Other.

7.20 The table and chart below indicate the numbers of movements in each year between 2005 and 2015 and illustrates the decline in non-ATM movements at the Airport over time, driven largely by the decline in Aero Club and Training, common to many airports around the UK. Positioning flights have increased significantly during this period and include movements by large passenger aircraft using the maintenance facilities at Norwich Airport, along with some offshore helicopter movements, relocating back to Norwich without passengers.

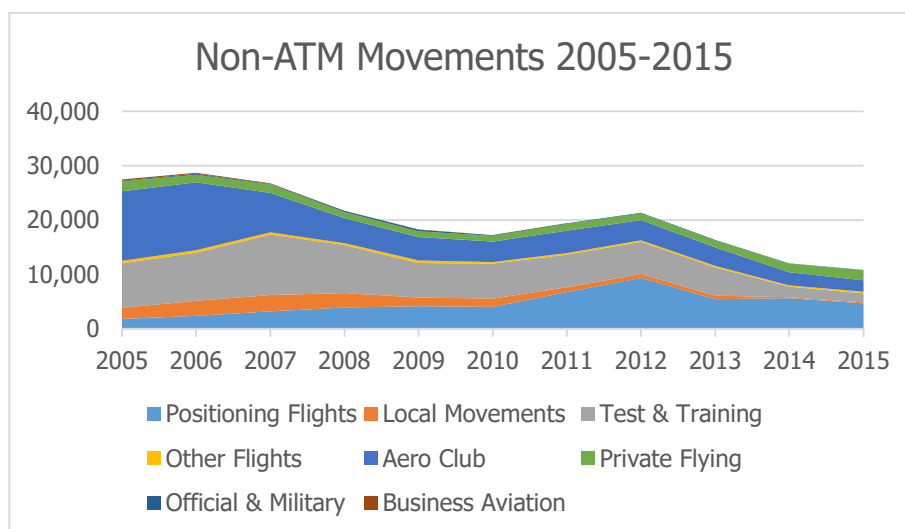


Figure 7.7 – Norwich Airport non-ATM Movements 2005-2015

- 7.21 General Aviation includes flying clubs and privately owned aircraft.
- 7.22 Business includes Executive Aviation, private charters and air ambulances.
- 7.23 Test and Training includes both flight tests by aircraft from the maintenance facilities as well as flight training.
- 7.24 Positioning Empty includes aircraft arriving for maintenance and aircraft arriving or departing empty to operate services or after diversions.

## 8.0 Forecasts for Future Growth to 2030 and 2045

### Introduction

- 8.1 In 2013, the Department for Transport (DfT) published UK Aviation Forecasts setting out the forecasts for passenger numbers, air transport movements and aviation carbon emissions at UK airports. The central forecast concluded that there would be an increase of 225 million passengers over the next 40 years.
- 8.2 Forecasts have been used to determine demand, surface access requirements, environmental impacts and sustainability targets as well as to programme capital development works to ensure that sufficient capacity is available to service passenger demand.

### Department for Transport Forecasts for Norwich Airport

- 8.3 The DfT issued long-term passenger traffic forecasts for all airports in the United Kingdom when the Government published its UK Aviation Forecasts in January 2013.
- 8.4 The DfT forecasts Norwich Airport passenger traffic reaching 400,000 passengers by 2020, rising to 1 million by 2050, although these were made before Flybe announced (in 2016) that it would increase its destinations in the summer and winter, and in 2016, passenger figures, including the offshore sector, exceeded 500,000 passengers, well above the DfT projections at this time.
- 8.5 In its UK Aviation Forecasts, the DfT forecasts stronger than average growth for the Eastern Region in the period from 2011 to 2041 of 30%. However, this does include London Stansted Airport, which is located in Essex.

### Passenger Forecasting Methodology

- 8.6 The passenger traffic forecasts in this Masterplan have been produced by a market-led bottom-up approach to 2030 based on:
- Growing underlying traffic demand for Norwich Airport's catchment from a base of 2015 in line with the DfT's 2013 Aviation Growth Rates;
  - Applying market capture performance to potential new routes to test which of these may be sustainable going forward, including eligible routes in the forecast;

- Applying aircraft size and load factor estimates to these routes to estimate the final passenger demand which may be handled;
- Considering stimulation, market share gain and the impact of onward connecting passengers on hub routes and adding adjustments to the route level forecasts to determine the final forecast.

- 8.7 Beyond this, to 2045, the forecasts switch from a bottom-up capacity and demand-led approach to an overall market size approach, taking into account overall market share growth from the first 15-year period and how this may continue going forward to reach a revised level of overall market share to estimate the forecast. Some reduction in demand associated with an expected decline in the offshore sector over time has also been factored in.
- 8.8 Given the long-term nature of these forecasts, they reflect a long-term growth rate. Although it is anticipated that, as a small regional airport, growth will necessarily be delivered in step changes over time and will not be linear throughout the period to 2045.
- 8.9 The adverse economic environment since mid-2008 has led to a significant reduction of air travel and passenger numbers at all UK airports, though more recently growth in demand has accelerated across the UK and returned to a level of normalised growth on the longer term, and the use of DfT growth rates reflects this aspect of the market where downturns are followed by accelerated growth.

### Norwich Airport's Core Catchment Area

- 8.10 Norwich Airport's core catchment can be considered to be around a 60-minute drive from the Airport and, in 2015, it is estimated that this core catchment contributed around 96% of Norwich Airport's passenger traffic. Additionally, the Airport's outer catchment area extends into Suffolk, Cambridgeshire, Essex and parts of Lincolnshire and the East Midlands. At present, the contribution from these areas is low compared with overall demand. A small number of passengers make connections between scheduled air services and the offshore gas platforms, and, as such, do not have an origin or destination within the catchment area.
- 8.11 The total population of Norfolk, Suffolk and North Cambridgeshire is around 2.27 million.

- 8.12 Norwich Airport's core catchment can be considered to comprise the following eight districts:
- Breckland;
  - Broadland;
  - Great Yarmouth;
  - King's Lynn and West Norfolk;
  - North Norfolk;
  - Norwich City;
  - South Norfolk; and
  - Waveney.
- 8.13 Nearly 40% of passengers from this core catchment area have a surface origin within Norwich City itself, higher than any other district.
- 8.14 Districts within the secondary catchment area are extensive and, in 2015, generated in excess of 5.2 million air passenger journeys across all airports, although most contribute only a very small number of passengers at Norwich Airport. These are:
- Babergh;
  - Bassetlaw;
  - Cambridge;
  - Chelmsford;
  - East Cambridgeshire;
  - Fenland;
  - Ipswich;
  - Lichfield;
  - Lincoln;
  - Mid Suffolk;
  - Peterborough;
  - South Kesteven;
  - St Edmundsbury;
  - Suffolk Coastal;
  - Tendring; and
  - Uttlesford.
- 8.15 The remaining counties and local authorities in the Eastern Region, including parts of Cambridgeshire and Essex have not been seen as a potential source of traffic. The London airports are more accessible for this area than Norwich Airport and this is reflected by the

lack of passengers using Norwich Airport in 2015 from these areas. Norwich's negligible penetration of this extended catchment is not anticipated to change over the forecast period.

### Underlying Traffic Demand

8.16 The underlying traffic demand has been taken from the Civil Aviation Authority (CAA) for 2015. As Norwich Airport has not been surveyed by the CAA, the estimates of the passenger profile for services from the Airport have been estimated as follows:

- For Edinburgh, Manchester and Aberdeen, the surveys from the other end of the route have been used with consideration of the 'destination' to inform the surface origin around Norwich. For airports surveyed prior to 2015, the passenger profile has been applied to the 2015 overall passenger demand;
- For the Amsterdam route, survey data from Aberdeen and Humberside to Amsterdam has been used to estimate the profile of demand, and then the catchment data associated with the domestic routes has been applied to this pro-rata to estimate the surface origins; and
- For the charter services, it has been assumed that all passengers are travelling for leisure purposes and their surface origin has been established by considering the levels of demand from the core and secondary catchment districts on similar routes served from London Stansted where a survey was conducted, with the catchment proportions allocated pro-rata to the overall passenger levels carried from Norwich in 2015.

8.17 Separately, Norwich Airport commissioned a survey in 2015 to identify the demographic characteristics within the catchment area and this was used to provide a cross-check on the results from the 2015 adjusted data outlined above.

8.18 The 2015 CAA survey provides traffic data, broken down by:

- Type of service – i.e. Charter or Scheduled;
- Origin airport;
- Final destination (and interim connecting points if not a direct itinerary);
- District of surface origin (or final destination) in the catchment area;
- Purpose of travel (business or leisure); and
- Nationality of passenger (UK or foreign).

8.19 In 2015, it is estimated that there were 1.85 million air journeys with a surface origin or destination in the core catchment area. Of these, around 21% of passengers were travelling



on business. When taking into account of the secondary catchment districts, the total air market from which Norwich Airport drew passengers was just over 7 million in 2015.

### Growth of Oil and Gas

- 8.20 The offshore sector and the helicopter operations supporting this represent a significant proportion of the passengers at Norwich Airport. In 2015, over 22% of all terminal passengers at the Airport were travelling to and from the offshore gas platforms. Furthermore, the sector also generates significant travel on key scheduled routes, including Aberdeen (74% of all passengers) and Amsterdam (69% of all point to point business passengers).
- 8.21 Gas production in the Southern North Sea region is an important market for Norwich Airport. Despite a decline in production, movements and passengers have been increasing at Norwich Airport, as it has claimed a larger share of the market against Humberside, climbing from 47% of the helicopter movements in 2005 to 67% in 2015. The overall helicopter market has also grown, from around 10,500 movements across the two airports in 2005, to 20,500 in 2015, driven by an increase in the number of individual oil fields (and associated platforms) and a diversification of the number of oil and gas operating companies requiring transport for its operatives, albeit each field produces less gas individually than seen historically.
- 8.22 Based on reserved data published by the UK Government Oil and Gas Authority and estimated production rates, the gas reserves in the region could expire by 2030, although this does not take account of future exploration and discoveries. For the Masterplan and consideration of infrastructure needs and environmental impacts, it is not deemed prudent to assume there will be no further discoveries in the region and that production will end. Furthermore, as the offshore wind and platform decommissioning sectors continue to grow, it is likely that there will be some switch of operations to support these activities.
- 8.23 Consultations with existing operators confirm that they may expect some decline in operations over time, but with some uncertainty of scale and timeframe. With this uncertainty around gas reserves, exploration, production rates and offshore wind development, the offshore sector forecasts have been driven off this simple assumption that numbers will be consistent with 2015 levels in 2030, reducing to 75% of 2015 levels by 2045. This equates to around 13,750 movements and 103,000 passengers in 2030, falling to 10,300 movements and 77,000 passengers by 2045. This does not mean that numbers will not increase in the meantime, but that it is assumed over time they will fall from any peak in demand.

### Norwich Airport's Passenger Forecast to 2030 / 2045

- 8.24 From a base of around 460,000 passengers in 2015, it is forecast that passenger numbers will grow to around 930,000 by 2030, increasing again to 1.4 million by 2045. These represent compound annual growth rates (CAGR) of 4.9% to 2030 and 2.8% thereafter to 2045. This pattern, is, however, influenced by the decline in passengers projected in the offshore market segment to 2045. The CAGR for scheduled and charter passengers is actually 5.9% to 2030 and 3.2% to 2045. These are above the DfT's growth rates for the underlying market as a result of step changes in market capture as new services are delivered.
- 8.25 For a small airport like Norwich, growth is unlikely to be linear throughout this period because small additions of capacity in any one year can lead to noticeable step changes in demand due to the low starting base, as has been seen in 2016 through the additional Flybe services. Analysis of the underlying market reveals a number of destinations which are already close to having sufficient demand to sustain direct services from Norwich Airport and, as such, there appears to be scope for a rapid growth in passenger services to 2030.
- 8.26 Scheduled and charter passengers are projected to increase from 77% of all passengers in 2015 to 89% (828,000) by 2030 and to 95% (1,326,000) by 2045 as offshore operations decline. It is anticipated that airlines will need to base new aircraft at the Airport, including a year-round basing of a charter aircraft.
- 8.27 By 2030, it is forecast that the Airport will increase its share of the core catchment market to 34.2%, up from 18% currently, with further market share gain to over 36% by 2045.

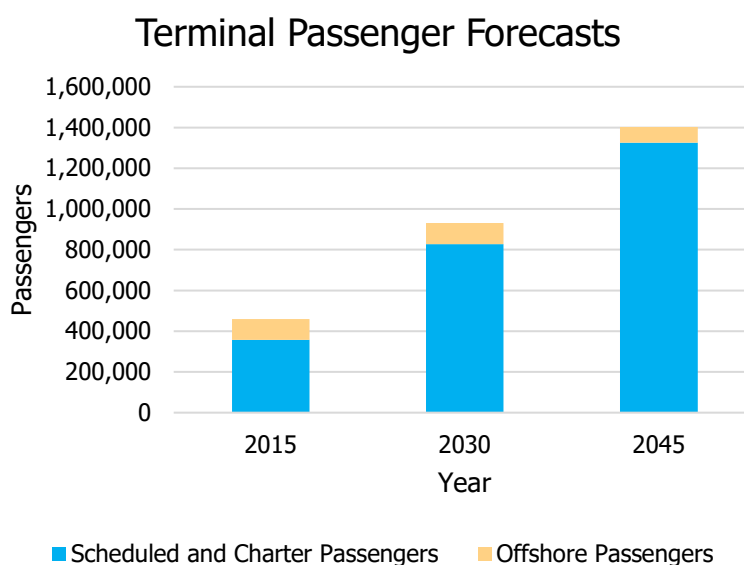


Figure 8.1 – Terminal Passenger Forecasts for 2030 and 2045

### Air Traffic Movement (ATMs) Forecasts

- 8.28 ATM forecasts have been developed on a detailed analysis of routes considering indicative aircraft types suitable for the range of the route and the operator envisaged.
- 8.29 The aircraft mix is predicted to be made up of primarily 70-80 seat type aircraft for short haul international and domestic routes. Larger 120-190 seat aircraft are assumed on the leisure routes into Europe. As traffic increases, it is likely that there will be a continual upward shift in aircraft sizes. As a result, ATMs will grow at an overall slower rate than the passenger figures as more passengers will be carried on each movement.
- 8.30 In the Planning Forecast, passenger related ATMs are forecast to rise to around 13,500 by 2030, up from around 9,000 in 2015. This represents a 450% increase in movements against a 137% increase scheduled and charter passengers. The overall passengers per passenger related ATM is, as a consequence, forecast to reach 61 by 2030, up from 39 in 2015.
- 8.31 By 2045, ATMs are forecast to grow further to around 16,900 with average passengers per ATM of 78.
- 8.32 In overall ATM terms (passenger and offshore), it is projected that movements will increase from around 23,000 movements in 2015 to 27,000 by 2030. As a result of the decline in offshore helicopter movements offsetting growth in the passenger sector over the period to 2045, it is projected that movements will remain around 27,000 by 2045.

### Growth of Business Aviation

- 8.33 There has been strong demand for Business Aviation services at Norwich Airport through Norwich-based operators such as SaxonAir. The demand reflects national and international growth in business traffic as individuals and corporations have increased usage of business aviation and air taxis.
- 8.34 Saxonair has developed General Aviation and charter handling services at the Airport since 2007 and has invested £7,000,000 in bespoke hangars, handling apron and office facilities from 2010 onwards. They have provided three separate hangars and high-quality offices on three floors in the Business Aviation Centre to the south-west of the runway. Saxonair operates its own fleet of 10 small to medium sized business jet and turboprop aircraft and arranges and handles charter flights for local and regional high worth individuals and businesses.

- 8.35 Norwich Airport forecasts that this market will continue to grow and that a number of operators will base aircraft at the Airport reflecting the economic growth and development of the region.

## 9.0 Phased Growth

### Introduction

- 9.1 These proposals have been developed from the passenger forecasts included within Chapter 8 of this Masterplan. The forecasts will be regularly reviewed and if growth is higher than anticipated, then the development proposals will be revised. Similarly, if there is a slowdown in the rate of growth, developments will be deferred. Additionally, advancements in technology may mean that these development proposals are subject to change.
- 9.2 Planning approval will be required for certain future developments in accordance with legislation. Planning applications will be made to the relevant local planning authority.

### Development Proposals to 2030

- 9.3 The development proposals to 2030 are shown in Figure 9.1 The proposed facilities will provide the capability of handling the expected 930,000 passengers per year by 2030. However, the pace of development will need to reflect the growth in passenger numbers.

### *Airport Terminal*

- 9.4 Aircraft check-in facilities are moving towards greater automation which will make way for additional capacity in the future within the current terminal building.
- 9.5 In addition, the Airport is in the process of reviewing the internal airside and landside configuration of the terminal building.
- 9.6 Notwithstanding these changes, additional passengers are predicted to use the Airport and allowance should be made for future expansion.
- 9.7 Terminal expansion would take place to the east of the existing terminal building where, at this stage, land has been safeguarded. It is acknowledged that the Regional Freight Building would need to be re-provided.

*Scheduled and Charter Apron Capacity*

- 9.8 One of the current capacity constraints at Norwich Airport is the available parking area for aircraft both overnight and during the peak operational hours. The current apron for commercial aircraft is located to the north-east of the terminal building. To cope with peak apron demand, additional apron capacity will be sought to the north-east of the terminal. The safeguarding of land for three to four Code D (B757 or smaller) or possible E (B767 or smaller) stands in front of the terminal building and existing stands is proposed.

*Maintenance, Repair and Overhaul Infrastructure*

- 9.9 MRO operators at Norwich Airport have benefited from the economic conditions which has led to lower costs on the international market, helping to compete with cheaper eastern European operators.
- 9.10 MRO services are a major economic contributor for the Airport and a major regional employer, as set out in previous chapters. The principal MRO operator, KLM UK Engineering (KLMUKE) is also linked to the new International Aviation Academy – Norwich.
- 9.11 Land has therefore been identified and safeguarded for future MRO expansion for both hangar space and apron capacity.
- 9.12 In September 2016, a new Engine Test Facility was opened to the north-east of the Site. This was a £1.4 million investment. The Engine Test Facility comprises a 10m high three-sided acoustic barrier, reducing aircraft noise for local communities. The Facility was built by an East Anglian company and a specialist acoustic company from Germany. This Facility will support the potential MRO expansion.
- 9.13 An area to the west of the Alpha taxiway has been identified for MRO remote parking apron capacity.
- 9.14 An area to the east of the Alpha taxiway has been identified for new hangars for MRO, to the north and south of current MRO facilities.

*Offshore Oil & Gas Services*

- 9.15 Current predictions for the offshore oil and gas sector point to a decline in gas field activities over time, which could have implications for services for Norwich Airport. However, it is recognised that this is a volatile market that could change, and airport capacity should be

safeguarded to respond to market scenarios in the future as further discoveries in the region could be made. There is also a strong likelihood that much of the oil and gas servicing requirements could be switched to offshore wind installation and servicing and oil and gas decommissioning sectors.

### *Airport Operating Hours*

- 9.16 Norwich Airport recognises the opportunity to extend its chartered holiday flights schedule during the summer months in order to maximise sector utilisation by based aircraft and tour operators generally which cannot be easily achieved within existing operating hours. This may require flights to arrive later than the current 23:00 restriction. Any change in operating hours will be subject to the planning process and assessments, which will be submitted alongside any application.

### *Runway and Air Traffic Control Infrastructure*

- 9.17 There is predicted to be an increase in hourly and total aircraft movements at Norwich Airport to service the increased passenger numbers. The single runway is 1,841m long and is capable of handling medium-sized aircraft only. The smaller 1,285m runway running northeast to southwest was closed in 2006 and is now used only as a taxiway.
- 9.18 The Delta taxiway is currently restricted to some Code C aircraft. The Airport may upgrade this taxiway in the future, or a Code D taxiway connection may be made to the adjacent operational main taxiway to improve the efficient use of the aircraft apron and provide improved aircraft access to the main runway.
- 9.19 As part of the general modernisation and safety improvements proposed for the airfield, additional landing and take-off lights are proposed for the western end of the runway to match those provided to the east, and a second Instrument Landing System (ILS) and Area Navigation (RNAV) is to be installed.

### *Car Parking*

- 9.20 The Airport will encourage a greater use of public transport targeting a shift away from the reliance on private car for journeys to the Airport. The requirement for car parking at the Airport will, however, still increase as passenger numbers grow and is an important part of the Airport's business model.

- 9.21 By 2030 Norwich Airport will need an extra 750 spaces, taking the capacity to 1,734 spaces.
- 9.22 In light of the above potential expansion scenario, allowance should be made for additional airport parking. This could be achieved by either acquisition of the existing Airport Park and Ride (P&R) site if this were to become surplus to existing requirement due to relocation following the NDR completion scheduled for March 2018 or through provision of a multi-deck configuration on the existing car park between 2015 and 2030. Since decking is unlikely to be viable despite offering staged provision, the primary parking expansion solution is proposed to be on the P&R site should that become available.
- 9.23 Norwich Airport will continue to have ongoing engagement with Parish Councils surrounding the Airport in respect of parking proposals in an attempt to discourage passengers from on street parking in Parishes.

#### *General Aviation and Business Aviation*

- 9.24 Norwich Airport has a tradition of providing General and Executive Aviation facilities for a variety of operators and aircraft types. As well as helicopter companies, servicing the offshore oil and gas industry, Norwich Airport is home to company owners of aircraft. In addition, the Airport also provides facilities for visitors, General Aviation and, also, the East Anglian Air Ambulance.
- 9.25 Norwich Airport remains committed to the continuing provision of these services and envisages a rationalisation of land use needs with the predominance of these facilities being located to the south of the runway.

#### *International Aviation Academy – Norwich (IAA-N)*

- 9.26 The new IAA-N was opened on 24 April 2017 and is a collaboration between the Airport, KLMUKE, City College Norwich and University of East Anglia. It is located to the south and in close proximity to the Airport and is a world-class training facility for careers in the aviation industry.

#### *Utilities Expansion*

- 9.27 Norwich Airport has internal services for distribution of telecoms, electricity, wastewater and surface drainage.



- 9.28 A number of these services will need reinforcement / replacement in the future. Norwich Airport is committed to investing in these services to ensure that they have the capacity to support the Airport's future growth.
- 9.29 In addition to these basic services, Norwich Airport has standby electrical generation for essential aviation equipment such as the Air Traffic Control Tower and airfield ground lighting. These key services will be reinforced / expanded as necessary to ensure the continued safe operation of the Airport.

#### *Site 4 – Land North East of the Runway*

- 9.30 In 2013, planning permission was granted on 41 hectares of land to the north of the runway for 95,035 sqm of aviation-related employment uses.
- 9.31 The site is located in the north-east corner of the airport comprising managed grass, taxiway, disused runway and apron. The Ground Run Enclosure used for engine testing is to the south-east of the site and the former fire training area is situated immediately to the east of the site comprising an area of concrete hardstanding, scrub and some trees. The current Fire Training Ground is situated to the west of the site. The location of the site is indicated at Figure 9.1 and totals 46.5ha and is known as 'Site 4'.
- 9.32 This planning permission was subsequently amended in 2016 as the pre-let occupier resolved not to proceed and remain in situ at its existing premises. The amended permission factors in the new access to the site from the new Northern Distributer Road, which is due to open in March 2018.
- 9.33 Site 4 is remote from the main Airport and, with the exception of retaining the required fire training facilities, has not been identified for any future airport operational or expansion requirements. Objective Evidence commissioned by Norwich Airport (Appendix 1) identified that circa 20% of Site 4 should be retained within the operational boundary for aviation-related uses.
- 9.34 Following this, NCC commissioned its own independent evidence which concluded that limiting the aviation use to 20% may be a potential constraint on future long term aviation development at the Airport. As a result of further discussions between Norwich Airport and the City Council, this Masterplan will safeguard 44% of the Site 4 Land (20.5ha) for aviation uses to maximise the opportunity for large scale aviation-related development. Norwich Airport will continue to collaborate with NCC, BDC and the New Anglia LEP.

- 9.35 In order to safeguard Site 4, the Airport expects to relocate the DME (Distance Measuring Equipment), from its current location to a location south of the runway.
- 9.36 This new DME site has been safeguarded and does not affect the land north-east of the runway and the existing and proposed MRO hangars to the south of the runway. The current KLMUKE hangars are acceptable in DME safeguarding terms due to their height and orientation. Any future expansion of operations will have to comply with all airport safeguarding requirements, but similar hangars to the existing MRO ones could be developed within the DME area if the demand arose.
- 9.37 In future, it may be possible to relocate the DME if any future infrastructure and operations come forward to the south of the runway. DME safeguarding is subject to airport procedures.

### Airspace

- 9.38 The 2013 Aviation Policy Framework recognises the need to provide airspace capacity to support airport expansion. It supports the CAA's Future Airspace Strategy<sup>1</sup> (FAS), published in 2011, with the aim of modernising the UK's airspace system.
- 9.39 The FAS's 2030 Vision is to establish:

**"Safe, efficient airspace that has the capacity to meet reasonable demand, balances the needs of all users and mitigates the impact of aviation on the environment."**

- 9.40 The Aviation Policy Framework<sup>2</sup> supports the implementation of the FAS. The Aviation Policy Framework states the following:

**"The implementation of the FAS can also play a significant role in delivering our economic and environmental objectives in relation to aviation. For example, by improving the overall efficiency of our airspace we can also at the same time provide significant opportunities to minimise aircraft emissions and air traffic delays."**

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<sup>1</sup> Civil Aviation Authority: Future Airspace Strategy for the United Kingdom 2011 to 2030

<sup>2</sup> 2013 Aviation Policy Framework

### *Local Airspace Capacity*

- 9.41 The UK has a complex structure to support an extensive network of arrival and departure routes, with the interaction of various airports having an impact in the capacity of the surrounding airspace.
- 9.42 Norwich Airport currently operates in Class D Controlled Airspace consisting of a Control Zone extending to a radius of 6Nm and Control Areas extending to 12Nm from the centreline of the aerodrome up to an altitude of 4,000 feet. Pilots must obtain permission from Norwich Airport Air Traffic Control (ATC) to enter the Controlled Airspace.
- 9.43 It is mandatory for aircraft to call Norwich Airport to enter Class D airspace. In order to provide a comprehensive air traffic service, Norwich Airport actively encourages airspace users to contact Norwich Airport ATC when operating in the local area, outside controlled airspace. The ATC uses a combination of radio instructions and surveillance radar to manage air traffic.
- 9.44 The Airport participates in the CAA sponsored Lower Airspace Radar Service and provides air traffic services to transit aircraft within 30Nm of Norwich Airport.

