

---

# The Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T))) Order

---

---

## 10.3 Land Use and Economic Development Report

---

Planning Act 2008

Infrastructure Planning

The Infrastructure Planning (Applications: Prescribed Forms and Procedure)  
Regulations 2009

*PINS Reference Number:* TR010015

*Document Reference:* 10.3

*Regulation Number:* 5(2)(q)

*Author:* Norfolk County Council

Revision	Date	Description
0	8 <sup>th</sup> January 2014	Revision for submission

<b>Mott MacDonald Internal Audit</b>			
<b>Revision</b>	<b>Originator</b>	<b>Checked By</b>	<b>Approved By</b>
0	S Cox	G Owen	P Hammond G Kelly

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties

*This document is submitted in relation to the application for a proposed development by Norfolk County Council to the Planning Inspectorate, under the Planning Act 2008.*

*The application is for the Norfolk County Council (Norwich Northern Distributor Road (A1067 to A47(T))) Order, to grant development consent for the construction of a new highway running west-east between the A1067 Fakenham Road and the A47 Trunk Road at Postwick, including improvements to the existing highway network to the north and north east of Norwich.*

*This document comprises part of the application documents and relates to Regulation 5(2)(q) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009.*

**PAGE NOT USED**

---

## Table of Contents

---

Executive Summary	1
1. Introduction	3
2. Economic baseline	9
3. Policy framework	27
4. Business consultation	43
5. Assessment of the potential impact of NDR on GVA and employment	45
6. Summary	67
Appendix A – Economic impact calculations	69
Appendix B – Roads and economic growth: a review of literature	75

**PAGE NOT USED**

## Executive Summary

- 1 Norwich is the largest city in East Anglia and the economic centre for Norfolk. The success of 'Greater Norwich' - a wider area than the city alone extending to the districts of Broadland, Norwich and South Norfolk (see Figure 1.1 below - is vital to the economic success of Norfolk and of the East Anglian sub-region (Cambridgeshire, Norfolk and Suffolk). Greater Norwich is an area that has experienced growth, and is anticipated to experience further growth in population and economic activity. The proposed Norwich Northern Distributor Road (NDR) is part of long-term infrastructure planning to support the delivery of housing and jobs to the north and north-east of Norwich between Norwich International Airport and the proposed Postwick Hub.
- 2 The NDR is the subject of a direction which was given by the Secretary of State for Transport on 9 August 2013 under section 35 of the Planning Act 2008 (the Direction). The Direction stated that the proposed NDR is nationally significant and is to be treated as development for which development consent under the Planning Act 2008 is required. The effect of the Direction is that consent for the construction and operation of the NDR is required to be pursuant to a development consent order (DCO) granted by the Secretary of State for Transport under the Planning Act 2008. This report forms part of NCC's application for a DCO for the NDR.
- 3 The economic impact assessment of the proposed NDR is provided within the context of the Joint Core Strategy's (JCS) stated growth targets which are in place to guide the future of the Greater Norwich economy. The NDR is a key strategic piece of infrastructure and will play a key role in supporting the delivery of growth in housing and jobs over the next two decades. The JCS contains twelve over-riding objectives, which underpin the spatial vision of creating some 36,820 new homes and 27,000 new jobs between 2008 and 2026 in the Greater Norwich area (Joint Core Strategy, pages 20-23).
- 4 The purpose of this report is to provide an explanation of the relationship between the proposed NDR and sites earmarked for development and to assess the economic development impact of the NDR in terms of jobs and dwellings which are assessed on a site-by-site basis with respect to the influence of the NDR on bringing development forward. A separate report has been produced which focuses on transport economics and benefits (the NDR Economic Appraisal Report).

- 5 The NDR, including the Postwick Hub, will bring the very substantial benefits described in Section 5. As is shown in Table 5.3 of the main report, these benefits include:
- **4,358** net additional direct jobs arising from the development sites listed in this report;
  - when multiplier effects are included this figure (of 4,358) rises to **5,230** net additional jobs that would not otherwise arise in Greater Norwich;
  - **£1.099bn** of additional GVA is forecast to be generated by those **5,230** jobs over some 30 years;
  - **£966m** of net additional physical investment in roads, infrastructure and housing; and
  - an average of **426** construction jobs (rising to **511** when multiplier effects are included) in each of the years until development is complete (estimated at 2034).



## **1. Introduction**

### **1.1 Study team**

- 1.1.1 Mott MacDonald's Economic, Social & Market Research team was appointed by Norfolk County Council (NCC) in March 2013 to prepare an economic impact assessment of the Norwich Northern Distributor Road (hereafter referred to as the NDR).

### **1.2 Method of approach**

- 1.2.1 The report presents the professional opinion of the study team. It considers the economic development impact of the NDR and provides evidence in support of the NDR; it also presents wider evidence of the relationship between road schemes and economic development. A range of techniques and approaches have been deployed in order to assess the potential economic development benefits of the NDR, including:
- a review of the local economic baseline for the study area;
  - a review of relevant policy and strategy documents in relation to the NDR;
  - a review of existing and proposed development sites that will be affected by the NDR;
  - a summary assessment of net additional economic development impacts attributed to the NDR in terms of jobs created, Gross Value Added (GVA) and new dwellings constructed; and
  - a review of evidence from academic and consultancy reports analysing the links between road improvements and economic benefits.
- 1.2.2 HM Treasury, through the Green Book: Appraisal and Evaluation in Central Government (2003 updated in July 2011) (the Green Book), has issued mandatory guidance on how cost-benefit analyses should be conducted by public sector bodies appraising proposals before funds are committed to a policy, programme or project. The Green Book provides general guidance on appraisal. The Treasury expects individual spending departments to use the Green Book's principles to develop detailed guidance in their respective spheres of activity. The Department for Transport (DfT) has developed detailed guidance for the assessment of transport projects that emphasises, for instance, savings in travel time and reductions in carbon emissions consequent on improvements in transport facilities. This guidance is set out in the DfT's WebTAG guidance, which is subordinate to the principles in the Green Book.
- 1.2.3 This report is concerned with the wider consequences of investment in NDR. An assessment of wider economic development benefits is required as part of the Green Book appraisal process where such benefits are deemed significant,

as is the case with the NDR. The Transport White Paper<sup>1</sup> also draws attention to the ways in which transport programmes can have a favourable impact on jobs and growth, through both the demand and supply side of the labour market. The aim of this report is to apply the Green Book and Transport White Paper approach in the context of wider economic development benefits associated with construction and operation of the NDR.

### **1.3 Description of the NDR**

- 1.3.1 The Scheme (the Norwich Northern Distributor Road, known as “the NDR”) is a dual carriageway all-purpose strategic distributor road, to be classified as the A1270 Principal Road, which would link the A1067 Fakenham Road, near Attlebridge, to the A47 Trunk Road (T) at Postwick. This will be over a length of approximately 20.4 km. Refer to the General Arrangement Plans in document number 2.6.
- 1.3.2 1.2.1 From west to east, the scheme will start with a realignment of 750m of the A1067 Fakenham Road to the north of the existing carriageway, where the NDR (A1270) starts at a new at-grade roundabout junction, located to the west of Taverham. The NDR would then continue eastwards as a dual carriageway to its new at-grade roundabout junction with the C262 Fir Covert Road. From this roundabout, the NDR would then cross the Marriott’s Way (a permissive path providing a pedestrian, cycling and horse riding facility along the route of a disused railway) which will be taken across the NDR via a new bridge), to a new at-grade roundabout junction with the C261 Reepham Road. The NDR would then continue south eastwards, crossing Bell Farm Track/Horsford Restricted Byway No. 5 (which will be taken up over the NDR via a new Restricted Byway and private access accommodation bridge) before connecting with a new at-grade roundabout junction, just west of the existing C282 Drayton Lane, and which new roundabout will have two new link road connections, one with the C261 Reepham Road and one with the B1149 Holt Road, to replace the existing Drayton Lane.
- 1.3.3 1.2.2 From here, the NDR would then continue south eastwards to a new grade-separated junction (provision of a bridge over the NDR with slip roads to/from the NDR) with the A140 Cromer Road, located close to and just north west of Norwich International Airport. The provision of this grade-separated junction will require the stopping up of lengths of the B1149 Holt Road and Holly Lane (U57142), as well as a length of the A140 Cromer Road, which will be replaced by a new highway west of its existing position, which will be taken over the NDR and provide the connection for its four connecting slip roads.

---

<sup>1</sup> Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen, January 2011, Cm 7996

East of the A140, the NDR would continue as a dual carriageway, turning north eastwards around the northern boundary of the airport to a further new at-grade roundabout junction at the northern tip of the airport. The primary purpose of this roundabout is to allow the NDR to undertake a roughly 90 degree change of direction around the Airport site. From this roundabout, the NDR would continue south eastwards, skirting the north east boundary of the airport, before turning eastwards and passing under a new highway, which will be carried by bridge over the NDR, immediately to the east of the existing C246 Buxton Road, and which would provide the new connection for its realignment sections north and south of the NDR.

- 1.3.4 The route of the dual carriageway NDR would then continue eastwards through the north of Beeston Park. It would then connect with both the B1150 North Walsham Road and the A1151 Wroxham Road via a new at-grade roundabout at each location, before turning south eastwards and entering the north eastern section of Rackheath Park approximately 250 metres from the western end of Sir Edward Stracey Road (U57538). It would then continue south eastwards, passing under a new bridleway and access bridge across the NDR, some 200 metres south west of the junction of Newman Road (U57490) with Long's Crescent (U57852).
- 1.3.5 The NDR would then connect with the C283 Salhouse Road via a new at-grade roundabout, before rising up on an embankment (maximum height approximately 8.5 metres), to cross both the Norwich to Cromer & Sheringham rail line and the C874 Plumstead Road on individual bridges in close proximity, prior to a new at-grade roundabout on the NDR, which would connect it via a new link road to a further small at-grade roundabout on the C874 Plumstead Road.
- 1.3.6 The NDR route would then continue southwards, crossing under the C442 Middle Road (which would be raised to pass over the NDR, on its existing alignment, via a new bridge) before connecting with a new at-grade roundabout known as the Business Park Roundabout.
- 1.3.7 At this point a single carriageway link is provided westwards to the existing C829/C830 Broadland Way/C831 Peachman Way roundabout and includes an at-grade roundabout on the link road to the proposed Broadland Gate Business Park.
- 1.3.8 From the Business Park roundabout the NDR proceeds southwards as a dual carriageway to a new Postwick north east at-grade roundabout immediately north of the A47(T) Norwich Southern Bypass. This roundabout has links from a

new A47(T) eastbound diverge slip road and a new A47(T) eastbound merge slip road. The NDR continues over the A47(T) as a four lane carriageway, one lane north and three south, on a new bridge and terminates at its southernmost point at a signalised junction, which replaces the existing Park and Ride roundabout with the A1042 Yarmouth Road.

1.3.9 This signalised junction would provide further links:

- Directly to and from the park and ride site for buses;
- West to the existing Postwick North West roundabout, via the existing Postwick bridge over the A47(T);
- East to the proposed park and ride site entrance at the proposed Oak's Lane roundabout and further East to the Brundall Low Road junction with the A1042 Yarmouth Road to Postwick village; and
- West to the A47(T) via an existing westbound merge slip road.

1.3.10 The works at Postwick Junction, will include modifications to the existing Postwick north west roundabout (as a result of closing the existing eastbound diverge slip road) and to the existing A1042 Yarmouth Road overbridge of the A47(T), to provide revised traffic lanes and the provision of a shared use cycle/footway.

1.3.11 The route of the NDR that has been described above is, for the majority of its length, within Broadland District. It does, however, for a short stretch close to Norwich International Airport, fall within the administrative area of Norwich City Council. A very small part of the works at Postwick falls within the administrative area of The Broads Authority. The new road from west to east runs through the following parishes:

- Attlebridge;
- Taverham;
- Drayton;
- Horsford;
- Horsham St Faith and Newton St Faith;
- Spixworth;
- Beeston St Andrew;
- Sprowston;
- Rackheath;
- Great and Little Plumstead; and
- Postwick with Witton.

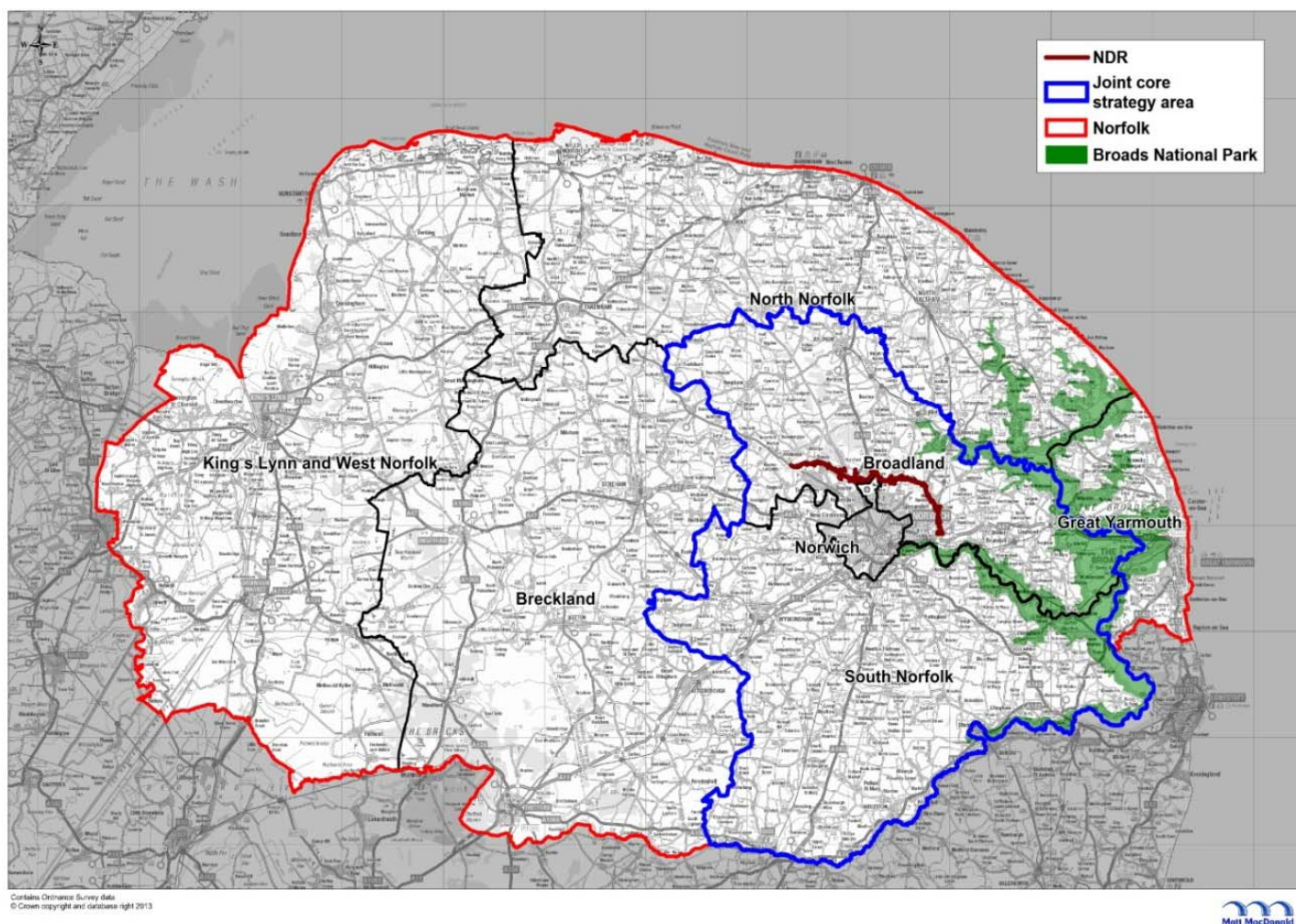
## **1.4 The study area**

1.4.1 The core area subject to the impact of the NDR is defined as the JCS area (i.e. the combined administrative areas of Broadland District Council, Norwich City Council and South Norfolk Council), which is the strategic planning area within which planned growth is proposed to be accommodated. This area is the study area for the purposes of this report. Parts of Broadland, South Norfolk and a



very small area of Norwich are also covered by the Broads Authority (which is a separate planning authority in its own right) and these areas are not included within the JCS area boundary. However, as the Broads Authority Core Strategy has no separate jobs or housing targets, these boundary distinctions have no significance in the context of this report. Given the strategic importance of the NDR in the County of Norfolk, this report will also consider the wider role of the NDR in supporting growth in Norfolk more generally. Figure 1.1 below shows the location of the NDR and the local authority area boundaries referred to in this report.

Figure 1.1 – NDR within study area (the JCS area) and local authority areas referred to in this report



## 1.5 Report structure

### 1.5.1 The remainder of the report is structured as follows:

- Section 2 – presents the economic baseline for the area.
- Section 3 – sets out the policy framework for the area.
- Section 4 – reviews the business consultation carried out in 2011.
- Section 5 – presents an assessment of the NDR's potential economic development benefits
- Section 6 – contains a summary of the NDR's potential economic development benefits.
- Appendix A – sets out the calculations of economic development benefit.
- Appendix B – provides an overview of the findings of studies considering the role of road schemes in supporting local economic development and growth.

## **2 Economic Baseline**

2.1.1 This section provides an overview of the existing economic characteristics of the study area in terms of employment, business, skills, unemployment and deprivation. A range of indicators are used and mapped at Lower Layer Super Output Area (LSOA) level<sup>2</sup> for ease of comparing spatial patterns. However, given that Census 2011 data remains relevant and is based on a greater sample of population than other data sets which are based on surveys (for example Annual Population Survey, Business Register and Employment Survey) it has been used where relevant throughout this section.

### **2.2 Employment and skills**

#### Employment

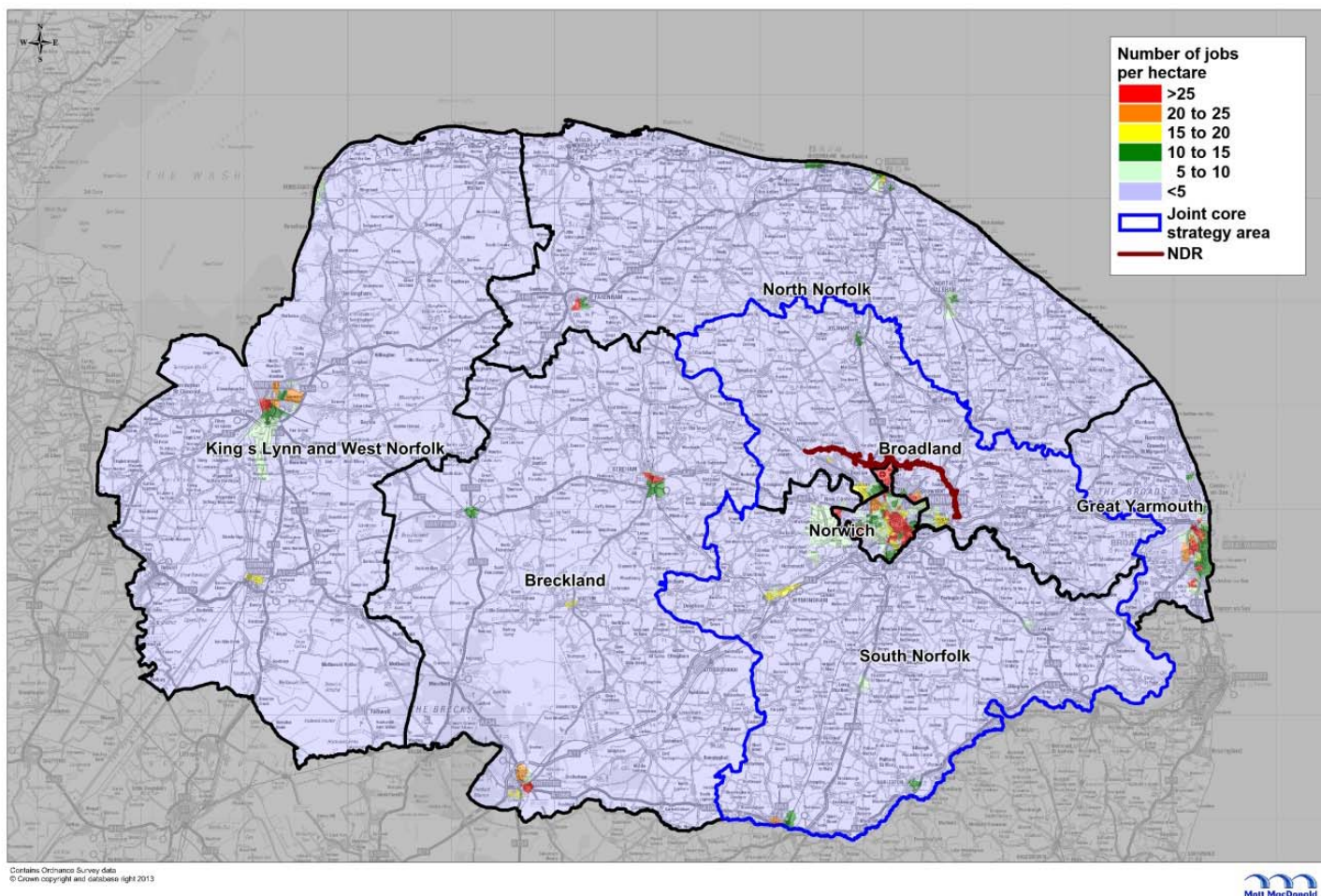
2.2.1 Employment density, as shown in Figure 2.1, illustrates the significance of Norwich as a sub-regional employment hub. The city centre and Norwich Airport Industrial Estate are visible as concentrations of employment (as red areas on the map) in Figure 2.1. Broadland Business Park is visible (as a yellow area on the map) to the east of Norwich adjoining the eastern end of the NDR and the influence of Norwich Research Park (NRP) (as a light green area on the map) to the west of Norwich is clear. The NDR has the potential to support growth and development to the northeast of Norwich and increase employment density in that area by providing improved access to employment for residents of North Norwich and north-east Norfolk. Given its proximity to the Airport and scope to provide modern commercial space, northeast Norwich has the potential to be the prime location for future indigenous growth, inward investment and foreign direct investment. Companies looking for large premises on sites that are well connected to the strategic road network and to the Airport could be accommodated in that area. This is particularly the case if the companies are in growth sectors such as aerospace, advanced engineering and offshore energy due to the likelihood that they are operating in global markets and have greater need for international travel which can be facilitated through the Airport and particularly its routes to Amsterdam providing access to KLM's global network.

---

<sup>2</sup> A Lower Layer Super Output Area (LSOA) is a geographic area, built from 4 to 6 groups of contiguous Output Areas, automatically generated to be as consistent in population size as possible, for the purpose of reporting on small area statistics in England and Wales. LSOAs were created from 2001 Census data and a LSOA typically contains a minimum population of 1,000 and a mean population of 1,500. (Source: Office of National Statistics) Further information available at: <http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/census/super-output-areas--soas-/index.html>



Figure 2.1 – Employment density, 2011



Source: Business Register and Employment Survey (BRES), 2011

## Skills

2.2.2 In Figure 2.2 below, educational attainment and skills are presented based on the proportion of residents aged 16+ that have attained Level 4 (Bachelor degree) or above. It is shown that the higher densities of more highly skilled people live in central and southern parts of Norwich city, the northern part of South Norfolk (adjoining Norwich), however, there are also pockets of high density populations of highly skilled people within the north and north western Norfolk areas of Kings Lynn and West Norfolk, in the north of North Norfolk and in the north, east and west of Broadland.