### *Airspace Routes*

- 9.45 Norwich Airport's ATC uses radio and surveillance radar to assist arriving and departing aircraft to connect with the national airway system.

### **Investment Plan and Phasing**

- 9.46 The work identified within this Masterplan has been carefully planned and phased to ensure that additional capacity and facilities are delivered when passenger demand and other demand are sufficient.
- 9.47 Large-scale capital projects must be meticulously planned to ensure that they do not impede the operational ability of the Airport. Therefore, a large percentage of the major construction works are done either during the quieter off-peak months or at night, adding an additional layer of complexity.
- 9.48 Furthermore, the large-scale works within this document require planning permission from the local regulatory bodies.

## Development Proposals 2030 to 2045

- 9.49 Given the difficulty of forecasting the volume of traffic so far into the future, Norwich Airport has developed only very provisional plans for the period 2030 through to 2045. The development proposals to 2045 are shown on Figure 9.2.

### *Runway*

- 9.50 Efficiencies which reduce aircraft CO<sub>2</sub> and noise emissions are being achieved in the industry through a new generation of aircraft and engines. Whilst advances are expected to be applied to all sizes of aircraft, certain efficiencies are gained by a combination of efficiency and size, such as the wide-bodied generation of aircraft.
- 9.51 These aircraft are currently unable to use Norwich Airport due to its runway length. In addition, although current MRO activities focus on small to medium size aircraft (up to Code D), future contract opportunities could include larger aircraft that would need to land and take off from Norwich Airport. This will also facilitate routes that require larger aircraft to carry more passengers to existing destinations and/or serve new destinations at a greater distance from the Airport.
- 9.52 It is therefore proposed that a 500m eastern extension to the runway will be safeguarded to accommodate larger aircraft in the future. The proposed extension will be subject to planning permission.
- 9.53 Although the proposed western extension of the Old Catton Cemetery would bring it closer to the Airport boundary, both the runway extension and taxiway would be designed so as to not affect either the existing or proposed cemetery.
- 9.54 As a consequence, the Public Safety Zone (PSZ) will be slightly altered to reflect the runway extension. The altered PSZ can be found on Figure 6.1 along with the current PSZs. For more information on aerodrome safeguarding, see Chapter 6.

### *Air Traffic Control (ATC)*

- 9.55 The current ATC Tower is located on the northern extremity of the airfield, some distance from the terminal and the bulk of the airport operations situated to the south. It is therefore likely that the ATC Tower be relocated to south of the runway. Consequently, land has been safeguarded for such a scenario.

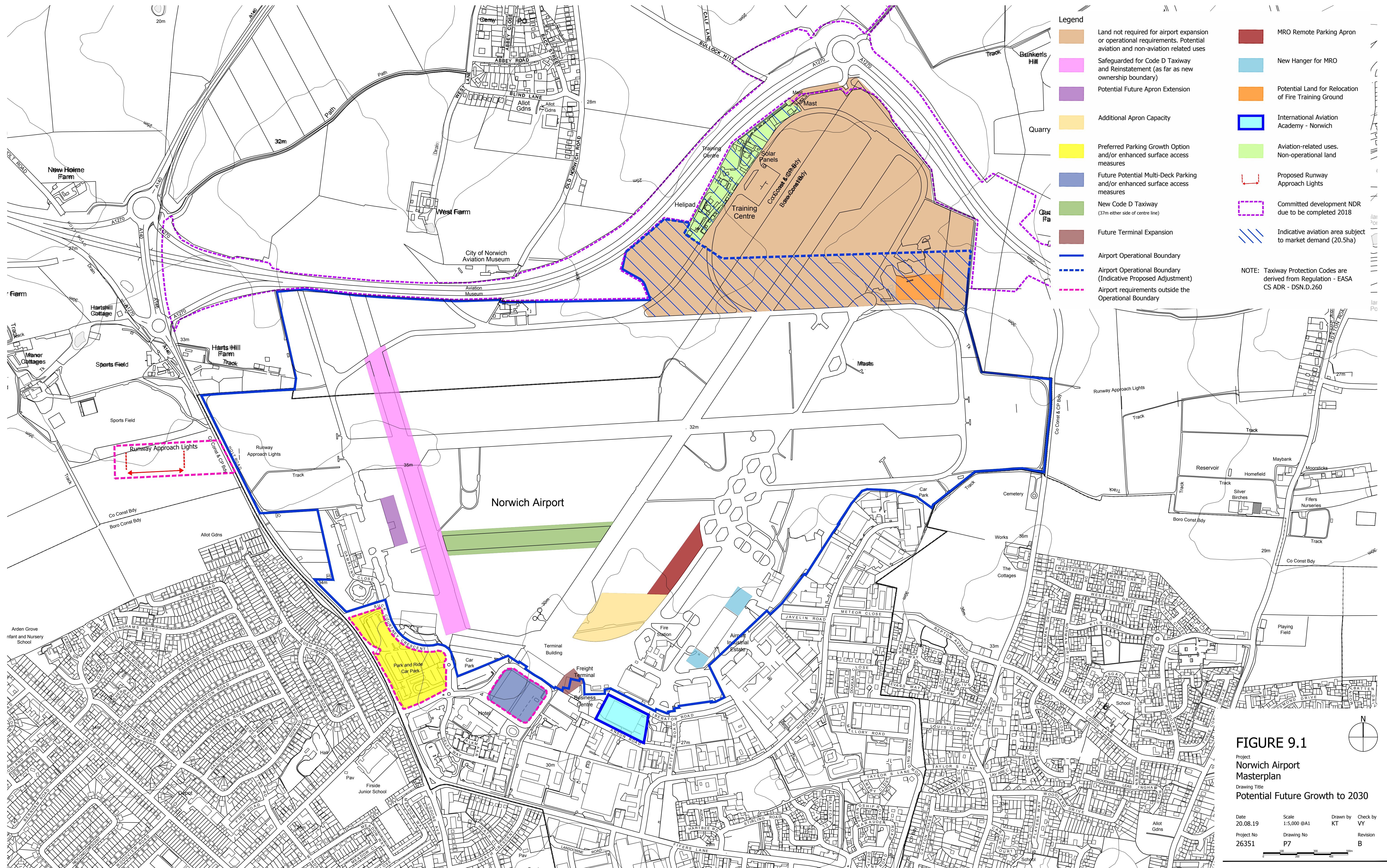
*Car Parking*

- 9.56 By 2045, Norwich Airport is anticipated to require an extra 1,250 spaces, bringing the total capacity to 2,234 spaces. This additional demand will be reviewed periodically, however at this stage a solution is anticipated through a Park & Ride strategy.

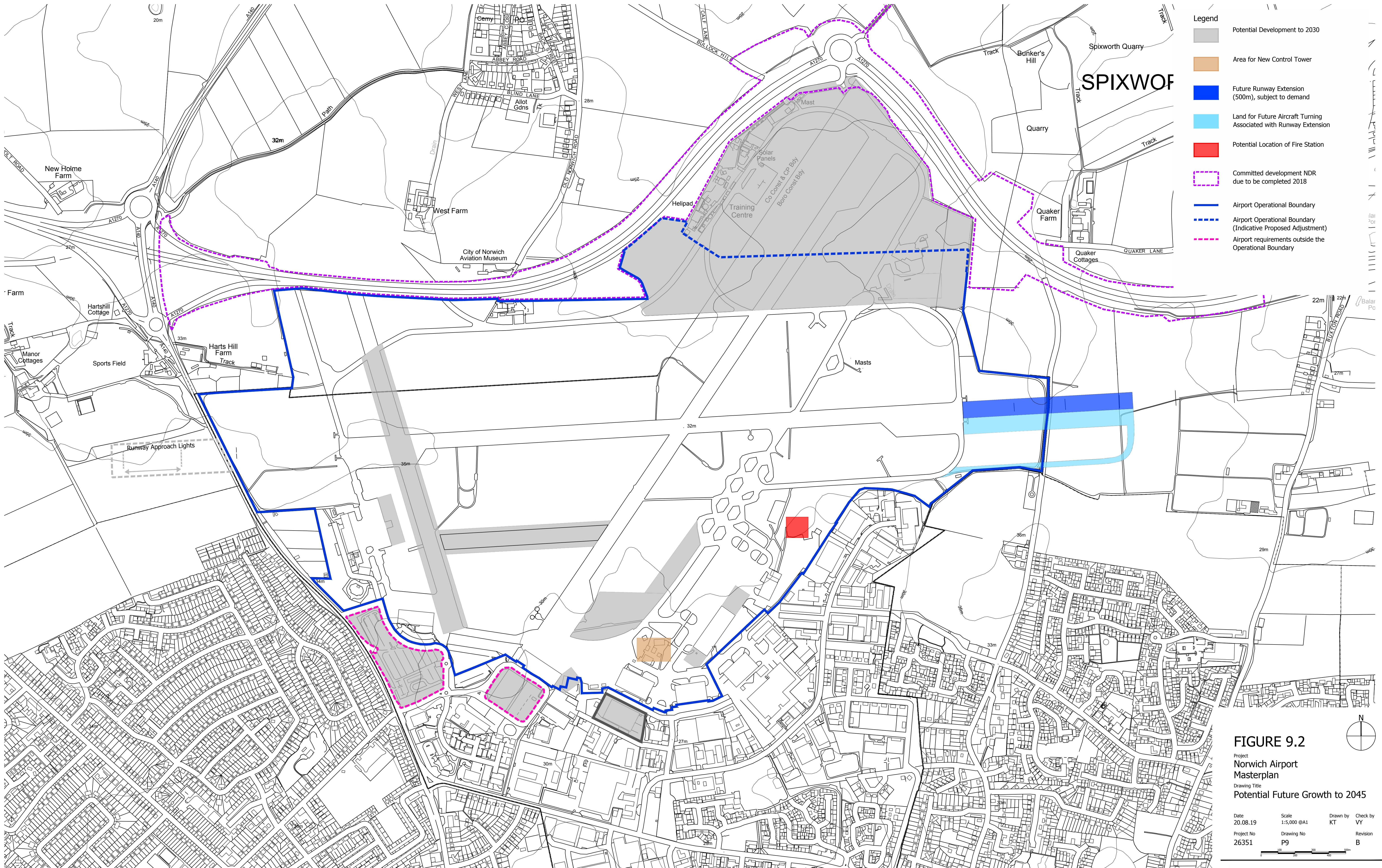
*Other Facilities*

- 9.57 An area to the south-east of the runway adjacent to KLMUKE, has been safeguarded for a potential new Fire Station.











## 10.0 Sustainable Transport

### Airport Surface Access Strategy

- 10.1 In common with other airports, Norwich Airport is required to develop an Airport Surface Access Strategy (ASAS). The aim is to set out the short and long-term targets for reducing the number of car journeys to the Airport and to promote policies to increase the usage of public transport for both passengers and employees. The need to produce an ASAS (a statutory requirement) is recognised in Policy DM27 of Norwich City Council's Development Management Policies, adopted in 2014.
- 10.2 The area covered by the ASAS is shown at Figure 4.1 and includes the area owned by the Airport outside its operational boundary.
- 10.3 The objectives of Norwich's ASAS are:
- To increase the ease of access to the Airport by public transport;
  - To ensure that there is adequate, reasonably priced car parking to minimise the number of 'dropped off' at the terminal to reduce trip generation;
  - To work with key stakeholders to support the development of a sustainable integrated transport plan and to improve the connectivity of the Airport and the surrounding area; and
  - To develop a Travel Plan for airport staff and passengers.
- 10.4 Although there is no current ASAS in place, a number of measures have been developed to promote environmentally friendly access to the Airport, focusing on the use of public transport and discouraging single car occupancy for employees. These measures are detailed in the following sections.
- 10.5 The benefits to the environment and local community can be summarised as:
- Reductions in car use, reducing congestion and air pollution; and
  - Ensuring that the communities close to the Airport can benefit from better public transport.
- 10.6 Norwich Airport will also benefit from the new NDR due to open in March 2018.



- 10.7 Norwich Airport strongly encourages Norfolk County Council to progress the NDR-A47 link (known as the Norwich Western Link) to improve connectivity in the region.
- 10.8 Upon endorsement of this Masterplan by Norwich City Council, Norwich Airport will commence preparation of an Airport Surface Access Strategy (ASAS), which will be submitted to NCC and BDC within 12 months of the date of endorsement.
- 10.9 The Transport Assessment will determine the need and extend of any mitigation required. The Masterplan has identified sufficient land within the airport boundary to accommodate potential measures to improve public transport to the Airport, such as improved access to the Site by all modes of travel and the potential for a transport hub or interchange, depending on the findings from the Transport Assessment and ASAS.
- 10.10 The surveys carried out by the Norwich Airport Passenger Action Group (NAPAG) in 2016 confirmed that the main capture area for Norwich Airport is as per the following postcodes.

**Table 10.1: Passenger Final Mode Airport Access<sup>1</sup>**

Postcode	Response (%)
NR1 – NR8	24.25%
NR9 – NR18	17.96%
NR19 – NR35	27.54%
IP18 – IP31	2.69%
IP1 – IP17	2.40%
PE14 or PE30 – PE38	1.80%
Any other PE	1.50%
Any CB	0.00%
Any CO	0.30%
Other	21.56%

<sup>1</sup> Note: Figures obtained from NAPAG Survey

### Norwich Area Transportation Strategy and Joint Core Strategy

- 10.11 The Norwich Area Transportation Strategy Implementation Plan Update was published in 2013. The aim of the Plan is to “deliver the transport element of the wider sustainable development agenda for the Norwich area as expressed through the Joint Core Strategy.” The Norwich Area Transport Strategy provided the framework for the transport strategy and Joint Core Strategy, with the updated version adopted in 2014.
- 10.12 The Joint Core Strategy sets out the policies for Norwich and its surrounding areas. Policy 6 concerns Access and Transportation and it states that “the transportation system will be enhanced to develop the role of Norwich as a Regional Transport Node”. These policies include improving the road network around the Airport, including the construction of the NDR and improvements to the A47. This policy guides future development in Broadland District, Norwich City and South Norfolk Councils until 2026. The Greater Norwich Local Plan will replace the Joint Core Strategy (estimated to be adopted in 2020) and will run to 2036.
- 10.13 Policy 6 in the Joint Core Strategy also recognises the importance of improving the strategic connections in and out the region by promoting the enhancement of rail services including improving the reliability to London and Cambridge. This is shown in the Norwich Area Transportation Strategy by improving the infrastructure to provide more and faster train journeys to London Liverpool Street. Updates to the Norwich Area Transportation Strategy and the emerging Greater Norwich Local Plan will continue to develop the transportation system throughout the region.

### Public Transport Accessibility

- 10.14 The current public transport to the Airport is provided by the Park and Ride (P&R) Service 501, which runs from Monday to Saturday. There are around six buses per hour. A bus pick-up and drop-off exists within the loop road in close proximity to the terminal entrance.
- 10.15 There are also local bus services running from Sheringham to Norwich City centre which run every day. It is about an eight-minute walk from this bus stop to the Airport. At peak times, there are up to three per hour.
- 10.16 There is also a cycleway (yellow pedalway) which connects the Airport with the south of the city at Lakenham. The cycleway traverses the city centre. Norwich Airport is also on the purple pedalway which is an outer circuit.

- 10.17 There are plans to increase the reliability of the bus services by introducing a Bus Rapid Transit Corridor, connecting Norwich Airport to Norwich City centre. The introduction of a Bus Rapid Transit route is in Policy 6 of the Joint Core Strategy as the city centre to the Airport is considered a key route.
- 10.18 Norwich Train Station is located to the east of the city and is around about 20-minute taxi ride from the Airport. It has services operated by Abellio Greater Anglia and East Midlands. These rail connections serve:
- Cambridge;
  - Cromer;
  - Great Yarmouth (via Acle);
  - Liverpool and Manchester;
  - London Liverpool Street;
  - Lowestoft; and
  - Sheringham
- 10.19 Increasing the use of public transport access will depend on the provision of high quality and frequent services. On its own, the demand generated by Norwich Airport will not be sufficient to justify these services. It is forecast that the development of Site 4 could put pressure on Norwich Airport meeting its targets. However, it will work with Norwich City, Broadland District and Norfolk County Councils to implement short-term improvements. As Site 4 is brought under development, Norwich Airport will work with stakeholders to develop a range of measures that will ensure a greater use of public transport by staff and passengers.

### *Modal Split*

- 10.20 The 2016 NAPAG survey showed that the predominant mode of transport to reach Norwich Airport is by car, as shown in Table 10.2 below<sup>2</sup>:

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<sup>2</sup> Note: Figures obtained from NAPAG Survey

**Table 10.2: Passenger Travel Mode Airport Access**

Modal Choice	Response (%)
Public Transport	5.09%
Taxi	42.81%
Private Transport (No Parking)	36.23%
Private Transport (Incl. Parking)	15.87%

- 10.21 The analysis of car usage has shown that 42.81% were dropped off by taxi, 36.23% of passengers were dropped off at the Airport by private car, with 15.75% utilising the car park facilities at the Airport. Only 5.09% of passengers used public transport.

### Targets

- 10.22 The aim of Norwich Airport's Transport Access Study is to reduce the reliance on cars and make better use of public transport to the Airport. However, given the nature of Norwich Airport's catchment area with a proportion of passengers often travelling from rural locations with relatively poor public transport, it is likely that car use will remain significantly higher than at other regional airports. Two sets of targets have been developed to reduce reliance on the car as the means of access to the Airport.

#### The Passenger Target:

- Aims to increase the proportion of passengers using public transport, the Park & Ride or car sharing. This recognises that the potential / likelihood that passengers would walk or cycle to the Airport is limited.

#### Employee Target:

- Aims to reduce the proportion of journeys made by individual staff travelling alone in a private car. Alternative modes of transport to meet this objective would include car sharing, public transport use, walking or cycling.

## Travel Plan

- 10.23 Norwich Airport will develop a Travel Plan to promote more efficient and environmentally friendly methods for staff, passengers and visitors to access the Airport, which will be produced alongside the ASAS. This will be reviewed at 5-yearly intervals.
- 10.24 The Airport's passengers and employees live across a wide area of the county but there is a concentration living in the city area.
- 10.25 The aim of the Travel Plan is to target a reduction in passengers and employees using their car, particularly as the sole occupant. It will consider access to the airport by all modes of transport, including targeting an increase in passengers and employees using sustainable forms of transport.
- 10.26 From the results of passenger surveys, targets are set out in Table 10.3<sup>3</sup>. The proposed targets are considered challenging yet realistic and achievable, if measures within the strategy are implemented and are successful and if the strategy is embraced as per the various measures and initiatives identified. Attainment of the targets is reliant upon future Airport development; the availability of public transport service infrastructure and the travel needs and perceptions of passengers and staff.

**Table 10.3: Passengers' final mode public transport use**

Year	
<i>2016 Actual</i>	<i>5.09%*</i>
<i>2017 Target</i>	<i>6%</i>
<i>2019 Target</i>	<i>7%</i>
<i>2021 Target</i>	<i>9%</i>
<i>2023 Target</i>	<i>10%</i>
<i>2030 Target</i>	<i>15%</i>
<i>2045 Target</i>	<i>25%</i>

- 10.27 Targets for the aims to reduce single car use by employees has also been set out as per Table 10.4 below:

<sup>3</sup> Figure obtained from NAPAG Survey

**Table 10.4: Employees single private car use**

Year	
<i>2016 N/A</i>	<i>-</i>
<i>2017 Actual</i>	<i>TBC</i>
<i>2019 Target</i>	<i>-2.0%</i>
<i>2021 Target</i>	<i>-4.0%</i>
<i>2023 Target</i>	<i>-5.0%</i>
<i>2030 Target</i>	<i>-10%</i>
<i>2045 Target</i>	<i>-20%</i>

- 10.28 The targets relate to final mode (i.e. the method of transport used to access the Airport site itself). These target figures would not, therefore, include a passenger who, for example, travelled by train to Norwich Rail Station and then used a taxi to access the site. However, information on all modes of transport used by passengers and staff will be obtained through surveys and continue to be analysed. The use of public transport as part of a journey, if not for the whole of the journey is also important. These targets will be finalised and presented to the Council within three years of endorsement.
- 10.29 Whilst Norwich Airport has been successful in achieving levels of passenger public transport usage slightly greater than its target, there will be difficulties discouraging staff of Norwich Airport and airport-based companies away from single private vehicle usage. The targets for this are demanding especially with the lack of public transport at key shift changes coupled with very early morning opening and night time closure times not being considered conducive to safe cycling or walking. However, in mitigation, the Airport's targets exclude taxi use, though in Government policy, taxis are regarded as being a form of public transport.
- 10.30 Future passenger and employee surveys will continue to be undertaken to identify progress against the identified targets and to gauge the success of the strategy initiatives. The targets will continue to be subject to review, following further surveys to reflect changing circumstances in Airport operation / throughput and public transport services.

### Parking Strategy

- 10.31 There are two public car parks at Norwich Airport, which together provide a capacity of approximately 984 cars. The Airport will continue to work with Norfolk County Council, tour operators and travel consolidators to ensure that passenger parking is in airport controlled car parks and to minimise "rogue" parking operators.

- 10.32 The Short Stay is located opposite to the terminal building and provides spaces for drop off and pick up as well as short stay parking. The Long Stay is located to the south-west of the terminal building. Staff working at the Airport park in secure locations a short distance to the east of the terminal.
- 10.33 After adjustment for increased use of public transport, the requirement for car parking at the Airport will still increase as passenger numbers grow. By 2045, it is estimated that the requirement for car parking will have increased from the existing 984 spaces to a combined requirement of 2,234, which is shown in the table below:

**Table 10.5: Car parking requirement forecasts (subject to the findings of the ASAS)**

Year	Existing Parking	Future Additional Parking Requirement	Total Parking Requirement
2016	984	0	984
2030	984	+750	1,734
2045	984	+1,250	2,234

### Passenger Parking

- 10.34 There are some 984 existing spaces to the east side of the Airport in two separate parcels near to the Airport. Allowing for the fact that many businesses at the Airport already have their own car parking within their leased areas, it is considered that the spaces on the south side of the Airport will provide sufficient parking for employees.
- 10.35 There is also a possibility that the Park & Ride service could be relocated to another site, better placed to give direct access from the Northern Distributor Road, with the existing Park & Ride site at the Airport being made available for further car parking to service Airport growth. Norwich Airport will engage with the relevant stakeholders to increase the bus services to the Airport, including the potential for a Bus Rapid Transit, linking the Airport to the city centre and beyond.
- 10.36 Passenger parking forecasts and requirements (shown in Table 10.5) will be determined by the ASAS within three years.

## Employee Parking

- 10.37 Many airport employees work shift patterns and weekends, which makes for efficient utilisation of staff parking. Equally early morning and late evening rostering times means that public transport services may not be available at the times employees require. Employers know that it is important to offer free car parking in order to attract and retain staff but are also aware of the cost of providing car parking, not least in terms of land use.
- 10.38 Norwich Airport will analyse the potential demand for EV charging points for employees and will consider installation, subject to the findings of the ASAS. Norwich Airport will encourage existing and new operators to install EV charging points.
- 10.39 Currently there is no intention to restrict car parking for staff. Part of the reason for this is to prevent overspill into local roads. The strategy, therefore, is to retain sufficient spaces at the Airport to meet staff parking demands. However, the ASAS will inform the future employee parking strategy and help determine the number of car parking spaces required for staff.

## *Review of passenger car parking requirements*

- 10.40 Predicting the level of passenger car parking spaces that will be needed in future years is difficult because the current passenger base is so small. Currently the capacities of the two airport car parks are as follows:
- Short Stay = 590
  - Long Stay = 394
- 10.41 The aim for future passenger car parking demand is, therefore, to be met from the existing parking at the site and supported by the Park & Ride and sustainable travel options. Car Parking Action Plan Issues to be examined are:

## Short Term (1-3 Years)

- Review the Car Park Strategy annually to ensure that it continues to be linked to the modal shift targets, such that the ratio of supply to passenger throughput has a commensurate reduction with increase passenger activity at the Airport;
- Continue to examine Airport car park usage, determine average lengths of stay, associated costs, numbers of passengers per vehicle etc.;



- Continue to review car parking pricing policy and its role in encouraging increased public transport usage to coincide with improved public transport access;
- Continue to ensure Airport car park facilities have regard to necessary provisions for special need passengers; and
- Discourage pick up / drop off through circulation design and enforcement charges. Long-term (three years and beyond);

10.42 These figures have been derived following the forecasts detailed in Chapter 7 of this Masterplan. The car parking figures and forecasts will be applied in the preparation of the ASAS.

### Vehicle Traffic Flows

10.43 Traffic flow to the Airport is variable, reflecting the hourly variations in passengers' throughput and the shift pattern in the KLM UK Engineering maintenance area and adjacent industrial estate. The measured Average Annual Daily Traffic (AADT) generated by the Airport is 3,909 from the Airport and 4,397 to the Airport.

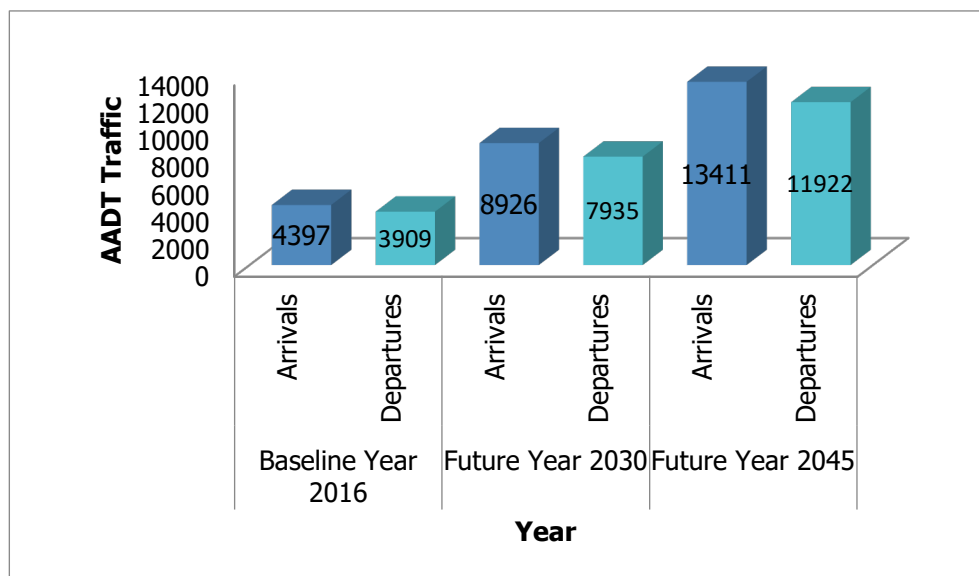


Figure 10.1: AADT Forecasts

10.44 In terms of vehicle traffic, the extended opening hours proposed would not equate to a significant volume of traffic and would be negligible in context of the AADT flows. Furthermore, the associated vehicle movements would occur at a time when traffic on the surrounding highway network is low and sufficient capacity exists.

## Highway Network

- 10.45 The primary distributor road network in the vicinity of the site comprises the A140, Holt Road and A1042.
- 10.46 Located to the west of the site is the A140. The A140 runs from the A14 near Needham Market to the A149 south of Cromer. It is of primary status for the entirety of its route. The A140 is a single carriageway road with an approximate width of 7m in close proximity to the site. To the south the Principal route connects to the A1042 Mile Cross Lane signalised junction.
- 10.47 Holt Road is a single carriageway road with a width of 5.2m and is classed as a Main Distributor. Holt Road Connects to the A140 via a 65m ICD standard roundabout junction. To the north, Holt Road connects to Horsford, Corpusty, Saxthorpe and Holt.
- 10.48 Mile Cross Lane and Boundary Road are classified as Principal routes which form a radial route around Norwich City Centre. Mile Cross Lane is predominantly single carriageway road but additional lanes are provided at major junction interchanges.
- 10.49 The NDR is also a vital improvement to the area, allowing the development of a modern, sustainable transport system for Norwich, including Bus Rapid Transit and facilities for cyclists and pedestrians. The NDR is to consist of 8.7 miles of dual carriageway linking the A47 in the south-east to Fakenham Road A1067 to the west. The NDR is expected to bring many benefits to the Norwich area some of which are listed below:
- Unlock the economic potential to the north and east of Norwich;
  - Estimated to bring £1.3bn of additional investment into the Norfolk economy;
  - Reduce congestion in Norwich;
  - Provide a high-quality link to Norwich Airport;
  - Provide essential infrastructure to support housing and employment growth; and
  - Free up road space for improvements such as Bus Rapid Transit and facilities for cyclists and pedestrians.
- 10.50 Norwich Airport recognises the importance of the link between the Airport and the Norwich Airport Industrial Estate (NAIE). Norwich Airport is committed to working with various stakeholders, including the owners of the NAIE, Norwich City and Norfolk County Councils, together with developers of the proposed hotel and operators of the International Aviation Academy Norwich (IAA-N) to regenerate and improve the link to maximise more efficient routing of public transport services and improved cycling and pedestrian facilities, including benefitting from the new development at land at St Faiths Road (application number:

2014/1955). For more information about the development, see Chapter 5. The linking of Meteor Close and Repton Avenue for general traffic except HGVs, due to be completed in 2018, will greatly improve connectivity with the NAIE. A highway link is planned for Heyford Road for bus, taxis and cyclists, further improving the connectivity of NAIE.

- 10.51 Norwich Airport is committed to working with Norwich City Council to implement a bus / taxi link from Anson Road to the Airport loop road. This will facilitate two-way traffic movement and potentially increase the number of scheduled buses at the Airport, thereby improving public transport connectivity.

### Staff / Employee Travel Plan Measures

- 10.52 To promote sustainable travel, a number of measures are proposed within the Travel Plan as set out below.

#### *Measures to Promote Car Sharing*

- 10.53 Car sharing is a good means of reducing single-occupancy car use and has the benefits of leading to a reduction in travel costs, a reduced demand for car parking, an opportunity to socialise with other employees and, most importantly, a reduction in the number of cars on the road, resulting in less congestion and pollution.
- 10.54 Table 10.6 below provides an indication of the annual costs that a driver would incur and the savings they could make just on fuel by car sharing<sup>4</sup>.

**Table 10.6: Fuel costs per annum**

Distance from Work	Driver Only*	Sharing with One*	Sharing with Two*
10km (6 miles)	£560	£280	£187
20km (12 miles)	£1,120	£560	£374
30km (20 miles)	£1,680	£840	£561
40km (25 miles)	£2,240	£1,120	£748

- 10.55 The benefits of car sharing are, therefore, apparent. The method will be promoted at the Site via the following measures:

<sup>4</sup> Based on a 1600cc engine with petrol at 134p per litre doing 10km to the litre, working 250 days/annum

- The Travel Plan will promote car sharing for existing employees wanting to car share, in addition to making them aware of general car schemes such as [www.liftshare.com/uk](http://www.liftshare.com/uk)
- The Airport will ensure that there are up-to-date contact details for local taxi services available, should employees not be able to car share through change of plans or emergencies.

#### *Measures to promote public transport*

10.56 As described in paragraphs 10.14 to 10.15, there are bus services located within the vicinity of the Site. Increased accessibility to, and use of, public transport is considered to be a key element of this Travel Plan. The following measures will be implemented to encourage public transport use:

- Provision of up-to-date public transport information including timetables and bus and train company contact information detailed on information boards, providing information on journeys to the city centre, train station and other major employment and academic centres;
- Taxi facilities and services will be publicised by use of the information boards in lobby areas directing users to the dedicated taxi booking office within the terminal building;
- The Airport will assist Norfolk County Council in its delivery of its "Better Bus" scheme;
- A website will be updated to include a link to any new travel measures / initiatives, including the extension of the P&R;
- The Airport will enter into discussions to provide the land necessary to allow a bus route between the Airport and the adjacent Council industrial site and the IAA-N. However, the security and operation of the Airport will be of paramount importance and will need to be considered as part of any proposed bus route; and
- Consider interest free loans for public transport season tickets for staff.

#### *Measures to Promote Cycling*

10.57 Cycling will be further encouraged by the following measures:

- Information on the local cycle network routes, acknowledging the enhanced pedalway network, to be provided to all staff by including this information on maps made available on information boards;
- The health and fitness benefits of cycling will continue to be directly promoted to staff;
- Promotion of / and incentives to participate in events, such as National Bike Week;

- Participation in the cycle to work scheme;
- Consider interest free loans for cycles; and
- Provision of better covered and secure cycle parking and changing facilities for staff and customers.

#### *Measures to promote walking*

10.58 Walking will be further encouraged by the following measures:

- Information on the local pedestrian network routes to be provided to staff by including this information to be produced by the occupiers and made easily available;
- The health and fitness benefits of walking will continue to be directly promoted to staff, and;
- Information boards in lobby areas will be utilised to provide regular updates on walking facilities, events and incentives.

#### *Measures to promote the Travel Plan*

10.59 The Travel Plan will be promoted through the following measures:

- Publication on notice boards and leaflets through the building, providing:
  - Information on health benefits;
  - Public transport links;
  - Bus and train timetables and contact information;
  - Cycle routes;
  - Pedestrian access; and
  - Incentives available.

#### *Passenger / Visitor Travel Plan Measures*

10.60 It is not realistic to set targets and objectives for passenger / visitor travel. This can, to an extent, be influenced, but no hard measures can be put in place insofar as to ensure a reduction in car driver trips, which is why the focus of this Travel Plan is on existing / future employees.

10.61 In this regard, the Airport will implement a number of measures aimed specifically at passengers / visitors, which include:

- Public transport information to be published on the Airport's website;
- Information on local taxi companies; and
- Information and promotion of the P&R.

10.62 The Airport will promote its Travel Plan objectives to other companies operating at Norwich Airport and will seek to align those companies' own sustainable transport plans with that of the Airport.

## 11.0 Sustainability

- 11.1 Sustainability concerns the processes by which the Airport manages its economic, social and environmental risks, obligations and opportunities.
- 11.2 Norwich Airport recognises the importance that growth in passenger numbers and other operations will bring additional pressures that will need to be planned for and managed to enable sustainable growth.
- 11.3 A key part of this is creating resilience over time, enabling the Airport to manage shocks and capture opportunities because they are connected to economic, social and environmental systems.
- 11.4 The key principles of sustainability that relate to Norwich Airport include:
- Sustainable growth: economic efficiency, innovation and productivity to maximise the Airport's contribution to the economy in the East, being the catalyst to attract high quality skilled employment;
  - Stakeholder engagement: learning from customers, employees and the surrounding community. Engagement includes involving stakeholders in joint decision-making;
  - Environmental management: providing the structures and processes that help embed environmental efficiency and responsibility into the Airport's culture, mitigating risks, and managing the impact of operations on those living around it.
- 11.5 Norwich Airport is committed to working with local partners and the community to ensure that the Airport plays a significant role in the region's future success.

### Economic Growth

- 11.6 Aviation is a major contributor to UK economic growth. It is estimated to support 961,000 jobs and contributes around £52 billion per annum to the UK economy<sup>1</sup>. Passenger numbers in the UK are expected to increase in the coming decades, to over 250 million. As a result, aviation's contribution to the UK economy will continue to grow over the next few decades.

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<sup>1</sup> Sustainable Aviation – 26 January 2016

- 11.7 As a result of this, the Aircraft Maintenance Repair and Overhaul (MRO) has been recognised as being a strategically important sector that offers real opportunity for future growth in the region.
- 11.8 Whilst it is a major employment generator in its own right, an important additional economic contribution of air transport is through its impact on other industries and as a facilitator for their growth. It is estimated that aviation indirectly contributes to 619,000 jobs.
- 11.9 The Greater Norwich Growth Board recognises the role that Norwich Airport plays in supporting economic growth in the region and that the future development of the Airport continues to contribute to the Joint Core Strategy. One of the key objectives of the Strategy is to improve transport networks and enhance connectivity to grow the region's economy.
- 11.10 Based upon these GVA per employee values, it is estimated Norwich Airport currently contributes £54.8 million to the regional economy from 1,240 direct jobs and a further £15.9 million GVA resulting from 'local' indirect and induced jobs. In total, therefore, Norwich Airport currently contributes over £70 million to the regional economy.
- 11.11 It is estimated that by 2030, Norwich Airport's GVA contribution to the region will be nearly £120 million through direct, indirect and induced employment. By 2045, Norwich Airport will contribute nearly £170 million to regional GVA.

#### *Meeting Norwich Airport's Growth Aspirations*

- 11.12 The UK Air Freight Study<sup>2</sup> prepared for the Department for Transport identified the ten most air intensive sectors. These sectors, including banking and finance, insurance and pension funds and other business services, accounted for almost 65% of the demand for air transport.
- 11.13 In 2015, approximately 40% of all trips from Norwich Airport were made for business purposes. The offshore sector remains a major driver behind this level of business usage, driven by the key routes to Aberdeen and Amsterdam. This level of business usage is well above levels seen at most UK regional airports, though this does reflect the limited route network at present and indeed it is anticipated that the proportion will fall as there is an increase in leisure orientated routes from 2016 onwards. However, it is clear that the sectors forecast to grow are among the most air intensive sectors and that, as a result of this, Norwich Airport will, in real terms, experience a significant growth in business use over the next 20 years. Over the life of the Masterplan, it is anticipated that business passenger figures will

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<sup>2</sup> UK Air Freight Study Report



grow by 138%. The development of the Airport and its extended service range will also enhance the attractiveness of Norwich and its surrounding region to high value, knowledge driven business that are considering relocation. These businesses are likely to offer more skilled opportunities and higher rates of pay than the Norwich average. It is estimated that currently, business travel via Norwich Airport supports around £37 million in GVA.

### *The Airport as an Employment Hub*

- 11.14 Norwich Airport is not only a significant catalyst for the local and regional economy, providing excellent and improving connectivity across the UK and Europe, but is also a major employment centre in its own right and a centre of excellence in a key industrial sector.
- 11.15 There are 1,240 full time equivalent jobs at Norwich Airport today. Taken as a whole, Norwich Airport is one of the largest employment sites in the region. A key element of Norwich Airport's role and significance as an employment hub is the presence of KLM UK Engineering (KLMUKE), which has established its headquarters at the Airport. Overall, KLMUKE has around 400 people at Norwich Airport and many of these jobs are highly skilled and well paid.

### *Direct Jobs*

- 11.16 The Airport currently generates around 1,240 Full Time Equivalent (FTE) jobs on site, across 24 on site employers including Norwich Airport Limited, KLMUKE, Air Livery, Petans, Saxonair, Babcock, Bristow Helicopters and others. Based on survey works, it is estimated that the majority of workers at the Airport, around 83%, live in Norwich. Only a small proportion of workers travel to work from outside Norfolk each day.
- 11.17 The Norwich Airport workforce comprises a mix of those involved in the day to day operations of the Airport and aircraft as well as businesses associated with the MRO sector.
- 11.18 Although the GVA impact per employee is estimated to be below the regional average of £44,000 currently, in reality, the impact could be greater as nationally it is estimated each employee in the aviation sector contributes around 85% more GVA per employee than the national average<sup>3</sup>.

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<sup>3</sup> ONS Annual Business Survey, 2013 Data

*Maintenance, Repair and Overhaul (MRO)*

- 11.19 KLMUKE is a leading UK based regional aircraft and narrow body MRO. KLMUKE services comprise base maintenance, line maintenance, component sales, technical training and decommissioning previous aircraft.
- 11.20 KLMUKE has been based at Norwich Airport for 40 years and currently employs 400 people, many in skilled engineering positions.
- 11.21 KLMUKE is a major contributor to the employment levels at Norwich Airport. Having KLMUKE's headquarters at Norwich Airport differentiates it from most UK regional airports. The development of Norwich Airport will help support the future growth of KLMUKE and to secure its continuing presence in the region as a major employer offering highly skilled job opportunities in specialist sectors.

*Skills and Training*

- 11.22 Norwich Airport is benefitting from the opening of an International Aviation Academy – Norwich (IAA-N) during 2017. The new world class training facility provides a range of resources and learning solutions for the majority of job types related to aviation. It has seen Norwich Airport working in collaboration with KLMUKE as well as the City College, Norwich and the University of East Anglia.
- 11.23 The establishment of the IAA-N will not only give local people the opportunity to take up training and employment opportunities at the Airport but in addition the opportunity to obtain practical experience alongside vocational qualifications and licences at the same time as securing a degree in aeronautical engineering. This is the first opportunity of its kind in the UK.
- 11.24 A high proportion of employment at Norwich Airport is accessible to local residents and covers a range of skills requirements, which includes many highly skilled jobs.

*Indirect and Induced Jobs*

- 11.25 In addition to the direct employment effects, there are wider consequences for the sub-regional economy through indirect and induced jobs. A Type 2 multiplier covering the Norwich and Norfolk region can be applied to the direct on-site employment figures to estimate the combined Indirect and Induced employment impacts of the Airport (i.e. for every 100 direct

jobs at Norwich Airport, a further 29 jobs are supported in the local economy). It is estimated, on this basis, that the Airport supports an estimated 360 indirect and induced jobs in the area.

- 11.26 In total, Norwich Airport currently supports nearly 1,590 direct, indirect and induced jobs and of these, it is estimated that more than 1,540 jobs are within Norwich and Norfolk.

#### *Future Growth at Norwich Airport*

- 11.27 If Norwich Airport grows, as predicted, direct jobs will increase to 1,950 by 2030. By 2045, the projection is for direct jobs to increase to 2,590.
- 11.28 It is estimated that spend by airport-based businesses will account for up to 570 indirect and induced jobs by 2030. It is also estimated that spend by airport-based businesses will account for up to 6,750 indirect and induced jobs by 2045.
- 11.29 In total, therefore, it is estimated that Norwich Airport will support up to 2,500 direct, indirect and induced jobs by 2030. Of these, around 2,400 jobs may be in the 'local economy'. By 2045, it is estimated that, in total, Norwich Airport will support up to 3,350 direct, indirect and induced jobs. Of these, around 3,250 jobs may be in the 'local economy'.
- 11.30 The planned growth at the Airport will also make a much wider contribution to the growth of Norwich and Norfolk's economy through improving connectivity to support growth in a range of sectors, supporting the strength of the aerospace and advanced engineering sector and the MRO sector and stimulating growth in the Norwich and Norfolk area by its synergy with neighbouring developments. By 2045, York Aviation estimates that the Airport will support around £120 million in GVA through productivity effects and £20 million through inbound tourism impacts.

#### **Stakeholder Engagement**

- 11.31 Norwich Airport is fully committed to supporting its employees to develop their skills and qualifications. This will grow the skill base of employees, ensuring their contribution to the company and to the region.
- 11.32 Communities are encouraged to take an active interest in airport operations and Airport staff will reach out to support local projects and initiatives.

- 11.33 Norwich Airport is committed to encouraging staff to take part in voluntary work to support and advise local organisations, trusts and charities.
- 11.34 Norwich Airport supports a full and positive engagement with its Airport Consultative Committee (ACC) as required through regulation and ensures an open dialogue on all matters pertaining to the safe and commercially successful operation of the Airport. The ACC is made up of representatives from local Parish Councils, local authorities and Operators at the Airport who all have a stake in the Airport's future be it as an employer, landowner, service provider or neighbour. Recent directives by Government to give greater prominence to the needs and views of passengers using the Airport is already achieved with the assistance of the independent Norwich Airport Passenger Action Group (NAPAG). The group has the support of the Airport in conducting passenger surveys and seeking implementation of identified improvements to customer service. NAPAG also relays its findings to the ACC so that there is transparency in its dealings and to ensure independence of its findings. These relationships will continue to be developed in future years.
- 11.35 Norwich Airport liaises openly with the Local Enterprise Partnership in its attempts to support growth of businesses located at the Airport and promotes the improvement of local infrastructure projects, designed to secure employment and improve the travel experience of its customers. Norwich Airport seeks to improve the relationship wherever possible and supports the Local Enterprise Partnership in its own promotion of the region.
- 11.36 Norwich Airport continues to promote its close working relationship with the neighbouring local authorities and those representing the wider community elsewhere in the region. The Airport aims to continue in open dialogue with the authorities both as shareholders in Norwich Airport Limited via their Board representation but also in the fields of Planning, Environmental Health, Transport and Highways.
- 11.37 The Airport fosters business links through its participation in local bodies such as the Chamber of Commerce, Norwich Business Improvement District and the Local Enterprise Partnership Transport Board.

### Environmental Management

- 11.38 According to the Committee on Climate Change, the UK domestic and international aviation contributed 6% of the UK's total emissions of carbon dioxide during 2013, of which 90% arose from international flights and 10% from domestic flights. In total, aviation makes up 22% of the UK's total transport emissions.

- 11.39 Norwich Airport will continue to promote the use of carbon offsetting scheme for air travel and car journeys to the Airport through our website and on-site publicity.
- 11.40 Carbon reduction should be viewed in the regional and national context. The increased choice of routes and services from regional airports outside the South East, not only promotes regional development but also cuts down on the need for long-distance travel to and from airports, thereby reducing vehicle emissions. An assessment for Flybe concerning its operations at Southampton Airport concluded that encouraging people to fly on direct services from their local airport, rather than making a long journey to a hub airport, not only reduced emissions but also reduced travel time for business and leisure journeys. Flybe estimated that the additional 900,000 passengers carried from Southampton between 2002 and 2004 saved 17 million car miles per year<sup>4</sup>.

#### *Carbon Dioxide (CO<sub>2</sub>) at Norwich Airport*

- 11.41 Norwich Airport has carried out an Energy Audit to better understand the use of energy and to contribute to the Environmental Management System.
- 11.42 The Energy Audit has analysed the energy, water use and waste generation at Norwich Airport to calculate the equivalent amount of carbon used in the Airport's operations.
- 11.43 Norwich Airport uses electricity and oil to operate the terminal and ground infrastructure, which does produce CO<sub>2</sub> emissions. Water use and waste generation also contributes towards the Airport's CO<sub>2</sub> emissions.

#### *Improving Energy Efficiency*

- 11.44 The existing estate at Norwich Airport is composed of numerous buildings and many lag behind modern efficiency standards. Our aim is to deliver, as development replaces existing legacy buildings, new and efficient facilities and equipment. In the short term, Norwich Airport will carry out a range of measures to improve energy efficiency at the Airport that can be implemented relatively easily including:
- Improved and integrated heating controls;
  - Improved levels of insulation wherever practicable to introduce;
  - Time switches and thermostats;

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<sup>4</sup> Parliament, Transport Committee – The Future of Aviation: Memorandum from Flybe3 (FOA 09)  
<https://publications.parliament.uk/pa/cm200910/cmselect/cmtran/125/125we16.htm>

- Door-closing mechanisms, particularly in departures between baggage handling and the main arrivals area;
- Staff awareness schemes and actions to reduce energy usage;
- Low energy lighting; and
- Sub metering.

### *Addressing Energy Supply*

11.45 Norwich Airport will assess all the available options for generating energy to the site from low carbon or sustainable sources including:

- Green Tariffs –Norwich Airport will seek where practicable, and within a wider Group purchasing strategy designed to promote the use of 'green' energy, to purchase its energy from suppliers who generate clean, reusable energy;
- Renewable Energy and On-site Generation – Norwich Airport is reviewing the suitability of renewable technologies and their ability to provide cost effective energy to the site; and
- District Energy Schemes – Norwich Airport will work with the Greater Norwich Partnership to evaluate the potential for campus wide Combined Heat and Power (CHP) to serve the Airport as well as developments in the Aeropark, where outline permission has been granted for a combined heat and power facility making use of an adjacent gas supply thereby delivering electricity from a cleaner fuel source.

### *Operations*

11.46 Norwich Airport will improve its operations and work with customers and stakeholders to reduce carbon generated by ground operations and other activities. These include:

- Switching to electrically operated and/or low emission ground handling vehicles where appropriate and practical;
- Carbon efficient landings and take-offs and minimising holding on the ground or in the air;
- Sustainable usage of operational vehicles; and
- Reducing carbon emissions from operations.



### *Development*

11.47 Future developments will be delivered through sustainable construction that achieves a high rating of sustainability certification, within the constraints of delivering aviation buildings such as hangars where energy efficiency is more difficult to integrate, applying recognised standards such as BREEAM or CEEQUAL:

- BREEAM – Building Research Establishment’s Environmental Assessment Method
- CEEQUAL – Civil Engineering Environmental Quality Assessment and Award Scheme

11.48 A reduction in carbon emissions will be achieved by:

- Design to minimise the use of energy that is currently in use;
- Utilising, where appropriate, onsite renewable energy sources; and
- Achieving targets set for sustainable construction and design set by the climate change action plan.

11.49 A carbon reduction programme will be supported by benchmarking and auditing to measure and identify opportunities for further improvement in site performance.

### *Other Sustainability Initiatives*

11.50 While reducing carbon emissions will continue to be central to the Airport’s sustainability, a range of initiatives will be reviewed, designed to deliver wider benefits to the local environment and community. Key areas include waste management, water management and procurement of services and supplies.

### **Waste Management**

11.51 Norwich Airport’s approach to mitigating the effects of waste reflect the Government’s sustainable waste management strategy. This involves reducing waste at source and then identifying the disposal option, which provides the most benefit or least damage to the environment as a whole, at an acceptable cost. This will include reusing materials wherever possible, making the best use of waste through recycling, composting and finally disposing of it through appropriate licensed facilities, as near to its place of production as possible.

11.52 These principles will be supported by a range of practical measures including:

- A programme for monitoring waste generated from airport activities;
- Appropriate processes to ensure the collection, sorting and storage of waste with a view to optimising reuse, recycling and composting;
- Effective and regular communication with all staff and passengers to raise awareness of waste issues and encourage best performance;
- Proactive management of the supply chain to minimise waste and maximise the use of reusable and recycled materials; and
- A construction waste strategy for all future development, applied by all staff and contractors.

11.53 Norwich Airport will continue to strive to achieve zero waste to landfill and to increase recycling. None of the Airport's waste currently goes to landfill with all recyclable material being separated by the Airport and the non-recyclable material being baled and sent as RDF (Residual Derived Fuel) for incineration for energy production.

11.54 The Waste Management Programme will generate year on year improvements aimed at achieving the target of increasing the proportion of waste going to direct recycling which currently is around 75%. The programme will be reviewed annually and revised as necessary to take account of business growth and to ensure that continuous levels of improvement are achieved.

### Water Quality

11.55 Water quality management relates to a number of operations at the airport including aircraft and vehicle washing, aircraft potable water supply and toilets and washing/shower facilities.

11.56 Further measures to reduce water consumption may include:

- Water metering;
- Low flush WCs;
- Aerated / spray taps;
- Low water use showers;
- Positive Infra-Red (PIR) controlled urinals;

11.57 Norwich Airport will continually evaluate any new technologies, which could assist in managing water resources.

- 11.58 Airport operators store, use and handle a wide variety of materials that can affect the environment if released to surface or ground waters. These include fuel aircraft de-icing media, vehicle and aircraft washing and refuelling, fire training and construction activities.
- 11.59 Norwich Airport recognises the potential of these activities to cause pollution and has rigorous procedures in place for the storage and use of polluting materials. Appropriate anti-pollution measures that are in place will be regularly monitored to ensure compliance with all relevant statutory controls for storage and handling of hazardous materials and discharges to water.
- 11.60 In particular, Norwich Airport commits, where practicable and affordable to:
- Ensuring that our drainage systems are improved to ensure that no contaminant can enter the groundwater;
  - Improving the surface water collection, interceptors and treatment system as the areas of airfield pavement, car parking and other hard standing increase; and
  - Improving the capture and treatment of water from the fire training area.