2.2.3 The spatial pattern around Norwich city and north parts of South Norfolk reflects the location of the University of East Anglia, and is similar to that observed in other university cities. It is also influenced by the housing market, location of employers employing highly-educated people (such as Norwich Research Park



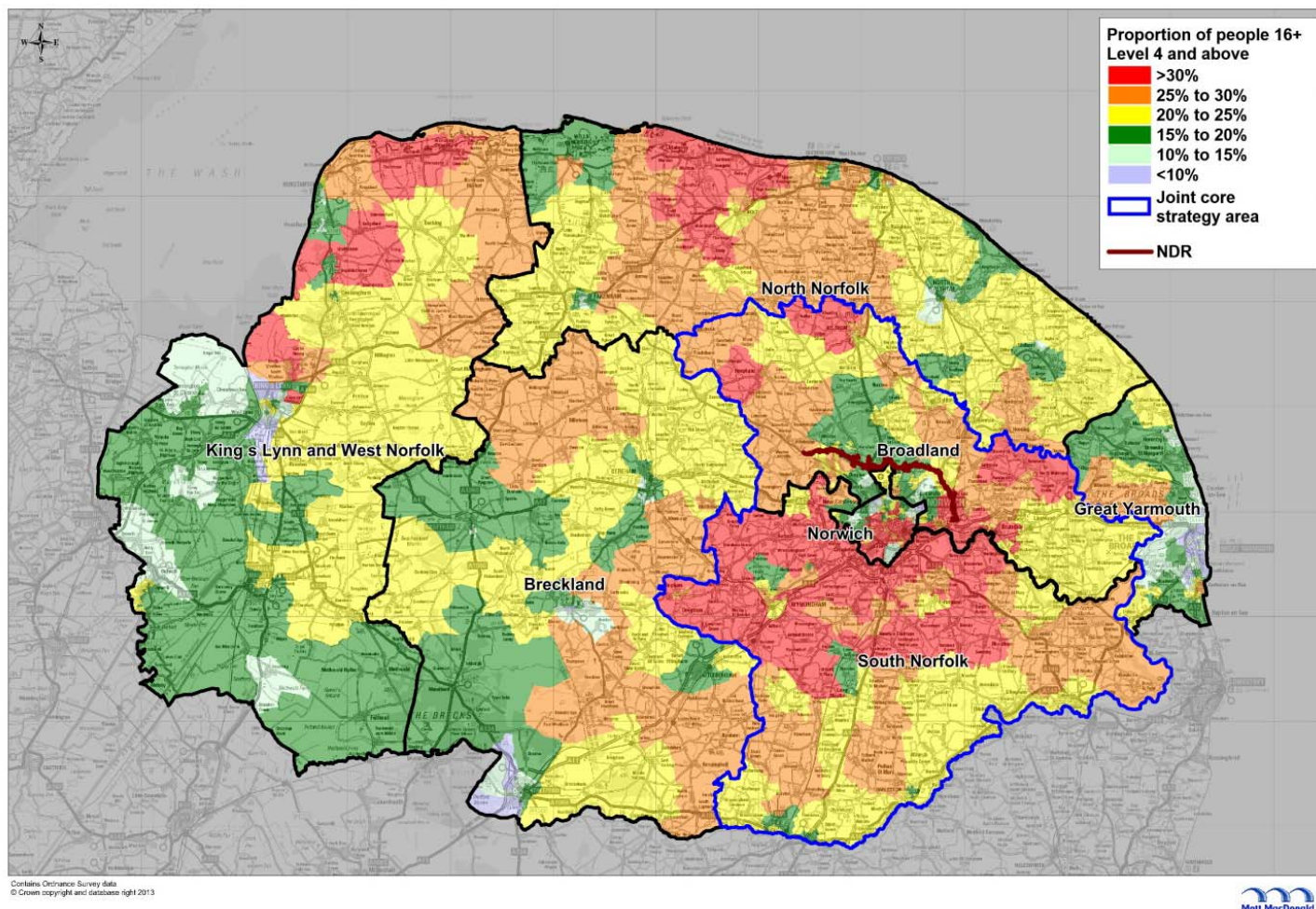
(NRP)) and good connectivity between residential and employment areas. For the JCS area overall, 26% of residents have attained Level 4 qualifications and above (compared to 27.4% of residents in England as a whole).

- 2.2.4 In comparison, the proposed alignment of the NDR runs through an area of relatively lower skills (shown in green on the map). The enhanced connectivity which the NDR would bring to this area would provide improved access to employment opportunities for residents living to the north of the city, whilst also simultaneously providing businesses in that area with access to a wider and more highly educated/ skilled labour market catchment area. In order to ensure that residents with lower skill levels were able to seek new employment opportunities that arise in the area there would need to be parallel interventions to provide training and skills development courses for local residents in-line with the needs of businesses. An example of this is that in addition to the existing training organisations and facilities in the area (e.g. City College) a new University Technical College (with a particular focus on engineering and energy sector training) is to be built in Norwich. The goal of the University Technical College is to provide students with skills and qualifications to go either to university or to take up skilled employment at age 18 with a particular focus on the engineering and energy sectors. An £8m construction project is underway in Old Hall Road in Norwich to provide the facility which will open in September 2014 and a start has recently been made on recruiting students: the intake is to be 300 students in Year 1. It has the support of a number of significant employers. University of East Anglia sponsorship and the backing of the Transforming Education in Norfolk (TEN) Group (The TEN Group is a federation of educational institutions in Norfolk, all committed to excellence in education<sup>3</sup>.)

---

<sup>3</sup> <http://tengroup.org.uk/>

Figure 2.2 – Proportion of residents aged 16+ holding Level 4 qualifications and above, 2011



Source: Census 2011

## Unemployment

2.2.5 Figure 2.4 indicates that there are concentrations of unemployment in the urban areas of Norwich (especially to the north of the city), Great Yarmouth, Thetford (especially to the north-west of the town) (in Breckland), and King's Lynn. Beyond these urban areas, the unemployment rate in the County is generally below 4%. Given the scale of national and global economic downturn since 2008, this suggests the area has demonstrated some resilience in comparison to other parts of the UK, perhaps influenced by a higher proportion of retirement age residents. A further feature of the Norfolk labour market is, however, the

much greater degree of part-time working than in the country as a whole<sup>4</sup>, suggesting a low pressure of labour demand. Although the alignment of the NDR generally passes through areas of low unemployment, it could provide improved access to employment opportunities for unemployed residents living in neighbourhoods to the central and northern areas of Norwich where unemployment is generally higher than the rest of the JCS area. For the JCS area, the unemployment rate at the Census 2011 was 4.2% with 11,864 people registered as unemployed<sup>5</sup>.

2.2.6 Since the 2011 Census, economic recovery has gradually been experienced throughout the UK and there has been an increase in employment rates and reduction in unemployment rates alongside an increase in average wage levels. In November 2013 the Office for National Statistics (ONS) reported (ONS, Labour Market Statistics, November 2013)<sup>6</sup> reported that for the UK in July to September 2013:

- *“The employment rate for those aged from 16 to 64 was 71.8%, up 0.3 percentage points from April to June 2013 and up 0.6 from a year earlier. There were 29.95 million people in employment aged 16 and over, up 177,000 from April to June 2013 and up 378,000 from a year earlier.*
- *The unemployment rate was 7.6% of the economically active population, down 0.2 percentage points from April to June 2013 and from a year earlier. There were 2.47 million unemployed people aged 16 and over, down 48,000 from April to June 2013 and from a year earlier.*
- *The inactivity rate for those aged from 16 to 64 was 22.2%, down 0.2 percentage points from April to June 2013 and down 0.4 percentage points from a year earlier. There were 8.92 million economically inactive people aged from 16 to 64, down 69,000 from April to June 2013 and down 149,000 from a year earlier.*
- *Total pay rose by 0.7% compared with July to September 2012. Regular pay rose by 0.8% over the same period.”* (ONS, Labour Market Statistics, November 2013, p1)

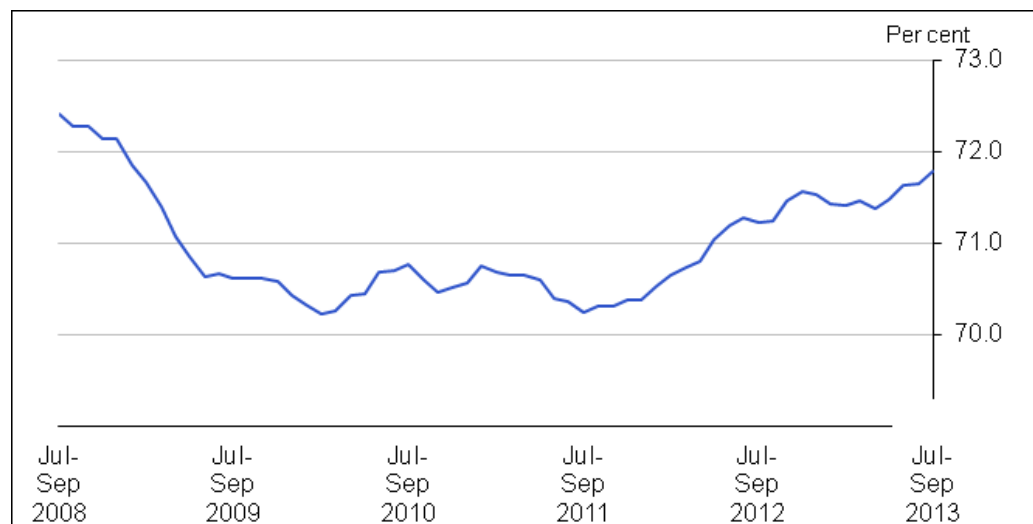
2.2.7 Figure 2.3 shows the trend in the employment rate for the UK during the course of the recession.

<sup>4</sup> Data from NOMIS (Annual Business Inquiry, Employee Analysis (2008), Available from: <https://www.nomisweb.co.uk/reports/lmp/la/1967128599/report.aspx> ) indicates 37% of workers in Norfolk are part-time compared to 31% nationally

<sup>5</sup> Census 2011 data on unemployment is based on the 16-74 year old economically active population. This is a different measure than that used for reporting monthly unemployment rates by ONS. The Census data is included here because it can be mapped to LSOA level along with other data from the Census. An updated unemployment position for September 2013 is presented below but the two data sets are not directly comparable.

<sup>6</sup> Available at <http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/november-2013/statistical-bulletin.html>

Figure 2.3 Employment rate (aged 16 to 64), seasonally adjusted



Source: ONS, Labour Market Statistics, November 2013, p5

2.2.8 The data in Table 2.1 below presents the unemployment position for Norfolk at September 2013. This is based on the 16-64 age group so is different and not directly comparable with the Census 2011 data:

- across Norfolk in September 2013, when there were 14,308 people registered as unemployed (an unemployment rate of 2.7%);
- in the JCS area (comprising the administrative areas of Broadland, Norwich and South Norfolk), which had 6,136 people aged 16-64 registered as unemployed in September 2013 (an unemployment rate of 4.1% in Norwich, 1.5% in Broadland and 1.7% in South Norfolk); and
- across England as a whole, where there were 1,078,299 people unemployed (an unemployment rate of 3.1%).

Table 2.1 – Claimant count unemployment rate, residents aged 16-64<sup>7</sup>, September 2013

Area	Number of claimants	Unemployment rate (%)
Breckland	1,811	2.3
Broadland	1,151	1.5
Great Yarmouth	2,845	4.8

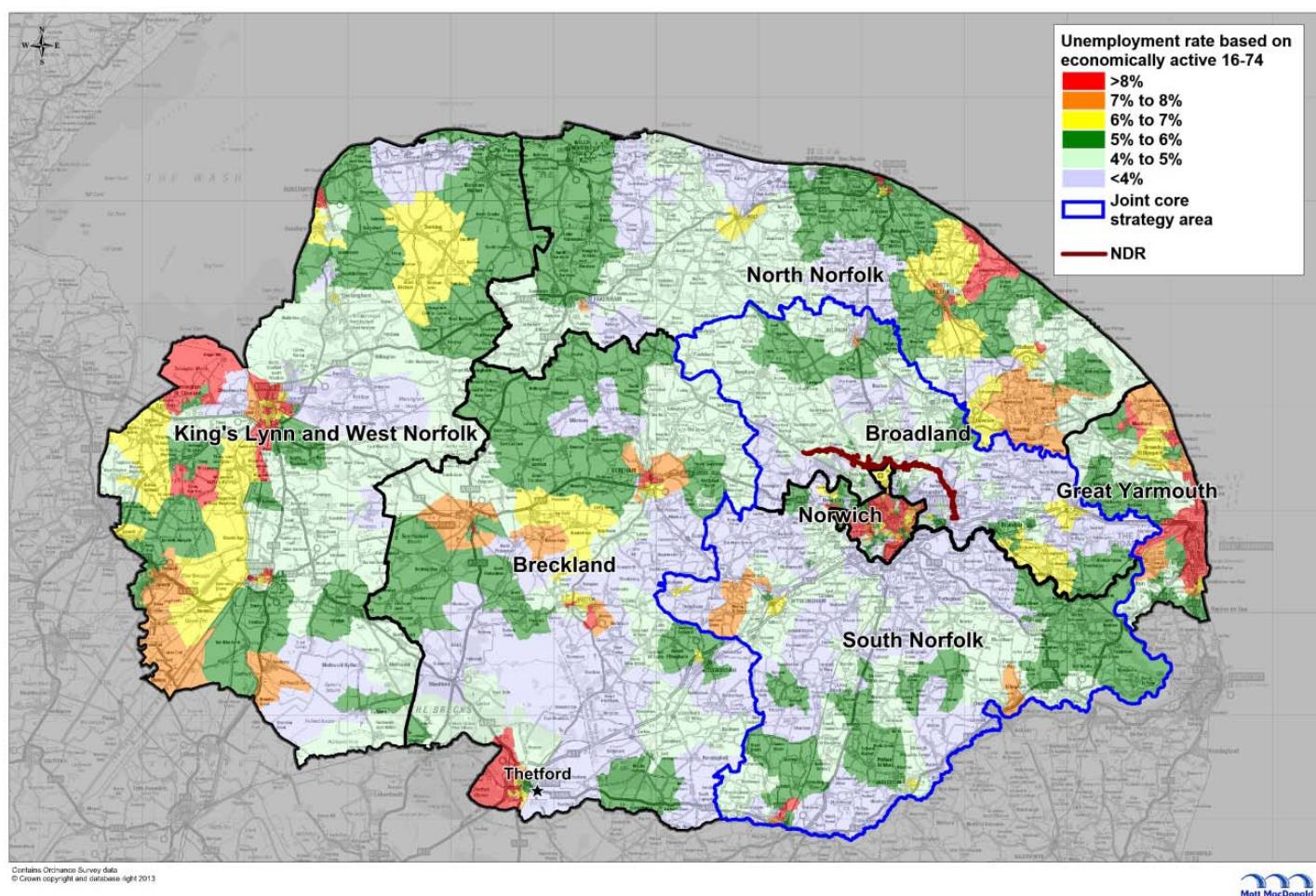
<sup>7</sup> The September 2013 data is based on economically active residents aged 16-64 and is not directly comparable with unemployment from Census 2011 though it does provide a reflection on the current position



Area	Number of claimants	Unemployment rate (%)
King's Lynn & West Norfolk	2,355	2.7
North Norfolk	1,161	2.0
Norwich	3,737	4.1
South Norfolk	1,248	1.7
Norfolk (as a whole and comprising the 7 areas listed above)	14,308	2.7
England	1,078,299	3.1

Source: ONS via NOMIS (ONS official labour market statistics), Claimant count excludes Universal Credit (benefits) claimants

Figure 2.4 – Unemployment rate for economically active population aged 16-74<sup>8</sup>, 2011



<sup>8</sup> See earlier note: 2011 (for economically active aged 16-74) unemployment data should not be directly compared with the 2013 (for economically active aged 16-64) unemployment data in this report.

Source: Census 2011

2.2.9 Table 2.2, below, supports the map set out in Figure 2.4 and presents Census-based unemployment figures for each district as well as regional and national comparators.

Table 2.2 - Unemployment as a proportion of economically active population (aged 16-74), 2011

Area	Unemployment	Economically Active Population (aged 16-74)	% unemployed as Proportion of Economically Active
Breckland	3,728	65,029	5.7
Broadland	2,691	64,232	4.2
Great Yarmouth	4,754	46,018	10.3
King's Lynn & West Norfolk	4,436	71,704	6.2
North Norfolk	2,636	45,819	5.8
Norwich	6,348	68,772	9.2
South Norfolk	2,825	63,158	4.5
JCS Area	11,864	196,162	6.0
East of England	188,578	3,038,090	6.2
England	2,020,413	27,183,134	7.4

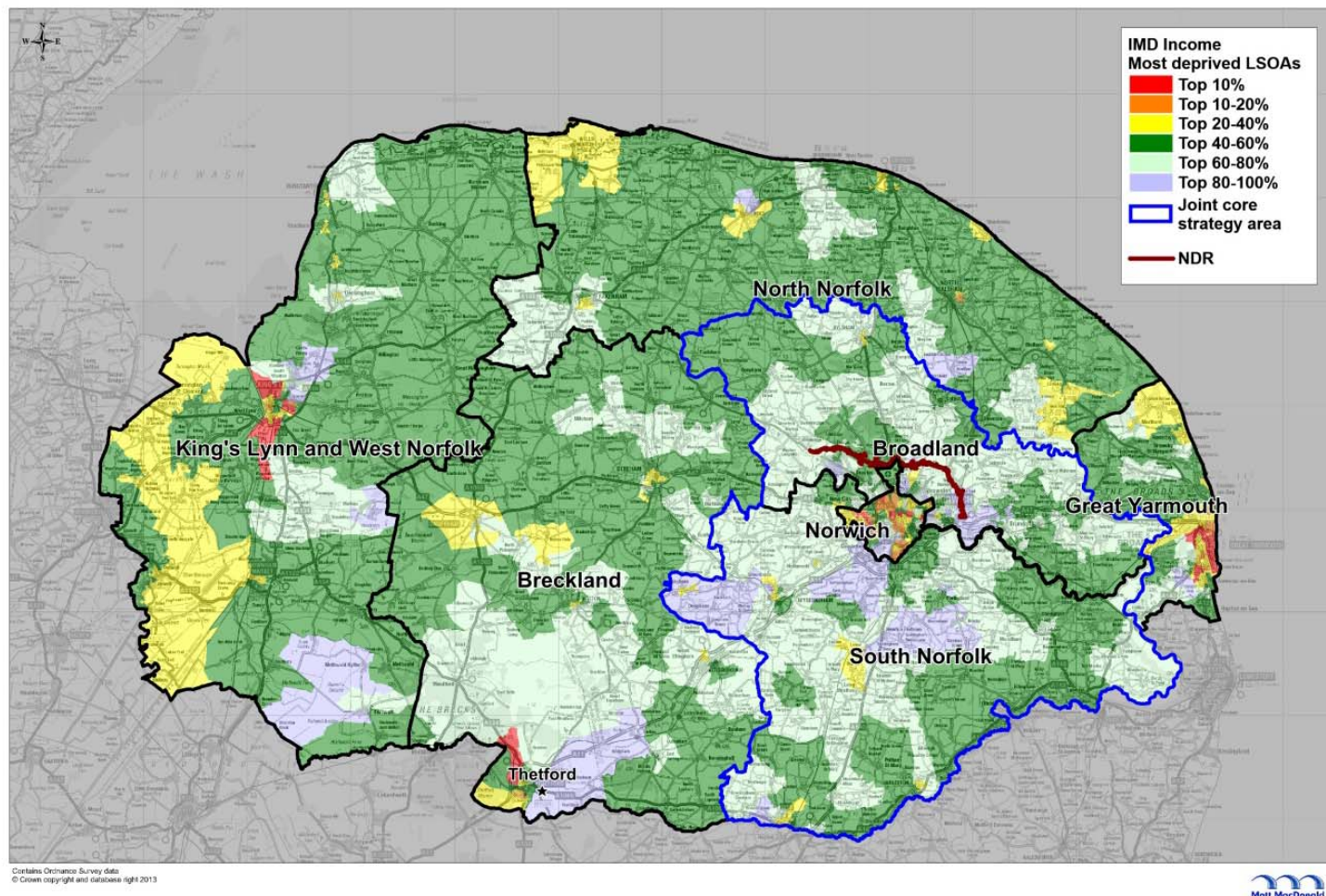
Source: Census 2011

## 2.3 Income

2.3.1 Figure 2.5 below presents data from the Indices of Deprivation (IMD) (2010) based on income levels in each LSOA. Some parts of Norfolk, particularly South Norfolk, southern areas of King's Lynn and West Norfolk, and southern areas of Breckland, are relatively affluent when ranked against English LSOAs. At the other end of the scale, urban centres in Norfolk, particularly Norwich, Great Yarmouth, northern Thetford (in Breckland), and King's Lynn are within the 10% most deprived LSOAs in England when ranked on income levels notably to the north and northeast of Norwich city.



Figure 2.5 – IMD Income Bands, 2010



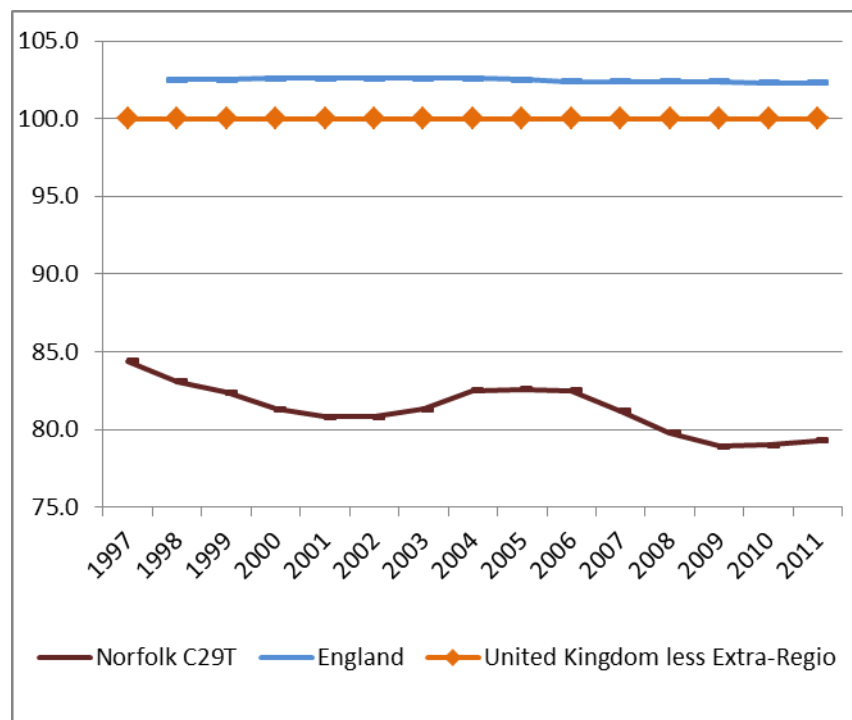
Source: IMD, 2010

## 2.4 Gross Value Added

2.4.1 The overall productivity of Norfolk's economy is illustrated in Figure 2.6 below. It shows the county's per capita contribution to national income (Gross Value Added (GVA) being the only measure of national income locally<sup>9</sup>) and the relative decline of Norfolk's per capita GVA compared to the UK over the fifteen years shown.

<sup>9</sup> Technically GVA relates to Gross Domestic Product (GDP), and even then the national level of GVA needs to be adjusted for taxes and subsidies to arrive at GDP. Moreover, GDP is only approximately equal to national income because the national income includes net income from overseas investments. There is, finally, an adjustment to be made in respect of 'extra regio', i.e. GVA arising in the UK but not in any particular area (this is mainly North Sea output). None of these technicalities need detain us here given the close correlation between national GVA, national GDP and national income, and the fact that, of the three, only GVA is available at sub-regional level..