### *Procurement*

- 11.61 Norwich Airport will ensure that purchasing decisions take full account of the consequences for the local community and environment. A fundamental principle will be to use local suppliers and contractors wherever possible, thus stimulating the local economy and reducing transport-related environmental impacts such as emissions and congestion.
- 11.62 In addition, the Airport will, where practicable and affordable:
- Purchase low energy-rated plant and equipment;
  - Select Forest Stewardship Council (FSC) certified timber where possible in permanent applications;
  - Use refrigerants and materials with zero ozone depletion potential (ODP) or global warming potential (GWP);
  - Minimise new (virgin) aggregate use and maximise the recycling of demolition materials;
  - Choose materials with low embodied energy for internal finishes;
  - Avoid the natural resource depletion of peat and natural weathered limestone, where possible; and
  - Minimise the specification of PVC or systems containing PVC and maximise the specification of natural materials.

- 11.63 Norwich Airport will continuously monitor purchasing arrangements to ensure that wherever practicable and affordable, the Airport is buying sustainable materials with high-recycled content from ethical sources and adopting 'lean construction' techniques in all developments.
- 11.64 Norwich Airport will work with its retailers and other suppliers, wherever practicable and affordable, to ensure that locally supplied goods and materials are sourced for the Airport shops and restaurants where available, to reduce "food miles" created by their distribution.

### Managing the Effects of Noise

- 11.65 The number of people in the noise contour equivalent to the 'onset of significant community annoyance' will increase from the current level of around 100 to around 150 in 2030 before falling to under 50 in 2045. The number of people in the noise contours equivalent to 'moderate community annoyance' and 'high community annoyance' will remain zero.
- 11.66 Furthermore, the consideration of noise at night finds no population exposed to above the WHO interim guideline value. The impact of the implementation of the Masterplan is, therefore, considered to be minimal on the overall airborne aircraft noise.
- 11.67 Ground noise from the Airport is currently reduced by the presence of screening from airport buildings, an adjacent industrial estate (NAIE) and a new dedicated facility for engine testing. These features will remain for the future. The nearest properties to the existing taxiway along the western boundary are located 250m away, situated along the A140 (Holt Road). The nearest properties to the eastern boundary and current taxiway, on St Faith's Road and Westacre Drive, are over 300m away.
- 11.68 Two of the committed developments (20141955, land at St Faiths Road and 20121516, land to the north of Sprowston and Old Catton) will have residential dwellings located closer than existing properties to the current eastern taxiway.
- 11.69 The land at St Faiths Road development have designed apartments located at just over 100m away from the current taxiway. The nearest residential dwellings to the existing eastern taxiway for the land to the north of Sprowston and Old Catton will be around 250m away.
- 11.70 The runway extension that may be required post 2030 will mean that existing properties on St Faiths Road and the proposed dwellings of the two committed developments may be located closer to the Airport.

### Airborne Noise

- 11.71 Air noise refers to noise from aircraft that are airborne or on an airport runway during take-off or landing.
- 11.72 Following detailed work carried out for the Government in 1982, the impact of airborne aircraft noise is assessed with reference to dB  $L_{Aeq,T}$  values. Government guidance says these values can be described as having the following effects:

**Table 11.1: Government guidelines for the impact of airborne aircraft noise**

Noise Level dB ( $L_{Aeq,16h}$ )	Level of 'significant community annoyance'
57	Onset
63	Moderate
69	High

- 11.73 For noise at night, the WHO interim guideline value of 55 dB  $L_{Aeq,T}$ <sup>5</sup> has been taken, which strictly, is computed on an annual basis,  $L_{night}$ , not as here where it is calculated for the summer period, the busiest period for many airports.
- 11.74 The Masterplan applies current Government guidance in assessing air noise, consistent with the criteria adopted by other airport Masterplans issued to date.
- 11.75 The air noise contours produced for the Masterplan have been generated using the Federal Aviation Administration's Integrated Noise Model Version 7.0d (INM). Noise contour figures are based on the summer period's (16 June to 15 September) aircraft movements. The actual (2015) movements were 9,956, those forecast by 2030 are 11,238 and by 2045 are 11,330. In the case of 2030, the forecast contains only aircraft types already in service, whereas, by 2045, the forecast contains a number of modernised types that are just entering service or will do in the next few years.

<sup>5</sup>  $L_{Aeq,T}$  – Equivalent continuous sound level. This is a notional steady level, which would cause the same A-weighted sound energy to be received as that due to the actual and possibly fluctuating sound from 07:00 to 23:00 (daytime, 16 hours) and 23:00 to 07:00 (night time 8 hours)

### *Scope of Noise Contours*

- 11.76 The noise contours that are depicted include all types of aircraft, both fixed wing and rotary and refer to airborne noise. The fixed wing aircraft operating at Norwich Airport includes turbofan and turbo-propeller air transport movements as well as the smaller general aviation traffic such as training flights and some corporate jets but excludes military type aircraft. The rotary aircraft includes those operating now and those proposed to operate in the future.
- 11.77 The contours for 2030 are on the basis of the current runway, but those for 2045 assume an extension to the runway. The extension considered is 500m in an easterly direction and would be used by the larger aircraft types.
- 11.78 Movements by general aviation make up a large proportion of the current flight pattern and there are also a number of executive jets. However, no significant growth is expected in these movements in the future.
- 11.79 Helicopter movements occur at Norwich Airport which depart along the main runway. These have been included in the air noise contours as they make up a significant proportion of the current flight pattern and this is expected to continue in the future, although any growth in helicopter activity is expected to be limited.
- 11.80 The remaining movements are the commercial, predominantly passenger, movements where growth is forecast from 2015 to 2030, and further growth from 2030 to 2045. The growth allows for the additional flights anticipated as a result of the alteration to operational hours.
- 11.81 The resulting noise contour maps are included at the end of this section.

### *Forecasts*

- 11.82 Figure 11.1 shows the modelled departure and circuit routes for fixed wing aircraft using the Airport. Figure 11.2 shows the modelled departure and circuit routes for helicopters using the Airport. Figures 11.3 to 11.5 show the daytime aircraft noise contours for 2015 and the estimated future daytime (07:00 to 23:00 hours) noise contours for 2030 and 2045 for both fixed wing and rotary aircraft.
- 11.83 The forecast daytime contours for 2030 shown in Figure 11.4 are similar in shape to those for 2015, shown in Figure 11.3, but are slightly greater in size. This is to be expected as they assume no change in the flight routes or modernisation of aircraft types but an increased



level of around 13% in aircraft movements, much of which is by larger commercial aircraft of similar types to those currently operating at the airport.

11.84 The forecast daytime contours for 2045 are shown in Figure 11.5. They reflect the expected future growth at the Airport after 2030 and make an allowance for advances in aircraft and engine technology. They also include the effect of the eastern runway extension. The departure routes have been assumed to be those that are currently in place. As a result, the contours for 2045 are generally similar in shape to those for 2030 but are smaller in size. In fact, they are actually very similar in size to those for 2015, even when accounting for the eastern runway extension.

11.85 A comparison between 2015, 2030 and 2045 is set out in the tables below:

**Table 11.2: Comparison of 2015, 2030 and 2045 Daytime Contours (57 dB LAeq, 16h)**

Year	Approx Area (km <sup>2</sup> ) of Daytime Contour	Approx Dwelling Number <sup>(1)</sup> in Daytime Contour	Approx Population <sup>(1)</sup> in Daytime Contour
2015	2.4	<50	100
2030	3.7	<50	150
2045	2.4	<50	<50

<sup>(1)</sup> Number rounded to the nearest 50

**Table 11.3: Comparison of 2015, 2030 and 2045 Daytime Contours (63 dB LAeq, 16h)**

Year	Approx Area (km <sup>2</sup> ) of Daytime Contour	Approx Dwelling Number <sup>(1)</sup> in Daytime Contour	Approx Population <sup>(1)</sup> in Daytime Contour
2015	0.7	0	0
2030	1.1	0	0
2045	0.8	0	0

**Table 11.4: Comparison of 2015, 2030 and 2045 Daytime Contours (69 dB LAeq, 16h)**

Year	Approx Area (km <sup>2</sup> ) of Daytime Contour	Approx Dwelling Number <sup>(1)</sup> in Daytime Contour	Approx Population <sup>(1)</sup> in Daytime Contour
2015	0.3	0	0
2030	0.4	0	0
2045	0.3	0	0

11.86 The dwelling counts and population numbers within each of the contours have been inferred from current Census data analysed by postcode location (provided by CACI Ltd).

- 11.87 Taking the population above the 'onset of significant community annoyance', this is forecast to increase from the current level of around 100 to around 150 in 2030 before falling to under 50 in 2045.
- 11.88 It is important to consider the numbers exposed to the 'moderate level of significant community annoyance' (63 dB  $L_{Aeq, 16h}$ ) as this is the level at which mitigation measures are often considered appropriate. Such an approach is set out in the 2013 Aviation Policy Framework. Taking account of the forecast development at the Airport, no population is forecast to be exposed to the 'moderate level of significant community' annoyance in 2030 or 2045, as is the case currently.
- 11.89 The absence of any population exposed to at least this moderate level means that there is also no population exposed to the 'high level of significant community annoyance'.
- 11.90 The comparison between Norwich Airport and other regional airports with a similar number of passengers show that the number of residents in and around Norwich who are exposed to the 'onset of community annoyance' is fewer. In its 2007 Masterplan, Bournemouth Airport calculated that the number of households affected by low noise levels (which they calculated as 57dB) would increase from 892 in 2004 to 1,1310 in 2015 and 1,880 in 2030, significantly higher than in Norwich.
- 11.91 During the night period, normally defined for noise purposes as the 8-hour period from 23:00 to 07:00 hours, there are very few aircraft flights at Norwich Airport. These are generally limited to a few early morning departures between 06:00 and 07:00 each day and, in 2015, these were less than 4% of the total movements. There is potential for certain night time services to European destinations, subject to future planning applications to occur in the future.
- 11.92 Figures 11.6 to 11.8 show that night noise contours for Norwich Airport both now and in the future. The contours show a change in shape in the future and a modest increase in size as the current situation of very few night movements will remain even with the potential change to operational hours. It can be seen from the contour figures that the 55 dB  $L_{Aeq, 8h}$  contour does not contain any properties, neither now nor in the future.

11.93 A comparison between 2015, 2030 and 2045 is set out in the table below:

**Table 11.5: Comparison of 2015, 2030 and 2045 night-time contours (55 dB  $L_{Aeq,8h}$ )**

Year	Approx Area (km <sup>2</sup> ) of Daytime Contour	Approx Dwelling Number ( <sup>1</sup> ) in Daytime Contour	Approx Population ( <sup>1</sup> ) in Daytime Contour
2015	0.8	0	0
2030	1.0	0	0
2045	0.9	0	0

### *Mitigation Measures*

- 11.94 As noted above, the moderate level of significant community annoyance (63 dB  $L_{Aeq,16h}$ ) is the level at which mitigation measures are often considered appropriate. The contours detailed above find that no population is currently, or expected to be in the future, exposed to this level. Furthermore, the consideration of noise at night finds no population exposed to a level which should be regarded as the maximum for avoiding sleep disturbance for most people. Even prior to the proposed change to one of the existing controls, the hours of operation, further assessment will be undertaken and the requirements for mitigation considered. Currently, dedicated mitigation measures in addition to the controls already in place are not found necessary.
- 11.95 Although the 2030 proposals include upgrading the western taxiway and additional apron capacity, the nearest residential dwellings will remain 250m away. Mitigation measures include banking alongside Holt Road screening the Airport and the position of the existing Park & Ride site.
- 11.96 Although the committed developments (20141955, land at St Faiths Road and 20121516, land to the north of Sprowston and Old Catton) have proposed dwellings situated close to the existing and proposed runway, mitigation measures have been put in place. Both committed developments have calculated that no residential properties will be situated inside the 57dB contours, meaning that no future resident will be subjected to the 'onset of community annoyance' level. The land at St Faiths Road has Small Business Units located adjacent to the Airport's south-west boundary to screen residential properties. The apartments, which are located just over 100m away are single aspect and provide screening for the other residential dwellings.
- 11.97 The land to the north of Sprowston and Old Catton committed development has also calculated that all the residential dwellings are outside the 57dB contour. The layout of the proposal

shows that recreational and green spaces will be located closer to both the existing Airport boundary and the proposed runway extension. Other mitigation measures for dwellings closest to the runway include thermal double glazing.

- 11.98 Both committed developments have recognised that noise levels will be slightly elevated at night time but have concluded that the proposed mitigation measures will be sufficient.

### *Ground Noise*

- 11.99 Ground noise is commonly defined as noise produced by aircraft activities and the use of ancillary equipment on the ground, that is, by sources other than by aircraft in flight, taking-off or landing. Sources of ground noise include:

- Aircraft starting engines;
- Taxiing and manoeuvring aircraft;
- Aircraft Auxiliary Power Units (APUs);
- Testing of aircraft engines (ground running); and
- Mobile ground equipment, e.g. Ground Power Units (GPUs).

- 11.100 Airport ground noise should be considered in the context of off-airport noise sources, or background noise. The most dominant contributor to the noise climate in the residential areas surrounding the Airport is road traffic. Airport ground noise will be audible at locations close to the Airport boundary and in areas beyond where background noise levels are low.

### *Current Impacts*

- 11.101 The running of aircraft engines at high power levels for test and maintenance purposes currently gives rise to noticeable levels of ground noise around the vicinity of the Airport and this activity has produced some complaints from local residents in the past.
- 11.102 Ground running, at low and high-power levels, is undertaken for test and maintenance purposes only on an intermittent basis during the daytime. To limit the noise from high power ground running, the Airport has recently constructed a dedicated Engine Testing Facility on the northern side of the Airport. This location has the benefit that the facility is distant from all but a few isolated receivers and it introduces local screening close to the aircraft.
- 11.103 The use of APUs and taxiing also generates ground noise. APUs provide electrical power to aircraft when they are on the aprons. The aprons are well located with regard to dwellings as

they are often screened by airport buildings, such as the numerous hangars, and the Airport is also bordered to the south by an industrial estate. This provides additional screening while also increasing the separation to the nearest dwellings.

11.104 Towards the western edge of the Site are two aprons used for helicopter operations. These are partly screened from the nearest dwellings by hangars adjacent to the aprons. The two are also separated by the Park and Ride facility and the fuel farm, in addition to the A140. This road is one of the main roads into Norwich City Centre and the traffic on it produces significant levels of noise, which mask much of the airport activity for the dwellings in close proximity to it.

11.105 Taxiing activity for medium bodied aircraft is mainly conducted on the central taxiway which runs from the terminal building to the runway, and on the runway itself. As a result, taxiing is generally conducted distant from dwellings, and, in many cases, the activity is also screened as are many of the aprons.

### *Forecasts*

11.106 In future, the general mix of aircraft is expected to remain similar to today, with a large proportion of small twin turbo-prop aircraft in use together with a mix of small and medium sized jet aircraft. Over time, and in particular by 2045, it is expected that a significant number of these will be modernised aircraft types that are quieter in operation than those operating today. These operations will continue to be confined mainly to daytime hours.

11.107 To accommodate the increased activity at the Airport, a number of onsite developments are proposed. These include an additional apron area, taxiway improvements and the construction of additional buildings, such as a new hangar, control tower and, possibly, a new fire station and terminal extension. There is also the possibility of an eastern extension to the runway after 2030.

11.108 The locations proposed for the additional apron area are adjacent to existing aprons but are more distant from dwellings. They will also benefit from the screening provided by the existing airport buildings and the industrial park.

11.109 The taxiway improvements comprise the upgrade of a taxiway towards the western end of the Airport and the construction of a new taxiway linking to it. These improvements do not alter the level of activity but will alter where some of it occurs.

- 11.110 The closest element to dwellings is the upgraded taxiway and, while closer than the existing main taxiway, it is at least 300m distant and aircraft using it will be partly screened by existing hangars. The closest dwellings are also exposed to significant noise from the A140, which they are adjacent to, such that any effect will be reduced.
- 11.111 Taking the overall situation, as the aircraft types expected to be used remain similar, the maximum noise levels generated around the area are likely to remain largely the same. Noise exposure levels will, however, increase over time as movement numbers increase but the change due to the growth in movement numbers is small (less than 1 dB) and may, in any event, be counteracted by the modernisation in aircraft types.
- 11.112 Noise levels, arising for example, from aircraft taxiing and maintenance, are expected to remain similar in the future to now. Any change in overall noise levels will also be small due to the modest increase in movements but may be counteracted by the modernisation in aircraft types.

#### *Mitigation Measures*

- 11.113 As noted above, Norwich Airport recently opened a new engine testing facility in September 2016. The new facility uses the latest noise reduction technology to improve the local environment.
- 11.114 When additional buildings or extensions are being planned, consideration will be given to how they could benefit the surrounding area by introducing additional screening for general ground noise.

#### *Road Traffic Noise*

- 11.115 The Airport terminal is accessed from the A140 via Amsterdam Way, which also provides access to the Park and Ride facility and businesses in Delft Way. As the implementation of the Masterplan proposals would generate additional road traffic to the Airport, an assessment has been made of the current and future traffic on both the A140, north and south of the junction with Middletons Lane and on Amsterdam Way. This assessment has considered both the additional traffic due to the airport development and the total traffic.
- 11.116 Predictions have been made using the Calculation of Road Traffic Noise, published by the Department for Transport Welsh Office, of the noise produced by two roads taking into account the traffic flows from 06:00 to 00:00 and their compositions.

- 11.117 The greatest change in traffic is predicted for Amsterdam Way, on which airport traffic is forecast to be the majority in the future. Compared with the current situation, increases in noise of 5 to 6 dB are predicted in 2030 and 2045, such that a moderate impact would result. This road is not, however, adjacent to dwellings and the absolute levels remain modest, in part due to the low traffic speed.
- 11.118 Due to the majority of the traffic not being related to the Airport, the changes for the A140 are less. As a result, only small changes from the current situation are predicted, around 2 dB in 2030 and still less than 3 dB in 2045, which correspond to a negligible impact with or without the airport development. This finding does not alter when traffic associated with the proposed change in operating hours is allowed for.
- 11.119 Considering the period from 0:00 to 06:00 am, current traffic flows are much less than those during the day, at most 5%. Consequently, road traffic noise levels are much less. In 2030 and 2045 this situation is expected to remain even allowing for the proposed change in operating hours.

## Noise Control Measures

### *Operation Hours*

- 11.120 Norwich Airport's operational use of the terminal and associated apron and taxiways are restricted to between 06:00 and 23:00 hours. Furthermore, the Airport applies extension charges to flights after 21:30.

### *Operational Procedures*

- 11.121 The Airport requires operators of all aircraft to ensure, at all times, that aircraft are operated in a manner calculated to cause the least disturbance practicable in the areas surrounding the aerodrome. During take-off, aircraft shall climb as steeply as minimum engine noise settings allow and during landing, without the assistance of the instrument landing system, shall follow a descent path, which will not result in their being at any time lower than the normal 3° glide path.
- 11.122 The Airport also requires the pilots of arriving jet aircraft and turbo-prop aircraft to perform a straight final approach to the runway and, on departure from the runway, all aircraft are to climb straight ahead to 1,000 ft. before turning, unless instructed otherwise by Air Traffic Control.



### *Monitoring and Accountability*

- 11.123 All local noise related incidents are monitored by Airfield Operations. In addition, the Airport's Consultative Committee includes representatives from local Parish, District and City Councils and meets regularly to discuss environmental and noise issues.

### **Air Quality**

- 11.124 Aircraft and aircraft support activities are the principal source of atmospheric emissions at airports. Emission from sources such as airport buildings are minor by comparison. Aircraft emissions arise from take-off, landing and taxiing. Aircraft support emissions are generated by ground support vehicles and airside support vehicles, aircraft engine testing and refuelling operations. Road traffic resulting from travel to and from the Airport is the other main source of emissions.
- 11.125 In general, air quality within the vicinity of Norwich Airport is good. The local authorities have not been required to designate any part of the immediate locality as an Air Quality Management Area (AQMA).
- 11.126 The development of the Airport is not expected to jeopardise the continued achievement of the Government's air quality strategy objectives, with passenger and ATMs staying well below the levels where more detailed assessment is required.
- 11.127 Increases in road traffic are also not expected to have a significant impact on air quality.

### *Regulatory Framework*

- 11.128 The Government has set Air Quality Strategy Objectives to limit the impact of atmospheric pollutant on human health and the environment. Ensuring compliance with the Air Quality Strategic Objectives is the responsibility of local authorities through the Local Air Quality Management (LAQM) system, introduced by the Environment Act 1995.
- 11.129 Since then, local authorities are required periodically to assess current and predicted air quality within their jurisdiction. If an objective is unlikely to be achieved, local authorities must designate the relevant locations as AQMAs and work towards ensuring that the target is met.
- 11.130 The latest formal assessment of air quality in the vicinity of Norwich Airport were Norwich City and Broadland District Council's Air Quality Assessments, both published in 2015. The

assessments provide data on the current levels of pollutants in the area and consider the likelihood that air quality limits could be exceeded in the future.

### *Implications of Airport Expansion*

- 11.131 Guidance produced by DEFRA indicates that emissions of PM<sub>10</sub> from airports are insignificant and that significant impacts associated with nitrogen dioxide are only likely to occur in the vicinity of airports with annual throughput of passengers in excess of 10 million passengers per annum or where the NO<sub>x</sub> background concentration is greater than 25µ/m<sup>3</sup>.
- 11.132 At Norwich Airport, in 2010/11 the figures were under the 'significant' threshold. Air Quality Consultants calculated that even with a 10% increase in annual aircraft movements, it would still be below NO<sub>x</sub> harmful levels. Projected aircraft movement increases in 2030 and 2045 do not exceed these threshold values. It is therefore very unlikely that there will be breaches of air quality strategic objectives.
- 11.133 Norwich Airport recognises that Air Quality Assessments will be submitted alongside any future planning applications for all the development proposals, which are detailed in Chapter 9.
- 11.134 Through its pledge to produce an ASAS, Norwich Airport is committed to reducing congestion, and therefore, the air quality impacts of traffic travelling to and from the Airport.

### *Environment Agency Floodplain*

- 11.135 The extent of areas at risk of flooding is shown indicatively on the Environment Agency's (EA) flood mapping, which provides details of known floodplains, areas which have suffered flooding and fluvial flood areas. The maps show that the Airport is not within an area of known flood risk according to the EA's records. Norwich Airport's own records state that was regular flooding just within its operational boundary, in the vicinity of the Business Aviation Centre, to the south-west of the Airport, which adjoins the existing long-stay car park to the east. However, since the construction of the Business Aviation Centre there have been no more reports of flooding.
- 11.136 The EA maps are indicative and the Agency is undertaking more detailed mapping work across the UK to refine and update the maps. In areas where more detailed information is not available planning applications often need to be accompanied by a Flood Risk Assessment (FRA) in accordance with advice set out in Planning Policy Guidance (PPG) 030. The PPG provides advice on site-specific flood risk assessment.

- 11.137 FRA work will be carried out at the Airport as part of future planning proposals for airport-related development. This will be confirmed through liaison with the EA and Norwich City and Broadland District Councils.

## Ecology

- 11.138 There has been an increase in bird strikes in Norwich over the past few years (from 16 in 2013 to 23 in 2015). However, the number of confirmed bird strikes did decrease by 48% from 2015 to 2016 as a result of the introduction of additional bird patrols as a mitigation measure during the construction of the Norwich Northern Distributor Road. This is a serious issue and a risk that must be minimised throughout the Airport's development and operational programme and development on adjoining land. The Airport will address all relevant aspects in order to mitigate the risk where relevant, including management of grassed areas and trees to discourage bird nesting and locating new wildlife habitats away from airside areas.
- 11.139 Norwich Airport commissioned a Phase 1 Habitat Survey in 2011 of the wider airport site to ensure that future development undertaken by Norwich Airport is conducted within the legal frameworks and to assess whether the Airport is of significant ecological value.
- 11.140 Where appropriate, Natural England disturbance licences will be obtained prior to the start of any major developments.
- 11.141 The 2011 Desk Study area was defined as an area within a 3.25km radius from the centre of the Airport. In May that year, an ecological walk-over survey was carried out to inform the Environmental Impact Assessment for the engine testing facility by independent and qualified ecologists. In 2012 a repeat Phase 1 habitat survey was carried out to the north of the Airport, for the 2013 application for the development of aviation related business space. The work was undertaken in accordance with the best practice guidelines of the Institute of Ecology and Environmental Management (IEEM).
- 11.142 The aim of the surveys was to record broad habitat types and the likely presence of any protected species on the site or within the wider study area.
- 11.143 The field survey drew on Phase 1 methods, described in the Handbook for Phase 1 Habitat Survey (JNCC 1990). Habitat types were identified using standard definitions. Each habitat was then mapped and notes were taken on the plant species present. In addition, a record was made of any signs of notable/statutory protected species that were encountered during the survey.

11.144 The initial habitat identification survey identified the presence of the following habitats of notable/statutory protected species:

- Potential bat roosting habitat on trees on the boundary of the Airport; and
- Numerous rabbit holes/warrens and fox holes.

11.145 The Survey concluded that the Site is defined as being low ecological value regarding potential building bat roosts and for other mammals as it is considered that the wider landscape is a more favourable habitat.

11.146 The field survey also concluded that no habitats within the Airport boundary represented a suitable habitat for any protected plant and fungi species.

11.147 The nearest Special Area of Conservation and Site of Special Scientific Interest, (SSSI) is around 2km away from the Airport, the River Wensum. Other SSSIs have been identified, both ecological and geological, 5km from the Airport. Although these SSSIs are a good distance away from Norwich Airport, future major planning applications will, if appropriate, include an assessment of the likely impact on these areas.