Figure 2.6 – Headline GVA per head indices at current basic prices: UK, England and Norfolk, 1997-2011



Source: Office for National Statistics

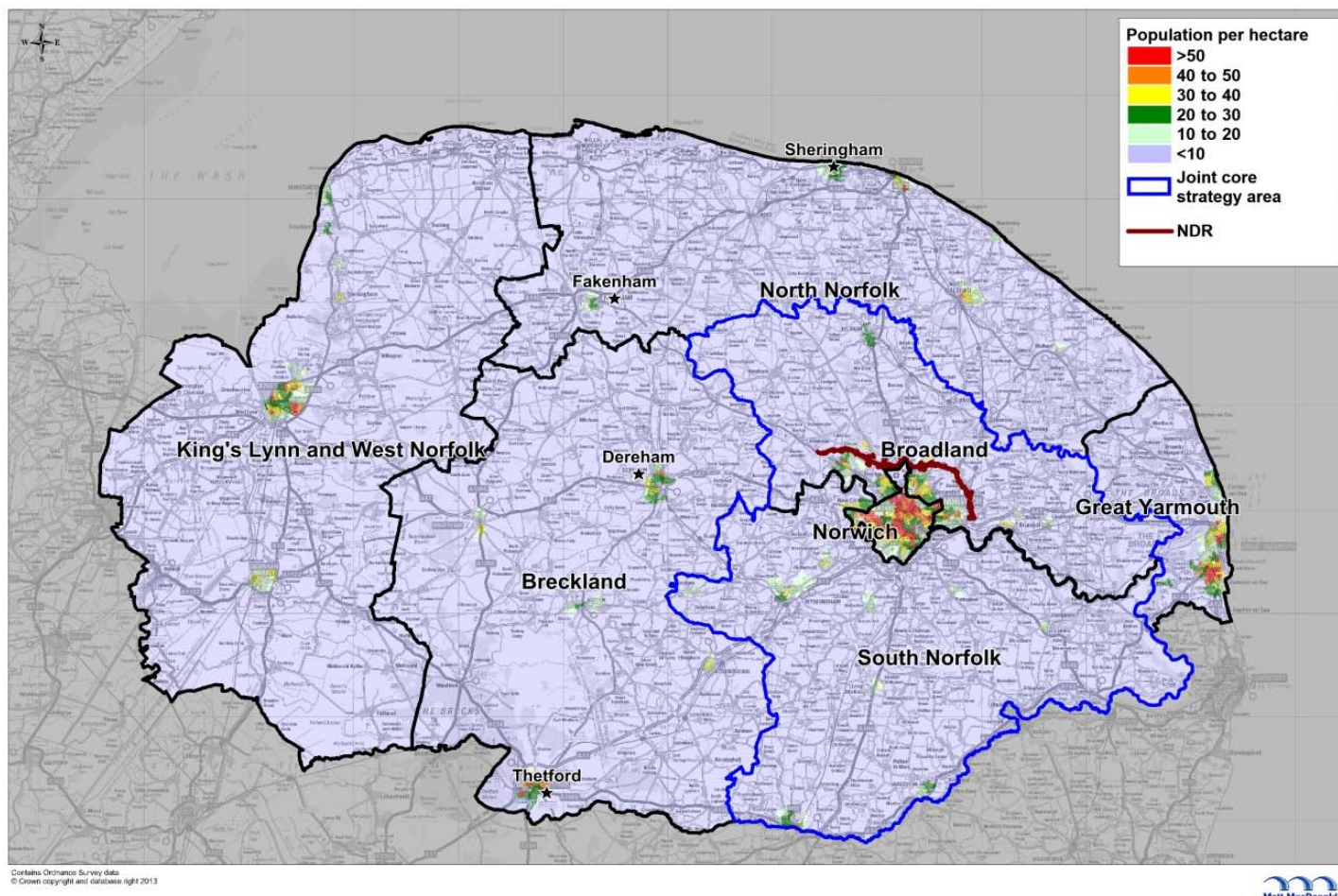
## 2.5 Population and deprivation

### Population

2.5.1 Similar to employment density, population density is also generally low across Norfolk with the central and northern areas of Norwich recognisable as having the greatest concentrations of population, in addition to other urban centres within the county including Great Yarmouth (to the east), and areas surrounding King's Lynn (Figure 2.7). Areas to the north and north-east of Norwich accommodate the next tier of more populous areas which is where future growth is being planned for and in close proximity to the NDR. Further economic growth is essential if population growth is to occur as the JCS anticipates. The NDR has a potential role to play in improving transport connections for workers around the Greater Norwich area, North Norfolk and Great Yarmouth



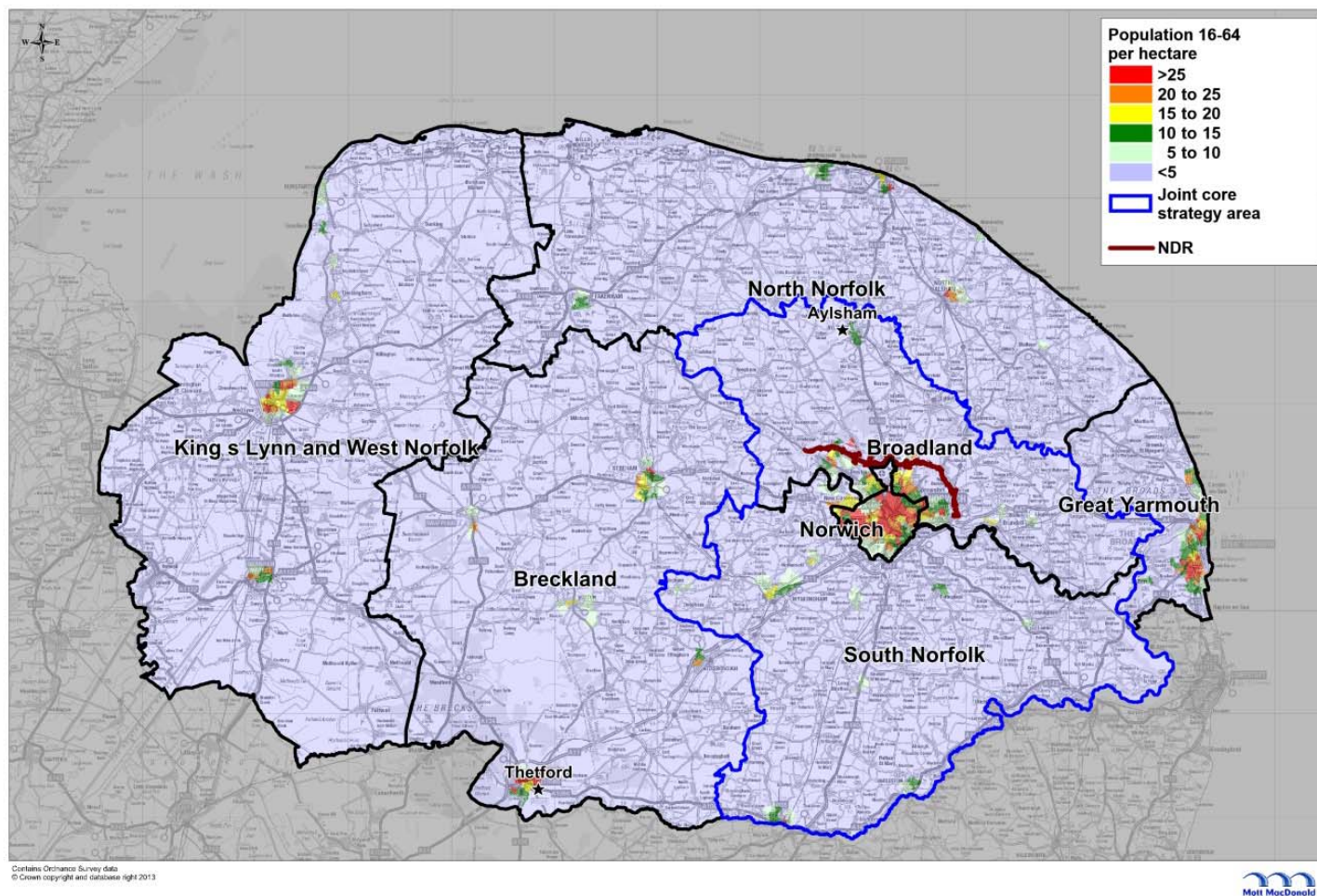
Figure 2.7 – Population density (total population), 2011



Source: Census, 2011

2.5.2 Moreover, in Figure 2.8 the relationship between residential areas with higher concentrations of working age residents (aged 16-64) and the NDR is shown. Again, high density populations are found within and around the urban centres across Norfolk including Norwich city, Great Yarmouth, Thetford and parts of King's Lynn. In comparison to the rest of Norfolk, there are high concentrations of working age residents at the western and eastern ends of the NDR route as well as in the market town of Aylsham to the north. The NDR would benefit these people by improving access to employment opportunities that will arise along the route of the NDR, at Norwich International Airport and in Norwich city centre while, simultaneously, increasing the labour catchment available to businesses benefiting from improved transport connections due to the NDR.

Figure 2.8 – Population density (working age population aged 16-64 years), 2011



Source: Census, 2011

## Deprivation

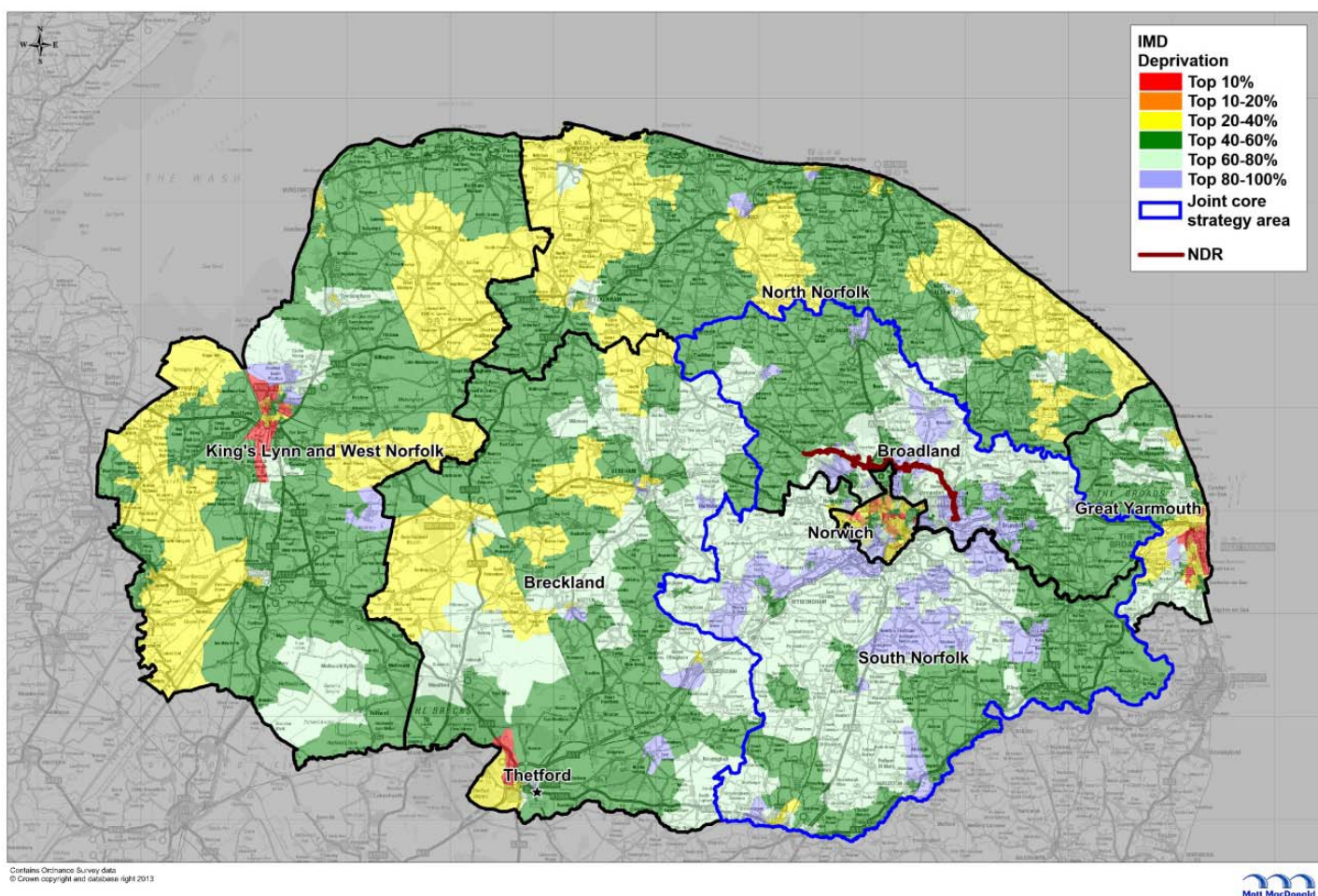
2.5.3 Deprivation is measured through the Government's Index of Multiple Deprivation (IMD), last updated in 2010<sup>10</sup> and based on an overall ranking based on domain scores for: income; employment, health deprivation & disability; education, skills & training; barriers to housing & services; crime; and, living environment. Norwich's hinterland in the JCS area is characterised by large areas of relatively low deprivation. As with some of the other indicators reviewed in this section, the urban areas of Norwich, Great Yarmouth, King's Lynn and Thetford, as well as some of the littoral parts of North Norfolk, are characterised by relatively higher levels of multiple deprivation. Parts of central and northern Norwich have IMD scores ranking in the top 10% and top 11-20% of the most deprived LSOAs in England (see Figure 2.9 below), and many of

<sup>10</sup> More details available at: <https://www.gov.uk/government/publications/english-indices-of-deprivation-2010>



the most deprived areas are in close proximity to the proposed alignment of the NDR. Residents of these areas should benefit from improved access to local employment opportunities that arise after the NDR's construction as employment sites are developed and businesses occupy the commercial space constructed. This has potential to reduce relative levels of deprivation by overcoming some of the barriers to labour market participation posed by travel costs providing that residents have requisite skills and qualifications to satisfy the needs of employers and compete in the labour market.

Figure 2.9 – Levels of deprivation by LSOA, 2010



Source: IMD, 2010

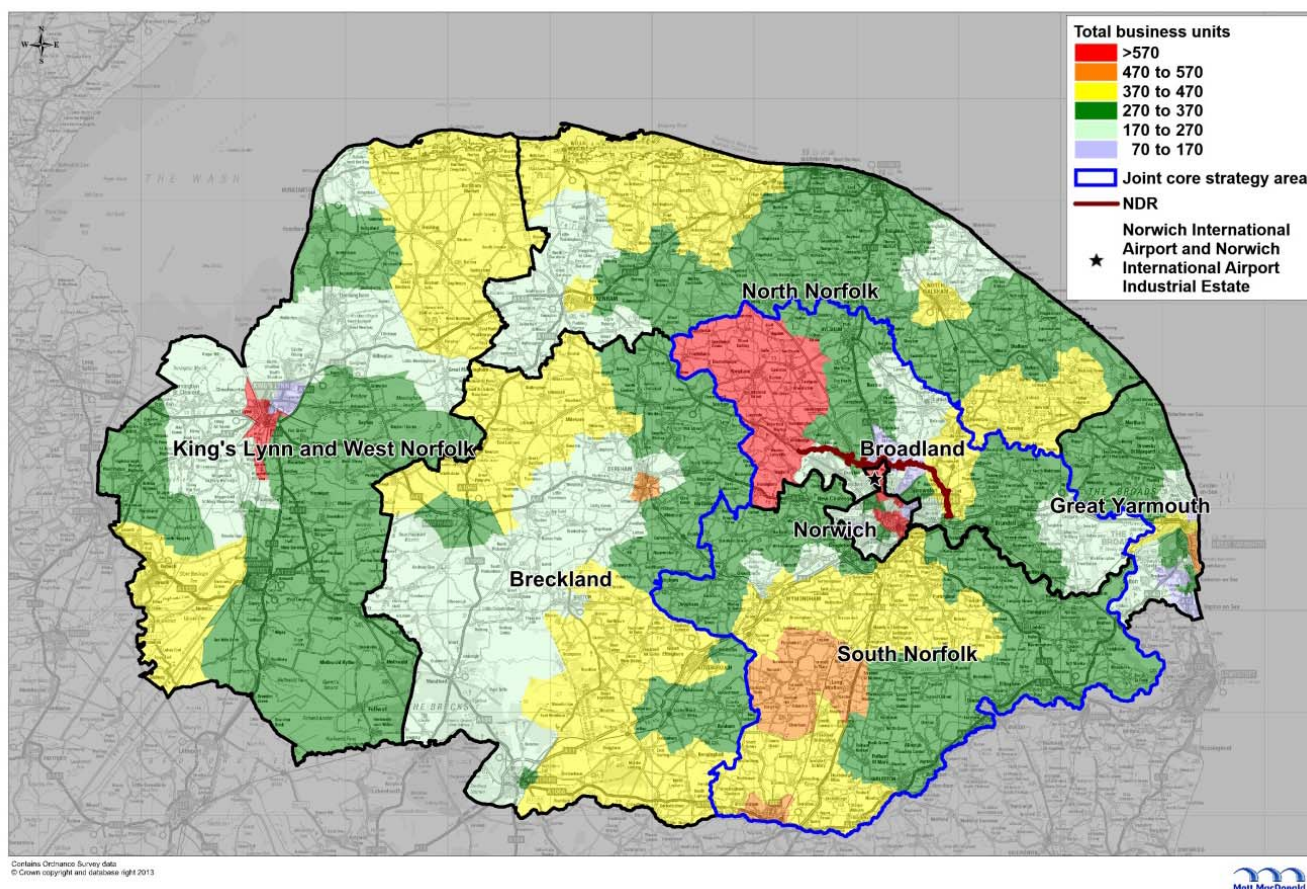
## 2.6 Businesses

### Business units

2.6.1 Business units provide a measure of the number of businesses in an area based on address points for each individual business (so that any business with

more than one address e.g. multiple retailers, banks etc. will be included for each address they have). From the spatial pattern of business units shown in Figure 2.10 below, the importance of Norwich city centre, Norwich International Airport and Norwich Airport Industrial Estate relative to the rest of the county is clear. The alignment of the proposed NDR route passes through some areas to the north of Norwich with relatively low numbers of business units at present, a situation which should alter as the NDR influences business decisions about location and new development sites are opened up. This is certainly the experience of Broadland Business Park which has been very attractive to the market and filled up over time reflecting the shortage of Grade A office space in Norwich; the expectation is that the same process will occur on land made more accessible by the NDR. The comparatively sparse business base to the north of the city should be positively influenced by the NDR as it supports the development process and the improved connectivity it offers encourages businesses to locate on the north side of the city.

Figure 2.10 – Concentration of business units at LSOA level





## 2.7 Land and property

### Employment land

2.7.1 The Greater Norwich Employment Growth Study (2008)<sup>11</sup> provided a comprehensive review of the employment land portfolio and made a series of recommendations that support the NDR proposals and have subsequently begun to be implemented:

- There is a relative lack of a range of available and ready-to-use sites, with the main current opportunities of this kind only at the Broadland Business Park.
- The Norwich Research Park (NRP) is one of the greatest areas of potential and of significance on a regional and national scale. It therefore deserves higher priority in terms of achieving the assembly of land and realisation of infrastructure.
- There is a case for developing a new north city employment hub. This should seek to realise the economic potential of the airport and in the longer-term benefit from the proposed NDR.
- *"In relation to offices the **overall floorspace** requirement is estimated to be in the region of 300,000 sq m. We would recommend this be distributed most obviously as follows:*
  - *Norwich City Centre and the wider central area 100,000 sq m*
  - *Norwich Research Park 100,000 sq m, based on a floorspace plot ratio ' of about 1:4.*
  - *Broadland Business Park 50,000 sq m*

*For the remaining 50,000 sq m, Arup suggested there are a number of options including:*

- *Further space in the city centre and/or*
- *New allocations of business parks associated with housing allocations.*
- *Greater use of Longwater as an office park."*

2.7.2 Proposals for employment land development and future economic growth are therefore focused on existing locations including the city centre, NRP and Broadland Business Park; in addition, the development of a new north city employment hub with the airport is suggested as a natural locus for development of employment land and future economic growth.

### House prices

2.7.3 Data on average house prices provide an overview of the relative attractiveness of residential areas which is based on a composite range of factors linked to

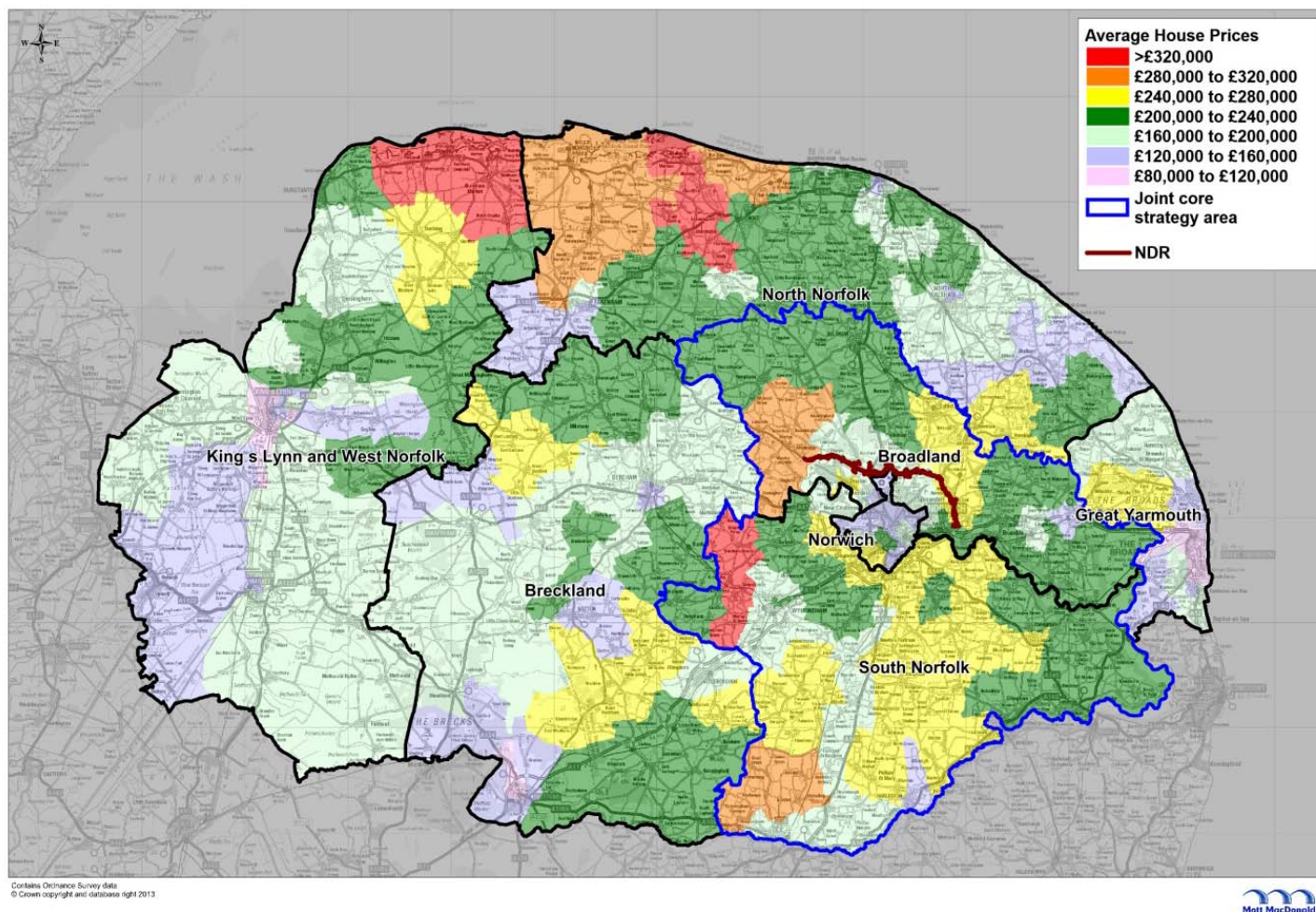
---

<sup>11</sup> Commissioned by the Greater Norwich Development Partnership (May, 2008) Greater Norwich Employment Growth and Sites & Premises Study: Ove Arup & Partners Ltd

house type, access to schools, transport connections to employment and leisure opportunities as well as neighbourhood facilities. Connectivity between residential areas and opportunities in the wider travel-to-work-area (and beyond) is one factor involved in determining demand for housing.

- 2.7.4 Drawing on data related to the value of dwelling houses at the point of sale, Figure 2.11 reveals that northern areas of North Norfolk, King's Lynn and West Norfolk have particularly high value in comparison with the rest of Norfolk. There are also pockets of high value density in the north west of South Norfolk. In comparison, the northern parts of Norwich are valued at less than the surrounding area. Indeed, the northern fringes of the city present consistently lower value housing compared to the southern fringes. Improving the connectivity of neighbourhoods to the north of the city should provide a boost to housing demand and drive up property values in the area over time following construction of the NDR.

Figure 2.11 – Average house prices when sold: February 2012 to February 2013



Source: Mott MacDonald calculations<sup>12</sup>

## 2.8 Summary

2.8.1 The economic baseline characteristics on which the NDR is to have an influence suggest that:

- The northern and north-eastern parts of Norwich are the least affluent and the most deprived parts of the JCS area, with higher concentrations of people that are unemployed.
- Parts of Norfolk to the north of Norwich are relatively less affluent and have lower average house prices than parts of Norfolk to the south of Norwich.
- The long-term trajectory over the next two decades is one of growth as set out in the JCS. NDR has been planned as a critical piece of infrastructure to support delivery of this growth.

<sup>12</sup> Average house prices based on price paid for a house between February 2012 to February 2013, available at : <http://www.landregistry.gov.uk/market-trend-data/public-data> Postcodes were used to identify location points for house sales which were used to allocate each sale to a specific LSOA which then enabled us to derive to derive an average house sale price for each LSOA

- The NDR will create opportunity for employment and housing growth to the north and north-east of Norwich, precisely the area where employment need is greatest and where a surplus of labour is available to meet demand from employers.
- A north city employment hub is recommended with the Airport providing a natural locus for this growth and the NDR acting as facilitator of future growth. The Airport is advancing its planned development through Norwich Aeropark to which the NDR will add impetus in future.



### 3.1 Policy Framework

3.1.1 This section provides a broad overview of the overarching policy framework in relation to the NDR and the communities it serves. The overview is presented at two spatial scales: national; and sub-regional/ local. We acknowledge that certain “targets” for growth used here are taken from the former Regional Spatial Strategy, however, these have been used in Norfolk as part of applicable Local Development Frameworks and therefore remain relevant. A list of the documents reviewed is set out in Table 3.1 below

Table 3.1 – Policy documents reviewed

National policy documents	
<ul style="list-style-type: none"> <li>• Department for Transport, Creating Growth, Cutting Carbon – Making Sustainable Transport Happen, 2011</li> <li>• National Planning Policy Framework, 2012</li> </ul>	
Sub-regional and local policy documents	
<ul style="list-style-type: none"> <li>• Joint Core Strategy for Broadland, Norwich and South Norfolk, GNDP, 2011</li> <li>• Joint Core Strategy Annual Monitoring Report, GNDP, 2011/12</li> <li>• New Anglia Local Enterprise Partnership Business Plan</li> <li>• Delivering Economic Growth in Norfolk – The Strategic Role for Norfolk County Council, 2012/17</li> <li>• Greater Norwich Economic Strategy 2009/14, GNDP, 2009</li> <li>• Norwich Area Transportation Strategy , 2004 updated in 2010</li> <li>• Norwich City Deal, Expression of Interest by Norwich City Council, 2013</li> </ul>	

### 3.2 National policy

Department for Transport: Creating Growth, Cutting Carbon - Making Sustainable Local Transport Happen, 2011

3.2.1 The DfT's White Paper states the Government's vision for local transport as being '*for a transport system that is an engine for economic growth, but one that is also greener and safer and improves quality of life in our communities*' (Department for Transport: Creating Growth, Cutting Carbon - Making Sustainable Local Transport Happen, paragraph 1.3, page 11).

3.2.2 The White Paper acknowledges that "*Local transport faces a sustainability challenge - excess delay is costing our urban economies £11 billion per annum, and carbon emissions impose a cost to society of up to £4 billion per annum. The costs to the health of our communities are even greater – up to £25 billion per year on the costs of physical inactivity, air quality and noise, and £9 billion on road traffic accidents.*" (Department for Transport: Creating Growth, Cutting Carbon - Making Sustainable Local Transport Happen, Key Points, page 15).

3.2.3 Sustainable growth is one of the country's biggest challenges. Solutions need to jointly address economic, environmental and community values and aspirations for the future. The transport sector's role in this is hugely important – sustainable means of getting people to work and to services such as education and healthcare providers - as well as to leisure activities and shops, are crucial to quality of life as well as to enhancing people's spending power and choice.

- The White Paper also notes that "*congestion acts as a drag on the economy: a recent study placed the cost of excess delays in urban areas at £10.9 billion per annum (Department for Transport: Creating Growth, Cutting Carbon - Making Sustainable Local Transport Happen, paragraph 2.7, page 16, quoting Cabinet Office Strategy Unit et al., 2009, page 9).*" Similarly, on the supply-side of the economy, "*access to employment, education and healthcare, as well as ending child poverty, all have a key impact on life chances and social mobility, and ultimately on growth.*" (Department for Transport: Creating Growth, Cutting Carbon - Making Sustainable Local Transport Happen, paragraph 2.9).. The White Paper notes (Department for Transport: Creating Growth, Cutting Carbon - Making Sustainable Local Transport Happen, at paragraph 2.10, page 17) that various studies have revealed that: 2-out-of-5 jobseekers say lack of transport is a barrier to getting a job, and 1-in-4 jobseekers said the cost of transport is a significant issue; (Lucas, 2003);
- 6% of 16–24 year olds turn down training or further education because of transport problems; young people in rural areas, and those with learning difficulties and disabilities, are more likely to cite costs of transport as a constraint in pursuing post-16 learning; (Social Exclusion Unit, 2002); and
- In 2008, 44% of workless households did not have a car or van (compared with 22% of all households) (Office for National Statistics, 2008).

National Planning Policy Framework (NPPF), 2012

3.2.4 The Government introduced the National Planning Policy Framework in 2012 as a guide to how the planning system should be implemented in England, suggesting that the purpose of the planning system is to contribute to the achievement of sustainable development. The NPPF identifies three dimensions to sustainable development: economic, social and environmental and advises that "*these dimensions give rise to the need for the planning system to perform a number of roles*" (National Planning Policy Framework, paragraph 7, page 8) which is set out below:

- an economic role – contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure;

- a social role – supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and support its health, social and cultural well-being; and
- an environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

3.2.5 The NPPF sets out a series of themes that align with sustainable development. Those that align with the proposals for the NDR and wider growth and development in Greater Norwich are listed below:

- Building a strong, competitive economy (section 1).
- Ensuring the vitality of town centres (section 2).
- Supporting a prosperous rural economy (section 3).
- Promoting sustainable transport (section 4).
- Delivering a wide choice of high quality homes (section 6).

### **3.3 Sub-regional and local policy**

Joint Core Strategy for Broadland, Norwich and South Norfolk, 2011

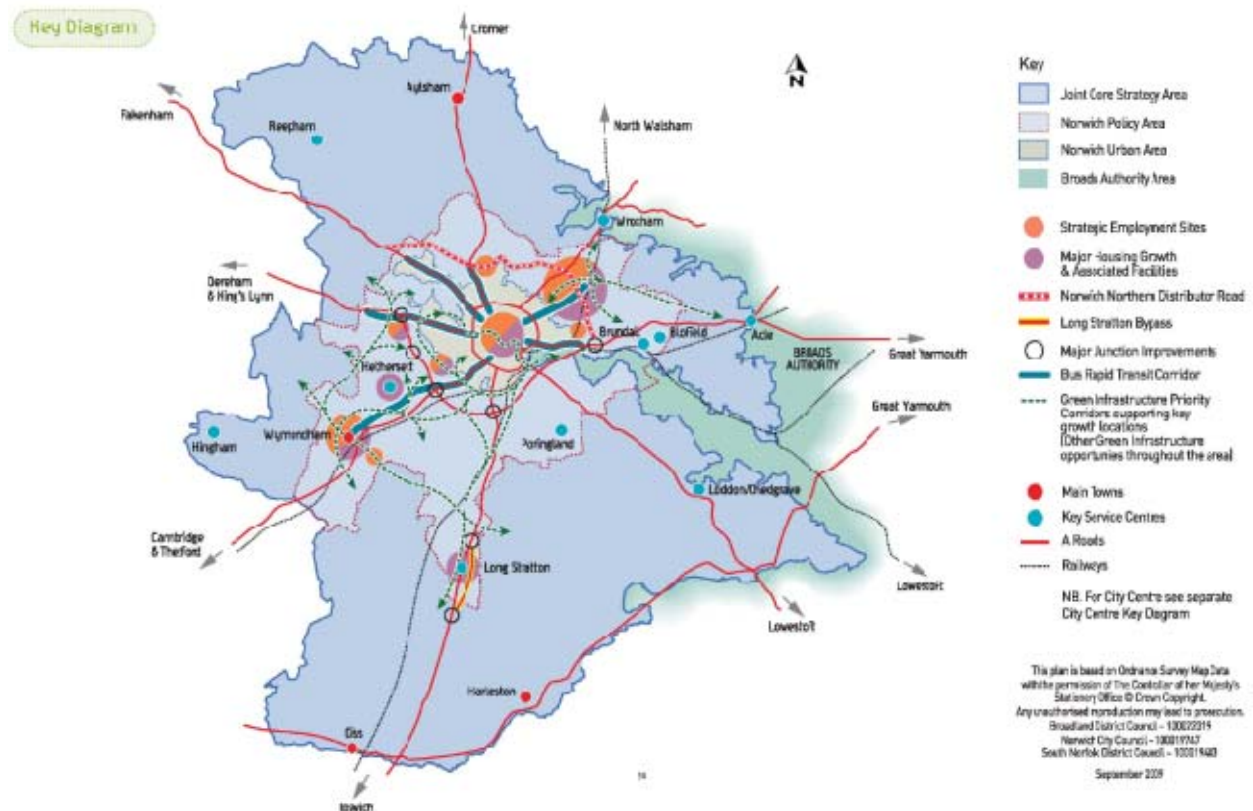
- 3.3.1 One of the principal local policy frameworks to emerge in recent years has been the Joint Core Strategy for Broadland, Norwich and South Norfolk adopted in March 2011 (JCS). Following a High Court Challenge part of the JCS was remitted but, supported by appropriate revised evidence, the remitted policies were resubmitted and were subject to public examination in July 2013. The Inspector has subsequently consulted on draft modifications that relate to contingency and clarity rather than the submitted locational policies. As of November 2013 the Inspector's report is imminent but not yet available. At this late stage the part plan carries substantial weight for the purposes of this report.
- 3.3.2 The JCS was facilitated by the Greater Norwich Development Partnership (GNDP), and sets out an over-arching strategy for growth across the districts of Broadland, Norwich and South Norfolk. It also identifies key locations for growth and sets out policies to ensure that future development is sustainable.
- 3.3.3 The JCS contains twelve over-riding objectives, which underpin the spatial vision of creating some 36,820 new homes and 27,000 new jobs between 2008 and 2026 in the Greater Norwich area. The recently examined part of the plan proposes a 10,000 dwelling mixed use urban extension into the Catton, Sprowston, Rackheath and Thorpe St Andrew 'growth triangle' to the northeast

of Norwich. The NDR has a role in supporting development in this area and in relation to the following spatial planning objectives of the JCS (Joint Core Strategy, pages 20-23):

- *“To allocate enough land for housing, and affordable housing, in the most sustainable settlements”* (Joint Core Strategy for Broadland, Norwich and South Norfolk Objective 2, page 20)– whereby new housing, employment, and services are planned in such a way that they are grouped together ensuring that the land is used efficiently and community needs are met
- *“To promote economic growth and diversity, and provide a wide range of jobs”* (Joint Core Strategy for Broadland, Norwich and South Norfolk, Objective 3, page 21) - this involves not only safeguarding existing employment sites but also allocating sufficient levels of land to meet the needs of growing businesses and inward investors.
- *“To promote regeneration and reduce deprivation”* (Joint Core Strategy for Broadland, Norwich and South Norfolk, Objective 4, page 21) - growth will be used to bring benefits to deprived neighbourhoods in Norwich and deprived towns, villages and rural settlements in the surrounding area
- *“To make sure people have ready access to services”* (Joint Core Strategy for Broadland, Norwich and South Norfolk, Objective 6, page 21) – the city centre provides a wide range of services and accessibility of the city centre will be maintained and enhanced. Wherever new homes and jobs are developed there will be a need to provide adequate supporting services.
- *“To enhance transport provision to meet the needs of existing and future populations while reducing travel need and impact”* (Joint Core Strategy for Broadland, Norwich and South Norfolk, Objective 7, page 21) - supports the co-location of housing and employment land uses alongside other community and service uses; also supports improved use of public transport, including the introduction of a bus rapid transit (BRT) system and recognises that the state of the strategic road network is fundamental to the health of the local economy.
- *“To encourage the development of healthy and active lifestyles”* (Joint Core Strategy for Broadland, Norwich and South Norfolk, Objective 11, page 23) - giving people better opportunities to make healthy travel choices as part of their daily lives, by providing “safe and direct cycle and pedestrian routes, and orbital bus services, to Broadland Business Park, Rackheath employment area, airport employment areas and to the surrounding countryside” (Joint Core Strategy for Broadland, Norwich and South Norfolk, page 57).

3.3.4 The JCS’ key diagram (incorporating the emerging JCS proposals) is set out in Figure 3.1 below and illustrates the critical importance of the NDR as a piece of strategic infrastructure supporting growth and development to the north and east of Norwich.

Figure 3.1 – JCS Key Diagram



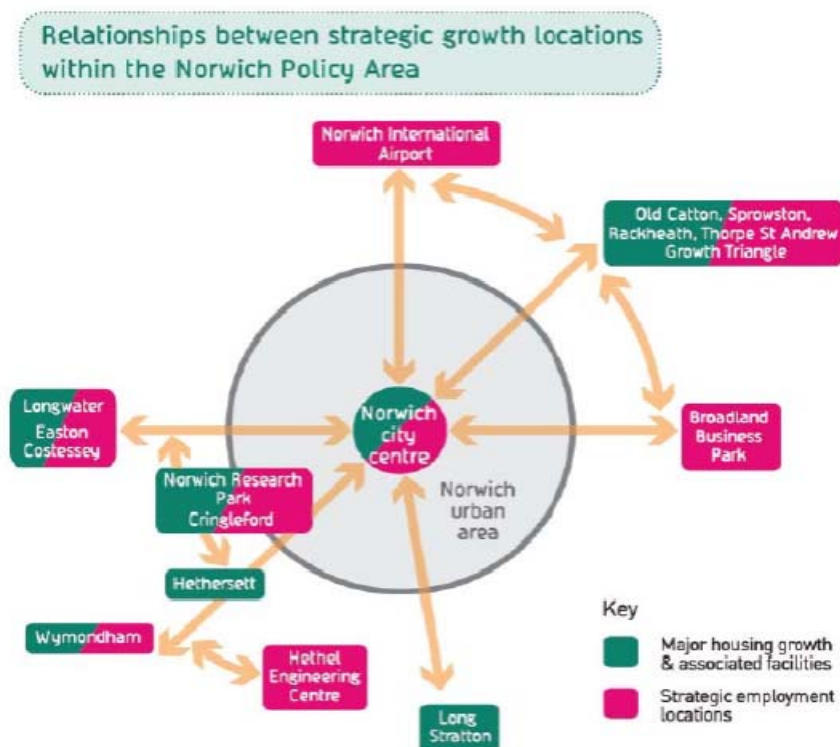
Source: Joint Core Strategy for Broadland, Norwich and South Norfolk, 2011 (page 24)

3.3.5 Figure 3.2, below, shows the relationships between strategic growth locations in the Norwich Policy Area (NPA)<sup>13</sup>, which are located around the edge of the city. The NDR would contribute to the provision of connectivity between some of these locations, as is indicated by the arrows forming a quarter circle between Norwich International Airport and Broadland Business Park.

<sup>13</sup> The Norwich Policy Area is defined by way of a plan in Appendix 4 of the JCS and sits within the JCS area. The NPA provides a focus for planning and co-ordinating Norwich related growth.



Figure 3.2 – JCS Strategic growth locations around Norwich



Source: JCS (page 53), 2011

### JCS Annual Monitoring Report, 2011/12

3.3.6 In line with the 2011 JCS, this monitoring report provides an indication of how the GNDP area (also the study area for the purposes of this report) is performing against the objectives set out in the JCS and identifies key target performance against JCS objectives. It states that a number of targets have been met or worked towards, including:

- reduction of carbon emissions;
- proportion of new dwelling development on previously developed land is achieving target;
- improved national retail ranking for Norwich (from 11th to 9th); and
- overall relative deprivation has improved (JCS Annual Monitoring Report, paragraph 1.2, page 2)

3.3.7 In terms of achieving JCS objectives, the following targets remain challenging, arguably as a result of the economic downturn:

- housing completions have been below target since 2008;
- the number of new business start-ups has been below target;
- increased youth unemployment; and

- a reduction in public transport accessibility (JCS Annual Monitoring Report, paragraph 1.3, page 3).

3.3.8 In terms of spatial planning for housing, the majority of new homes will be built in the NPA – 33,000 out of the 36,820 between 2008 and 2026, with the remaining development being allocated to smaller sustainable settlements. Since 2008, net housing completions per annum in the NPA have fallen short of the 1,825 per annum target – 2008/09: 1,193; 2009/10: 923; 2010/11: 910; and 2011/12: 915. However, affordable housing completions in Norwich exceeded target levels in 2011/12 (at 61% actual as against a target of 33%) (JCS Annual Monitoring Report, Table 5, page 16).

3.3.9 In addition to this, the gross employment floor space developed between 2008 and 2012 across all employment types in the JCS area (Broadland, Norwich and South Norfolk) has fluctuated: 27,358 m<sup>2</sup> in 2008/09; 17,811 m<sup>2</sup> in 2009/10; 37,707 m<sup>2</sup> in 2010/11; and 26,914 m<sup>2</sup> in 2011/12. More specifically, Broadland has had the highest level of gross floor space development for employment at 51,871 m<sup>2</sup> across all employment types (JCS Annual Monitoring Report, Table 8 page 25).

3.3.10 Improvements to the Postwick Interchange at the A47(T) are “*essential to deliver permitted expansion of the Broadland Business Park and to enable wider developments to the northeast of Norwich*” (JCS Annual Monitoring Report, paragraph 2.1, page 130) where an urban extension is proposed but is dependent on new infrastructure. The planned improvements to the Postwick Interchange have been designed to accommodate the junction of the A47(T) with the eastern end of the proposed NDR.

New Anglia Local Enterprise Partnership (LEP) for Norfolk and Suffolk - Towards a Growth Plan, Consultation Draft, (July 2013)

3.3.11 Following the successful acceptance by Government of the New Anglia Local Enterprise Partnership proposals in 2011, the LEP has identified its areas of focus and has been developing its priorities. Towards a Growth Plan, Consultation Draft states that: “*investment to increase the capacity of the A14 and A47 and other roads is essential to enable growth. The Norwich Northern Distributor Road is vital to unlock the potential of Greater Norwich. To promote more sustainable travel, rail investment is also needed, notably on the Great Eastern Main Line and West Anglia Route to overcome capacity constraints*” (Towards a Growth Plan, Consultation Draft, paragraph 1.13, page 9).

3.3.12 The LEP is fully supportive of the GNDP and its aims which are embodied in the JCS and the Greater Norwich Economic Strategy<sup>14</sup>. The NDR is a key element of transport infrastructure and would facilitate delivery by the LEP of the expected growth in housing and employment that the area needs, and has the potential to achieve. It fits with the LEP ambitions to resolve some of the key challenges which are faced by inhabitants of the LEP's area:

- *“Below average skill levels in Norfolk and Suffolk.*
- *Low GVA and wages.*
- *An infrastructure deficit in the road and rail network, both East to West and North to South.*
- *Inadequate utilities infrastructure, which is actively hindering private sector investment.*
- *Poor Broadband coverage compared with most other parts of the country.*
- *Low business start-up numbers compared with national and regional averages.*
- *Significant areas of deprivation in urban, rural and coastal areas.”* (based on New Anglia LEP Towards A Growth Plan, paragraphs 1.13 – 1.22, pages 9-10).

3.3.13 The aims of the New Anglia LEP are:

- *“To ensure New Anglia is nationally and internationally competitive.*
- *To act as a catalyst to achieving sustainable economic growth and tackling barriers where they occur through:*
- *Enabling business start-up and growth.*
- *Developing existing growth sectors, clusters and supply chains.*
- *Championing infrastructure improvements to aid business productivity and the smooth functioning of local labour markets.*
- *Delivering action at the level that is meaningful and works for business.*
- *Facilitating business and local community engagement.*
- *Promoting skills and workforce development.”* (New Anglia LEP Business Plan Presentation, page 2).

3.3.14 The NDR directly addresses the local infrastructure deficit in the Norwich area and would facilitate the growth of 27,000 jobs by linking up key employment sites. It would also open up strategic access to north and northeast of Norfolk which will help address challenges and aims of the New Anglia LEP.

3.3.15 The LEP's aims for development reflect Norfolk County Council's economic growth strategy, identifying the NDR as a key element of transport infrastructure which will help to facilitate the current and forecasted rates of economic,

---

<sup>14</sup> Greater Norwich Economic Strategy 2009/14, GNDP (2008)



employment and housing growth across northern Norfolk by creating links to key employment and strategic development sites.

Delivering Economic Growth in Norfolk – The Strategic Role for Norfolk County Council, 2012/17

3.3.16 Norfolk County Council (NCC) has produced an economic growth strategy to support Norfolk's development 2012-17. In its first Priority Theme the strategy states that: *"maintenance of existing road network is critical and the rural nature of the county makes connectivity within and beyond the county a key priority. The Norwich Northern Distributor Route (NDR) (...) is vital to the continued economic success of the Greater Norwich area, also benefiting North Norfolk and Great Yarmouth"* ('Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk City Council, page 4).

3.3.17 Key challenges facing the implementation of this strategy include: addressing infrastructure constraints; securing infrastructure funding; encouraging business start-ups; securing investment from key growth sectors; tackling the mismatch between skills and employability ('Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk City Council, page 3-4).

3.3.18 Construction and operation of the NDR will significantly contribute towards the delivery of the following Priority Themes and Action Plans which are identified within Norfolk's economic growth strategy ('Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk City Council, paragraph 5.2):

- "To provide support for growth and removing infrastructure constraints" ('Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk City Council, Theme 1 Section 5.2.1, page 14-16) - priorities include:
  - Roads and rail – Infrastructure Plan to define targets (June 2012)
  - Great Yarmouth 'Third River Crossing'
  - Breckland riverside regeneration
  - West Norfolk – housing creation and College facility regeneration
  - North Norfolk and Norwich Research Park
  - Super-fast broadband - targeted at 30Mbps
- "To help businesses to start up and grow" ('Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk City Council, Section 5.2.2, page 16-20):
  - Business start-up scheme – targeted 400 new start-ups by 2013/14
  - Rural growth network – 1,200 individuals given advice; 400 businesses assisted; 150 new businesses started; 700 jobs created
  - Hethel Engineering Centre – targeted 40,000 ft<sup>2</sup> Advanced Manufacturing Centre built at Hethel by March 2013

- To improve perceptions of Norfolk's business offer and secure inward investment and growth in key sectors ('Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk City Council, Section 5.2.3, page 20-22)
  - Develop 'World Class Norfolk' campaign.
  - Work with UK Trade & Investment's Investment Services Team (UKTI IST) and other partners to deliver inward investment.
  - Work with UKTI IST and district partners to deliver Investor Development Programme.
  - Deliver a programme of visits to businesses outside UKTI criteria.
  - Produce a Sector Development Plan.
  - Work with local Councils to maximise offshore energy opportunities.
  - Maximise Enterprise Zone developments – targeted 80 new businesses by 2015.
  - Build on relationships with Essex and Suffolk County Councils.
- "To provide fair access to the public sector" (Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk City Council, Section 5.2.5, page 24):
  - Tendering opportunities are filtered through Contracts Finder website
  - Annual 'Meet the buyer' event established
  - Procurement process for smaller suppliers is less bureaucratic
  - Remove unnecessary requirements for high level insurance cover
  - Simplify processes for lower-value procurements

#### Greater Norwich Economic Strategy 2009/14

3.3.19 This strategy sets out the current economic vision and priorities for Greater Norwich to equip the area for facilitating its growth potential.

3.3.20 A number of key challenges to growth for the Greater Norwich area have been outlined in the strategy, and these are significant factors in determining the area's growth potential. These include (Greater Norwich Economic Strategy 2009/14, paragraph 1.51. page 13):

- the provision of sufficient jobs in accordance with population increases;
- a diverse economic base with varied knowledge sectors to create new employment;
- stimulate entrepreneurship, increasing business start-up rates;
- improving international, national and regional connectivity to promote sustainable transport; and
- the development of an appropriate range of employment sites.

3.3.21 As a focus for local growth, the sustained development of Greater Norwich is vital; the NDR development is closely aligned with the following main development objectives within this strategy:

- *“To strengthen the area’s economy, maximise diverse employment opportunities, and ensure that the businesses can flourish”* (Greater Norwich Economic Strategy 2009/14, Objective 1, page 16)– one of the priorities within this objective is to support the growth of the knowledge economy by encouraging key sectors and facilitating the attraction of businesses that can exploit the research potential of the local universities. The sectors identified include engineering, environment, and life sciences
- *“Ensure that the area has the necessary infrastructure and quality of environment to attract and retain investment and support business growth”* (Greater Norwich Economic Strategy 2009/14, Objective 3, page 17)- developing improved and sustainable transport and communications infrastructure to support planned growth and development; maintaining an appropriate supply of suitably located employment sites; and ensuring investment in required public utilities infrastructure.
- *“To raise the profile of Norwich as a high quality place to live, work and visit”* (Greater Norwich Economic Strategy 2009/14, Objective 4, page 17) - if the proposed development were to succeed it would help to develop a stronger image for the area, and act as a catalyst for further investment.