11.148 The Airport has, therefore, been identified as being of limited ecological value. There is potential for the Airport's expansion to affect the areas of higher ecological value surrounding the Airport. However, any future planning application would be accompanied by an updated ecological assessment.

### Landscape Value

11.149 Norwich Airport recognises the importance and value of the landscape character in which the Airport is situated, demonstrated by the range of landscape and conservation designations throughout the Norfolk Broads, the surrounding countryside and Norwich City centre.

11.150 Due to operational and safety reasons, there is a limited amount of vegetation within Norwich Airport's boundary. Therefore, the Site is of low landscape value.

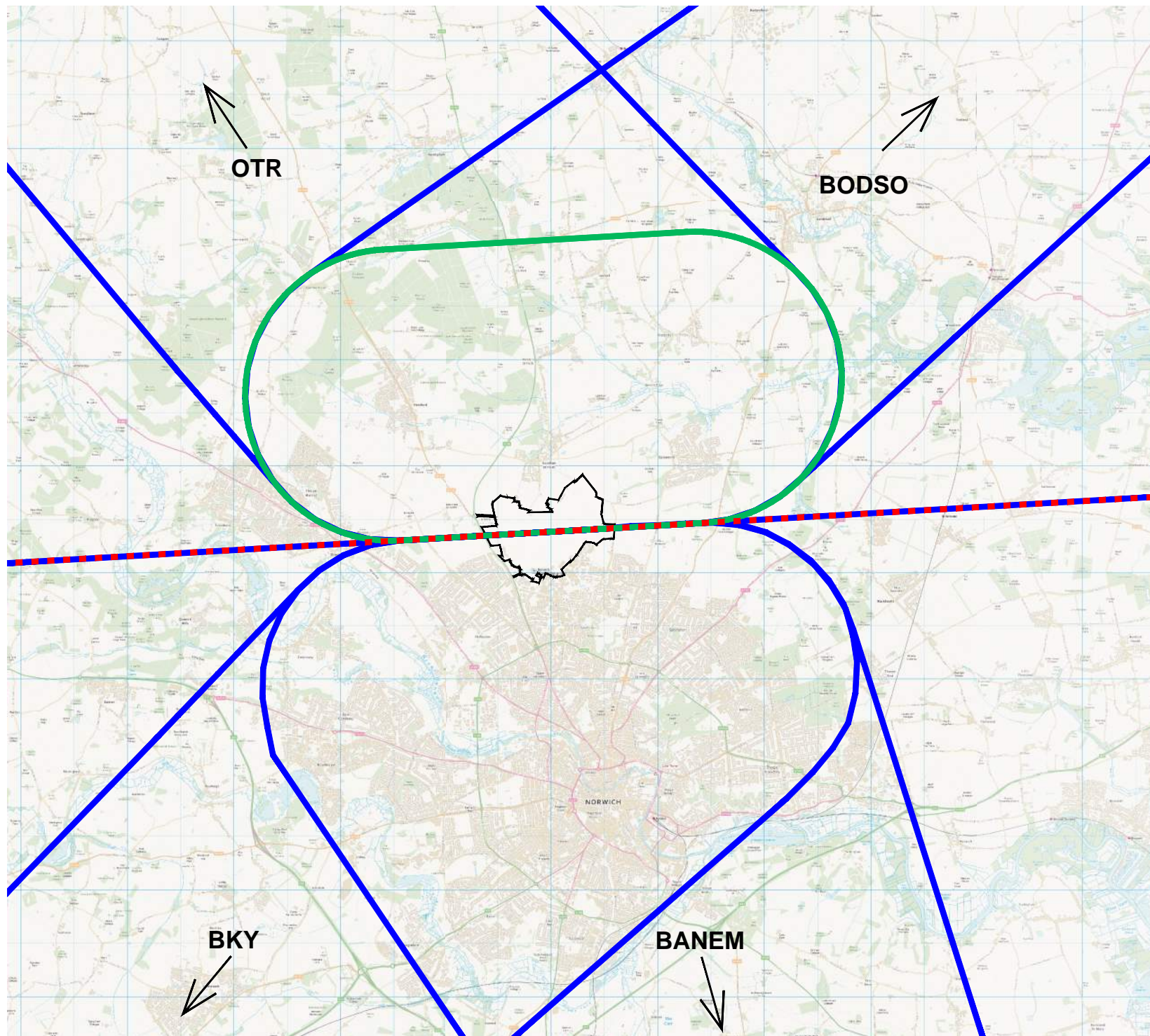
11.151 The northern and eastern boundary of the Airport also adjoins Spixworth's Landscape Character Area (E3), adopted in September 2013, which provides landscape planning guidelines for the area. However, the Assessment recognises that the Airport is "a major influence", prohibiting some types of landscaping.

- 11.152 The development options set out in the Masterplan are consistent with the existing airport landscape characteristics. Whilst the landscape character area will be influenced by the proposals, no key features will be lost as a result of the proposed developments.
- 11.153 Potential receptors of visual and light impacts associated with the Airport's ground operations have been identified to include nearby residential properties, commercial premises and adjacent roads. Whilst the predicted significance of these impacts is minor, landscape management can have a positive role in mitigating any negative effects. The Airport will seek to minimise these potential impacts through sensitive site layout, screening and lighting management, also taking into account the future impacts upon the significant developments that are planned for the sites surrounding the Airport. Future planning applications should make provision for screening of airport activities.

#### *Public Areas*

- 11.154 As an important transport gateway for both Norwich and Norfolk, Norwich Airport will ensure that the management of the Airport's external environment and appearance creates a positive customer experience and perception of both the Airport and surrounding area. Public spaces and facilities will be well maintained and designed to ensure good access and circulation through the site. Hard landscaping features such as paving, lighting and seating will be designed to ensure a compatible and co-ordinated approach, using local and natural materials wherever possible. The health and safety of all airport users and site security are imperative and these will be integral considerations in the future design and management of the Airport's working environment.





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#### LEGEND:

- Arrival Routes
- Departure Routes
- Circuit Routes
- Initial Departure Reporting Point
- NIA Operational Boundary

Project

## Norwich Airport Masterplan

Drawing Title

### Modelled Departure and Circuit Tracks Fixed Wing Aircraft

Date  
May 2017

Scale  
1:100000@A4



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Figure No  
11.1

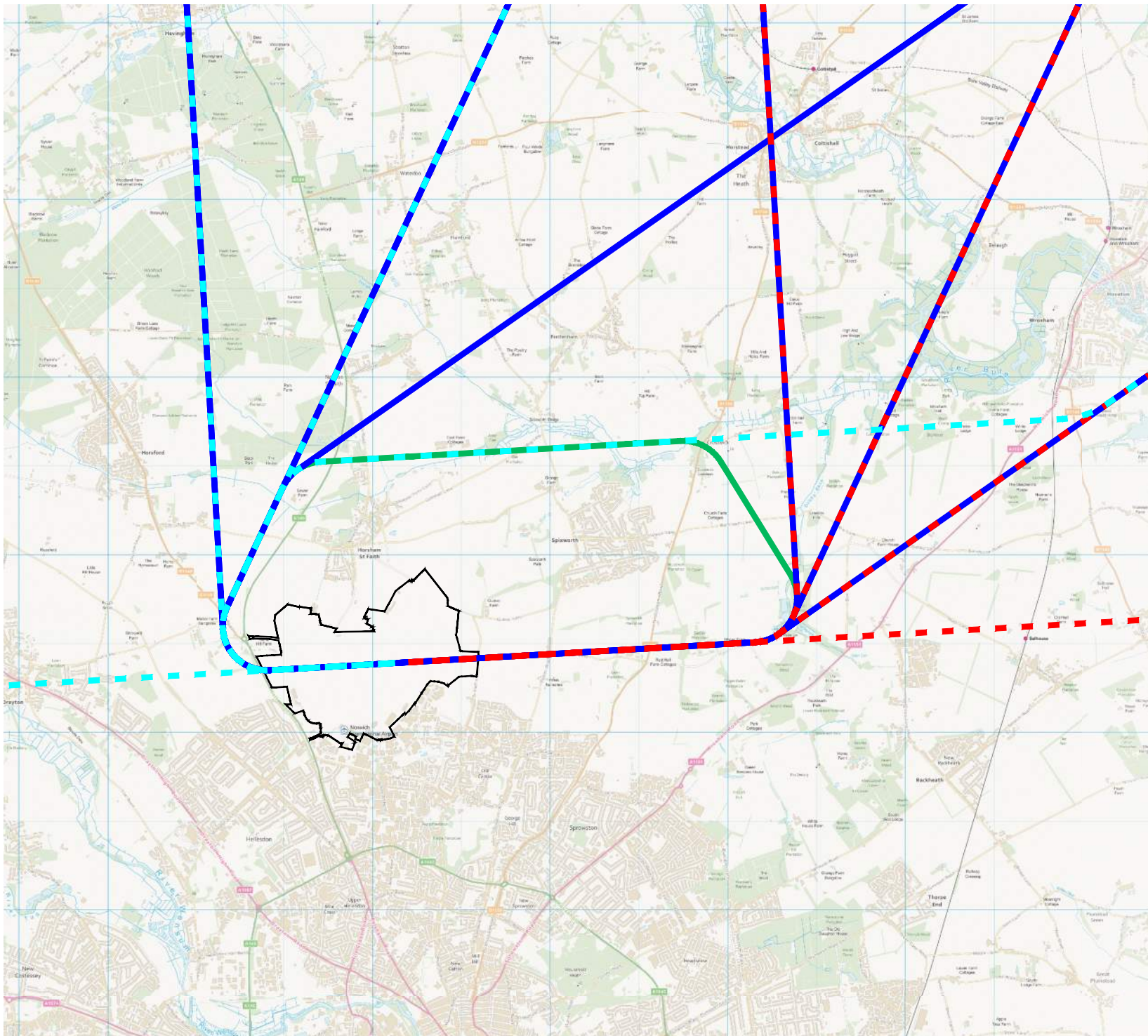
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 **Norwich Airport**  
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**LEGEND:**

- Arrival 09 Routes
- Arrival 27 Routes
- Departure Routes
- Circuit Routes
- NIA Operational Boundary

Project  
**Norwich Airport  
Masterplan**

Drawing Title  
**Modelled Departure  
and Circuit Tracks  
Helicopters**

Date May 2017 Scale 1:60000@A4

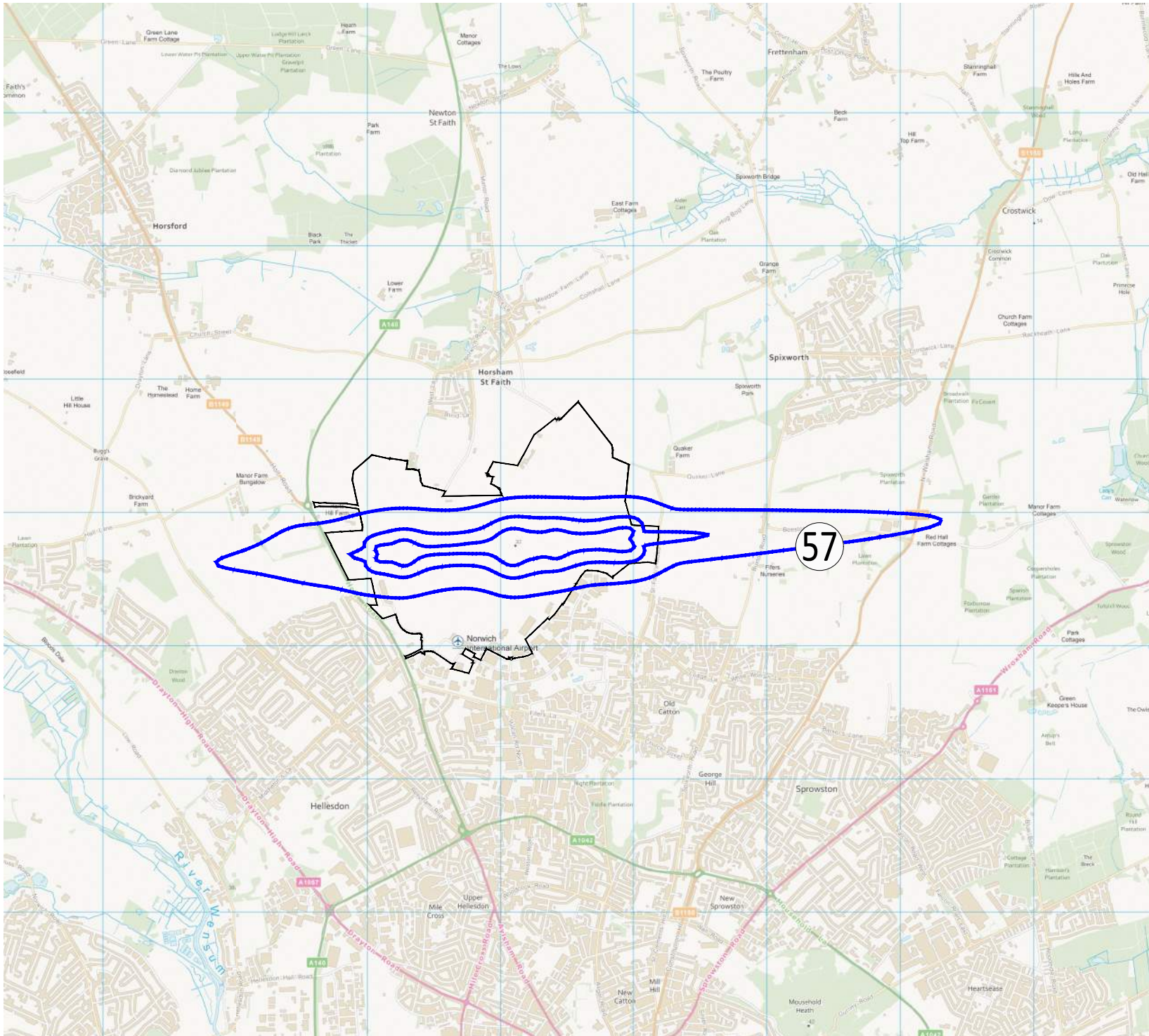


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#### LEGEND:

- Noise Contours,  
57 to 69 dB LAeq,16h in 6 dB steps
- NIA Operational Boundary

Project

## Norwich Airport Masterplan

Drawing Title

### Airborne Aircraft Noise Contours 2015 Actual Summer Day

Date  
May 2017

Scale  
1:40000@A4



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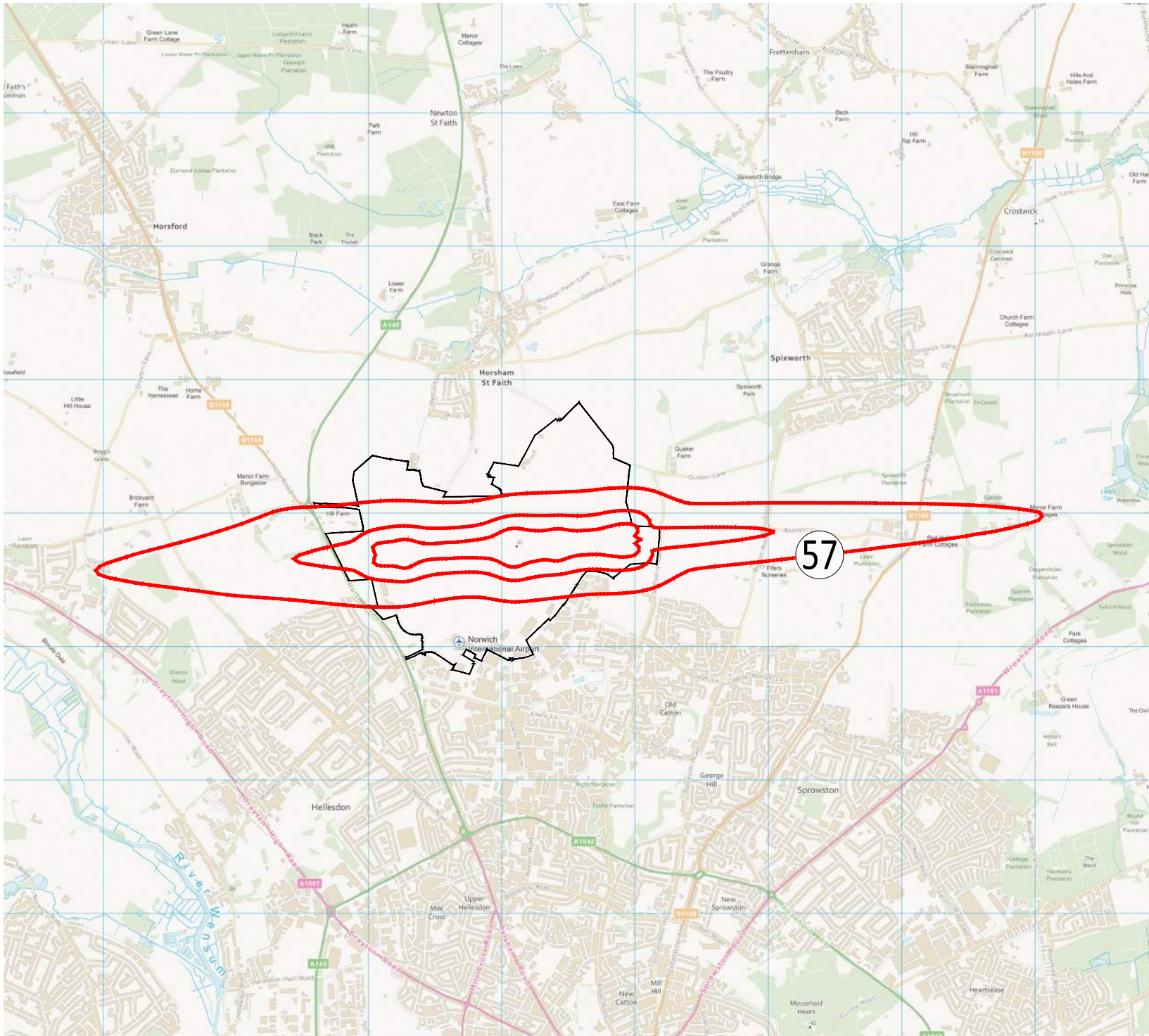
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#### LEGEND:

- Noise Contours,  
57 to 69 dB LAeq,16h in 6 dB steps
- NIA Operational Boundary

Project

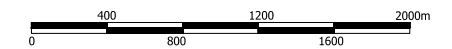
## Norwich Airport Masterplan

Drawing Title

### Airborne Aircraft Noise Contours 2030 Forecast Summer Day

Date  
May 2017

Scale  
1:40000@A4



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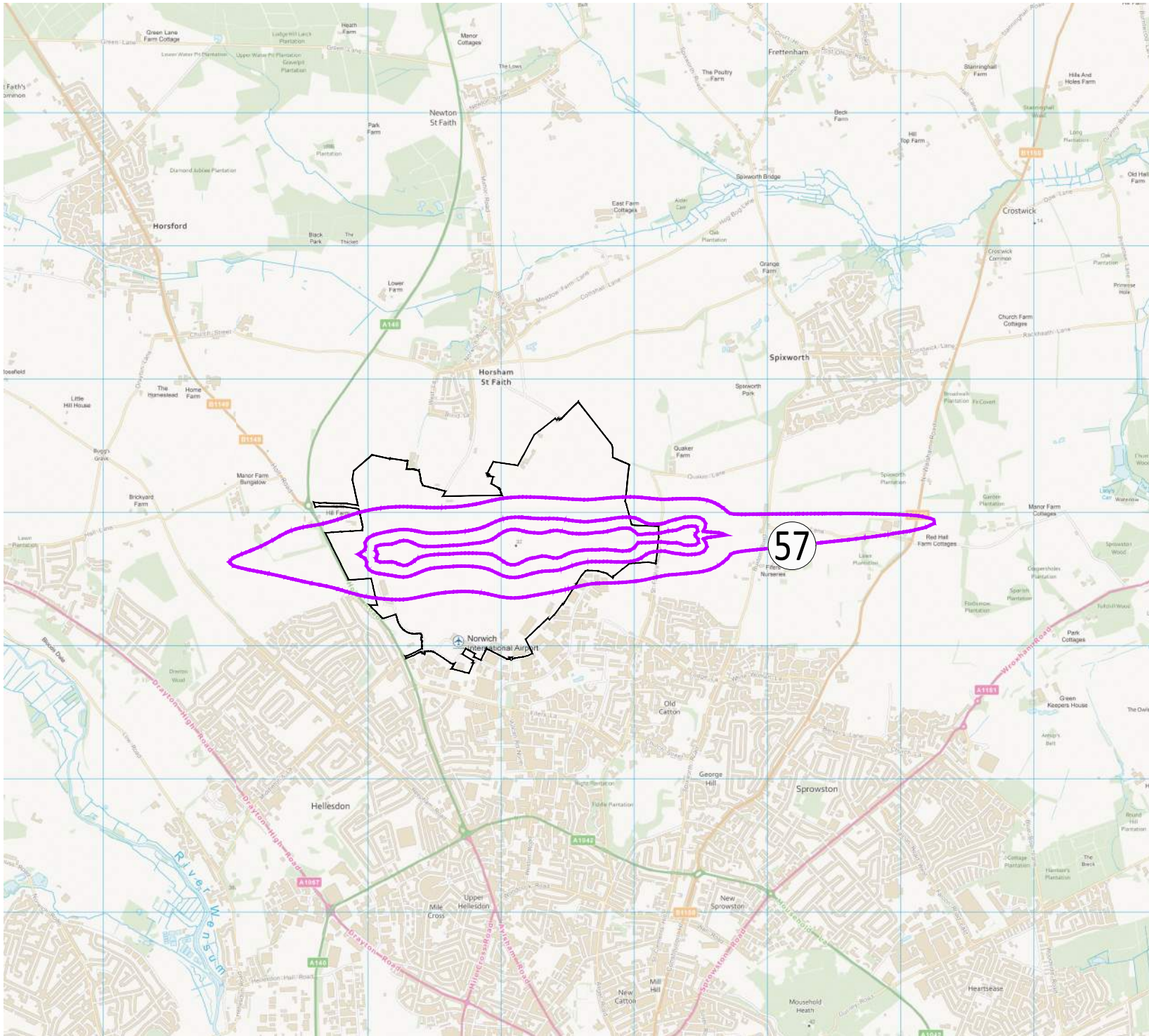
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#### LEGEND:

- Noise Contours,  
57 to 69 dB LAeq,16h in 6 dB steps
- NIA Operational Boundary

Project

## Norwich Airport Masterplan

Drawing Title

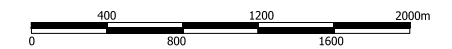
### Airborne Aircraft Noise Contours 2045 Forecast Summer Day

Date

May 2017

Scale

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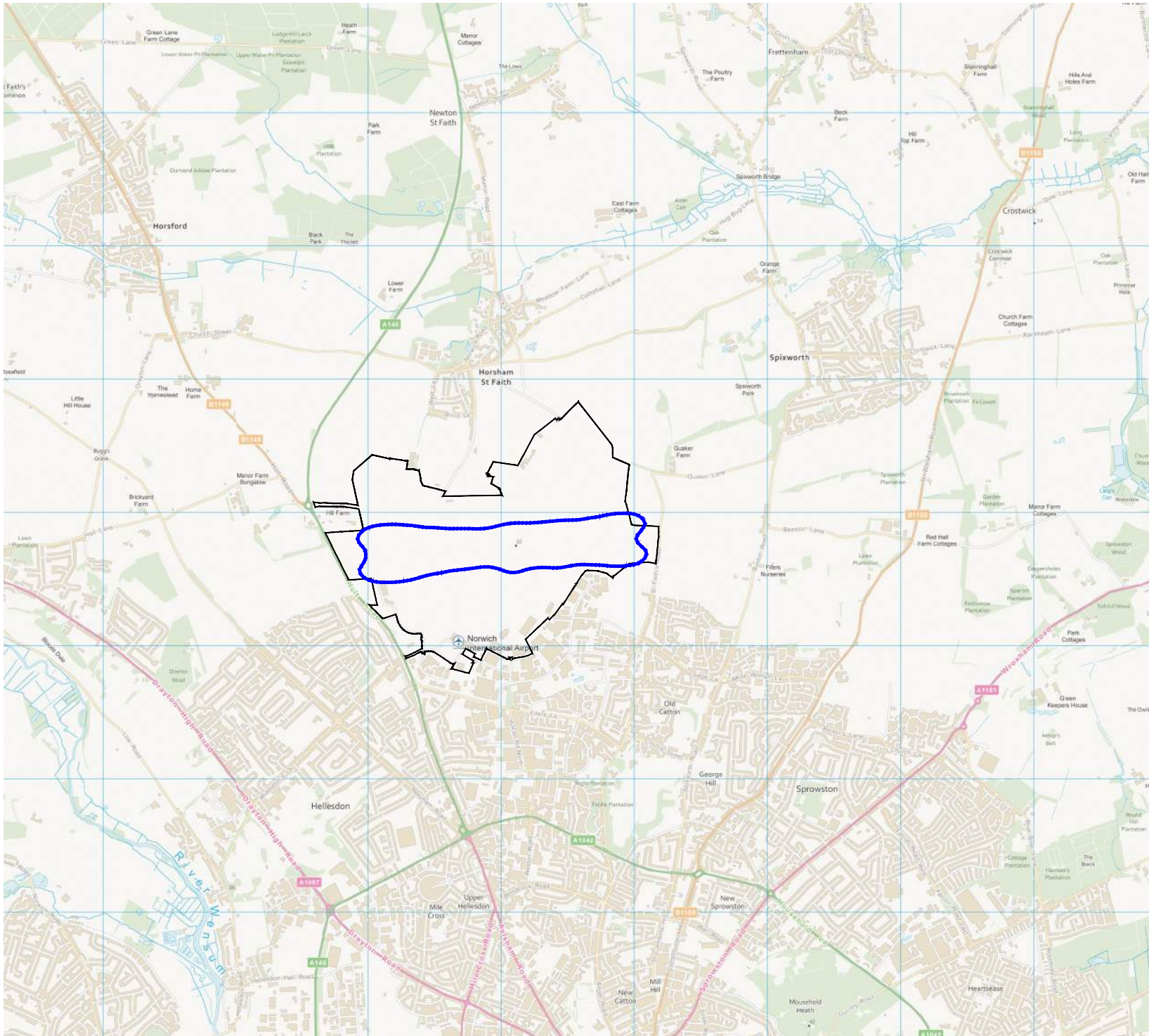
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#### LEGEND:

- 55 dB LAeq,8h Noise Contour
- NIA Operational Boundary

Project

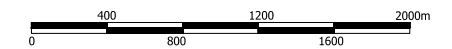
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Drawing Title

### Airborne Aircraft Noise Contours 2015 Actual Summer Night

Date  
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Scale  
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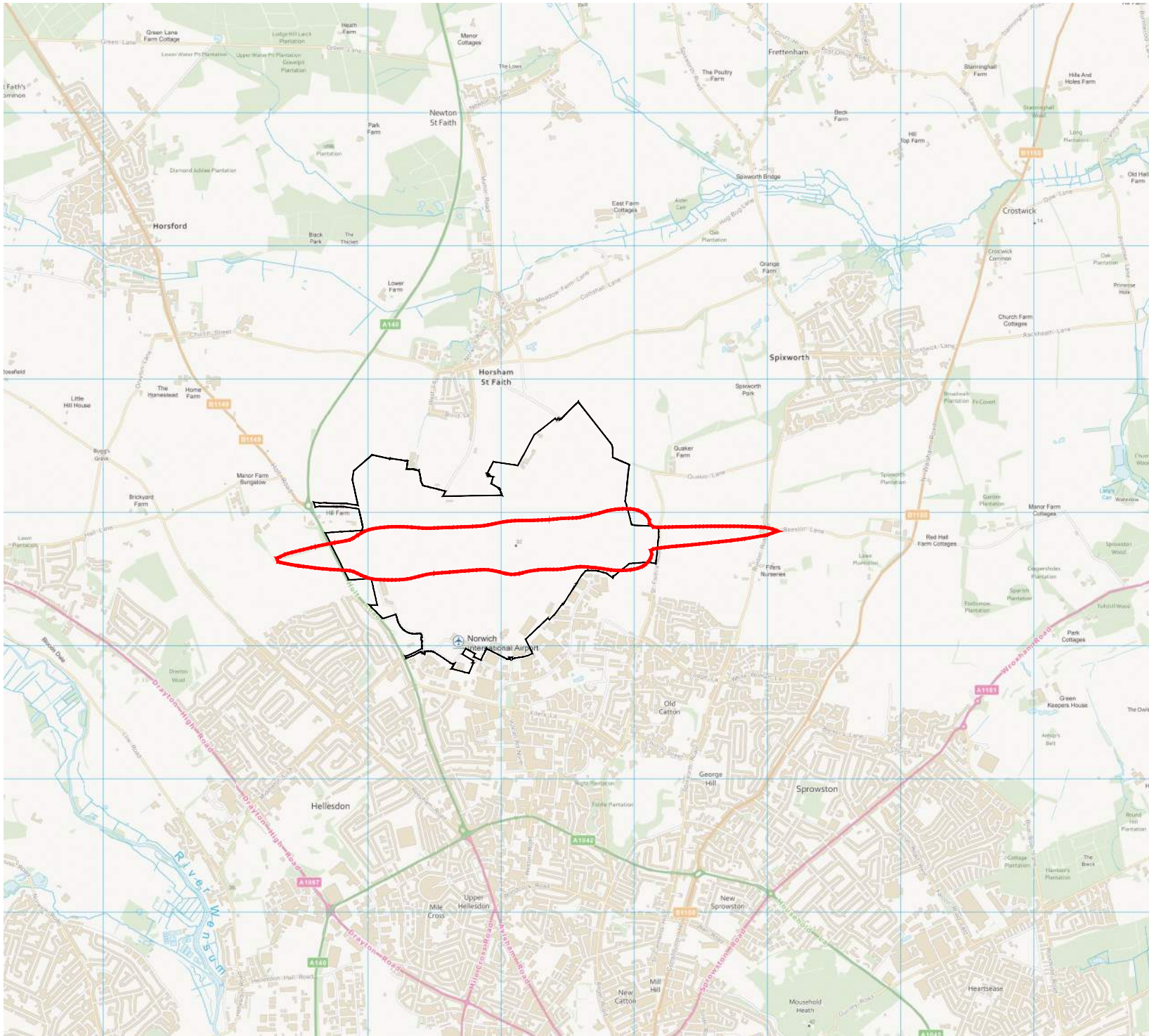
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Project No  
A11008

Drawing No  
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#### LEGEND:

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- NIA Operational Boundary

Project

## Norwich Airport Masterplan

Drawing Title

### Airborne Aircraft Noise Contours 2030 Forecast Summer Night

Date  
May 2017

Scale  
1:40000@A4



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DCH

Check by  
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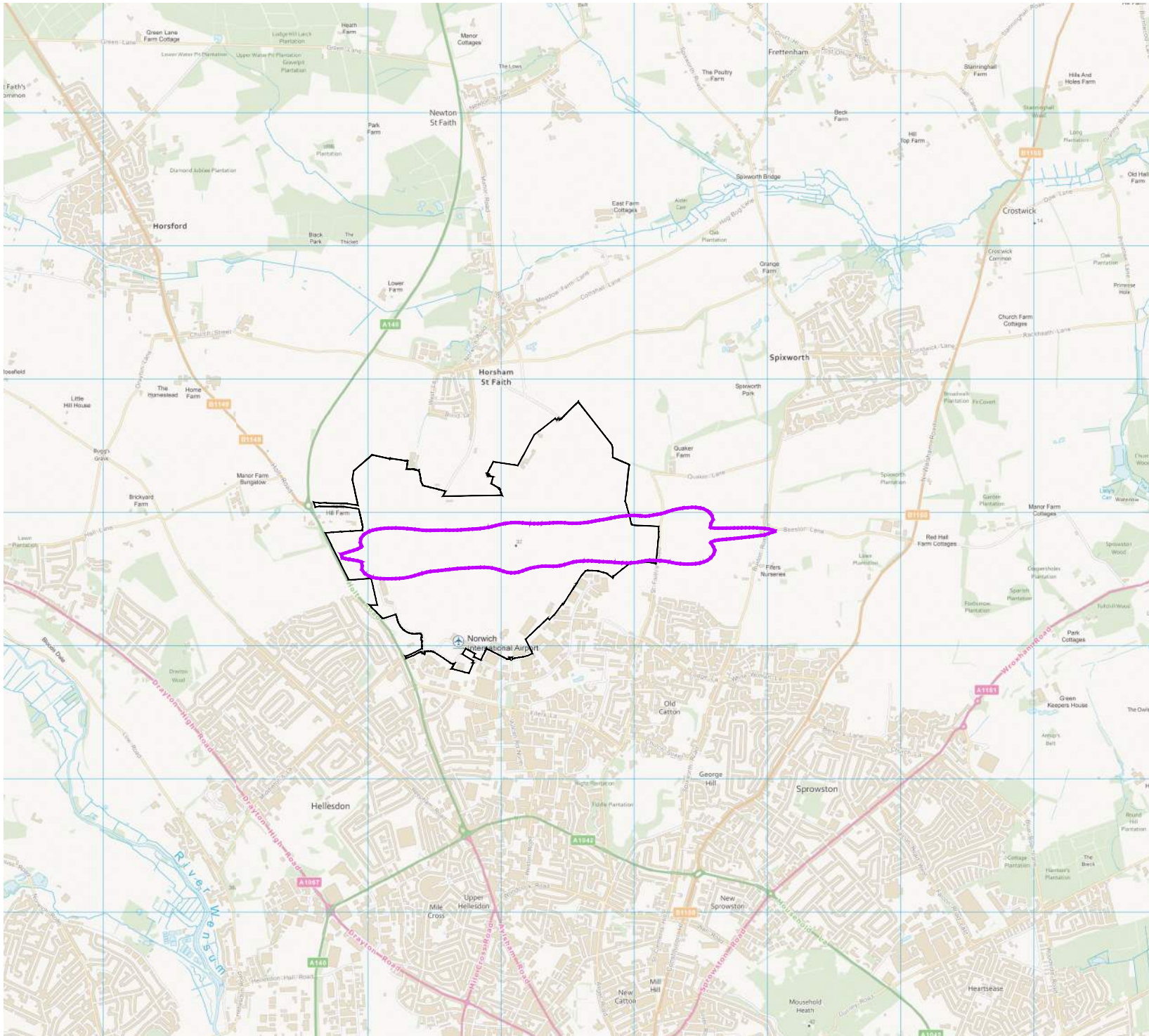
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#### LEGEND:

- 55 dB LAeq,8h Noise Contour
- NIA Operational Boundary

## Project

# Norwich Airport Masterplan

### Drawing Title

## Airborne Aircraft Noise Contours 2045 Forecast Summer Night

Date May 2017 Scale 1:40000@A4



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Figure No 11.8 Project No A11008 Drawing No DRAFT



## 12.0 Glossary

### **Air Taxi Movement**

The movement of an aircraft operating on a non-scheduled service.

### **Air Traffic Control**

Provided at an airport by ground-based controllers who direct aircraft on the ground and in the air.

### **Air Traffic Movement**

Landing or take-offs of aircraft engaged on the transport of passengers, cargo or mail on commercial terms. All scheduled movements, including those operated empty, loaded charter and air taxi movements are included.

### **Air Transport Movement**

See Air Traffic Movement

### **Aircraft Movement**

This is the departure and arrival of an aircraft at an airport. An aircraft that lands and takes off at an airport is classified as 2 (two) movements

### **Aircraft Stand**

Situated remotely or adjacent to the terminal building, stands are locations on an apron where day-to-day servicing activities are completed. This includes the enplaning and deplaning of passengers.

### **Airport Surface Access Strategy (ASAS)**

An ASAS should set out challenging short and long-term targets for increasing the proportion of journeys made to the Airport by public transport; the strategy including green transport plans for those who work at the Airport to achieve these targets, taking into account prospective growth at the Airport and background growth in traffic and a system whereby the Forum can oversee the implementation of the strategy.

### **Airside**

The area of the Airport restricted to the public and does not permit general access.



**Apron**

A defined area on the aerodrome provided for the stationing of aircraft for the embarkation of passengers, the loading and unloading of baggage and cargo and for parking.

**AVGAS**

Aviation gasoline.

**AVTUR**

This is aviation fuel used by aircraft with jet and turbine engines.

**BREEAM**

(BRE's Environmental Assessment Method) is the world's longest established and most widely used environmental assessment method for buildings. It sets the standards for best practice in sustainable development and demonstrates a level of achievement. It has become the de facto measure of a building's environmental performance.

**CACI Ltd**

A leading provider of marketing solutions and information systems.

**Conservation Area**

Designation given by the Local Authority in accordance with Planning Conservation and Listed Buildings Act, 1990 to areas of settlements, the character or appearance of which it is considered desirable to preserve and enhance.

**Development Plan**

A plan prepared by a Local Planning Authority to guide development and land use.

**Domestic Services**

Services that are flown entirely within the United Kingdom, Isle of Man and Channel Islands.

**Emission Trading Scheme**

An administrative approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants.

**Environmental Impact Assessment (EIA)**

EIA is an assessment of the likely positive and/or negative influence a project may have on the environment. They can be defined as the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of development proposals prior to major decisions being taken and commitments made. The purpose of the assessment is to ensure that decision-makers consider environmental impacts before deciding whether to proceed with new projects.

**Environmental Management Strategy**

The focus of environmental impacts and ways they can be minimised. The scope of the activities, resources or area that is to be improved environmentally varies considerably.

**General Aviation**

General Aviation refers to all flights excluding military and scheduled airline flights, both private and commercial. General Aviation flights range from gliders and powered parachutes to large, non-scheduled cargo jet flights.

**General Aviation Movements**

Commercial movements including Air-Taxis, positioning and local movements and all non-commercial movements including private aircraft operations and aero-club instructed flights.

**Greater Norwich**

Greater Norwich is an area that comprises Norwich City, Broadland District and South Norfolk Councils.

**Gross Value Added (GVA)**

GVA is a measure of the value of the goods and services produced in the economy, primarily used to monitor the performance of the national economy as well as the overall economic well-being of an area.

**Imperial Park**

This is an area of land (known as Site 4), approximately 40 hectares to the north east of the Airport. Envisaged as a modern aviation related business park, the Imperial Park will benefit from the development of the Norwich Northern Distributor Road

**International Aviation Academy – Norwich (IAA-N)**

This is new training centre conceived by KLM UK Engineering and Norwich Airport to meet the future engineering needs of KLM UK Engineering. This was opened on 24 April 2017 and provides courses that meet the needs of the airline and airport industries.

**Landside**

That area of the Airport where the public have general access

**Maintenance, Repair and Overhaul (MRO)**

MRO is the blanket term for all the services relating to assuring aircraft safety and airworthiness. MRO covers both scheduled maintenance to keep the aircraft airworthy on an ongoing basis as well as unscheduled maintenance due to damage, component and engine failures. It also includes mandatory modifications and upgrades to the cabin, systems and other components.

**Masterplan**

An important document created by UK airport operators to indicate how they propose to take forward the conclusions on the future development at their individual airports supported by the Aviation Framework, 2013. They will inform the local planning processes and enable local people, businesses and other stakeholders to be aware of the proposals.

**National Planning Policy Framework (NPPF)**

This sets out the Government's planning policies for England and how these are expected to be applied. It also provides a framework within which local people and their accountable councils can produce their own local and neighbourhood plans which reflect the needs of their communities

**Norwich Northern Distributor Road (NDR)**

The NDR is a proposed 14km dual carriageway, linking the A47 (to the east of Norwich) to the north-west of Norwich. The NDR will also have a junction connecting it to Norwich Airport.

**Planning Practice Guidance**

This is a web-based online resource that was introduced by the Coalition Government in 2014 to simplify the planning system and bring about better community involvement which is to be read in conjunction with the National Planning Policy Framework

**PMio**

Fine Particle Matter

**Scheduled Services**

Services performed in accordance with a published timetable

**Skills Pledge**

The Skills Pledge is a voluntary, public commitment by the leadership of a company or organisation to support all its employees to develop their basic skills, including literacy and numeracy, and work towards relevant, valuable qualifications to at least Level 2 (equivalent to five good GCSEs).

**Stand**

See Aircraft Stand

## Abbreviations

### AADT

Average Annual Daily Traffic

### AAP

Area Action Plan

### ACC

Airport Consultative Committee

### AGL

Aircraft Ground Lighting

### APU

Auxiliary Power Units

### AQMA

Air Quality Management Area

### ASAF

Airport Surface Access Forum

### ASAS

Airport Surface Access Strategy

### ASP

Aviation Skills Partnership

### ATC

Air Traffic Control

### ATZ

Air Traffic Zone

### BAC

Business Aviation Centre

### BAGA

Business and General Aviation

### BDC

Broadland District Council

### BEA

Business and Executive Aviation

### BID

Business Improvement District

### BREEAM

Building Research Establishment's  
Environmental Assessment Method

### CAA

Civil Aviation Authority

### CAGR

Compound Annual Growth Rates

### CEEQUAL

Civil Engineering Environmental Quality  
Assessment and Award Scheme

### CHP

Combined Heat and Power

### dB

Decibel

### DCLG

Department for Communities and Local  
Government

### DDA

Disability Discrimination Act

### DEFRA

Department of the Environment, Food and  
Rural Affairs

### DfT

Department for Transport

### EA

Environment Agency

### EASA

European Aviation Safety Agency

### FAS

Future Airspace Strategy

### FBO

Fixed Base Operation

### FRA

Flood Risk Assessment

### FSC

Forest Stewardship Council

### FTE

Full Time Equivalent

### GA

General Aviation

**GPDO**

General Permitted Development Order

**GPU**

Ground Power Unit

**GVA**

Gross Value Added

**GWP**

Global Warming Potential

**ha**

Hectares

**HGV**

Heavy Goods Vehicles

**HSE**

Health &amp; Safety Executive

**IAA-N**

International Aviation Academy – Norwich

**IATA**

International Air Transport Association

**ICAO**

International Civil Aviation Organisation

**IEEM**

Institute of Ecology &amp; Environmental Management

**ILS**

Instrument Landing System

**INM**

Integrated Noise Model

**ISO**

International Organisation for Standardisation

**JCS**

Joint Core Strategy

**KLMUKE**

KLM UK Engineering

**LAQM**

Local Air Quality Management

**LDF**

Local Development Framework

**LDS**

Local Development Scheme

**LPA**

Local Planning Authority

**LTP**

Local Transport Plan

**MARS**

Multiple Apron Ramp System Stands

**MOD**

Ministry of Defence

**MPPA**

Million Passengers Per Annum

**MRO**

Maintenances Repair Overhaul

**MT**

Motor Transport

**NA**

Norwich Airport

**NAIE**

Norwich Airport Industrial Estate

**NAL**

Norwich Airport Limited

**NAPAG**

Norwich Airport Passenger Action Group

**NCC**

Norwich City Council

**NCP**

National Car Parks

**NDR**

Norwich Northern Distributor Road

**Nm**

Nautical Mile

**NPPF**

National Planning Policy Framework

**NWI**

Norwich Airport

**ODP**

Ozone Depletion Potential

**P&R**

Park & Ride

**PIA**

Positive Infra-Red

**PPG**

Planning Practice Guidance

**PSZ**

Public Safety Zone

**RAF**

Royal Air Force

**RCA**

Regional & City Airports

**RESA**

Runway End Safety Areas

**RFFS**

Rescue and Fire Fighting Service

**RNAV**

Area Navigation

**SMEs**

Small and Medium Sized Enterprises

**SSSI**

Site of Special Scientific Interest

**TA**

Transport Assessment

**UEA**

University of East Anglia



# **APPENDIX 1**

## **Site 4 Objective Evidence Report**



**York Aviation**

---

**NORWICH AIRPORT**

**SITE 4 OBJECTIVE EVIDENCE REPORT**

**FINAL REPORT**

**August 2018**

---



**York Aviation**

**Originated by: Richard Connelly**

**Dated: 16<sup>th</sup> August 2018**

**Reviewed by: Louise Congdon**

**Dated: 16<sup>th</sup> August 2018**



**NORWICH AIRPORT**

**SITE 4 OBJECTIVE EVIDENCE REPORT**

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## 1 INTRODUCTION AND BACKGROUND

In February 2018, York Aviation (YAL) were commissioned by Rigby Group, as owners of Norwich Airport Ltd. to undertake a review of the aviation related requirement of Site 4 and supplemented this in May 2018 with further evidence and considerations following engagement with Norwich City Council. This report draws together the evidence base produced earlier into a single document.

- 1.1 Site 4 forms part of the Airport Operational Area and the planning consent allows for aviation related commercial development. The site is identified in the ongoing Greater Norwich Local Plan consultation as a potential development site.
- 1.2 This aim of this report is to provide the necessary evidence of the scale of land likely to be needed to support the long term growth of the commercial operations of the Airport, and to illustrate the need, or otherwise, for Site 4 in supporting other aviation related activities, such as business aviation, Maintenance, Repair & Overhaul (MRO), cargo and general aviation.
- 1.3 The draft Master Plan identified that Site 4 was not required for core aviation activity, however this was not clearly demonstrated by reference to the land that might need to be safeguarded for the longer term (beyond the forecast period to 2045) to ensure that the Airport can continue to support the full range of potential aviation uses. This report then fills this gap in the evidence as well as substantiating the long term potential scale of aviation related development that might realistically take place associated with an airport of the scale of Norwich, including over the longer term to 2090.
- 1.4 The demonstrative evidence we present is divided into two parts:
  - to provide evidence on the expected scale of the market for aviation related activities, particularly MRO and related activity as envisaged as the main aviation related users of the northern Site 4 in the original planning application;
  - to establish whether there is sufficient land within the remainder of the Airport site to accommodate these uses and consider the longer term potential development of commercial aviation at Norwich on the assumption that the majority of Site 4 is released for non-aviation uses.
- 1.5 This report is structured as follows:
  - in **Section 2**, we set out the **Long Term Passenger Demand** of the Airport;
  - in **Section 3**, we present our assessment of the **Market Potential** in the non-passenger aviation segments;
  - in **Section 4**, we outline the **Scope of Facilities** required to meet the long term needs of the Airport;



- ➔ In **Section 5**, we outline the case for **Enabling Development** which considers the deliverability of aviation activity on Site 4;
- ➔ in **Section 6**, we set out our **Conclusions**.

## 2 LONG TERM PASSENGER DEMAND

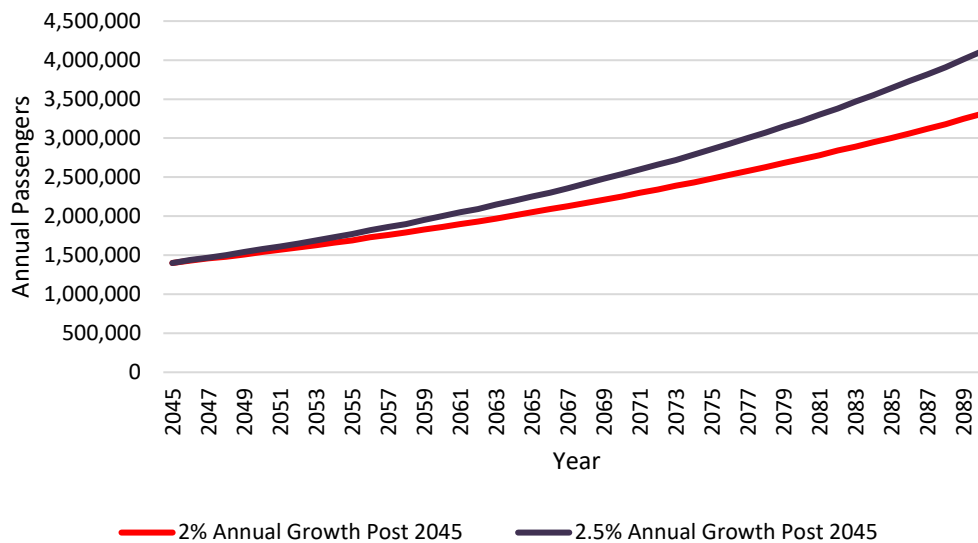
### Commercial Passenger Market

- 2.1 We have previously produced long term forecasts for Norwich Airport (NWI) to support the Draft 2017 Master Plan, covering the period to 2045. In considering the required infrastructure, we have not sought to develop detailed forecasts beyond 2045, but rather to apply simple metrics of growth to give a broad picture of when passengers demand may reach key milestone throughputs.
- 2.2 The Master Plan forecast shows the Airport reaching 1.4 million passengers per annum (mppa) by 2045, including around 80,000 passengers flying on offshore helicopters. This would place the Airport on a par with airports like Cardiff Wales and Doncaster Sheffield today.
- 2.3 From this starting point, we have run two scenarios for a further 45 year period to 2090:
- Applying a long term growth rate of 2% per annum to all non-offshore helicopter passengers; and
  - Applying a long term growth rate of 2.5% per annum to all non-offshore helicopter passengers.
- 2.4 In both cases, these growth rates exceed the long term average projected by the Department for Transport (DfT) which is 1.8% in the 2017 DfT Forecasts<sup>1</sup>. This may be expected however as a small airport such as NWI could be expected to clawback some market leakage as it grows and offers a wider range of services. However, importantly, by presenting growth rates above the DfT figures, we have sought to provide an upper bound projection to ensure that our assessment of the land required for commercial activities will provide for all eventualities over the longer term
- 2.5 In both cases, we have assumed offshore passengers would remain around 80,000 as explained below. The results can be seen in **Figure 2.1** overleaf but, in summary:
- At 2% annual growth – The Airport would reach 3mppa around 2085, and will not reach 3.5mppa even by 2090; and
  - At 2.5% annual growth – The Airport would reach 3mppa around 2077, 3.5mppa by 2084 and would reach 4mppa by 2089.

---

<sup>1</sup> UK Aviation Forecasts, October 2017, Department for Transport

**Figure 2.1: Long Term Passenger Projections**



*Source: York Aviation*

- 2.6 These are indicative figures only to provide an indication of a realistic long term potential for which land would need to be safeguarded for purely aviation relation uses. At the upper end of the scale, NWI would be comparable with Leeds/Bradford or London City airports today. We consider the infrastructure requirements and the timescales over which this may be required later in this report.

### **Offshore Market**

- 2.7 Based on the analysis undertaken as part of our Master Plan forecast, we believe that there is unlikely to be significant growth in the offshore helicopter market. We anticipate some switch from Gas to Windfarm usage, but the growth of the latter is likely to just act to offset the former's decline.
- 2.8 For this reason, we do not, at this time, believe there is a case for increasing the offshore helicopter passenger figures for 2045, and this is why they remain capped within the overall projections shown above. It must be noted however, that this is an assumption based on current thinking and that there could be changes in circumstances which could lead to further growth/decline.



### 3 MARKET POTENTIAL – NON-PASSENGER AVIATION MARKET

3.1 In this section, we consider the opportunities for other aviation related activities to be attracted to NWI over and above the requirements directly associated with handling passenger flights, albeit that the scale of such activities which could realistically be attracted will be related in large part to the scale of passenger related operations. It is these non-passenger related activities which could generate a need for aviation related facilities to be located in part of Site 4. In this section, we cover:

- Freight Demand
- Business & General Aviation
- Maintenance – MRO
- Airport City type developments

#### **Freight**

3.2 At present, there is a very small throughput of freight at NWI and we understand that this is associated with freight being taken to the offshore gas platforms and with parts being moved between the Netherlands and KLM UK Engineering as bellyhold freight on the scheduled KLM services. Although there is a freight shed, most of the freight going through this is handled by truck and will be handled as bonded freight on the trucks and taken for consolidation at larger airports in the UK.