Norwich Area Transportation Strategy (NATS) (2004, updated in 2010<sup>15</sup>)

3.3.22 Norfolk County Council’s NATS presents a high level strategy for transport across the county of Norfolk and within Norwich, as well as key short, medium and long term transport delivery methods to realise the area’s growth potential. One of the main objectives of NATS is to ensure that transport services meet the needs of local people, businesses and visitors to support continued sustainability across the area minimising the adverse effect of journeys on people and the built and natural environment. NATS promotes travel choice, recognising the need to maintain the economic health of the Norwich area, and does not propose radical restrictions on vehicular access.

3.3.23 NATS recognises that the major growth in the area is likely to include a major urban extension to the north east of Norwich and growth of Norwich International Airport, and looks to provide the essential infrastructure needed to accommodate this growth, including the NDR.

3.3.24 The strategy identifies the following transport measures:

- a bus rapid transit network;
- improvements to a core bus network as well as integrated ticketing and improved information;
- city centre improvements;
- a package of cycling and walking improvements;
- specific rail service improvements;
- Smarter Choices initiatives; and

---

<sup>15</sup>As part of the development of Norfolk’s Third Local Transport Plan (LTP3), *Connecting Norfolk*, March 2011

- the NDR.

3.3.25 In terms of helping improve business performance; the NDR was highlighted as the most important scheme within NATS. It was demonstrated to be essential in providing the necessary capacity to enable continued improvements for buses, cyclists and pedestrians. When implemented, the NDR will provide relief to key radial routes and therefore additional capacity for the implementation of enhanced priority for buses, cyclists and pedestrians.

Norwich City Deal, Expression of Interest, January 2013

3.3.26 In November 2012 Norwich City Council and the New Anglia LEP were invited by Government to prepare an expression of interest for negotiating a City Deal. This was followed in February 2013 by the Cabinet Office announcing Greater Norwich's inclusion in the second round of City Deals.

3.3.27 In February 2013, the Cabinet Office announced it would work with 20 towns and cities, including the Greater Norwich area, as part of a second wave of City Deals. The first and second wave of deals was presented as an attractive package designed to:

- *"Give cities the powers and tools they need to drive local economic growth;*
- *Unlock projects or initiatives that will boost their economies; and*
- *Strengthen the governance arrangements for each city."* (The Cabinet Office, Unlocking growth in Cities: City Deals – Wave 1, 2012, page 1).

3.3.28 An expression of interest was submitted to the Cabinet Office on 15 January 2013 following collaborative work involving Broadland, Norwich City, South Norfolk and Norfolk County partners on a plan to develop a Greater Norwich approach. An overview of the Expression of Interest is publicly available<sup>16</sup> and its main objectives are summarised below:

3.3.29 The Expression of Interest sought to bring together the three strands of enterprise and innovation, skills, and infrastructure to exploit the growth potential of the internationally renowned Norwich Research Park (NRP), in order to develop it into a world-class science centre acting as a catalyst for economic growth:

- The intention is to build on private sector investment to expand the NRP to 55ha ); such expansion is expected to bring much wider benefits, with the LEP confident a major transformational boost to the NRP will help stimulate growth to the whole Greater Norwich area.

---

<sup>16</sup> <http://www.norwich.gov.uk/YourCouncil/Partnershipworking/Pages/CityDealForGreaterNorwich.aspx>



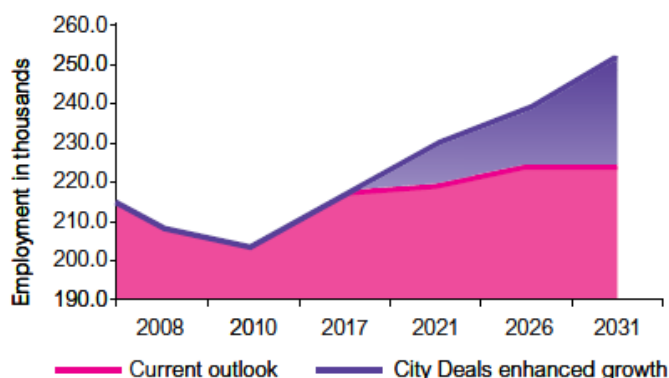
- Hand-in-hand with any major boost to the jobs market is the need for additional homes and infrastructure, including community facilities, transport connections and utilities. The LEP aims to help facilitate delivery of the 37,000 new homes proposed in the JCS.
- By working together and maximising the opportunities for government and private sector funding, as well as using new powers to be granted to the area authorities pursuant to the City Deal, the LEP will be set to accelerate the area's growth, so vital for economic recovery.
- As well as providing additional jobs, the LEP will also seek to play a role in addressing the mismatch, identified by local businesses as a local issue, between job opportunities and skills provision.

3.3.30 The LEP's ambition for the Norwich City Deal is to catch up on the 'lost decade' of lost jobs and output. Dynamic growth at the NRP will act as a catalyst to deliver:

- Accelerated local growth for national economic recovery.
- 40,000 new jobs, which is a major increase over the LEP's pre-recession projection (over a 30% increase) and a significant uplift to its current outlook.
- 37,000 new homes for Greater Norwich.
- 50% increase in knowledge based businesses.
- 30% increase in GVA above trend.
- An international flagship for life sciences enterprises. (paragraph D1, page 09).

3.3.31 The City Deal approach is expected to deliver enhanced jobs growth for Greater Norwich as Figure 3.3, below, indicates.

Figure 3.3 – Norwich City Deal - Greater Norwich Job Growth



Source: Greater Norwich City Deal, Expression of Interest, January 2013, page 3

- 3.3.32 The importance of infrastructure to supporting economic growth in Greater Norwich is reiterated through the City Deal submission. The public sector partners: Broadland District Council, Norwich City Council, Norfolk County Council and South Norfolk Council intend to “create infrastructure to support the expansion and growth of the NRP which in turn will release private sector investment and jobs in housing development to support business and employment growth” (GNCD – EOI, page 9). The JCS proposes that at least 37,000 new homes are to be delivered by 2026 (JCS, Spatial Planning Objective 2, page 20).
- 3.3.33 In recent years, housing growth stalled because of the global economic downturn. This generated a loss of confidence in the housing sector, uncertainty of delivery and lack of access to finance. The City Deal proposal will enable the public sector and its partners to put the JCS back on track post-recession (Greater Norwich City Deal, Expression of Interest, page 9). The benefits of growth are expected to spread across Norfolk and the New Anglia LEP area, through the supply chain, linking for example with the energy focussed Enterprise Zone in Great Yarmouth/ Lowestoft. City Deal objectives have the potential to both deliver and benefit from key infrastructure such as the NDR, A47 improvements and improvements in the Norwich-London rail service.
- 3.3.34 Having successfully passed the selection process, the City Deal partners subsequently engaged with ministers and government departments over a six-month period to negotiate the full scope of the deal for the area. The negotiation document (due to be publicly available in November 2013) is understood to have expanded the proposals to focus on three key locations for growth. In addition to Norwich Research Park, the aviation cluster is to be expanded at Norwich International Airport and a digital creative cluster is to be further developed in the city centre (based around Norwich University of the Arts). Alongside reaching an agreement on the measures required to deliver the ambitious plans for these locations/clusters, the LEP will also be seeking to have a greater influence over how national programmes for investment in skills, jobs, infrastructure and housing can be shaped to benefit the whole of the Greater Norwich area. A final decision will be made by Government in November 2013.
- 3.3.35 Whilst the NDR is to be built on the opposite side of the city to Norwich Research Park, the anticipated growth at Norwich Research Park is expected to give rise to additional growth across the Greater Norwich area. This will require enhanced transport infrastructure and transport connectivity.

### **3.4 Summary**

- 3.4.1 The overarching policy framework for Norfolk, Greater Norwich and the JCS area is oriented towards growth and recognises the importance of infrastructure provision to support the occurrence of growth. An urban extension to the north-east of Norwich would deliver a lot of the growth identified in the JCS and the area around Norwich International Airport has potential for an aviation-related cluster to further develop in that area. The NDR is essential if this growth is to be delivered and, at the micro level, is critical in allowing sites to be brought forward. Consequently, the NDR is critical to the future development of Greater Norwich and to Norfolk's economy.

**PAGE NOT USED**



## **4.1 Business Consultation**

- 4.1.1 During 2011, Mott MacDonald conducted consultation and engagement work with a range of Norfolk-based businesses. The process of consulting and engaging with the local business community was not intended to be a scientific exercise with a stratified sample used to produce quantifiable results. It was a qualitative exercise designed to gather local nuanced opinion from a range of businesses and business representatives e.g. Chamber of Commerce.
- 4.1.2 In total 39 businesses responded and provided an overwhelmingly positive and supportive response to proposals for the NDR. A summary of the consultation responses received is set out below, together with a number of representative statements from respondents (which have been anonymised for the purposes of reporting at the business community level rather than expressing a series of individual business concerns).

## **4.2 Summary of comments received**

- 4.2.1 The main theme to emerge from respondents' comments was the need for improvement of traffic flow resulting in a reduction in journey time and fuel costs. Other themes included: economic benefits; a reduction in pollution levels; and improved livelihoods of local inhabitants. The following comments illustrate the general sentiment within the business organisations which were consulted:
- "I thoroughly support the bid to Government for funding for the Norwich Northern Distributor Road"
  - "I fully enthusiastically support the introduction of the Norwich Northern Distributor Road"
  - "I would like to show my strong support for the building of the Norwich Northern Distributor Road"
  - "We are pleased to offer our support for the proposed scheme"
  - "Me and my drivers would certainly welcome the NDR"
  - "I am very supportive of the NDR"
  - "I fully support the Norwich Northern Distributor Road bid"
  - "We support the NDR and welcome it"
  - "The construction of the Norwich Northern Distributor Road is the single most important road improvement in Norfolk"
  - "My view is that the NDR is way overdue so I am therefore fully supportive"
- 4.2.2 Furthermore, it was suggested from the business responses received that the NDR will improve traffic flow through and around Norwich and this may have multiple positive knock-on effects for local businesses and residents. Journey times are expected to be reduced which will therefore cut fuel costs and

improve business prospects for businesses located north of Norwich. Businesses such as distribution companies and taxi firms also predicted they would be able to increase productivity and therefore increase turnover following the NDR's construction.

- 4.2.3 Respondents also suggested that the NDR is vital to support the growth of the Greater Norwich and Norfolk area; some respondents predicted that the tourism industry will benefit significantly due to easier access into the city drawing in new visitors and a larger number of customers who currently travel elsewhere. It was suggested that in addition to attracting new clients and customers, new industries, such as the energy sector, could potentially start up in the area. This, in turn, would create more local employment within and around Norwich. Costs for the local councils are also predicted to be reduced due to a reduction in the need for repairs and maintenance of smaller roads that are not designed for the current usage levels, if traffic currently using those roads was redistributed onto the NDR.
- 4.2.4 More direct effects for local inhabitants of Norwich were predicted by some respondents to include a reduction in hazards associated with large vehicles using smaller village roads; it was mentioned in the consultation responses that currently larger vehicles than cars are traveling within close proximity to schools posing risk of accident. Respondents also noted that removing the current high traffic volumes in and around central Norwich is also expected to remove the assumed high noise and air pollution levels away from inhabitants of congested areas.
- 4.2.5 In contrast to the supportive responses; 3 of the 39 consultees expressed negative responses in relation to the NDR. The reasons for such negative responses were linked to opposition to the potential new housing developments associated with the NDR, such as Rackheath eco-town, and respondents said that they felt that damage to the existing countryside could not be justified.
- 4.2.6 In conclusion, a large proportion of respondents consulted (92%) expressed their full support for the NDR and gave varying examples of how the NDR would benefit the local area and/or business growth in that area.

### **4.3 Summary**

- 4.3.1 The consultation responses provide a range of qualitative commentary that is, in the main, favourable to the NDR, and it is clear that the NDR is perceived to be a piece of infrastructure which will simultaneously support the growth of local businesses and encourage local economic development.

## **5.1 Assessment of the potential Impact of NDR on GVA and Employment**

- 5.1.1 This section sets out an assessment of the favourable impact of the NDR on GVA and employment statistics in the study area as a result of development on land where conditions will become more favourable for development once the NDR has been constructed. Development of the various sites considered would, in the absence of the NDR, place greater and greater strain on the existing road infrastructure. Well before the end date (2026) for the JCS, congestion would require a planning-led halt to development.
- 5.1.2 We discuss 'additionality' later in this section, meaning the additional development and employment that would be created with, rather than without, the NDR. Although we consider additionality in relation to each development site identified in the study area, it seems probable that full development at any one site would be possible without the NDR, but that development of all sites would not be possible without the NDR. The judgments about additionality, which have been reached by Mott MacDonald in conjunction with NCC (planning and economic development officers) and those involved in the development and masterplanning of Norwich international Airport and Norwich Industrial Estate, should be read in this context and considered against the relevant policy objectives of the JCS.

## **5.2 Assessing the Impact**

- 5.2.1 Traditional analysis of the benefits of road schemes concentrates on what may be called their 'transport' benefits, such as reductions in commuting times and accidents. Those benefits are monetised in accordance with established principles set out in the DfT's transport analysis guidance ('WebTAG') and the resulting money values, discounted over time, may be compared with the capital cost of the scheme being assessed.
- 5.2.2 In addition to such transport benefits, a road scheme will often enable a particular site to be developed, creating jobs and economic activity on that site. Such benefits have often in the past been excluded from the assessment of road schemes, in the belief that perfectly functioning markets might allow the benefits to arise anyway (though not necessarily in the same locations). But in current economic circumstances markets are manifestly not functioning with

textbook efficiency, and an express component of government transport policy is to support schemes that generate benefits in the form of additional jobs and economic activity, as well as transport benefits, by supporting a transport system “that is an engine for economic growth” (Department for Transport: Creating Growth, Cutting Carbon – Making Sustainable Local Transport Happen, 2011, paragraph 1.3). The Green Book states at paragraph 5.25 that *"In principle, appraisals should take account of all benefits to the UK. This means that as well as taking into account the direct effects of interventions, the wider effects on other areas of the economy should also be considered."*

- 5.2.3 This section of this report sets out an assessment of such wider economic development benefits which are forecast to arise in connection with the NDR.
- 5.2.4 The NDR will facilitate commercial and residential developments that would, at least in part, be unlikely to occur without the NDR, thereby generating increased investment and employment. The NDR will raise the level of employment in the study area, rather than merely bringing about changes in job locations without affecting the level of employment. Even where the NDR would facilitate development on particular sites that would not be possible (on these sites) in its absence, part of that development might potentially have arisen elsewhere in Norwich or the surrounding area: so not all of the gross jobs (i.e. the extra jobs created on the particular sites where development is facilitated by the NDR) will be ‘additional’, and as noted at the start of this section, the primary focus of this report is additionality.
- 5.2.5 The assessment of additionality based on forecasts rather than actual results (an ex ante appraisal) is inevitably more difficult than it is in an evaluation based on historic factual information (ex post evaluation) when occupiers and others can be surveyed about what they would have done in the absence of the intervention. In an ex ante appraisal, which is necessary in the present assessment of additionality for the NDR, the uncertainties inherent in such an assessment mean that a conservative approach should be taken, under which additionality is assessed at the low point of the plausible range. In consideration of this, a judgment has been made in consultation with NCC and (Norwich International Airport and Norwich Industrial Estate), about the extent of additionality attributable to the NDR, and this report is based on that judgment.
- 5.2.6 The NDR is anticipated to have a generally beneficial effect on the economy of Norwich and the JCS area. It will, for instance, improve transport connections between Norwich city centre and the remainder of the county of Norfolk and is



expected to promote city centre development; furthermore, it will substantially improve the connection between Great Yarmouth and Norwich International Airport - respectively the sea and land bases for much southern North Sea offshore energy activity - and thus it will help to promote development in Great Yarmouth as well as Norwich. Benefits realised at some distance from the NDR are, however, less obvious than those at sites on or very close to the NDR, and therefore this report does not seek to quantify additionality in relation to those sites; rather, their existence is noted as providing supplementary justification for the NDR.

- 5.2.7 Where, in closer proximity to the NDR, (quantified) additionality does arise, there are favourable knock-on effects on the local economy, as net additional workers spend part of their wages on local services and as new or larger firms increase their local purchases.
- 5.2.8 The overview of additionality set out above focuses on employment. But jobs vary widely from highly-paid professional jobs to minimum wage jobs. Wages are the main component of GVA, the balance of GVA being essentially profits, rent and interest. GVA is important locally and to national government, because an increase in GVA constitutes economic growth, a primary political objective in the current economic circumstances. It is perhaps especially important in Norfolk where GVA per capita, as was noted earlier (in section 2 drawing on ONS' GVA data), has been declining compared with the national average for a number of years. As well as quantifying multiplier and linkage effects, the approach adopted in this report estimates the effect on GVA of additional job creation in connection with the NDR, on the basis of norms for the industries in which jobs are considered likely to be created: a number of jobs on a retail park will, for instance, make a smaller contribution to GVA than that which would be made by the same number of jobs in a high-tech engineering facility.
- 5.2.9 GVA and employment patterns are likely to remain consistent for many years; once they arise they are likely to persist for several decades. In this report, GVA effects are evaluated over a 30 year period. Because GVA builds up over time (rather than the whole effect being felt at once), the average duration of the business activities generating the GVA, weighted by their discounted value, is some 15 years, which is a conservative estimate of the likely duration of those business activities. Total GVA resulting from a scheme may amount to a very large sum over 30 years, even after the substantial reduction occasioned by discounting at the suggested rate of 6% per annum. But such GVA must be 'earned' by the deployment of labour and capital. If, for instance, a road

scheme yields a discounted total GVA increment of £X over 30 years that is in current, post-recessionary, circumstances a benefit, but a smaller benefit than £X given the requirement to earn the GVA. This report aims to identify the GVA increment. The judgment as to whether that increment, in conjunction with the other benefits (and dis-benefits) of the proposed scheme, justifies the expenditure arising from the scheme's capital cost is a matter for the decision maker.

### **5.3 Relationship with JCS aspirations for growth**

- 5.3.1 The JCS for Broadland, Norwich and South Norfolk was adopted in March 2011. It provides the essential context for an assessment of the economic impact of the NDR. The JCS is based upon anticipated growth in the economy and population of the UK and their likely implications for Norfolk and for the JCS authorities specifically. Its central targets ('grand challenges') are the provision between 2008 and 2026 of:
- 37,000 additional homes; and
  - '27,000 new jobs of all types and levels in all sectors of the economy and for all the workforce.' (Joint Core Strategy, pages 20-23).
- 5.3.2 The JCS is an integrated strategy. Its objectives need to be taken forward simultaneously. For example, the employment objective is likely to be met only if other JCS objectives such as those for housing and workforce skills and the infrastructure necessary to support them are also met. In this context, the NDR is fundamental to the delivery of the JCS objectives of creating new homes and jobs. As well as facilitating employment and housing development, the NDR is expected to release capacity on the existing road network within Norwich to allow significant improvement to public transport, walking and cycling facilities.
- 5.3.3 The JCS states (Para 6.19) that '*completion of the Northern Distributor Road is fundamental to the full implementation of this Joint Core Strategy. In particular it is necessary to allow significant development in the growth triangle*', but the JCS also states (Para 7.13) that '*delay to, or non-delivery of, the NDR would not prevent the JCS provision of housing and employment development within the Norwich City and South Norfolk areas*'. However, it does also state (Para 7.14) that '*without the NDR the housing and employment growth in the Broadland part of the NPA cannot all be delivered*'.
- 5.3.4 The JCS was adopted in 2011, over two years ago, when various development proposals were at an embryonic stage. It is suggested, as a result of subsequent progress, that the split in the JCS between sites in Broadland District that require the NDR to enable them to come forward, and those sites in

Norwich that do not, whilst remaining essentially valid, requires flexible interpretation in the light of further work on the requirements of the individual sites.

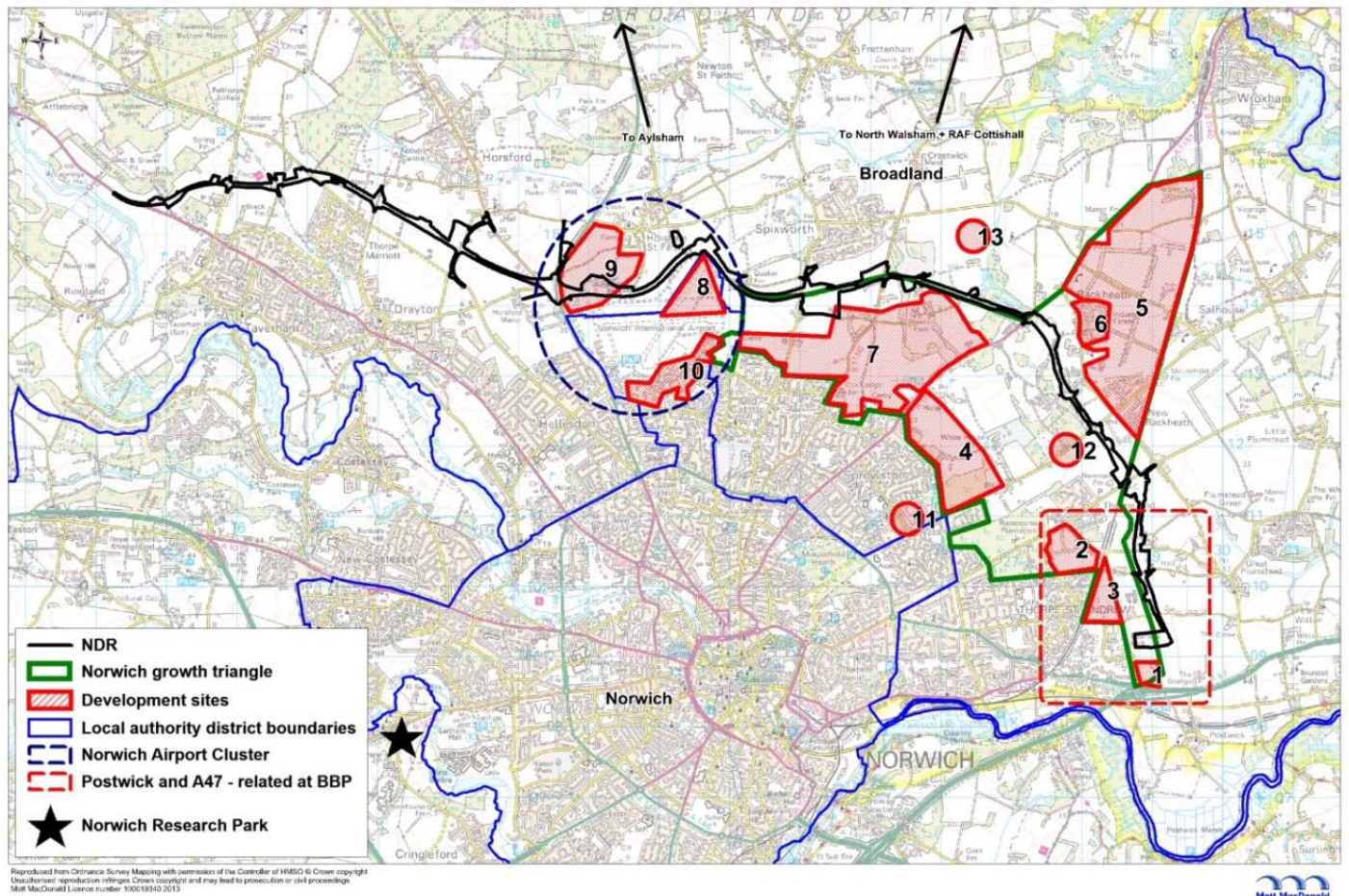
## 5.4 Development Sites

5.4.1 Through a review of the policy documents in Section 3 and discussion with Norfolk County Council economic development and planning staff, a list was drawn up of key sites where development was at least partly contingent on construction of the NDR. Those key sites form the basis of the impact assessment in the following sub-section of this report and they are shown numbered 1 to 13 on the plan in Figure 5.1 below, where they are also grouped within three sub areas:

- **Postwick** – sites 1, 2 and 3 that are also linked to the Postwick junction and A47 improvements (and which are located within the red dotted rectangular shaped boundary line on the plan).
- **Norwich Growth Triangle** – sites 4, 5, 6, 7 and sites 11, 12 and 13, which are located to the north-east of Norwich and which are included in the JCS as part of the urban extension (These sites (as well as the 3 Postwick sites) are located within the green solid roughly triangular shaped boundary line on the plan). (The Postwick sites are geographically located within the growth triangle boundary but they are identified in the JCS by a separate and separable policy – and were not allocated through the Growth Triangle policy.)
- **Norwich International Airport** – sites 8, 9 and 10, which are adjacent to, or related to, Norwich Airport and its operations (and which are located within the blue dotted circular shaped boundary line on the plan).