3.3 We do not see any reason for this pattern to change or for any significant growth in freight at NWI. The Airport's location away from the main trunk motorway network means that it will be highly unattractive to freight airlines seeking access to the UK freight distribution network, located principally between London and the Midlands. The local market is unlikely to sustain pure freighter operations flights directly.

3.4 We would not anticipate any need for additional freight handling capacity on this basis.

#### **General and Business Aviation**

3.5 Currently there is a steady, though low scale general and business aviation market at NWI (excluding offshore helicopters). Across this sector the activity will largely be serving the local market, perhaps with some small number of trainee pilots choosing to come to NWI for the flying school. Both the business and general aviation sectors are dominated by the South East of England, with some growth at core cities such as Manchester, but NWI is not located to be able to capitalise on these markets.

- 3.6 There has been long term cost pressure on the general aviation market, resulting in some aspects of the sector remaining relatively flat or even declining over the last decade. However, developments in Microlight flying (which covers smaller aircraft now) has led to some regrowth in the sector which may benefit NWI, though the extent of this may be small in overall terms and certainly by nature would not require large areas of hangarage or apron due to the size of the aircraft in question.
- 3.7 Whilst larger airports in the UK continue to squeeze out these activities, it is unlikely that NWI will represent a viable alternative for operators to relocate because the nature of general and business aviation is that it should be in convenient locations to maximise the time benefits offered over alternative transport modes. As NWI is not close to any of the Airports which are pricing the sector out, then they will be unable to satisfy the relevant markets.
- 3.8 Flying schools in the UK have benefitted from growth in demand from overseas, particularly Asia, and the shortages of pilots more recently in Europe. However, overall the scale of flying school activity remains relatively flat due to the cost and weather benefits of training in other global locations, including Spain and the USA. Furthermore, any boost gained from lack of training facilities in Asia may be reversed as flying schools are established on the continent.
- 3.9 Given the limited size of the local market for general and business aviation and its relative remoteness from other markets, e.g. London, we would expect to see only modest growth in this sector over time driven by local demand. Given the levels of activity on the current general aviation apron, we believe that any growth over the medium term could be easily accommodated, and even over the longer term, only minimal expansion of the apron may be required, which would not require a relocation to Site 4.

### **Maintenance – MRO**

- 3.10 Norwich Airport is fairly unique among smaller regional airports in the UK in having substantial active aircraft maintenance facilities, provided by KLM UK Engineering (KLMUKE) and Air Livery (aircraft painting). The location of the KLMUKE facility at NWI is historic, resulting from the formation of Air UK in the 1980s out of Air Anglia, and the subsequent retention of the maintenance facility at NWI when KLM took over Air UK. This explains why NWI has MRO activity when larger regional airports such as Newcastle and Leeds have a very limited offer. The KLMUKE facility provides support not only for KLM and KLM Cityhopper fleets, but also undertakes third party work for other airlines and aircraft owners. The scale of the activity makes this attractive to Air Livery as a secondary activity in support of aircraft maintenance. As a result of the KLMUKE facility, there remains a strong pool of skills in the engineering sector at the Airport supported by the presence of the International Aviation Academy.

- 3.11 At present, there remains a buoyant aircraft maintenance market in the UK, supported by a combination of independent providers and in-house capabilities at the key airlines. However, for a number of years a large (and growing) part of the market has seen European airlines, including British Airways, easyJet and others, to send aircraft to Central Europe, the Middle East or further into Asia for heavy maintenance, driven by significantly lower labour costs which offset the costs of moving aircraft further afield for maintenance.
- 3.12 This has led to only limited growth in the UK market for heavy maintenance hangarage over recent years, with the most recent example being Monarch's hangar at Birmingham, although this came at the expense of the operator's Manchester facility which was subsequently closed as activity was consolidated into Birmingham. More recently, easyJet opened a new hangar at London Gatwick and this will be supplemented at the Airport by a new Boeing-operated hangar but, in both cases, these facilities are designed almost exclusively for line maintenance, and are only located at Gatwick because of the large based fleets which operate during the day and then go for routine maintenance through the night in the hangars. The same is true for the British Airways and Virgin Atlantic hangars at Gatwick and the Thomas Cook and Jet2 hangars at Manchester. This was also an influencing factor in the decision to locate the Monarch hangar at Birmingham, where value could be added in offering both line support and heavy maintenance in a single location. Such facilities could never be attracted to NWI because the based fleet of aircraft now, and in the future even at 4 mppa, would not be sufficient to require such line maintenance facilities over and above the capability of the KLMUKE hangar to provide required line maintenance support.
- 3.13 In considering the future potential for MRO in the UK, we have combined our industry knowledge with consultations with three key MRO providers in the UK, KLM UK Engineering, Chevron and Air Livery. Due to commercial sensitivities, the information provided by these companies has been aggregated, but it is worth noting that the picture painted by all three was consistent. There is some emerging evidence, however, that there will be some re-trenching of heavy maintenance back to Western Europe over the coming years driven by three factors:
- The rapid growth of airlines in Asia means that there will be increasing pressure on capacity there which may displace European carriers;
  - Retention of skilled staff in Central Europe is difficult as many will move to Western Europe on receiving their qualifications to earn a higher salary; and
  - Costs of sending airline staff to oversee maintenance are increasingly high and seen as offsetting cost benefits.
- 3.14 This may present some opportunities for NWI to grow in this sector, but these are unlikely to be widespread and are unlikely to require the whole of Site 4. NWI's strengths, which may make it attractive, include:
- Existing MRO cluster, which can generate synergies such as the shared use of ancillary facilities like the paint shop; and



skills shortages.

3.15 However, there are factors which will limit NWI's attractiveness, including:

- ➔ A preference by many operators to be located at bigger airports where there is significant line maintenance and ad-hoc repair demand to supplement any heavy maintenance, driven by based aircraft or those rotating through as part of their normal schedules;
- ➔ The current runway length remains restrictive to widebody aircraft and, hence, those MRO providers who want to offer flexibility on the aircraft sizes they maintain, such as Boeing or Chevron, will be unlikely to consider NWI without the extension. Flexibility to cover aircraft of all sizes is likely to be important to MRO providers. The Master Plan safeguards the option of such an extension, but it will be the passenger market that determines whether this is required, not the low number of movements associated with MRO;
- ➔ Although clusters have benefits as highlighted above, operators have highlighted to us that they do not like too much immediate competition around them. They try to differentiate on location, otherwise it leaves only price for differentiation, which can drive down returns. Whilst we would not expect the presence of KLMUKE at NWI to act as an impediment to all future MRO operators, it may limit the number that could be attracted to locate at the Airport and compete within the context of a relatively small local 'guaranteed' market and the limitations on the types of aircraft which could be maintained; and
- ➔ Having too many operators in a single location can drive up direct costs as salaries escalate in order to attract the same staff.

3.16 The scale of hangars which would be needed to support narrowbody maintenance would not be as large as they would if they needed to accommodate widebody aircraft, and hangars that are used for heavy maintenance, as opposed to line maintenance, can be smaller for the same number of aircraft because they will tend to stagger aircraft inside, rather than parking them directly side by side. As an example, the easyJet hangar at Gatwick, used for line maintenance, is 5,400m<sup>2</sup> and accommodates two narrowbody aircraft, but the Monarch building at Birmingham is around 10,200m<sup>2</sup>, but can handle up to five narrowbody aircraft despite not even being double the size of the easyJet hangar. We overlay the total land area used by the Monarch hangar at Birmingham (including hangar, offices, car park and apron) onto the NWI Site 4 in **Figure 3.1** overleaf below.

Figure 3.1: Overlay of Monarch Maintenance facility onto Site 4



Source: York Aviation, Google Earth

- 3.17 As can be seen, one of the largest new hangars (including associated apron and car parking) in the UK could be accommodated perhaps 8 times over on the whole of Site 4, generating capacity for 40+ narrowbody aircraft or 16 widebody aircraft. This is far beyond the scale of MRO seen anywhere in the UK and highly unlikely to be achievable in a single location, particularly one where there is little 'line' flying.
- 3.18 We consider a more detailed hangar layout scheme in **Section 4** of this report, but it is worth noting that the proposed reserved strip for aviation related used, as part of the Section 73 application, could potentially accommodate up to 3 such developments, delivering a greater floor area than the combined hangarage at Manchester Airport. To achieve this would require approximately 20% of the Site 4 area (46.5ha), and this is derived from work later in this report.
- 3.19 Furthermore, there will be intense competition for any new hangar developments in the UK, with airports such as Liverpool and Bristol already preserving land in their emerging Master Plans to attract these operations. In both of these cases, however, there is a recognition that the markets are unlikely to be large enough to fill all available land and so these are viewed as part of mixed-use development.
- 3.20 Given the previously identified strengths of NWI, it seems reasonable to preserve a suitable area of land to allow for some limited long term expansion in the MRO sector. However, on balance with the factors against NWI and the overall space available compared to the smaller areas given over to MRO at comparator airports, it would not be credible in our view to retain the whole of Site 4 for aviation related activity.

- 3.21 Over the longer term we have considered whether the land provision will be sufficient to protect the interests of the Airport and the City to 2090 in the MRO sector. Our view over this longer period remains consistent with the near term as the barriers to growth are unlikely to change at NWI. Given the issues around competition which were outlined by consultees, both for contracts and for labour, it would be credible to assume that these constraints will always remain a burden on NWI's ability to expand significantly in this market.
- 3.22 The growth trajectory to date at NWI for the key MRO provider, KLM UK Engineering (KLMUKE), perhaps illustrates the relatively slow rate of expansion which could continue. Leaving aside historic buildings which have variously been used for a variety of MRO and aviation-related activities over time, KLMUKE built a hangar of just under 3,500m<sup>2</sup> in 1989, and supplemented this ten years later with a hangar of 4,000m<sup>2</sup>. KLMUKE has only recently sought to increase capacity by adding a 2,500m<sup>2</sup> aircraft hangar and 1,440m<sup>2</sup> workshop (a total of 3,940m<sup>2</sup> of new floorspace) to its facilities. On average, KLMUKE has, therefore, sought to add a new building every 15 years, with each development averaging 3,800m<sup>2</sup>. Including the original building in 1989, KLMUKE has added a total of 11,440m<sup>2</sup> over 30 years at NWI, which is just marginally more than the 10,000m<sup>2</sup> of each individual building, of which we have shown that 3 could be accommodated on 20% of Site 4. Given that there remains space in the proximity of the current KLMUKE facilities to add further buildings of a similar size, then it is credible to assume that the operator would seek to grow in its existing cluster where possible. Hence, the existing south side area of the Airport provides sufficient land to support KLMUKE's likely growth for the next 15-30 years or more without needing to use part of Site 4. Furthermore, we would not envisage a strong desire to relocate out of existing buildings because of the high cost of hangar development compared to the returns attainable. We will consider this point in more detail later in this note.
- 3.23 This suggests that growth onto Site 4 is more likely to be driven by new operators, for whom the barriers of locating at NWI may be insurmountable. In considering the decision making process of these operators, it must be recognised that NWI will be in competition with other airports to attract this business that is not locationally tied to any specific airline's operations at a particular airport. Liverpool Airport's Master Plan<sup>2</sup> specifically allocates an employment area to the south of the Airport which could be made available for MRO facilities by 2050. Similarly, Bristol Airport has shown scope for hangar development in support of the MRO sector in all three schemes within its Master Plan consultation document<sup>3</sup>. If competing for MRO facilities in the UK, these two airports, along with others such as Newcastle and Leeds/Bradford, would offer operators a number of benefits, including:
- ➔ No immediate onsite competition from heavy maintenance operators, allowing a competitive advantage to be promoted, along with reduced competition for local labour;

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<sup>2</sup> <https://www.liverpoolairport.com/media/2957/liverpool-john-lennon-airport-master-plan-to-2050.pdf>

<sup>3</sup>

[https://static1.squarespace.com/static/59b6667ab7411c6d0214b1f3/t/5a09cee3085229359db1d1e7/1510592250040/Master+plan+2017\\_Small.pdf](https://static1.squarespace.com/static/59b6667ab7411c6d0214b1f3/t/5a09cee3085229359db1d1e7/1510592250040/Master+plan+2017_Small.pdf)



- Higher numbers of based aircraft allowing operators to offer a broader portfolio of services, as highlighted in our original report, such as supporting line flying and undertaking repairs on damaged aircraft in situ. Liverpool Airport expects to increase passenger throughput to close to 12million passengers per annum (mppa) by 2050, whilst Bristol expects to be handling around 19mppa by 2045. In both cases, this will require significant levels of based aircraft, which will be attractive to MRO providers;
- Strong skills clusters exist in both locations, providing synergies with workforces and training providers.

- 3.24 Across the UK, the pattern of growth in hangarage development away from the core London airports (which primarily supports line flying) has reflected the slow development seen at NWI. The last major hangar, the Monarch facility, opened in 2013, five years ago (and was accompanied by closing a facility at Manchester and consolidating to Birmingham). There have been small scale developments, such as the Flybe hangar at Newquay, but this was again to support line flying primarily. We have been able to identify one operator that may be interested in a large scale hangar away from London, but the delivery time on this is uncertain but could be delivered around 10 years after the Monarch facility opened. This clearly illustrates that the rate of growth, even with the positive growth factors in the UK market, remains steady. If a new hangar of 10,000m<sup>2</sup> was delivered on average every 15 years in the UK, then a total of five new hangars may be needed by 2090 across the UK. The allowance of 20% of land at NWI to accommodate some of this growth would be adequate to handle 60% of this growth and, given the constraints at NWI, this may be hard to achieve in practice.
- 3.25 It is also worth considering the impact of changes to other sectors at NWI over time. Whilst there may be some growth in demand for small hangars to support general and business aviation by 2090, this is likely to be offset by reduced demand for hangarage to support the offshore sector. Currently, all three helicopter operators at NWI retain significant hangar facilities. The Master Plan recognises that the sector is expected to contract as gas supplies are depleted. Furthermore, in the very short term, there is some risk that the entire UK offshore gas contract could be let to a single operator, and if this were to be the case, then there is a chance that some hangarage would be made available very soon at NWI. The scale of some of these hangars could be sufficient to handle a new MRO operator or an expanded KLMUKE demand over time.
- 3.26 Finally, the timescales over which firms may come to NWI are also uncertain. There could be near-term opportunities for a single hangar, but then it seems likely that future opportunities will be much further out as the Asian market fills and this could be 10-20 years or more away. This leaves some risk to the short term achievability of the near-term opportunity because it will be hard to commercially justify opening up Site 4 for a single building and operator. This leaves the very real risk that NWI will not be able to capitalise on this opportunity and it will go elsewhere. The loss of such an opportunity in the short term may reduce the benefits of the cluster in the long term when NWI seeks to compete for new operators in the future. We consider the Enabling Development case in relation to non-aviation uses in **Section 5**.

### Airport City Type Developments

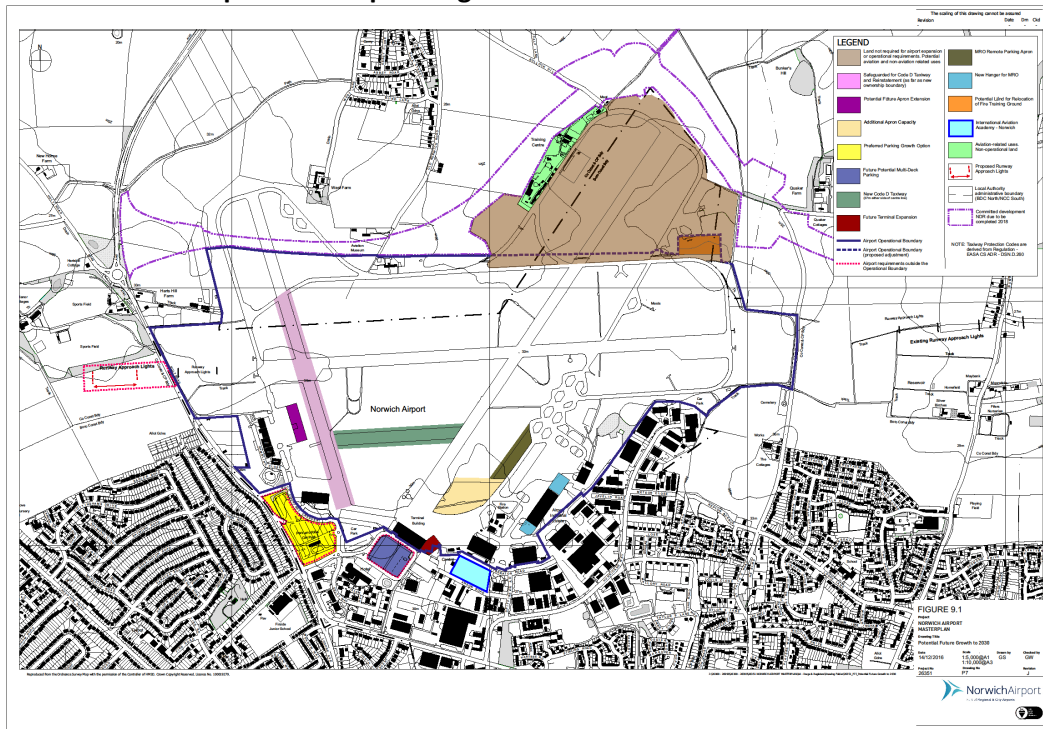
- 3.27 We understand that it has also been suggested that Norwich could attract other aviation related uses to this area, along the Manchester Airport City model. At Manchester, it is proposed to develop some 5 million ft<sup>2</sup> of offices, logistics, hotels and advanced manufacturing space over the next 10-15 years adjacent to the operational airport on two sites totalling some 52.6 hectares. This compares to the Site 4 of some 46.5 hectares. This development needs to be seen within the context of:
- ➔ the area's designation as part of an Enterprise Zone;
  - ➔ the relative scale of Manchester Airport which handled almost 28 mppa in 2017;
  - ➔ the proximity of the sites to the M56 motorway and major markets across the Liverpool/Manchester/Leeds corridor.
- 3.28 This zone does not include MRO type activity, which is located on a 9 hectare site within the operational part of the Airport. At present there are only three hangars used for MRO at Manchester, with a total floor area of approximately 28-29,000 m<sup>2</sup>, less than three times the size of the Monarch hangar at Birmingham. The Airport's Sustainable Development Plan 2016 proposes that this area is sufficient for MRO type activity as the airport grows, albeit that some of the older hangarage is likely to require redevelopment. This would suggest that the reservation for aviation development of approximately 20% of Site 4 should be more than sufficient to accommodate any reasonable aviation related activity at NWI given that this is in addition to the existing KLMUKE and Air Livery facilities
- 3.29 In terms of the uses being attracted to the Airport City site, these, in reality, have little direct connection with the operation of the Airport. Major logistics sheds have been attracted for Amazon and DHL and, whilst there is some connection to cargo activity at the Airport, the principal rationale for the location is proximity to the motorway. Similarly the attractiveness of the northern part of the site to office development is, at least in part, related to the direct rail and tram connections to the rest of Manchester. The scale of passenger activity at the Airport will be the principal driver of hotel requirements.
- 3.30 Overall, then, we do not believe that Manchester Airport City provides a relevant comparator for Site 4 at NWI and to the extent that comparisons are valid, the scale of areas reserved for different activities at Manchester strongly suggest that the principal uses which might be attracted to Site 4 are likely to be non-aviation related and that a reservation of 20% for directly aviation related uses would be more than sufficient even for the longer term.

## 4 SCOPE OF FACILITIES

### Norwich Airport Master Plan

- 4.1 The Draft 2017 Norwich Airport Masterplan sets out the strategy for the development of facilities to meet the requirements of the traffic forecasts for the two key plan periods to 2030 and from 2030 until 2045. The traffic forecasts for these periods are 0.93 mppa by 2030 and 1.4 mppa by 2045. We have commented earlier on these forecasts in the light of the recent traffic performance at NWI and would expect that growth of this magnitude over this timescale to remain a realistic prospect.
- 4.2 To meet the requirements of these traffic projections, the Masterplan sets out phased developments to provide targeted new and modified infrastructure including new taxiway, apron, terminal and car parking facilities.
- 4.3 It also provides for the ability of other airport operations such as MRO, General Aviation (GA) and the offshore rotary sector to develop, grow and adapt accordingly. It is in these market segments that could give rise to the need to use of part of Site 4 to the north of the runway. Earlier, we have commented on the growth prospects and potential of these other non-passenger commercial market segments and indicated the extent that each of these are expected to perform during the Masterplan periods to 2045 and beyond. We have, as a central component of this report, identified what the longer term prospects are for these sectors beyond 2045 and will return to this later in this section.
- 4.4 **Figure 4.1** overleaf reproduces Figure 9.1 from the Masterplan which sets out the 'Potential Future Growth' developments to 2030. These comprise a range of developments across the southern part of the site in support of apron and terminal growth for commercial passenger flights, apron development in support of MRO, GA and offshore and other rotary operations, car parking and hangar development.

Figure 4.1: Norwich Airport Masterplan: Figure 9.1 – Potential Future Growth to 2030

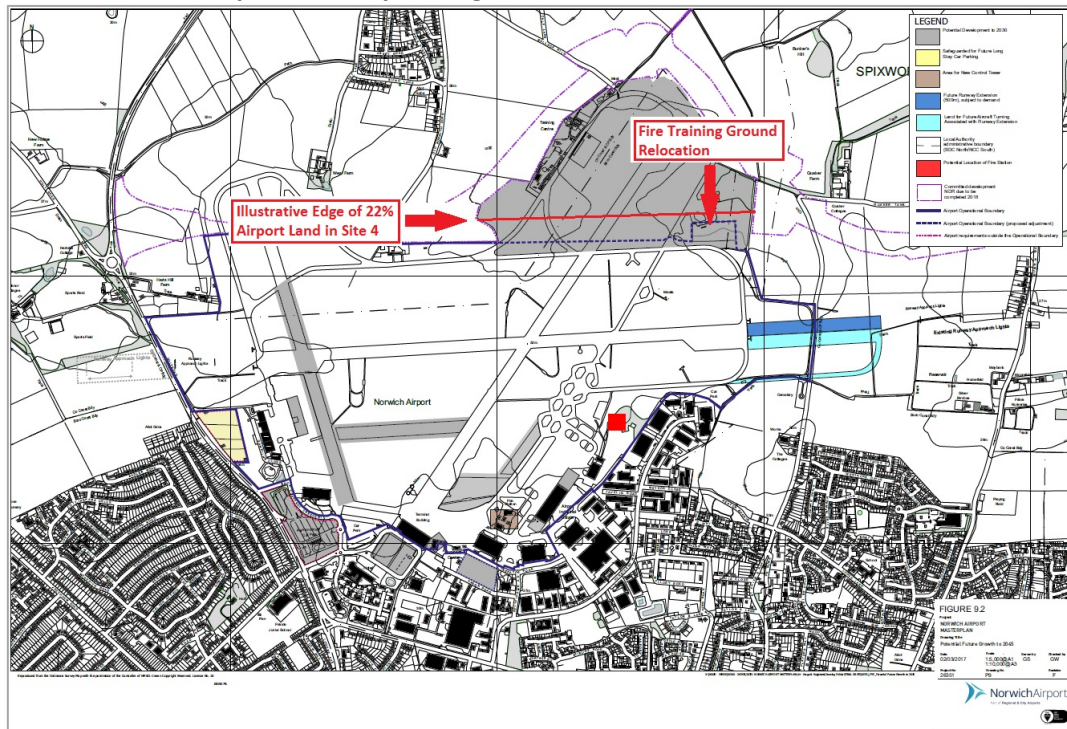


Source: Norwich Airport Draft Masterplan, July 2017

- 4.5 It also highlights the extent of Site 4 to the north of the runway including the relocation of the Fire Training Ground to the south east corner of this site.
- 4.6 There is also a proposed new Code D taxiway running east-west to the south of the runway that will facilitate improved ground circulation for the taxiing of aircraft.
- 4.7 What is noticeable from this plan is the extent of available and unused land airside between the runway and the terminal apron areas and between the east and west apron zones that support MRO, GA and the offshore sectors.
- 4.8 **Figure 4.2** overleaf goes on to reproduce Figure 9.2 from the Masterplan that sets out the 'Potential Future Growth' developments to 2045. As well as illustrating the proposals set out above to 2030, the additional developments include additional car parking, a new fire station and the safeguarding of a runway extension.



Figure 4.2: Norwich Airport Masterplan: Figure 9.2 – Potential Future Growth to 2045



Source: Norwich Airport Draft Masterplan, July 2017

- 4.9 The full extent of Site 4 to the north of the runway is illustrated in grey and we have highlighted the relocation of the Fire Training Ground from its original location in the north-west area of Site 4 to its new location to the south-east. This relocation will have taken place during the first plan period to 2030.
- 4.10 We have also highlighted a red line that runs east-west across Site 4. This provides an illustrative suitable strip for potential aviation-related hangar development with airside access. Preserving land for three hangars of the scale of the Monarch facility at Birmingham (and more than the MRO facilities at Manchester) and some ancillary activities, as considered later in this section, would require approximately 20%<sup>4</sup> of the area to be retained for this use, though in reality the demand may never need all of this area as previously highlighted.

#### **Possible MRO Scheme Layout and Land Allocation**

- 4.11 **Figure 4.3** overleaf illustrates the Option A 'Illustrative Masterplan' layout for Site 4 taken from the 'Imperial Park, Norwich Vision Document', October 2017. This depicts a range of airport related uses across the southern section of Site 4, the area highlighted in Figure 4.2.

<sup>4</sup> This excludes the area required for an emergency helicopter, fire training ground and the engine run bay.

Figure 4.3: Imperial Park Vision Document – Option A



Source: Norwich Airport

- 4.12 In this area we have highlighted the 'Engine Run Up Bay', recently constructed by the airport that will remain in this location long term. To its east is the relocated Fire Training Ground. To the west of this area is a potential new location for an emergency helicopter operation, though we understand that the location of this facility is continuing to be reviewed across the whole airport site. In between these facilities, the Option A layout illustrates a row of hangars and apron.
- 4.13 In determining the land required, we have looked independently at the need for MRO and non-commercial aviation activity at NWI. However we are aware that the Airport and NCC, as part of the Master Plan proposals, have held discussions over the allocation of land, and that the Airport had suggested 20% of the land could be allocated for directly aviation related uses.