Figure 5.1 – Development sites and areas referred to in the economic impact analysis



5.4.2 Further information on each site is contained in Table 5.1 below. It should be noted that sites 12 and 13 are not site specific but relate to broader areas located between Postwick and Norwich International Airport at which development is likely to be influenced by the NDR.

5.4.3 An explanation of the quantitative benefits arising from those 13 sites is included in sub-section 5.5.2. below.



Table 5.1 – Sites included in the economic development impact assessment

Site name	Site description	Comment and JCS Reference
1.) Broadland Gate Business Park	Permission for extension of business park for predominantly B1 uses	Site is linked to Postwick Expansion referred to throughout JCS but particularly Appendix 8 (JCS, p. 146).
2.) Broadland Brook Farm	Permission for 600 dwellings	Site is linked to Postwick Linked to expansion of Broadland Gate Business Park. Expansion referred to throughout JCS but particularly Appendix 8 (JCS, p 146).
3.) Broadland Gate Laurel Farm	Permission for extension of business park for predominantly B1 uses	Site is linked to Postwick Linked to expansion of Broadland Gate Business Park. Expansion referred to throughout JCS but particularly Appendix 8 (JCS, p 146).
4.) Broadland Housing site – Blue Boar Lane	Existing permission, not yet implemented	Site is counted as gross only because it has planning permission in place ahead of the NDR. Site referred to in the JCS (page 56)
5.) Rackheath Ecotown	Planning framework is in place. Detailed planning and phasing still evolving	Part of urban extension Promoting economic growth at Rackheath included in the JCS (Objective 3, page 21).
6.) Rackheath Industrial Estate	Improvements brought forward under influence of NDR and Rackheath	Improvements to existing industrial estate
7.) Beyond Green Developments	Planning framework is in place. 3,500 dwelling mixed-use development. Benefits from resolution to permit, limited to 900 dwellings pre-NDR, with the remaining 2,600 dwellings dependent on the NDR coming forward	Part of urban extension
8.) Norwich Airport (Airport Site 4)	Land adjacent to the airport will be accessed by NDR	Aviation-related cluster – Norwich Aeropark

		Site being brought forward by Norwich Airport though NDR will assist in advancing the development timeframe Promoting economic growth at Norwich International Airport included in the JCS (Objective 3, page 21).
9.) Norwich Airport (Airport Site 3)	Land adjacent to the airport will be accessed by NDR	Aviation-related cluster Promoting economic growth at Norwich International Airport included in the JCS (Objective 3, page 21).
10.) Norwich Airport Industrial Estate	Existing industrial estate being masterplanned to support better use of existing employment land allocation to provide additional space	Aviation-related cluster and general employment uses
11.) Salhouse Road	Land in proximity to airport, NDR and existing employment uses	Aviation-related cluster and general employment uses
12.) Housing in North East Growth Triangle	Sprowston/ Thorpe St Andrew	Not site specific The growth triangle is referred to throughout the JCS including Policy 9 (page 50) and Policy 12 (page 67).
13.) Housing in Broadland part of NPA	Broadland	Not site specific (JCS, Policy 14, page 35).

## 5.5 NDR economic development benefits

5.5.1 Construction of the NDR will require prior or simultaneous implementation of the Postwick Hub Scheme (PHS). This report considers the effects of the NDR and the PHS schemes together on the economy of Greater Norwich and the wider county. The two schemes will have substantial effects on traffic flows in their immediate vicinity and in the wider city area, and these effects will yield benefits and costs; and the NDR and PHS will, of course, incur capital costs for their construction. The traffic effects and capital costs have been considered in

detail in the report focused on transport economic assessment and are therefore not considered further here<sup>17</sup>.

#### Qualitative benefits

5.5.2 A judgment has been made, drawing on consultation with local experts, that the NDR and the PHS, if implemented, will have wide-ranging, favourable effects on the economy of Norfolk, including favourable effects on Norwich city centre, Great Yarmouth and several settlements north of Norwich. These places are, however, some distance from, or otherwise not closely connected, to the two schemes. This report seeks to describe, rather than to quantify, the likely effects on them of the two schemes. The descriptions are set out below in Table 5.2.

Table 5.2 – NDR qualitative assessment of wider economic benefits

<b>NDR's Influence</b>	<b>Description of qualitative benefit</b>
<ul style="list-style-type: none"> <li>• Strategic infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Greater Norwich is on a growth trajectory as the JCS clearly states; the north-east of Norwich is a key location for accommodating that growth yet its infrastructure is widely regarded as insufficient for a modern, growing economy. The introduction of the NDR will bring Norwich's strategic road infrastructure up to the standard of other core and major cities where road infrastructure has been a factor in distributing growth and development spatially.</li> <li>• In areas experiencing growth there can be a risk of the property market overheating if the supply of jobs and homes is not adequately planned for. The JCS sets the planning framework for growth and the NDR is a key strategic step in distributing the growth to north-east Norwich and so mitigating this risk.</li> </ul>
<ul style="list-style-type: none"> <li>• Norwich city centre – visitor economy</li> </ul>	<ul style="list-style-type: none"> <li>• If traffic is removed from the city centre it will make the area more attractive as a place to live in, to invest in and to visit. There are likely to be benefits to property and land values as well as increases to visitor numbers over time as the area's attractiveness becomes more widely understood and appreciated. Other historic city centres with heritage and cultural attractions at their core have seen the benefit of removing traffic from the centre: Cambridge, Canterbury, Chester and York are prime examples, and Norwich would benefit from the ambience and attractiveness of a less congested core with the NDR in place</li> <li>• Simultaneously, visitor economy effects will stimulate additional</li> </ul>

<sup>17</sup> For further information please refer to the 'NDR – Economic Appraisal Report' which has been submitted as part of the DCO application documentation.

<b>NDR's Influence</b>	<b>Description of qualitative benefit</b>
	<p>consumption leading to job creation over time through multiplier effects as the central area attracts more people, whose dwell time is longer and who spend more money in the process. Increased demand from visitors could lead to an increase in the volume and quality of hotel accommodation in the city centre too, but this will be linked to demand and hotel operators' awareness of the market opportunity in the city.</p> <ul style="list-style-type: none"> <li>Increased visitor effect and the expenditure it injects into the local economy is often overlooked in terms of economic benefit because the jobs it creates are lower-paid, lower-skilled service sector jobs. This is true, but they are often precisely the type of jobs that many people seek as part of a portfolio approach to employment (i.e. multiple part-time jobs simultaneously) and are accessible to people with lower skills and educational attainment of which there are concentrations to the north of the city and in its northern hinterland.</li> </ul>
<ul style="list-style-type: none"> <li>Norwich – visitor statistics</li> </ul>	<ul style="list-style-type: none"> <li>Data on the economic impact of tourism for Norwich City, 2010<sup>18</sup> sets out headline figures for volume and value of tourism as at 2010 as follows: <ul style="list-style-type: none"> <li>Overall value of tourism to Norwich economy £432m</li> <li>Total tourism-related employment, 7,357 jobs (13.9% of all employment)</li> <li>Total number of trips 5.2m, of which 4.7m are day trips and 0.5m staying trips</li> </ul> </li> <li>Given the importance of day trips to the Norwich visitor economy, improved connectivity and journey reliability through construction of the NDR will be essential to preserving and growing the volume and value of tourism in future.</li> </ul>
<ul style="list-style-type: none"> <li>Norwich city centre – retail offer</li> </ul>	<ul style="list-style-type: none"> <li>Norwich remains the primary shopping destination in the East of England according to a variety of published nationwide retail rankings based on varying criteria. For example, Norwich has consistently ranked in the top ten in Javelin Group's Venuescore<sup>19</sup> publication (evaluating each venue in terms of their provisions of multiple retailers). 2013-14 has been the exception (ranked 13th) compared to previous rankings at number 5 and number 9 over the past decade. The city was the only East of England venue in the top ten in the Venuescore 2011-12 survey. This is a great improvement in comparison with its rank of 45 in 1989 (Hillier</li> </ul>

<sup>18</sup> Tourism South East (2010) Economic Impact of Tourism, Norwich City 2010 Results

<sup>19</sup> Javelin Group 'Venuescore 2013-14 UK Shopping Venue Rankings'

NDR's Influence	Description of qualitative benefit
	<p>Parker, Shopping Centres of Great Britain, 1990).</p> <ul style="list-style-type: none"> <li>• In 2006 Norwich was reported to generate £1.17 billion of retail spending annually, well ahead of its nearest regional competitors<sup>20</sup>. The 2011 CACI rankings, which measure total consumer expenditure in retail destinations, place Norwich first in the region and tenth nationwide with £1.18 billion of consumer expenditure spent in the city. Experian's 2008 retail rankings, using a similar measure, placed Norwich thirteenth nationally, down from tenth in 2007, having been overtaken by Liverpool, Cardiff and Westfield (London), all of which have recently seen new retail development<sup>21</sup>.</li> <li>• Overall comparison goods spend in Norwich has risen significantly in the same period, up from £1.14 billion in 2007 to £1.38 billion in 2008. Data from the 2011 CACI Retail Footprint states Norwich has a total retail expenditure of £2.2 billion<sup>22</sup>. Norwich continues to hold its own as the premier retail destination in East Anglia and improved accessibility for shoppers will assist in preserving its position going forward.</li> </ul>
<ul style="list-style-type: none"> <li>• Norwich city centre property market</li> </ul>	<ul style="list-style-type: none"> <li>• Direct cause and effect is difficult to state categorically, but development sites such as Anglia Square and Duke Street in Norwich could benefit from the NDR in an indirect way over time. The NDR would enhance their connectivity with and accessibility from the north, making them a more attractive proposition for investment. Duke Street has benefitted from new development (residential, hotel, car park) completed pre-recession and, in a recovering market over the next few years, the NDR could provide impetus for the remaining sites in the area to be developed. At the same time, there is expected to be an improvement in public transport including the proposed Bus Rapid Transit (BRT), for which capacity on the network is expected to be released by the NDR, and this would also improve connectivity and accessibility.</li> <li>• Anecdotal evidence from NCC's economic development team suggests that when Broadland Business Park was first opened it provided a boost to the city centre commercial office market as property owners in the city centre upgraded their offers to meet the competition from the new premises at Broadland. There is real scope for the same effects to be felt again as development in the NDR Corridor provides renewed impetus for developers and</li> </ul>

<sup>20</sup> Norwich Local Development Framework, Norwich City Centre Shopping Floorspace Monitor 2006

<sup>21</sup> Norwich Local Development Framework, Norwich City Centre Shopping Floorspace Monitor 2008

<sup>22</sup> Intugroup: 'Norwich, a Top 10 City' (Accessed October 2013)  
[http://www.intugroup.co.uk/media/80466/intu2032\\_chapelfield\\_18.02.13.pdf](http://www.intugroup.co.uk/media/80466/intu2032_chapelfield_18.02.13.pdf)



<b>NDR's Influence</b>	<b>Description of qualitative benefit</b>
	property owners to see it as a catalyst for renewal and upgrade of existing city centre property.
<ul style="list-style-type: none"> <li>Norwich Research Park (NRP)</li> </ul>	<ul style="list-style-type: none"> <li>NRP is clearly a key driver of economic growth for Norwich and the sub-region. The NDR, and the enhanced public transport provision, including cross-city BRT facilitated by the NDR (as explained above), will improve links between the NRP and the north of the city, which will increase the supply of labour able to work at NRP in high skilled and low skilled jobs (this is important as the cost of travel to work is more significant for low skilled jobs and the NDR will help to improve access to the NRP from Norwich's less affluent neighbourhoods). Furthermore, the NDR will make areas to the north of Norwich more accessible as places to live for people working at NRP; this could have a stimulating effect on residential property prices to the north of Norwich which are suppressed compared to areas south of Norwich as illustrated in Section 2.</li> <li>As NRP grows and expands, as articulated in Section 3 (Norwich City Deal), the number of highly skilled and highly paid workers employed there will increase. Based on current patterns of behaviour it is highly likely that these newcomers to the area will seek to live in established higher-value residential areas to the south of Norwich, close to their peers and within easy commuting distance to NRP. This may lead to increased demand and inflated prices in those areas, a situation which could be alleviated through the NDR extending the area of housing search to the north of Norwich, the villages on the urban fringe and market towns in the city's northern hinterland.</li> </ul>
<ul style="list-style-type: none"> <li>Great Yarmouth and offshore energy</li> </ul>	<ul style="list-style-type: none"> <li>Great Yarmouth is a centre for the North Sea's growing offshore energy sector industries. Links between Great Yarmouth and Norwich International Airport are important as offshore workers and contractors will be flying to Norwich International Airport from Aberdeen and Amsterdam then travelling on to Great Yarmouth by road, or being helicoptered offshore from the Airport.</li> <li>The offshore sector in the North Sea is set to expand as the Government issues further offshore wind licences. Presently there are about 1,800 turbines planned and this could grow to 3,300 in the future; with this growth there will also be a commensurate increase in workers travelling to and through the area; with the NDR providing part of the road link between Norwich Airport and Great Yarmouth, it will become an important route.</li> </ul>
<ul style="list-style-type: none"> <li>Norwich and offshore</li> </ul>	<ul style="list-style-type: none"> <li>As the offshore renewables sector expands there will be demand for office space in the area. Great Yarmouth has disadvantages in</li> </ul>

<b>NDR's Influence</b>	<b>Description of qualitative benefit</b>
energy	<p>terms of its office supply which could lead to increased demand for office space in Norwich from firms in this sector. The links between Norwich Airport and Great Yarmouth noted in the point above indicate that the NDR corridor is an ideal place for demand for office space to be met.</p> <ul style="list-style-type: none"> <li>• As part of the Northeast Growth Triangle, plans are being progressed by Beyond Green Developments (site 7 in Figure 5.1) for a sustainable urban extension which will provide employment space for environment-related businesses. Demand from offshore firms could be satisfied in this area while such uptake would also reinforce the sustainability credentials of the urban extension.</li> <li>• There is already evidence of energy-related businesses being located in the JCS area with Aquaterra (which is involved in the design of offshore structures) employing about 1,200 people and having a base close to the Airport.</li> </ul>
<ul style="list-style-type: none"> <li>• Aylsham</li> </ul>	<ul style="list-style-type: none"> <li>• Aylsham is an attractive market town to the north of Norwich and it will benefit from links to the NDR via the A140 where it will join the NDR west of Norwich International Airport. The Aylsham settlement has capacity for housing growth (c500 dwellings permitted) and its attractiveness will be enhanced by improved connectivity via the NDR to employment opportunities along the NDR corridor, including those at Broadland Business Park, Norwich Airport, Rackheath and NRP. Discussions with NCC's economic development team have referred to a 'Wymondham effect' potentially occurring in Aylsham; that is a repetition of the increase in development activity and property prices which occurred in the settlement of Wymondham, following improvements to the road infrastructure and connectivity with Norwich.</li> </ul>
<ul style="list-style-type: none"> <li>• North Walsham</li> </ul>	<ul style="list-style-type: none"> <li>• North Walsham is an attractive market town to the north of Norwich that will benefit from links to the NDR via the B1150 where it will join the NDR near Spixworth. The 'Wymondham effect' described above for Aylsham is also anticipated to occur at North Walsham though the effects are expected to be less pronounced at North Walsham, which would still be connected to the NDR via a 'B' road or via the A1151 through Wroxham; either way the improved connectivity is notable but less pronounced.</li> </ul>
<ul style="list-style-type: none"> <li>• Former RAF Coltishall</li> </ul>	<ul style="list-style-type: none"> <li>• The former RAF Coltishall site has a prison on site and demonstrates longer-term potential for employment uses, particularly large land-take uses of B2 or B8 category. NCC owns much of the site and has recently completed consultation on future uses. The NDR will improve access and connectivity to/from the</li> </ul>

<b>NDR's Influence</b>	<b>Description of qualitative benefit</b>
	site via the B1150 making it more attractive for employment uses.
<ul style="list-style-type: none"> <li>Norfolk tourism</li> </ul>	<ul style="list-style-type: none"> <li>Norfolk's visitor economy is an important sector of the economy and the NDR will improve connectivity for tourists visiting the Norfolk Broads, north Norfolk coast, Great Yarmouth and Norwich as part of a visit. It is difficult to assess the influence the NDR may have on the volume and value of tourism in the area but connectivity within the area will be improved through the NDR and such improved connectivity can reasonably be expected to improve attractiveness of these renowned destinations to visitors. Improved connectivity will also serve to protect Norfolk's position as a visitor destination for all segments of the market.</li> <li>Access to Norfolk will be enhanced through improvements to the A47 and A11 (and the A14), but the NDR will also improve connectivity between Great Yarmouth and areas to the north of Norwich. This could improve day visitor trips to the seaside town from residents and visitors to areas north of Norwich, the Norfolk Broads and the north Norfolk coast. The NDR is therefore integral to the provision of greater intra-County connectivity enabling visitors to move around and between destinations with greater ease avoiding the need to travel through central Norwich unless they wish to.</li> </ul>
<ul style="list-style-type: none"> <li>Place making</li> </ul>	<ul style="list-style-type: none"> <li>Northeast Norwich is proposed as a sustainable urban extension, to be brought forward on Ecotown principles (Rackheath (site 5 in Figure 5.1) and the Beyond Green Developments Ltd proposals (site 7 in Figure 5.1) draw on exemplar developments from around Europe (for example Stockholm). The principles underpinning these development proposals seek to ensure that the area will become a fully-functioning extension to Norwich and an exemplar of sustainable urban development. In itself, the area is likely to attract visitors in future who are interested in sustainable urban development and keen to understand the approach taken to this in Norwich. The NDR would be an important piece of infrastructure providing strategic access to these sites, and removal of traffic from the city centre, to allow the sustainable access and high quality environment on which the spatial development of the area is dependent.</li> </ul>
<ul style="list-style-type: none"> <li>Place competitiveness</li> </ul>	<ul style="list-style-type: none"> <li>Modern urban economies require a mixed commercial property offer to make them attractive to a broad range of businesses and entrepreneurs. Norwich's property offer has successfully responded to changing demand, for example: <ul style="list-style-type: none"> <li>Broadland Business Park has been a success and renewed impetus is expected to arise from the Postwick junction</li> </ul> </li> </ul>

<b>NDR's Influence</b>	<b>Description of qualitative benefit</b>
	<p>improvements.</p> <ul style="list-style-type: none"> <li>– In close proximity to Broadland Business Park there are smaller business parks providing B1 accommodation (at Meridian Business Park and St Andrews Business Park) but these premises are full;</li> <li>– One of the development sites being advanced at the Airport (site 8 in Figure 5.1 (Airport Site 4)) is planned to accommodate the operations of KLM Air Livery currently based at Norwich Airport Industrial Estate. KLM Air Livery's move to purpose-built premises will support the Airport's planned expansion and make space available on the Airport Industrial Estate for additional aviation-related firms to move into.</li> <li>– At Norwich Airport new buildings are occupied by Klyne Aviation and Bond Aviation.</li> <li>• The above points indicate there is demand for well-connected B1 office space on Norwich's fringe, and demand from aviation-related businesses to be located in close proximity to the Airport.</li> </ul>
<ul style="list-style-type: none"> <li>• Norwich International Airport</li> </ul>	<ul style="list-style-type: none"> <li>• Norwich International Airport currently has about 85,000 offshore helicopter movements per annum which involve workers travelling from Great Yarmouth to the Airport to fly to their offshore sites. Great Yarmouth can only accommodate about one-third of the total demand for helicopter flights by workers needing to fly offshore. The NDR would relieve pressure on the existing network between Great Yarmouth and the Airport and would provide an alternative to Norwich ring road as part of this journey. As the offshore sector grows, so demand for helicopter flights can reasonably be expected to increase too.</li> <li>• Norwich International Airport's catchment area is Norfolk extending into Cambridgeshire and Suffolk. Passengers driving to the Airport from the south will mostly come via the A11 and A140 and presently use the outer or inner ring roads to access the Airport. The NDR would provide an alternative route from the south, accessed via the A47 and Postwick. Passengers travelling from the north and east would also benefit from reduced journey times.</li> <li>• Interventions that can deliver passengers to the Airport more efficiently and reliably can influence airline decisions to operate routes from the Airport in future. KLM is increasing its city hopper flights from Norwich to Amsterdam from three to four per day and improved connectivity for passengers can support this type of growth and sustain it in future.</li> </ul>

NDR's Influence	Description of qualitative benefit
<ul style="list-style-type: none"> <li>• Growth</li> </ul>	<ul style="list-style-type: none"> <li>• In a recent PwC report (PwC, Good Growth for Cities, A Report on Urban Economic Wellbeing from PwC and Demos, November 2013), Norwich was ranked tenth of the thirty-nine UK cities included in the Demos-PwC Good Growth for Cities Index (based on an indicator set including employment, health, income, skills, work-life balance, housing, sectoral balance, income distribution, transport and environment. The highest ranking cities were reported as performing relatively well on jobs, income and skills but less well on housing.</li> <li>• The report also noted that <i>“Delivering effective, efficient and sustainable urban infrastructure is essential to provide the city backbone from which economic success and prosperity can grow. With many cities in our index showing red flashing lights for indicators such as housing and transport, and with the UK at 24th place on the World Economic Forum’s league table for infrastructure, it is clear that more needs to be done to deliver and meet the needs of our citizens and businesses. Not only do cities in the UK need to upgrade failing and ageing infrastructure, but as technology drives mobility and connectivity, cities are also seeking to upgrade what they can offer residents and businesses and establish smart city systems that will position them as global leaders. (p23). The NDR is planned in response to this growth agenda.</i></li> </ul>

#### Quantitative benefits

5.5.3 The quantitative analysis carried out for this report has focused on specific development sites located on or close to the proposed line of the NDR, including the Postwick Hub, as described above in Figure 5.1 and Table 5.1. Some of the sites cannot be developed without the two schemes (NDR and PHS); others will be easier to develop with the two schemes; and two schemes are particularly associated with the PHS (Broadland Gate Business Park and the employment element of Brook Farm/ Laurel Farm) and appear to be contingent on that scheme only. There are development proposals for the sites ranging in detail from outlines to detailed plans. We estimate that collectively the sites could accommodate over 11,000 jobs, which is a substantial proportion of the 27,000 jobs anticipated in the Joint Core Strategy.

5.5.4 The methodology used to quantify economic development benefits arising from these sites in connection with the NDR is summarised below, and a summary of the analysis carried out is followed by discussion of the findings. A summary



table (Table 5.3) is included at the end of this section and is supplemented by the detailed tables of calculations appearing in Appendix A. To facilitate referencing, figures in the text below that are taken from Table 5.3 appear underlined and in ***italic bold***.

5.5.5 One element of the methodology is the conversion of gross effects (such as the jobs actually arising on a particular site) to net effects after allowing for deadweight or non-additionality (that is the possibility that some of the jobs arising would have arisen anyway elsewhere in the study area). The gross to net conversion for each site is based on the site's context and its potential for development, and has been discussed and agreed with NCC Planning and Economic Development officers as well as Norwich International Airport and Norwich Industrial Estate staff. The methodology is also based on the following assumptions:

- Phased job growth over a thirty-year period so that the cumulative build-up of jobs and development can be considered.
- Differentiation between higher and lower GVA employment for each site, based on informed discussion with NCC Planning and Economic Development officers.
- Use of a standard multiplier to determine the composite supply-chain and consumption effects of additional expenditure and economic activity in the area.
- Estimation of the capital expenditure to be injected into the area through the construction period and development of individual sites, and the corresponding extent of employment during development.