- 4.14 The approach taken was firstly to look at the potential need for aviation activities over time, as highlighted in Section 2, and then to consider how the whole airport site could best be used to meet its own operational needs and also the needs of third party operators on site, including the current maintenance providers, and their likely desire to retain a cluster around their existing facilities, this is considered in more detail later in this Section. As highlighted earlier in this report, we believe there would be limited scope for growth of general & business aviation and cargo at NWI, even over the longer term, and that the space available to the southern side of the site, where such activities are already clustered, would be adequate to allow for any underlying growth.
- 4.15 This leaves the MRO sector which, as highlighted previously, is hard to forecast over any realistic timeframe both due to its very nature, with growth being somewhat ad-hoc at individual airports, and as a result of the uncertainties around external factors which could drive growth in the UK to a greater or lesser extent. As highlighted earlier in this report, our consideration of required land was driven by three factors:
- Growth may be driven by existing operators who would likely be able/prefer to expand in-situ on the south of the site; and
  - Whilst there are factors which may make NWI attractive for consideration by new MRO providers, we have found that in general there is a reluctance for multiple providers to cluster widely and this may prevent large scale growth in the sector at NWI given the existing strong presence of KLM; and
  - A number of key UK airports, even those which do not currently have a presence in this market, are allocating land within their emerging Master Plans for MRO/Aerospace development, increasing competition for a limited number of ad-hoc opportunities which may arise.
- 4.16 In considering the scope of land required, we considered how much space would need to be retained to allow for a significant provision of hangarage to accommodate growth in such activities. We have deliberately examined the scope of land required for more hangarage than might ever, in practice, be delivered in light of the factors identified. We considered the scale of land required by the most recent large hangar built in the UK, which is far larger than any individual hangar at NWI presently, and broadly determined how much land would be needed to accommodate a cluster of such buildings.

- 4.17 We believe that the area between the engine test bay and the air ambulance facility would be adequate to accommodate three very large hangars, all of which would be capable of handling widebody aircraft in circumstances where a runway extension would allow a broader range of aircraft to be maintained at NWI. We have developed an illustrative scheme for this, though it must be recognised that this scheme is only illustrative however to show the scale of land available. If NWI could attract MRO operators onto the site then the actual scheme would need to be proposed at that time as it would depend on the individual needs of the operator. This could involve smaller hangars in different locations along the strip. Given the high costs of development, as highlighted above, it would be unwise for the Airport to make firm suggestions as to the scale of development at this time because this could lead to an overprovision of facilities that would be unlikely to be funded, in turn preventing the opportunity from being realised.
- 4.18 **Figure 4.4** overleaf illustrates a potential scheme layout for three hangars of 10,000m<sup>2</sup> each, totalling 30,000m<sup>2</sup>. We have assumed that the apron and associated taxiway would be accommodated within the main airport site, but clear of the runway strip. Aircraft (including widebody aircraft such as Airbus A350s and Boeing-787s) could be parked safely on the apron without exceeding the heights permitted within the runway safeguarded area. The building heights would be sufficient to allow widebody aircraft to be accommodated.
- 4.19 To ensure adequate provision is made for apron and car parking, we illustrate the same size apron and car park for each hangar as seen at the comparable Monarch hangar at Birmingham. The hangar locations in relation to each other allow for sliding doors to be opened and the 25m separation between hangars is based on examples seen elsewhere in the UK.
- 4.20 Hangars typically require just one large door for access as aircraft tend to remain in the buildings for longer periods of time, so do not need the flexibility to be moved daily in or out. This is the standard configuration for large MRO buildings. This also provides direct, non-airside, access for employees and supplies. For this reason, the strip of land running parallel to the runway is the most logical in our view as it will allow the maximisation of airside and non-airside access without creating wasteful cul de sacs of taxiway.





*Source: York Aviation*

- 4.21 The depth of each building, along with the associated landside car park and supporting utilities generate a boundary line on Site 4 which equates to 20% of the land available. This excludes the areas highlighted previously for an emergency helicopter operation, engine run bay and fire training ground. The apron to support these activities could be contained within the current airport operational area, outside of Site 4.
- 4.22 As highlighted earlier, the potential for additional MRO and other hangar related airport uses at NWI, in addition to that which can be accommodated on land to the south of the runway, is uncertain and likely only over the very long term, in spite of the potential gravitation back towards Western Europe of European based MRO from Asia and other regions. Competition from other UK airports for new UK based MRO will be high. We believe that the 20% of Site 4 available for potential MRO serves very much as a 'back stop' in the event that overall MRO, GA, Flying School, etc., activity at NWI outgrows the available land to the south of the runway and in reality this northern allowance is likely to be more hangarage than NWI could realistically expect to deliver over the longer term, particularly if existing operators choose to cluster on the south of the site.. As can be seen in Figure 4.4, even with three large hangars, there would be space for additional ancillary aviation activity in this area if required.

### ***Comparison with Previous Constraints***

4.23 As discussed at the meeting, YAL were not involved with the previously proposed Aeropark scheme, which determined the previously proposed use of Site 4. We recognise that the desire was to develop 95,035m<sup>2</sup> of hangarage, with Air Livery as the anchor development and, as such, the scheme was considered too large overall to fit on the south side of the airport site due to constraints. Whilst these constraints continue to apply, it appears that two key aspects have changed:

- ➔ Provision needed to be made for a single hangar for Air Livery which would have been long and thin, with bays located side by side as required by paint shops. Since that time, Air Livery has chosen to build individual bays in hangars across Europe to be closer to the demand from MRO providers. Therefore, the unusual nature of this building is unlikely to be replicated (we are not aware of any similar multi-bay paint shop in the UK) and, therefore, the more standalone type hangars for this purpose could be developed in pockets of available land to the south side if required;
- ➔ Provision was made to reserve the ability to have all buildings at a height of 35metres. The latest KLMUKE application has a building height of 17.7m and so can be located well inside the runway safeguarding area in which building heights can increase by 1 metre for every 7 metres away from the edge of the runway strip. Our assessment of demand suggests that there could be a need for smaller hangars, not requiring 35m of height and, therefore, these can be accommodated in the area that was not available under the Aeropark proposal.

4.24 Crucially, we have taken into account all operational constraints in our analysis of capacity and our assessment (to follow) of possible layouts for hangar development on Site 4. The scheme would allow full visibility from the control tower although, in circumstances where this was not the case, CCTV could be used to allow the towers to see any restricted areas. This is common practice in the UK, and now even extends to CCTV being used to develop remote towers which are not even located at the Airport<sup>5</sup>.

### **Growth Beyond 2045**

4.25 We next consider how much land NWI might need to accommodate growth above 1.4 mppa in the very long term beyond 2045. In doing this we have considered three growth thresholds, 3.0 mppa (approximately twice the 2045 1.4 mppa traffic forecast) along with a 3.5 mppa and 4.0 mppa throughput based upon growth trends of 2% and 2.5% per year seen in Section 2. Based on these growth rates, the throughput of 3.0 mppa may be reached between 2077 and 2085 and the 3.5 mppa reached from 2084 to 2090, depending on the rate of growth, and 4.0 mppa being reached in 2089 based upon a growth rate of 2.5%. These are all a long way out in the latter parts of this century.

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<sup>5</sup> <http://www.bbc.co.uk/news/uk-39960993> and <https://www.internationalairportreview.com/news/63979/highlands-invest-remote-tower-tech/>

- 4.26 Earlier in this section, in relation to Figure 4.1 and the proposals to 2030, we commented on the apparent extent of available and unused land airside between the runway and the terminal apron areas and between the east and west apron zones that support MRO, GA and the offshore sectors.
- 4.27 Our approach to gauge whether NWI will have sufficient land to the south of the runway, along with the 20% of Site 4, is to benchmark how much land is used to support operations at a selection of other UK airports that have a throughput in the 2.0 to 4.5 mppa range and compare this with the size of NWI. The airports selected are Aberdeen, Belfast City, Leeds Bradford and Southampton.
- 4.28 The areas we have measured are approximate and for consistency have used 'Google Earth' as a basis for the area measurements. The figures are set out in the **Table 4.1** below and we have divided the areas for the four benchmark airports in to three categories:
- ➔ total site area excluding the runway and associated 300m wide runway strip;
  - ➔ area of apron and taxiway used for commercial aircraft parking; and
  - ➔ the area occupied by the terminal, forecourt, access roads and car parking.
- 4.29 The comparator for NWI in this table has been obtained using a CAD drawing file with the same categories of area, except the area of apron and taxiway is the potential available area between the terminal and the runway strip and, thus, includes the apparent available undeveloped area described earlier as a potential expansion zone for such activities. As a cross check, we have also measured the total site area for NWI south of the runway strip in 'Google Earth' and derived a figure of 804,000 m<sup>2</sup>, a very close match to the more accurate measurement of 807,000 m<sup>2</sup> in CAD. This then provides reasonable confidence that the areas measured for the benchmark airports using 'Google Earth' are sufficiently accurate to make comparisons.
- 4.30 Table 4.1 also combines the total area of the 'Terminal, Forecourt, Access Roads and Car Parking' with the 'Commercial Apron and Taxiway' in the right hand column.

**Table 4.1: Benchmark Airport Site Areas (m<sup>2</sup>)**

<b>Airport</b>	<b>Mppa (2016)*</b>	<b>Total Site Area</b>	<b>Commercial Apron and Taxiway Site Area</b>	<b>Terminal, Forecourt, Access Roads and Car Parking Site Area</b>	<b>Combined Apron and Terminal Totals</b>
Aberdeen	3	575,000	97,500	103,000	200,500
Belfast City	2.7	187,000***	50,000	137,000	187,000
Leeds Bradford	3.6	454,000	165,000	147,000	312,000
Southampton	2	305,000	54,000	91,000	145,000
Norwich	0.5	807,000	191,000**	111,000	302,000
Notes: *CAA Airport Statistics 2016 **Potential available land at NWI between terminal and Runway Strip ***Excludes extensive site of Bombardier Aerospace complex which has no airside connection					

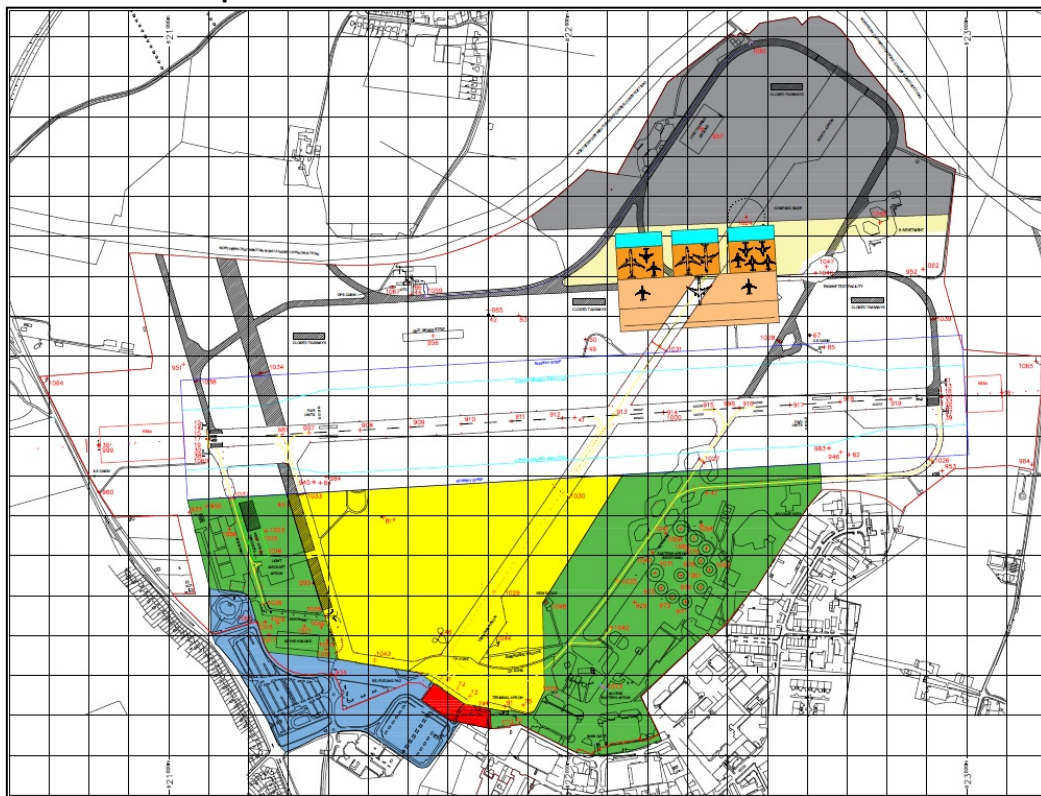
Source: York Aviation, CAA Statistics, Google Earth

- 4.31 Importantly it should be noted that the NWI total site area is only for land south of the 300m runway strip and then excludes any of the Site 4 land.
- 4.32 What is striking, is how large the NWI site is at 807,000m<sup>2</sup> compared to the other airports. Aberdeen with its significantly larger offshore rotary and fixed wing operation, the associated MRO and a commercial passenger throughput of 3.0 mppa is smaller at 575,000m<sup>2</sup>. Leeds/Bradford, at 410,000m<sup>2</sup>, is around half the size of NWI with a throughput of 3.6 mppa, although it does not have a significant MRO operation.
- 4.33 Belfast City Airport has, for the commercial operations, an area only at 187,000m<sup>2</sup> - it is a very compact airport. On the opposite side of the runway is the extensive Bombardier Aerospace complex covering an area of 770,000m<sup>2</sup>. Whilst some of this is adjacent to the Airport, the level of access is limited these days and the vast majority of it is landside. We have excluded this from the benchmarking as the scale and nature of this operation is unique at a British commercial airport. The Southampton Airport site at 305,000m<sup>2</sup> is split between two compact areas for commercial and other activity including GA.
- 4.34 The NWI combined area of 302,000m<sup>2</sup> comprising the 191,000m<sup>2</sup> of potential airside area and the 111,000m<sup>2</sup> of the terminal, car parking and forecourt zones is very similar to the combined 312,000m<sup>2</sup> at Leeds Bradford Airport, which handles 4.5 mppa and has plans to grow to 6.4 mppa by 2030. We understand that Leeds Bradford anticipate being able to handle in the region of at least 5 mppa through their site without the need to encroach too much on to land used by non-passenger related activities. There may be a requirement to relocate some car parking activity onto new sites outside the current airport boundary.



- 4.35 This would suggest that the 302,000m<sup>2</sup> of available space for passenger related and other operations at NWI could support of 4 mppa. This area excludes the use of any part of Site 4 reserved for aviation related uses which would be available in addition to support growth in the other market sectors such as offshore rotary, GA, Air Taxi, Air Ambulance, MRO, Flying school etc. to the extent required
- 4.36 Figure 4.5 illustrates, through shaded areas, the key zones of the operation or activity, including Site 4 to the north.

**Figure 4.5: Norwich Airport Site Block Plan**



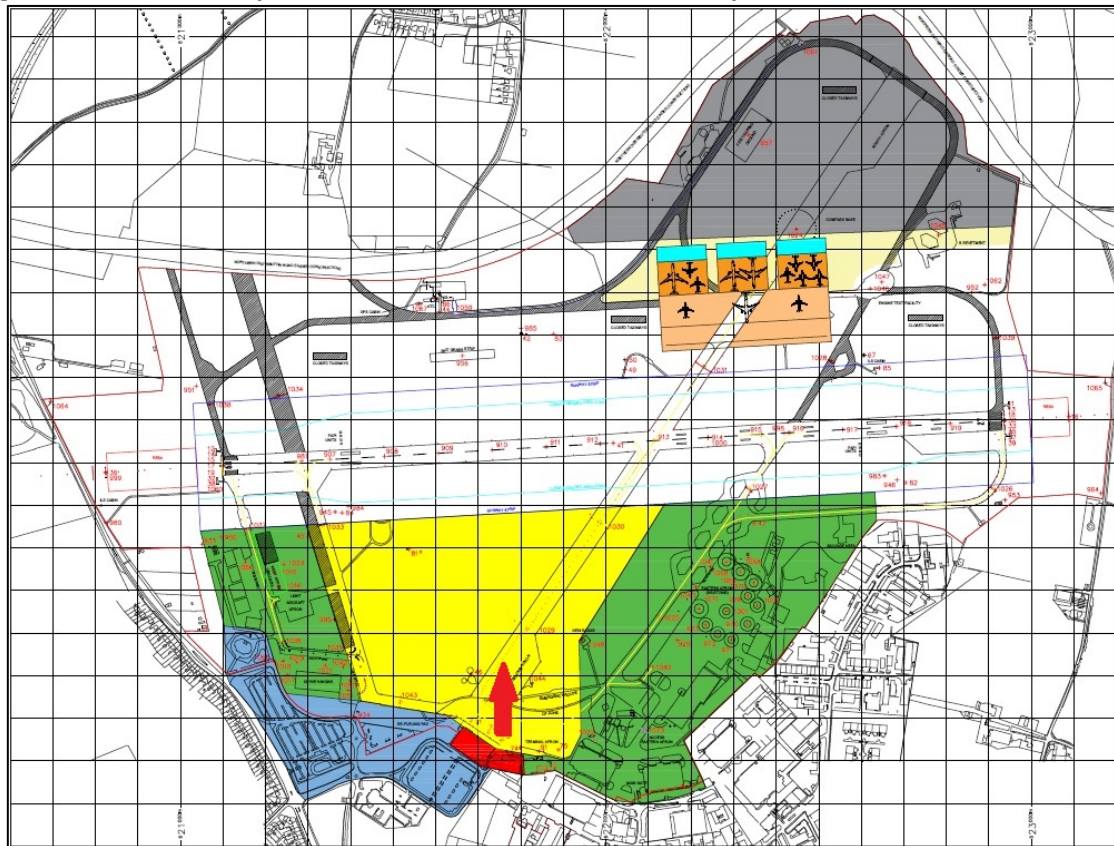
**Norwich Airport Site Block Plan Key:**

- Potential airside area for commercial apron and taxiways
- Terminal zone including proposed Masterplan extension
- Car parking, forecourt and access roads
- East and West zones for MRO, Off-shore, GA, Air Taxi, Flying Schools, Operational support, etc.
- Site 4 - 20% for Airport related activities
- Site 4 - 80% for non-aviation related developments

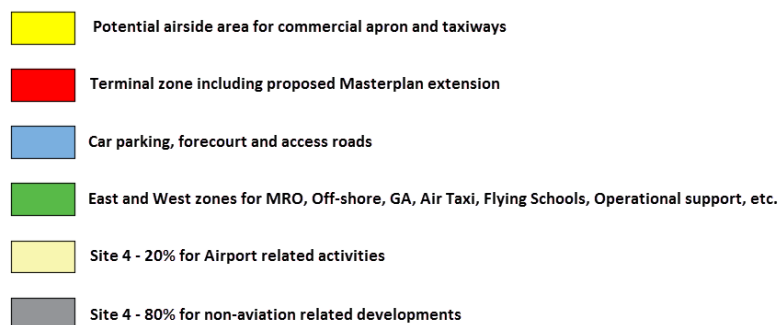
Source: York Aviation

- 4.37 The 'yellow' area is the potential airside area for commercial apron and taxiways, as discussed earlier. At its south is the 'red' terminal zone including the proposed Masterplan extension. Adjacent to this is a 'blue' zone covering the car parking, forecourt and access roads. The 'green' zones to the east and west cover the various MRO, offshore, GA, air taxi and flying school activities, along with other engineering and operational accommodation in support of airport activities. To the north is Site 4 in two colours, the 'beige' strip along its southern edge is the 20% of the site reserved for potential airport related activities, the remaining 'grey' area being available for the non-aviation related developments.
- 4.38 This strip of land that constitutes the 20% of potential airfield related activities located along the southern edge of Site 4 will be in the 'line of sight' of the Control Tower located to the west of Site 4 on the northern side of the runway. Any MRO and other airport related development, together with its associated aprons and taxiways, will likely be south facing in any event. Any important localised areas that need to be observed in detail by the Control Tower can be resolved by the use of CCTV coverage, as is normal practice at all airports.
- 4.39 The two 'green' zones cover an area that is much larger than currently occupied by the various non-commercial related aviation activities and as such effectively provide significant space for these to grow and develop in the very long term without impeding the growth of the core commercial aviation activity.
- 4.40 The 'yellow' zone is substantial, with large areas undeveloped, even if all of the Masterplan proposals to 2045 are implemented. However, in order that terminal, associated car parking (over and above Masterplan proposals) and forecourt capacity can be enhanced beyond 1.4mppa then more land area will be required for these uses. **Figure 4.6** illustrates how the terminal could be expanded northwards in to part of the current commercial area, with the commercial apron area shifting northwards and expanded accordingly in to part of the very large 'yellow' area to the north.

Figure 4.6: Norwich Airport Site Block Plan – Terminal Zone Expansion Northwards



Norwich Airport Site Block Plan Key:



Source: York Aviation

- 4.41 Similarly, the 'blue' area could also be easily expanded northwards in to the 'yellow' zone to create additional car parking and associated road capacity.
- 4.42 This will still support the 3.5 mppa to 4 mppa very long term growth potential of NWI given that it is the combined 'Yellow, Red and Blue' areas that make up the 302,000 m<sup>2</sup> of available space.

- 4.43 It should be noted that the boundaries between all these areas to the south of the runway are not fixed. The 'yellow' commercial airfield zone could stretch east and west if required if the 'green' non-commercial areas do not grow significantly beyond the zones they currently occupy.
- 4.44 The block plans confirm that NWI will be able to support significant growth beyond 1.4 mppa and still allow significant land to be available for other non-commercial airport related uses to the south of the runway. This in turn endorses the strategy of reserving just 20% of Site 4 for airport related activities to provide a 'flexible' backstop for additional MRO, GA and flying school activity that is not otherwise accommodated to the south of the runway.
- 4.45 The ongoing KLMUKE and Air Livery expansion, and proposed replacement apron for KLMUKE, outlined in section 3, will form part of the eastern 'green' zone on the block plan. This expansion will only utilise part of the spare land available within this zone, leaving further land for development thereafter.



## 5 ENABLING DEVELOPMENT

- 5.1 Within this report, we have previously indicated that the sporadic nature of MRO opportunities coming forward meant that there was a risk NWI would not be able to compete for opportunities if Site 4 did not have the necessary basic infrastructure in place to allow promotion of the site for aviation uses if and when opportunities arise.
- 5.2 A critical element of this is the cost of providing hangarage and the very low rates of return that these investments deliver. The returns from such a development would most likely not cover the cost of opening a site (road access, utilities etc.) for development of an individual unit.
- 5.3 To illustrate this point, it is worth noting that hangar developments, when rented out, may only generate in the region of £60-100 per m<sup>2</sup><sup>6</sup>, which can be below standard warehousing development, yet can cost more to construct because of the technical requirements for clearspan development, specialist flooring, insulation and complex door structures. Often construction costs can be in the region of £900-1,200 per m<sup>2</sup>, compared to £600-800 per m<sup>2</sup> for other warehouse development. The yields, therefore, are regularly below 6-8%; well below what would be expected for a commercial return. In recent examples we have been involved with, proposed hangar developments were showing a negative Internal Rate of Return (IRR) without taking account of wider incomes such as landing fees or the full costs of opening up a new site for development. With such low returns on hangar developments, it would be very difficult for the Airport to credibly make a business case to spend significant money to open the site for one, two or perhaps even three hangars. Without other supporting commercial development, enabling the site to be opened up, the effect could be that there was no viable additional MRO provision over the period to 2090 on the north side of the Airport.

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<sup>6</sup> Newquay Airport's Aerohub is advertising hangarage for between £5-£8 per square foot <http://www.aerohub.co.uk/airside/hangar-availability>

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## 6 CONCLUSIONS

- 6.1 The long term passenger growth scenario beyond 2045 suggests that NWI could reach 3.0 to 3.5 mppa towards the latter parts of the century, and even up to 4.0 mppa. Within this growth scenario off-shore rotary is not expected to grow beyond current levels. Freight traffic will not require additional facilities on site and GA traffic is likely to see only modest growth beyond current levels.
- 6.2 The MRO sector enjoys a high quality presence at NWI with two principal players supported by a strong local skills base. However, in spite of the prospect that some UK and European demand for MRO may return to operators in the UK and Europe, NWI will face stiff competition to attract significant additional new hangar development, over and above expansion of existing facilities. Whilst some of this may be attracted to NWI, the strip of land suggested within Site 4 (20%) for aviation related activities is likely to be more than sufficient for any reasonable scale of new development which might be attracted, even over the very long term.
- 6.3 We have benchmarked the NWI site and the areas of land to the south of the runway with a selection of other UK airports and from this exercise demonstrate that there is more than sufficient land to accommodate at least 4mppa of commercial passenger traffic alongside the requirements of all the other airport based operations, including expansion of existing hangarage.
- 6.4 Indeed, the 'green' areas to the east and west for non-commercial operations are much larger than the area currently used for these activities at NWI, further endorsing our view that even if NWI were to reach 4 mppa later this century, there will still be sufficient land available for all other uses to expand into.
- 6.5 With the Engine Run-Up Bay and a proposed relocation of the Fire Training Ground in the vicinity of Site 4, sufficient land would remain, within the 20% area, for additional hangars, or perhaps Flying School and GA activities, over and above the areas already highlighted in 'green' to the south of the runway.
- 6.6 In overall terms, then, the existing aviation site south of the runway and a reservation of up to 20% of Site 4 will be more than sufficient to enable NWI to fulfil its realistic aviation potential over the very long term, including its ability to attract wholly new aviation related tenants and operators. Realisation of these opportunities will require the site(s) to be readily available, given the competition to attract new hangars from many other airports. Hence, the importance of securing other development on the remainder of Site 4 at an early stage, acting an enabler, to create the conditions whereby NWI is has a readily serviced site to offer at short notice if opportunities arise.

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