5.5.6 The results of this methodology are expressed as net additional jobs, GVA, investment effects at 2034 which is referred to as the steady state year (being the year at which the net additional growth attributable to the NDR is estimated to be fully achieved).

5.5.7 If the NDR and Postwick Hub schemes did not proceed, there would be fewer jobs on the sites, but some of the sites (including at Norwich International Airport and Broadland Business Park) would still accommodate significant employment growth; moreover, without the schemes some jobs that would have been located on sites in the vicinity of the NDR and Postwick Hub schemes would find alternative locations within Greater Norwich. This report suggests that the two schemes (NDR and PHS) will lead to about ***4,358***<sup>23</sup> net additional jobs being created within Greater Norwich by the year 2034. Further detail on the build-up of net jobs is provided at Appendix A (Table A.1, which shows net

---

<sup>23</sup> We provide exact numbers so that the arithmetic is clear. The inevitable uncertainties mean that these numbers should be regarded as no more than the centrepieces of wider ranges.

jobs figures for the sites shown on Figure 5.1 and listed in Table 5.1). Local expenditure resulting from the newly created jobs and from local purchasing by new or expanded firms will, it is estimated, raise total additional job creation from the **4,358** jobs mentioned above to **5,230** net additional jobs within the study area<sup>24</sup>.

- 5.5.8 This report takes as background the JCS and the other relevant documents discussed in Section 3. Such documents are based in turn on forecasts for the national and regional economies and demographic forecasts. Job creation on the sites considered in this report is contingent upon those forecasts and upon other matters covered by the JCS, such as the need for appropriate workforce skills to satisfy employer requirements.
- 5.5.9 The sites considered in this report will require substantial investment in offices and other workplaces and ancillary facilities and are also forecast to accommodate some 10,000 new dwellings, of which it is estimated that about 7,000 will be additional. This high level of additionality is based on the view of NCC that few of the dwellings could be built in other locations within Greater Norwich in the JCS period to 2026 or in the period to 2034 which this assessment covers. Total additional investment in workplaces is estimated at **£122m**, based upon average investment of £28,000<sup>25</sup> for each of the **4,358** jobs; additional investment in housing is estimated at **£700m** (£100,000 per additional dwelling); and the capital cost of construction of the NDR and the PHS is estimated by NCC at **£144m**. These components yield a total of **£966m** of net additional investment during the period leading to steady state in 2034.
- 5.5.10 The **£966m** of additional investment will require an estimated **8,940** job-years of labour over the period 2014 to 2034, based upon conventional estimates of £100,000 per job-year in housing and commercial building and £200,000 per job-year in road construction. On average over the 21 years this will mean that **426** full-time equivalent workers are employed in construction. As with 'permanent' jobs, expenditure by these workers, and the purchase of supplies locally, will add modestly to the jobs total and the conservative estimate of the composite multiplier (1.2 – see above) used in this Report suggests that there

---

<sup>24</sup> In the absence of detailed information on multiplier and supply chain effects, this report has used a composite multiplier of 1.2, eg the 4,358 additional jobs on the sites in question are assumed to yield 5,230 jobs (4,358 X 1.2 = 5,230) following multiplier and supply chain effects. This figure of 1.2 is prudently low: the English Partnerships Additionality Guide (2008) suggests at its Table 4.8 a composite multiplier of 1.29 for B1/B2/B8 space; and the Department for Business Innovation and Skills (Occasional Paper, Number 1, 'Research to Improve the Assessment of Additionality' October 2009) suggests various numbers in its Chapter 7 on multipliers, but its Table X1 identifies a mean value from research for a sub-regional composite multiplier of 1.25.

<sup>25</sup> This figure of £28,000 depends heavily on the types of occupier attracted to the sites. The figure could be much more than £28,000, but in our judgment could not be less. Investment in building costs alone would exceed £28,000 per job reckoned at £1,500 per square metre and 20 square metres per job on average across industries.

will be 85 'multiplier' jobs in the local economy, making **511** ( $426 \times 1.2$ ) investment-related jobs in all, on average in the period 2014-2034. These jobs are assumed to cease once construction is complete on the attainment of steady state in 2034.

5.5.11 The activities briefly summarised above will lead to greater output (GVA) in the local economy. These effects have been assessed over a period of roughly 30 years, to 2047. At 2010 prices, but undiscounted, it is estimated that when steady-state is achieved (2034), local GVA will be **£187m** per annum greater with the schemes than without, as a consequence of the 5,238 additional jobs that will have been created by then. Table 5.3, in conjunction with the more detailed tables in Appendix A, analyses this increase as between additional GVA on the two Postwick sites (**£61m**), additional GVA on other sites (**£95m**), and additional GVA resulting from the composite multiplier ( $\text{£31m} = 0.2 \times (\text{£61m} + \text{£95m})$ ), all totalling **£187m** per annum.

5.5.12 GVA is usually expressed as an annual flow such as the figure of **£187m** per annum mentioned in the previous paragraph. But to compare it with one-off costs - such as the costs of the NDR and the PHS - it is desirable to take the total impact on GVA, summed over a period of years and appropriately discounted. At 2010 prices, discounted to the same year at 6%<sup>26</sup> and including multiplier effects, we estimate that additional GVA in total over the period to 2047 will be **£1,099m**, comprising **£916m** arising directly from additional employment at the various sites and a composite multiplier effect of £183m.

---

<sup>26</sup> HM Treasury's Green Book (Annex 6) specifies a social discount rate of 3.5%. But for the commercial activities expected to provide most of the jobs accommodated on the sites considered here, a long term real rate of return on commercial investments is more appropriate and this is generally put at around 6%, as indicated by average return on equities in the UK and USA reported in the authoritative Barclays Equity Gilt study, published annually since 1956.

Table 5.3 – Employment, GVA and investment effects – summary table

Type of Benefit Note that steady state is attained in 2034	Postwick Sites <sup>27</sup>	NDR Sites	Total
<b>Primary Effects</b>			
FTE gross jobs on sites listed in the text, in steady state (see Appendix A, Table A.1)	5,000	6,281	11,281
FTE additional jobs on sites listed in the text, in steady state (see Appendix A, Table A.1)	1,667	2,691	4,358
Additional GVA per year in steady state, £m, 2010 prices, undiscounted	61 <sup>28</sup>	95 <sup>29</sup>	156
Additional GVA from continuing activities in total to 2047, £m, 2010 prices, discounted at 6% (see Appendix A, Table A.5)	378	538	916
<b>Primary Effects plus Multiplier Effects (multiplier value 1.2 – see main text and footnote above)</b>			
FTE net additional jobs in steady state	2,000	3,229	5,230
Additional GVA per year in steady state, £m, 2010 prices, undiscounted	73	114	187
Additional GVA from continuing activities in total to 2047, £m, 2010 prices, discounted	454	646	1,099
<b>Investment Effects</b>			
Gross investment in road construction, £m, undiscounted, total (per NCC)	144		
Gross commercial investment, £m, undiscounted, total	140	176	316
Gross housing investment, £m, undiscounted, total at £100,000 per dwelling (see Appendix A, Table A.1 for planned numbers of dwellings)		985	985
Net investment <sup>30</sup> in road construction, £m, undiscounted, total			144
Net additional commercial investment, £m,	47	75	122

<sup>27</sup> The 'Postwick Sites' are Broadland Gate Business Park and Broadland Gate Laurel Farm. They are contingent on the Postwick Hub Scheme but could proceed without the NDR. The 'NDR Sites' are the remaining sites listed in Table 5.1.

<sup>28</sup> Postwick Hun Scheme Economic Appraisal Report

<sup>29</sup> See Appendix A, Table A.3

<sup>30</sup> Note that this is obviously 'additional'.

undiscounted, total at £28,000 per additional job (see main text)			
Net additional housing investment, £m, undiscounted, total at £100,000 per dwelling		700	700
Total net additional investment, £m, undiscounted	47	775	966
Net additional job-years of employment in construction at £100,000 per job year (housing and commercial) and £200,000 (roads)	467	7,753	8,940
Average investment-related employment 2014-2034	22	369	426
<b>Employment through Investment Effects (multiplier value 1.2)</b>			
Average investment-related employment 2014-2034	27	443	511

**Note:** the final digit in the figures in the Total column may be affected by rounding.



**PAGE NOT USED**

## 6.1 Summary

6.1.1 **Note:** Figures in this summary taken from Table 5.3 are underlined and in *bold*.

6.1.2 The NDR is a critical piece of infrastructure that is integral to the JCS aspirations for growth. The role of the NDR in supporting Greater Norwich's development is also apparent in the other land-use and economic development policy documents pertinent to the area, and this reinforces the integral role of the NDR. Similarly, the role of Norwich in the East of England economy is also important, particularly in terms of retail provision, tourism and offshore energy but also in providing key centres of economic activity such as Norwich Research Park and Norwich International Airport, all of which are expected to benefit from improved connectivity delivered through the NDR.

6.1.3 NCC currently estimates that construction costs of the NDR and the Postwick Hub will be some **£144m**. There will also be road maintenance and other operational costs during the 30 year period considered here, though they will be much less than the capital costs of construction. It is not the purpose of this report to assess costs in detail, or to combine the benefits considered here with the WebTAG benefits and detailed costs in a full cost-benefit analysis. The purpose of providing headline costs figures in this report is to enable decision makers to contrast the costs with the benefits considered here. The analysis in this report suggests that the quantifiable benefits identified exceed the costs of construction; and the full scale of benefit will be greater as there are also unquantifiable and qualitative benefits that are more difficult to assess precisely, but which are set out in Section 5 above.

## 6.2 Key economic benefits

6.2.1 The NDR, including the Postwick Hub, will bring the very substantial benefits described in Section 5. As is shown in Table 5.3, they include<sup>31</sup>:

- **4,358** net additional direct jobs arising from the development sites listed in this report;
- when multiplier effects are included this figure (of 4,358) rises to **5,230** net additional jobs that would not otherwise arise in Greater Norwich;
- **£1.099bn** of additional GVA is generated by those **5,230** jobs over some 30 years;

---

<sup>31</sup> Exact figures, such as 4,358 jobs, are provided to allow tracking of the arithmetic. They should be regarded as no more than the centre points of wide ranges. For instance, 4,358 jobs might better be regarded as 4,000-5,000 jobs.

- **£966m** of net additional physical investment in roads, infrastructure and housing; and
- an average of **426** construction jobs (rising to **511** when multiplier effects are included) in each of the years until development is complete (estimated at 2034).

6.2.2 The benefits attributed to the NDR are substantial and reflect its potentially important role as strategic infrastructure to underpin economic growth in Greater Norwich over the next three decades and beyond. Moreover, to build on Greater Norwich's growth potential, the city needs an infrastructure that matches those already in place in competitor locations: most UK cities already have, or are implementing, road infrastructure which improves connectivity and links areas of employment opportunity with areas of employment need. The NDR is part of this strategic approach and, if implemented, could deliver benefits to the area's internationally renowned NRP, future inward investors, existing businesses, residents and visitors alike as well as supporting development in key growth sectors.

6.2.3 Simultaneously, there are also a range of qualitative benefits which have been discussed in the previous section. These are important and although they cannot be quantified, they do provide impetus for further economic growth and development in future. For instance; improved access to Broadland Business Park and Norwich International Airport can make development and location at these sites more attractive for businesses; the same is true for improved access and connectivity to the city centre for residents and visitors; and, the importance of reliable journey times between Great Yarmouth and the Airport in order to support the offshore energy sector is increasingly significant as offshore activity increases.

## Appendices

### Appendix A. Economic impact calculations

Table A.1 – NDR and Development Sites: Gross to Net Calculations for Employment and Dwellings

Sites	Employment				Dwellings		
	Gross Jobs	Gross jobs (Lower jobs/ha)	Additionality	Net jobs	Gross Dwellings	Gross Revised	Net Dwellings
1 Broadland Gate Business Park	3,200	3,200	33%	1,067	-		
2 Broadland Gate Brook Farm	-	-	33%	-	-		
3 Broadland Gate Laurel Farm	1,800	1,800	33%	600	-		
4 Broadland Housing - Blue Boar	-	-			1,223	-	-
NEGT Housing in Sprowston,							
12 Thorpe St Andrew fringe						1,900	1,350
13 Housing in Broadland NPA					2,000	1,000	700
5 Rackheath Ecotown	3,300	2,500	50%	1,250	4,150	3,950	2,800
6 Rackheath Industrial Estate	20	20	50%	10	-		
7 Beyond Green Devts	1,000	800	50%	400	3,520	3,000	2,150
8 Norwich Airport (Airport Site 4)	1,000	1,000	0%	-	-		
9 Norwich Airport (Airport Site 3)	2,000	1,600	60%	960	-		
10 Norwich Airport Industrial Estate	50	50	50%	25	-		
11 Salhouse Rd	311	311	15%	47	-		
	<b>12,681</b>	<b>11,281</b>		<b>4,358</b>	<b>10,893</b>	<b>9,850</b>	<b>7,000</b>

**Note:** the Gross Jobs in the first column of figures were supplied by NCC. In some cases, they appeared to be greater than could easily be accommodated on the respective sites. As a matter of prudence, the lower figures in the second column of figures were agreed between Mott MacDonald and NCC as the basis for calculations.

**Source:** Mott MacDonald in conjunction with NCC Planning and Economic Development

Table A.2 – Phasing of Job Creation

Site No.	1	3	1	3	5	7	8	9	10	11	
	BGBP	BGLF	BGBP	BGLF	Rackheath	Beyond Green Devts	Airport Site 4	Airport Site 3	Airport Ind Est	Salhouse Rd	Total
Jobs	Gross*	Gross*	Net b/d	Net b/d	Net b/d	Net b/d	Net b/d	Net b/d	Net b/d	Net b/d	Net b/d
Total	3200	1800	1,067	600	1,260	400	-	960	25	47	4,358
2014	0	0	0	0	0	0	0	0	0	0	-
2015	320	180	107	60	0	0	0	0	0	0	167
2016	320	320	107	107	0	0	0	0	0	0	213
2017	320	320	107	107	0	0	0	0	0	0	213
2018	320	320	107	107	74	24	35	56	1	3	407
2019	320	320	107	107	148	47	70	113	3	5	600
2020	1600	900	533	300	222	71	105	169	4	8	1,413
2021	1760	990	587	330	296	94	140	226	6	11	1,690
2022	1920	1080	640	360	371	118	175	282	7	14	1,967
2023	2080	1170	693	390	445	141	210	339	9	16	2,243
2024	2240	1260	747	420	519	165	245	395	10	19	2,520
2025	2400	1350	800	450	593	188	280	452	12	22	2,797
2026	2560	1440	853	480	667	212	240	508	13	25	2,998
2027	2720	1530	907	510	741	235	200	565	15	27	3,200
2028	2880	1620	960	540	815	259	160	621	16	30	3,402
2029	3040	1710	1013	570	889	282	120	678	18	33	3,603
2030	3200	1800	1067	600	964	306	80	734	19	36	3,805
2031	3200	1800	1067	600	1,038	329	40	791	21	38	3,923
2032	3200	1800	1067	600	1,112	353	-	847	22	41	4,042
2033	3200	1800	1067	600	1,186	376	-	904	24	44	4,200
2034	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2035	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2036	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2037	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2038	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2039	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2040	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2041	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2042	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2043	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2044	3200	1800	1067	600	1,260	400	-	960	25	47	4,358
2045	3200	1800	1067	600	1,260	400		960	25	47	4,358
2046	3200	1800	1067	600	1,260	400		960	25	47	4,358
2047	3200	1800	1067	600	1,260	400		960	25	47	4,358

\* These two columns are replicated from the Postwick Hub Scheme Economic Appraisal Report (April 2013), p25

**Note:** Table A.2 shows gross figures for the Broadland Gate Business Park (BGBP) and Broadland Gate Laurel Farm (BGLF) to demonstrate consistency with the Postwick Hub Scheme Economic Appraisal Report. It shows net figures (i.e. figures after the deduction of estimated non-additionality (deadweight)) for BGBP and BGLF and for the other sites where job creation occurs. Phasing for BGBP and BGLF is replicated from the PHS Economic Appraisal Report. Phasing for Airport Site 4 is based on discussions with the Airport operator: their view is that the NDR will accelerate job creation but will not affect the final number of jobs on that site, so there are additional jobs in the early years but not in steady state. Phasing at other sites assumes that additional (i.e. NDR-induced) occupancy begins in 2018 and proceeds at a uniform rate until steady state is attained in 2034.



Table A.3 – Analysis of Jobs between High-GVA (£45,000) and Low-GVA (£29,000) jobs at 2011 Prices

Site No.	5	7	8	9	10	11	
	Rackheath	Beyond Green Devts	Airport Site 4	Airport Site 3	Airport Ind Est	Salhouse Rd	Total
% that are high value (balance are low value)	40%	40%	50%	50%	30%	30%	
Average GVA per job, £	35,520	35,520	37,100	37,100	33,940	33,940	
Average GVA per job at 2011 prices, £	34,824	34,824	36,373	36,373	33,275	33,275	
<b>Total GVA by year, £m</b>							
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	2.6	0.8	1.3	2.1	0.0	0.1	6.9
2019	5.2	1.6	2.5	4.1	0.1	0.2	13.7
2020	7.7	2.5	3.8	6.2	0.1	0.3	20.6
2021	10.3	3.3	5.1	8.2	0.2	0.4	27.5
2022	12.9	4.1	6.4	10.3	0.2	0.5	34.3
2023	15.5	4.9	7.6	12.3	0.3	0.5	41.2
2024	18.1	5.7	8.9	14.4	0.3	0.6	48.1
2025	20.6	6.6	10.2	16.4	0.4	0.7	54.9
2026	23.2	7.4	8.7	18.5	0.4	0.8	59.1
2027	25.8	8.2	7.3	20.5	0.5	0.9	63.2
2028	28.4	9.0	5.8	22.6	0.5	1.0	67.4
2029	31.0	9.8	4.4	24.6	0.6	1.1	71.5
2030	33.6	10.7	2.9	26.7	0.6	1.2	75.6
2031	36.1	11.5	1.5	28.8	0.7	1.3	79.8
2032	38.7	12.3	0.0	30.8	0.7	1.4	83.9
2033	41.3	13.1	0.0	32.9	0.8	1.5	89.5
2034	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2035	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2036	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2037	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2038	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2039	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2040	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2041	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2042	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2043	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2044	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2045	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2046	43.9	13.9	0.0	34.9	0.8	1.6	95.1
2047	43.9	13.9	0.0	34.9	0.8	1.6	95.1

**Note 1:** Table A.3 shows additional GVA by year at each of the non-Postwick sites, determined by multiplying the number of additional jobs taken from Table A.2 by average GVA per job as shown in the

fourth row of this Table (A.3). For instance, the 74 jobs at Rackheath in 2018 (Table A.2) are multiplied by £34,824 (A.3) to yield, following rounding, £2.6m of GVA in 2018 (A.3).

**Note 2:** The 2011 GVA per job figures of £45,000 for high-GVA jobs and £29,000 for low-GVA jobs are consistent with the figures used in the Postwick Hub Scheme Economic Appraisal Report; 2010 figures have been assumed to be 2% lower than in 2011. The proportion of high-GVA jobs at each site is based upon NCC's expectations of the type of occupier to be expected at the various sites. The remaining jobs (i.e. those that are not 'high-GVA') are taken to be low-GVA jobs.

**Note 3:** GVA for the two Postwick sites is not presented in Table A.3, but in Table A.5

Table A.4 – Discount Factors for GVA

Years	Discount Factors
2010	1.000
2011	0.943
2012	0.890
2013	0.840
2014	0.792
2015	0.747
2016	0.705
2017	0.665
2018	0.627
2019	0.592
2020	0.558
2021	0.527
2022	0.497
2023	0.469
2024	0.442
2025	0.417
2026	0.394
2027	0.371
2028	0.350
2029	0.331
2030	0.312
2031	0.294
2032	0.278
2033	0.262
2034	0.247
2035	0.233
2036	0.220
2037	0.207
2038	0.196
2039	0.185
2040	0.174
2041	0.164
2042	0.155
2043	0.146
2044	0.138
2045	0.130
2046	0.123
2047	0.116

Table A.5 – Discounted GVA, £m

Discounted GVA, £m	Rackheath (5)	Beyond Green Devts (7)	Airport Site 4 (8)	Airport Site 3 (9)	Airport Ind Est (10)	Salhouse Rd (11)	Total
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	1.6	0.5	0.8	1.3	0.0	0.1	4.3
2019	3.1	1.0	1.5	2.4	0.1	0.1	8.1
2020	4.3	1.4	2.1	3.4	0.1	0.2	11.5
2021	5.4	1.7	2.7	4.3	0.1	0.2	14.5
2022	6.4	2.0	3.2	5.1	0.1	0.2	17.1
2023	7.3	2.3	3.6	5.8	0.1	0.3	19.3
2024	8.0	2.5	3.9	6.4	0.2	0.3	21.3
2025	8.6	2.7	4.2	6.9	0.2	0.3	22.9
2026	9.1	2.9	3.4	7.3	0.2	0.3	23.3
2027	9.6	3.0	2.7	7.6	0.2	0.3	23.5
2028	9.9	3.2	2.0	7.9	0.2	0.4	23.6
2029	10.2	3.2	1.4	8.1	0.2	0.4	23.6
2030	10.5	3.3	0.9	8.3	0.2	0.4	23.6
2031	10.6	3.4	0.4	8.5	0.2	0.4	23.5
2032	10.7	3.4	0.0	8.5	0.2	0.4	23.3
2033	10.8	3.4	0.0	8.6	0.2	0.4	23.4
2034	10.8	3.4	0.0	8.6	0.2	0.4	23.5
2035	10.2	3.2	0.0	8.1	0.2	0.4	22.2
2036	9.6	3.1	0.0	7.7	0.2	0.3	20.9
2037	9.1	2.9	0.0	7.2	0.2	0.3	19.7
2038	8.6	2.7	0.0	6.8	0.2	0.3	18.6
2039	8.1	2.6	0.0	6.4	0.2	0.3	17.6
2040	7.6	2.4	0.0	6.1	0.1	0.3	16.6
2041	7.2	2.3	0.0	5.7	0.1	0.3	15.6
2042	6.8	2.2	0.0	5.4	0.1	0.2	14.7
2043	6.4	2.0	0.0	5.1	0.1	0.2	13.9
2044	6.1	1.9	0.0	4.8	0.1	0.2	13.1
2045	5.7	1.8	0.0	4.5	0.1	0.2	12.4
2046	5.4	1.7	0.0	4.3	0.1	0.2	11.7
2047	5.1	1.6	0.0	4.0	0.1	0.2	11.0
<b>Total</b>	<b>233.0</b>	<b>74.0</b>	<b>33.0</b>	<b>185.5</b>	<b>4.4</b>	<b>8.2</b>	<b>538.2</b>
<b>Additional GVA from BGBP and BGLF, per Postwick Economic Appraisal Report</b>							<b>378.0</b>
<b>Total</b>							<b>916.2</b>

**Note:** Table A.5 shows discounted GVA arising from the non-Postwick sites derived by multiplying the GVA figure from Table A.3 by the discount factors in Table A.4. For instance the £22.6m of additional GVA (Table A.3) at Airport Site 3 in 2028 is multiplied by the discount factor of 0.35 for the year 2028 taken from Table A.4 to yield, following rounding, the £7.9m of additional discounted GVA shown in Table A.5. Additional discounted GVA at the two Postwick sites is calculated in the Postwick Economic Appraisal Report as £378m and, in Table A.5, this figure is added to the values from the non-Postwick sites to arrive at the overall total of £916.2m.

## **Appendix B. Roads and economic growth: a review of literature**

### **B.1 Introduction**

B.1.1 Although there is a significant amount of ex-ante appraisal work completed before investment is made in road schemes, the same cannot be said for ex-post appraisal of the benefits of road schemes. A body of international academic research has developed with a focus on assessing the economic benefits of highway infrastructure over long periods and some of this is reviewed here. In England, the Highways Agency produces analysis through its Post Opening Project Evaluation (POPE) process and this body of work is also referred to here.

### **B.2 Findings from POPE**

B.2.1 POPE focuses on major schemes with a capital cost in excess of £10m. Individual POPE studies consider how much a scheme actually cost (outturn cost) compared to predicted costs. These costs include: construction costs, land, preparation and supervision costs. The study also calculates the (ex-post) benefits of the scheme and compares this to the (ex-ante) benefits which were forecast. All of the government's New Approach to Transport Appraisal (NATA) objectives are covered in the evaluation: environment, safety, economy, accessibility and integration. The economy element does not consider the wider economic benefits that may accrue outside the parameters of the transport scheme, at the margins of the infrastructure, so factors such as jobs, productivity and commercial development are not included. Nevertheless, the following summary points are made in regards to major schemes (2002 to 2009):

- The majority of schemes (76%) evaluated to date (2009) had delivered more than £2 of benefit per £1 invested.
- The average net benefit of major schemes ranges from £58m (for schemes evaluated over 30 years) to £79m (for schemes evaluated over 60 years) at 2002 prices (POPE Meta Report, Highways Agency, 2011)

B.2.2 Tables B.1 and B.2 provide a review of the POPE work reflecting on road schemes in the East of England (with some from a slightly wider area) based on POPE reports available on the Highways Agency website.



Table B.1 – POPE 30-year benefits of road schemes within the East of England

East of England Schemes	30 Year Present Value Benefits, £			Benefit Cost Ratio		
	Pre-Scheme Forecast	Actual	Variance	Pre-Scheme Forecast	Actual	Variance
A11 Roudham Heath	£36.2m*	£215m*	N/A	2.3*	4.2*	N/A
A120 Stansted to Braintree	£646.4m	£1215.8m <sup>1</sup>	£569.4m	4.1	12.11	8.0
A14 Rookery crossroads	£8.65m	£13.48m	£4.85m	1.96	2.0	0.04
A14 Haughley New Street to Stowmarket	£91.7m	£70.8m	-£20.9m	13.9	7.5	-6.4
A421 Great Barford	£244.7m	£314.6m	£69.9m	7.9	8.5	0.6
A428 Caxton Common	£104.8m <sup>2</sup>	£59.5m <sup>2</sup>	-£45.3m <sup>1</sup>	2.92	> 1.42	< -1.52
A43 Silverstone	£317.8m	£163.3m	-£154.5m	4.2	1.4	-2.8
A47 Thorney Bypass	£47.64m	£66.53m	£18.89m	2.48	2.96	0.48
A6 Clapham	£61m	£54m	-£7m	1.6	1.3	-0.3
A6 Rushden	£27.8m	£39.7m	£11.9m	2.6	2.4	-0.2

Source: Highways Agency POPE Major Schemes Summary Reports

**Notes:** \*Not directly comparable

<sup>1</sup>Listed as Post Opening Re-forecast, not actual evaluation

<sup>2</sup>First 10 years impact only.

Table B.2 – 60 year Post Opening Project Evaluation of benefits of road schemes within the East of England

East of England Schemes	60 Year Present Value Benefits, £			Benefit Cost Ratio		
	Pre-Scheme Forecast	Actual	Variance	Pre-Scheme Forecast	Actual	Variance
A10 Wadesmill	£106.6m	£121.1m	£14.5m	4.5	3.01	-1.5
A11 Attleborough	£68.7m	£88.9m	£20.2m	5.4	5.2	-0.2
M1 Junctions 6a to 10 Widening	£2,004.3m	£1,683.6m	-£320.7m	6.9	6.1	-0.8

Source: Highways Agency POPE Major Schemes Summary Reports

B.2.3 As can be seen from Table B.1 and Table B.2, all of the East of England schemes that have been evaluated to date were predicted to generate, and have shown, a considerable net benefit. All have resulted in a positive benefit cost ratio as well.

- B.2.4 The benefits vary in scale depending on the size of the project; and the variance with which forecast and actual benefits differ is relative to this. For example, the A120 Stansted to Braintree scheme was forecast to generate £646.4m worth of benefits over 30 years. After completion, the actual benefits accrued were equal to £1,215.8m (£569.4m more benefits than expected). This translated in the variance of Benefit Cost Ratio (BCR) for that scheme; BCR predicted at 4.1, but after completion recalculated at 12.1 (Highways Agency, POPE A120 Stansted – Braintree, page 3). This is almost a 300% increase in BCR. In comparison, a smaller scale scheme such as the Rushden Bypass, with an actual 30-year present value benefit of £39.7m displayed a much smaller change in BCR; reducing from a forecasted 2.6 to an actual 2.4 (Highways Agency, POPE A6 Rushden – Higham Ferrers Bypass, page 9).
- B.2.5 This change in variance is to be expected, as with the increase in scale of projects, the opportunity for inaccuracies and external influences also increases. It is important to note that in each of these schemes, though there may be differences between the forecast and actual benefits of the scheme, the economic BCR remains positive in each case.

### **B.3 Integration and Wider Economic benefits**

- B.3.1 As mentioned previously, the POPE reports include some ex-post analysis on the integration benefits of a scheme (as one of the government's NATA objectives). The majority of these evaluated schemes comply with regional development and transport objectives. For example, the A6 Rushden scheme *"is broadly consistent with the delivery of key policies within the Northamptonshire Structure Plan and the East Northamptonshire Local Plan"* (Highways Agency, POPE A6 Rushden – Higham Ferrers Bypass, page 9). When asked whether the area is a better place to live following the opening of the bypass, 58% of residents agreed that it was, whilst only 15% disagreed (paragraph 6.43, page 58).
- B.3.2 Similarly, the A421 Great Barford Bypass resulted in the following evaluation: *'The benefits offered align with key policy objectives set out in the latest Bedfordshire Local Transport Plan and the East Midlands Regional Spatial Strategy'*. These conclusions indicate that such large-scale transport schemes can be implemented in such a way that they complement regional and local transport objectives. In the case of the A120 Stansted to Braintree, the scheme not only delivered on integration objectives but also on wider economic benefits:

---

*“The Essex LTP1 delivery report in particular has demonstrated that the A120 scheme has achieved its objective in terms of the integration objective. The scheme also contributes to other policies including the East of England Plan and the A12/A120 Route Management Strategy.” And “The scheme has provided new employment and regeneration opportunities as stated in the scheme objectives” (Highways Agency, POPE A120 Stansted – Braintree, page 3)<sup>32</sup>.*

B.3.3 The A120 route is not the only scheme that has benefited the local economy beyond simply shorter travel time and increased safety; many have unlocked areas of employment, investment and enterprise; however such successes can be overlooked due to not being included within the monetary post-project evaluations. It is important to take these additional benefits into account as they can significantly impact on a local economy, especially in areas of stalled growth or where prevailing infrastructure acts as a hindrance to investment and trade.

B.3.4 In summary, the POPE reports provide an overview of the economic benefits delivered by road schemes but the evaluation process stops short of considering wider economic benefits. The scale of benefits is therefore likely to be greater than captured in the POPE work and this suggests that wider economic benefit assessment is an important element of the appraisal and evaluation process, though it remains an area of assessment that is generally given less prominence in appraisals.

## **B.4 Findings from Research Studies**

B.4.1 In a study by Gibbons et al (2010)<sup>33</sup> it was noted that evaluation of the benefits of transport improvements has traditionally revolved around the measurement of direct benefits to users. Recent practice has begun to widen the scope to include a broad range of 'wider' economic benefits. These wider benefits (and costs) include spill overs between people and between firms that cause the aggregate benefits to diverge from the sum of the private user benefits (Gibbons et al, 2010:p2). Foremost amongst these measures is agglomeration, though there is a suggestion that the focus on agglomeration leads to localised benefits going undetected (Gibbons et al, 2010:p49).

B.4.2 The finding from this study is related to the potential accessibility changes and agglomeration benefits and there is no convincing evidence that the schemes of

---

<sup>32</sup> Highways Agency: 'POPE of Major Schemes Summary Report – A120 Stansted to Braintree Report'

<sup>33</sup> Gibbons, S., Lyytikainen, T., Overman, H., Sanchis-Guarner, R. & Laird, J. (2010) Evaluating the productivity impacts of road transport schemes: London: Department for Transport

the scale included in this study (including all major road transport improvements between 1998 and 2003) have created any measurable agglomeration benefits of this type. The most likely explanation for this is that the changes in employment accessibility may be too small and geographically localised to generate detectable changes in agglomeration-related productivity (Gibbons et al: 2010, Main Findings).

- B.4.3 Nevertheless, Gibbons et al (2010:p3) suggest that it is only a small conceptual step from the observation that firms are more productive in more integrated and dense economies, to the conclusion that improvements in transport networks could improve productivity. Improvements to the road and rail networks bring firms closer to each other and firms closer to workers in terms of travel times and costs. This closer economic integration exposes firms to greater competition, improving productivity at the macro level, and improves the basis for agglomeration economies arising at the micro level.
- B.4.4 Focusing on the micro level, a study by Matson et al (2006)<sup>34</sup> primarily focused on landscape and countryside issues at the settlement level but does consider road by-pass schemes as case studies and provides the following summaries in relation to a review of ex-post evaluation work with a wider economic dimension:
- A27 Polegate Bypass  
Too little significance had been given to the role of planned development driving trunk road improvements in the Polegate area. Although pressure for housing, commercial and business development did not feature in the justification of the scheme at public inquiry, they have subsequently taken on central importance in providing the case for further road expansion (Matson et al: 2006, p26).
  - A34 Newbury Bypass  
The bypass has enabled edge-of-town development on the old road, most notably Vodafone's HQ. It also appears to have aided further development of industrial and business parks accessed via the old road (Matson et al: 2006, p28).
  - M65 Blackburn Southern Bypass  
Local councils now regard widening of the M65 as essential to further industrial development. Blackburn with Darwen Borough Council called for widening between junctions 5 and 6 in their second Local Transport Plan in

---

<sup>34</sup> Matson, L., Taylor, I., Sloman, L. & Elliott, J. (2006) Beyond transport infrastructure: lessons for the future from recent road projects, London: CPRE and The Countryside Agency

order to facilitate the expansion of the Whitebirk site into a strategic regional investment location. This was supported by the North West Development Agency and promoted through the Draft NW Regional Spatial Strategy (Matson et al: 2006, p29).

- B.4.5 The Eddington Report (2006)<sup>35</sup> assessed the state of Britain's national transportation infrastructure and whether problems in the transportation network affected productivity and economic performance. It concluded that major additions to the highway system were not required but that the *"Government should make sustained highway and other investments to improve the transportation network 'in those places that are important for the U.K.'s economic success"* (The Eddington Transport Study, 2006:58).
- B.4.6 Mera (1973)<sup>36</sup> (cited in Lakshmanan (2010)<sup>37</sup>) carried out the first study which found that public infrastructure—including transport and communications infrastructure— contributes to aggregate private production in ways similar to that of privately supplied inputs and that its impact on productivity could be assessed through the use of the production function framework. He divided Japan into eight regions, and concluded that from 1954 to 1963 (a period of intense reconstruction of the Japanese economy), investments in transport and communication substantially contributed to private production in the manufacturing and service sectors. The output elasticities of 0.35 for the manufacturing sector and about 0.40 for the service sector implied that a 1% increase in infrastructure stocks led respectively to 0.35% and 0.40% increases in the outputs of Japanese manufacturing and service sectors.
- B.4.7 In a far-reaching study completed in the USA by Shatz et al (2011)<sup>38</sup> a number of points were identified based on review and meta-analysis of existing studies. A summary of points emerging from the report are set out below:
- *"Highway infrastructure can affect the economy in a number of ways, nearly all of them related to increasing mobility. It can enable producers to reach markets more cheaply and to increase the size of their market area. It can enable workers to choose among a wider array of employment opportunities and to live farther from their workplaces. It can enable producers to have a broader choice of input suppliers. Related to lowering the costs of reaching markets or inputs, it can increase the speed with which producers can reach*

---

<sup>35</sup> Eddington, R. (2006) The Eddington Transport Study. Norwich: HMSO

<sup>36</sup> Mera, K., (1973) Regional production functions and social overhead capital: an analysis of the Japanese case, *Regional and Urban Economics*, 3, pp157–186.

<sup>37</sup> Lakshmanan, T.R. (2010) The broader economic consequences of transport infrastructure investments, *Journal of Transport Geography*

<sup>38</sup> Shatz, H.J., Kitchens, K.E., Rosenbloom, S. & Wachs, M. (2011) Highway infrastructure and the economy. Implications for federal policy. Santa Monica CA: The RAND Corporation



*markets or inputs, allowing them to hold lower inventories and carry out just-in-time production.” (Shatz et al., 2011:p15).*

- *“Researchers have found that, beyond the value of the interstate system, highway infrastructure has caused positive economic outcomes for those industries that use it more intensively.” (Keeler and Ying, (1988) cited in Shatz et al., (2011:p16)).*
- *“An early study of 28 metropolitan areas from 1980 to 1984 found quite a strong relationship between public capital (which included roadways but also such capital stock as sewerage, water supply, hospitals, and airports) and personal income (Duffy-Deno and Eberts, 1989). The authors found that a 10 percent increase in public investment (the annual spending on public capital) was associated with a 1.13 percent increase in metropolitan area personal income. Furthermore, a 1 percent increase in the public capital stock was associated with a 0.8 percent increase in personal income. They attributed the first effect to the employment and wages stemming from construction, and the second effect to the use of public capital as a productive input and consumption good.” (Shatz et al., 2011:29).*
- *“New interstates built in nonmetropolitan counties between 1969 and 1993 raised earnings in those counties by about 6 percent to 8 percent (Chandra and Thompson, 2000). These results differed by industry. Earnings in nonmetropolitan counties that did not receive interstates fell by 1 percent to 3 percent, again with differences by industries.” (Shatz et al., 2011:30).*
- *“Matching Appalachian counties with non-Appalachian counties, Lynch (2007) found that Appalachian counties served by the Appalachian Development Highway System (ADHS) tended to have statistically significant faster growth from 1969 to 2000 in total income (measured according to place of residence), total earnings (measured according to place of work), population, per capita income, retail trade, and services than their matched, non-Appalachian counties.” (Shatz et al., 2011:32).*
- *“Roads in China contributed strongly to growth of gross domestic product (GDP) per worker and to poverty reduction between 1982 and 1999 (Fan and Chan-Kang, 2008). Although the Chinese built both high-end roads, such as expressways, and low-end roads, such as narrow, single-lane roads, it was actually the low-end roads that made the greatest contributions both to GDP growth and poverty reduction. For example, increasing the length of high-end roads by 10 percent was associated with a 0.34 percent increase in GDP per worker, but increasing the length of low-end roads by the same proportion was associated with a 1.56 percent increase in GDP per worker.” (Shatz et al., 2011:39).*
- *“In an analysis of Indian roads between 1972 and 1993, Hulten, Bennathan, and Srinivasan (2003, as cited in Hulten, 2005) found that a 10 percent increase in national and state highways and district roads was related to a 4.4 percent increase in the level of productivity. In this case, in simplified*

*terms, productivity was estimated as the difference between the growth of manufacturing output and the growth of manufacturing inputs.” (Shatz et al., 2011:39).*

- *“In a study about Spain from 1964 to 1991, Moreno et al. (1997) focused on the link between infrastructure and regional growth. They found that infrastructure (as measured by the value of roads and highways, railways, harbours and maritime signalling, airports, water and sewage facilities, and urban structures) had a positive but modest effect on labour productivity. Whereas an increase in infrastructure of 1 percent was related to a 0.04 percent increase in labour productivity, an increase in private capital of 1 percent was related to a 0.5 percent increase in labour productivity.” (Shatz et al., 2011:39).*
- *“Cadot, Röller, and Stephan (2005) researched transportation investment (rail, highways, and waterways) in 21 regions in France from 1985 to 1992, analyzing both the extent to which politics influenced public investment and public investment’s relationship with regional domestic product. They found that although politics heavily influenced transportation investment, and although such investment appeared not to be related to where it might be most productive, it still had a positive effect on domestic product.” (Shatz et al., 2011:40).*
- *“Two papers reported the intriguing result that the quantity of infrastructure may not be the only important issue, or even the most important. Rather, infrastructure in better condition had large and positive effects on growth (Aschauer, 2000) and even outweighed the quantity of infrastructure in growth effects (Hulten, 1996).” (Shatz et al., 2011:41).*

## **B.5 Summary**

- B.5.1** Research has identified positive effects of highway infrastructure on economic outcomes, in particular productivity and output. Broad measures of public infrastructure have a positive and significant effect on economic outcomes and highways have such an effect on productivity and output specifically.

## Glossary

ADHS	Appalachian Development Highway System
B1/B2/B8	Development categories: business (including office) / general industrial / storage and distribution
BCR	Benefit Cost Ratio
BGBP	Broadland Gate Business Park
BGLF	Broadland Gate Laurel Farm
DCO	Development Consent Order
BRES	Business Register and Employment Survey
BRT	Bus Rapid Transit
CACI	Company providing marketing solutions and information systems
DfT	Department for Transport
FTE	Full-time Equivalent
GDP	Gross Domestic Product
GNCD – EOI	Greater Norwich City Deal – Expression of Interest
GNDP	Greater Norwich Development Partnership
GVA	Gross Value Added
HQ	Head Quarters
IMD	Index of Multiple Deprivation
JCS	Joint Core Strategy
KLM	Royal Dutch Airlines
LEP	Local Enterprise Partnership
LSOA	Lower Super Output Area
LTP	Local Transport Plan
NATA	New Approach to Transport Appraisal
NATS	Norwich Area Transportation Strategy
NCC	Norfolk County Council
NDR	Norwich Northern Distributor Road
NOMIS	National Online Manpower Information System (Office for National Statistics )
NPA	Norwich Policy Area
NPPF	National Planning Policy framework
NRP	Norwich Research Park
NW	North West
ONS	Office for National Statistics
PHS	Postwick Hub Scheme
POPE	Post Opening Project Evaluation
PWC	PricewaterhouseCoopers
RAF	Royal Air Force
TEN	Transforming Education in Norfolk

---

UKTI	UK Trade and Investment
UKTI IST	UK Trade and Investment's Investment Services Team
WebTAG	Web-based Transport Appraisal Guidance produced by the Department for Transport

---

## Bibliography

Cabinet Office Strategy Unit et al. (2009) The Future of Urban Transport.  
Department for Transport.

<http://webarchive.nationalarchives.gov.uk/20091204001009/http://www.dft.gov.uk/pgr/regional/policy/urbantransport/>

Department for Communities and Local Government (2012), National Planning Policy Framework

Department for Transport, 2011, Creating Growth, Cutting Carbon. Making Sustainable Local Transport Happen. Cm 7996

Eddington Transport Study (2006)

<http://thepep.org/ClearingHouse/docfiles/Eddington.Transport.Study%20-%20Rod.pdf>

Greater Norwich Development Partnership (2009) Greater Norwich Development Strategy 2009 – 2014, [http://www.gndp.org.uk/content/wp-content/uploads/downloads/2010/03/GNDP\\_Economic\\_Strategy.pdf](http://www.gndp.org.uk/content/wp-content/uploads/downloads/2010/03/GNDP_Economic_Strategy.pdf)

Gibson et al., (2010) Evaluating the Productivity Impacts of Road Transport Schemes, <http://assets.dft.gov.uk/publications/pgr-evaluation-evaluationguidance-evalprodimpacts/final-report.pdf>

Greater Norwich Development Partnership (2011), JCS Annual Monitoring Report, 2011-12, <http://www.gndp.org.uk/content/wp-content/uploads/downloads/2013/03/GNDPAMR201112FINALV2.pdf>

Greater Norwich Development Partnership (2011), Joint Core Strategy for Broadland, Norwich and South Norfolk: Adopted March 2011, <http://www.gndp.org.uk/our-work/joint-core-strategy/adoption/>

HM Treasury (2003) (updated in 2011), Green Book: Appraisal and Evaluation in Central Government, London: TSO, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/220541/green\\_book\\_complete.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf)

New Anglia Local Enterprise Partnership for Norfolk and Suffolk (2013), Towards a Growth Plan, <http://www.newanglia.co.uk/Assets/Files/Content/New%20Anglia%20Plan%20for%20Growth.pdf>



New Anglia Local Enterprise Partnership for Norfolk and Suffolk, (unknown date),  
New Anglia LEP Business Plan Presentation,  
<http://www.newanglia.co.uk/Assets/Files/Content/Business-Plan.pdf>

Matson et al., (2006) Beyond Transport Infrastructure: Lessons for the future from recent road projects, <http://transportforqualityoflife.com/u/files/Beyond-Transport-Infrastructure-fullreport%20July2006.pdf>

Norfolk City Council (2012) 'Delivering Economic Growth in Norfolk' – The Strategic Role for Norfolk County Council, 2012/17 (Draft)

Norwich City Council and the New Anglia LEP (2013) Greater Norwich City Deal, Expression of interest,  
<http://www.norwich.gov.uk/YourCouncil/Partnershipworking/Documents/CityDealExpressionOfInterest.pdf>

The Cabinet Office (2012) Unlocking growth in cities: city deals – wave 1,  
<https://www.gov.uk/government/publications/city-deals-wave-1>

Transport for Norwich (2009) A summary for our plans for the future, Consultation October 2009, <http://www.norfolk.gov.uk/view/NCC105058>

Shatz, H.J., Kitchens, K.E., Rosenbloom, S. & Wachs, M. (2011) Highway infrastructure and the economy. Implications for federal policy. Santa Monica CA: The RAND Corporation

## **POPEs**

Rushden: <http://assets.highways.gov.uk/our-road-network/pope/major-schemes/A6-Rushden-and-Higham-Ferrers-Bypass/POPE%20%20A6%20Rushden%20%26%20Higham%20Ferrers%20FYA%20report%20%20final.pdf>

Great Bartford: [http://assets.highways.gov.uk/our-road-network/pope/major-schemes/A421%20Great%20Barford%20Bypass/POPE\\_A421\\_Great\\_Barford\\_FYA\\_FINAL.pdf](http://assets.highways.gov.uk/our-road-network/pope/major-schemes/A421%20Great%20Barford%20Bypass/POPE_A421_Great_Barford_FYA_FINAL.pdf)

A120 Stansted to Braintree, <http://assets.highways.gov.uk/our-road-network/pope/major-schemes/A120%20Stansted%20to%20Braintree%20Improvement/POPE%20%20A120%20Stansted%20to%20Braintree%20FYA%20%20website%20part%20A.pdf>

POPE META REPORT (2011): [http://assets.highways.gov.uk/our-road-network/pope/major-schemes/POPE\\_meta\\_2011\\_main\\_report\\_final.pdf](http://assets.highways.gov.uk/our-road-network/pope/major-schemes/POPE_meta_2011_main_report_final.pdf)

**Studies referenced in Shatz et al. (2011)**

Shatz, H.J., Kitchens, K.E., Rosenbloom, S. & Wachs, M. (2011) Highway infrastructure and the economy. Implications for federal policy. Santa Monica CA: The RAND Corporation

Chandra, Amitabh and E. Thompson (2000) 'Does Public Infrastructure Affect Economic Activity? Evidence from the rural interstate highway system'. *Regional Science and Urban Economics* 30(2000): 457-90

Duffy-Deno KT, Eberts RW (1989). Public infrastructure and regional economic development: a simultaneous equations approach. Federal Reserve Bank of Cleveland, Research Department.

Fan, Shenggen, and Connie Chan-Kang, 2008. 'Regional Road Development, Rural and Urban Poverty: Evidence from China', *Transport Policy* 15.5, 305-314

Hulten, C. R., E. Bennathan, and S. Srinivasan. 2006. "Infrastructure, Externalities, and Economic Development: A Study of the Indian Manufacturing Industry." *The World Bank Economic Review* 20(2): 291-308.

Olivier Cadot/Lars-Hendrik Röller/Andreas Stephan: 2006 A Political Economy Model of Infrastructure Allocation: An Empirical Assessment Published in the *Journal of Public Economics*, Vol 90, no 6/7, pp. 1133-1153, 2006.

Rosina Moreno Serrano & Manuel Artis Ortuno & Enrique Lopez Bazo & Jordi Surinach Caralt, 1997. "Evidence on the complex link between infrastructure and regional growth, "Working Papers in Economics 19, Universitat de Barcelona. *Espai de Recerca en Economia*

David Alan Aschauer, 2000. "Do states optimize? Public capital and economic growth," *The Annals of Regional Science*, Springer, vol. 34(3), pages 343-363.

Hulten Charles, 1996, Infrastructure Capital and Economic Growth: How Well You Use it May Be More Important Than How Much You Have" NBER working paper 5847 (1996)

Lynch, about Appalachian Development Highway System, 2007